

N60087_003872
BRUNSWICK_NAS
SSIC 5000-33c

LABORATORY DATA PACKAGE, 320-36665-1, NAS BRUNSWICK ME
03/20/2018
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-36665-1

Job Description: TT: PFAS, Brunswick, Discharge

For:

Tetra Tech, Inc.
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Attention: Jeff Orient



Approved for release.
David R Alltucker
Project Manager I
3/20/2018 2:42 PM

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03/20/2018

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Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
Q	One or more quality control criteria failed.
M	Manual integrated compound.
E	Result exceeded calibration range.
D	The reported value is from a dilution.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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)

Job Narrative
320-36665-1

Comments

No additional comments.

Receipt

The samples were received on 3/2/2018 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.9° C.

LCMS

Method(s) EPA 537 (Mod): The first level standard from the initial calibration curve is used to evaluate the tune criteria. The instrument mass windows are set at +/- 0.5amu; therefore, detection of the analyte serves as verification that the assigned mass is within +/- 0.5amu of the true value, which meets the DoD/DOE QSM tune criterion.

Method(s) EPA 537 (Mod): The laboratory control sample (LCS) for preparation batch 320-212840 and analytical batch 320-213304 recovered outside control limits for Perfluorododecanoic acid (PFDoA). This analyte was biased high in the LCS and was not detected in the associated samples; therefore, the data have been reported.

Method(s) EPA 537 (Mod): The concentration of Perfluorooctanoic acid (PFOA) associated with the following sample exceeded the instrument calibration range: TP-PFC-027-TPI (320-36665-1). This analyte has been qualified; however, the peak did not saturate the instrument detector. This sample was re-analyzed at dilution and both sets of data are reported.

Method(s) EPA 537 (Mod): The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-212840 and analytical batch 320-213304 were outside control limits for several analytes. Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Method(s) EPA 537 (Mod): The concentration of Perfluorooctanesulfonic acid (PFOS) and Perfluorohexanesulfonic acid (PFHxS) associated with the following samples exceeded the instrument calibration range: (320-37017-A-3-A), (320-37017-A-3-B MS) and (320-37017-A-3-C MSD). These analytes have been qualified; however, the peaks did not saturate the instrument detector. These samples have been re-analyzed at dilution and both sets of data were reported.

Method(s) EPA 537 (Mod): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C4 PFBA: (320-37017-A-3-A), (320-37017-A-3-B MS) and (320-37017-A-3-C MSD). These samples have been re-analyzed at dilution with all IDA in control. Both sets of data are reported. Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

Method(s) EPA 537 (Mod): Results for samples TP-PFC-027-TPI (320-36665-1), (320-37017-A-3-A), (320-37017-A-3-B MS) and (320-37017-A-3-C MSD) were reported from the analysis of a diluted extract due to high concentration of target analytes in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits

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

Organic Prep

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Client Sample ID: TP-PFC-027-TPI

Lab Sample ID: 320-36665-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	71		2.0	0.58	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoropentanoic acid (PFPeA)	180		2.0	0.43	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanoic acid (PFHxA)	350		2.0	0.47	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	69		2.0	0.60	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1300	E M	2.0	0.53	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorononanoic acid (PFNA)	2.3		2.0	0.51	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.73	J	2.0	0.48	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	48		2.0	0.46	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	350		2.0	0.38	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	7.6		2.0	0.37	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	330	M	4.0	1.1	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	72	D	20	5.8	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	180	D	20	4.3	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	340	D	20	4.7	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	70	D	20	6.0	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1800	D M	20	5.3	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	45	D	20	4.6	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	380	D	20	3.8	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS) - DL	8.9	J D	20	3.7	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	340	D	40	11	ng/L	10		EPA 537 (Mod)	Total/NA

Client Sample ID: TP-PFC-027-MID CARBON

Lab Sample ID: 320-36665-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	120		2.0	0.59	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoropentanoic acid (PFPeA)	190		2.0	0.43	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanoic acid (PFHxA)	110		2.0	0.47	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.8		2.0	0.61	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	21	M	2.0	0.54	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	3.2		2.0	0.46	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	2.0	0.38	ng/L	1		EPA 537 (Mod)	Total/NA

Client Sample ID: TP-PFC-027-TPE

Lab Sample ID: 320-36665-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	130		2.0	0.58	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoropentanoic acid (PFPeA)	140		2.0	0.42	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanoic acid (PFHxA)	43		2.0	0.46	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.76	J M	2.0	0.60	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.9	J M	2.0	0.53	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.74	J	2.0	0.45	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.38	J	2.0	0.37	ng/L	1		EPA 537 (Mod)	Total/NA

Client Sample ID: TP-PFC-027-TPE-D

Lab Sample ID: 320-36665-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	130		2.0	0.59	ng/L	1		EPA 537 (Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Client Sample ID: TP-PFC-027-TPE-D (Continued)

Lab Sample ID: 320-36665-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	140		2.0	0.43	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanoic acid (PFHxA)	44		2.0	0.47	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.76	J	2.0	0.61	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1.7	J	2.0	0.54	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.72	J	2.0	0.46	ng/L	1		EPA 537 (Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Client Sample ID: TP-PFC-027-TPI

Lab Sample ID: 320-36665-1

Date Collected: 03/01/18 08:55

Matrix: Water

Date Received: 03/02/18 09:15

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	71		2.0	0.58	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluoropentanoic acid (PFPeA)	180		2.0	0.43	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorohexanoic acid (PFHxA)	350		2.0	0.47	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluoroheptanoic acid (PFHpA)	69		2.0	0.60	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorooctanoic acid (PFOA)	1300	E M	2.0	0.53	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorononanoic acid (PFNA)	2.3		2.0	0.51	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorodecanoic acid (PFDA)	0.73	J	2.0	0.48	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	0.71	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	0.51	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	0.75	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	0.82	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorobutanesulfonic acid (PFBS)	48		2.0	0.46	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorohexanesulfonic acid (PFHxS)	350		2.0	0.38	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	7.6		2.0	0.37	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorooctanesulfonic acid (PFOS)	330	M	4.0	1.1	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	0.55	ng/L		03/14/18 10:07	03/16/18 01:11	1
Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	1.3	ng/L		03/14/18 10:07	03/16/18 01:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	96		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C4 PFBA	97		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C5 PFPeA	103		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C2 PFHxA	90		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C4-PFHpA	101		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C4 PFOA	86		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C5 PFNA	111		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C2 PFDA	115		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C2 PFUnA	108		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C2 PFDoA	102		50 - 150				03/14/18 10:07	03/16/18 01:11	1
18O2 PFHxS	93		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C2-PFTeDA	113		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C4 PFOS	98		50 - 150				03/14/18 10:07	03/16/18 01:11	1
13C3-PFBS	97		50 - 150				03/14/18 10:07	03/16/18 01:11	1

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	72	D	20	5.8	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluoropentanoic acid (PFPeA)	180	D	20	4.3	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluorohexanoic acid (PFHxA)	340	D	20	4.7	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluoroheptanoic acid (PFHpA)	70	D	20	6.0	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluorooctanoic acid (PFOA)	1800	D M	20	5.3	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluorononanoic acid (PFNA)	15	U	20	5.1	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluorodecanoic acid (PFDA)	9.9	U	20	4.8	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluoroundecanoic acid (PFUnA)	15	U	20	7.1	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluorododecanoic acid (PFDoA)	15	U Q	20	5.1	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluorotridecanoic Acid (PFTriA)	30	U	40	7.5	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluorotetradecanoic acid (PFTeA)	30	U	40	8.2	ng/L		03/14/18 10:07	03/17/18 00:59	10

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Client Sample ID: TP-PFC-027-TPI

Lab Sample ID: 320-36665-1

Date Collected: 03/01/18 08:55

Matrix: Water

Date Received: 03/02/18 09:15

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 - DL (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	45	D	20	4.6	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluorohexanesulfonic acid (PFHxS)	380	D	20	3.8	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluoroheptanesulfonic Acid (PFHpS)	8.9	J D	20	3.7	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluorooctanesulfonic acid (PFOS)	340	D	40	11	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluorodecanesulfonic acid (PFDS)	15	U	20	5.5	ng/L		03/14/18 10:07	03/17/18 00:59	10
Perfluorooctane Sulfonamide (FOSA)	30	U	40	13	ng/L		03/14/18 10:07	03/17/18 00:59	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	80		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C4 PFBA	85		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C5 PFPeA	87		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C2 PFHxA	88		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C4-PFHpA	92		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C4 PFOA	89		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C5 PFNA	91		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C2 PFDA	92		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C2 PFUnA	87		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C2 PFDoA	76		50 - 150				03/14/18 10:07	03/17/18 00:59	10
18O2 PFHxS	84		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C2-PFTeDA	80		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C4 PFOS	80		50 - 150				03/14/18 10:07	03/17/18 00:59	10
13C3-PFBS	90		50 - 150				03/14/18 10:07	03/17/18 00:59	10

Client Sample ID: TP-PFC-027-MID CARBON

Lab Sample ID: 320-36665-2

Date Collected: 03/01/18 09:00

Matrix: Water

Date Received: 03/02/18 09:15

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	120		2.0	0.59	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluoropentanoic acid (PFPeA)	190		2.0	0.43	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluorohexanoic acid (PFHxA)	110		2.0	0.47	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluoroheptanoic acid (PFHpA)	3.8		2.0	0.61	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluorooctanoic acid (PFOA)	21	M	2.0	0.54	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluorodecanoic acid (PFDA)	1.0	U	2.0	0.48	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	0.72	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	0.52	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	0.76	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	0.83	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluorobutanesulfonic acid (PFBS)	3.2		2.0	0.46	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	2.0	0.38	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.0	U	2.0	0.37	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.1	ng/L		03/14/18 10:07	03/16/18 01:19	1
Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	0.56	ng/L		03/14/18 10:07	03/16/18 01:19	1

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Client Sample ID: TP-PFC-027-MID CARBON

Lab Sample ID: 320-36665-2

Date Collected: 03/01/18 09:00

Matrix: Water

Date Received: 03/02/18 09:15

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	1.3	ng/L		03/14/18 10:07	03/16/18 01:19	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C8 FOSA	78		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C4 PFBA	86		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C5 PFPeA	82		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C2 PFHxA	83		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C4-PFHpA	93		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C4 PFOA	90		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C5 PFNA	94		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C2 PFDA	97		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C2 PFUnA	96		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C2 PFDoA	81		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹⁸ O2 PFHxS	81		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C2-PFTeDA	93		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C4 PFOS	83		50 - 150				03/14/18 10:07	03/16/18 01:19	1
¹³ C3-PFBS	78		50 - 150				03/14/18 10:07	03/16/18 01:19	1

Client Sample ID: TP-PFC-027-TPE

Lab Sample ID: 320-36665-3

Date Collected: 03/01/18 09:05

Matrix: Water

Date Received: 03/02/18 09:15

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	130		2.0	0.58	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluoropentanoic acid (PFPeA)	140		2.0	0.42	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorohexanoic acid (PFHxA)	43		2.0	0.46	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluoroheptanoic acid (PFHpA)	0.76	J M	2.0	0.60	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorooctanoic acid (PFOA)	1.9	J M	2.0	0.53	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.51	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorodecanoic acid (PFDA)	0.98	U	2.0	0.47	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	0.70	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	0.51	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorotridecanoic Acid (PFTriA)	2.9	U	3.9	0.74	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorotetradecanoic acid (PFTeA)	2.9	U	3.9	0.81	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorobutanesulfonic acid (PFBS)	0.74	J	2.0	0.45	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorohexanesulfonic acid (PFHxS)	0.38	J	2.0	0.37	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.98	U	2.0	0.36	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	1.1	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	0.55	ng/L		03/14/18 10:07	03/16/18 01:27	1
Perfluorooctane Sulfonamide (FOSA)	2.9	U	3.9	1.3	ng/L		03/14/18 10:07	03/16/18 01:27	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C8 FOSA	76		50 - 150				03/14/18 10:07	03/16/18 01:27	1
¹³ C4 PFBA	80		50 - 150				03/14/18 10:07	03/16/18 01:27	1
¹³ C5 PFPeA	77		50 - 150				03/14/18 10:07	03/16/18 01:27	1
¹³ C2 PFHxA	78		50 - 150				03/14/18 10:07	03/16/18 01:27	1
¹³ C4-PFHpA	87		50 - 150				03/14/18 10:07	03/16/18 01:27	1
¹³ C4 PFOA	91		50 - 150				03/14/18 10:07	03/16/18 01:27	1

TestAmerica Sacramento

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Client Sample ID: TP-PFC-027-TPE

Lab Sample ID: 320-36665-3

Date Collected: 03/01/18 09:05

Matrix: Water

Date Received: 03/02/18 09:15

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	89		50 - 150	03/14/18 10:07	03/16/18 01:27	1
13C2 PFDA	89		50 - 150	03/14/18 10:07	03/16/18 01:27	1
13C2 PFUnA	92		50 - 150	03/14/18 10:07	03/16/18 01:27	1
13C2 PFDoA	81		50 - 150	03/14/18 10:07	03/16/18 01:27	1
18O2 PFHxS	79		50 - 150	03/14/18 10:07	03/16/18 01:27	1
13C2-PFTeDA	91		50 - 150	03/14/18 10:07	03/16/18 01:27	1
13C4 PFOS	76		50 - 150	03/14/18 10:07	03/16/18 01:27	1
13C3-PFBS	74		50 - 150	03/14/18 10:07	03/16/18 01:27	1

Client Sample ID: TP-PFC-027-TPE-D

Lab Sample ID: 320-36665-4

Date Collected: 03/01/18 00:00

Matrix: Water

Date Received: 03/02/18 09:15

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	130		2.0	0.59	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluoropentanoic acid (PFPeA)	140		2.0	0.43	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorohexanoic acid (PFHxA)	44		2.0	0.47	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluoroheptanoic acid (PFHpA)	0.76	J	2.0	0.61	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorooctanoic acid (PFOA)	1.7	J	2.0	0.54	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorodecanoic acid (PFDA)	0.99	U	2.0	0.48	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	0.72	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	0.52	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	0.75	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	0.82	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorobutanesulfonic acid (PFBS)	0.72	J	2.0	0.46	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.38	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.99	U	2.0	0.37	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.1	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	0.56	ng/L		03/14/18 10:07	03/17/18 00:43	1
Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	1.3	ng/L		03/14/18 10:07	03/17/18 00:43	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	82		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C4 PFBA	89		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C5 PFPeA	86		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C2 PFHxA	86		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C4-PFHpA	86		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C4 PFOA	88		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C5 PFNA	89		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C2 PFDA	85		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C2 PFUnA	83		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C2 PFDoA	81		50 - 150				03/14/18 10:07	03/17/18 00:43	1
18O2 PFHxS	87		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C2-PFTeDA	90		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C4 PFOS	88		50 - 150				03/14/18 10:07	03/17/18 00:43	1
13C3-PFBS	85		50 - 150				03/14/18 10:07	03/17/18 00:43	1

TestAmerica Sacramento

Default Detection Limits

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Prep: 3535

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	2.0	0.46	ng/L	EPA 537 (Mod)
Perfluorobutanoic acid (PFBA)	2.0	0.59	ng/L	EPA 537 (Mod)
Perfluorodecanesulfonic acid (PFDS)	2.0	0.56	ng/L	EPA 537 (Mod)
Perfluorodecanoic acid (PFDA)	2.0	0.48	ng/L	EPA 537 (Mod)
Perfluorododecanoic acid (PFDoA)	2.0	0.52	ng/L	EPA 537 (Mod)
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	0.37	ng/L	EPA 537 (Mod)
Perfluoroheptanoic acid (PFHpA)	2.0	0.61	ng/L	EPA 537 (Mod)
Perfluorohexanesulfonic acid (PFHxS)	2.0	0.38	ng/L	EPA 537 (Mod)
Perfluorohexanoic acid (PFHxA)	2.0	0.47	ng/L	EPA 537 (Mod)
Perfluorononanoic acid (PFNA)	2.0	0.52	ng/L	EPA 537 (Mod)
Perfluorooctane Sulfonamide (FOSA)	4.0	1.3	ng/L	EPA 537 (Mod)
Perfluorooctanesulfonic acid (PFOS)	4.0	1.1	ng/L	EPA 537 (Mod)
Perfluorooctanoic acid (PFOA)	2.0	0.54	ng/L	EPA 537 (Mod)
Perfluoropentanoic acid (PFPeA)	2.0	0.43	ng/L	EPA 537 (Mod)
Perfluorotetradecanoic acid (PFTeA)	4.0	0.83	ng/L	EPA 537 (Mod)
Perfluorotridecanoic Acid (PFTriA)	4.0	0.76	ng/L	EPA 537 (Mod)
Perfluoroundecanoic acid (PFUnA)	2.0	0.72	ng/L	EPA 537 (Mod)

Isotope Dilution Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFOSA (50-150)	PFBA (50-150)	PFPeA (50-150)	PFHxA (50-150)	PFHpA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)
320-36665-1	TP-PFC-027-TPI	96	97	103	90	101	86	111	115
320-36665-1 - DL	TP-PFC-027-TPI	80	85	87	88	92	89	91	92
320-36665-2	TP-PFC-027-MID CARBON	78	86	82	83	93	90	94	97
320-36665-3	TP-PFC-027-TPE	76	80	77	78	87	91	89	89
320-36665-4	TP-PFC-027-TPE-D	82	89	86	86	86	88	89	85
LCS 320-212840/2-A	Lab Control Sample	76	84	80	80	89	92	91	99
MB 320-212840/1-A	Method Blank	76	82	79	82	87	90	94	95

		Percent Isotope Dilution Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	PFUnA (50-150)	PFDoA (50-150)	PFHxS (50-150)	PFTDA (50-150)	PFOS (50-150)	3C3-PFBs (50-150)
320-36665-1	TP-PFC-027-TPI	108	102	93	113	98	97
320-36665-1 - DL	TP-PFC-027-TPI	87	76	84	80	80	90
320-36665-2	TP-PFC-027-MID CARBON	96	81	81	93	83	78
320-36665-3	TP-PFC-027-TPE	92	81	79	91	76	74
320-36665-4	TP-PFC-027-TPE-D	83	81	87	90	88	85
LCS 320-212840/2-A	Lab Control Sample	90	80	82	88	81	77
MB 320-212840/1-A	Method Blank	95	80	79	94	82	78

Surrogate Legend

PFOSA = 13C8 FOSA
PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
PFHpA = 13C4-PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFHxS = 18O2 PFHxS
PFTDA = 13C2-PFTeDA
PFOS = 13C4 PFOS
13C3-PFBS = 13C3-PFBS

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15

Lab Sample ID: MB 320-212840/1-A

Matrix: Water

Analysis Batch: 213304

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 212840

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1.5	U	2.0	0.59	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluoropentanoic acid (PFPeA)	1.0	U M	2.0	0.43	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorohexanoic acid (PFHxA)	1.0	U	2.0	0.47	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.61	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorooctanoic acid (PFOA)	0.585	J	2.0	0.54	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorodecanoic acid (PFDA)	1.0	U	2.0	0.48	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	0.72	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorododecanoic acid (PFDoA)	1.5	U	2.0	0.52	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	0.76	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	0.83	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	0.46	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	0.38	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.0	U	2.0	0.37	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.1	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	0.56	ng/L		03/14/18 10:07	03/16/18 00:56	1
Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	1.3	ng/L		03/14/18 10:07	03/16/18 00:56	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	76		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C4 PFBA	82		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C5 PFPeA	79		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C2 PFHxA	82		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C4-PFHpA	87		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C4 PFOA	90		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C5 PFNA	94		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C2 PFDA	95		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C2 PFUnA	95		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C2 PFDoA	80		50 - 150	03/14/18 10:07	03/16/18 00:56	1
18O2 PFHxS	79		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C2-PFTeDA	94		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C4 PFOS	82		50 - 150	03/14/18 10:07	03/16/18 00:56	1
13C3-PFBS	78		50 - 150	03/14/18 10:07	03/16/18 00:56	1

Lab Sample ID: LCS 320-212840/2-A

Matrix: Water

Analysis Batch: 213304

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 212840

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorobutanoic acid (PFBA)	40.0	43.5		ng/L		109	83 - 118
Perfluoropentanoic acid (PFPeA)	40.0	41.1		ng/L		103	83 - 108
Perfluorohexanoic acid (PFHxA)	40.0	42.7		ng/L		107	83 - 109
Perfluoroheptanoic acid (PFHpA)	40.0	42.0		ng/L		105	80 - 113
Perfluorooctanoic acid (PFOA)	40.0	40.7		ng/L		102	80 - 107
Perfluorononanoic acid (PFNA)	40.0	42.3		ng/L		106	83 - 113
Perfluorodecanoic acid (PFDA)	40.0	39.7		ng/L		99	85 - 113
Perfluoroundecanoic acid (PFUnA)	40.0	41.2		ng/L		103	76 - 105

TestAmerica Sacramento

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Method: EPA 537 (Mod) - PFAS for QSM 5.1, Table B-15 (Continued)

Lab Sample ID: LCS 320-212840/2-A

Matrix: Water

Analysis Batch: 213304

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 212840

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	40.0	47.0	Q	ng/L		117	87 - 116
Perfluorotridecanoic Acid (PFTriA)	40.0	44.6		ng/L		112	75 - 129
Perfluorotetradecanoic acid (PFTeA)	40.0	42.5		ng/L		106	82 - 115
Perfluorobutanesulfonic acid (PFBS)	35.4	40.1		ng/L		113	87 - 120
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.3		ng/L		94	81 - 106
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.2		ng/L		106	80 - 117
Perfluorooctanesulfonic acid (PFOS)	37.1	38.0		ng/L		102	82 - 112
Perfluorodecanesulfonic acid (PFDS)	38.6	40.7		ng/L		105	81 - 114
Perfluorooctane Sulfonamide (FOSA)	40.0	42.8		ng/L		107	85 - 114

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
¹³ C8 FOSA	76		50 - 150
¹³ C4 PFBA	84		50 - 150
¹³ C5 PFPeA	80		50 - 150
¹³ C2 PFHxA	80		50 - 150
¹³ C4-PFHpA	89		50 - 150
¹³ C4 PFOA	92		50 - 150
¹³ C5 PFNA	91		50 - 150
¹³ C2 PFDA	99		50 - 150
¹³ C2 PFUnA	90		50 - 150
¹³ C2 PFDoA	80		50 - 150
¹⁸ O2 PFHxS	82		50 - 150
¹³ C2-PFTeDA	88		50 - 150
¹³ C4 PFOS	81		50 - 150
¹³ C3-PFBS	77		50 - 150

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

LCMS

Prep Batch: 212840

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36665-1	TP-PFC-027-TPI	Total/NA	Water	3535	
320-36665-1 - DL	TP-PFC-027-TPI	Total/NA	Water	3535	
320-36665-2	TP-PFC-027-MID CARBON	Total/NA	Water	3535	
320-36665-3	TP-PFC-027-TPE	Total/NA	Water	3535	
320-36665-4	TP-PFC-027-TPE-D	Total/NA	Water	3535	
MB 320-212840/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-212840/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 213304

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36665-1	TP-PFC-027-TPI	Total/NA	Water	EPA 537 (Mod)	212840
320-36665-2	TP-PFC-027-MID CARBON	Total/NA	Water	EPA 537 (Mod)	212840
320-36665-3	TP-PFC-027-TPE	Total/NA	Water	EPA 537 (Mod)	212840
MB 320-212840/1-A	Method Blank	Total/NA	Water	EPA 537 (Mod)	212840
LCS 320-212840/2-A	Lab Control Sample	Total/NA	Water	EPA 537 (Mod)	212840

Analysis Batch: 213558

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-36665-1 - DL	TP-PFC-027-TPI	Total/NA	Water	EPA 537 (Mod)	212840
320-36665-4	TP-PFC-027-TPE-D	Total/NA	Water	EPA 537 (Mod)	212840

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Client Sample ID: TP-PFC-027-TPI

Date Collected: 03/01/18 08:55

Date Received: 03/02/18 09:15

Lab Sample ID: 320-36665-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			212840	03/14/18 10:07	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	213304	03/16/18 01:11	ABH	TAL SAC
Total/NA	Prep	3535	DL		212840	03/14/18 10:07	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)	DL	10	213558	03/17/18 00:59	ABH	TAL SAC

Client Sample ID: TP-PFC-027-MID CARBON

Date Collected: 03/01/18 09:00

Date Received: 03/02/18 09:15

Lab Sample ID: 320-36665-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			212840	03/14/18 10:07	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	213304	03/16/18 01:19	ABH	TAL SAC

Client Sample ID: TP-PFC-027-TPE

Date Collected: 03/01/18 09:05

Date Received: 03/02/18 09:15

Lab Sample ID: 320-36665-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			212840	03/14/18 10:07	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	213304	03/16/18 01:27	ABH	TAL SAC

Client Sample ID: TP-PFC-027-TPE-D

Date Collected: 03/01/18 00:00

Date Received: 03/02/18 09:15

Lab Sample ID: 320-36665-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			212840	03/14/18 10:07	KMK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	213558	03/17/18 00:43	ABH	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Laboratory: TestAmerica Sacramento

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Oregon	NELAP	10	4040	01-29-19

Method Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Method	Method Description	Protocol	Laboratory
EPA 537 (Mod)	PFAS for QSM 5.1, Table B-15	DOD 5.1	TAL SAC

Protocol References:

DOD 5.1 = DOD 5.1

Laboratory References:

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

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: TT: PFAS, Brunswick, Discharge

TestAmerica Job ID: 320-36665-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-36665-1	TP-PFC-027-TPI	Water	03/01/18 08:55	03/02/18 09:15
320-36665-2	TP-PFC-027-MID CARBON	Water	03/01/18 09:00	03/02/18 09:15
320-36665-3	TP-PFC-027-TPE	Water	03/01/18 09:05	03/02/18 09:15
320-36665-4	TP-PFC-027-TPE-D	Water	03/01/18 00:00	03/02/18 09:15

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 212932Lab Sample ID: IC 320-212932/6 Client Sample ID: _____Date Analyzed: 03/14/18 14:31 Lab File ID: 2018.03.14LLICAL_006.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.97	Isomers	hannigana	03/14/18 15:00

Lab Sample ID: ICB 320-212932/9 Client Sample ID: _____Date Analyzed: 03/14/18 14:54 Lab File ID: 2018.03.14LLICAL_009.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.67	Wrong peak	hannigana	03/14/18 15:10
Perfluoroheptanoic acid (PFHpA)	2.25	Baseline	hannigana	03/14/18 15:10
Perfluorooctanoic acid (PFOA)	2.60	Baseline	hannigana	03/14/18 15:11

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 213304Lab Sample ID: CCB 320-213304/1 Client Sample ID: _____Date Analyzed: 03/16/18 00:32 Lab File ID: 2018.03.15LLAAX_003.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.66	Wrong peak	hannigana	03/16/18 07:45
Perfluorooctanoic acid (PFOA)	2.63	Assign Peak	hannigana	03/16/18 07:45

Lab Sample ID: CCVL 320-213304/2 Client Sample ID: _____Date Analyzed: 03/16/18 00:40 Lab File ID: 2018.03.15LLAAX_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	2.96	Baseline	hannigana	03/19/18 11:41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.64	Baseline	hannigana	03/19/18 11:42
Perfluoroundecanoic acid (PFUnA)	3.64	Baseline	hannigana	03/19/18 11:39

Lab Sample ID: MB 320-212840/1-A Client Sample ID: _____Date Analyzed: 03/16/18 00:56 Lab File ID: 2018.03.15LLAAX_025.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	hannigana	03/19/18 09:53

Lab Sample ID: 320-36665-1 Client Sample ID: TP-PFC-027-TPIDate Analyzed: 03/16/18 01:11 Lab File ID: 2018.03.15LLAAX_027.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.59	Incomplete Integration	hannigana	03/16/18 07:57
Perfluorooctanesulfonic acid (PFOS)	2.95	Isomers	hannigana	03/16/18 08:04

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 213304Lab Sample ID: 320-36665-2 Client Sample ID: TP-PFC-027-MID CARBONDate Analyzed: 03/16/18 01:19 Lab File ID: 2018.03.15LLAAX_028.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.58	Isomers	hannigana	03/19/18 10:01

Lab Sample ID: 320-36665-3 Client Sample ID: TP-PFC-027-TPEDate Analyzed: 03/16/18 01:27 Lab File ID: 2018.03.15LLAAX_029.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoroheptanoic acid (PFHpA)	2.20	Assign Peak	hannigana	03/19/18 10:04
Perfluorooctanoic acid (PFOA)	2.60	Isomers	hannigana	03/19/18 10:05

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 213555Lab Sample ID: IC 320-213555/2 Client Sample ID: _____Date Analyzed: 03/16/18 23:09 Lab File ID: 2018.03.16ICAL_002.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorotetradecanoic acid (PFTeA)	4.55	Baseline	phomsopha t	03/18/18 12:21

Lab Sample ID: IC 320-213555/3 Client Sample ID: _____Date Analyzed: 03/16/18 23:17 Lab File ID: 2018.03.16ICAL_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.69	Baseline	phomsopha t	03/18/18 12:24

Lab Sample ID: ICB 320-213555/9 Client Sample ID: _____Date Analyzed: 03/17/18 00:04 Lab File ID: 2018.03.16ICAL_010.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.68	Assign Peak	phomsopha t	03/18/18 12:42
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	phomsopha t	03/18/18 12:42

Lab Sample ID: CCB 320-213555/11 Client Sample ID: _____Date Analyzed: 03/17/18 00:20 Lab File ID: 2018.03.16ICAL_012.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.68	Assign Peak	phomsopha t	03/18/18 12:45
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	phomsopha t	03/18/18 12:45

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 213558Lab Sample ID: 320-36665-1 DL Client Sample ID: TP-PFC-027-TPI DLDate Analyzed: 03/17/18 00:59 Lab File ID: 2018.03.16LLBX_036.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.68	Isomers	hannigana	03/19/18 10:22

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFC_ALL_SU_00043	09/07/18	03/07/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHFA_00012	200 uL	13C4-PFHFA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUDa_00014	200 uL	13C2 PFUnA	0.05 ug/mL
.LCd3-NMeFOSAA_00006	05/19/22		WELLINGTON, Lot d3NMeFOSAA0517		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
.LCd5-NEtFOSAA_00006	11/08/22		WELLINGTON, Lot d5NEtFOSAA1117		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
.LCM2-6:FTS_00006	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
.LCM2-8:2FTS_00008	07/05/22		WELLINGTON, Lot M282FTS0717		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCM2PFHxDA_00013	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00012	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHFA_00012	05/03/22		Wellington Laboratories, Lot M4PFHFA0517		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
.LCM5PFPEA_00013	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
.LCM8FOSA_00016	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00013	04/12/22		Wellington Laboratories, Lot MPFBA0417		(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFBS_00006	05/24/22		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
.LCMPFDA_00018	07/13/22		Wellington Laboratories, Lot MPFDA0717		(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00013	05/23/22		Wellington Laboratories, Lot MPFDoA0517		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00019	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00013	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00013	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00017	10/17/22		Wellington Laboratories, Lot MPFOA1017		(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00025	10/17/22		Wellington Laboratories, Lot MPFOS1017		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUDa_00014	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFIC-IS_00024	07/24/18	01/24/18	Methanol, Lot 090285	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
.LCM2PFOA_00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFIC_LLO_00006	08/20/18	02/22/18	MeOH/H2O, Lot Baker 141039	200 mL	LCMPFC_ALL_SU_00041	10 mL	13C2-PFOA	2.5 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
..LCM2PFOA_00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCPFC_LL0_00006	08/20/18	02/22/18	MeOH/H2O, Lot Baker 141039	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NetFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpa	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NetFOSAA_00006	200 uL	d5-NetFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpa	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUDa_00014	200 uL	13C2 PFUnA	0.05 ug/mL
					(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
					(Purchased Reagent)		d5-NetFOSAA	50 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22		WELLINGTON, Lot d3NMeFOSAA0517		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NetFOSAA_00006	11/08/22		WELLINGTON, Lot d5NetFOSAA1117		(Purchased Reagent)		d5-NetFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22		WELLINGTON, Lot M282FTS0717		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00012	05/03/22		Wellington Laboratories, Lot M4PFHPa0517		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00013	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM8FOSA 00016	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00013	04/12/22		Wellington Laboratories, Lot MPFBA0417		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00006	05/24/22		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00018	07/13/22		Wellington Laboratories, Lot MPFDA0717		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00013	05/23/22		Wellington Laboratories, Lot MPFDoA0517		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00019	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00013	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA 00013	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00017	10/17/22		Wellington Laboratories, Lot MPFOA1017		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00025	10/17/22		Wellington Laboratories, Lot MPFOS1017		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00014	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFCLL1_00005	08/20/18	02/22/18	MeOH/H2O, Lot 90285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NMeFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCLL1_00136	50 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.02335 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0237 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.02395 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.025 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.025 ng/mL
							Perfluorobutanoic acid (PFBA)	0.025 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0221 ng/mL
							Perfluorodecanoic acid (PFDA)	0.025 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid (PFDoA)	0.025 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0241 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.025 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0238 ng/mL
							Perfluorohexanoic acid (PFHxA)	0.025 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.02275 ng/mL
							Perfluorononanoic acid (PFNA)	0.025 ng/mL
							Perfluorooctanoic acid (PFOA)	0.025 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0232 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	0.025 ng/mL
							Perfluoropentanoic acid (PFPeA)	0.025 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	0.025 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	0.025 ng/mL
							Perfluoroundecanoic acid (PFUnA)	0.025 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA_00006	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUDa_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22		WELLINGTON, Lot d3NMeFOSAA0517		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00006	11/08/22		WELLINGTON, Lot d5NETFOSAA1117		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2-8:2FTS 00008	07/05/22		WELLINGTON, Lot M282FTS0717		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA 00013	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA 00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA 00012	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA 00012	05/03/22		Wellington Laboratories, Lot M4PFHPA0517		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA 00013	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA 00016	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00013	04/12/22		Wellington Laboratories, Lot MPFBA0417		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00006	05/24/22		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00018	07/13/22		Wellington Laboratories, Lot MPFDA0717		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00013	05/23/22		Wellington Laboratories, Lot MPFDoA0517		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00019	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00013	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA 00013	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00017	10/17/22		Wellington Laboratories, Lot MPFOA1017		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00025	10/17/22		Wellington Laboratories, Lot MPFOS1017		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00014	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSP_00136	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LCPFCSP_00132	1 mL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0934 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.0958 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							Perfluorobutanoic acid (PFBA)	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid (PFDA)	0.1 ug/mL
							Perfluorododecanoic acid (PFDoA)	0.1 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0952 ug/mL
							Perfluorohexanoic acid (PFHxA)	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctane Sulfonamide (FOSA)	0.1 ug/mL
							Perfluoropentanoic acid (PFPeA)	0.1 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	0.1 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	0.1 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.1 ug/mL
..LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFUdA_00007	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
...LC4:2FTS_00003	12/12/21	WELLINGTON, Lot 42FTS1216			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
...LC6:2FTS_00003	06/25/21	WELLINGTON, Lot 62FTS0616			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00003	08/22/21	WELLINGTON, Lot 82FTS0816			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSAA_00004	09/30/21	WELLINGTON, Lot NetFOSAA0916			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSAA_00005	10/12/21	WELLINGTON, Lot NMeFOSAA0916			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCPFBA_00007	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
...LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
...LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTTrDA_00006	02/12/21	Wellington Laboratories, Lot PFTTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTTriA)	50 ug/mL
...LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL2_00004	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NetFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							1802 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00136	100 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0467 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0474 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.0479 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.05 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.05 ng/mL
							Perfluorobutanoic acid (PFBA)	0.05 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0442 ng/mL
							Perfluorodecanoic acid (PFDA)	0.05 ng/mL
							Perfluorododecanoic acid (PFDoA)	0.05 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.05 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0476 ng/mL
							Perfluorohexanoic acid (PFHxA)	0.05 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0455 ng/mL
							Perfluorononanoic acid (PFNA)	0.05 ng/mL
							Perfluorooctanoic acid (PFOA)	0.05 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0464 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	0.05 ng/mL
							Perfluoropentanoic acid (PFPeA)	0.05 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorotetradecanoic acid (PFTeA)	0.05 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	0.05 ng/mL
							Perfluoroundecanoic acid (PFUnA)	0.05 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA_00006	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHFA_00012	200 uL	13C4-PFHFA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	1802 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUDa_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22		WELLINGTON, Lot d3NMeFOSAA0517		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00006	11/08/22		WELLINGTON, Lot d5NETFOSAA1117		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22		WELLINGTON, Lot M282FTS0717		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00012	05/03/22		Wellington Laboratories, Lot M4PFHFA0517		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00013	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22		Wellington Laboratories, Lot MPFBA0417		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22		Wellington Laboratories, Lot MPFDA0717		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22		Wellington Laboratories, Lot MPFDoA0517		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22		Wellington Laboratories, Lot MPFOA1017		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22		Wellington Laboratories, Lot MPFOS1017		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00014	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFCSP_00136	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LCPFCSP_00132	1 mL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0934 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.0958 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							Perfluorobutanoic acid (PFBA)	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid (PFDA)	0.1 ug/mL
							Perfluorododecanoic acid (PFDoA)	0.1 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0952 ug/mL
							Perfluorohexanoic acid (PFHxA)	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide (FOSA)	0.1 ug/mL
							Perfluoropentanoic acid (PFPeA)	0.1 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	0.1 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	0.1 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.1 ug/mL
..LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00007	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
...LC4:2FTS_00003	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
...LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS0616		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00003	08/22/21		WELLINGTON, Lot 82FTS0816		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSAA_00004	09/30/21		WELLINGTON, Lot NetFOSAA0916		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSAA_00005	10/12/21		WELLINGTON, Lot NMeFOSAA0916		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCPFBA_00007	05/27/21		Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA 00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
...LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA 00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
...LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTrDA_00006	02/12/21	Wellington Laboratories, Lot PFTTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTTriA)	50 ug/mL
...LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL3_00004	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NETfOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFCSP_00136	500 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.2335 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.237 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.2395 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.25 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.25 ng/mL
							Perfluorobutanoic acid (PFBA)	0.25 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.221 ng/mL
							Perfluorodecanoic acid (PFDA)	0.25 ng/mL
							Perfluorododecanoic acid (PFDoA)	0.25 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.241 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.25 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.238 ng/mL
							Perfluorohexanoic acid (PFHxA)	0.25 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.2275 ng/mL
							Perfluorononanoic acid (PFNA)	0.25 ng/mL
							Perfluorooctanoic acid (PFOA)	0.25 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.232 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	0.25 ng/mL
							Perfluoropentanoic acid (PFPeA)	0.25 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	0.25 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	0.25 ng/mL
							Perfluoroundecanoic acid (PFUnA)	0.25 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUDa_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22		WELLINGTON, Lot d3NMeFOSAA0517		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETfOSAA_00006	11/08/22		WELLINGTON, Lot d5NETfOSAA1117		(Purchased Reagent)		d5-NETfOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22		WELLINGTON, Lot M282FTS0717		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00012	05/03/22		Wellington Laboratories, Lot M4PFHpa0517		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00013	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22		Wellington Laboratories, Lot MPFBA0417		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22		Wellington Laboratories, Lot MPFDA0717		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22		Wellington Laboratories, Lot MPFDoA0517		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22		Wellington Laboratories, Lot MPFOA1017		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22		Wellington Laboratories, Lot MPFOS1017		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00014	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPPCSP_00136	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LCPFCSP_00132	1 mL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0934 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.0958 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							Perfluorobutanoic acid (PFBA)	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorodecanoic acid (PFDA)	0.1 ug/mL
							Perfluorododecanoic acid (PFDoA)	0.1 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0952 ug/mL
							Perfluorohexanoic acid (PFHxA)	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide (FOSA)	0.1 ug/mL
							Perfluoropentanoic acid (PFPeA)	0.1 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	0.1 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	0.1 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.1 ug/mL
..LCPFCS_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDaA_00008	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUDa_00007	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
...LC4:2FTS_00003	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
...LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS0616		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00003	08/22/21		WELLINGTON, Lot 82FTS0816		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSAA_00004	09/30/21		WELLINGTON, Lot NETFOSAA0916		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSAA_00005	10/12/21		WELLINGTON, Lot NMeFOSAA0916		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCPFBA_00007	05/27/21		Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00008	03/15/21		Wellington Laboratories, Lot LPFBS0316		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00008	05/29/22		Wellington Laboratories, Lot PFDA0517		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDoA_00008	05/29/22		Wellington Laboratories, Lot PFDoA0517		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDSA_00002	05/24/21		Wellington Laboratories, Lot LPFDS0516		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpA_00008	12/02/21		Wellington Laboratories, Lot PFHpA1216		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00003	09/01/22		Wellington Laboratories, Lot LPFHpS0817		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
...LCPFHxA_00007	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxS-br_00004	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00009	07/20/22		Wellington Laboratories, Lot PFNA0717		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00009	09/27/22		Wellington Laboratories, Lot PFOA0917		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFOS-br_00004	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00010	09/30/21		Wellington Laboratories, Lot FOSA0916I		(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
...LCPFPeA_00007	05/31/21		Wellington Laboratories, Lot PFPeA0516		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFTeDA_00006	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTTrDA_00006	02/12/21		Wellington Laboratories, Lot PFTTrDA0216		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTTriA)	50 ug/mL
...LCPFUDa_00007	10/18/21		Wellington Laboratories, Lot PFUDa1016		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL4_00004	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NMeFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00132	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	1 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	1 ng/mL
							Perfluorobutanoic acid (PFBA)	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid (PFDA)	1 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid (PFDoA)	1 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.964 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ng/mL
							Perfluorohexanoic acid (PFHxA)	1 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.91 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.928 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	1 ng/mL
							Perfluoropentanoic acid (PFPeA)	1 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	1 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	1 ng/mL
							Perfluoroundecanoic acid (PFUnA)	1 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA_00006	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUDa_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22		WELLINGTON, Lot d3NMeFOSAA0517		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00006	11/08/22		WELLINGTON, Lot d5NetFOSAA1117		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2-8:2FTS 00008	07/05/22		WELLINGTON, Lot M282FTS0717		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA 00013	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA 00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA 00012	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA 00012	05/03/22		Wellington Laboratories, Lot M4PFHPA0517		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA 00013	07/20/22		Wellington Laboratories, Lot M5PFPEA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA 00016	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00013	04/12/22		Wellington Laboratories, Lot MPFBA0417		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00006	05/24/22		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00018	07/13/22		Wellington Laboratories, Lot MPFDA0717		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00013	05/23/22		Wellington Laboratories, Lot MPFDoA0517		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00019	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00013	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA 00013	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00017	10/17/22		Wellington Laboratories, Lot MPFOA1017		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00025	10/17/22		Wellington Laboratories, Lot MPFOS1017		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00014	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFuDA_00007	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
..LC4:2FTS_00003	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
..LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS0616		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00003	08/22/21		WELLINGTON, Lot 82FTS0816		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSAA_00004	09/30/21		WELLINGTON, Lot NETFOSAA0916		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSAA_00005	10/12/21		WELLINGTON, Lot NMeFOSAA0916		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00007	05/27/21		Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00008	03/15/21		Wellington Laboratories, Lot LPFBS0316		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22		Wellington Laboratories, Lot PFDA0517		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00008	05/29/22		Wellington Laboratories, Lot PFDoA0517		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDSA_00002	05/24/21		Wellington Laboratories, Lot LPFDS0516		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00008	12/02/21		Wellington Laboratories, Lot PFHpA1216		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22		Wellington Laboratories, Lot LPFHpS0817		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00007	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxS-br_00004	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22		Wellington Laboratories, Lot PFNA0717		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00009	09/27/22		Wellington Laboratories, Lot PFOA0917		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00004	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00010	09/30/21		Wellington Laboratories, Lot FOSA0916I		(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00007	05/31/21		Wellington Laboratories, Lot PFPeA0516		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00006	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00006	02/12/21		Wellington Laboratories, Lot PFTrDA0216		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFUdA_00007	10/18/21		Wellington Laboratories, Lot PFUdA1016		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL5_00004	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NMeFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00132	500 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	2.335 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	2.37 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	2.395 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	2.5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	2.5 ng/mL
							Perfluorobutanoic acid (PFBA)	2.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	2.21 ng/mL
							Perfluorodecanoic acid (PFDA)	2.5 ng/mL
							Perfluorododecanoic acid (PFDoA)	2.5 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	2.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.5 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	2.38 ng/mL
							Perfluorohexanoic acid (PFHxA)	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanesulfonic acid (PFHxS)	2.275 ng/mL
							Perfluorononanoic acid (PFNA)	2.5 ng/mL
							Perfluorooctanoic acid (PFOA)	2.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	2.32 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	2.5 ng/mL
							Perfluoropentanoic acid (PFPeA)	2.5 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	2.5 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	2.5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	2.5 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHFA_00012	200 uL	13C4-PFHFA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUDa_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00006	11/08/22	WELLINGTON, Lot d5NEtFOSAA1117			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22	WELLINGTON, Lot M262FTS0217			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22	WELLINGTON, Lot M282FTS0717			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00012	05/03/22	Wellington Laboratories, Lot M4PFHFA0517			(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFDA_00018	07/13/22		Wellington Laboratories, Lot MPFDA0717		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22		Wellington Laboratories, Lot MPFDoA0517		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22		Wellington Laboratories, Lot MPFOA1017		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22		Wellington Laboratories, Lot MPFOS1017		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00014	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00007	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LC4:2FTS_00003	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
..LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS0616		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00003	08/22/21		WELLINGTON, Lot 82FTS0816		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSAA_00004	09/30/21		WELLINGTON, Lot NETFOSAA0916		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSAA_00005	10/12/21		WELLINGTON, Lot NMeFOSAA0916		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00007	05/27/21	Wellington Laboratories, Lot	PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00008	03/15/21	Wellington Laboratories, Lot	LPFBS0316		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot	PFDA0517		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot	PFDoA0517		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot	LPFDS0516		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot	PFHpA1216		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot	LPFHpS0817		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot	PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot	brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot	PFNA0717		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00009	09/27/22	Wellington Laboratories, Lot	PFOA0917		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot	brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot	FOSA0916I		(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot	PFPeA0516		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot	PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00006	02/12/21	Wellington Laboratories, Lot	PFTTrDA0216		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot	PFUdA1016		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL6_00005	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NMeFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00132	1 mL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	4.67 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	4.74 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	4.79 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							Perfluorobutanoic acid (PFBA)	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid (PFDA)	5 ng/mL
							Perfluorododecanoic acid (PFDoA)	5 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	4.82 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	4.76 ng/mL
							Perfluorohexanoic acid (PFHxA)	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.55 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.64 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	5 ng/mL
							Perfluoropentanoic acid (PFPeA)	5 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorotridecanoic Acid (PFTriA)	5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	5 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA_00006	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHFA_00012	200 uL	13C4-PFHFA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	1802 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUDa_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22		WELLINGTON, Lot d3NMeFOSAA0517		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00006	11/08/22		WELLINGTON, Lot d5NETFOSAA1117		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22		WELLINGTON, Lot M282FTS0717		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00012	05/03/22		Wellington Laboratories, Lot M4PFHFA0517		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00013	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22		Wellington Laboratories, Lot MPFBA0417		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22		Wellington Laboratories, Lot MPFDA0717		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22		Wellington Laboratories, Lot MPFDoA0517		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22		Wellington Laboratories, Lot MPFOA1017		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22		Wellington Laboratories, Lot MPFOS1017		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00014	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00006	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUDa_00007	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
..LC4:2FTS_00003	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
..LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS0616		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00003	08/22/21		WELLINGTON, Lot 82FTS0816		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSAA_00004	09/30/21		WELLINGTON, Lot NETFOSAA0916		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCN-MeFOSAA_00005	10/12/21	WELLINGTON, Lot NMeFOSAA0916			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA 00007	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00008	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA 00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDSA_00002	05/24/21	Wellington Laboratories, Lot LPFDS0516			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA 00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA 00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA 00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00006	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL7_00004	08/20/18	02/22/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFCSF_00132	2 mL	13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
							Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	9.34 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	9.48 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	9.58 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	10 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	10 ng/mL
							Perfluorobutanoic acid (PFBA)	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	8.84 ng/mL
							Perfluorodecanoic acid (PFDA)	10 ng/mL
							Perfluorododecanoic acid (PFDoA)	10 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	9.64 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	9.52 ng/mL
							Perfluorohexanoic acid (PFHxA)	10 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	9.1 ng/mL
							Perfluorononanoic acid (PFNA)	10 ng/mL
							Perfluorooctanoic acid (PFOA)	10 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	9.28 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	10 ng/mL
							Perfluoropentanoic acid (PFPeA)	10 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	10 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	10 ng/mL
							Perfluoroundecanoic acid (PFUnA)	10 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00006	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FTS_00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00013	200 uL	13C2-PFHxDA	0.05 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHFA_00012	200 uL	13C4-PFHFA	0.05 ug/mL
					LCM5PFPEA_00013	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00014	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00006	05/19/22		WELLINGTON, Lot d3NMeFOSAA0517		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00006	11/08/22		WELLINGTON, Lot d5NEtFOSAA1117		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00006	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00008	07/05/22		WELLINGTON, Lot M282FTS0717		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00013	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00012	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00012	05/03/22		Wellington Laboratories, Lot M4PFHFA0517		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00013	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00016	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00013	04/12/22		Wellington Laboratories, Lot MPFBA0417		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00006	05/24/22		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00018	07/13/22		Wellington Laboratories, Lot MPFDA0717		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00013	05/23/22		Wellington Laboratories, Lot MPFDoA0517		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00019	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00013	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00013	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00017	10/17/22		Wellington Laboratories, Lot MPFOA1017		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00025	10/17/22		Wellington Laboratories, Lot MPFOS1017		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00014	11/22/21		Wellington Laboratories, Lot MPFUdA1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPPFCSP_00132	08/20/18	02/20/18	Methanol, Lot 090285	10000 uL	LC4:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.934 ug/mL
					LC6:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00003	200 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSAA_00004	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSAA_00005	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCPFBA_00007	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFBS_00008	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00008	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00008	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDSA_00002	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00008	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpSA_00003	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00007	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxS-br_00004	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00009	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00009	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00004	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00007	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00006	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTriDA_00006	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFuDA_00007	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
..LC4:2FTS_00003	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
..LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS0616		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00003	08/22/21		WELLINGTON, Lot 82FTS0816		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSAA_00004	09/30/21		WELLINGTON, Lot NETFOSAA0916		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSAA_00005	10/12/21		WELLINGTON, Lot NMeFOSAA0916		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00007	05/27/21		Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00008	03/15/21		Wellington Laboratories, Lot LPFBS0316		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22		Wellington Laboratories, Lot PFDA0517		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00008	05/29/22		Wellington Laboratories, Lot PFDoA0517		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDSA_00002	05/24/21		Wellington Laboratories, Lot LPFDS0516		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFHpA_00008	12/02/21	Wellington Laboratories, Lot PFHpA1216			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00007	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxS-br_00004	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00009	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00009	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00004	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00007	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00006	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00006	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00007	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFCIC_FULL_00011	07/02/18	02/22/18	MeOH/H2O, Lot 09285	200 mL	LCMPFC_ALL_SU_00041	10 mL	13C2-PFOA	2.5 ng/mL
..LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFCIC_FULL_00011	07/02/18	02/22/18	MeOH/H2O, Lot 09285	200 mL	LCMPFC_ALL_SU_00041	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFAC-24PAR_00001	250 uL	Perfluorobutanesulfonic acid (PFBS)	2.2125 ng/mL
							Perfluorobutanoic acid (PFBA)	2.5 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	2.4125 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorodecanoic acid (PFDA)	2.5 ng/mL
							Perfluorododecanoic acid (PFDoA)	2.5 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	2.375 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	2.28 ng/mL
							Perfluorohexanoic acid (PFHxA)	2.5 ng/mL
							Perfluorononanoic acid (PFNA)	2.5 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	2.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	2.31375 ng/mL
							Perfluorooctanoic acid (PFOA)	2.5 ng/mL
							Perfluoropentanoic acid (PFPeA)	2.5 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	2.5 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	2.5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	2.5 ng/mL
.LCMPFC_ALL_SU_00041	08/20/18	02/20/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00006	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETfOSAA 00006	200 uL	d5-NETfOSAA	0.05 ug/mL
					LCM2-6:FTS 00006	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS 00008	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA 00013	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA 00012	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA 00012	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA 00013	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA 00016	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA 00013	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS 00006	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA 00018	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA 00013	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA 00019	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS 00013	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA 00013	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA 00017	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS 00025	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA 00014	200 uL	13C2 PFUnA	0.05 ug/mL
					..LCd3-NMeFOSAA 00006	05/19/22	WELLINGTON, Lot d3NMeFOSAA0517	
..LCd5-NETfOSAA 00006	11/08/22	WELLINGTON, Lot d5NETfOSAA1117		(Purchased Reagent)		d5-NETfOSAA	50 ug/mL	
..LCM2-6:FTS 00006	02/17/22	WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL	
..LCM2-8:2FTS 00008	07/05/22	WELLINGTON, Lot M282FTS0717		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL	
..LCM2PFHxDA 00013	07/13/22	Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL	

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2PFTeDA 00012	11/30/22	Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA 00012	05/03/22	Wellington Laboratories, Lot M4PFHPA0517			(Purchased Reagent)		13C4-PFHPA	50 ug/mL
..LCM5PFPEA 00013	07/20/22	Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA 00016	10/11/22	Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00013	04/12/22	Wellington Laboratories, Lot MPFBA0417			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00006	05/24/22	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00018	07/13/22	Wellington Laboratories, Lot MPFDA0717			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00013	05/23/22	Wellington Laboratories, Lot MPFDoA0517			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00019	10/27/22	Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00013	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA 00013	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00017	10/17/22	Wellington Laboratories, Lot MPFOA1017			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00025	10/17/22	Wellington Laboratories, Lot MPFOS1017			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00014	11/22/21	Wellington Laboratories, Lot MPFUDa1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFAC-24PAR_00001	09/15/22	Wellington Laboratories, Lot PFAC24PAR0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1.77 ug/mL
							Perfluorobutanoic acid (PFBA)	2 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	1.93 ug/mL
							Perfluorodecanoic acid (PFDA)	2 ug/mL
							Perfluorododecanoic acid (PFDoA)	2 ug/mL
							Perfluoroheptanesulfonic Acid (PFHps)	1.9 ug/mL
							Perfluoroheptanoic acid (PFHpA)	2 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	1.824 ug/mL
							Perfluorohexanoic acid (PFHxA)	2 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctane Sulfonamide (FOSA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.851 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
							Perfluoropentanoic acid (PFPeA)	2 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	2 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	2 ug/mL
							Perfluoroundecanoic acid (PFUnA)	2 ug/mL
LCPFCS_00118	03/29/18	10/02/17	Methanol, Lot 090285	250 mL	LC4:2FTS_00003	100 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.01868 ug/mL
					LC6:2FTS_00003	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.01896 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LC8:2FTS_00003	100 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.01916 ug/mL
					LCN-EtFOSA-M_00005	100 uL	N-ethylperfluoro-1-octanesulfonamide	0.02 ug/mL
					LCN-EtFOSAA_00004	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCN-MeFOSA-M_00004	100 uL	MeFOSA	0.02 ug/mL
					LCN-MeFOSAA_00004	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCPFBA_00007	100 uL	Perfluorobutanoic acid (PFBA)	0.02 ug/mL
					LCPFBS_00008	100 uL	Perfluorobutane Sulfonate	0.01768 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.01768 ug/mL
					LCPFDA_00007	100 uL	Perfluorodecanoic acid (PFDA)	0.02 ug/mL
					LCPFDoA_00007	100 uL	Perfluorododecanoic acid (PFDoA)	0.02 ug/mL
					LCPFDSA_00002	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.01928 ug/mL
					LCPFHpA_00008	100 uL	Perfluoroheptanoic acid (PFHpA)	0.02 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.01904 ug/mL
					LCPFHxA_00007	100 uL	Perfluorohexanoic acid (PFHxA)	0.02 ug/mL
					LCPFHxDA_00008	100 uL	Perfluorohexadecanoic acid	0.02 ug/mL
					LCPFHXS-br_00004	100 uL	Perfluorohexane Sulfonate	0.0182 ug/mL
							Perfluorohexanesulfonic acid (PFHXS)	0.0182 ug/mL
					LCPFNA_00009	100 uL	Perfluorononanoic acid (PFNA)	0.02 ug/mL
					LCPFOA_00008	100 uL	Perfluorooctanoic acid (PFOA)	0.02 ug/mL
					LCPFODA_00008	100 uL	Perfluorooctadecanoic acid	0.02 ug/mL
					LCPFOS-br_00004	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.01856 ug/mL
					LCPFOSA_00010	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.02 ug/mL
					LCPFPeA_00007	100 uL	Perfluoropentanoic acid (PFPeA)	0.02 ug/mL
					LCPFTeDA_00007	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.02 ug/mL
					LCPFTTrDA_00007	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.02 ug/mL
					LCPFUDa_00007	100 uL	Perfluoroundecanoic acid (PFUnA)	0.02 ug/mL
.LC4:2FTS_00003	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL
.LC6:2FTS_00003	06/25/21		WELLINGTON, Lot 62FTS0616		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-36665-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LC8:2FTS_00003	08/22/21		WELLINGTON, Lot 82FTS0816		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ug/mL
.LCN-EtFOSA-M_00005	05/24/21		WELLINGTON, Lot NetFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
.LCN-EtFOSAA_00004	09/30/21		WELLINGTON, Lot NetFOSAA0916		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCN-MeFOSA-M_00004	05/24/21		WELLINGTON, Lot NMeFOSA0516M		(Purchased Reagent)		MeFOSA	50 ug/mL
.LCN-MeFOSAA_00004	10/12/21		WELLINGTON, Lot NMeFOSAA0916		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCPFBA_00007	05/27/21		Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
.LCPFBS_00008	03/15/21		Wellington Laboratories, Lot LPFBS0316		(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA_00007	05/31/21		Wellington Laboratories, Lot PFDA0516		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
.LCPFDoA_00007	05/31/21		Wellington Laboratories, Lot PFDoA0516		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
.LCPFDSA_00002	05/24/21		Wellington Laboratories, Lot LPFDS0516		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
.LCPFHpA_00008	12/02/21		Wellington Laboratories, Lot PFHpA1216		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpSA_00003	09/01/22		Wellington Laboratories, Lot LPFHpS0817		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
.LCPFHxA_00007	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
.LCPFHxDA_00008	05/25/21		Wellington Laboratories, Lot PFHxDA0516		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00004	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00009	07/20/22		Wellington Laboratories, Lot PFNA0717		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFOA_00008	08/02/21		Wellington Laboratories, Lot PFOA0716		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA_00008	04/29/21		Wellington Laboratories, Lot PFODA0416		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS-br_00004	10/14/20		Wellington Laboratories, Lot brPFOSK1015		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA_00010	09/30/21		Wellington Laboratories, Lot FOSA0916I		(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
.LCPFPeA_00007	05/31/21		Wellington Laboratories, Lot PFPeA0516		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
.LCPFTeDA_00007	09/30/21		Wellington Laboratories, Lot PFTeDA0916		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
.LCPFTrDA_00007	02/12/21		Wellington Laboratories, Lot PFTrDA0216		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
.LCPFUdA_00007	10/18/21		Wellington Laboratories, Lot PFUdA1016		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL

Reagent

LC4 : 2FTS_00003



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

4:2FTS

LOT NUMBER:

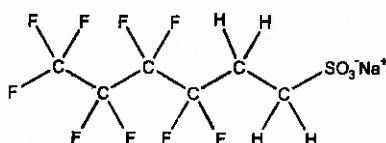
42FTS1216

COMPOUND:

Sodium 1H,1H,2H,2H-perfluorohexane sulfonate

STRUCTURE:**CAS #:**

Not available

**MOLECULAR FORMULA:** $C_6H_4F_8SO_3Na$ **MOLECULAR WEIGHT:**

350.13

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)
46.7 ± 2.3 µg/ml (4:2FTS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/12/2016

EXPIRY DATE: (mm/dd/yyyy)

12/12/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

• See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/21/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

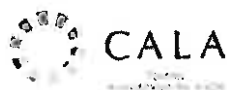
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

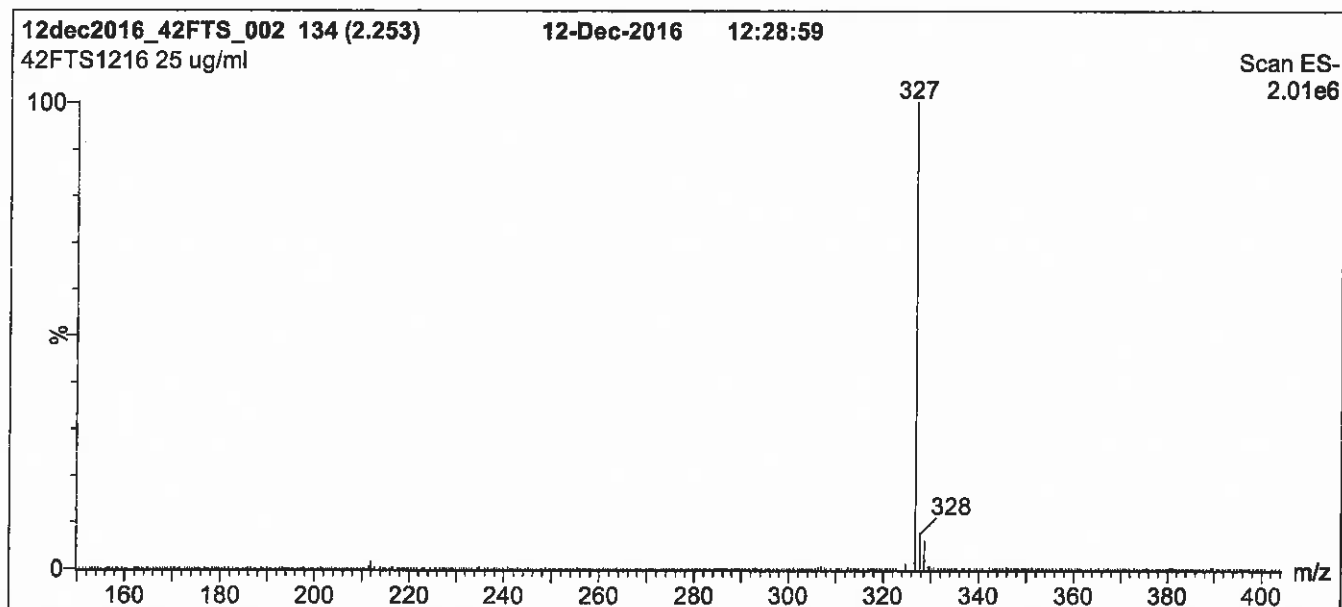
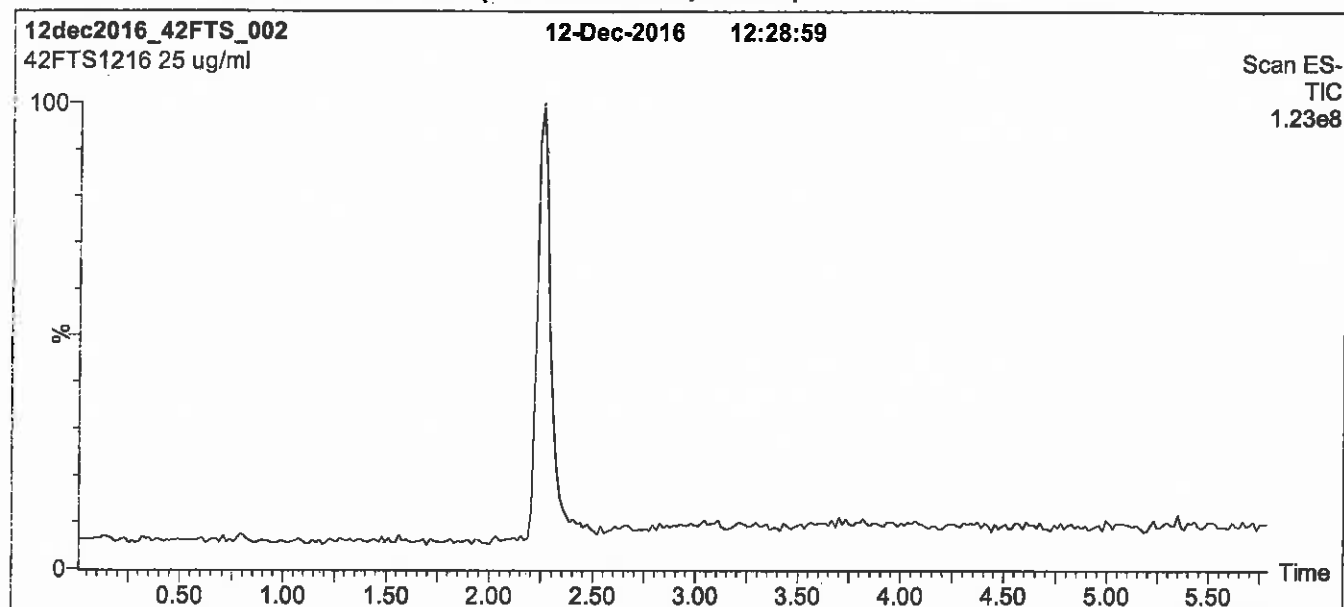
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



****For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com****

Figure 1: 4:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

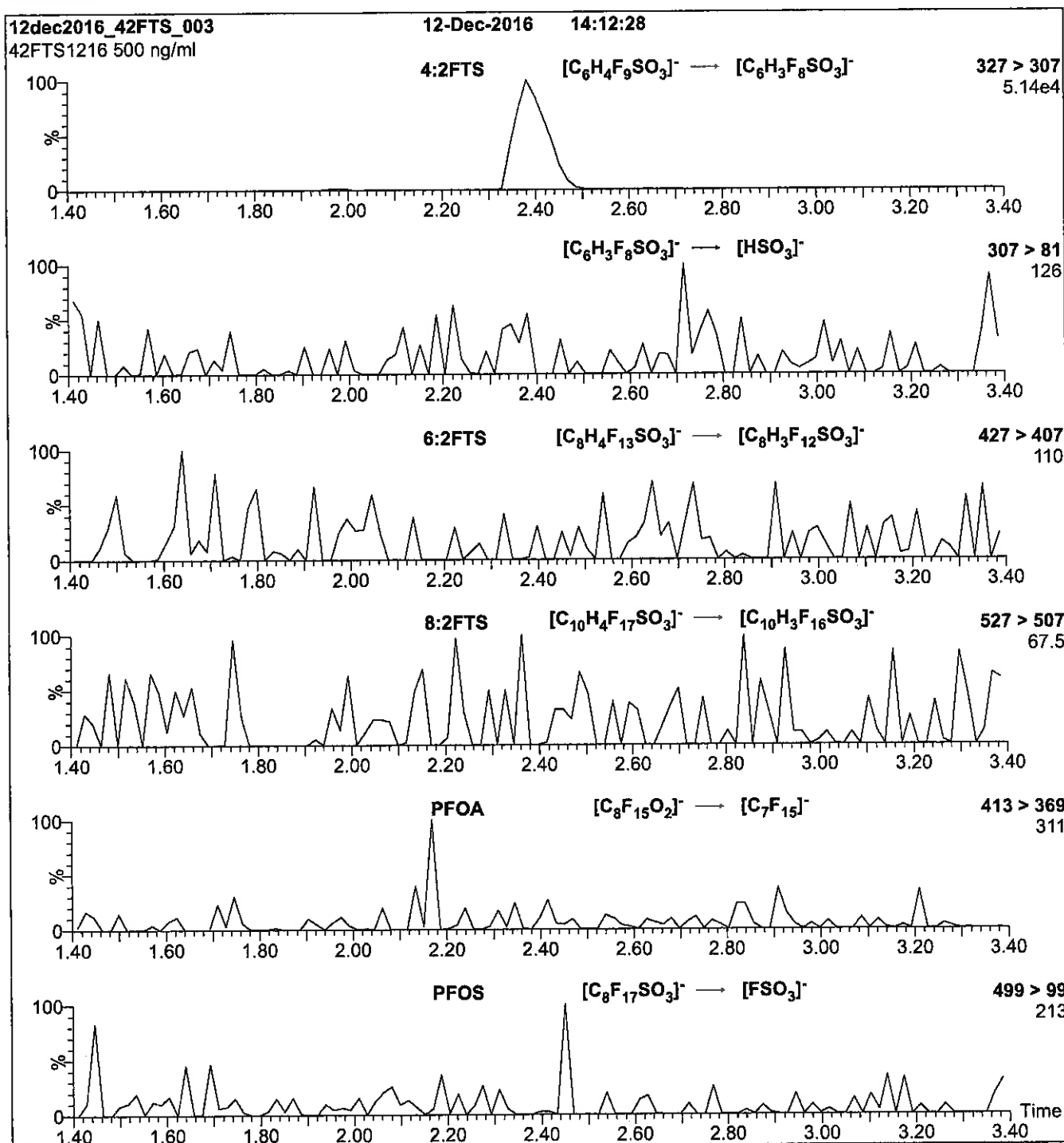
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: 4:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 4:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

LC6:2FTS_00003

P: 12/29/16 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

6:2FTS

LOT NUMBER:

62FTS0616

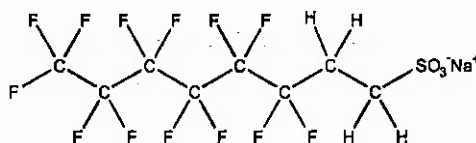
COMPOUND:

Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₈H₄F₁₃SO₃Na

MOLECULAR WEIGHT:

450.15

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)
47.4 ± 2.4 µg/ml (6:2FTS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

06/25/2016

EXPIRY DATE: (mm/dd/yyyy)

06/25/2021

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 06/29/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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HAZARDS:

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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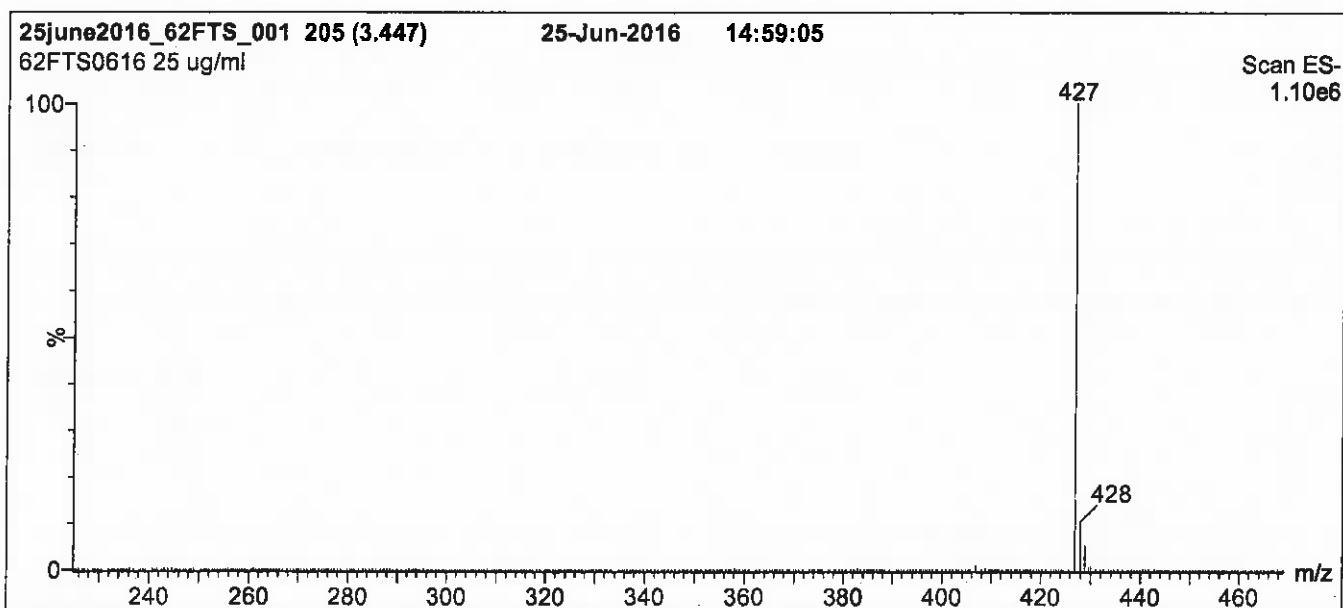
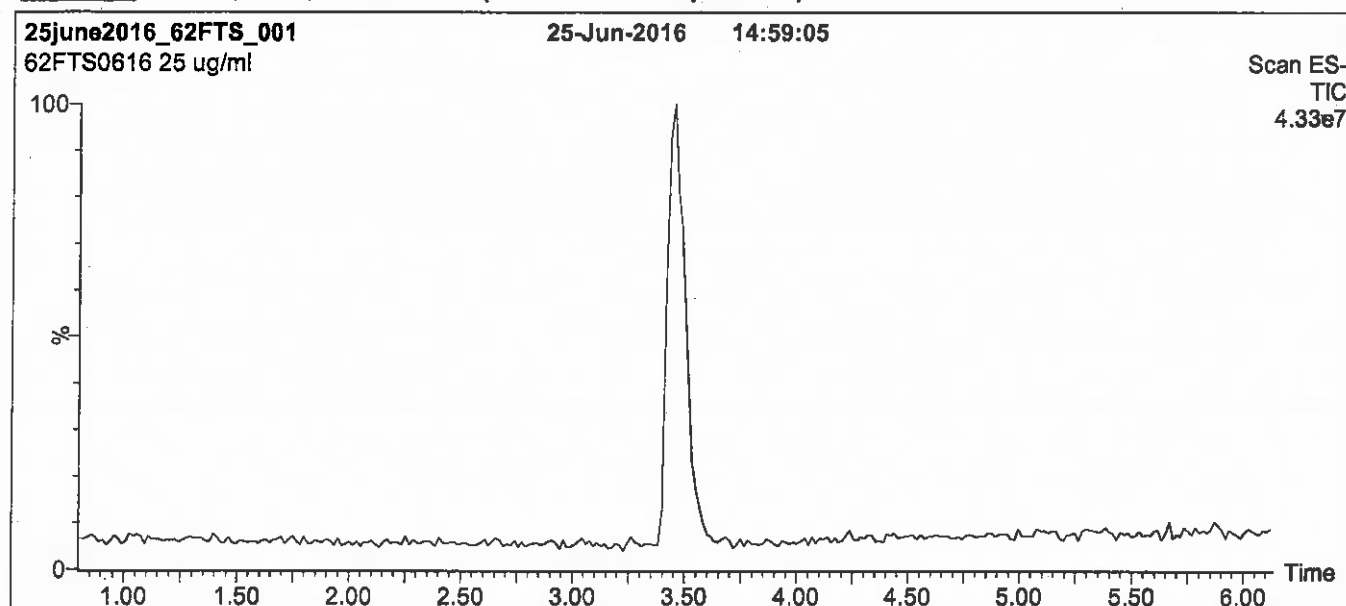
QUALITY MANAGEMENT:

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For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: 6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

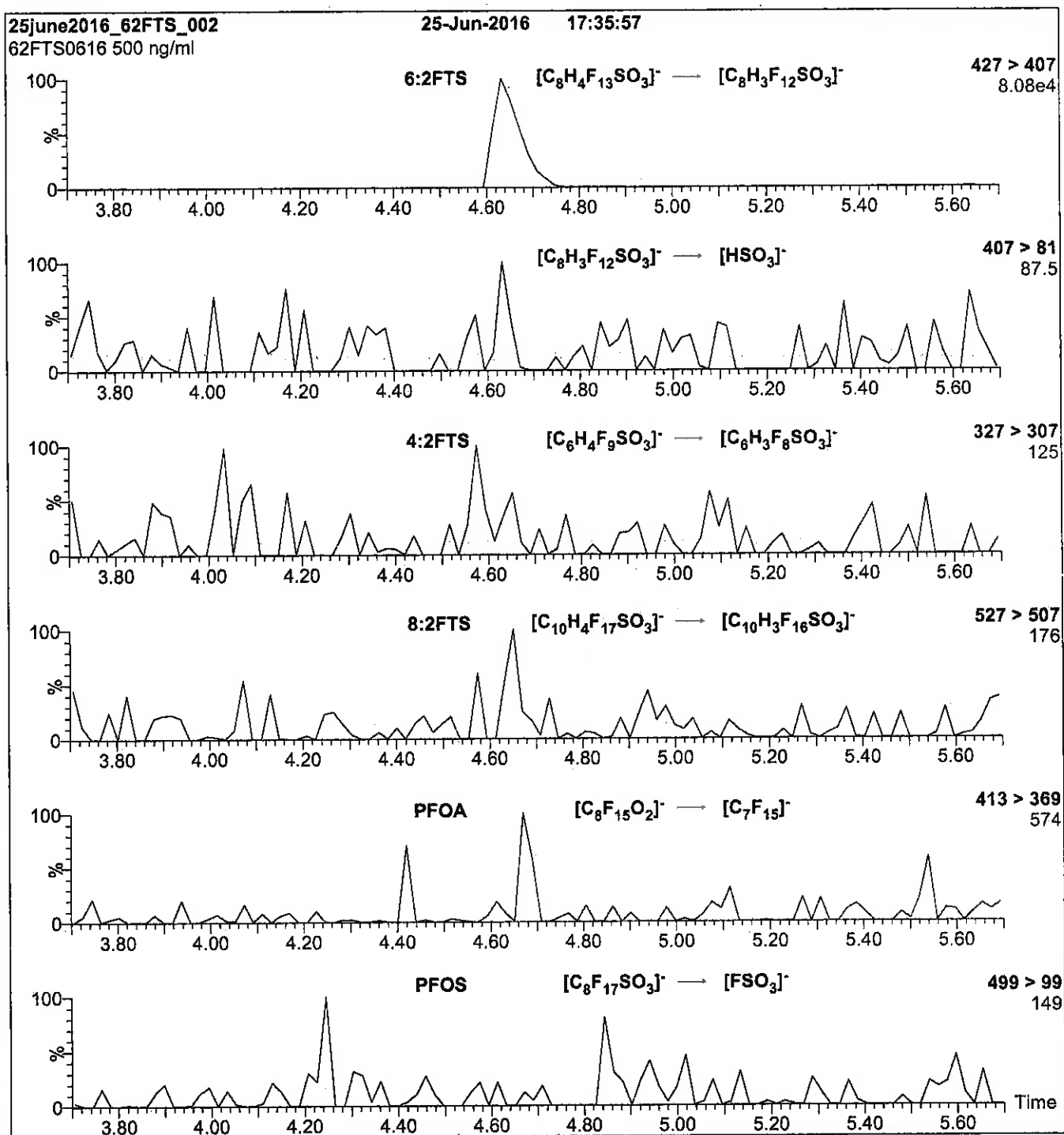
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: 6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 25

Reagent

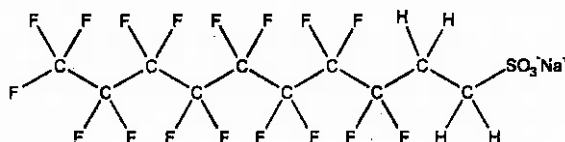
LC8 : 2FTS_00003



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS0816
COMPOUND: Sodium 1H,1H,2H,2H-perfluorodecane sulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{10}H_4F_{17}SO_3Na$ **MOLECULAR WEIGHT:** 550.16
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt) **SOLVENT(S):** Methanol
 $47.9 \pm 2.4 \mu\text{g/ml}$ (8:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/22/2016
EXPIRY DATE: (mm/dd/yyyy) 08/22/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/25/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

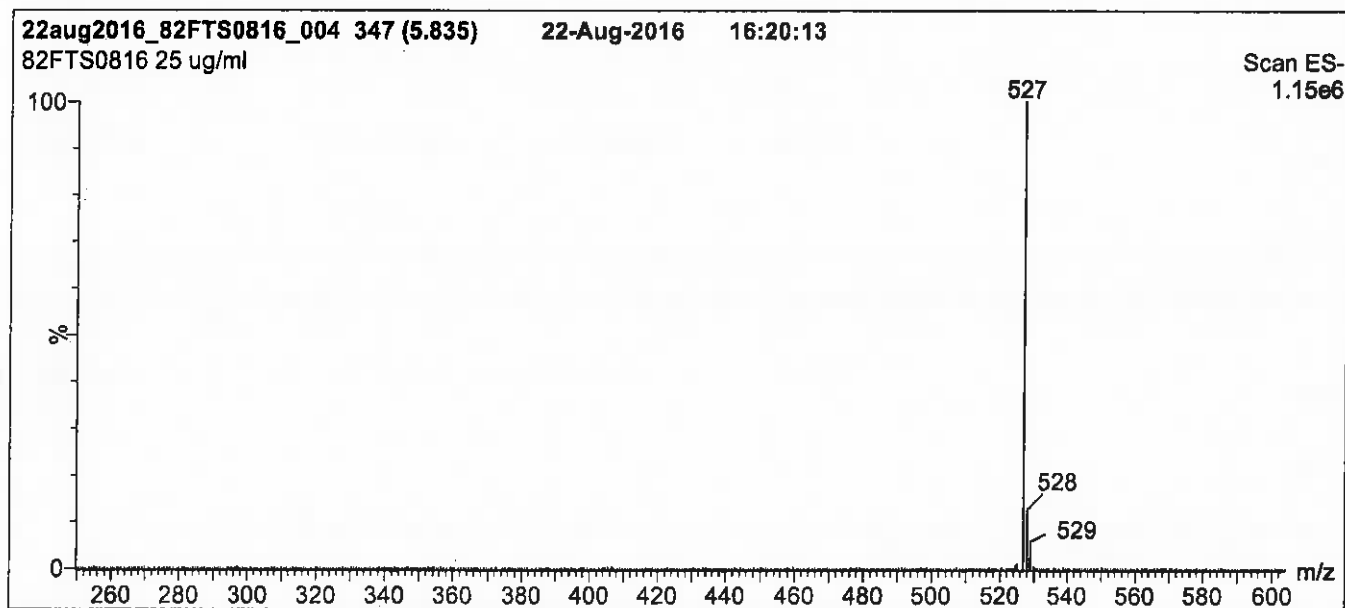
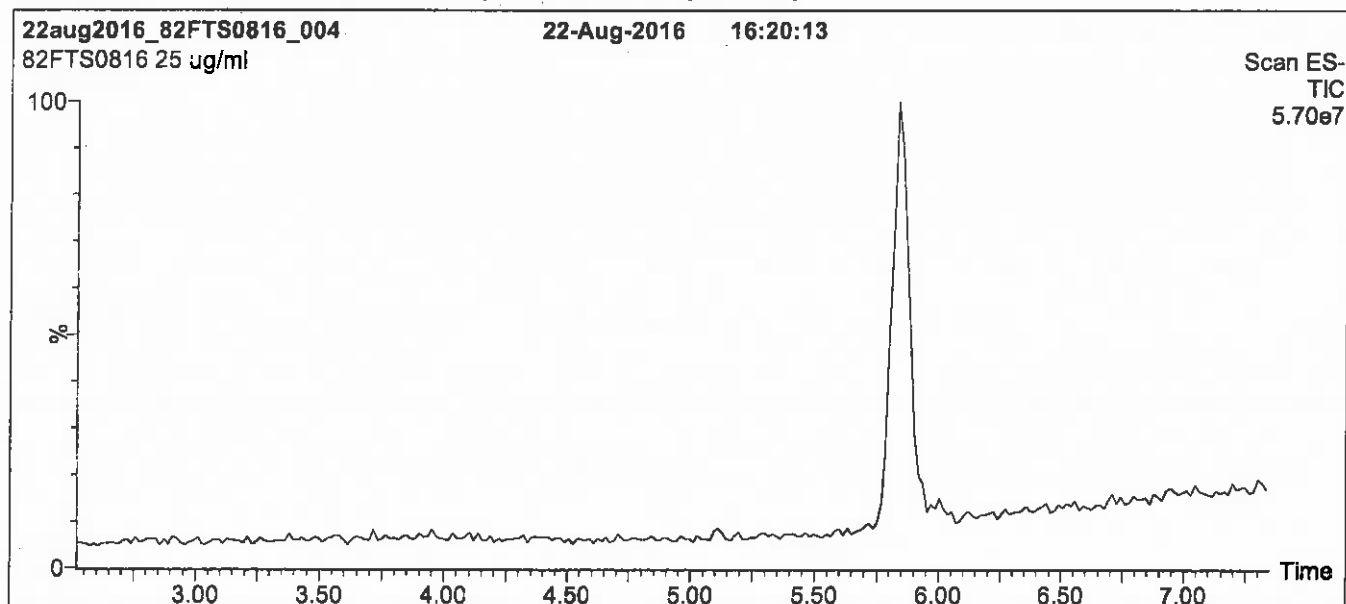
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: 8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Agilent Zorbax Bonus-RP
1.8 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH/ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

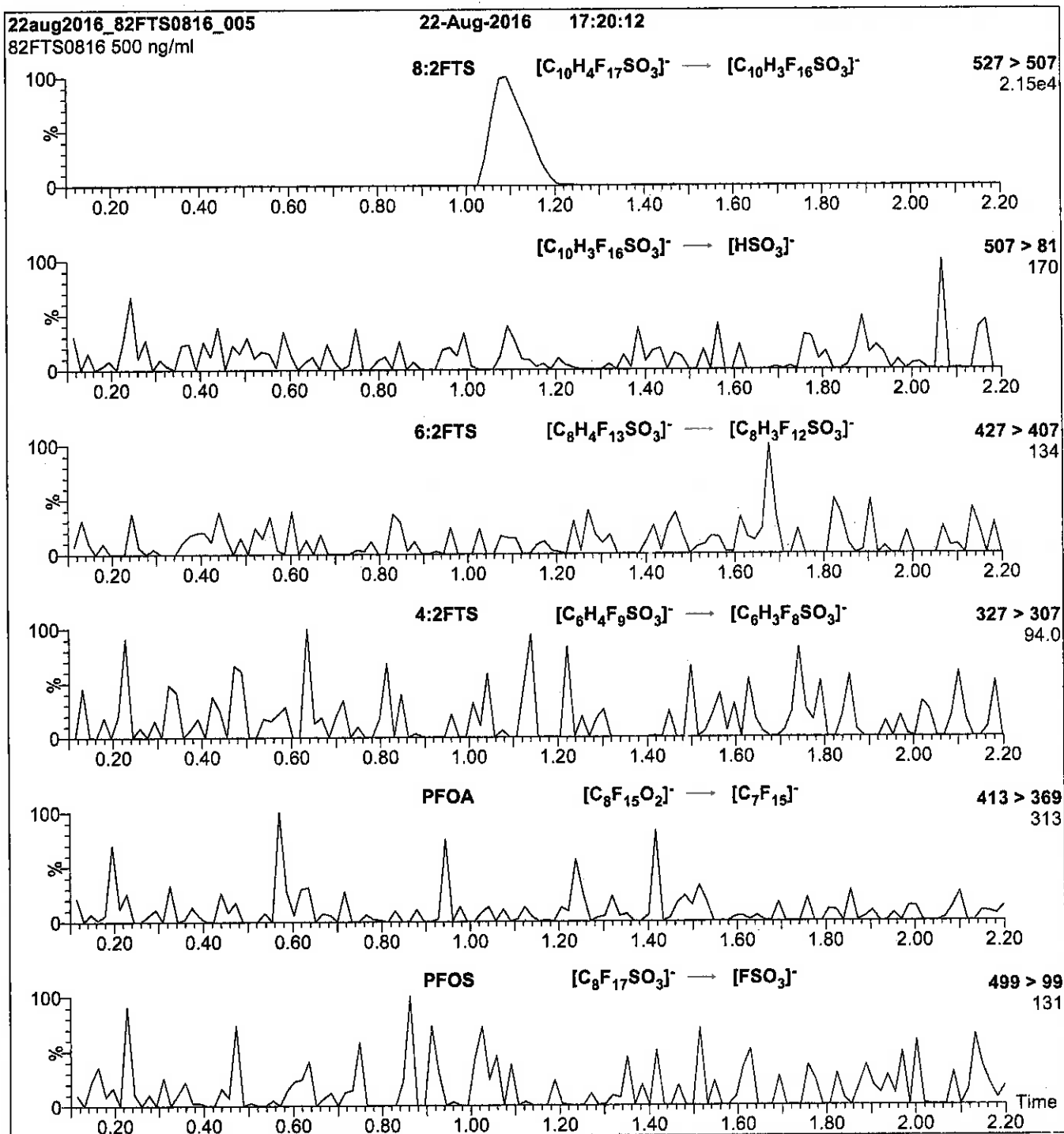
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250- 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: 8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 30

Reagent

LCd3-NMeFOSAA_00006



1106123

ID: LCd3-NMeFOSAA_00006

Exp: 05/19/22 Prod: CCL

d3-N-MeFOSAA

r: 12/4/17 ccl



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

d3-N-MeFOSAA

LOT NUMBER:

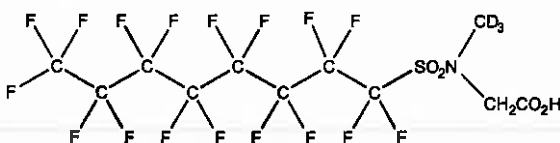
d3NMeFOSAA0517

COMPOUND:

N-methyl-d3-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:**CAS #:**

Not available

**MOLECULAR FORMULA:** $C_{11}D_3H_3F_{17}NO_4S$ **CONCENTRATION:** $50 \pm 2.5 \mu\text{g/ml}$ **MOLECULAR WEIGHT:**

574.23

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY: $\geq 98\% \text{ } ^2\text{H}_3$ **LAST TESTED:** (mm/dd/yyyy)

05/19/2017

EXPIRY DATE: (mm/dd/yyyy)

05/19/2022

RECOMMENDED STORAGE:

Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 05/31/2017

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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UNCERTAINTY:

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

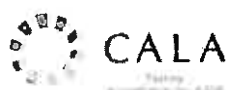
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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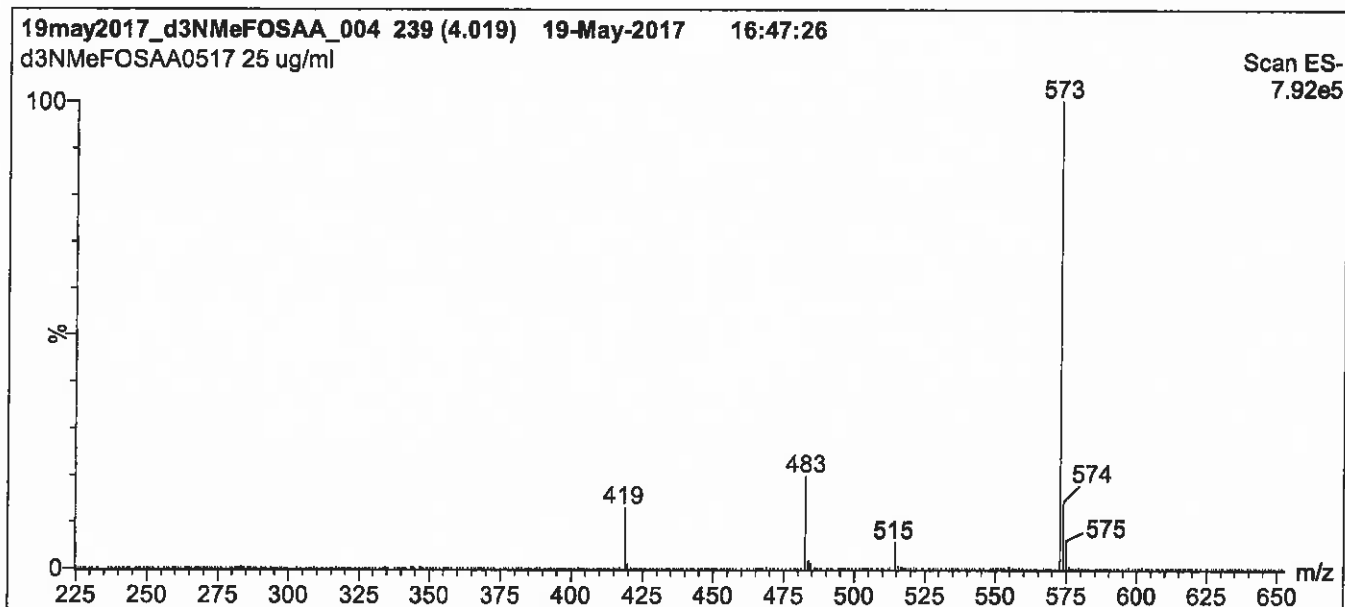
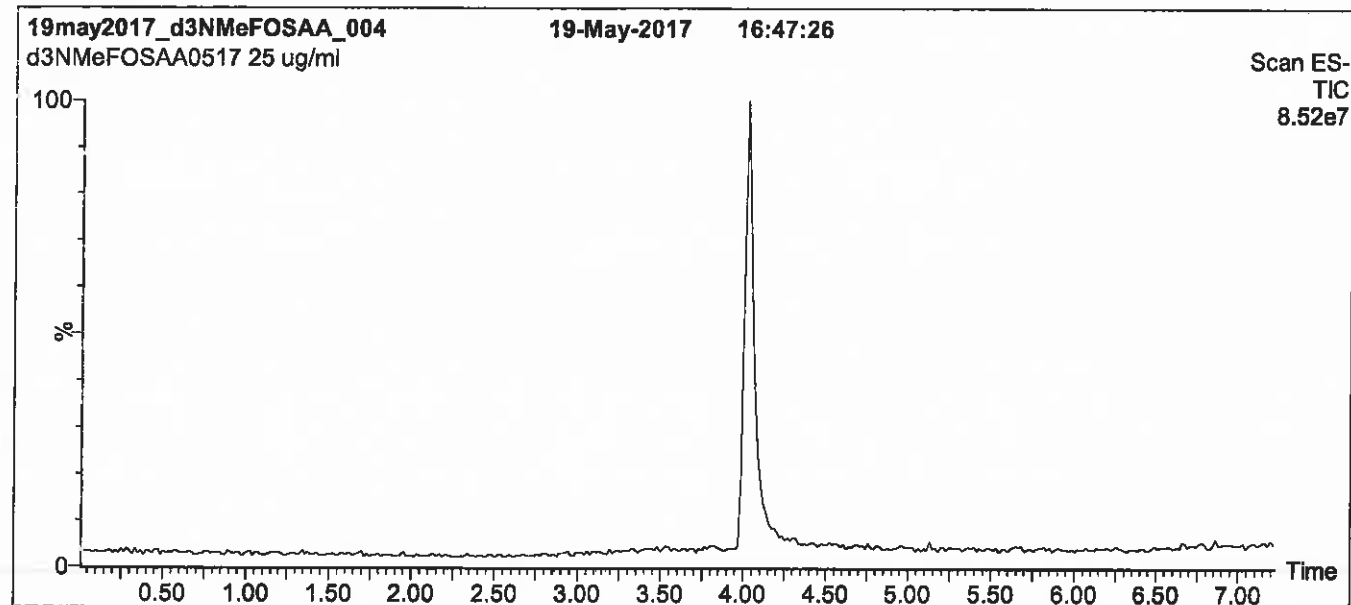
QUALITY MANAGEMENT:

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Figure 1: d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

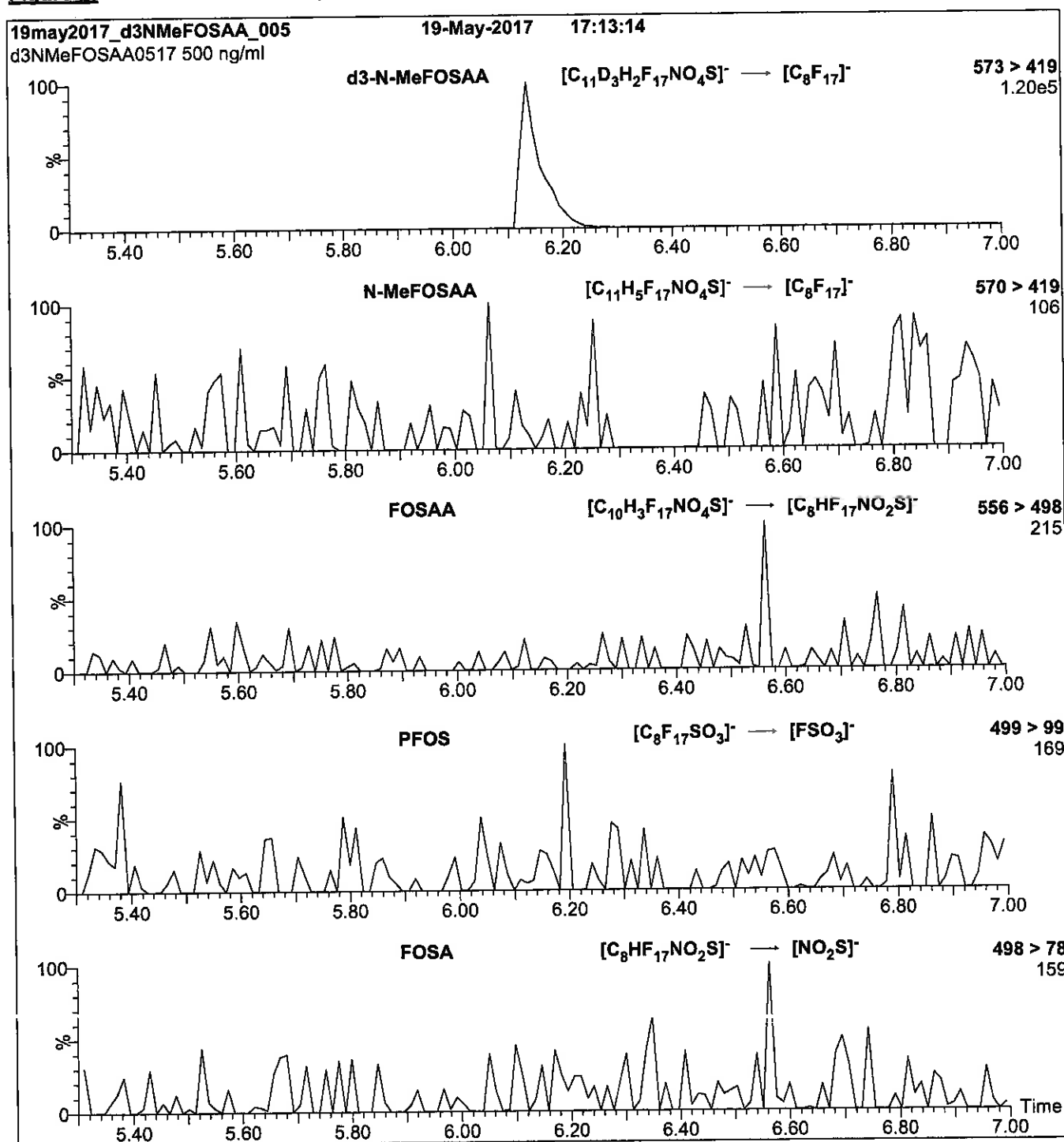
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: d3-N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d3-N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3

Collision Energy (eV) = 20

Reagent

LCd5-NEtFOSAA_00006



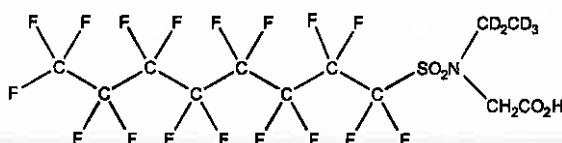
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

d5NEtFOSAA1117

N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

Not available



590.26

Methanol

 $\geq 98\% \text{ } ^2\text{H}_c$

11/08/2022

Refrigerate

Refrigerate ampoule

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Date: 11/16/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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LIMITED WARRANTY:

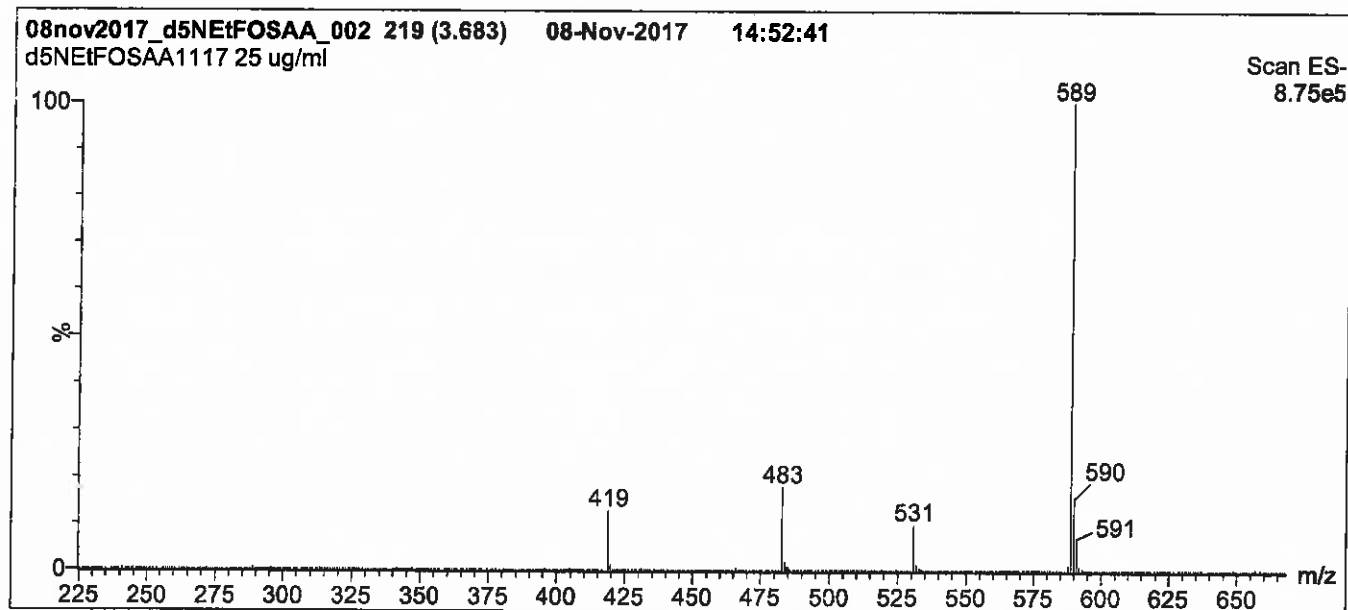
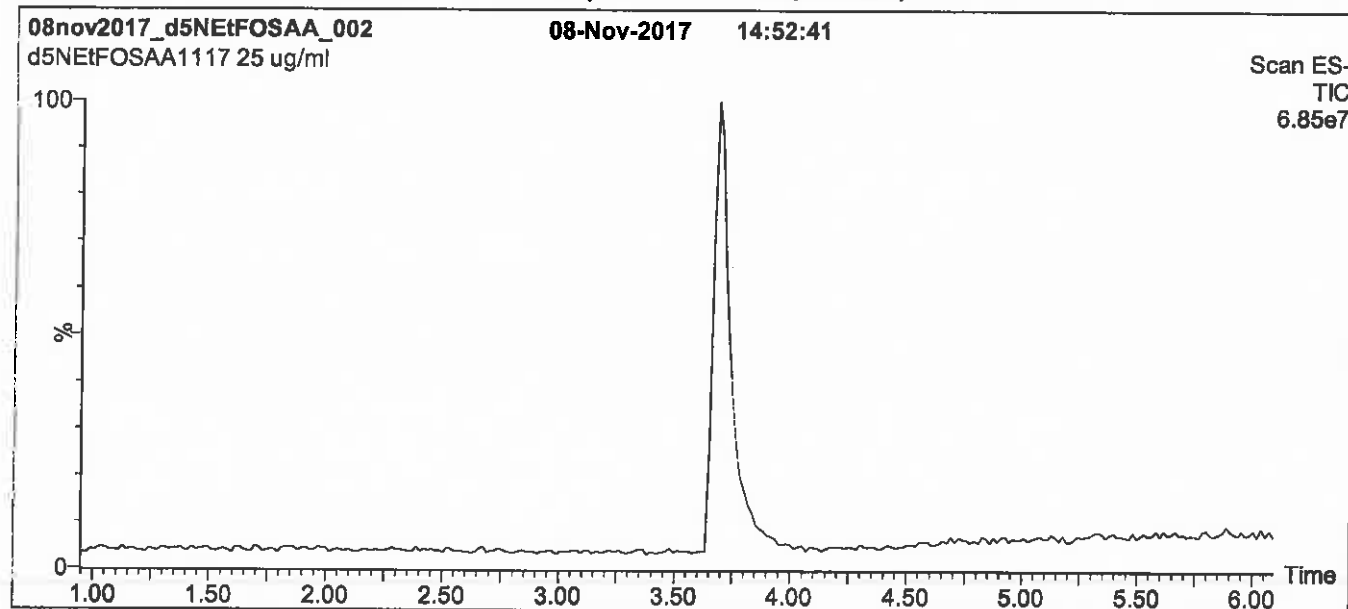
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Figure 1: d5-N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

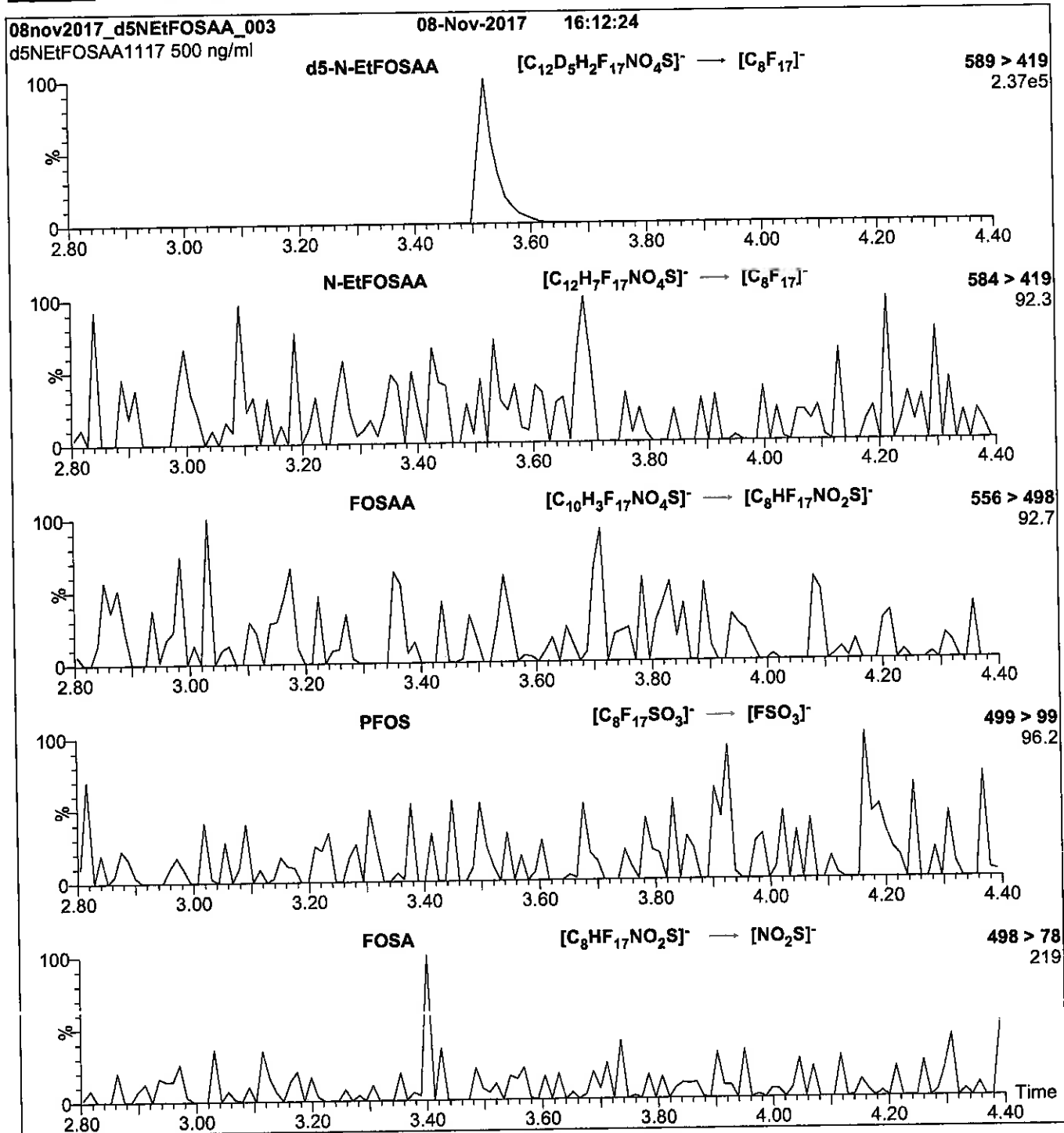
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: d5-N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d5-N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 20

Reagent

LCM2-6:FTS_00006

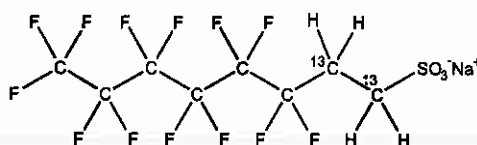


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0217
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 452.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.5 ± 2.4 µg/ml (M2-6:2FTS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 02/17/2017 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 02/17/2022
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 6:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 6:2FTS and M2-6:2FTS will produce signals in the m/z 429 to m/z 409 channel during SRM analysis. We recommend using the m/z 429 to m/z 81 transition to monitor for M2-6:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/24/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

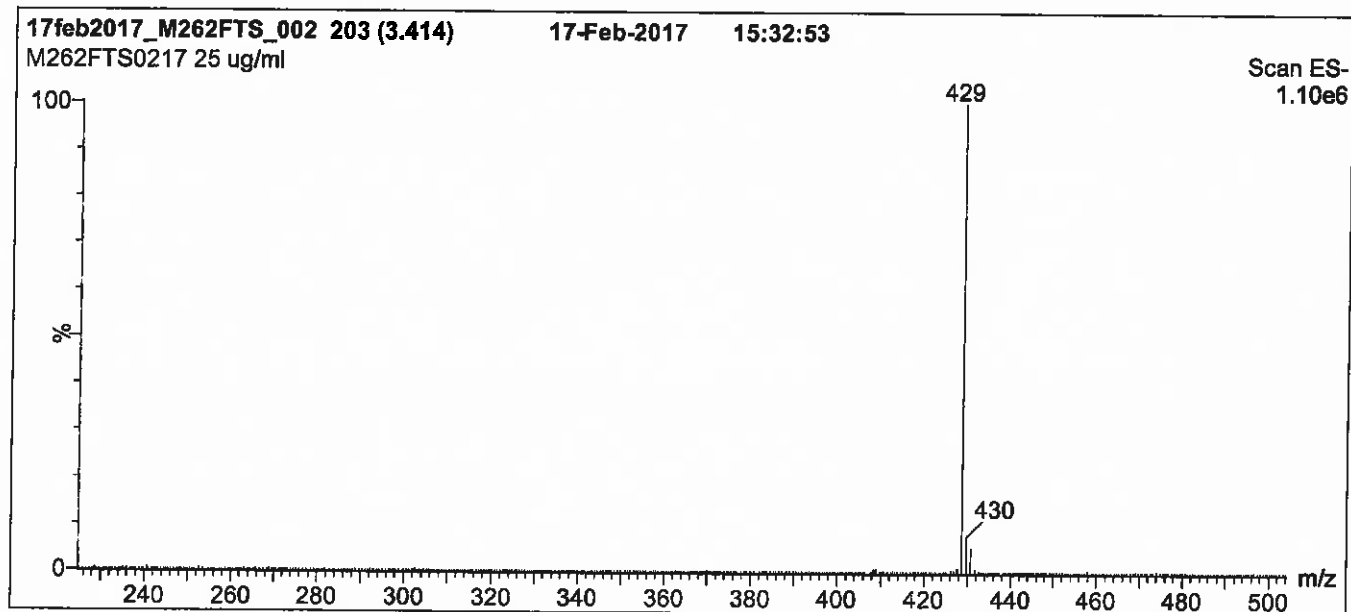
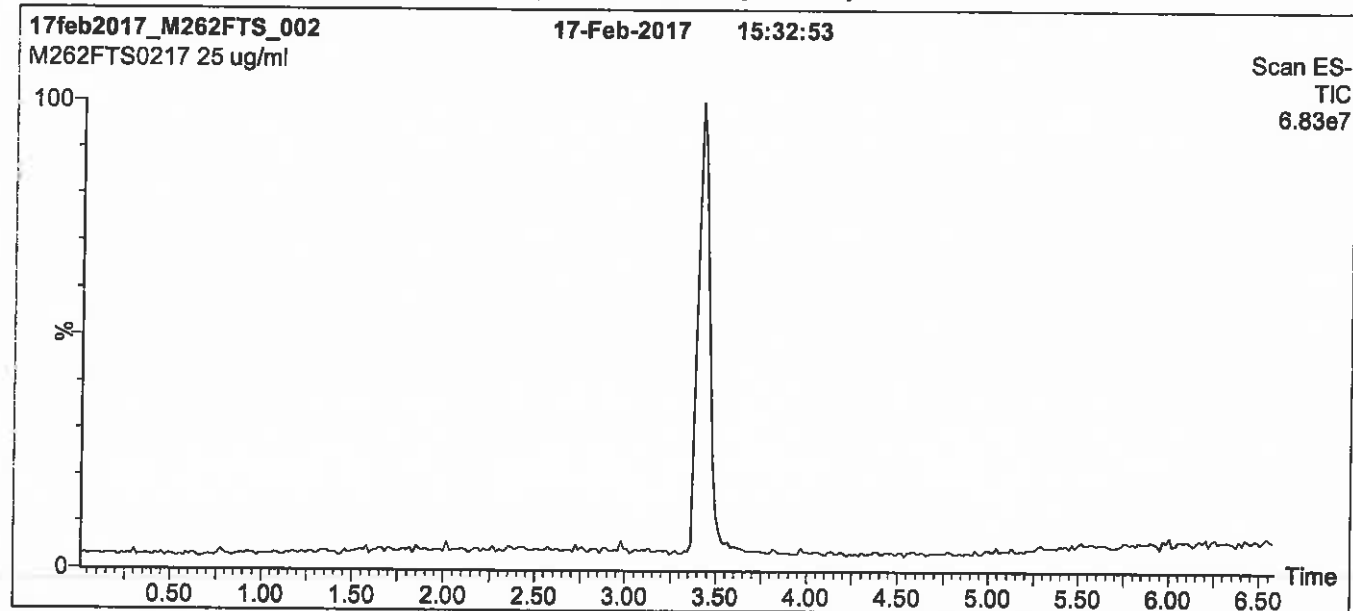
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to Initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)

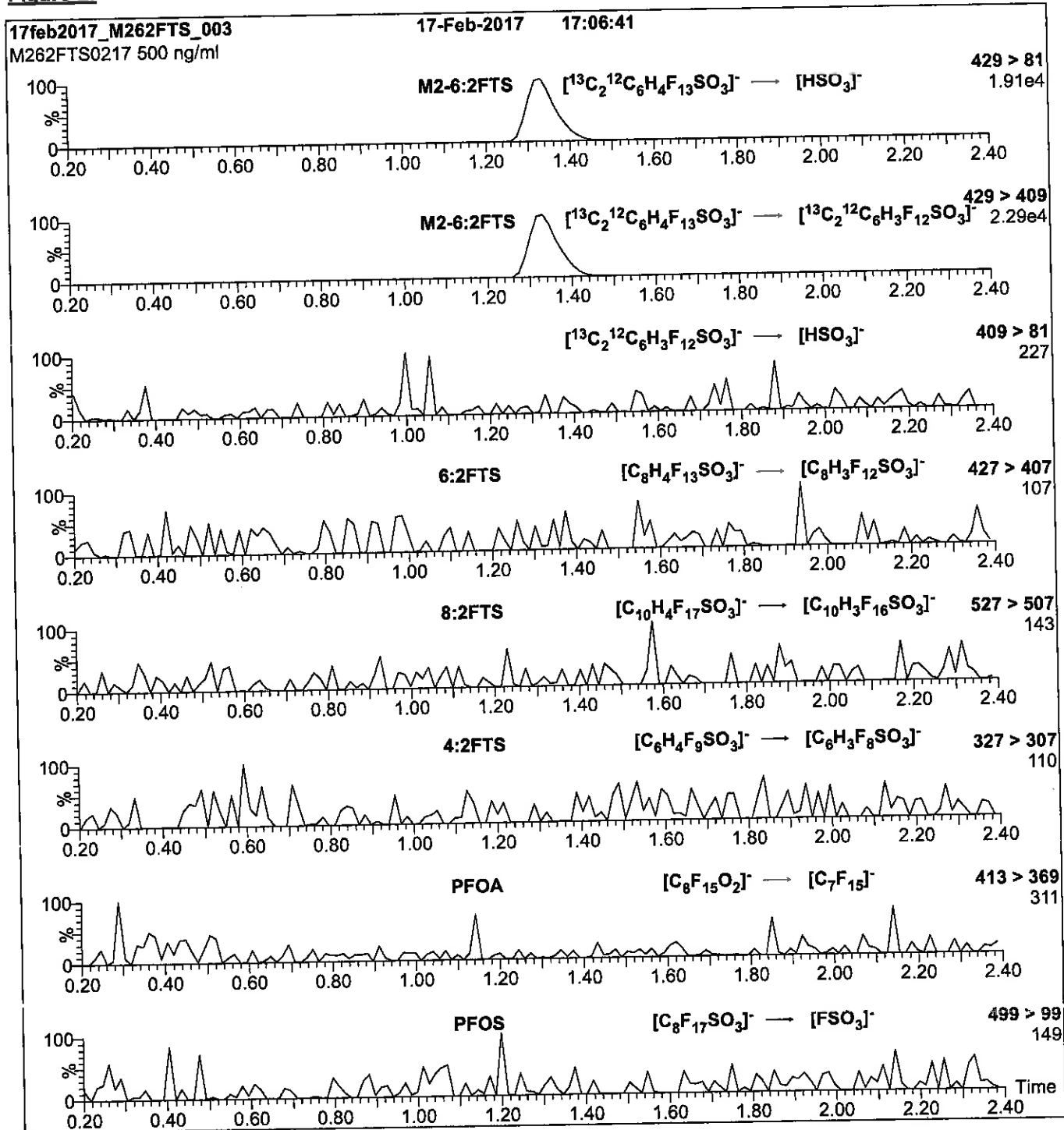
Capillary Voltage (kV) = 3.00

Cone Voltage (V) = 30.00

Cone Gas Flow (l/hr) = 50

Desolvation Gas Flow (l/hr) = 750

Figure 2: M2-6:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-6:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 25

Reagent

LCM2-8 : 2FTS_00008

V: 12/4/17 CCL

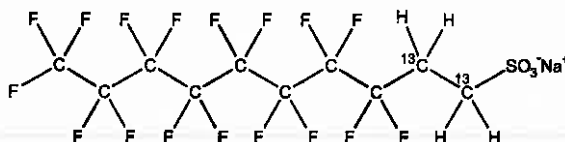


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0717
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₂ ¹² C ₈ H ₄ F ₁₇ SO ₃ Na	MOLECULAR WEIGHT:	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	SOLVENT(S):	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C
LAST TESTED: (mm/dd/yyyy)	07/05/2017		(1,2- ¹³ C ₂)
EXPIRY DATE: (mm/dd/yyyy)	07/05/2022		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 8:2FTS contains 4.22% of ³⁴S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 07/07/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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LIMITED WARRANTY:

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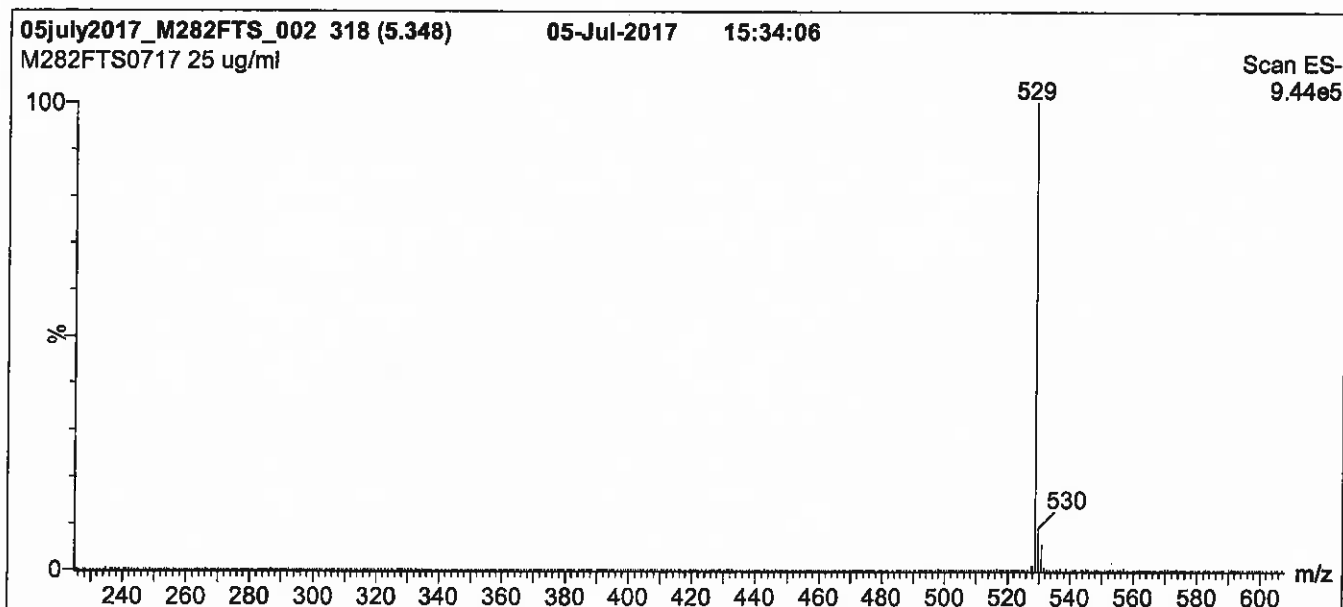
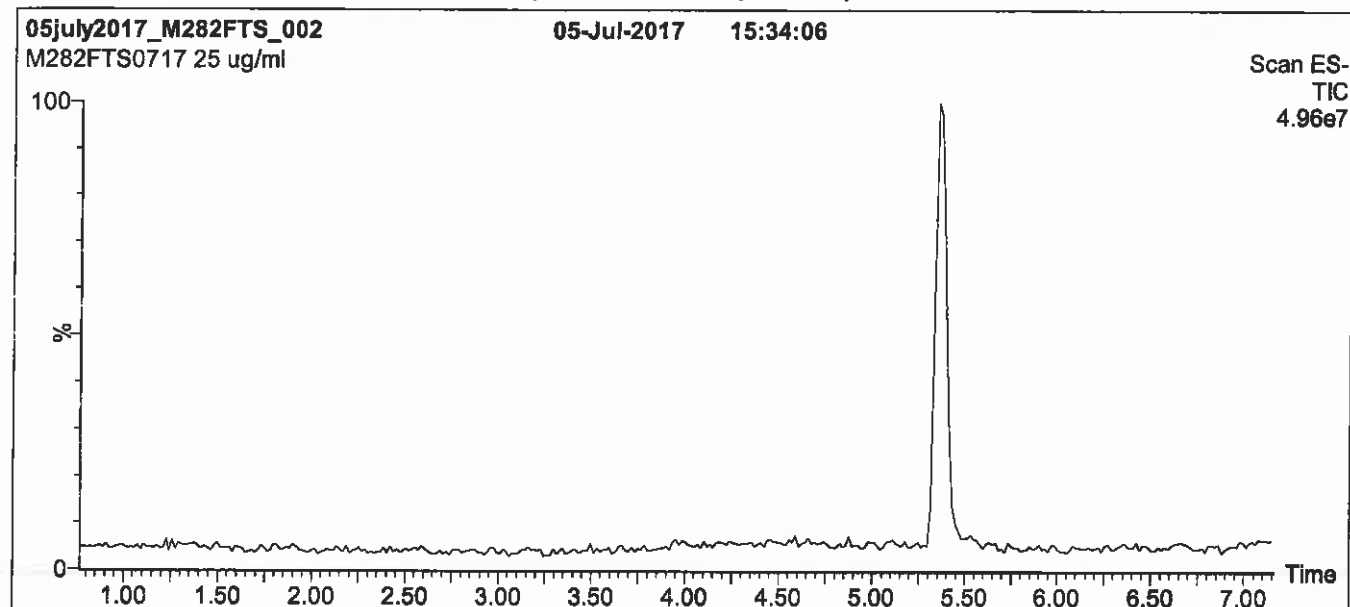
QUALITY MANAGEMENT:

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Figure 1: M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

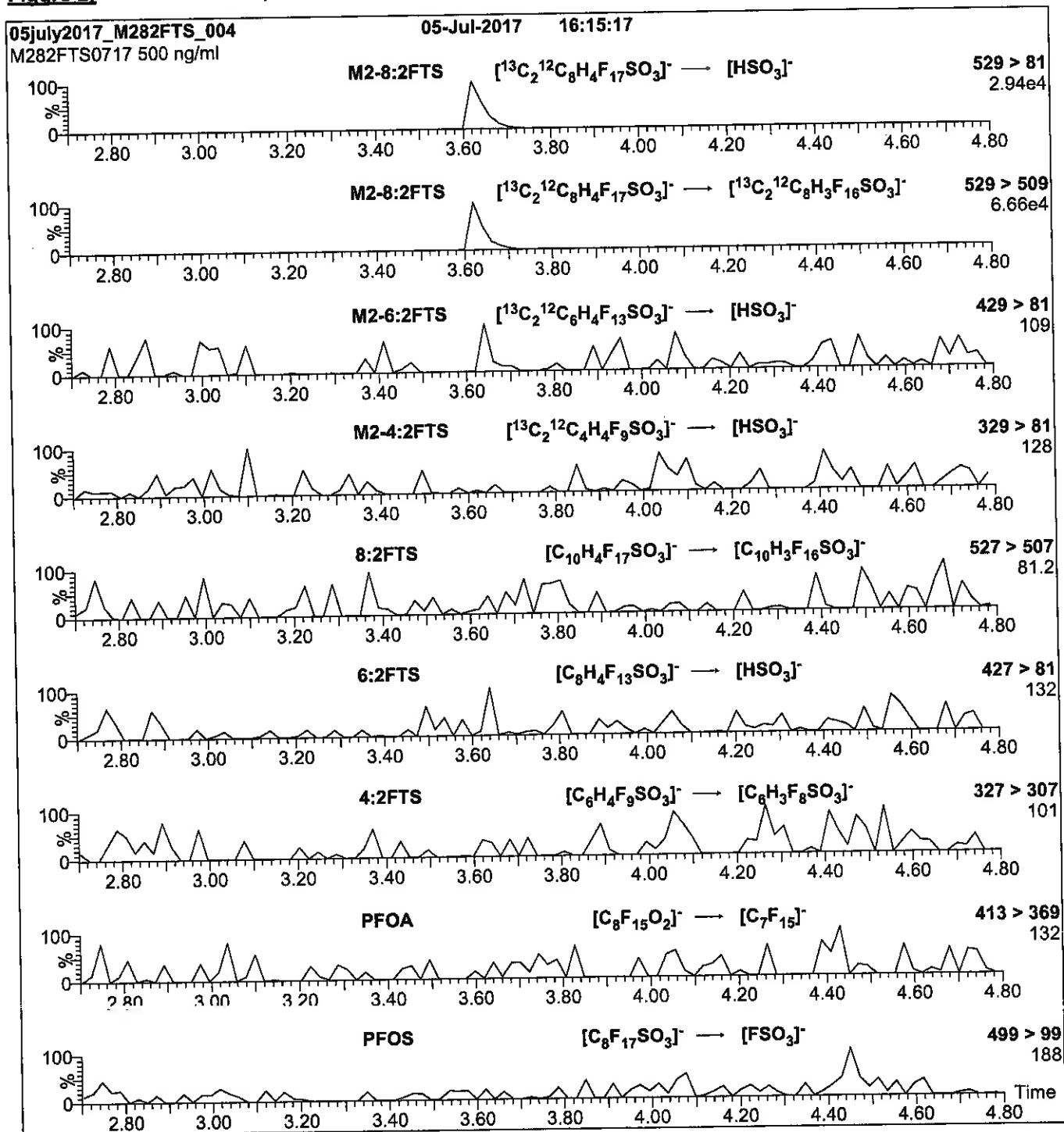
Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2-8:2FTS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2-8:2FTS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 30

Reagent

LCM2PFHxDA_00013

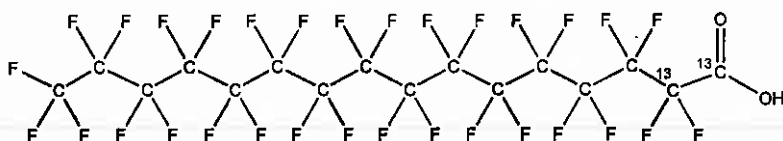
12/4/17 CCL



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid
LOT NUMBER: M2PFHxDA0717
STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₄HF₃₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml
MOLECULAR WEIGHT: 816.11
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 07/14/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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SYNTHESIS / CHARACTERIZATION:

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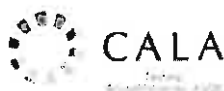
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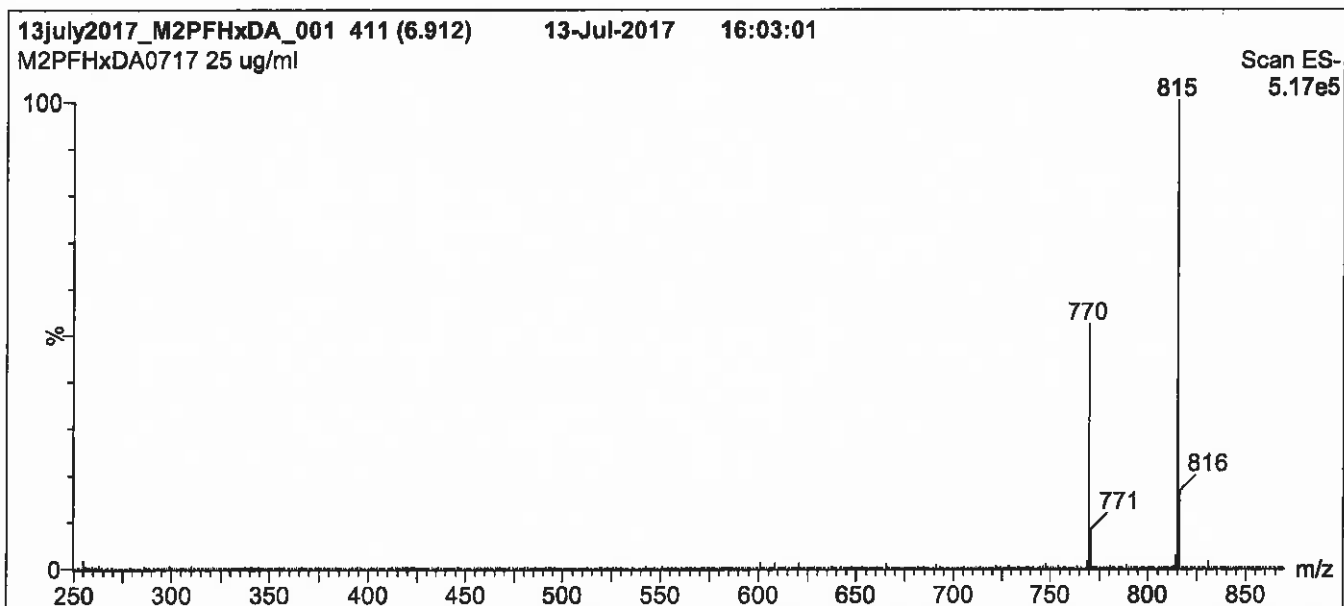
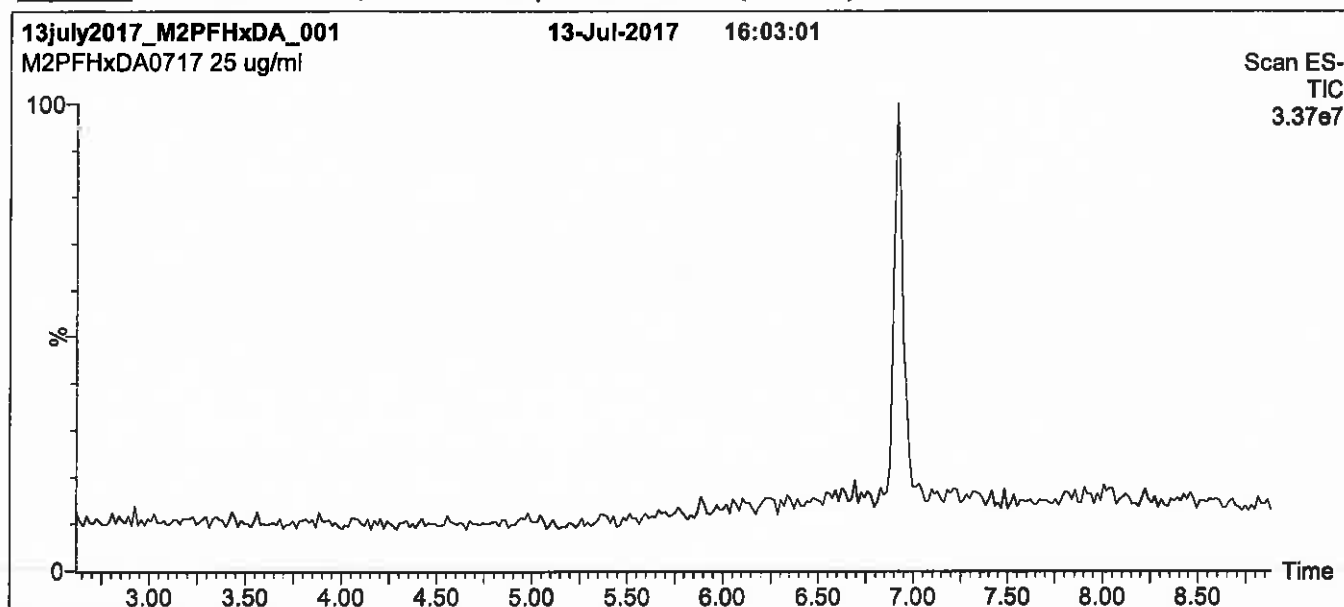
QUALITY MANAGEMENT:

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Figure 1: M2PFHxDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

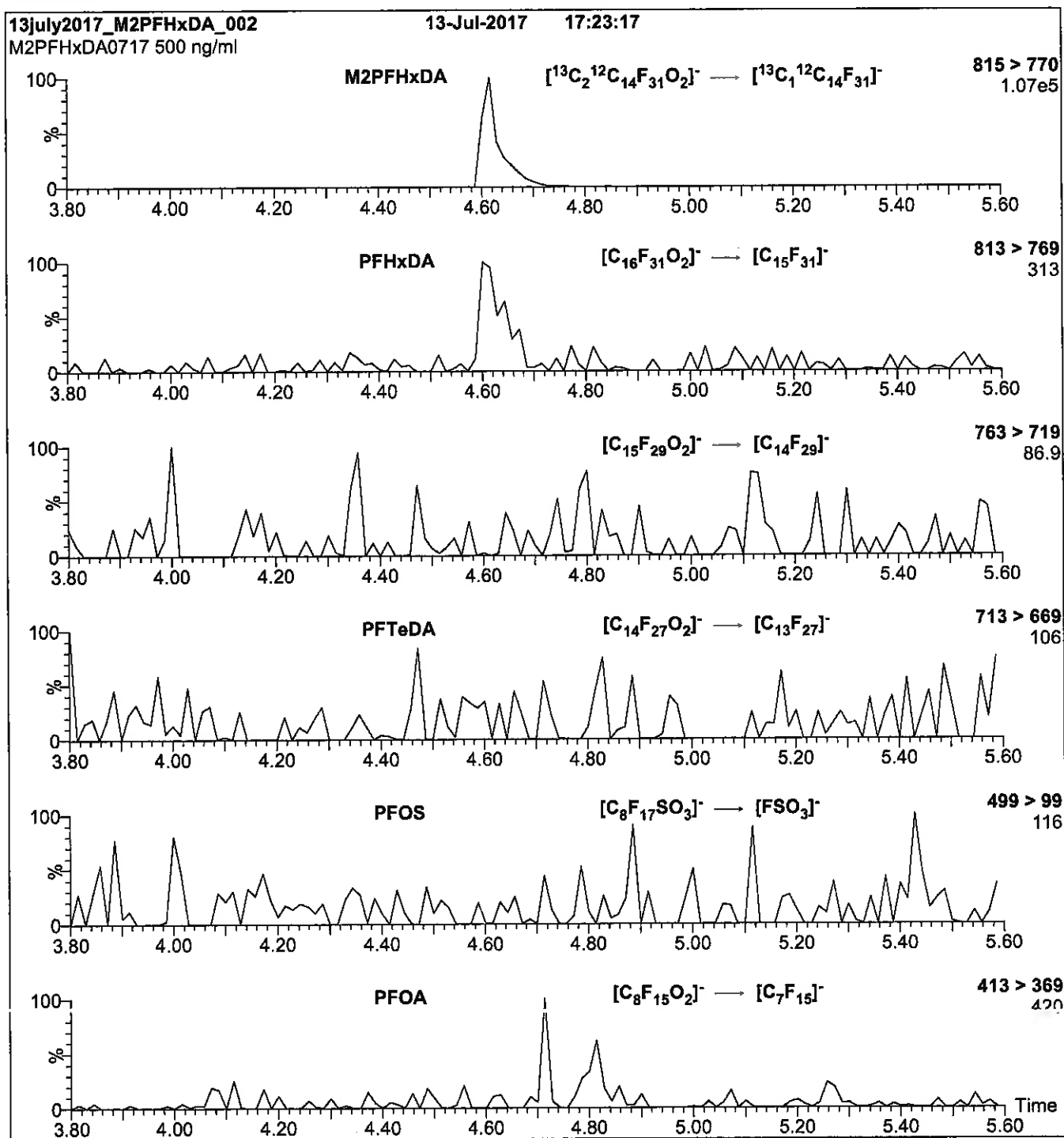
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFHxDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.28\text{e-}3$
Collision Energy (eV) = 15

Reagent

LCM2PFOA_00008



WELLINGTON LABORATORIES

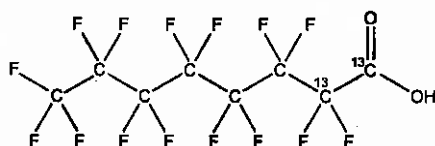
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]octanoic acid

LOT NUMBER: M2PFOA0216

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆HF₁₆O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 416.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99%¹³C
(1,2-¹³C₂)

LAST TESTED: (mm/dd/yyyy) 02/12/2016

EXPIRY DATE: (mm/dd/yyyy) 02/12/2021

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/24/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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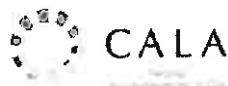
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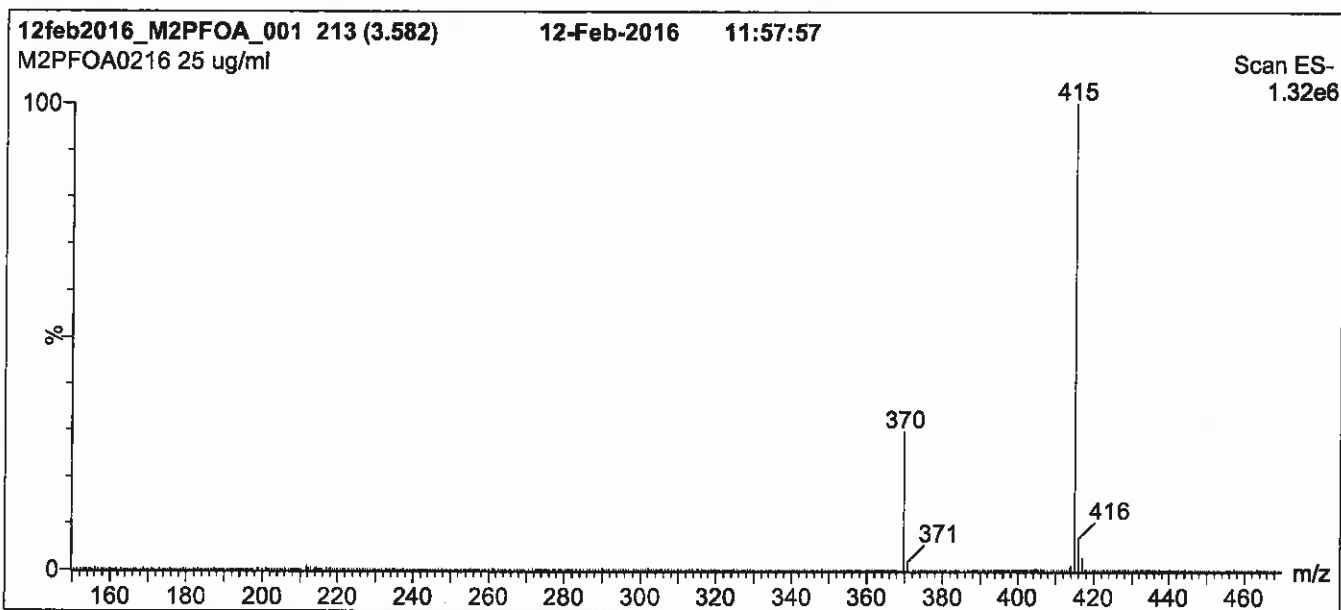
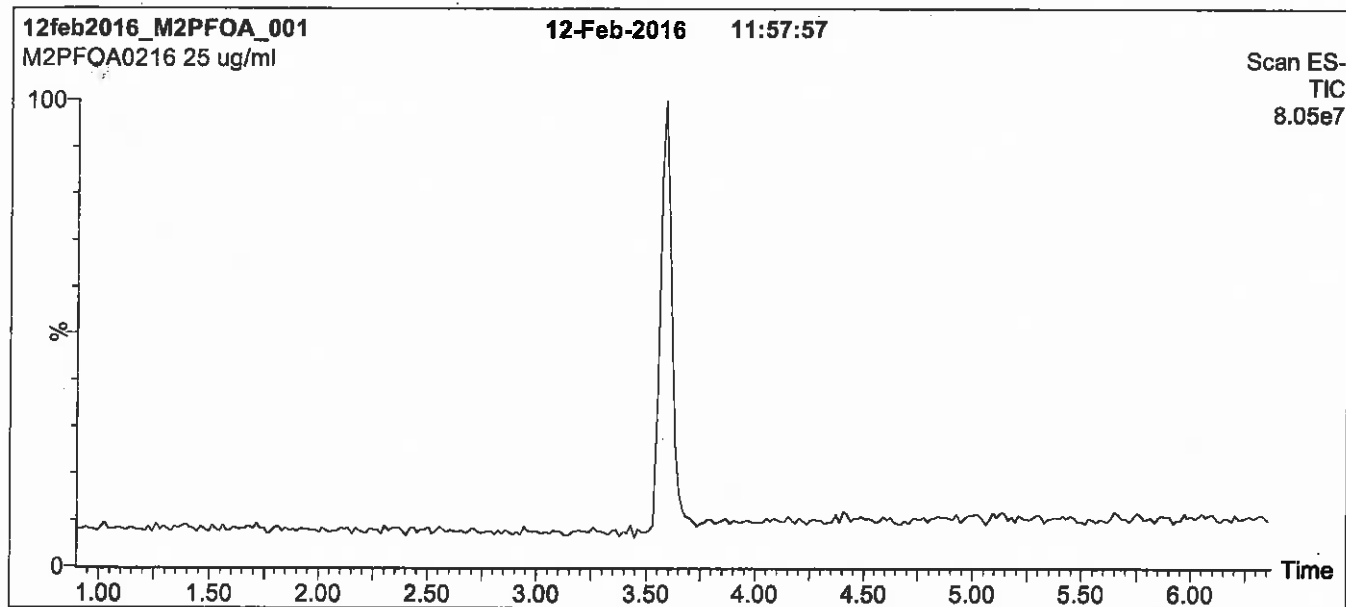
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Figure 1: M2PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

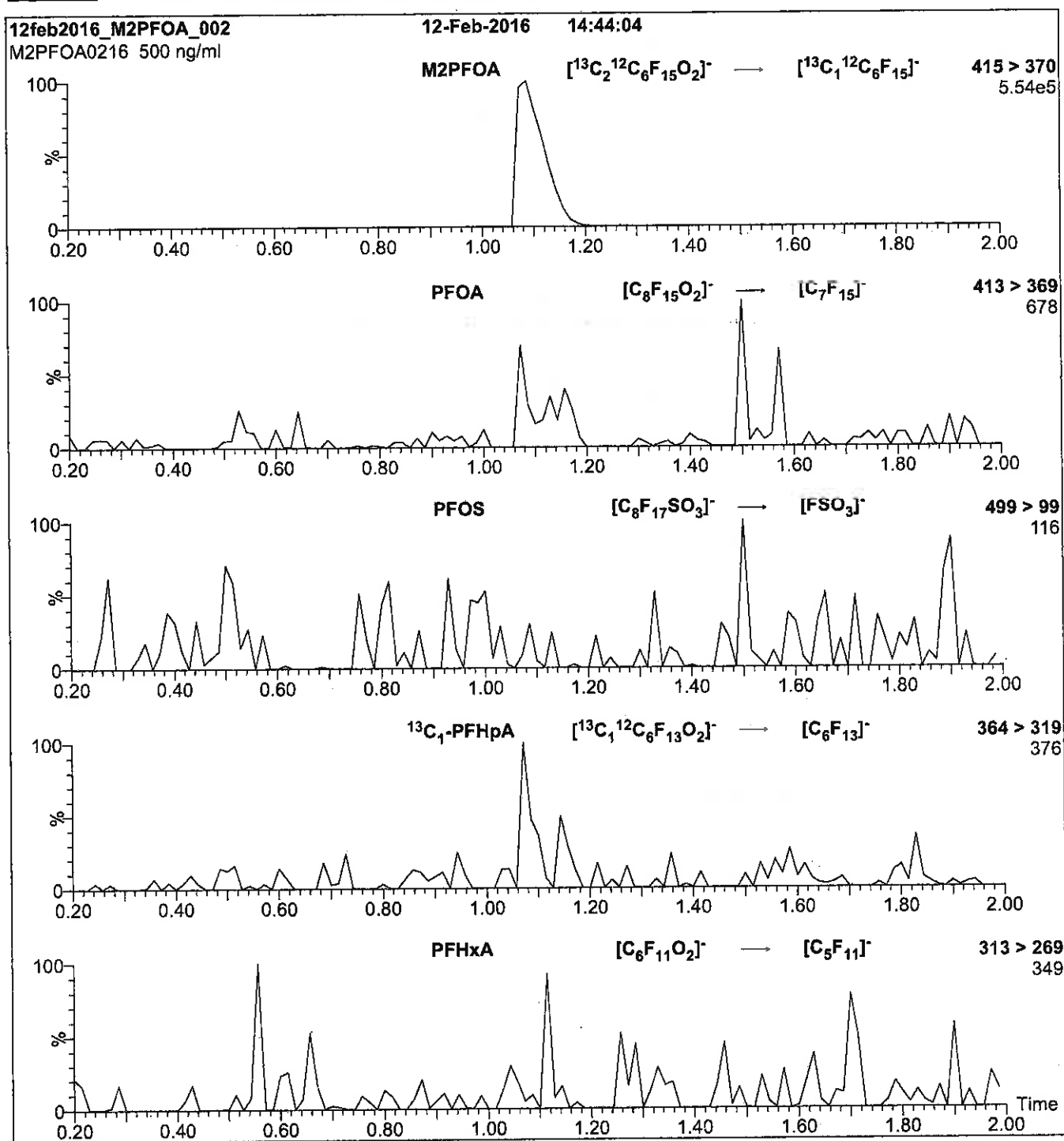
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFOA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 10

Reagent

LCM2PFTeDA_00012

V: 12/4/17 CCL



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

M2PFTeDA

LOT NUMBER:

M2PFTeDA1117

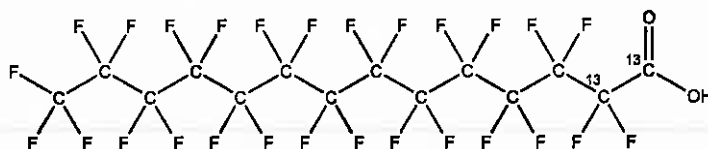
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]tetradecanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₁₂HF₂₇O₂

CONCENTRATION:

50 ± 2.5 µg/mL

MOLECULAR WEIGHT:

716.10

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

11/30/2017

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

11/30/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date:

12/01/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

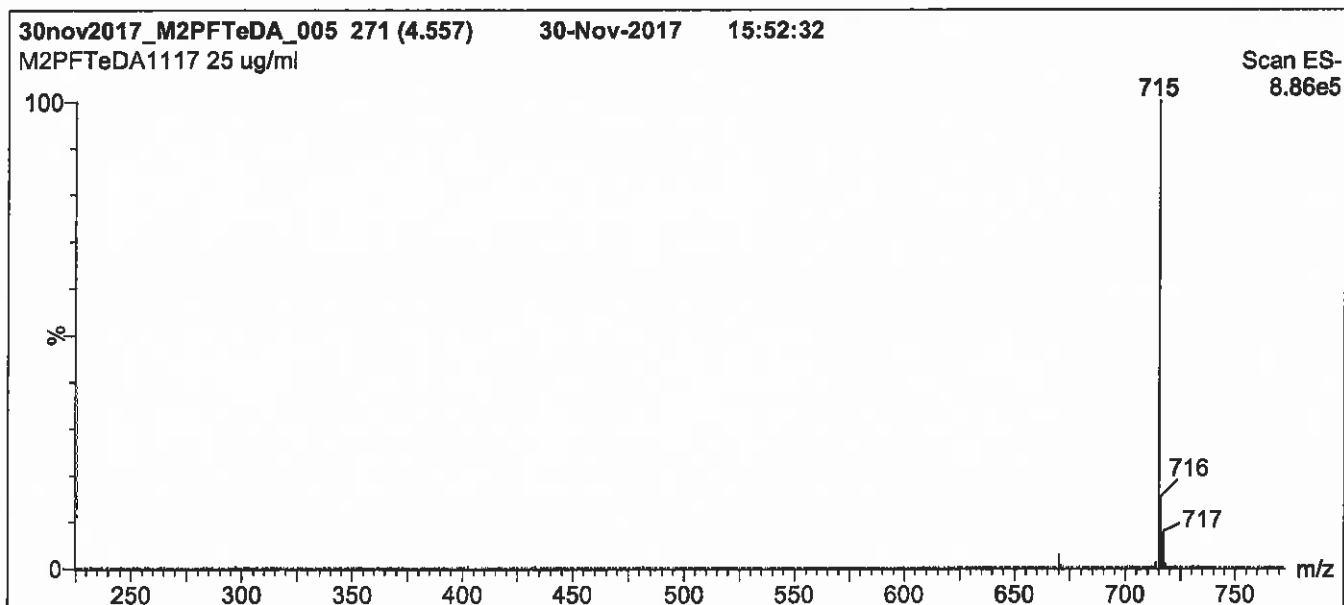
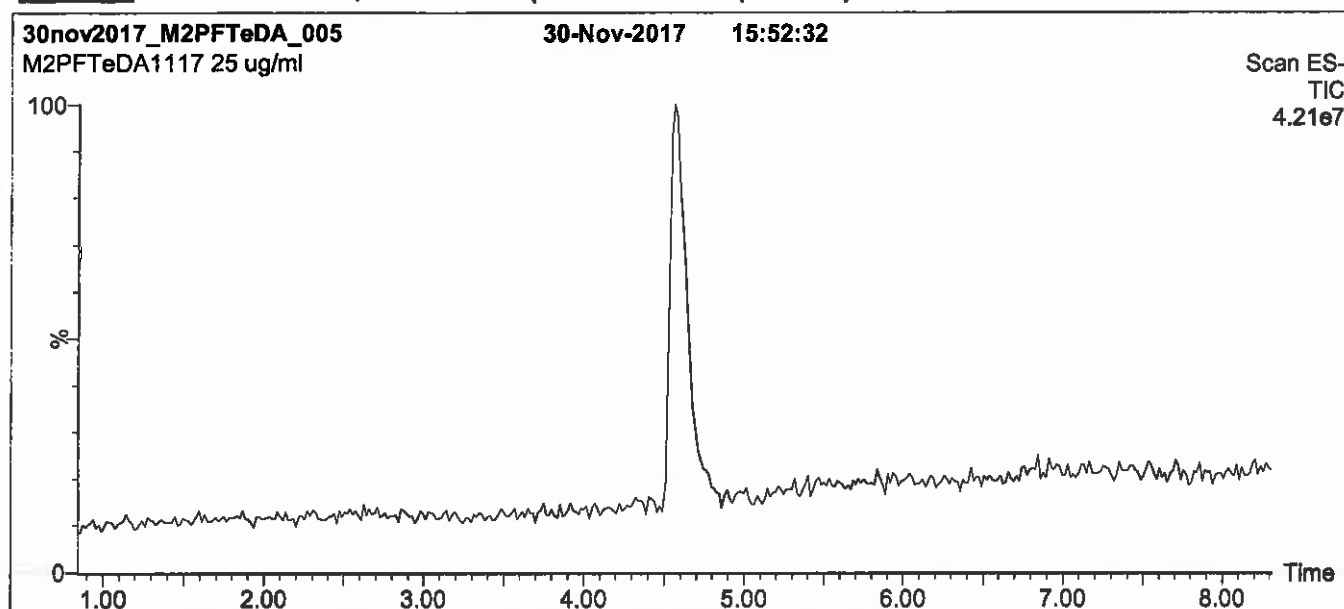
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

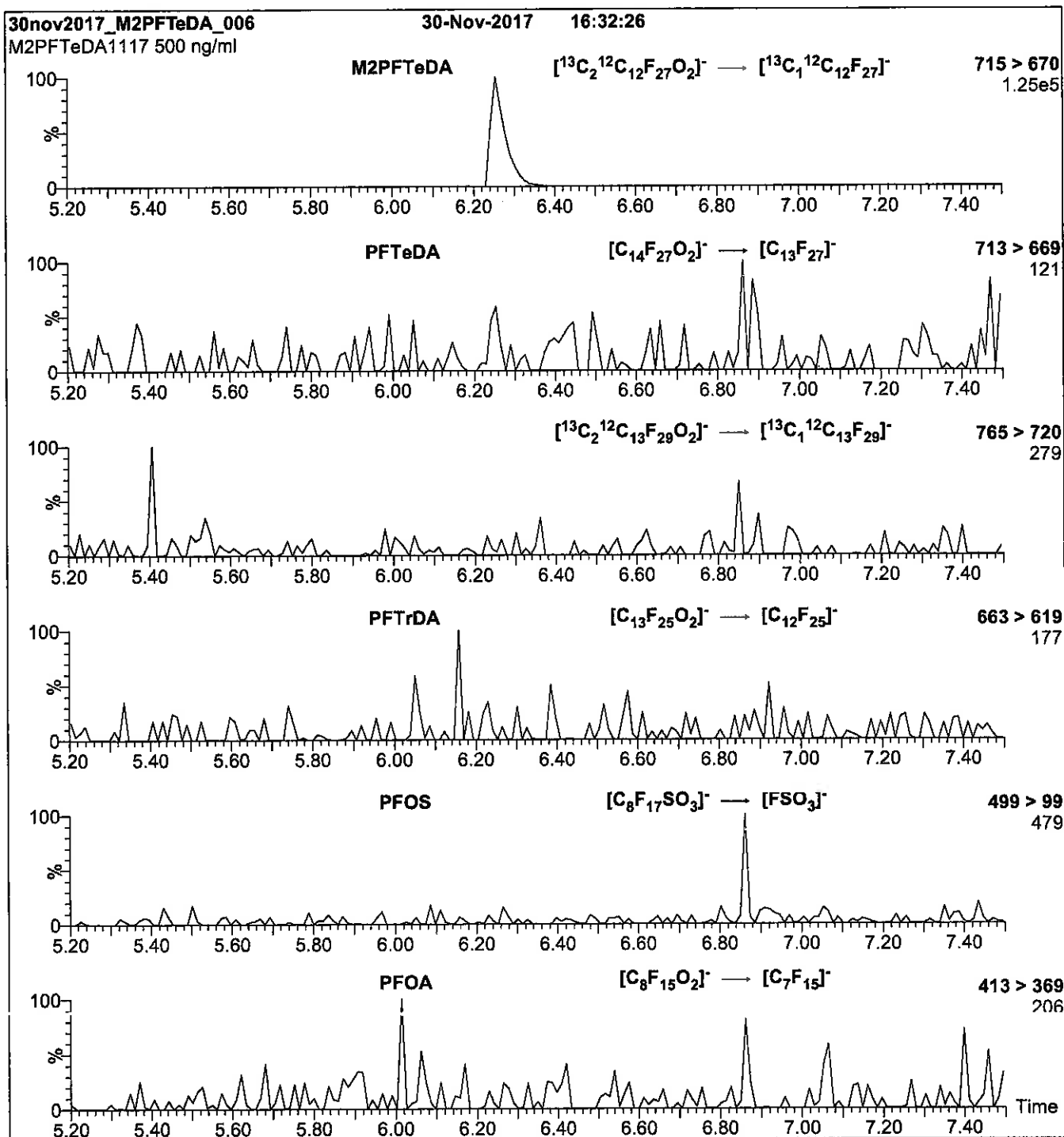
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M2PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 14

Reagent

LCM4PFHPA_00012

v: 12/4/17 CCL



WELLINGTON LABORATORIES

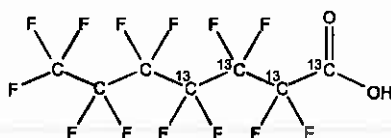
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M4PFHpA
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]heptanoic acid

LOT NUMBER: M4PFHpA0517

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄¹²C₃HF₁₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 368.03
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99%¹³C
(1,2,3,4-¹³C₄)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/03/2017
EXPIRY DATE: (mm/dd/yyyy) 05/03/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 05/11/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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UNCERTAINTY:

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

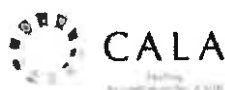
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

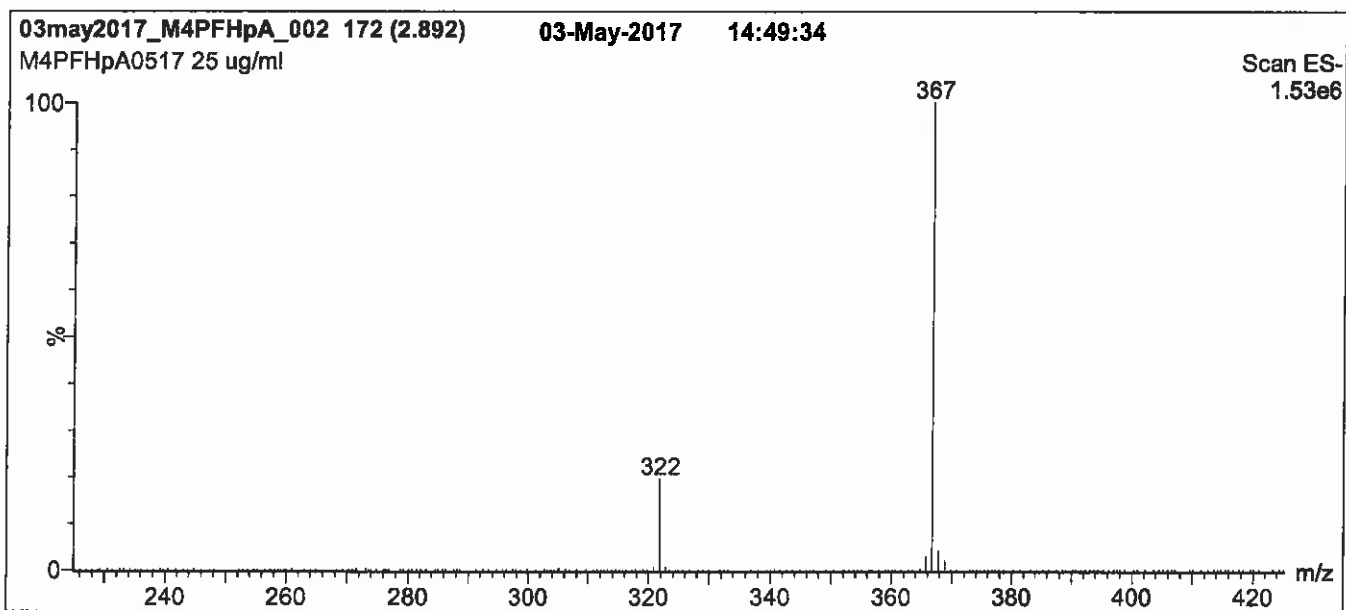
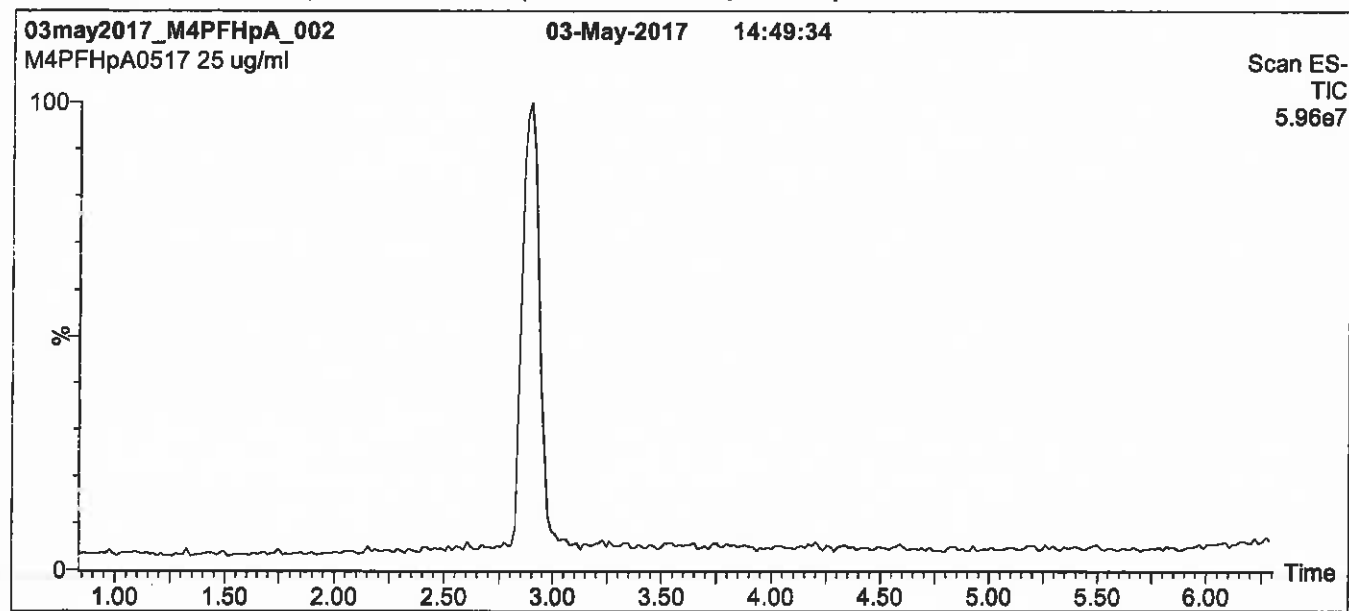
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M4PFHpA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

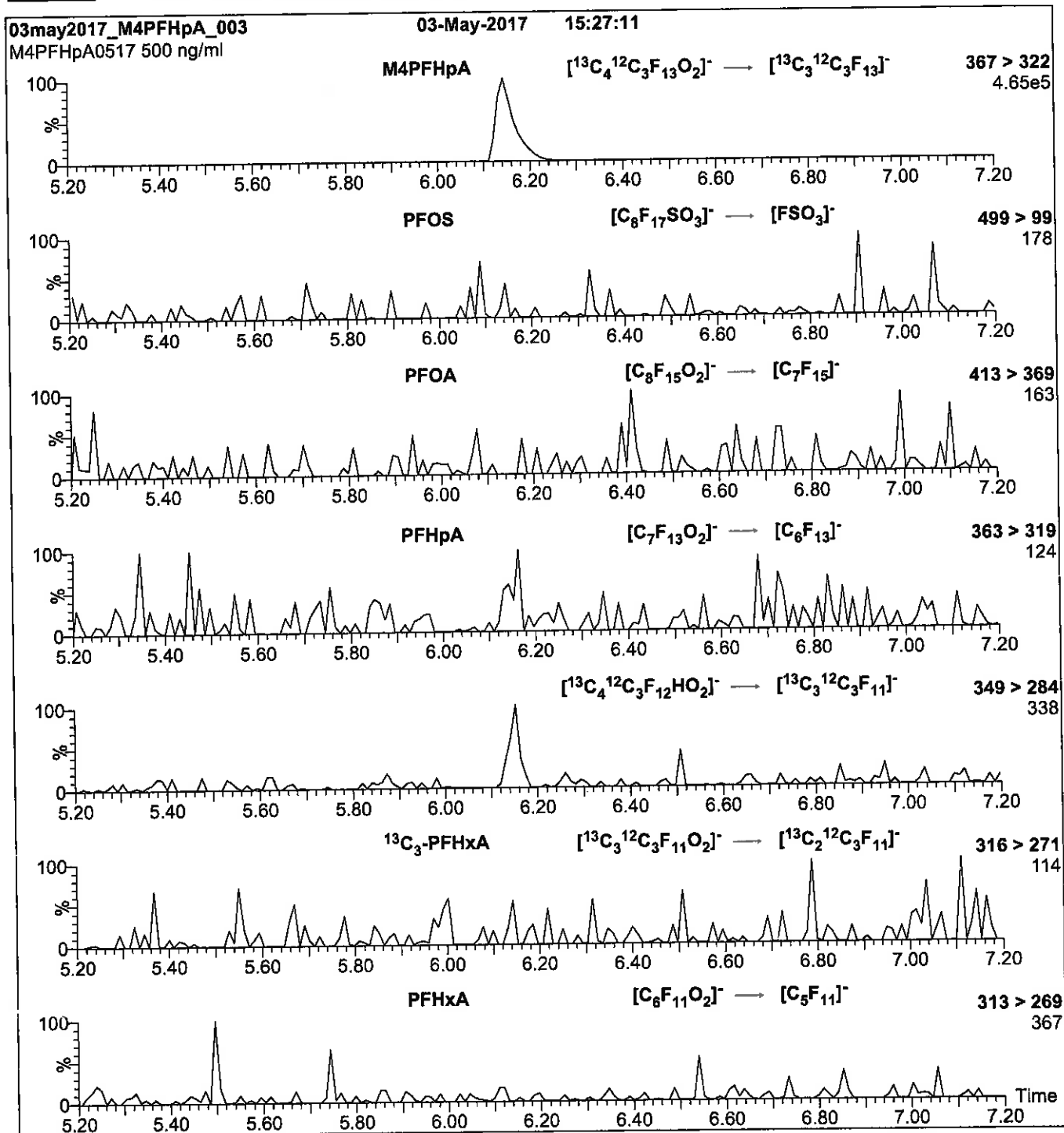
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M4PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M4PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 9

Reagent

LCM5PFPEA_00013



1106313

ID: LCM5PFPEA_00013

Exp: 07/20/22 Prod: CCL

13C5-Perfluoropentanoic acid

r: 12/4/17 ccc



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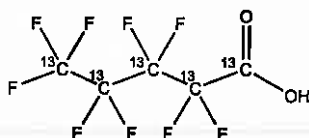
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-[¹³C₅]pentanoic acid

LOT NUMBER: M5PFPeA0717

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₅HF₉O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 269.01
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/20/2017

ISOTOPIC PURITY: ≥99% ¹³C
(¹³C₅)

EXPIRY DATE: (mm/dd/yyyy) 07/20/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 07/26/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

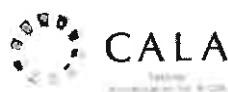
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LIMITED WARRANTY:

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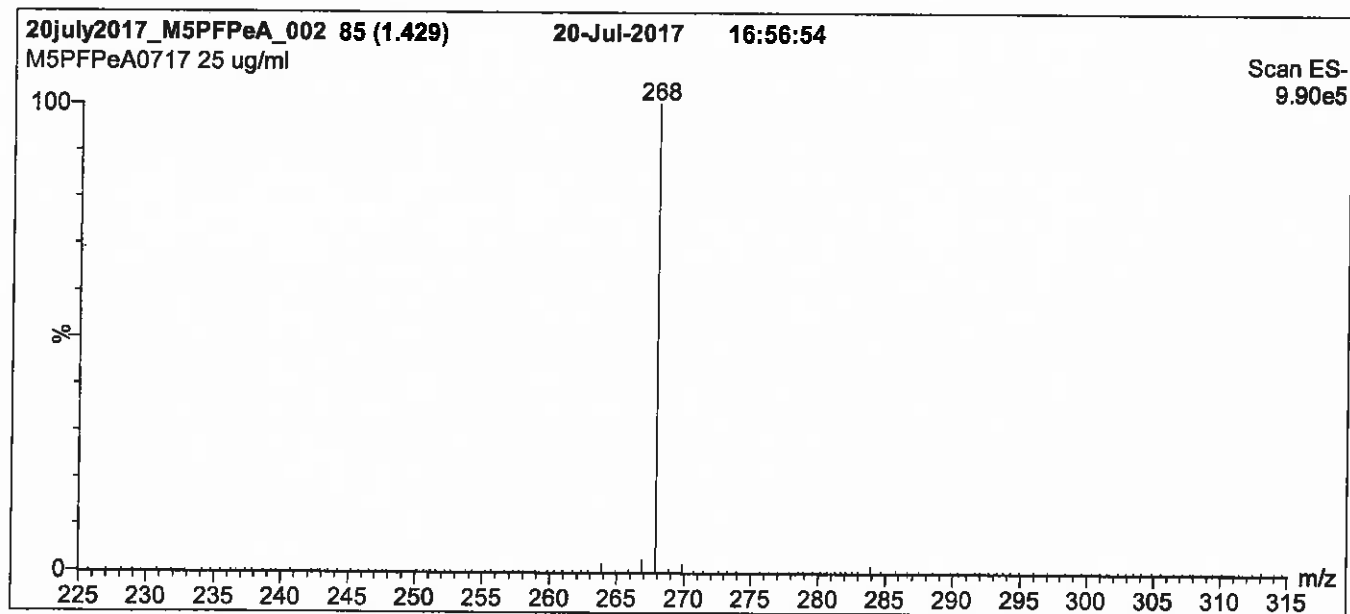
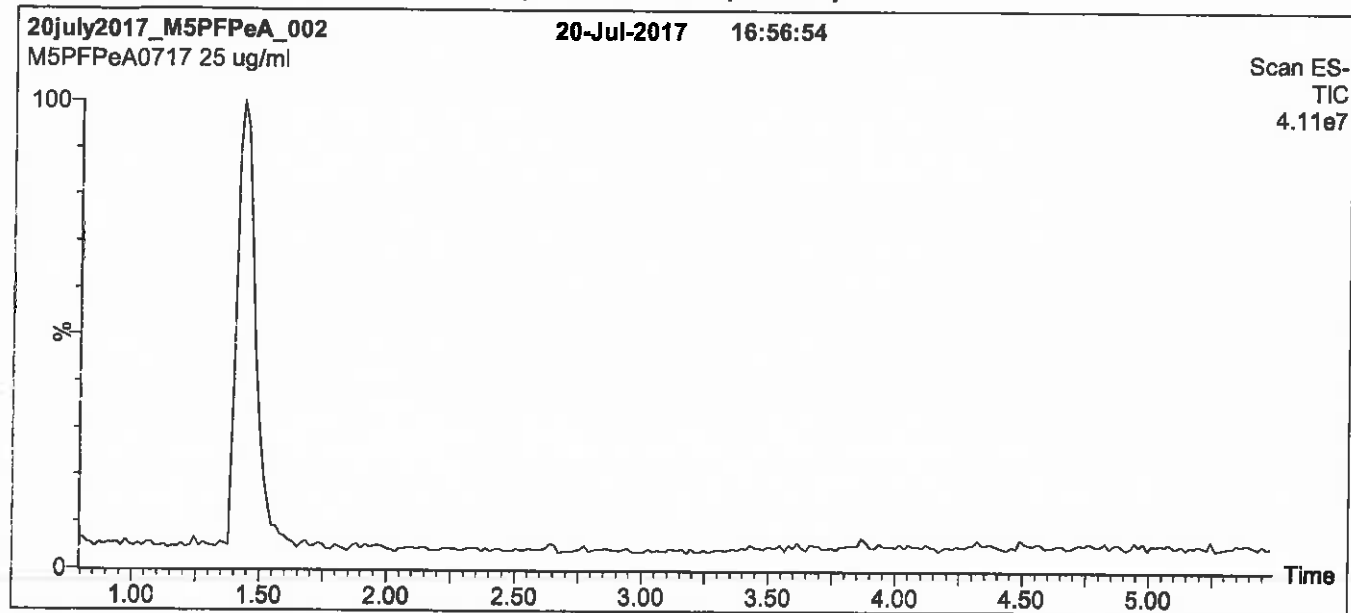
QUALITY MANAGEMENT:

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Figure 1: M5PFPeA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Hold for 1 min. Ramp to 90% organic over 7 min and hold
for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

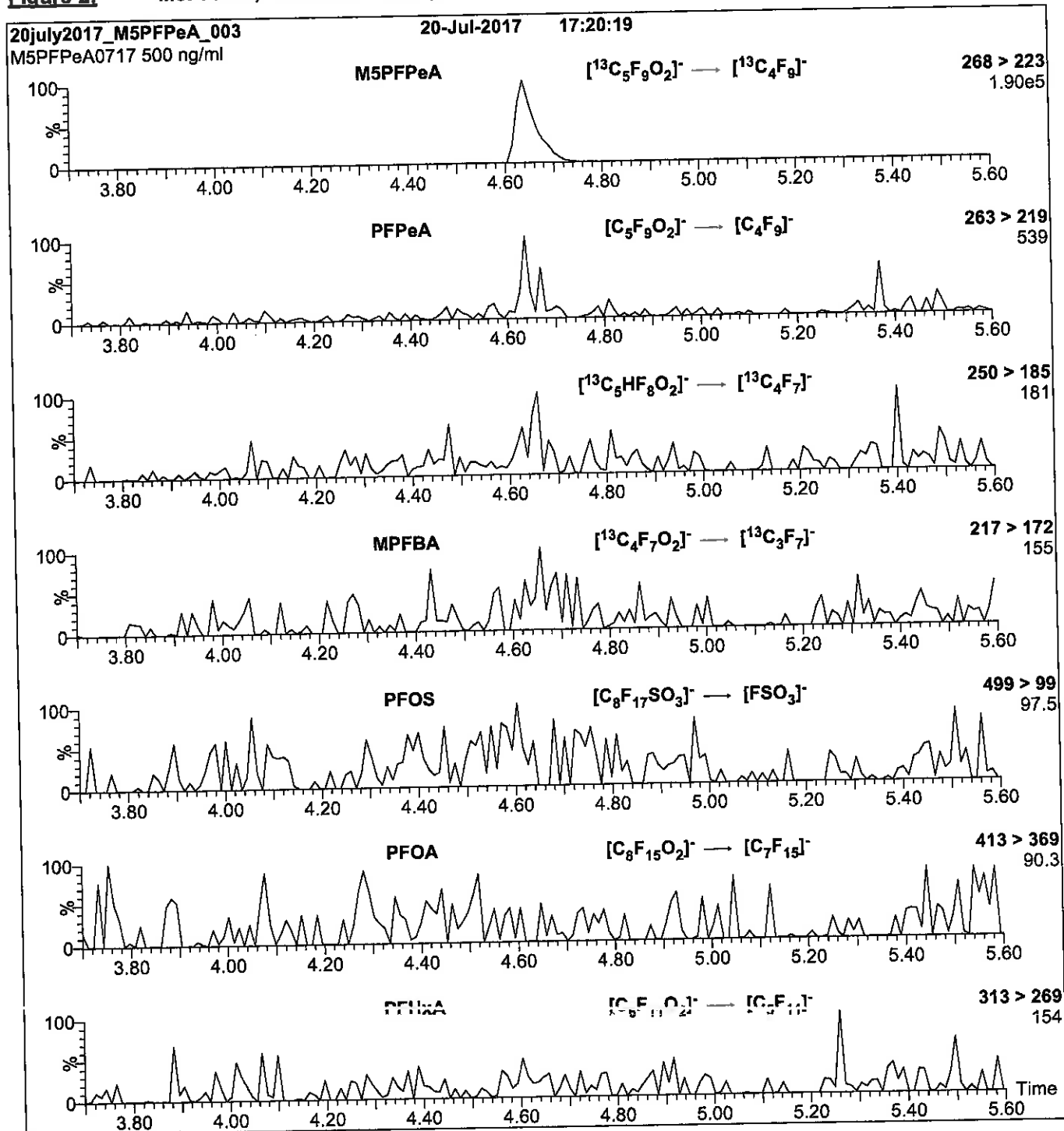
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: M5PFPeA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M5PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = $3.54\text{e-}3$
Collision Energy (eV) = 9

Reagent

LCM8FOSA_00016



1106276

ID: LCM8FOSA_00016

Exp: 10/11/22 Ppt: CCL

13C8-Perfluorooctanesulfo

r: 12/4/17
CCAWELLINGTON
LABORATORIESCERTIFICATE OF ANALYSIS
DOCUMENTATION**PRODUCT CODE:**

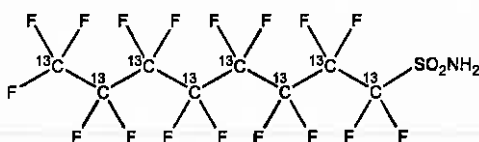
M8FOSA-I

LOT NUMBER:

M8FOSA1017I

COMPOUND:Perfluoro-1-[¹³C₈]octanesulfonamide**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₈H₂F₁₇NO₂S**CONCENTRATION:**

50 ± 2.5 µg/ml

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/11/2017

EXPIRY DATE: (mm/dd/yyyy)

10/11/2022

RECOMMENDED STORAGE:

Refrigerate ampoule

MOLECULAR WEIGHT:

507.09

SOLVENT(S):

Isopropanol

ISOTOPIC PURITY:≥99% ¹³C
(¹³C₈)**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.1% of perfluoro-1-[¹³C₄]octanesulfonamide and ~ 0.01% of perfluoro-1-[¹³C₇]heptanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date:

10/20/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

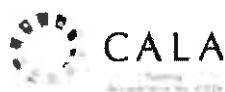
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

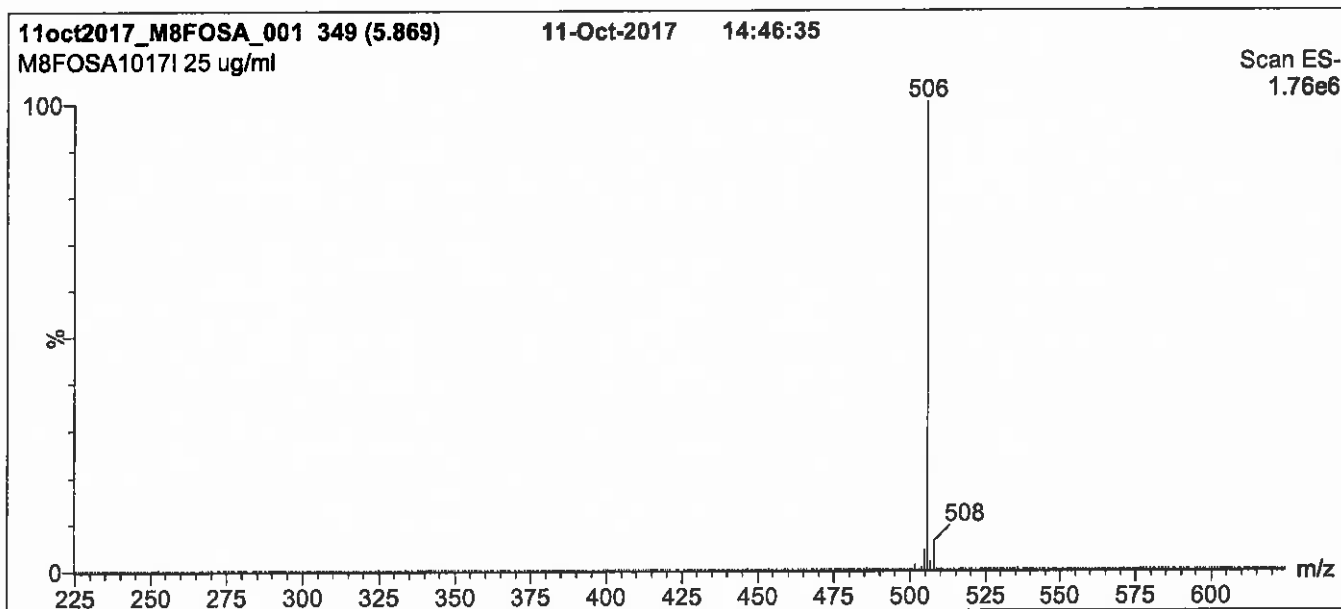
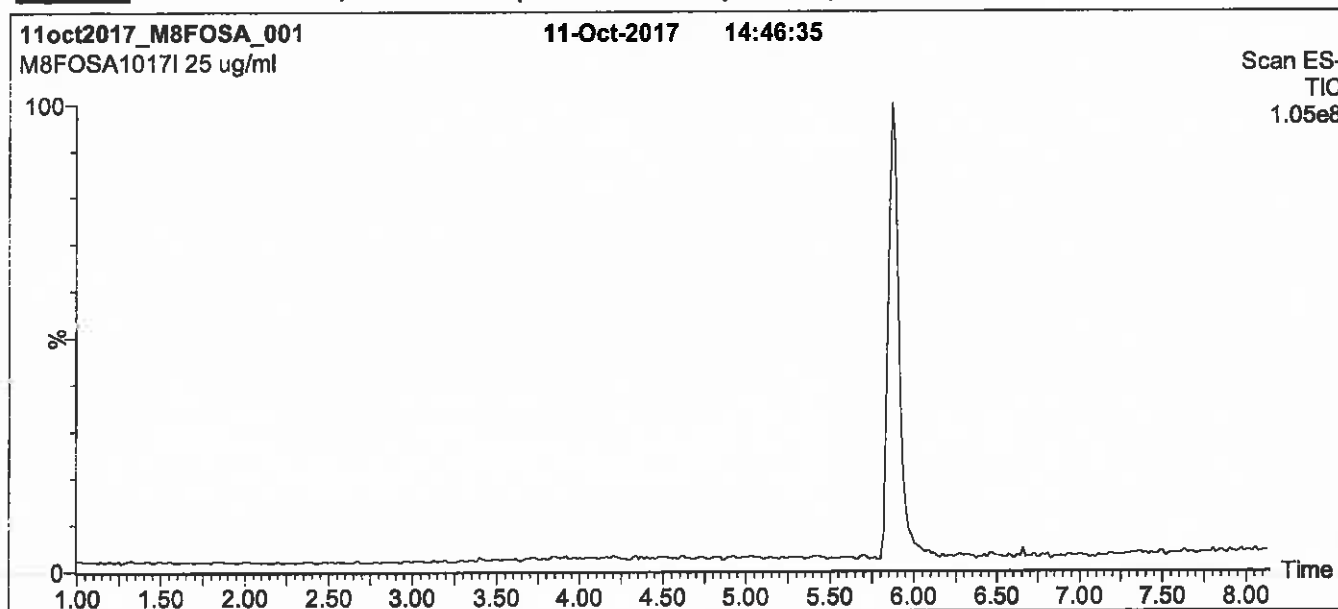
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 85% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

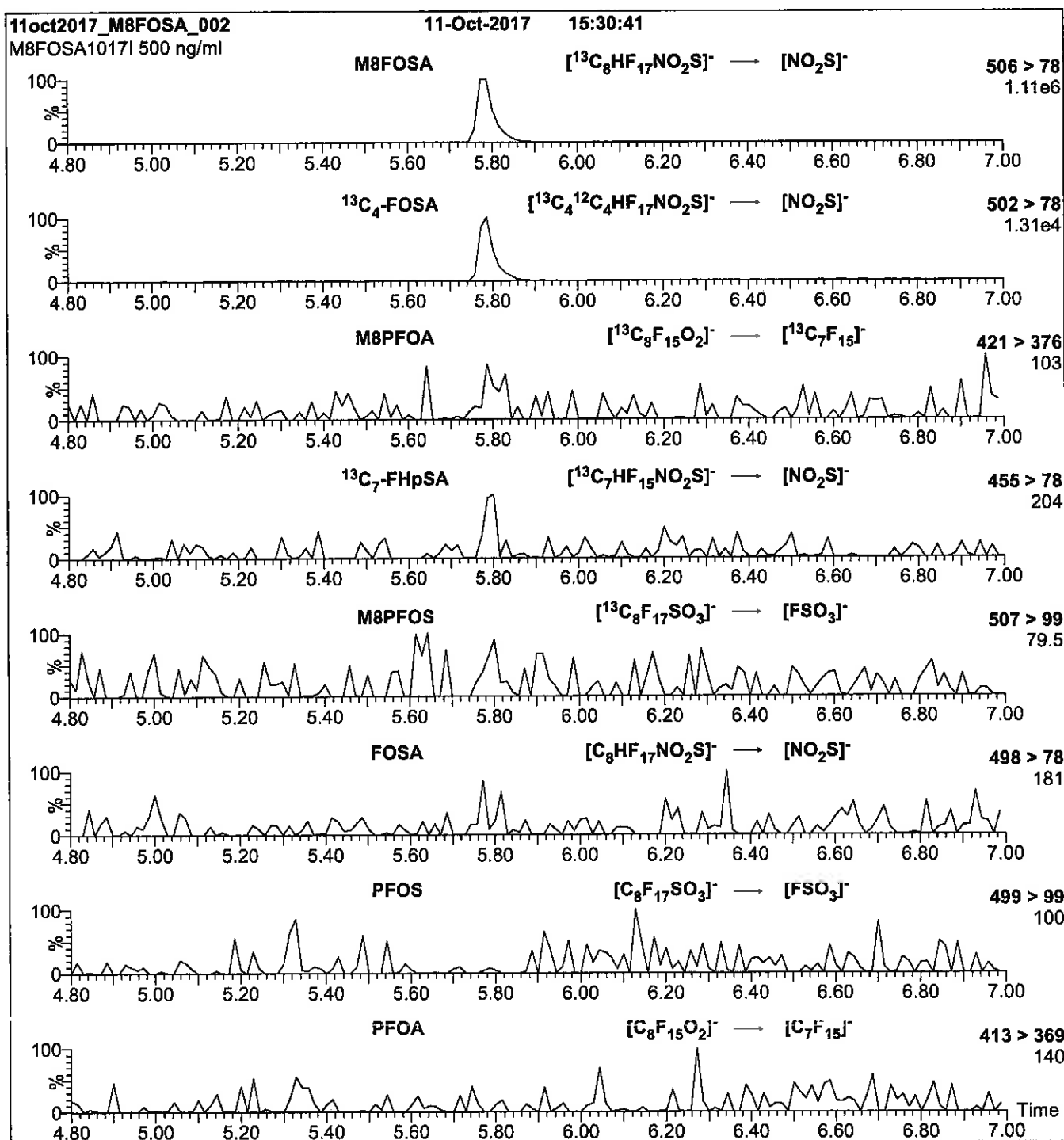
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M8FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M8FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00013



1106251

ID: LCMPFBA_00013

Exp: 04/12/22 Prod: CCL

13C4-Perfluorobutanoic ac

r: 12/4/17 ccc



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

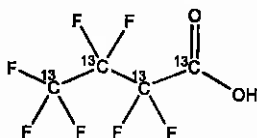
MPFBA

LOT NUMBER:

MPFBA0417

COMPOUND:Perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₄HF₈O₂**MOLECULAR WEIGHT:**

218.01

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99%¹³C**LAST TESTED:** (mm/dd/yyyy)

04/12/2017

(1,2,3,4-¹³C₄)**EXPIRY DATE:** (mm/dd/yyyy)

04/12/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE**Certified By:**

B.G. Chittim, General Manager
Date: 04/20/2017

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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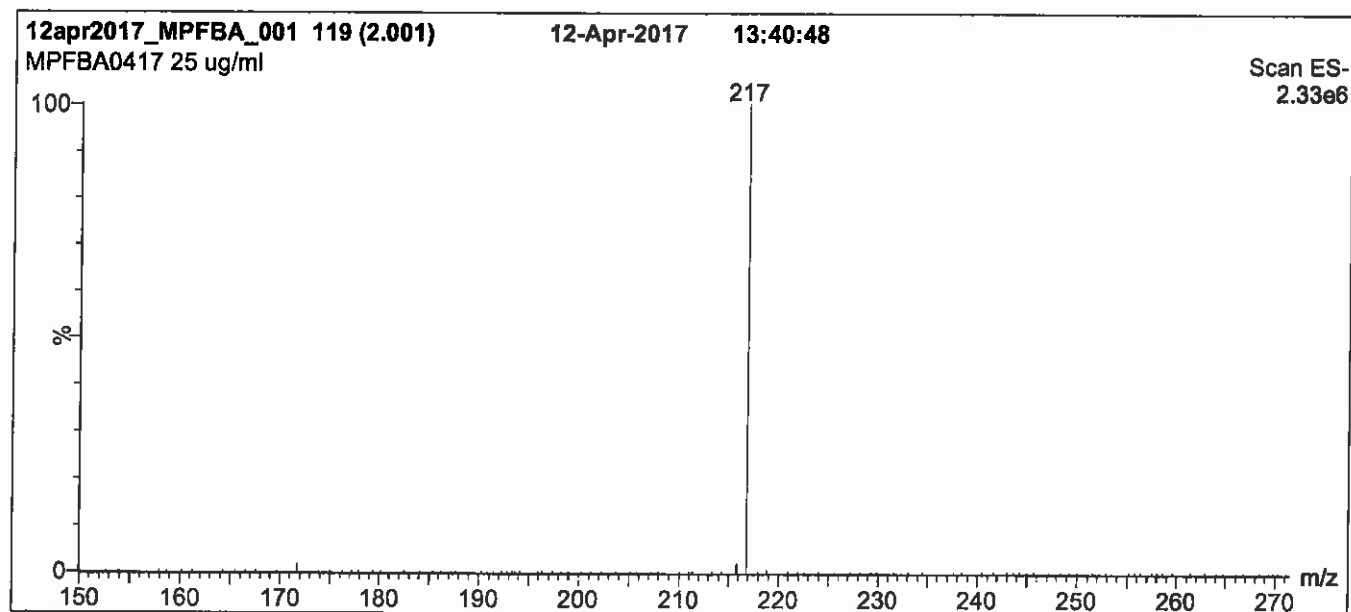
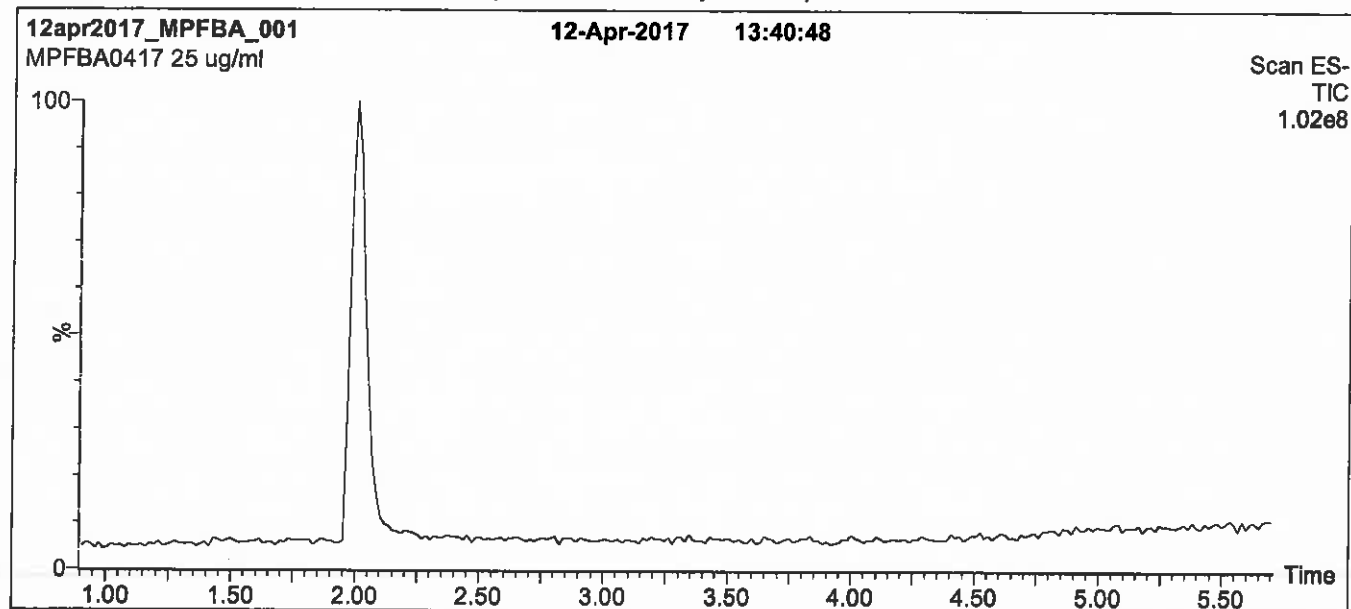
QUALITY MANAGEMENT:

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Figure 1: MPFBA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

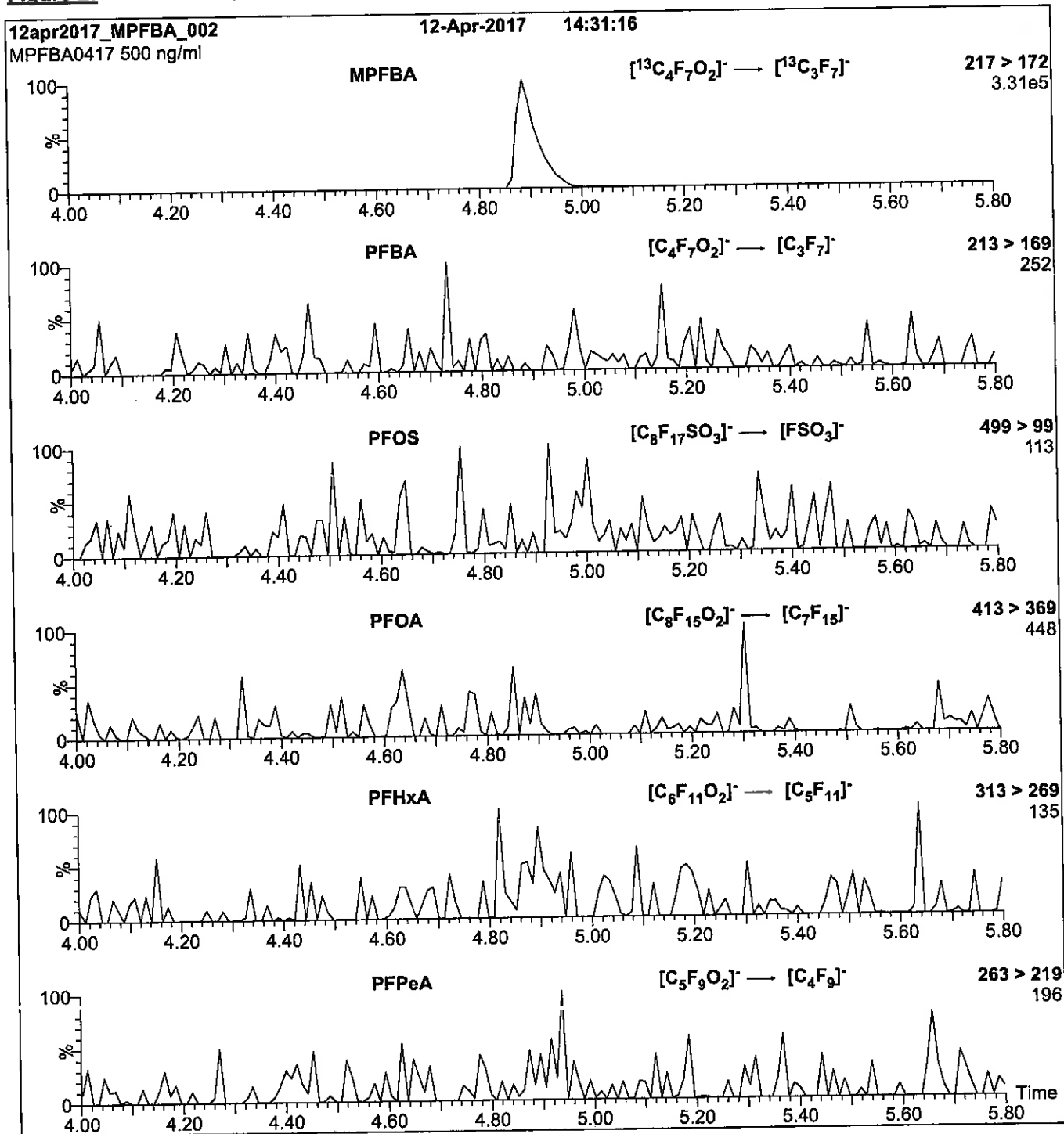
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFBA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop Injection
10 μl (500 ng/ml MPFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 10

Reagent

LCMPFBS_00006



1106130
ID: LCMFBS_00006
Exp: 05/24/22 Prod: CCL
13C3-Perfluorobutanesulfonate

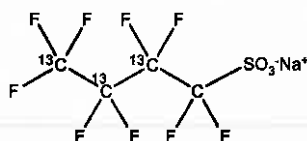
r: 12/4/17 cck



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBS **LOT NUMBER:** M3PFBS0815
COMPOUND: Sodium perfluoro-1-[2,3,4-¹³C₃]butanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₃ ¹² CF ₆ SO ₃ Na	MOLECULAR WEIGHT:	325.06
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.5 ± 2.3 µg/ml (M3PFBS anion)	SOLVENT(S):	Methanol
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C (2,3,4- ¹³ C ₃)
LAST TESTED: (mm/dd/yyyy)	05/24/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

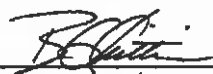
DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 05/25/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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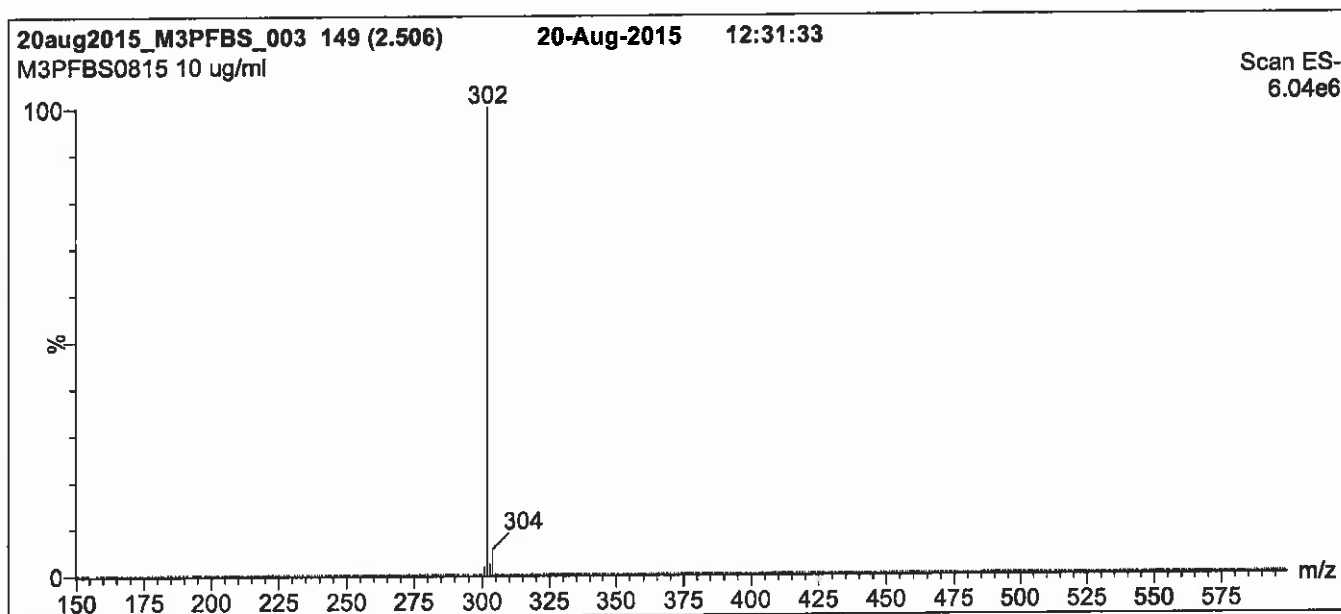
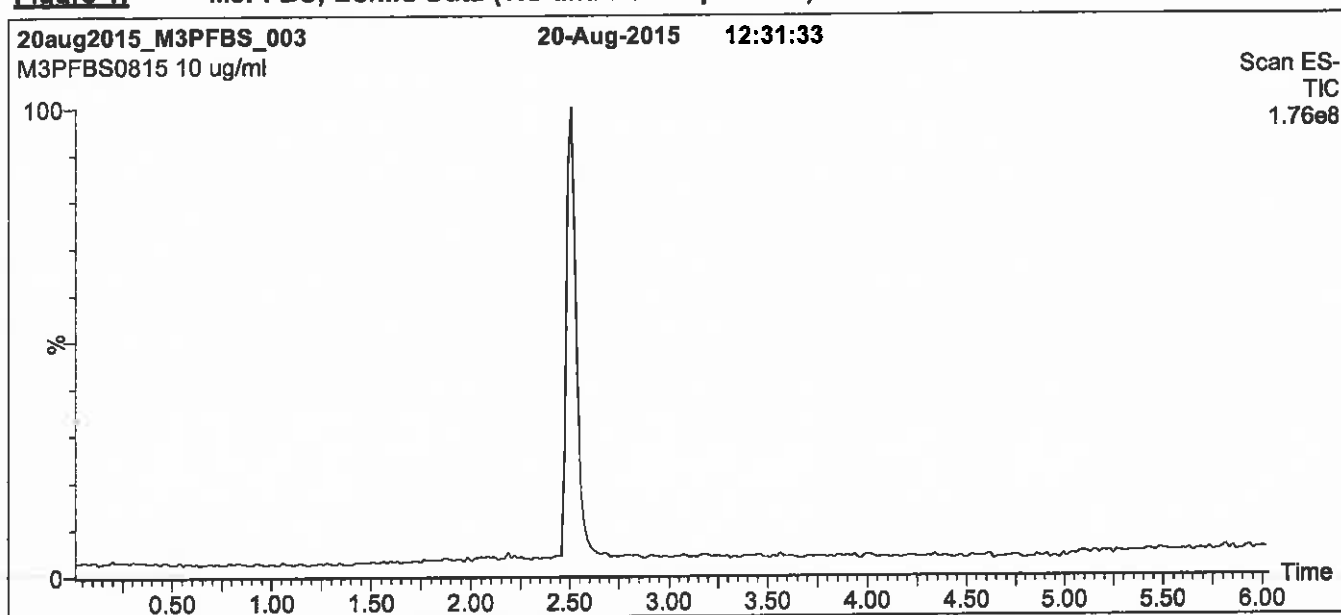
QUALITY MANAGEMENT:

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Figure 1: M3PFBS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

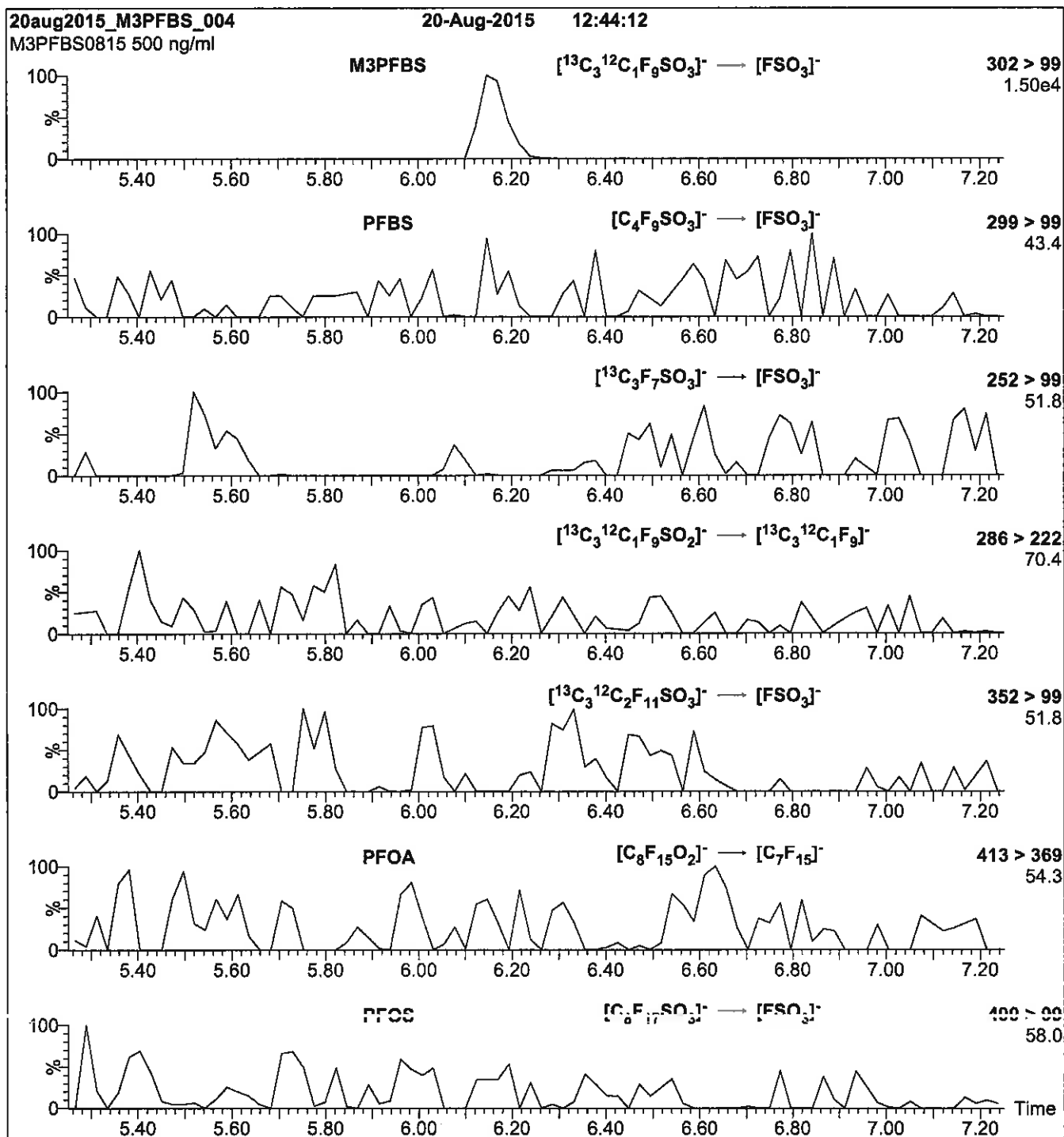
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: M3PFBS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml M3PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 25

Reagent

LCMPFDA_00018



1106159

ID: LCMPPFDA_00018

Exp: 07/13/22 Prod: CCL

13C2-Perfluorodecanoic a

7/12/4/17 cca



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

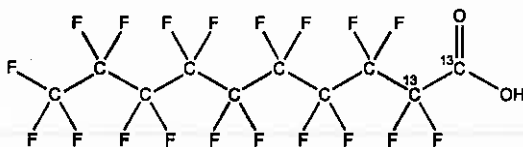
MPFDA

LOT NUMBER:

MPFDA0717

COMPOUND:Perfluoro-n-[1,2-¹³C₂]decanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₈HF₁₉O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

516.07

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C**LAST TESTED:** (mm/dd/yyyy)

07/13/2017

(1,2-¹³C₂)**EXPIRY DATE:** (mm/dd/yyyy)

07/13/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of ¹³C₁-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 07/14/2017

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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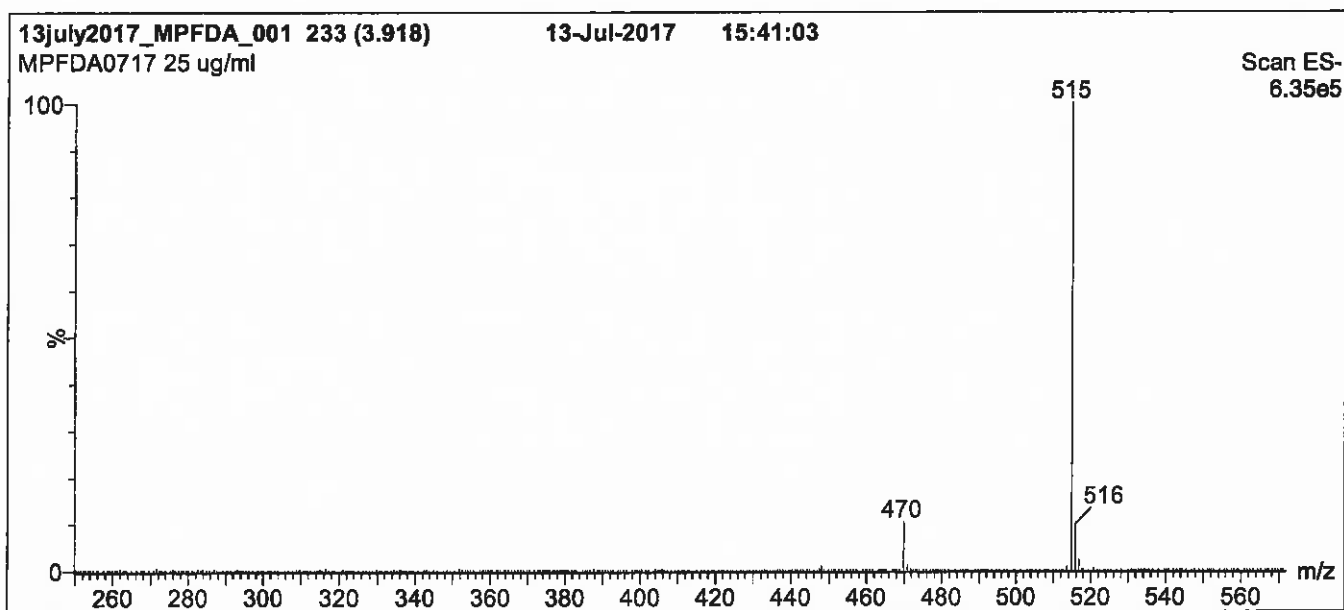
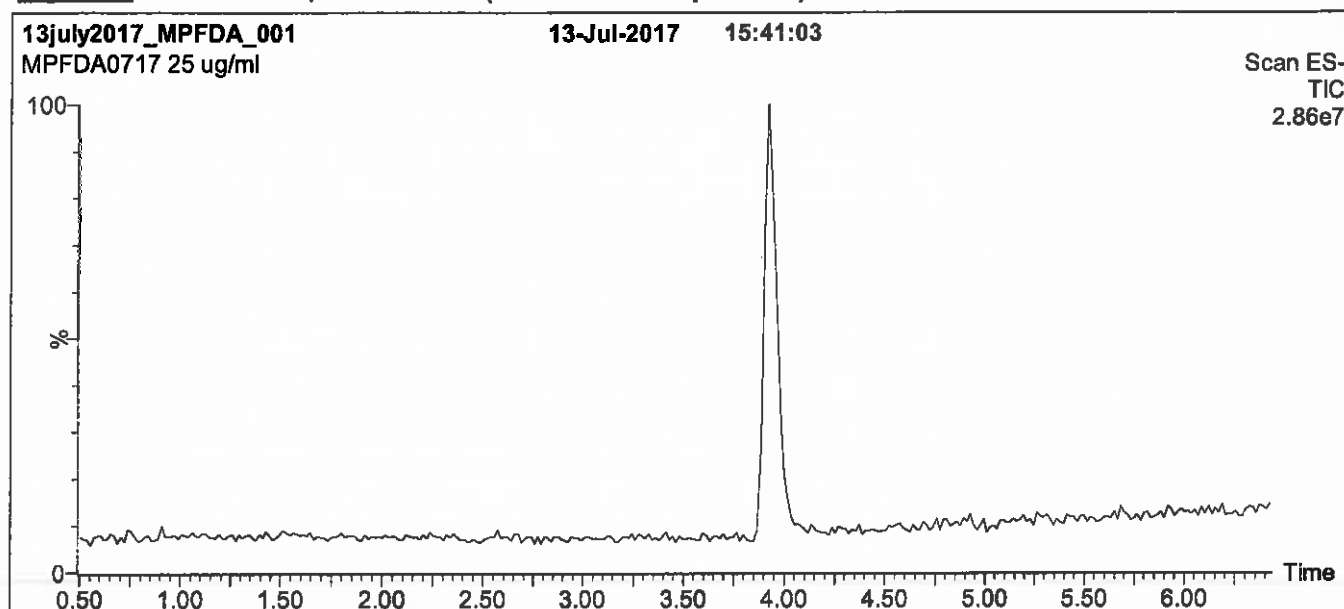
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MS: Micromass Quattro micro API MS

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1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

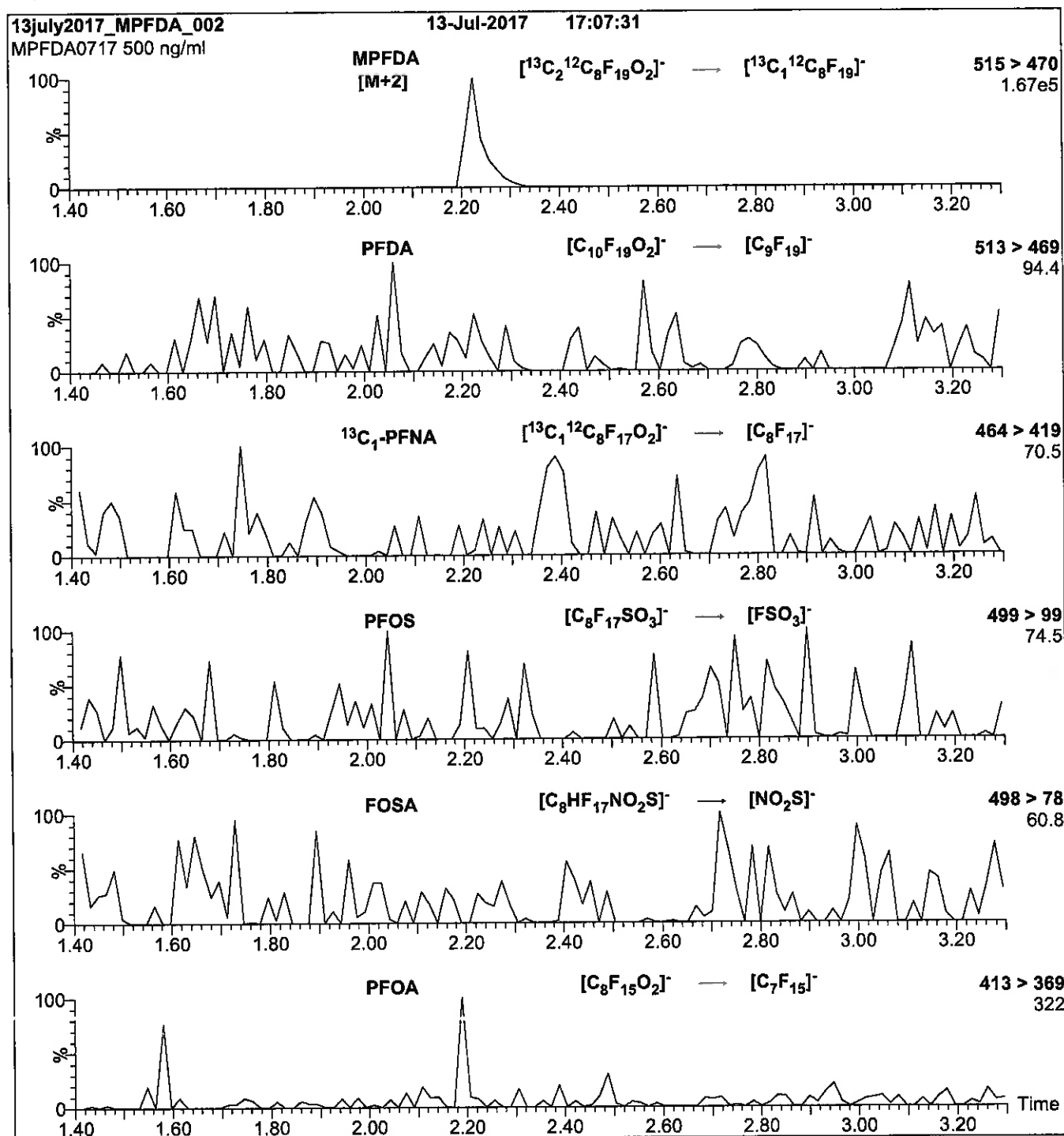
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 13

Reagent

LCMPFD_oA_00013



1106319

ID: LCMFDoA_00013

Exp: 05/23/22 Prod: CCL

13C2-Perfluorododecanoic

0: 12/4/17



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

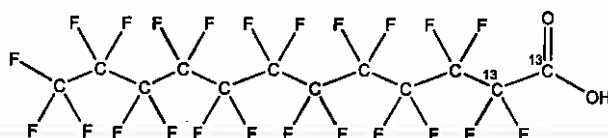
MPFDoA

LOT NUMBER:

MPFDoA0517

COMPOUND:Perfluoro-n-[1,2-¹³C₂]dodecanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₁₀HF₂₃O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

616.08

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C(1,2-¹³C₂)**LAST TESTED:** (mm/dd/yyyy)

05/23/2017

EXPIRY DATE: (mm/dd/yyyy)

05/23/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

 B.G. Chittim, General Manager

Date: 05/26/2017

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

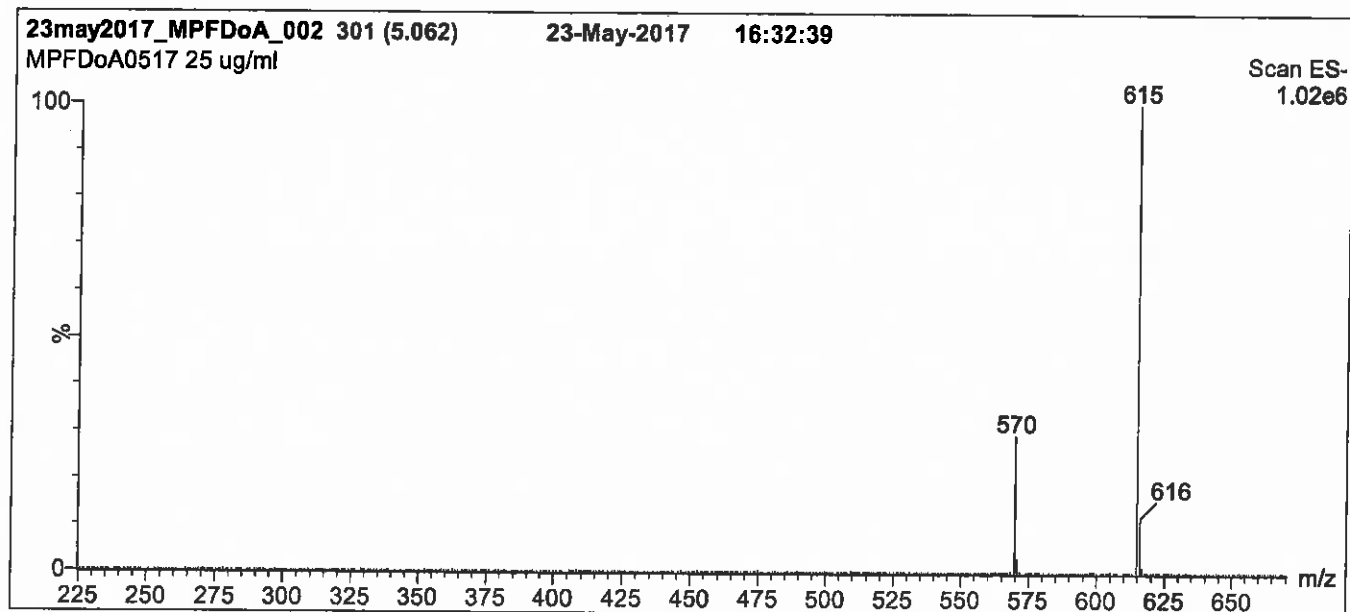
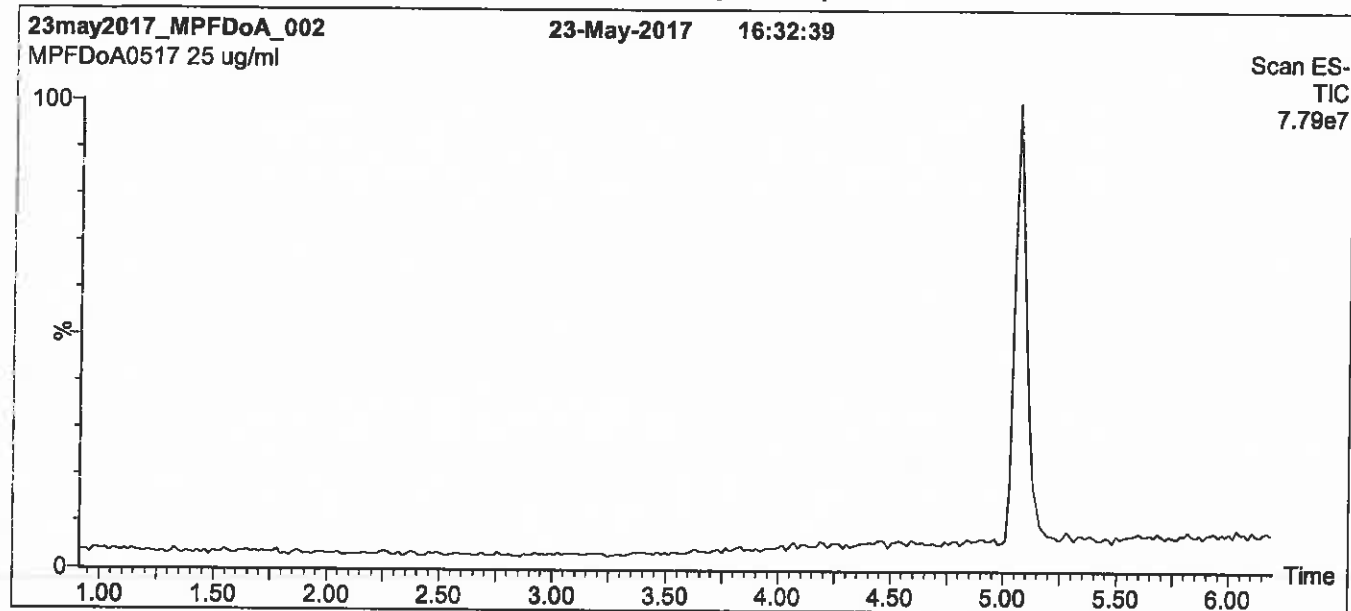
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: MPFDoA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

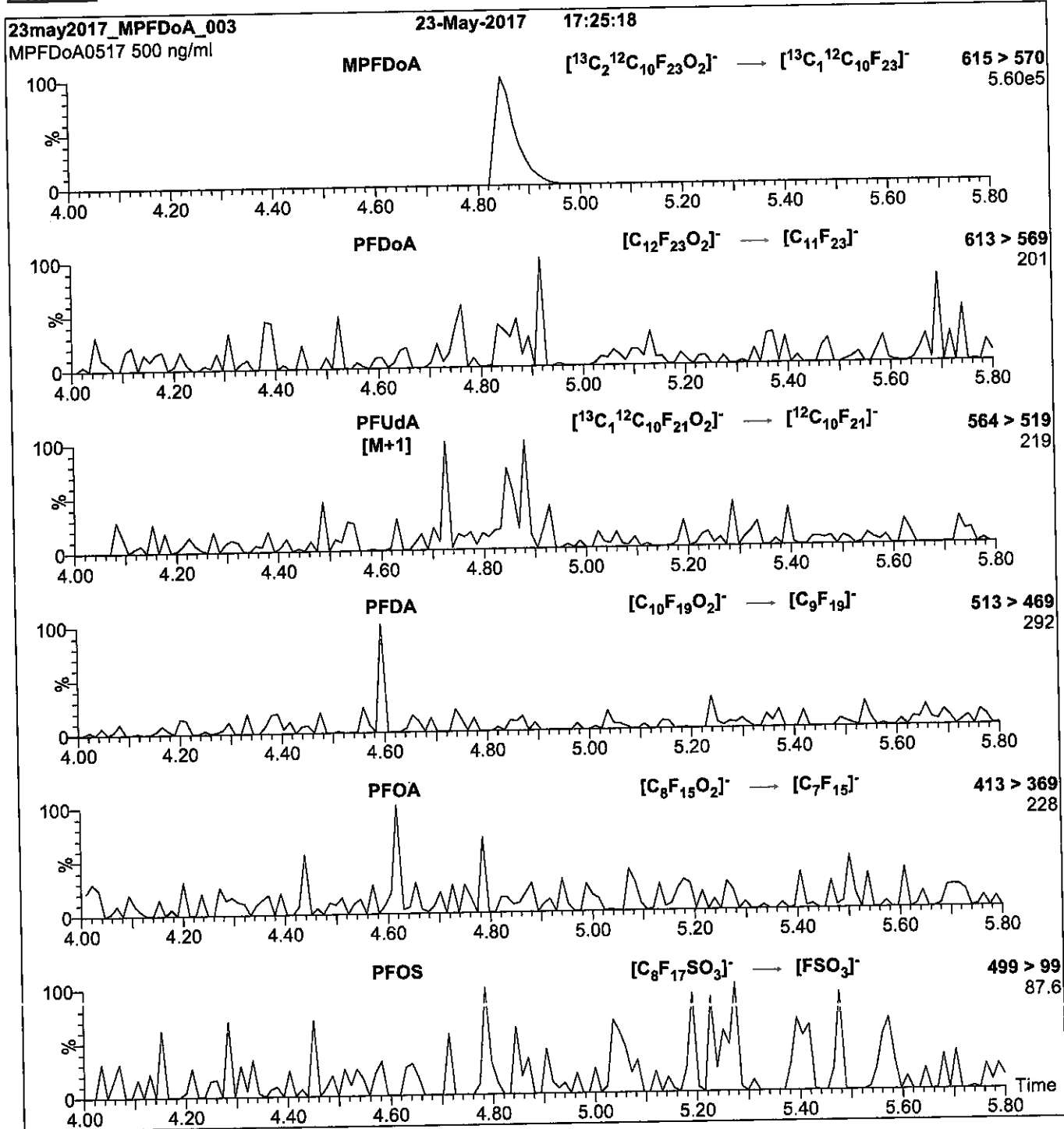
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFDoA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFDoA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00019

V: 12/14/17 CCL



WELLINGTON LABORATORIES

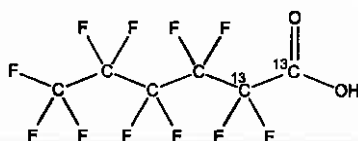
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexanoic acid

LOT NUMBER: MPFHxA1017

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₄HF₁₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 316.04
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99%¹³C
(1,2-¹³C₂)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/27/2017
EXPIRY DATE: (mm/dd/yyyy) 10/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of perfluoro-n-hexanoic acid and < 0.3% of perfluoro-n-octanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:
B.G. Chittim, General Manager

Date: 10/30/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

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Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

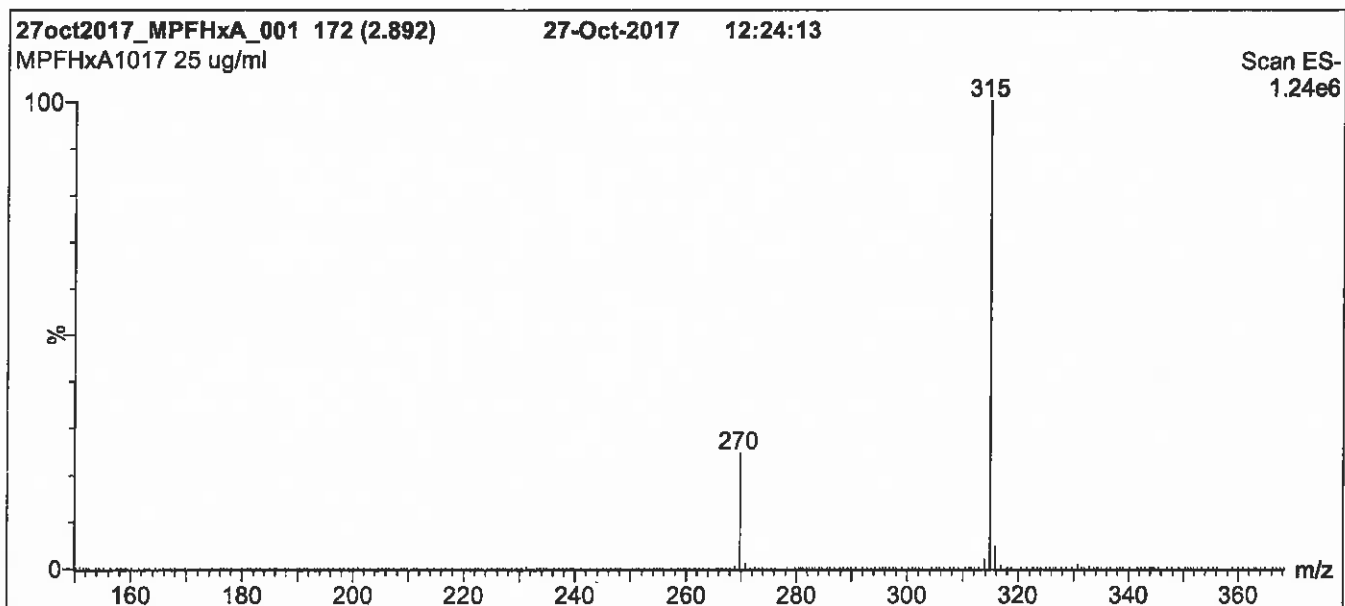
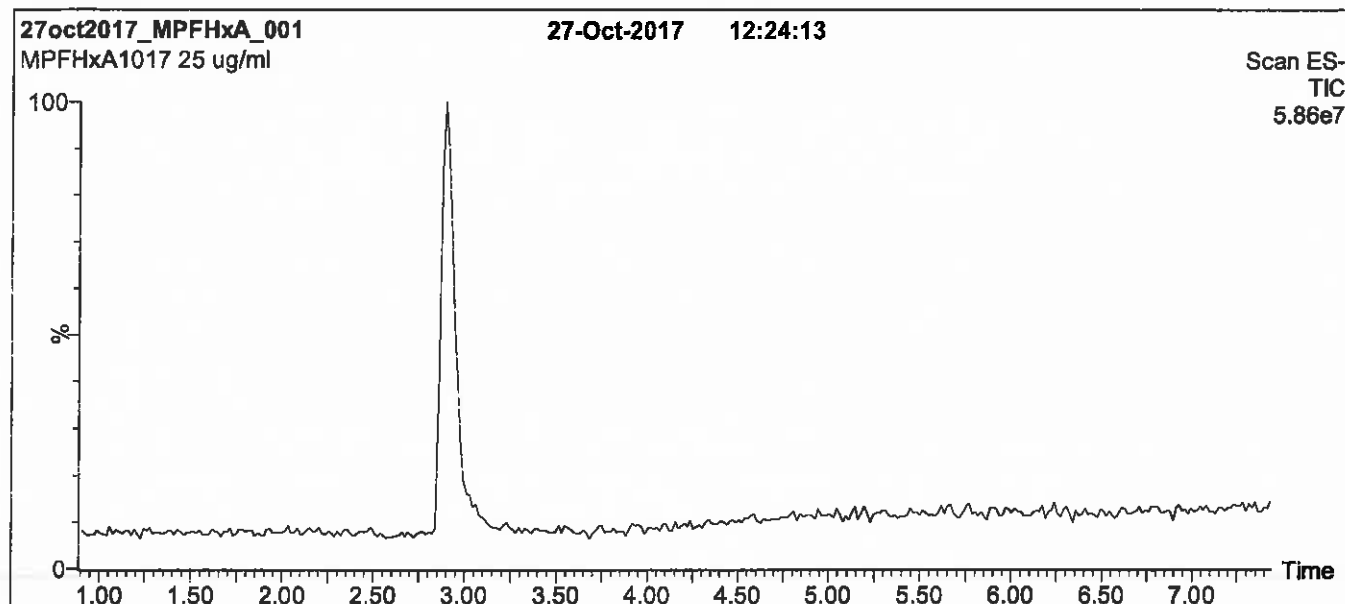
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

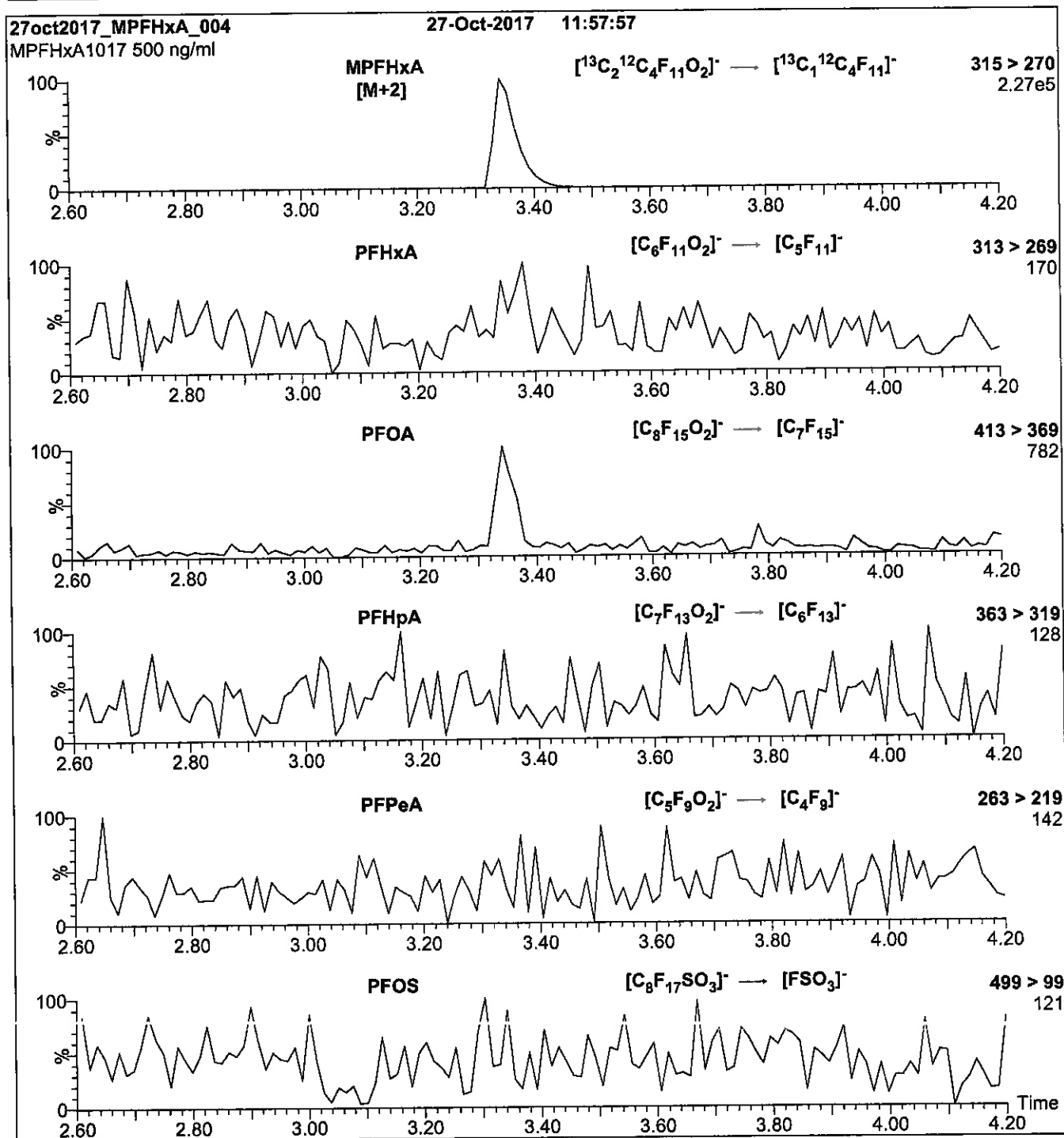
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions over 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.58e-3
Collision Energy (eV) = 10

Reagent

LCMPFHxS_00013



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFHxS

LOT NUMBER:

MPFHxS0217

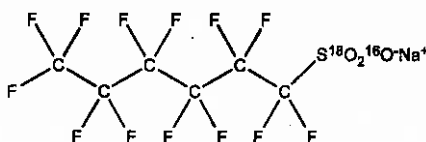
COMPOUND:

Sodium perfluoro-1-hexane[¹⁸O₂]sulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₆F₁₃S¹⁸O₂¹⁶ONa

MOLECULAR WEIGHT:

426.10

CONCENTRATION:

50.0 ± 2.5 µg/ml (Na salt)
47.3 ± 2.4 µg/ml (MPFHxS anion)

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

>94% (¹⁸O₂)

LAST TESTED: (mm/dd/yyyy)

02/17/2017

EXPIRY DATE: (mm/dd/yyyy)

02/17/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The response factor for MPFHxS (C₆F₁₃S¹⁸O₂¹⁶O⁻) has been observed to be up to 10% lower than for PFHxS (C₆F₁₃S¹⁶O₃⁻) when both compounds are injected together. This difference may vary between instruments.
- Contains ~ 1.0% of sodium perfluoro-1-octane[¹⁸O₂]sulfonate (¹⁸O₂-PFOS).
Due to the isotopic purity of the starting material (¹⁸O₂ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/02/2017

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

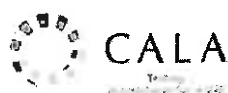
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

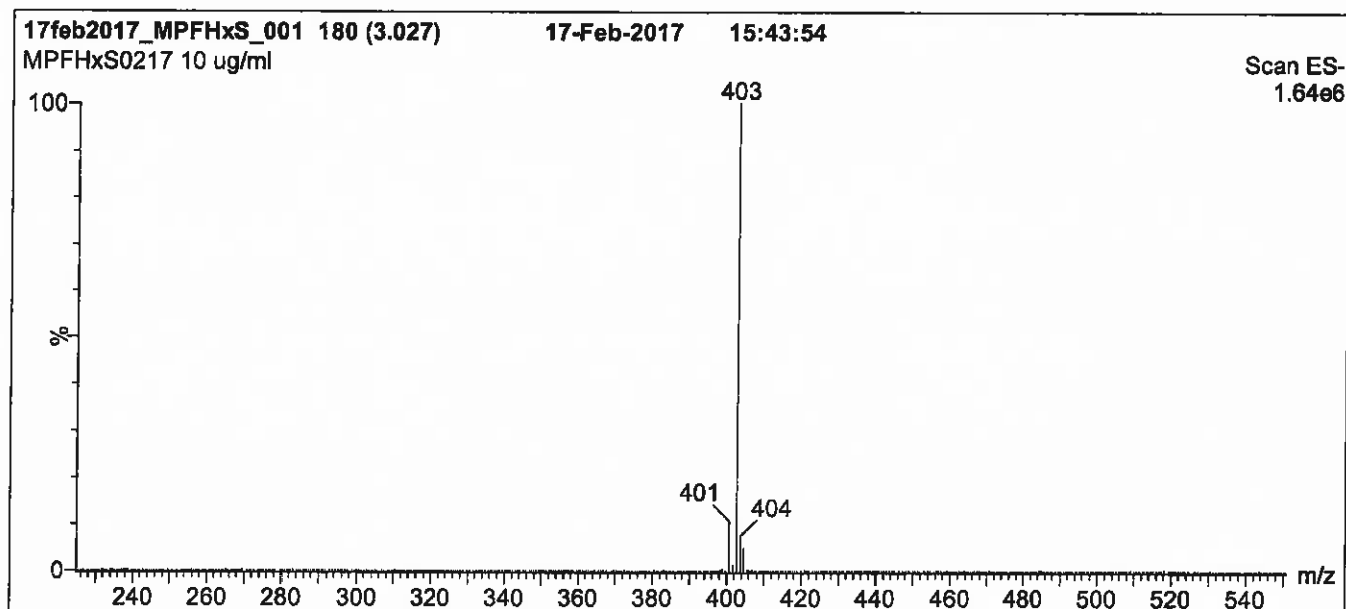
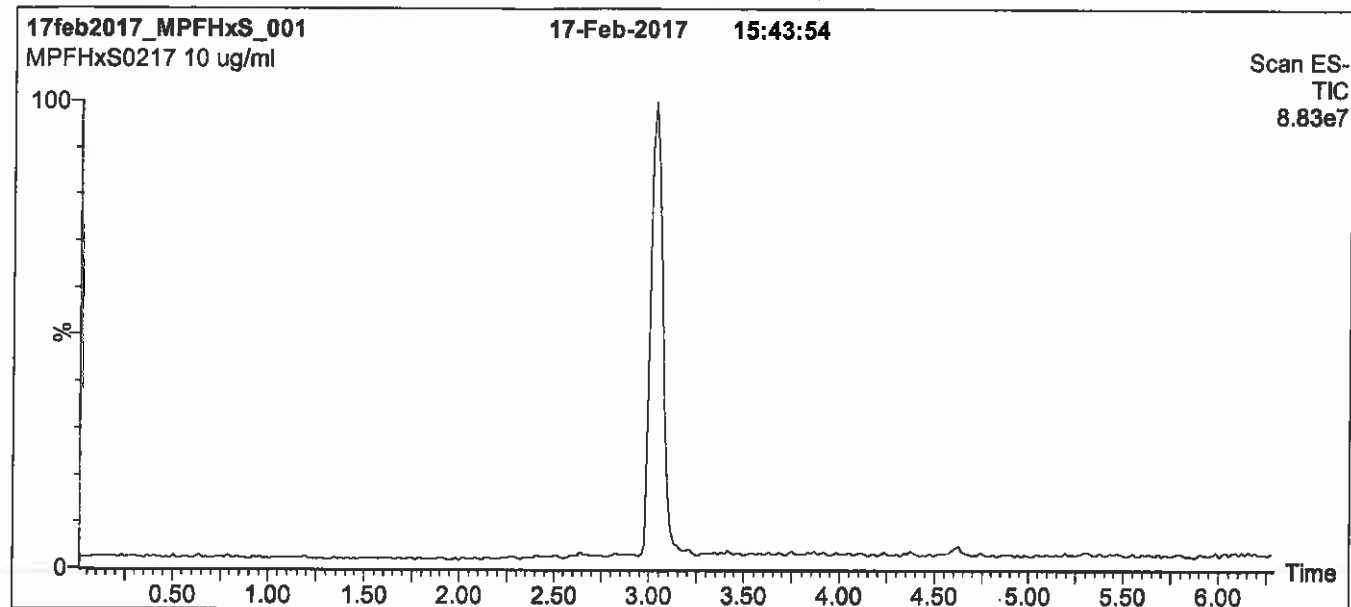
QUALITY MANAGEMENT:

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Figure 1: MPFHxS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

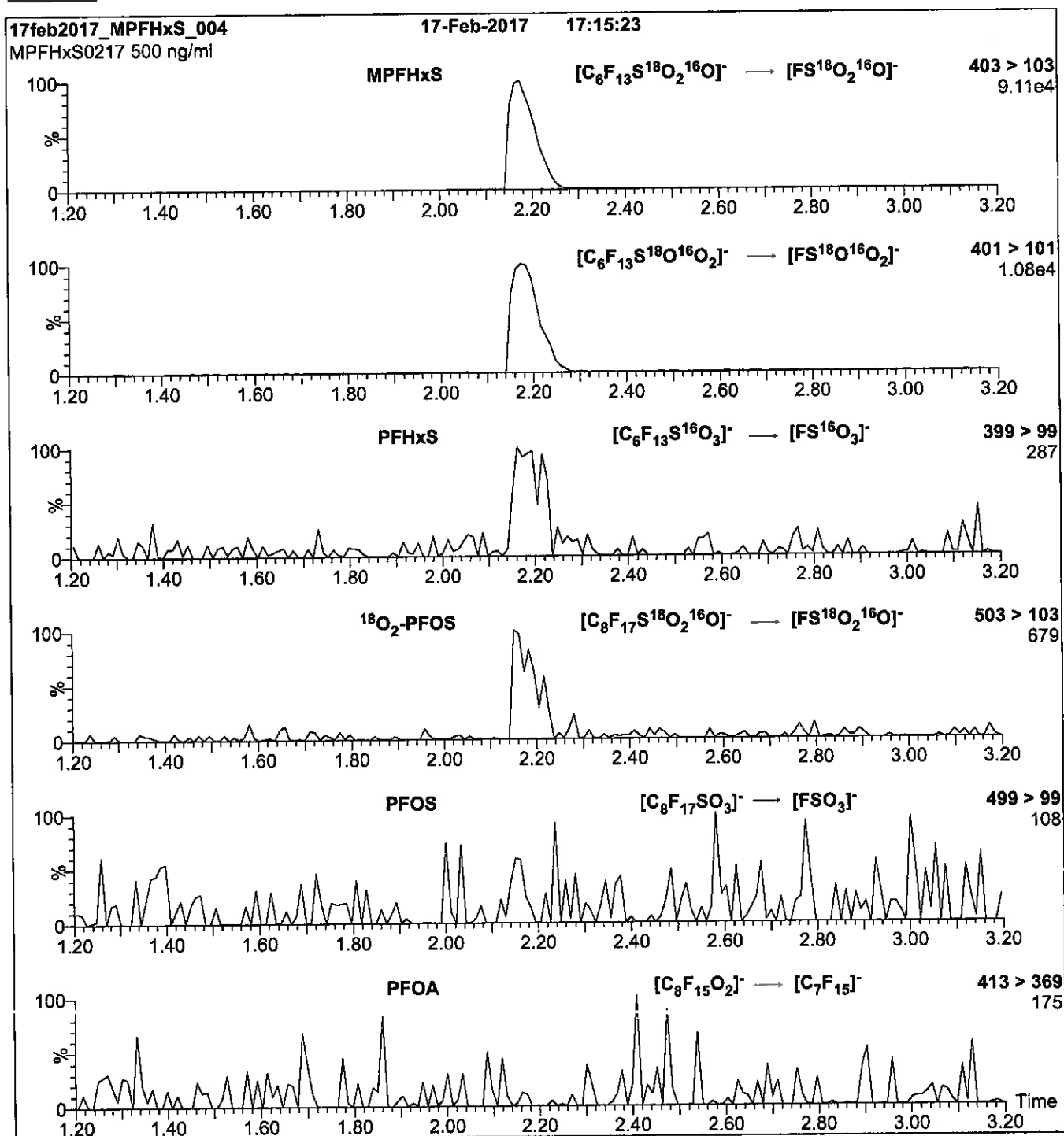
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFHxS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml MPFHxS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 30

Reagent

LCMPFNA_00013



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFNA

LOT NUMBER:

MPFNA0916

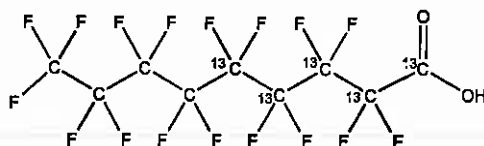
COMPOUND:

Perfluoro-n-[1,2,3,4,5-¹³C₅]nonanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₅¹²C₄HF₁₇O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

469.04

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99%¹³C

LAST TESTED: (mm/dd/yyyy)

09/30/2016

(1,2,3,4,5-¹³C₅)

EXPIRY DATE: (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/11/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

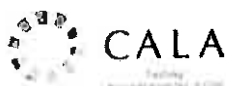
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

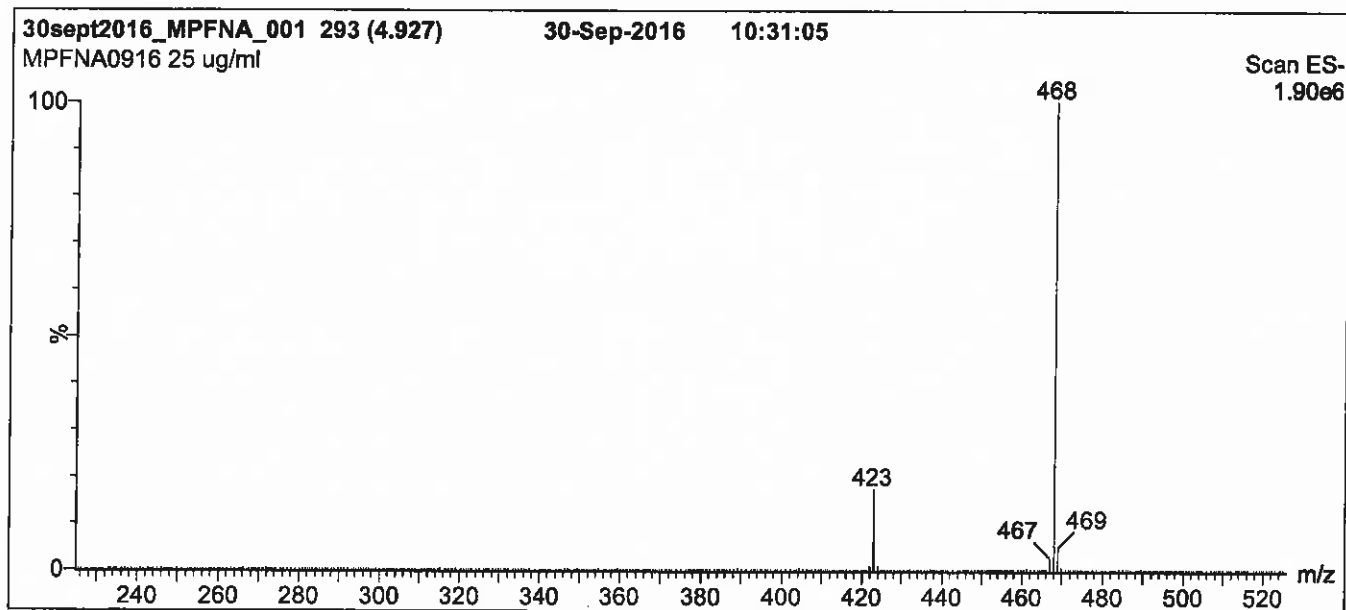
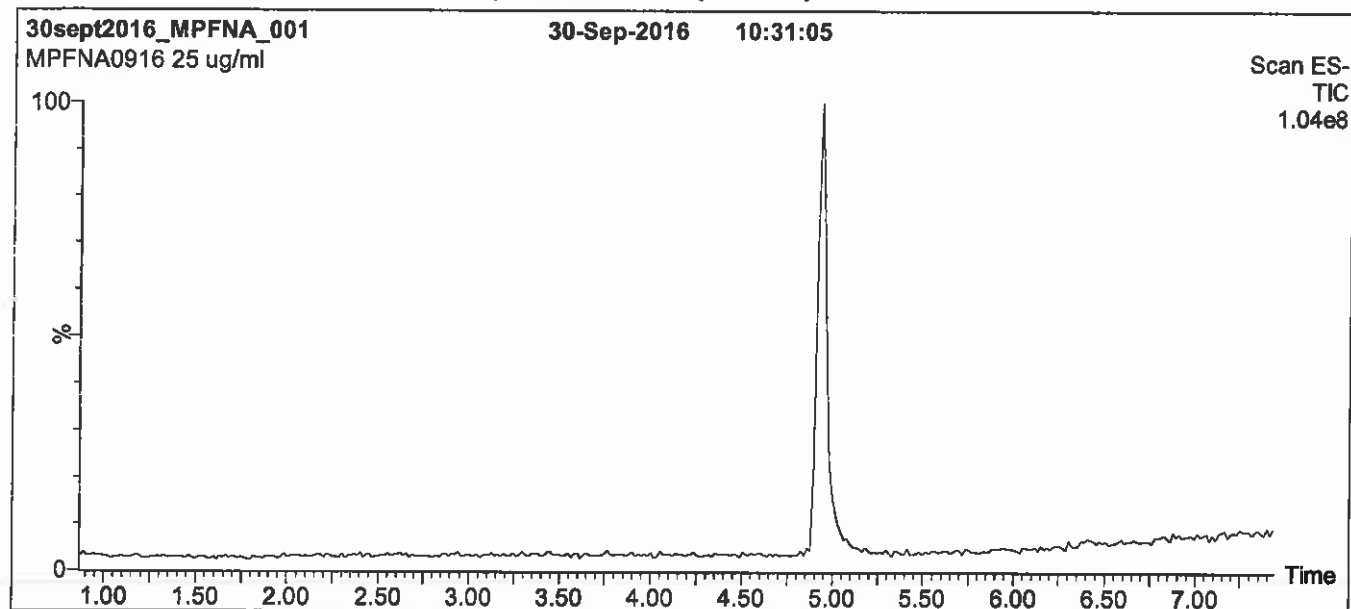
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: MPFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

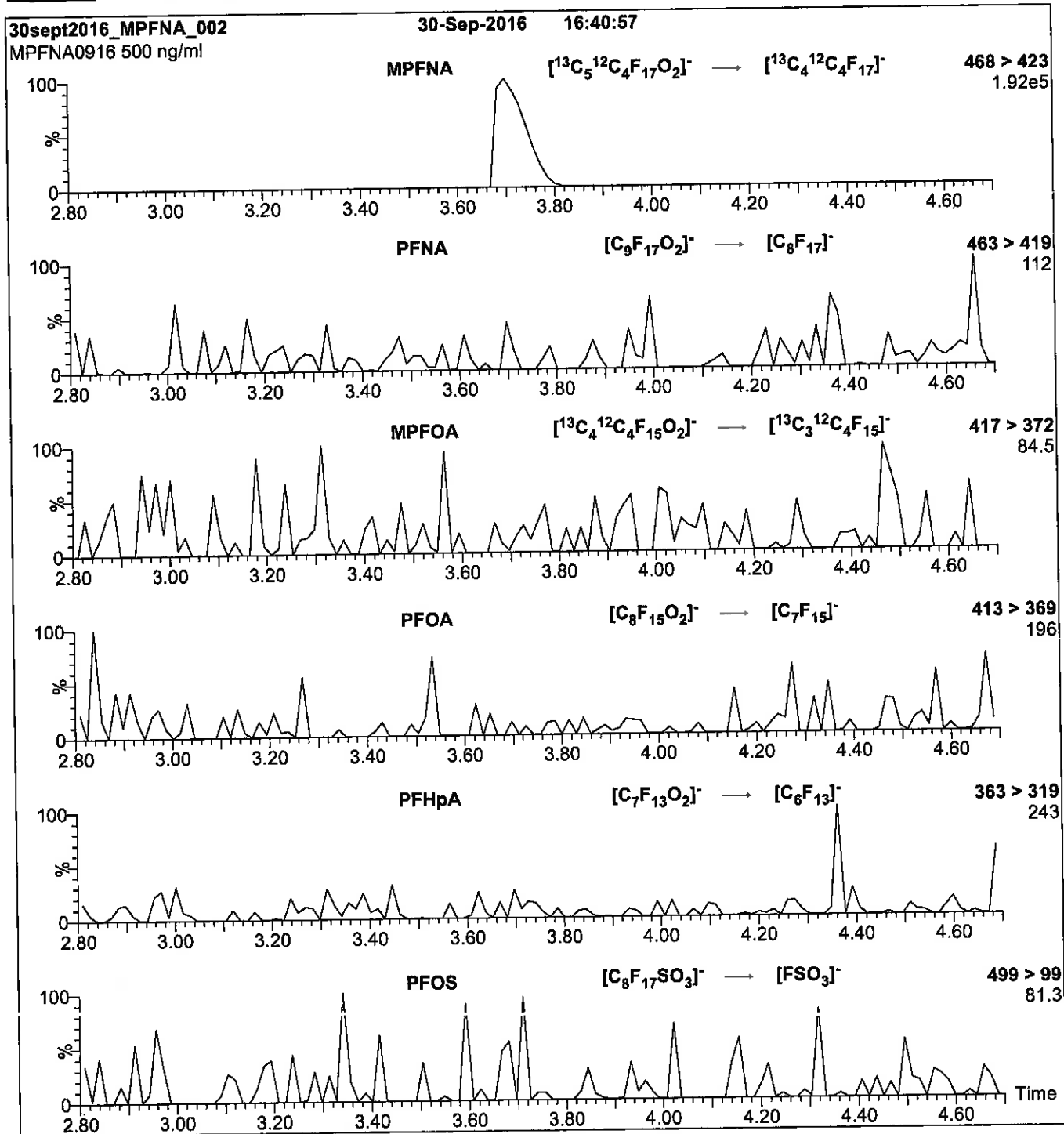
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFNA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00017

r: 12/4/17 cce



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFOA

LOT NUMBER:

MPFOA1017

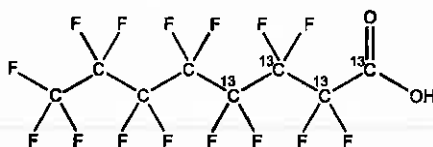
COMPOUND:

Perfluoro-n-[1,2,3,4-¹³C₄]octanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₄¹²C₄HF₁₆O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

418.04

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

10/17/2017

(1,2,3,4-¹³C₄)

EXPIRY DATE: (mm/dd/yyyy)

10/17/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 10/19/2017

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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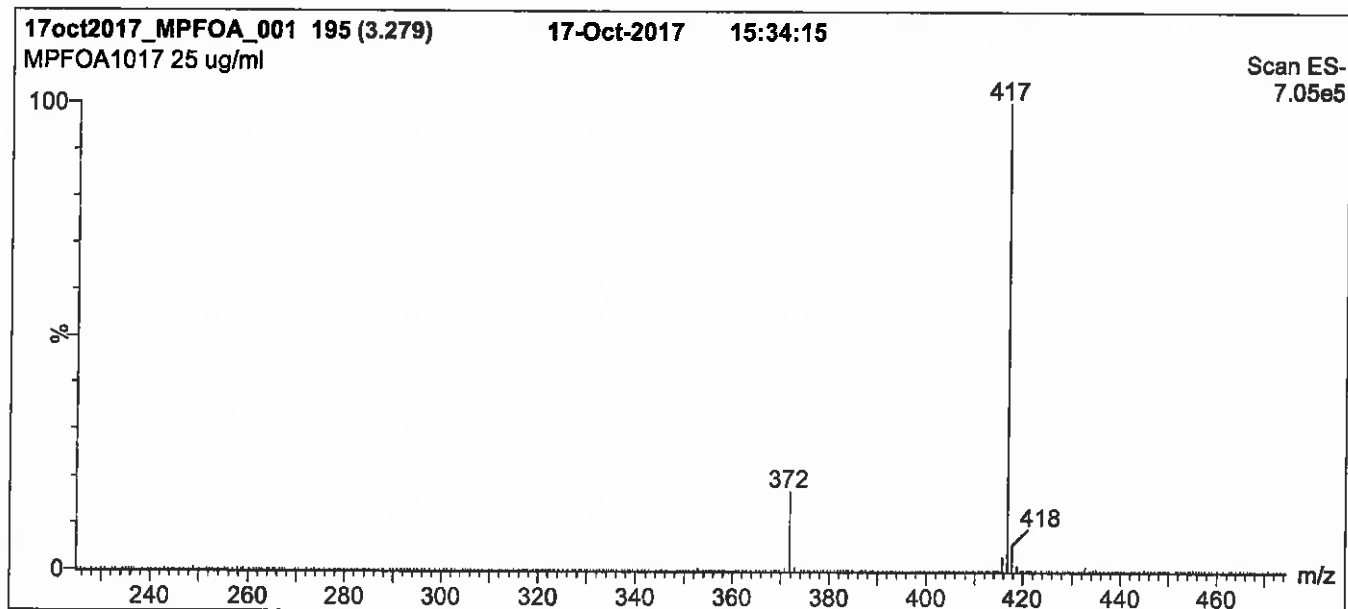
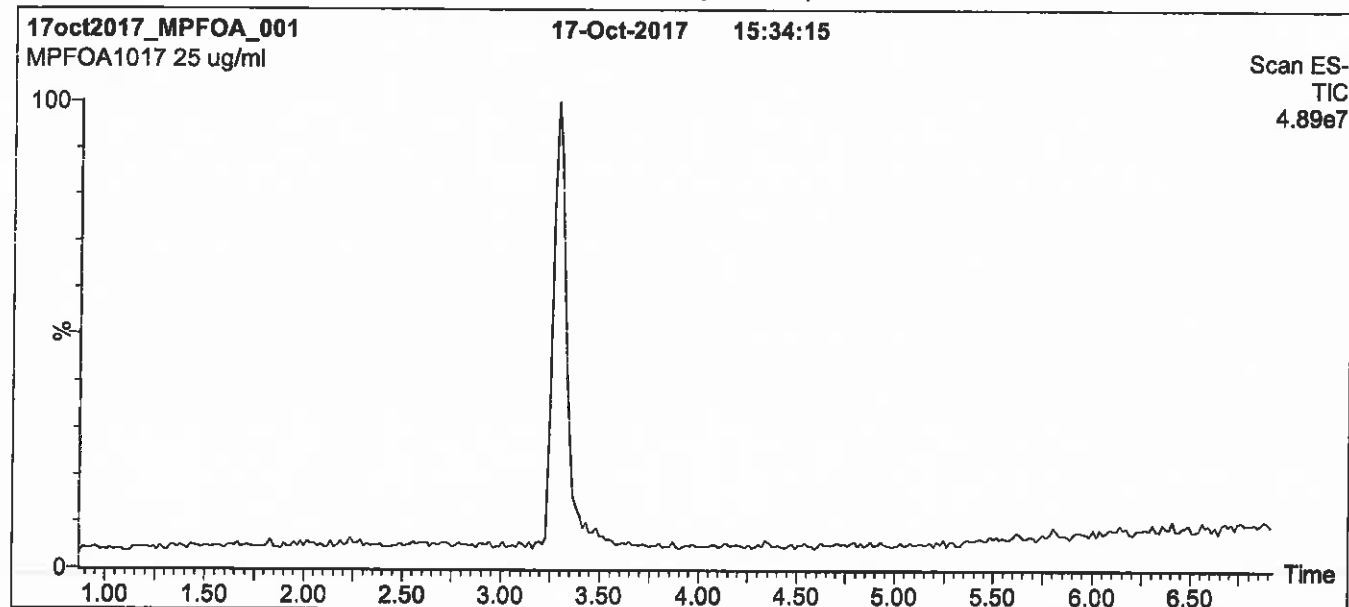
QUALITY MANAGEMENT:

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Figure 1: MPFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

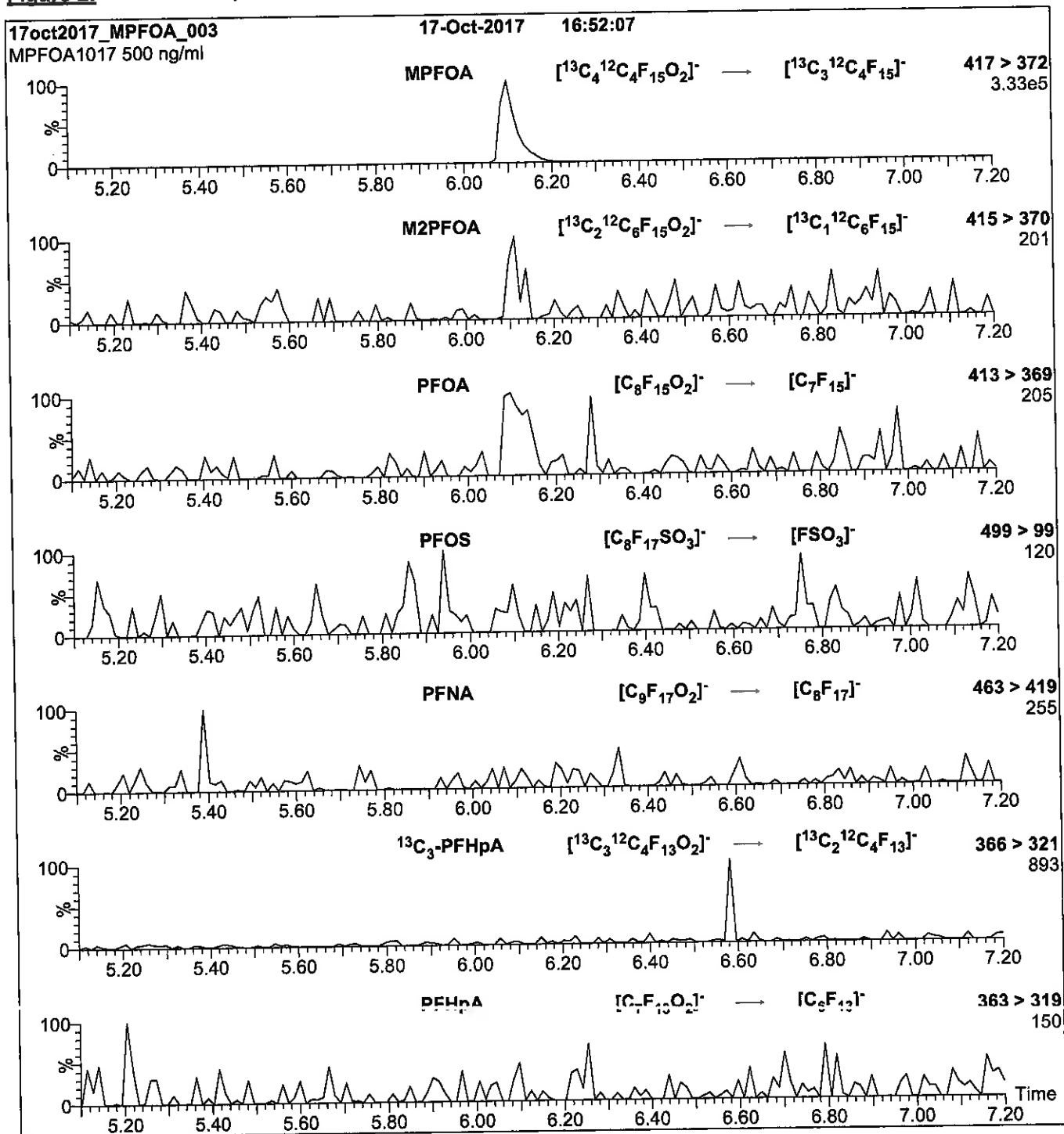
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCMPFOS_00025



1106029

ID: LCMFOS_00025

Exp: 10/17/22 Ppdt: SKV

13C4-Perfluorooctanesulfo

r: 12/17 CCL



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

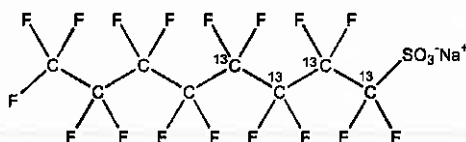
MPFOS

LOT NUMBER:

MPFOS1017

COMPOUND:Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₄¹²C₄F₁₇SO₃Na**CONCENTRATION:**

50.0 ± 2.5 µg/ml (Na salt)

47.8 ± 2.4 µg/ml (MPFOS anion)

MOLECULAR WEIGHT:

526.08

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C**LAST TESTED:** (mm/dd/yyyy)

10/17/2017

(1,2,3,4-¹³C₄)**EXPIRY DATE:** (mm/dd/yyyy)

10/17/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.4% Sodium perfluoro-1-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

 B.G. Chittim, General Manager

Date: 10/18/2017

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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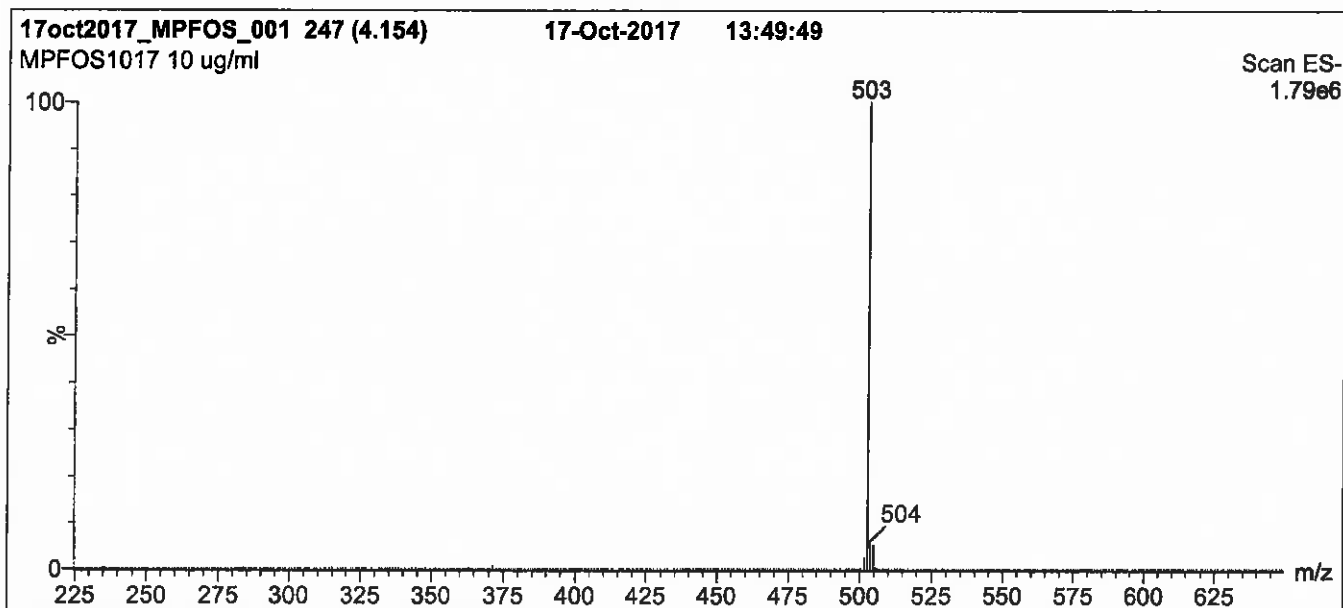
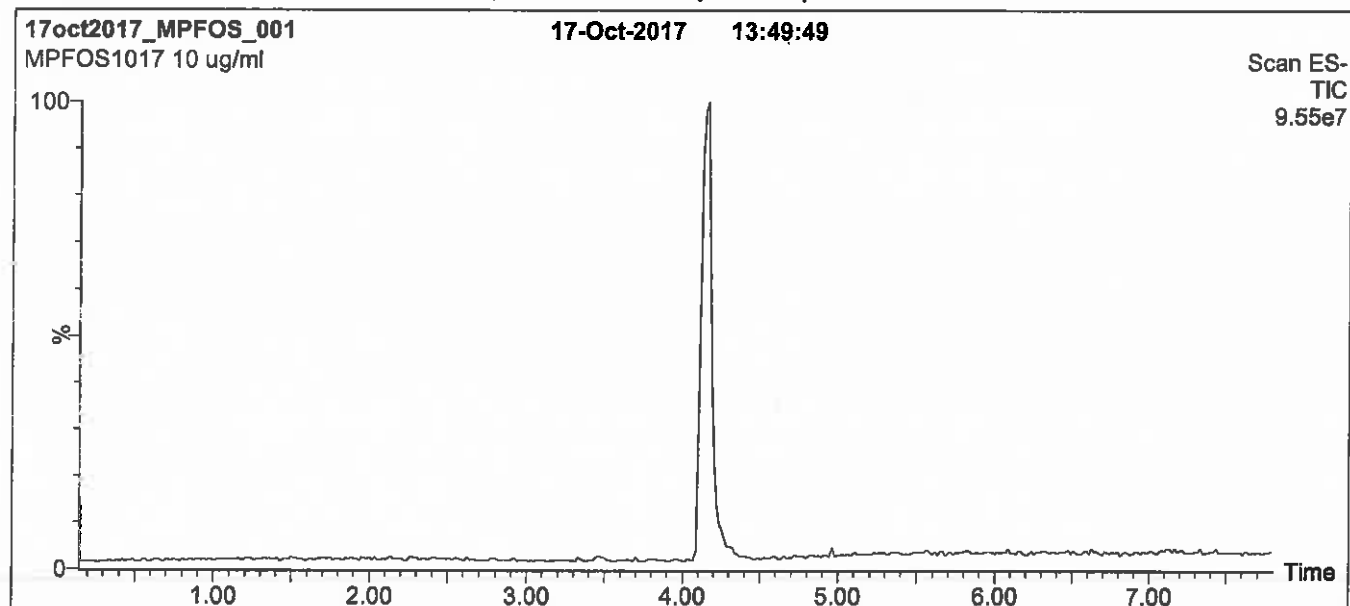
QUALITY MANAGEMENT:

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Figure 1: MPFOS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

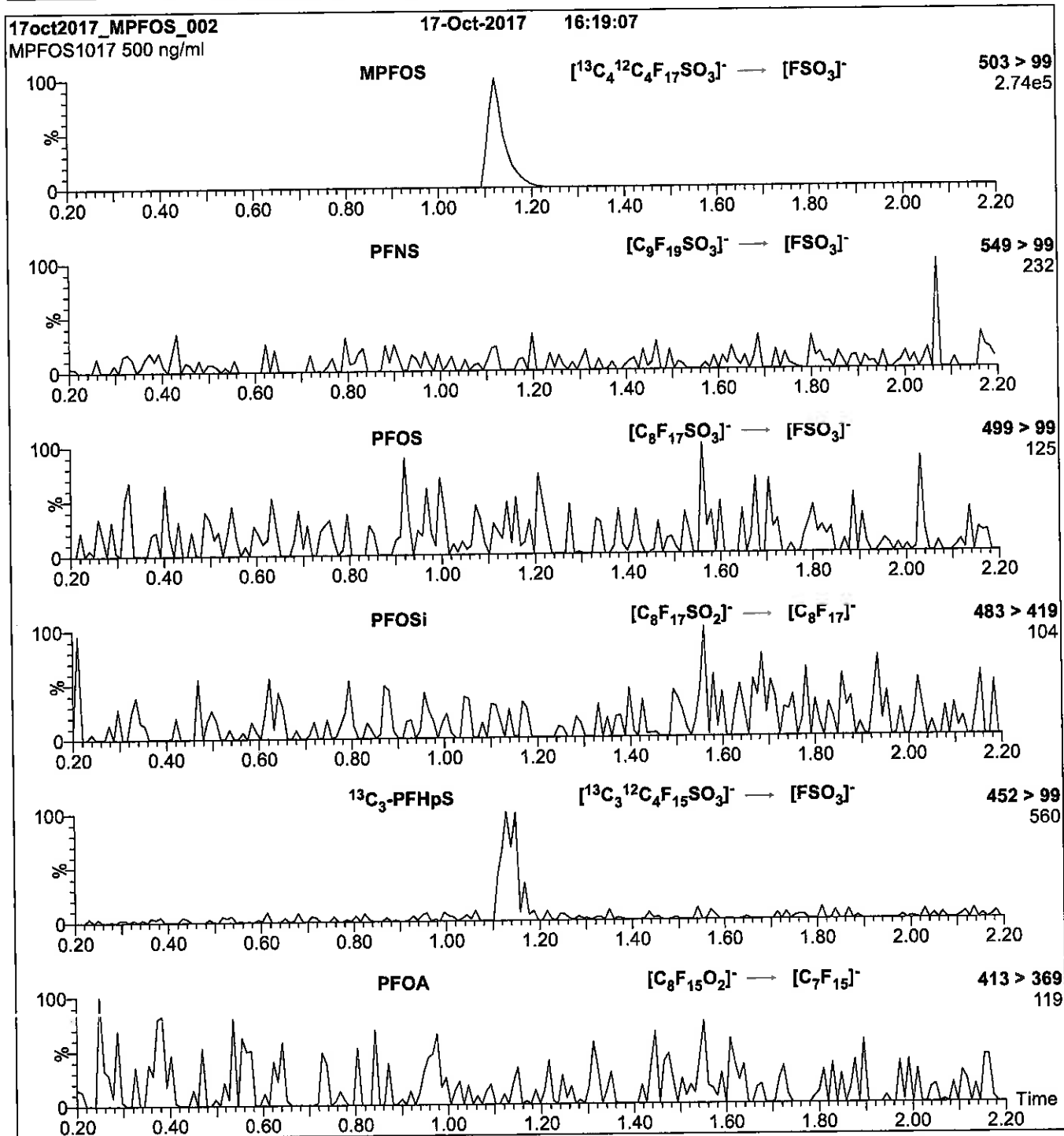
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFOS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop Injection
10 μl (500 ng/ml MPFOS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 40

Reagent

LCMPFUdA_00014



1106187

ID: LCMPFUDa_00014

Exp: 11/22/21 Prod: CCL

13C2-Perfluoroundecanoic

R: 12/4/17 CCL



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

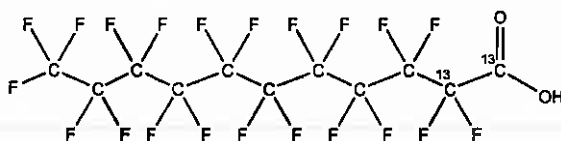
MPFUdA

LOT NUMBER:

MPFUdA1116

COMPOUND:Perfluoro-n-[1,2-¹³C₂]undecanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₉HF₂₁O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

566.08

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99% ¹³C**LAST TESTED:** (mm/dd/yyyy)

11/22/2016

EXPIRY DATE: (mm/dd/yyyy)

11/22/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

(1,2-¹³C₂)**DOCUMENTATION/ DATA ATTACHED:**

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-¹³C₁-PFUdA (~1%; see Figure 2), 2-¹³C₁-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ¹³C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/07/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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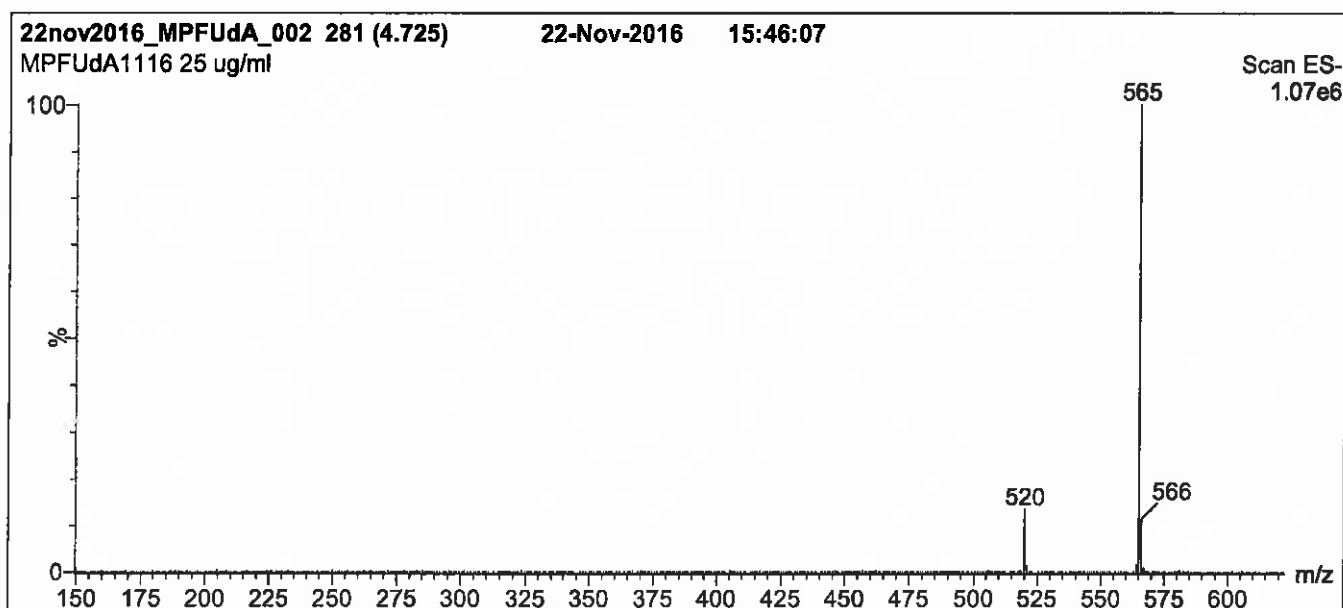
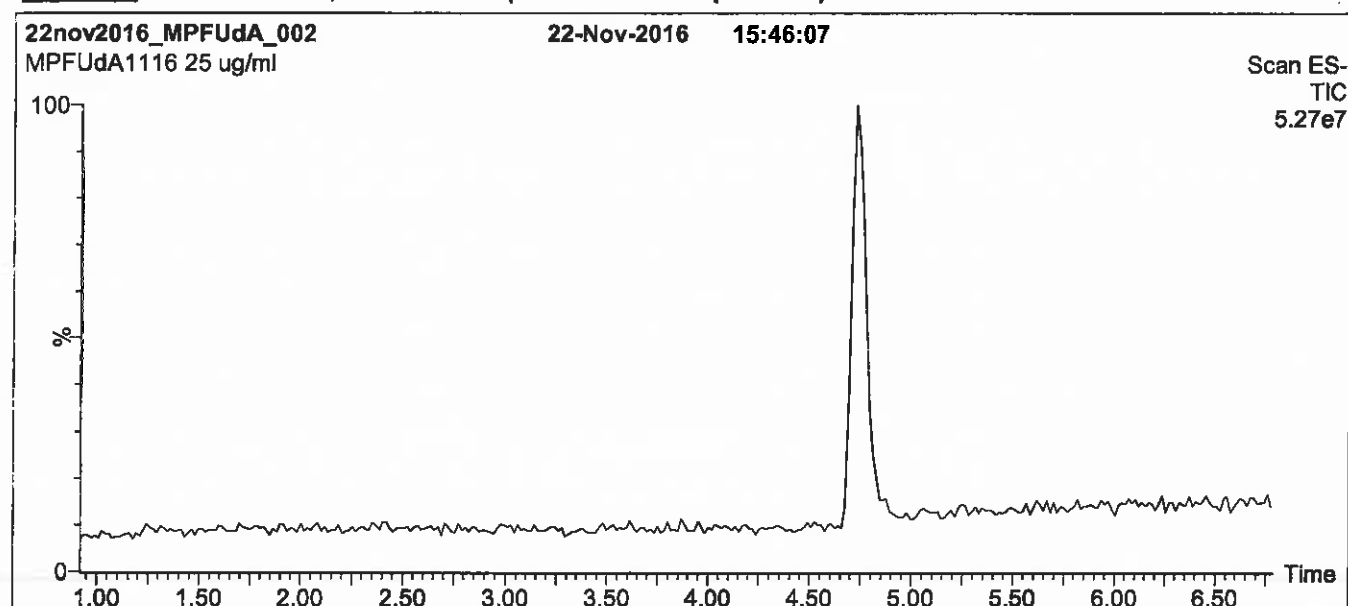
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MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

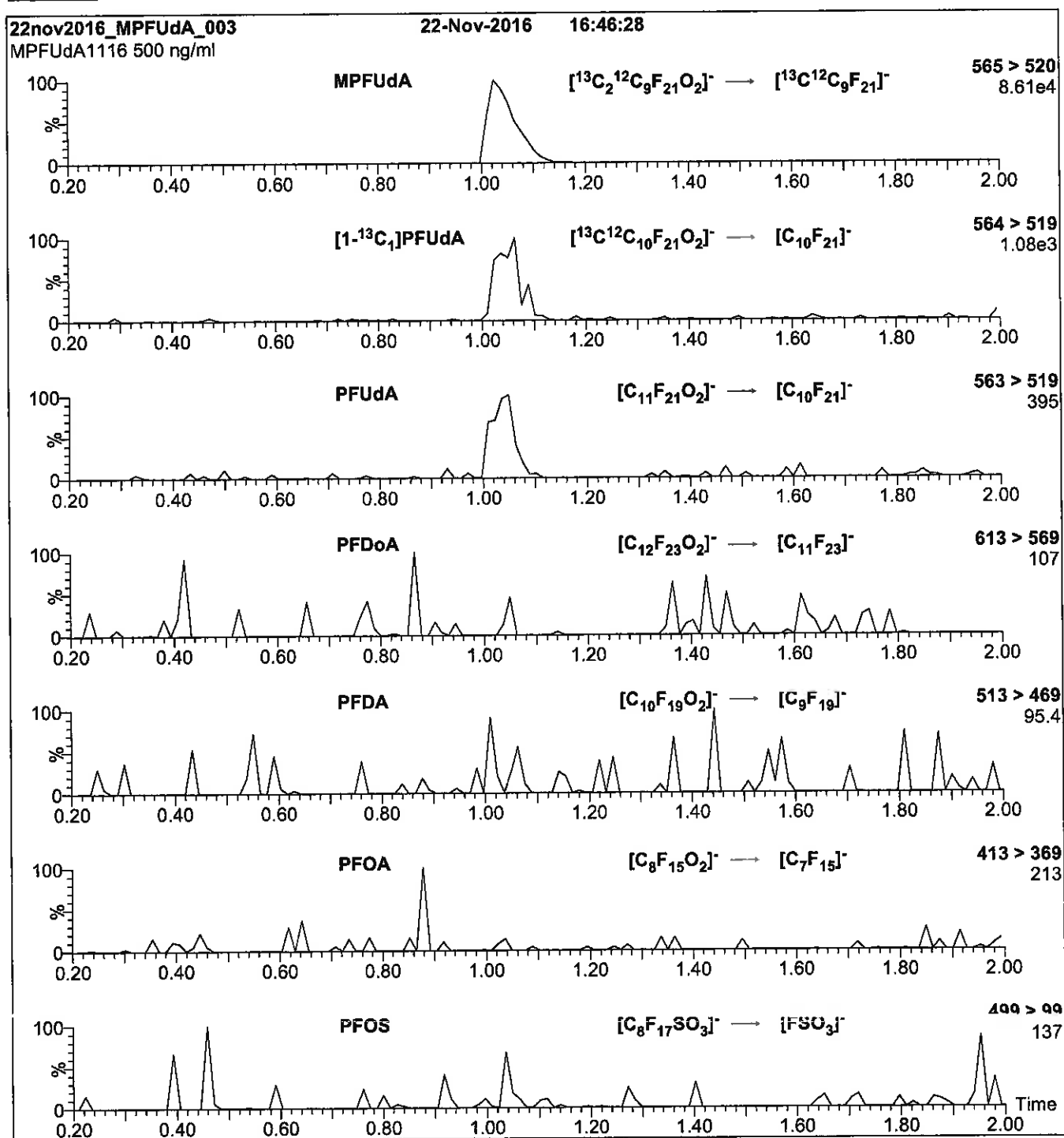
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

Figure 2: MPFUDa; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μl (500 ng/ml MPFUDa)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Reagent

LCN-EtFOSA-M_00005

R: 12/29/16 SKV



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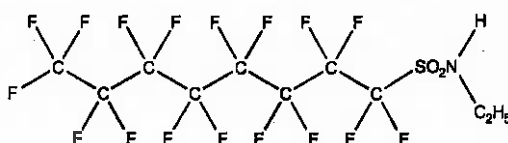
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide

LOT NUMBER: NEtFOSA0516M

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA: $C_{10}H_{18}F_{17}NO_2S$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/24/2016
EXPIRY DATE: (mm/dd/yyyy) 05/24/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 527.20
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/27/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

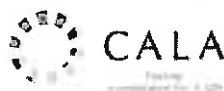
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

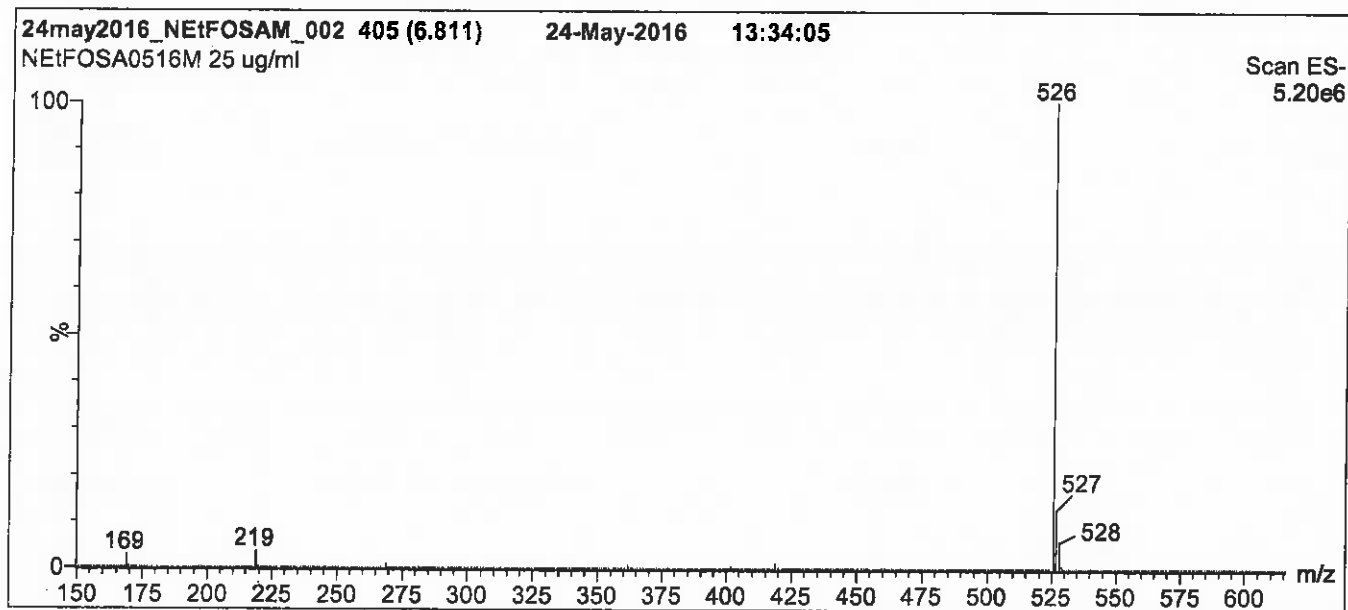
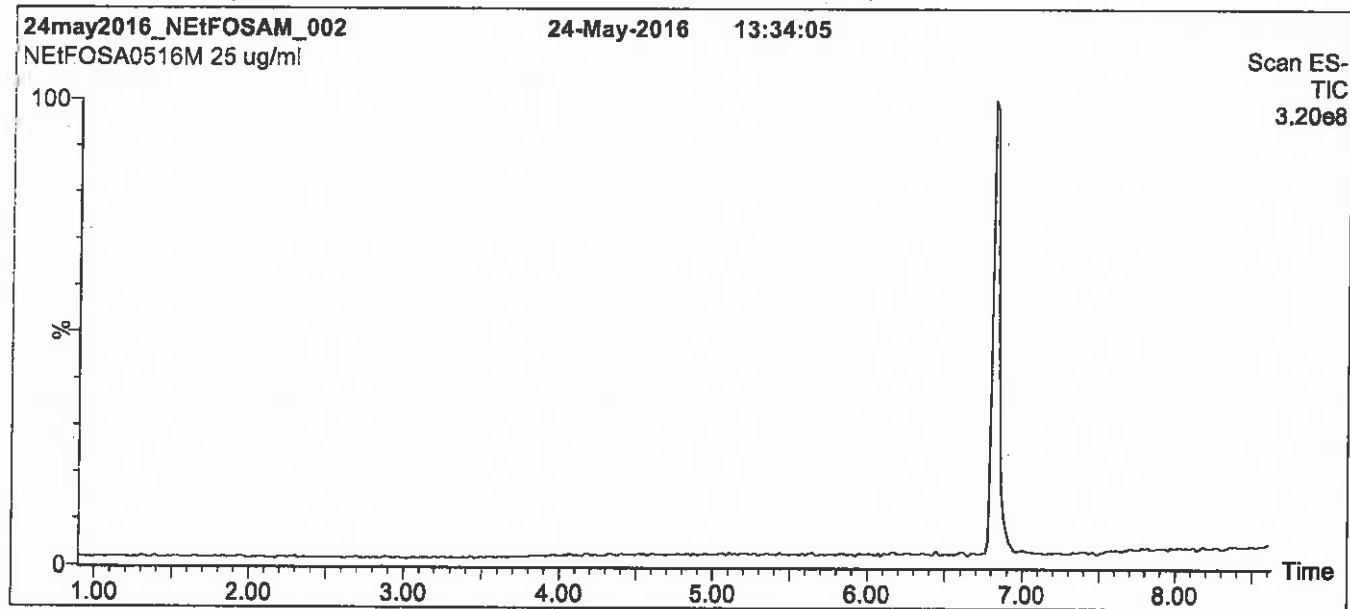
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5
min before returning to initial conditions in 0.5 min.
Time: 10 min

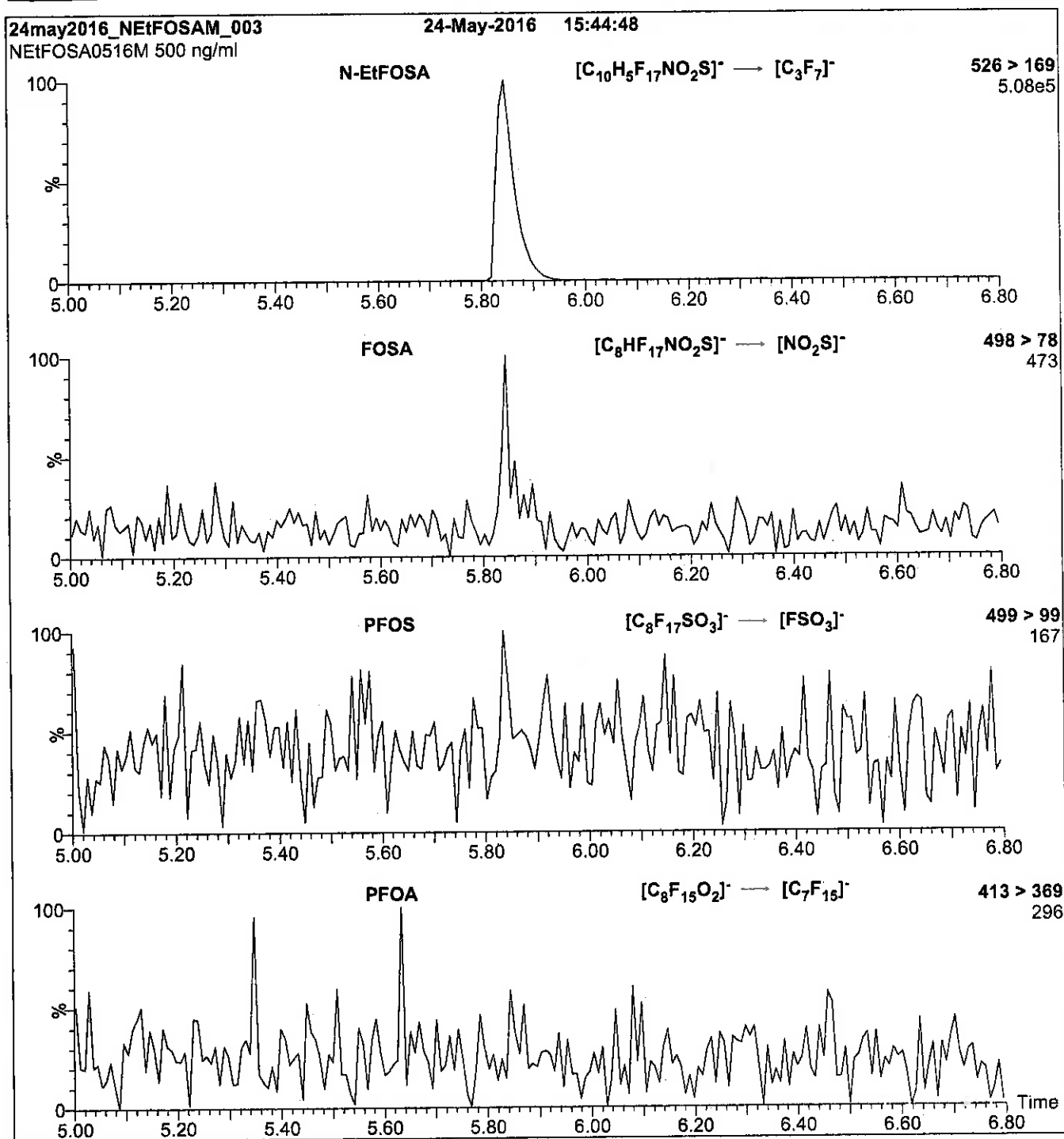
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-EtFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-EtFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-EtFOSAA_00004

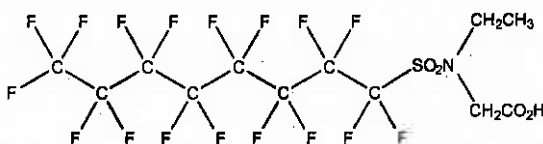


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0916
COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2991-50-6



MOLECULAR FORMULA: $C_{12}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 585.23
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/07/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

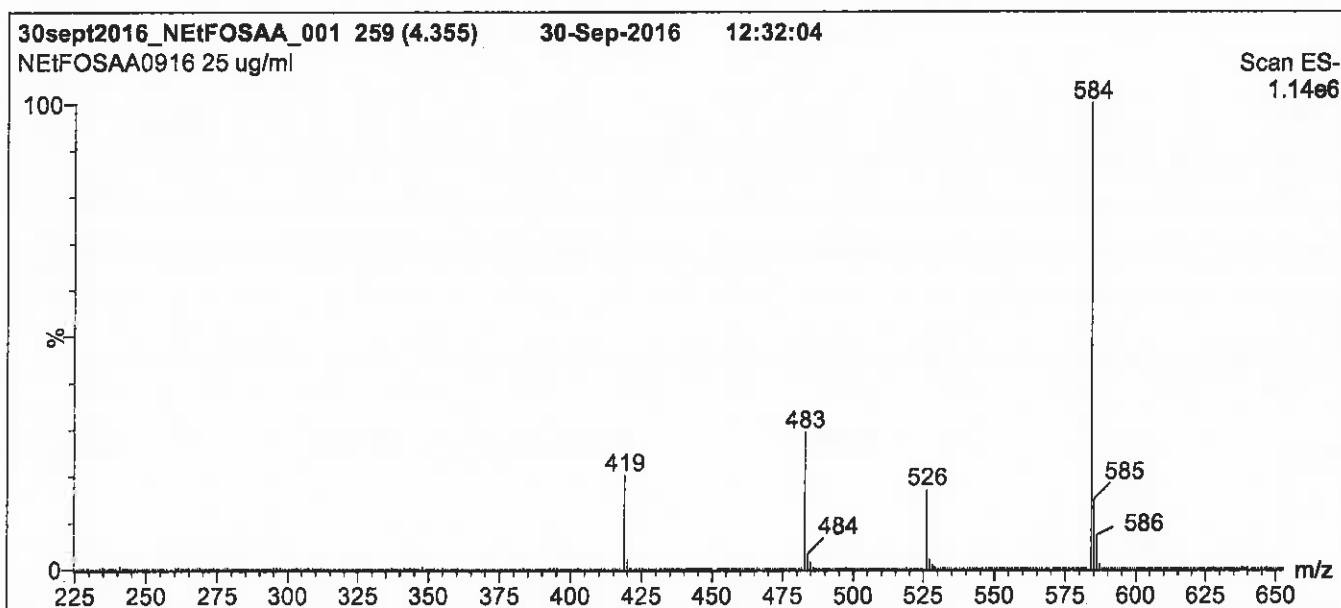
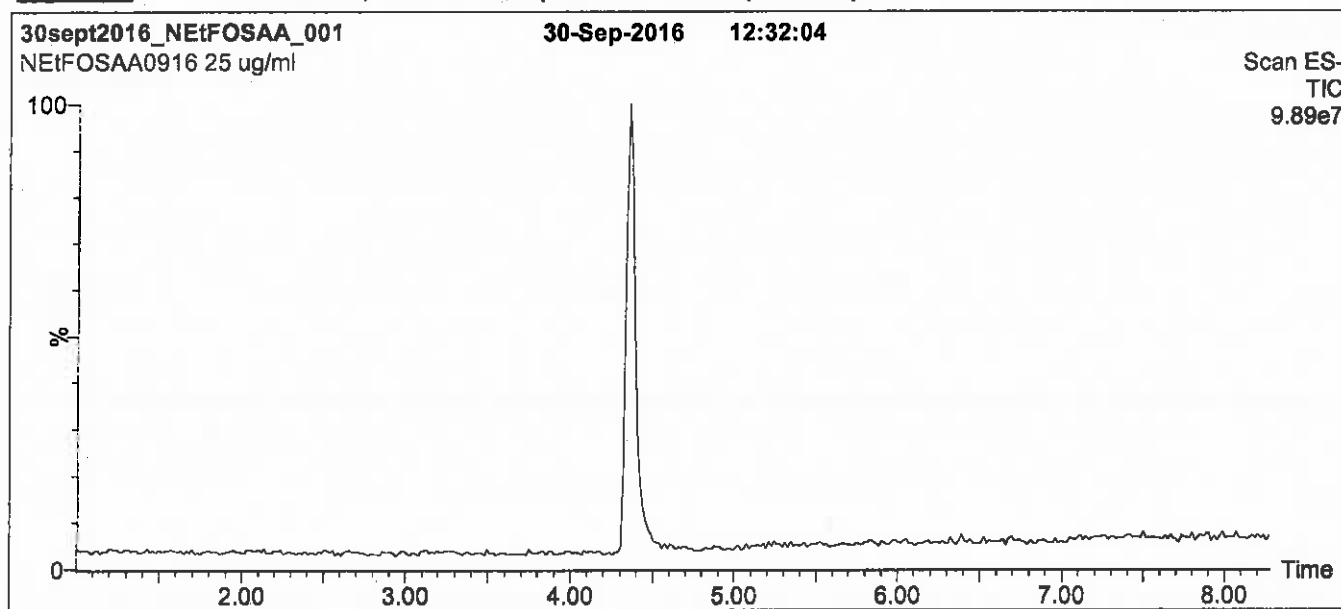
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

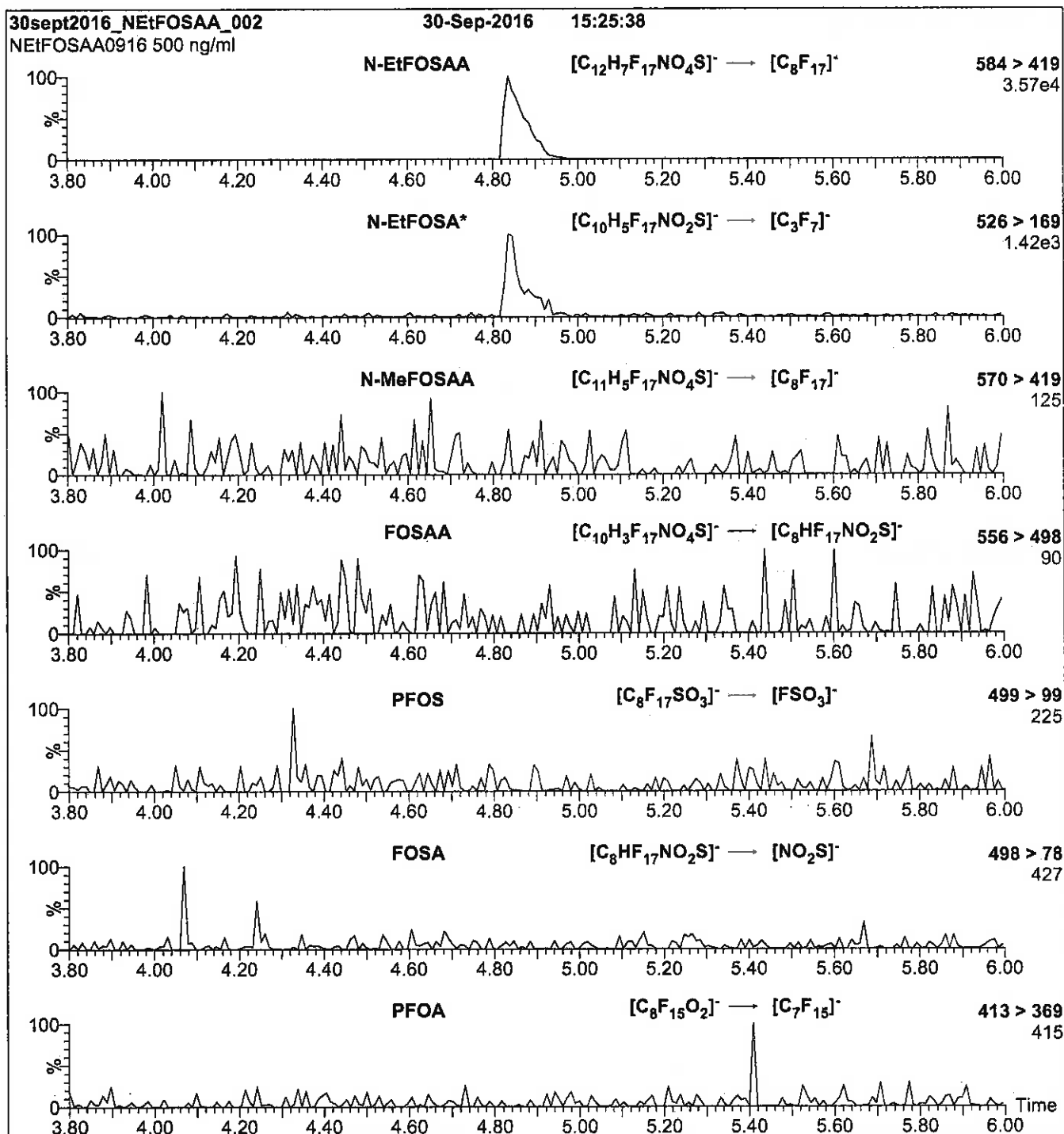
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-EtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



Note: N-EtFOSA is formed by fragmentation of N-EtFOSAA.

Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-EtFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 20

Reagent

LCN-MeFOSA-M_00004



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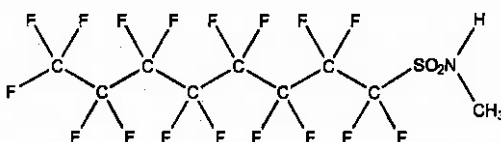
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide

LOT NUMBER: NMeFOSA0516M

STRUCTURE:

CAS #: 31506-32-8



MOLECULAR FORMULA: $C_9H_4F_{17}NO_2S$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/24/2016
EXPIRY DATE: (mm/dd/yyyy) 05/24/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 513.17
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/26/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

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where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

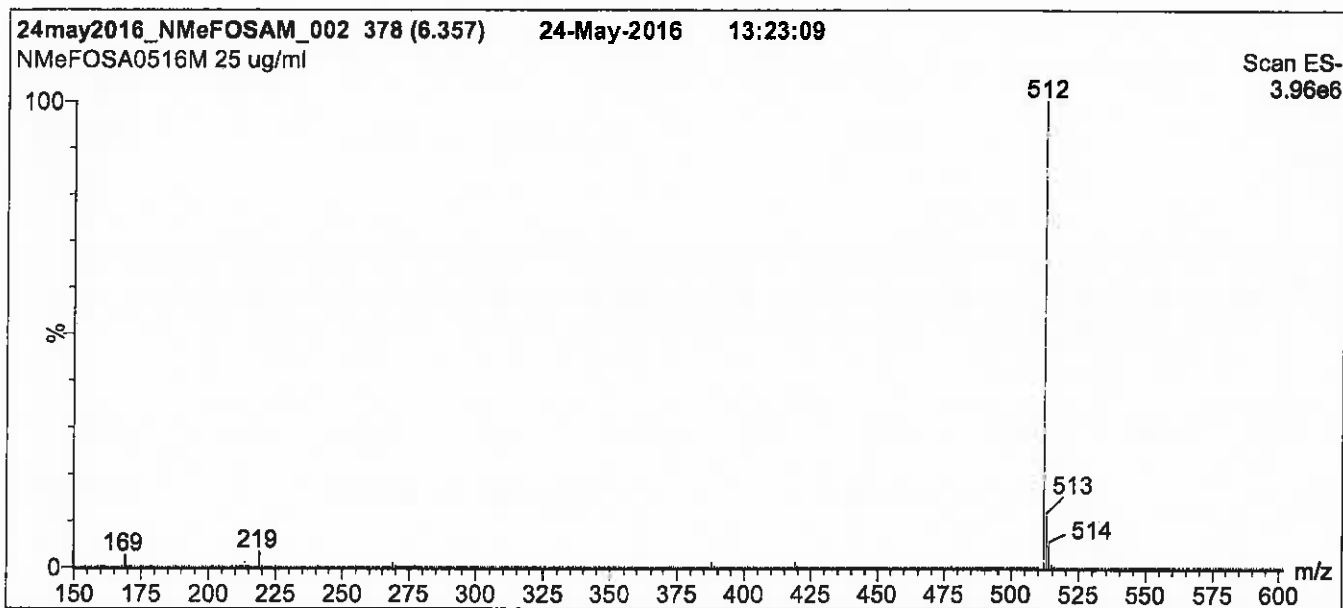
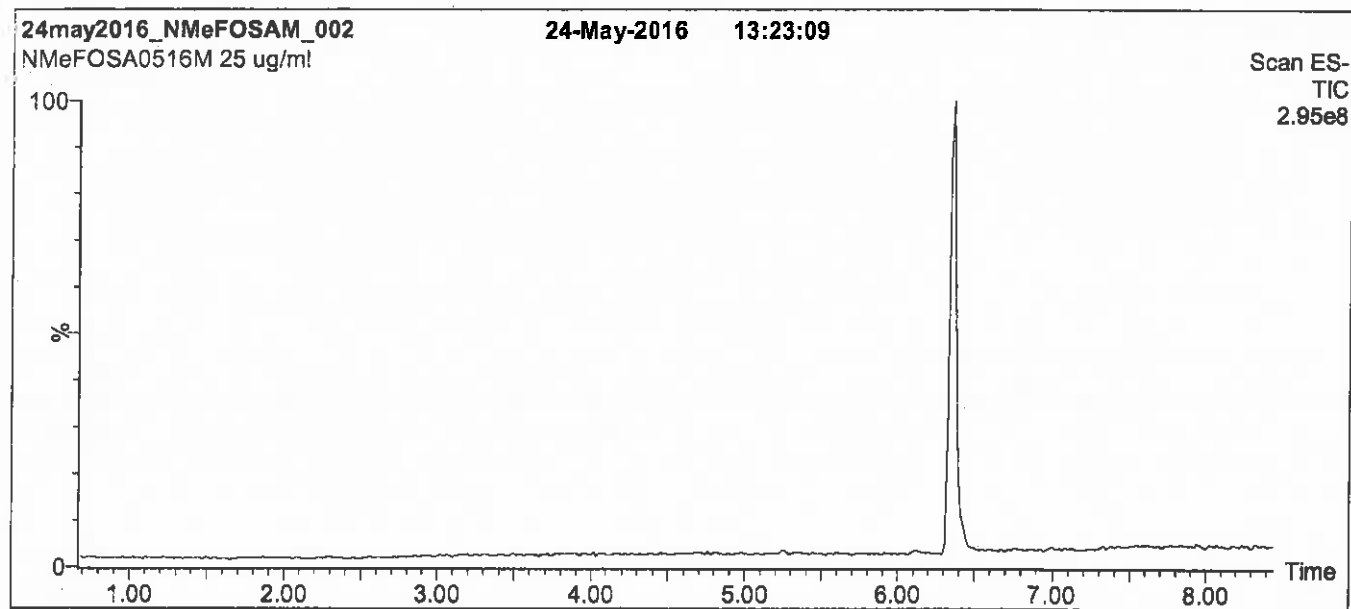
QUALITY MANAGEMENT:

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Figure 1: N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H₂O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

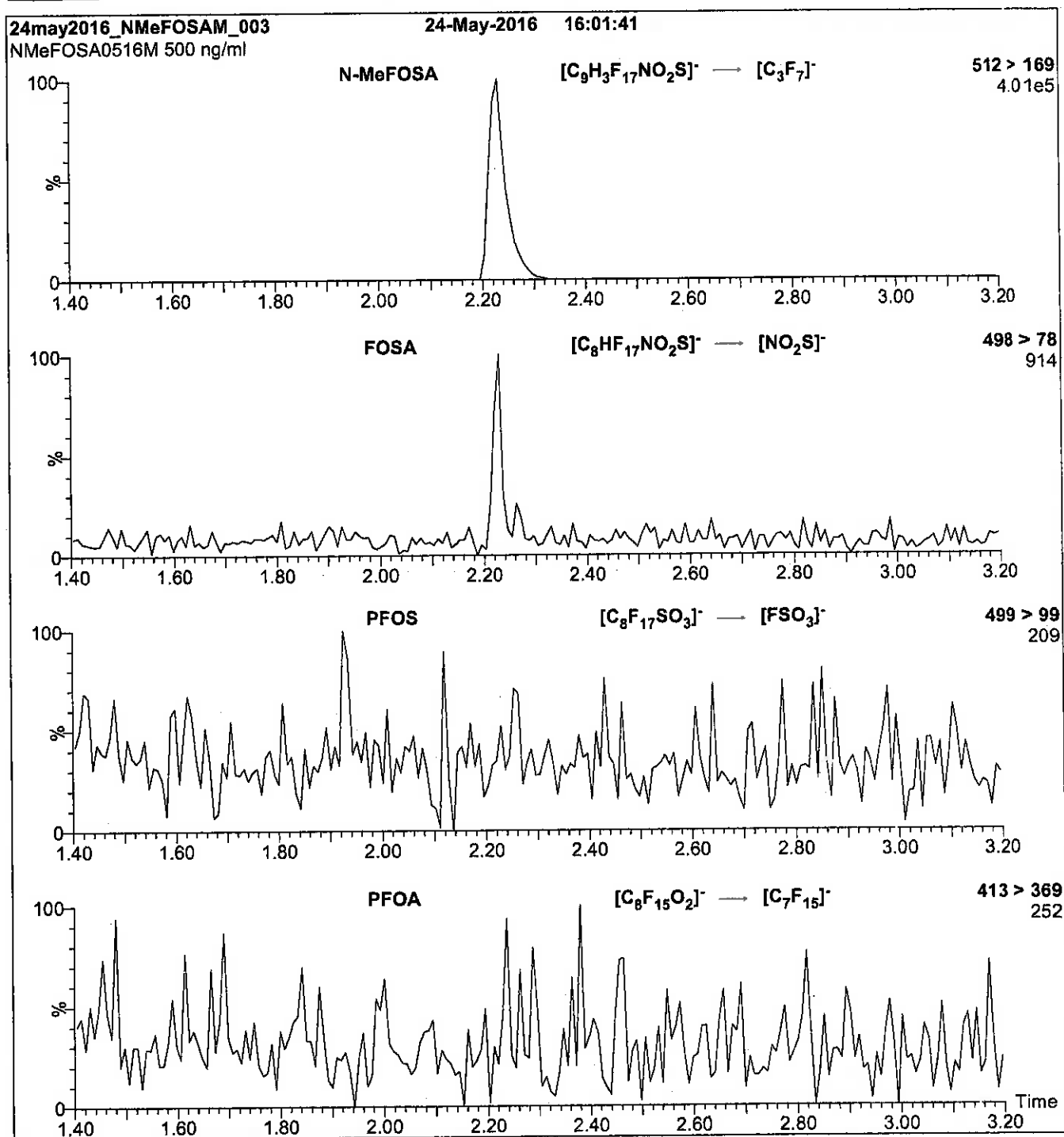
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-MeFOSA-M; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSA-M)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCN-MeFOSAA_00004

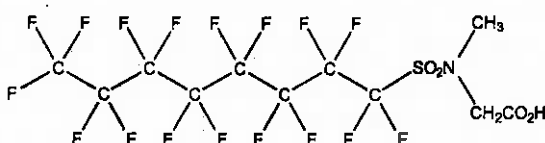


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA0916
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2355-31-9



MOLECULAR FORMULA: $C_{11}H_8F_{17}NO_4S$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 571.21
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/12/2016
EXPIRY DATE: (mm/dd/yyyy) 10/12/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/25/2016
 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

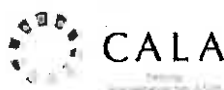
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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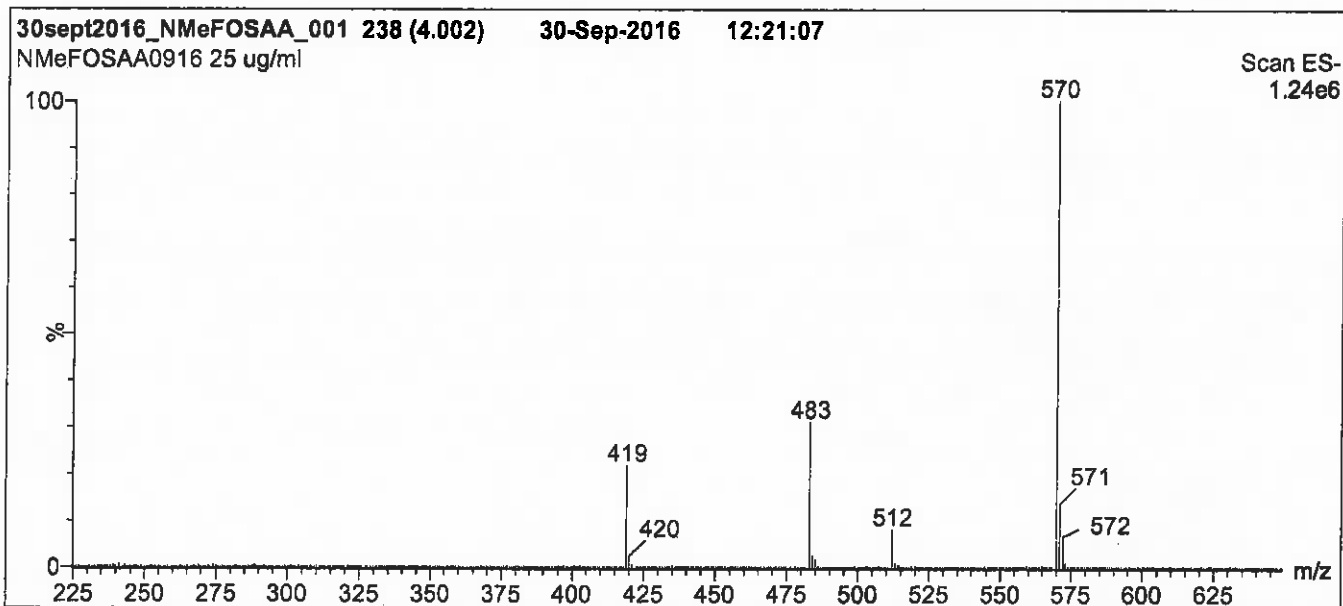
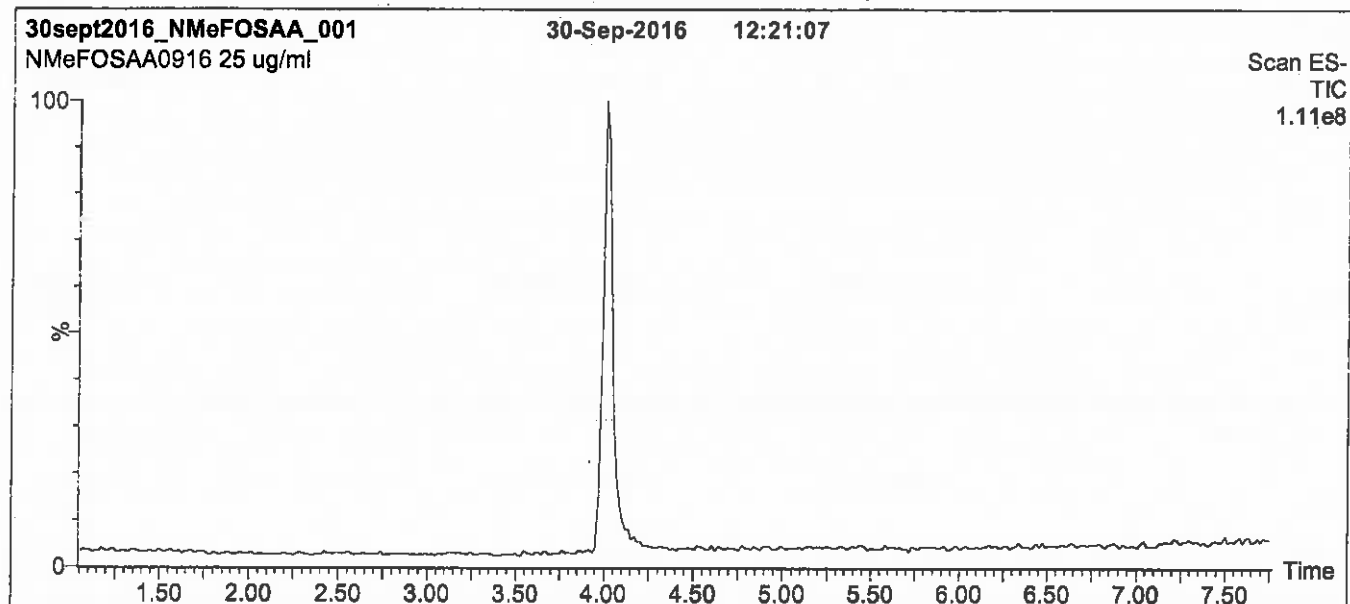
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

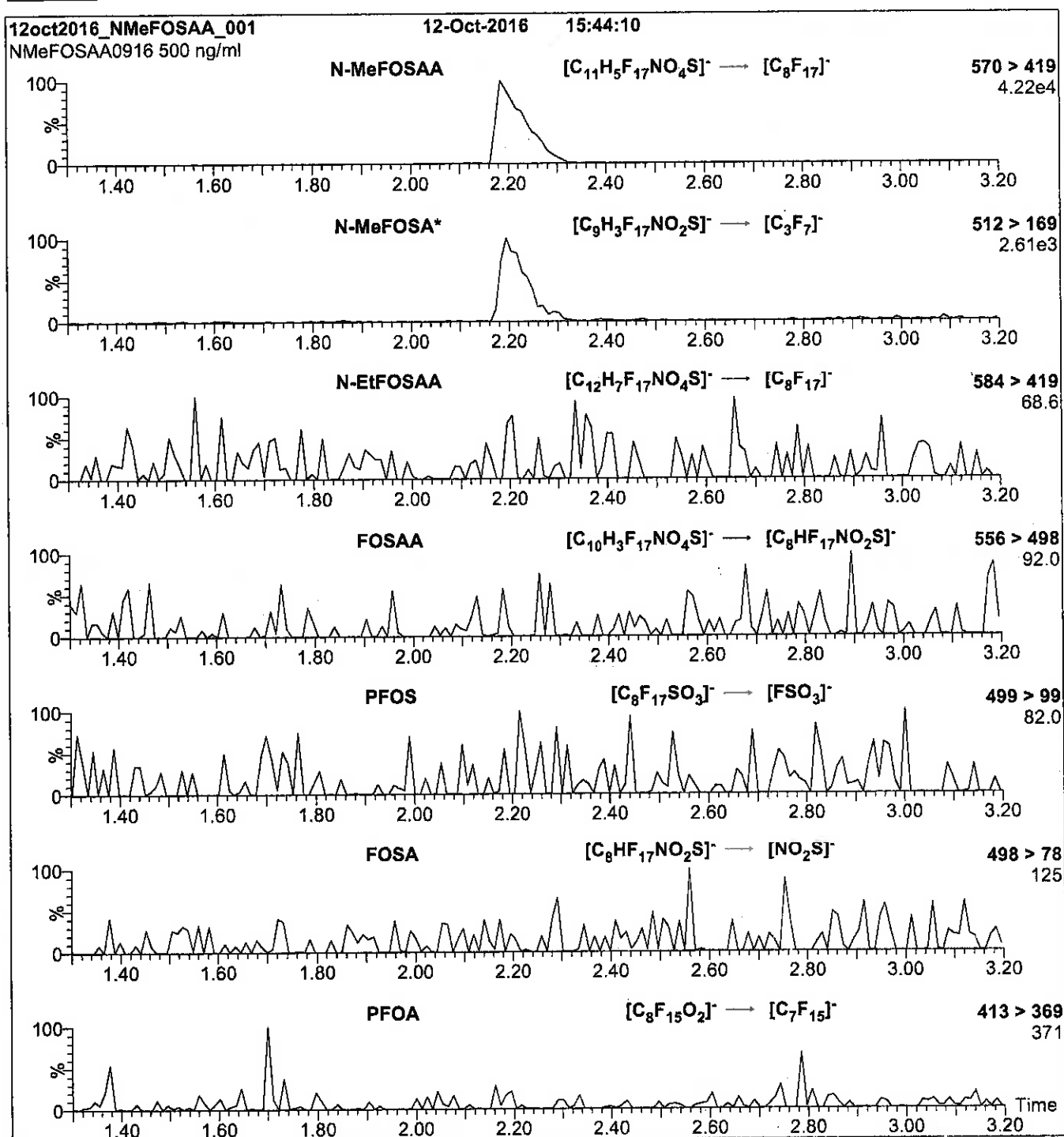
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



***Note:** N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 20

Reagent

LCN-MeFOSAA_00005

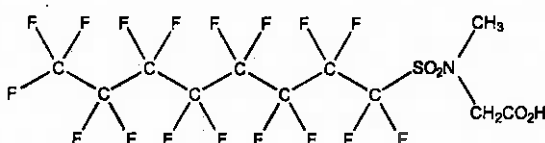


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA0916
COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** 2355-31-9



MOLECULAR FORMULA: $C_{11}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 571.21
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/12/2016
EXPIRY DATE: (mm/dd/yyyy) 10/12/2021
RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent the conversion of the acetic acid moiety to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/25/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

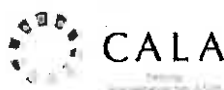
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

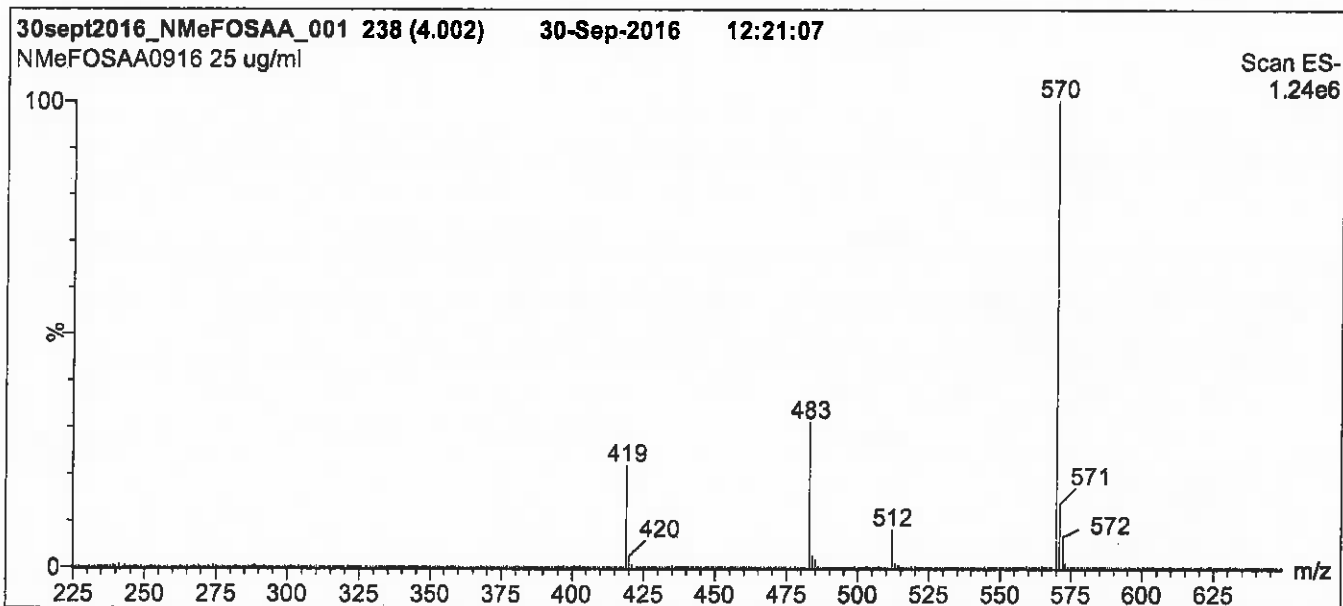
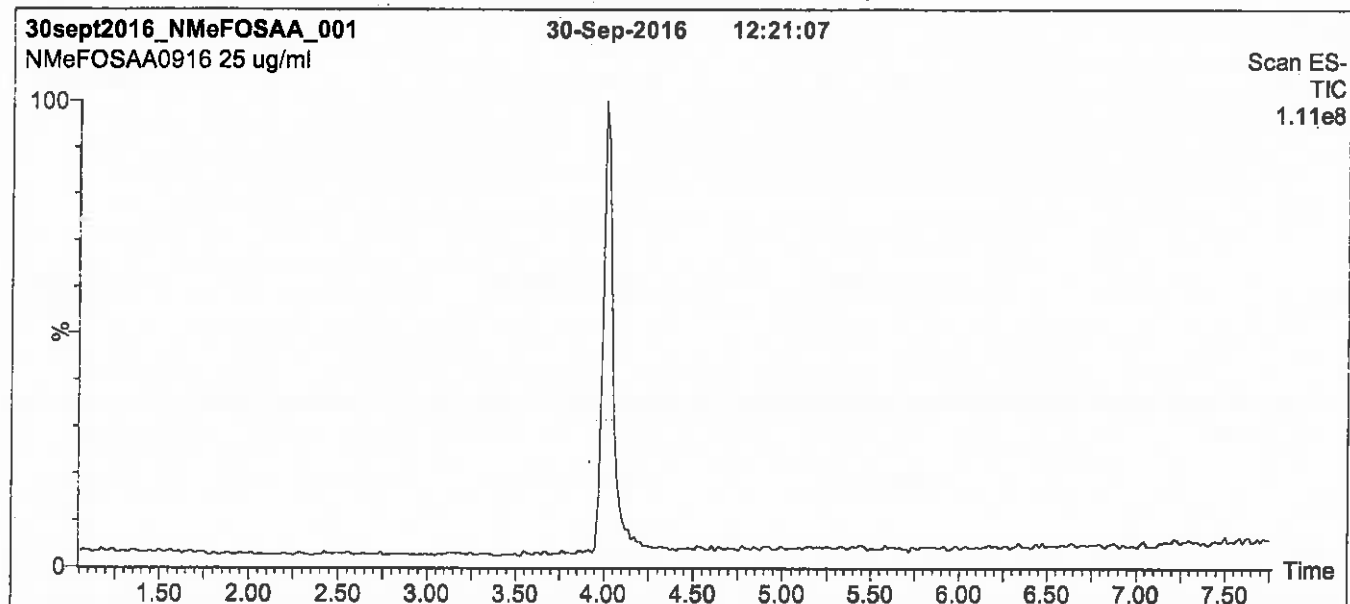
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

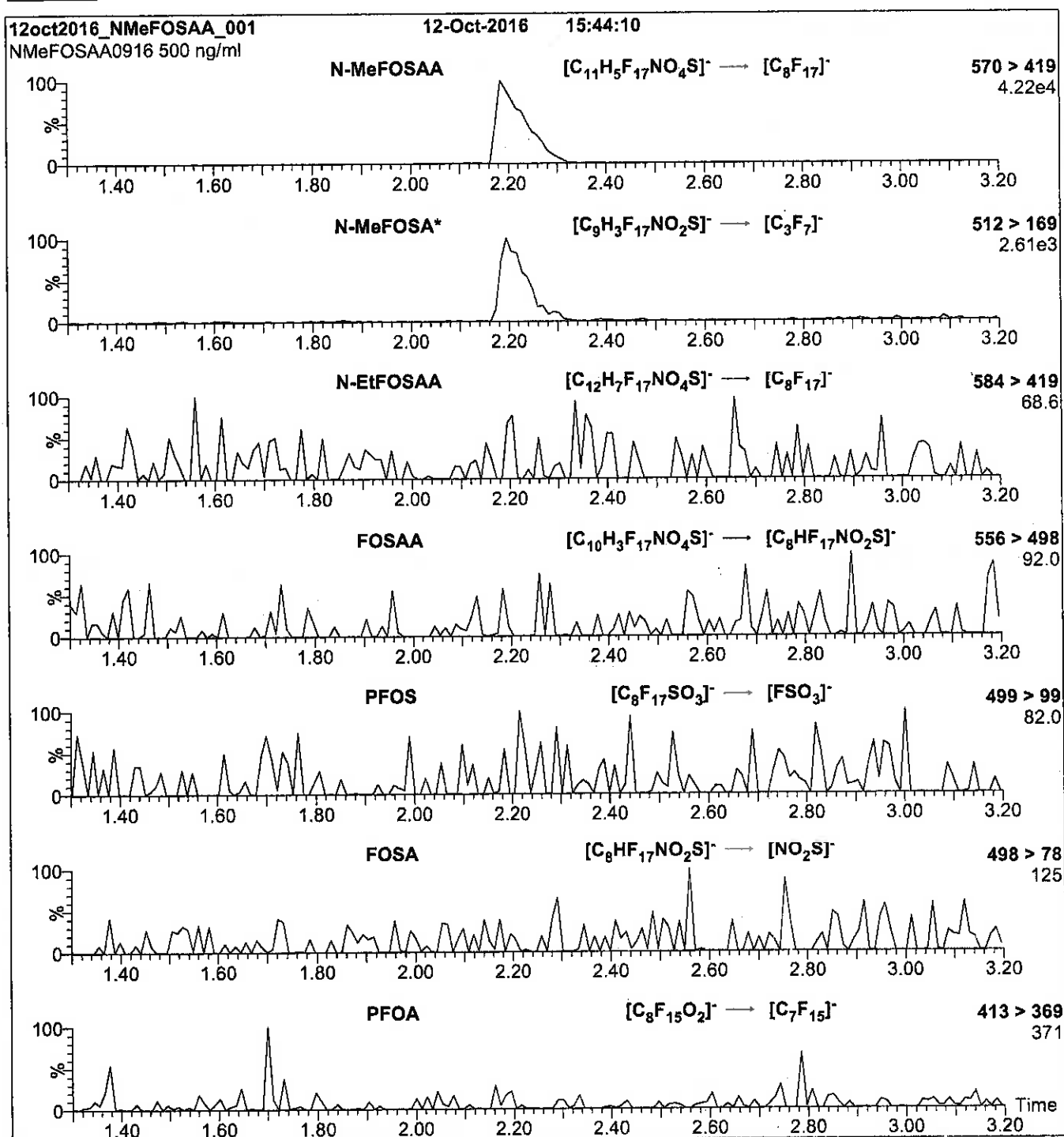
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 35.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: N-MeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



***Note:** N-MeFOSA is formed by in-source fragmentation.

Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml N-MeFOSAA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 20

Reagent

LCPFAC-24PAR_00001



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PFAC-24PAR

**Native Per- and Poly-fluoroalkyl Substance
Precision and Recovery Standard Solution**

PRODUCT CODE: PFAC-24PAR
LOT NUMBER: PFAC24PAR0917
SOLVENT(S): Methanol / Isopropanol (4%) / Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 09/13/2017
LAST TESTED: (mm/dd/yyyy) 09/15/2017
EXPIRY DATE: (mm/dd/yyyy) 09/15/2022
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

PFAC-24PAR is a solution/mixture of eleven native linear perfluoroalkylcarboxylic acids (C_4 - C_{14}), seven native perfluoroalkylsulfonates (C_4 , C_5 , C_7 , C_9 , and C_{10} linear; C_6 and C_8 linear and branched), three native telomer sulfonates (4:2, 6:2, and 8:2), two native perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide. The components and their concentrations are given in Table A.

The individual native perfluoroalkylcarboxylic acids, native perfluoroalkylsulfonates, native telomer sulfonates, native perfluorooctanesulfonamidoacetic acids, and perfluoro-1-octanesulfonamide all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
 Table B: Isomeric Components and Percent Composition of PFHxSK
 Table C: Isomeric Components and Percent Composition of PFOSK
 Figure 1: LC/MS Data (SIR)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acids to their respective methyl esters.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

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HOMOGENEITY:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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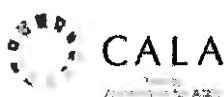
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Table A: PFAC-24PAR; Components and Concentrations
(ng/ml, $\pm$ 5% in Methanol / Isopropanol (4%) / Water (<1%))

Compound	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
Perfluoro-n-butanoic acid	PFBA	2000		A
Perfluoro-n-pentanoic acid	PFPeA	2000		B
Perfluoro-n-hexanoic acid	PFHxA	2000		E
Perfluoro-n-heptanoic acid	PFHpA	2000		G
Perfluoro-n-octanoic acid	PFOA	2000		K
Perfluoro-n-nonanoic acid	PFNA	2000		M
Perfluoro-n-decanoic acid	PFDA	2000		Q
Perfluoro-n-undecanoic acid	PFUdA	2000		V
Perfluoro-n-dodecanoic acid	PFDoA	2000		X
Perfluoro-n-tridecanoic acid	PFTTrDA	2000		Y
Perfluoro-n-tetradecanoic acid	PFTeDA	2000		Z
Perfluoro-1-octanesulfonamide	FOSA	2000		T
N-methylperfluoro-1-octanesulfonamidoacetic acid	N-MeFOSAA	2000		S
N-ethylperfluoro-1-octanesulfonamidoacetic acid	N-EtFOSAA	2000		U
Compound	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Potassium perfluoro-1-butanedisulfonate	L-PFBS	2000	1770	C
Sodium perfluoro-1-pentadisulfonate	L-PFPeS	2000	1880	F
Potassium perfluorohexanedisulfonate*	PFHxSK: linear isomer	1620	1480	I
	PFHxSK: Σ branched isomers	378	344	H
Sodium perfluoro-1-heptadisulfonate	L-PFHpS	2000	1900	L
Potassium perfluorooctanedisulfonate**	PFOSK: linear isomer	1580	1460	O
	PFOSK: Σ branched isomers	422	391	N
Sodium perfluoro-1-nonadisulfonate	L-PFNS	2000	1920	R
Sodium perfluoro-1-decanedisulfonate	L-PFDS	2000	1930	W
Sodium 1H,1H,2H,2H-perfluoro-1-hexanedisulfonate	4:2FTS	2000	1870	D
Sodium 1H,1H,2H,2H-perfluoro-1-octanedisulfonate	6:2FTS	2000	1900	J
Sodium 1H,1H,2H,2H-perfluoro-1-decanedisulfonate	8:2FTS	2000	1920	P

* See Table B for percent composition of linear and branched PFHxSK isomers.

** See Table C for percent composition of linear and branched PFOSK isomers.

Table B: PFHxSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR	
1	Potassium perfluoro-1-hexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	81.1	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF(SO ₃ ⁻)K ⁺ CF ₃	2.9	18.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	CF ₃ CF ₂ CF ₂ CF(CF ₃)CF ₂ SO ₃ ⁻ K ⁺ CF ₃	1.4	
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	CF ₃ CF ₂ CF(CF ₃)CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	5.0	
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	CF ₃ CF(CF ₃)CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	8.9	
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	CF ₃ CF ₃ CCF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.2	
7	Other Unidentified Isomers		0.5	

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

Table C: PFOSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

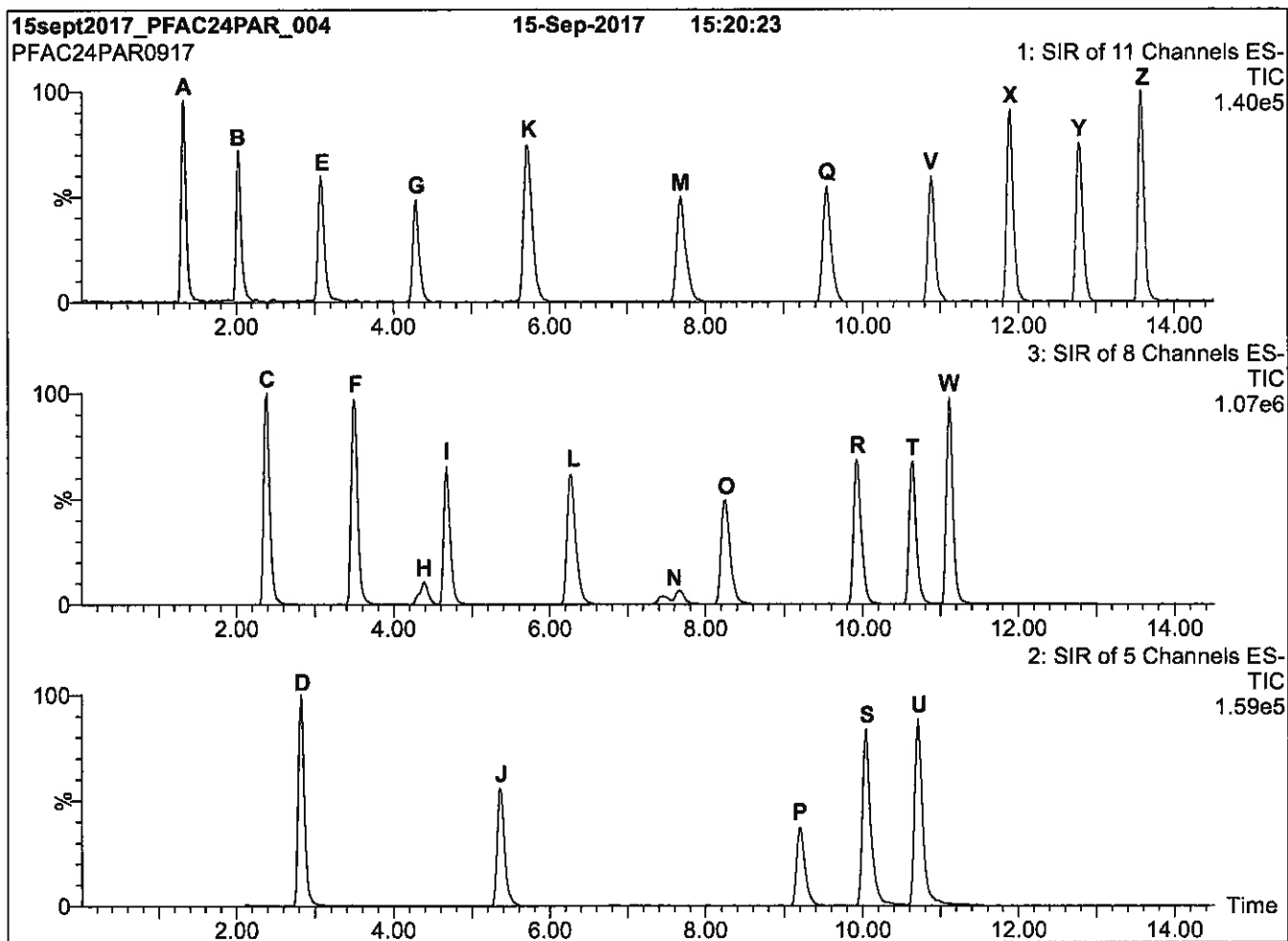
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR	
1	Potassium perfluoro-1-octanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	78.8	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF(SO ₃ ⁻)K ⁺ CF ₃	1.2	21.1
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF(CF ₃)SO ₃ ⁻ K ⁺ CF ₃	0.6	
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF(CF ₃)CF ₂ SO ₃ ⁻ K ⁺ CF ₃	1.9	
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF(CF ₃)CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	2.2	
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF(CF ₃)CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	4.5	
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF(CF ₃)CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	10.0	
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₃ CCF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.2	
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₃ CF ₂ CCF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.03	
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₃ CF(CF ₃)CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.4	
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₃ CF(CF ₃)CF(CF ₃)CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.07	

* Percent of total perfluorooctanesulfonate isomers only.
 ** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By:


 B.G. Chittim, General Manager
Date: 09/19/2017
(mm/dd/yyyy)

Figure 1: PFAC-24PAR; LC/MS Data (Total Ion Current Chromatogram; SIR)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 55% organic over 3.5 min.
Ramp to 70% organic over 6.5 min.
Ramp to 85% organic over 5 min and hold for
1 min before returning to initial conditions in 0.5 min.
Time: 17 min

Flow: 300 μ l/min

MS Parameters

Experiment: SIR

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (10-70)
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)

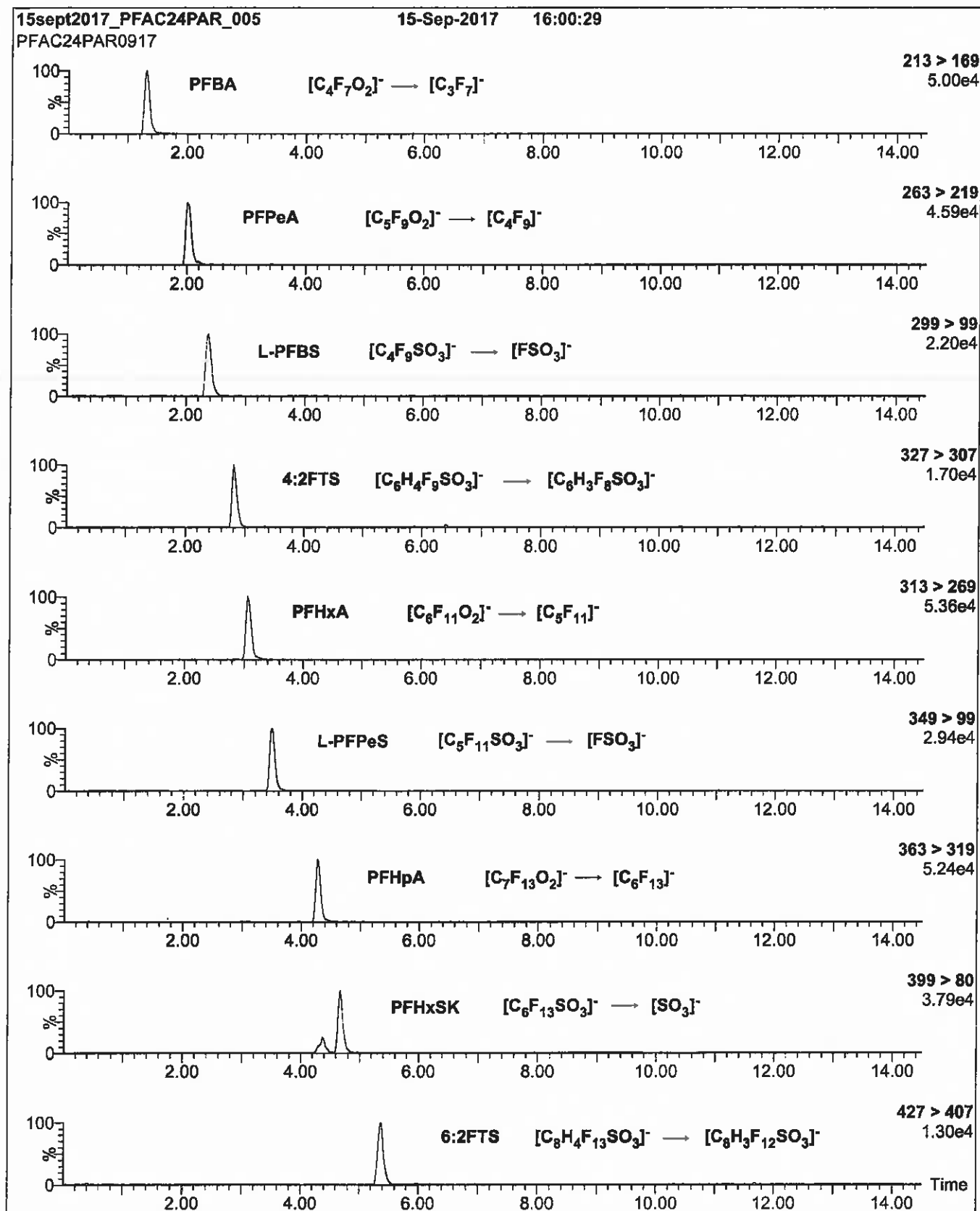


Figure 2: PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)

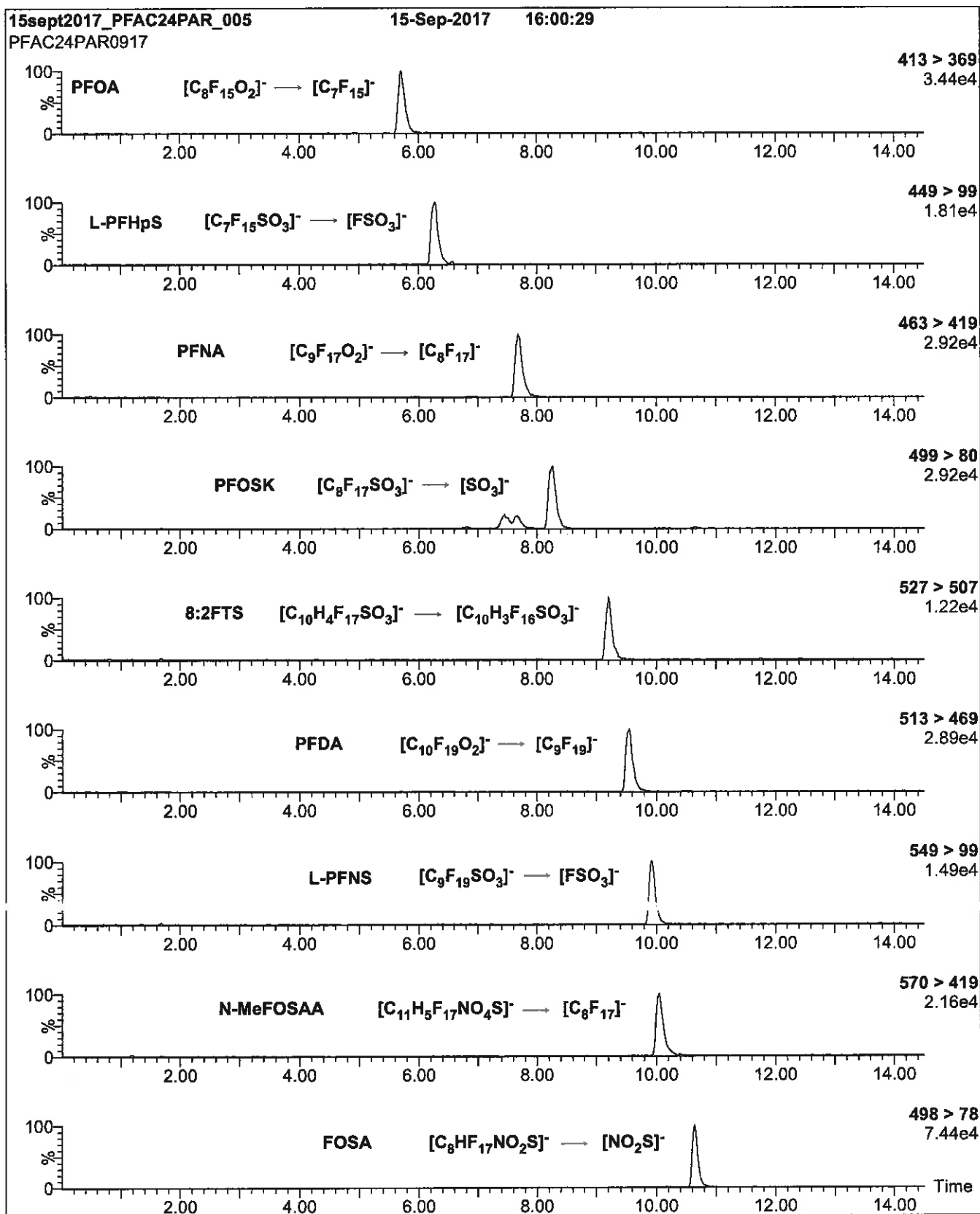
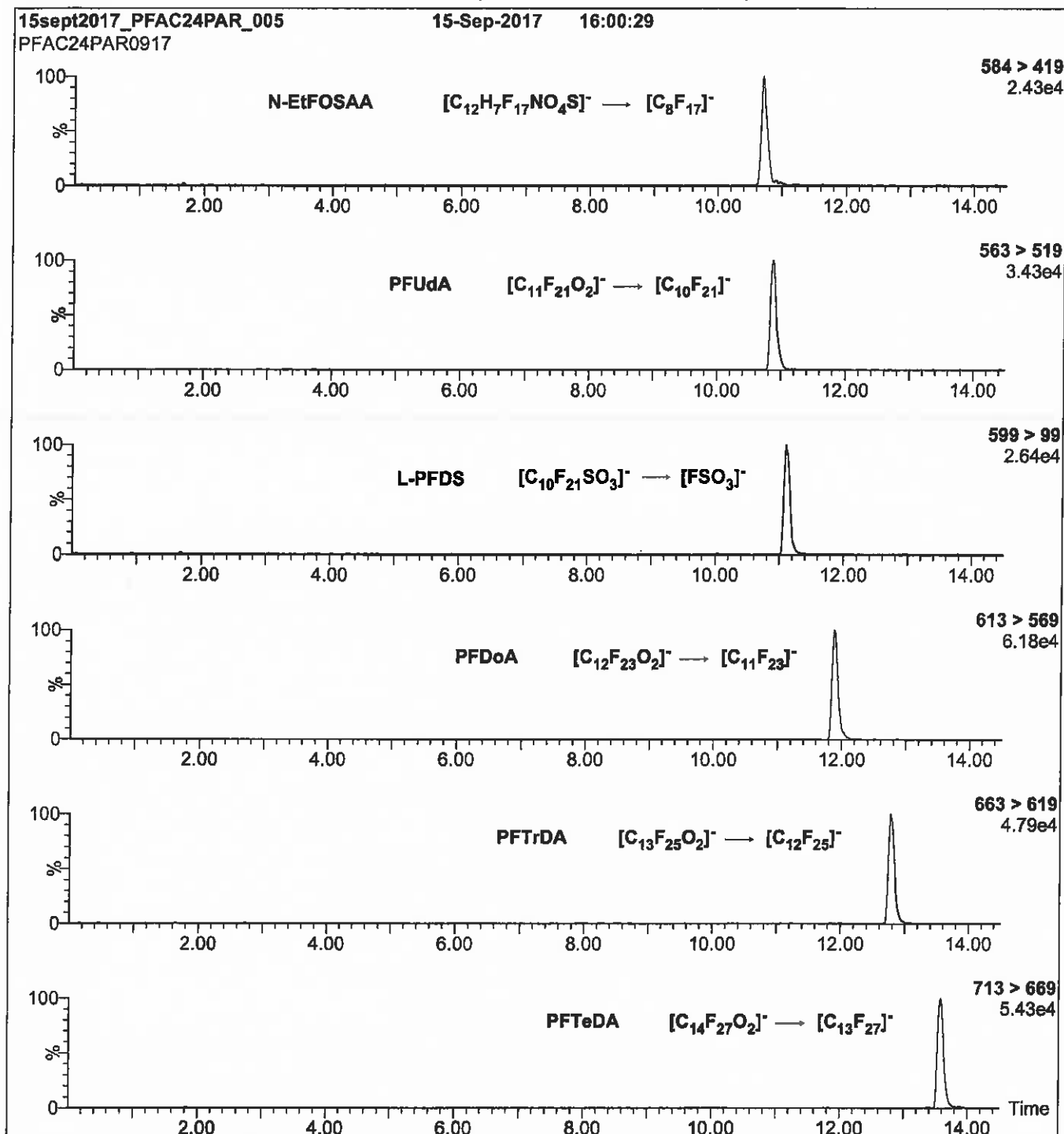


Figure 2: PFAC-24PAR; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (PFAC-24PAR)

Mobile phase: Same as Figure 1

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3

Collision Energy (eV) = 8-50 (variable)

Reagent

LCPFBA_00007

r: 12/20/16 sw/
S



WELLINGTON LABORATORIES

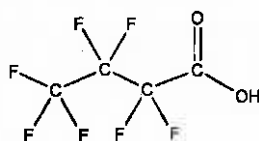
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanoic acid

LOT NUMBER: PFBA0516

STRUCTURE:

CAS #: 375-22-4



MOLECULAR FORMULA: $C_4HF_7O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 214.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/27/2016
EXPIRY DATE: (mm/dd/yyyy) 05/27/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/31/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

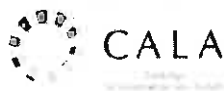
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

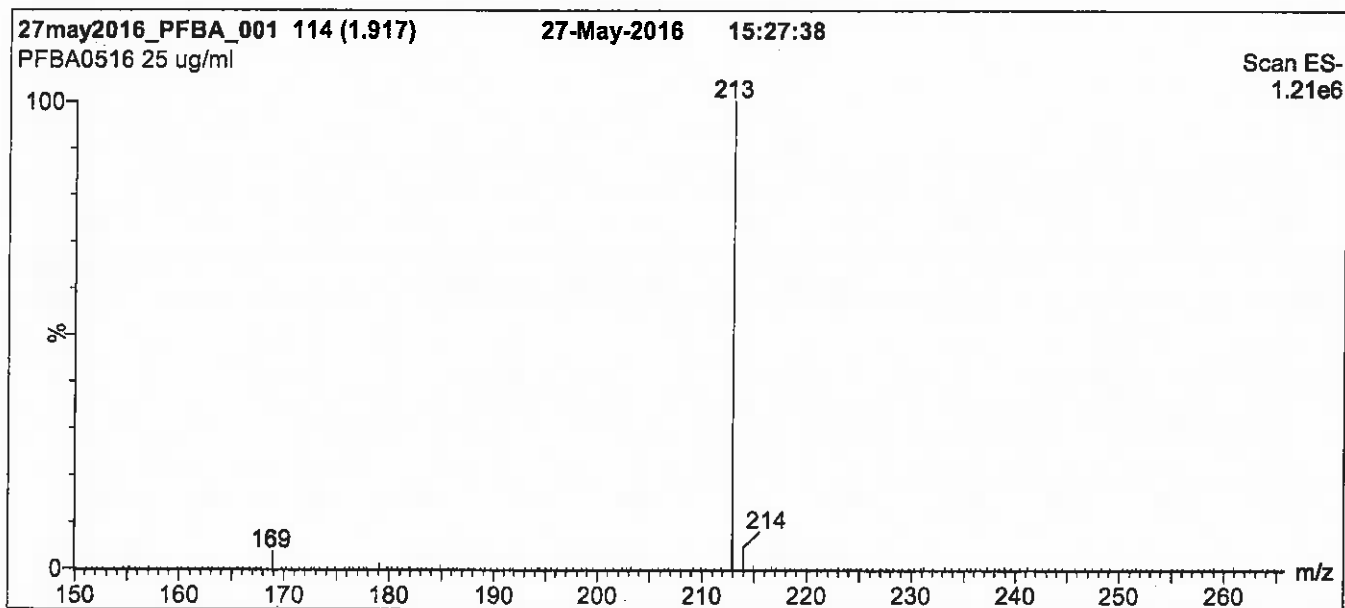
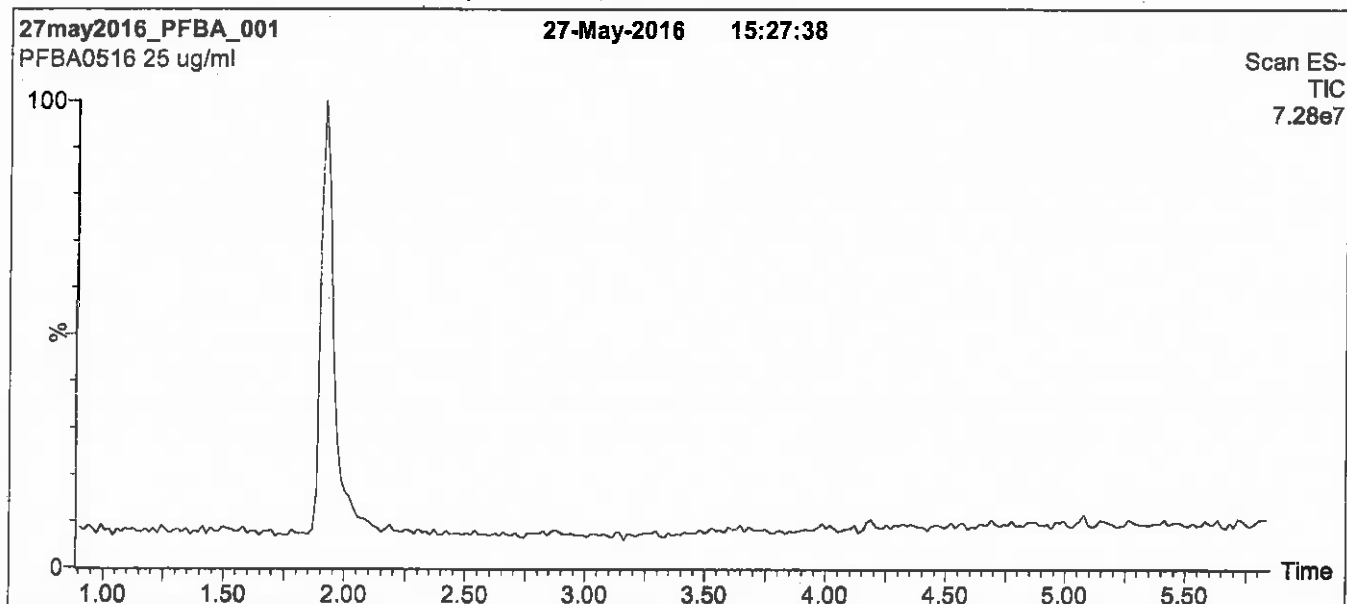
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFBA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5
min before returning to initial conditions in 0.5 min.
Time: 10 min

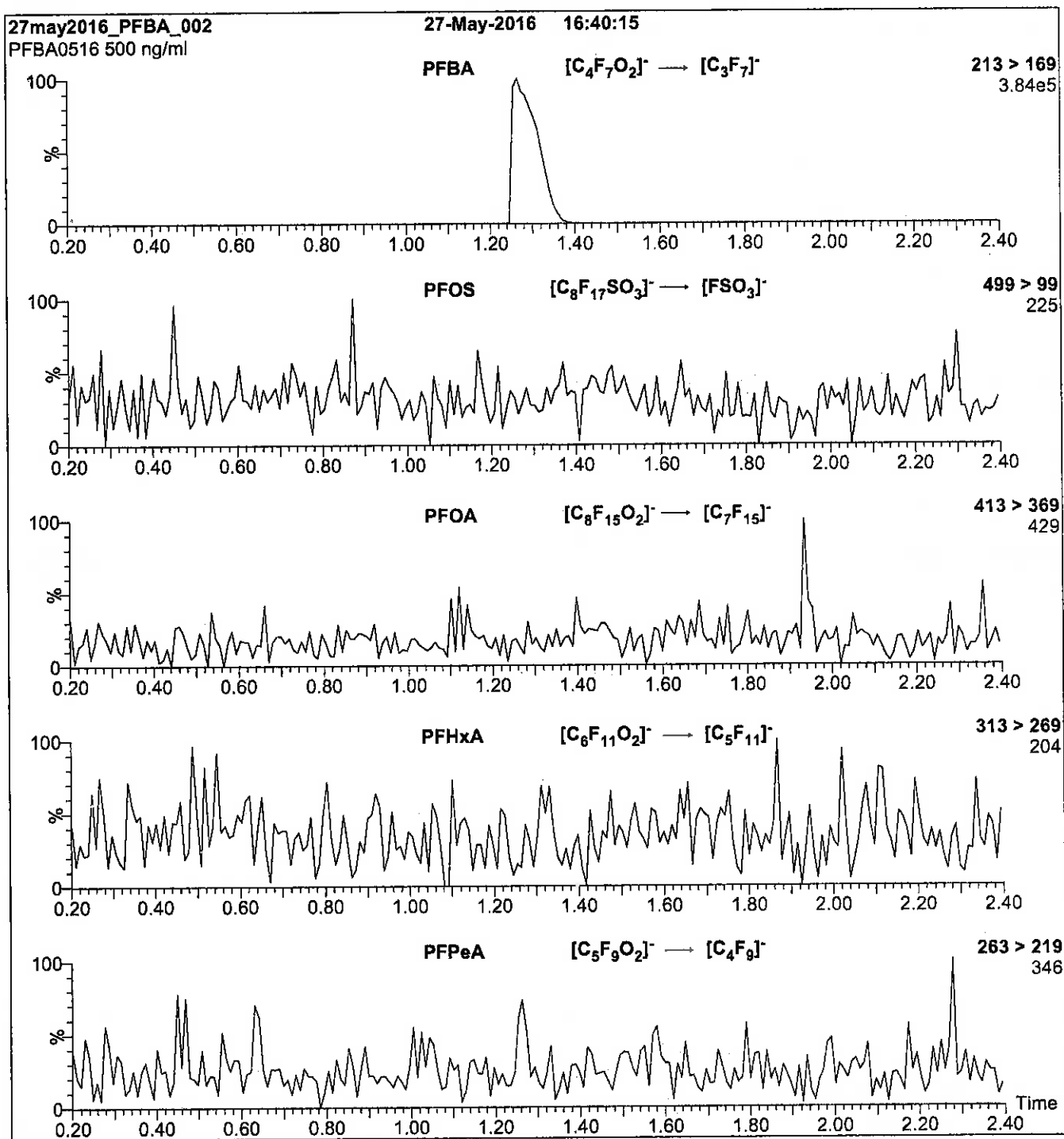
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 10.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFBA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFBA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 10

Reagent

LCPFBS_00008

R: 8BC 9/13/16



730724
ID: LCPFBFS_00007
Exp: 03/15/21 Ppdt: SBC
PF-1-butanedisulfonate K sa



730725
ID: LCPFBFS_00008
Exp: 03/15/21 Ppdt: SBC
PF-1-butanedisulfonate K sa



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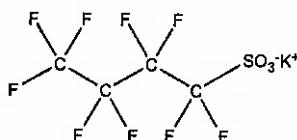
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
COMPOUND: Potassium perfluoro-1-butanedisulfonate

LOT NUMBER: LPFBS0316

STRUCTURE:

CAS #: 29420-49-3



MOLECULAR FORMULA: $C_4F_9SO_3K$
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/15/2016
EXPIRY DATE: (mm/dd/yyyy) 03/15/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 338.19
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 03/21/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

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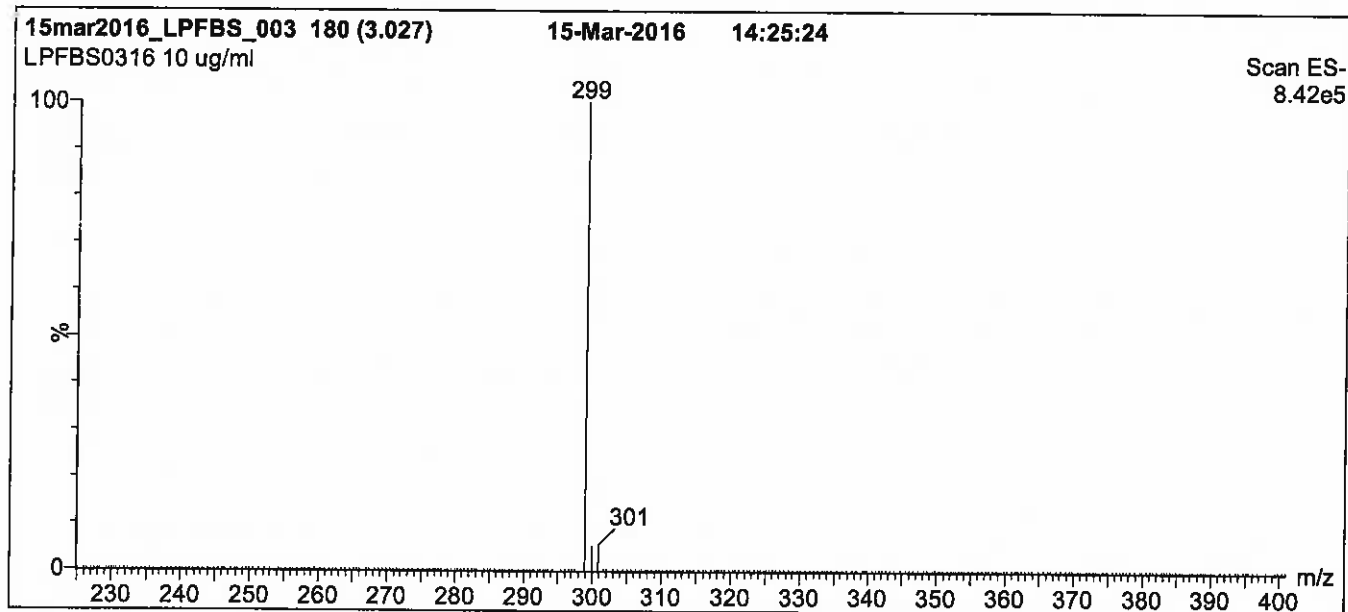
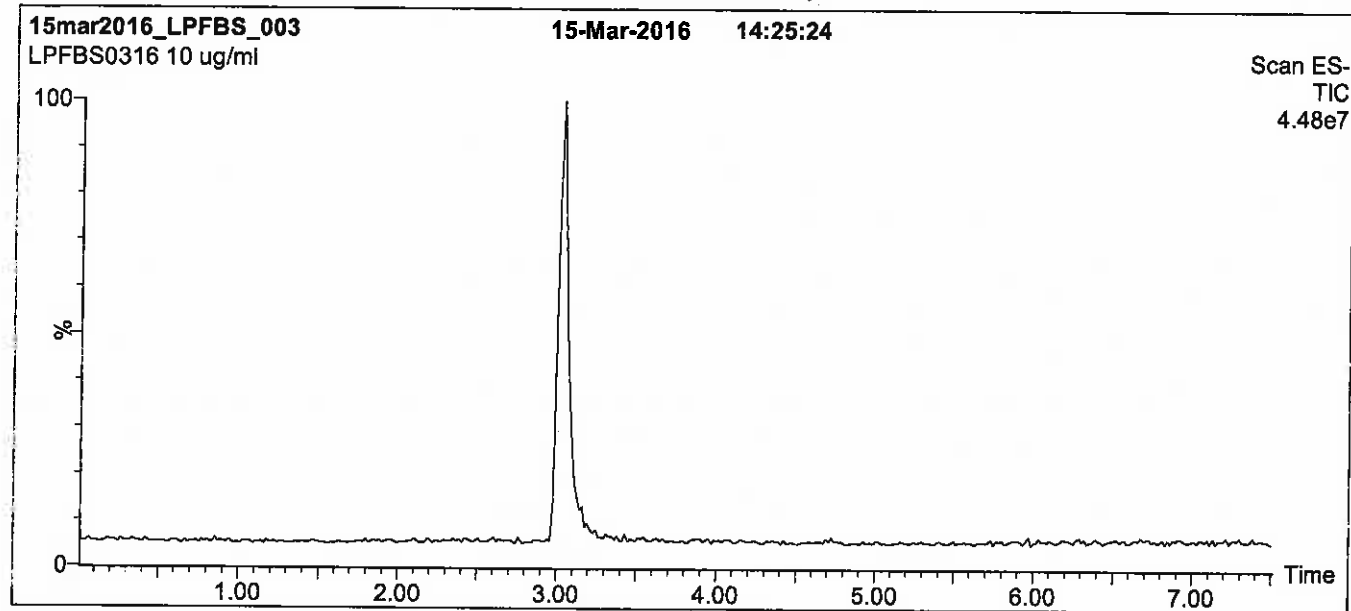
QUALITY MANAGEMENT:

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Figure 1: L-PFBS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

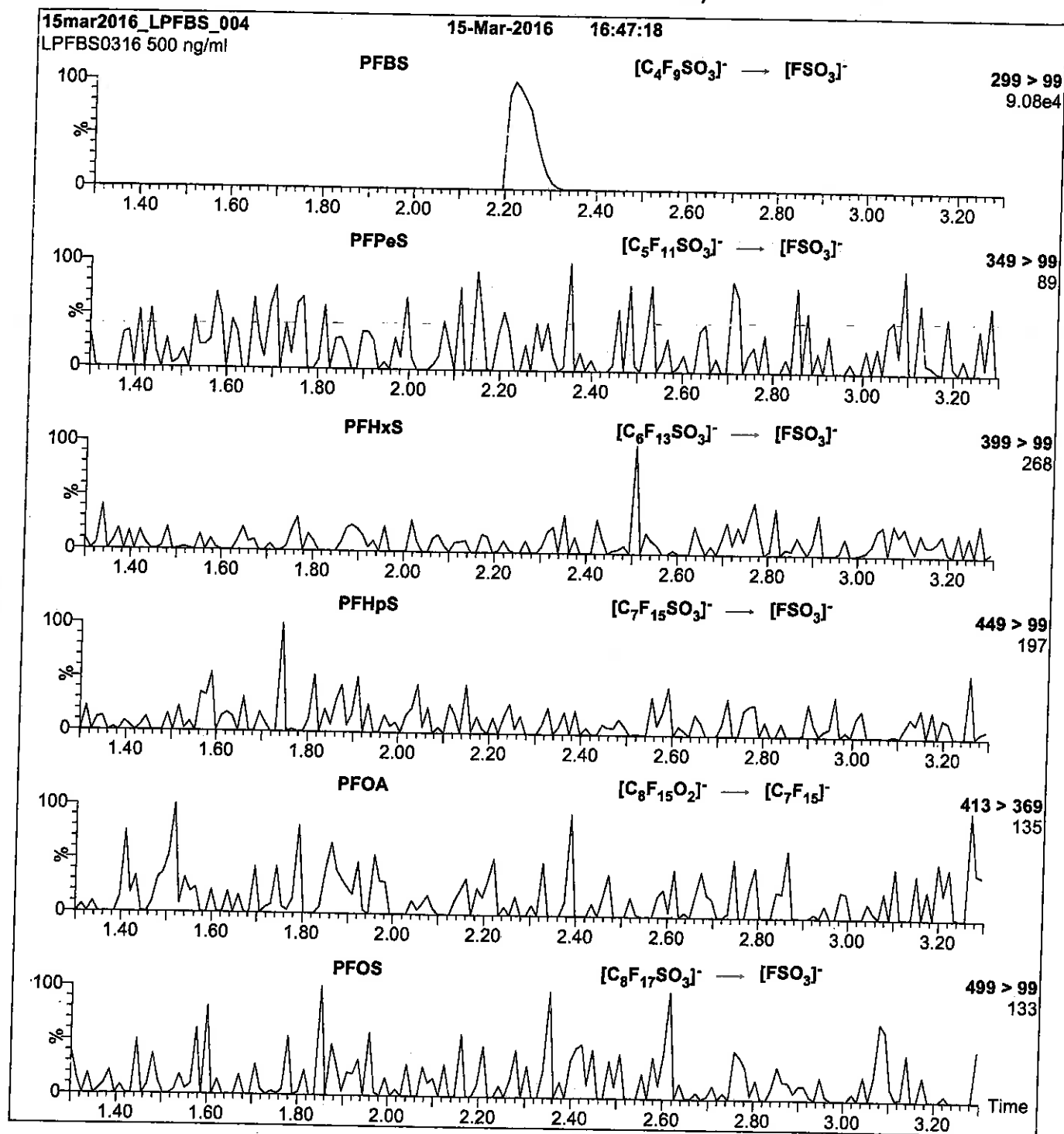
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFBS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFBS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 25

Reagent

LCPFDA_00007

P: 8BZ 9/13/16
Scanned 10/14/16 SR



730620
ID: LCPFDA_00006
Exp: 05/31/21 Prod: SBC
PF-n-decanoic acid



730621
ID: LCPFDA_00007
Exp: 05/31/21 Prod: SBC
PF-n-decanoic acid



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFDA

LOT NUMBER:

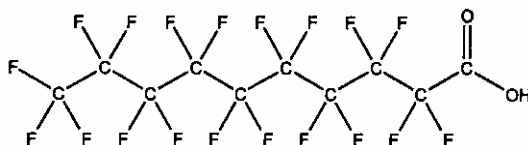
PFDA0516

COMPOUND:

Perfluoro-n-decanoic acid

STRUCTURE:**CAS #:**

335-76-2

**MOLECULAR FORMULA:** $C_{10}H_2F_{18}O_2$ **MOLECULAR WEIGHT:**

514.08

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/31/2016

EXPIRY DATE: (mm/dd/yyyy)

05/31/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 06/13/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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SYNTHESIS / CHARACTERIZATION:

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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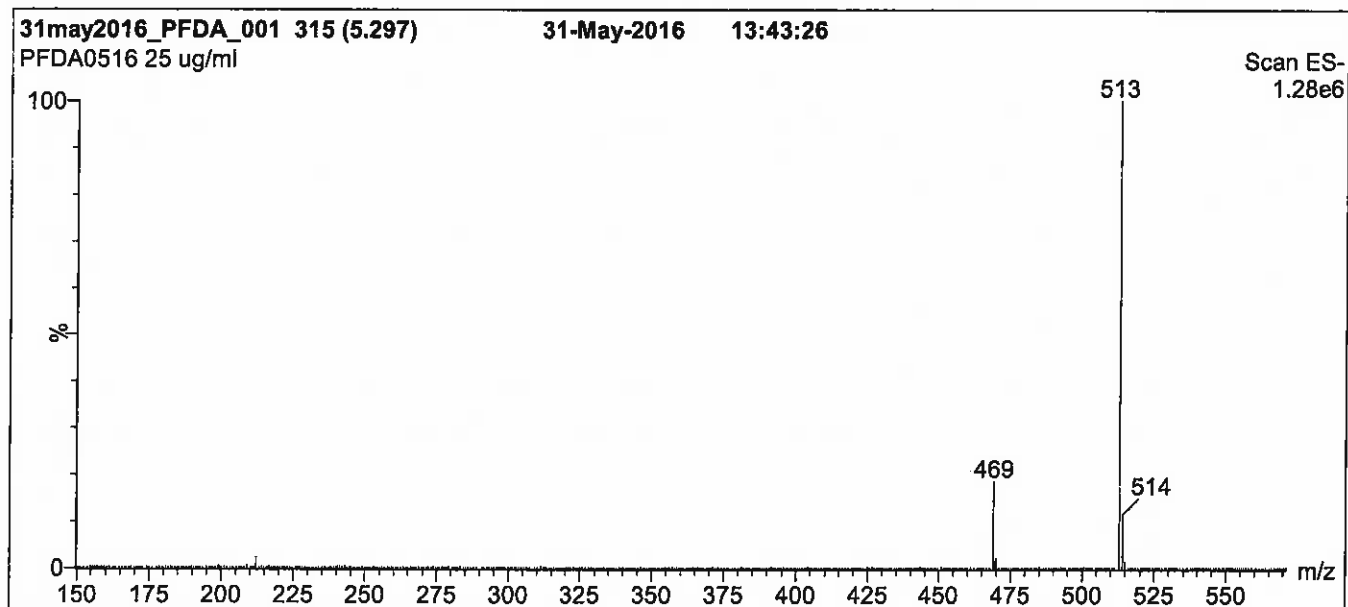
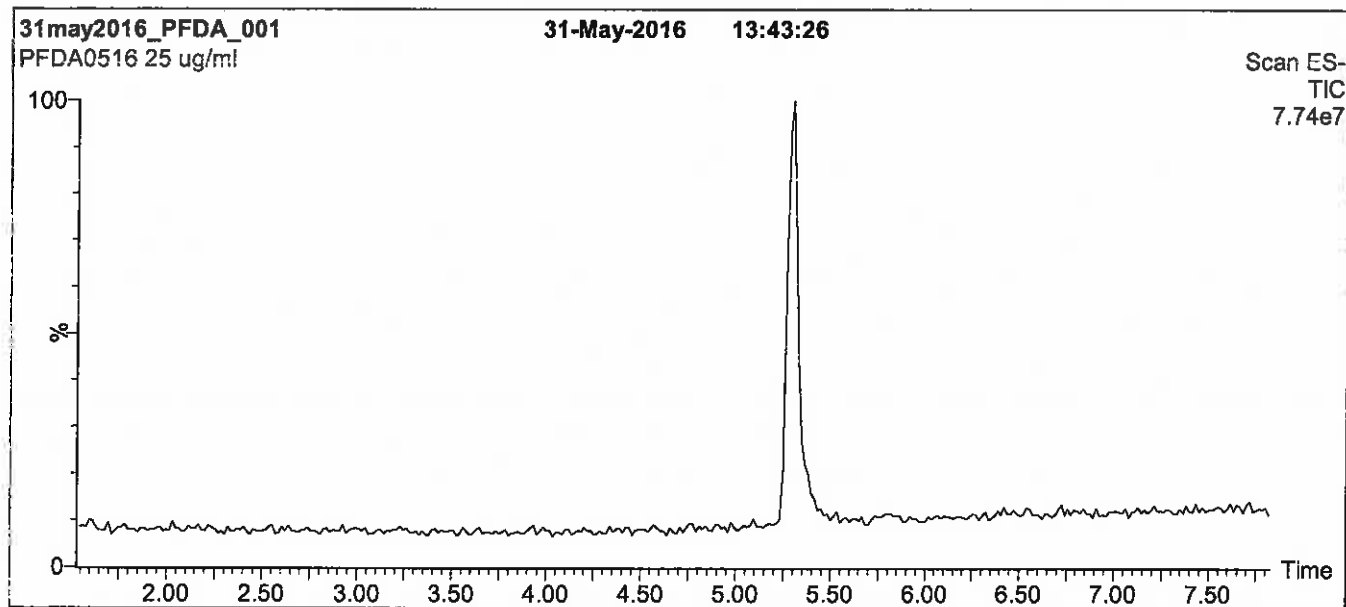
QUALITY MANAGEMENT:

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Figure 1: PFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)

Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)

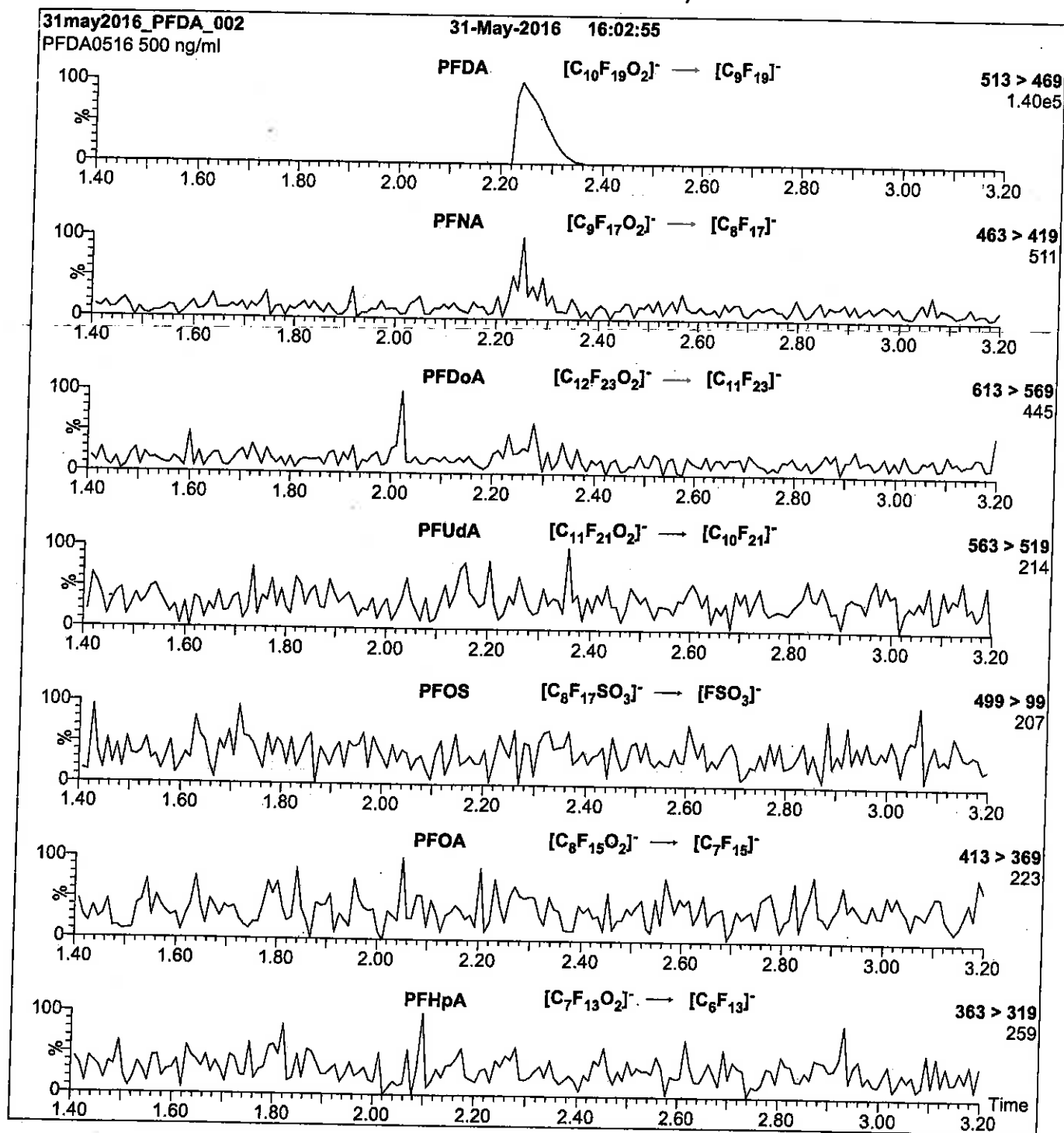
Capillary Voltage (kV) = 2.00

Cone Voltage (V) = 15.00

Cone Gas Flow (l/hr) = 50

Desolvation Gas Flow (l/hr) = 750

Figure 2: PFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCPFDA_00008

n: 9/2/17 skv



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFDA

LOT NUMBER:

PFDA0517

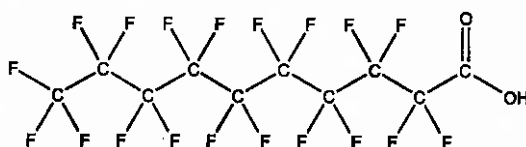
COMPOUND:

Perfluoro-n-decanoic acid

STRUCTURE:

CAS #:

335-76-2



MOLECULAR FORMULA:

$C_{10}H_{19}O_2$

MOLECULAR WEIGHT:

514.08

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/29/2017

EXPIRY DATE: (mm/dd/yyyy)

05/29/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 05/30/2017

(mm/dd/yyyy)

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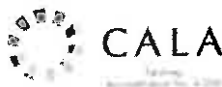
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LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

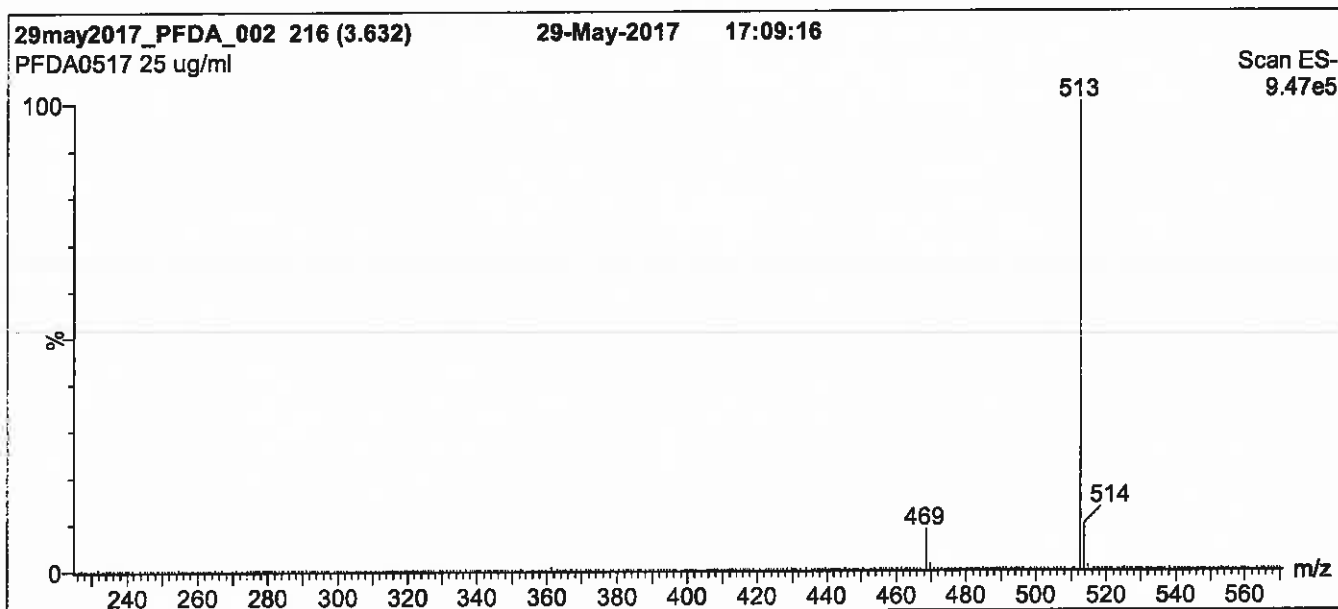
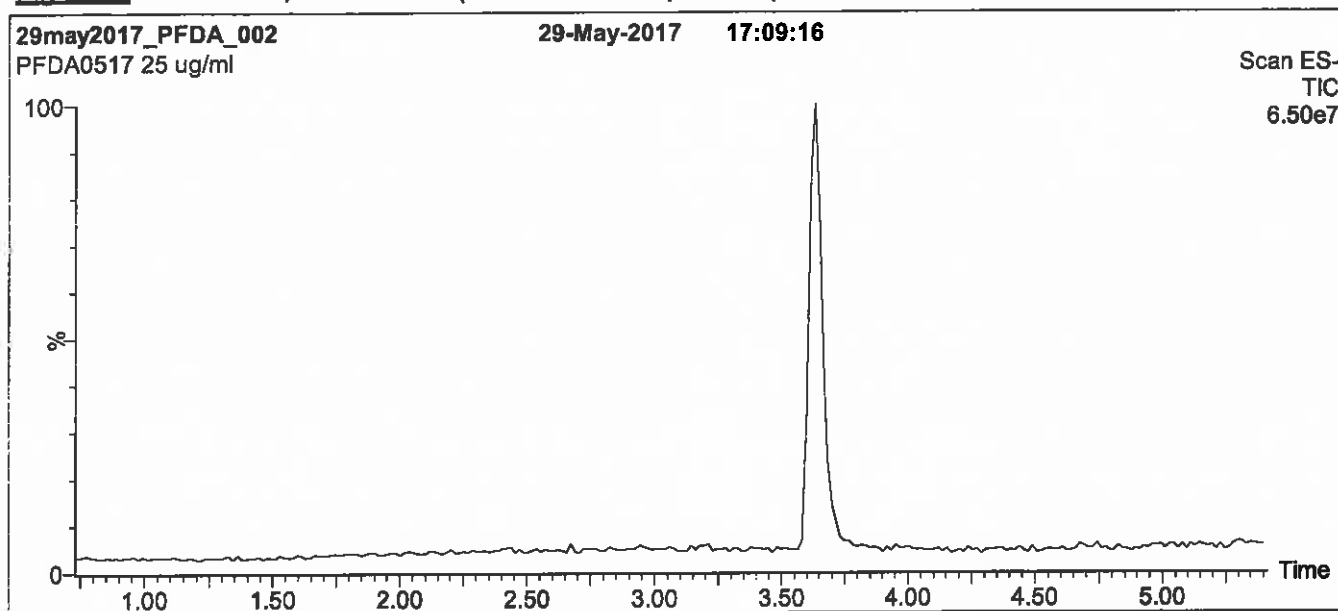
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: PFDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

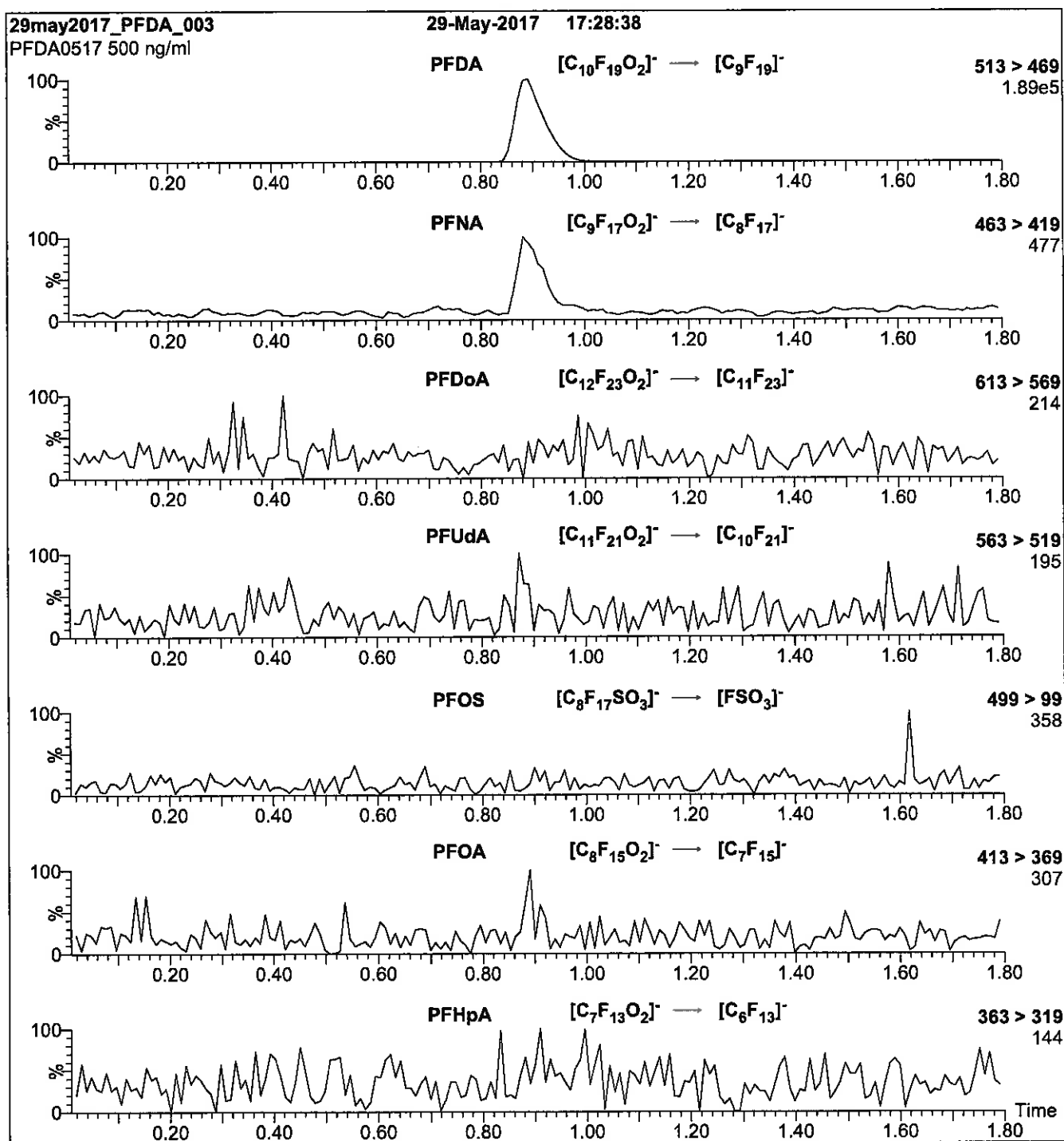
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00007

r: 12/21/16 SPV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFD0A

LOT NUMBER: PFD0A0516

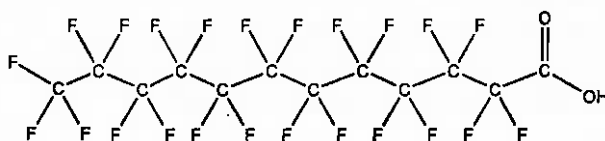
COMPOUND:

Perfluoro-n-dodecanoic acid

STRUCTURE:

CAS #:

307-55-1



MOLECULAR FORMULA:

$C_{12}H_{23}O_2$

MOLECULAR WEIGHT:

614.10

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/31/2016

EXPIRY DATE: (mm/dd/yyyy)

05/31/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 06/02/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

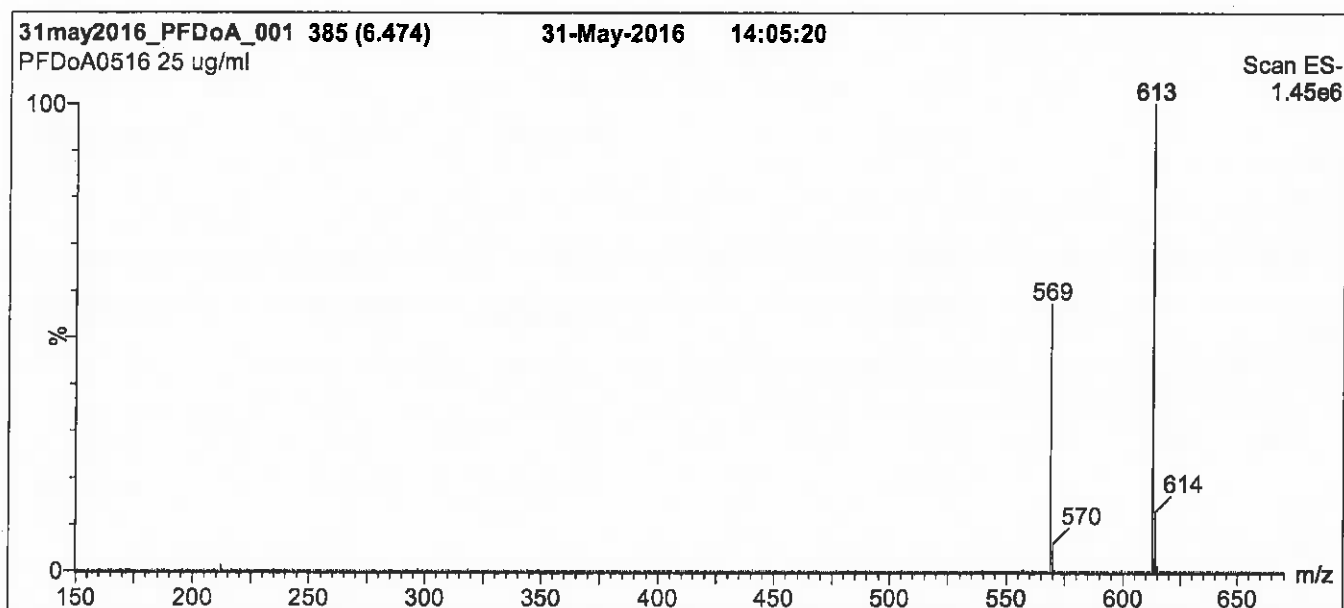
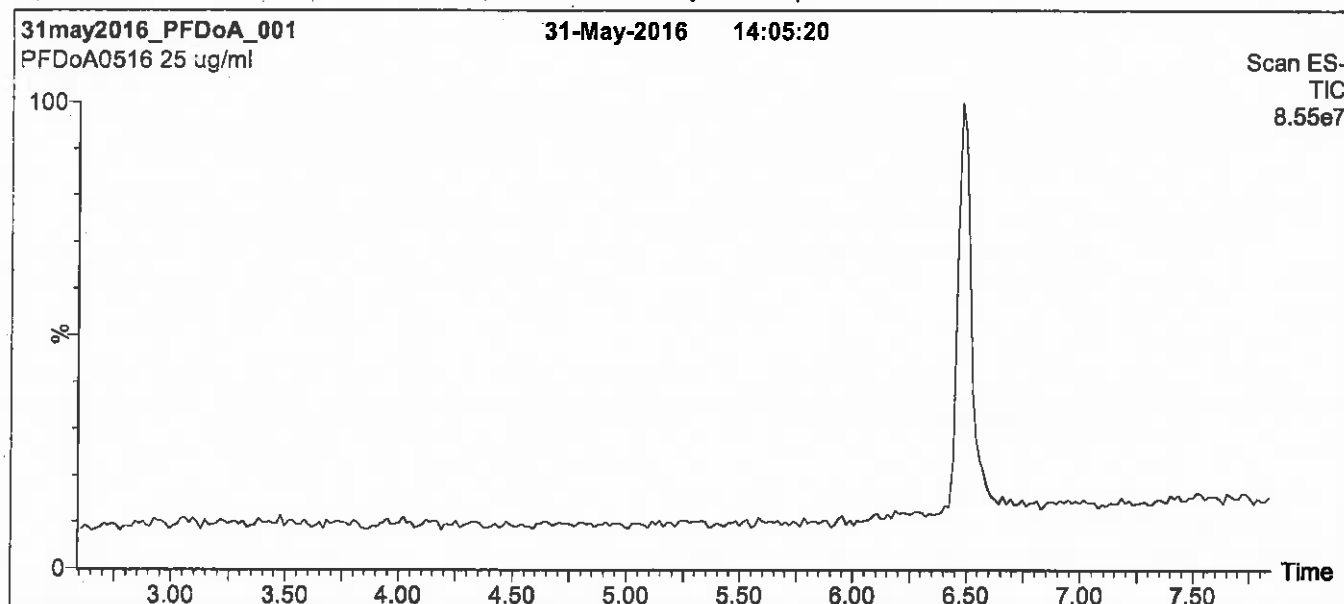
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



Figure 1: PFDaA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)

Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.

Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)

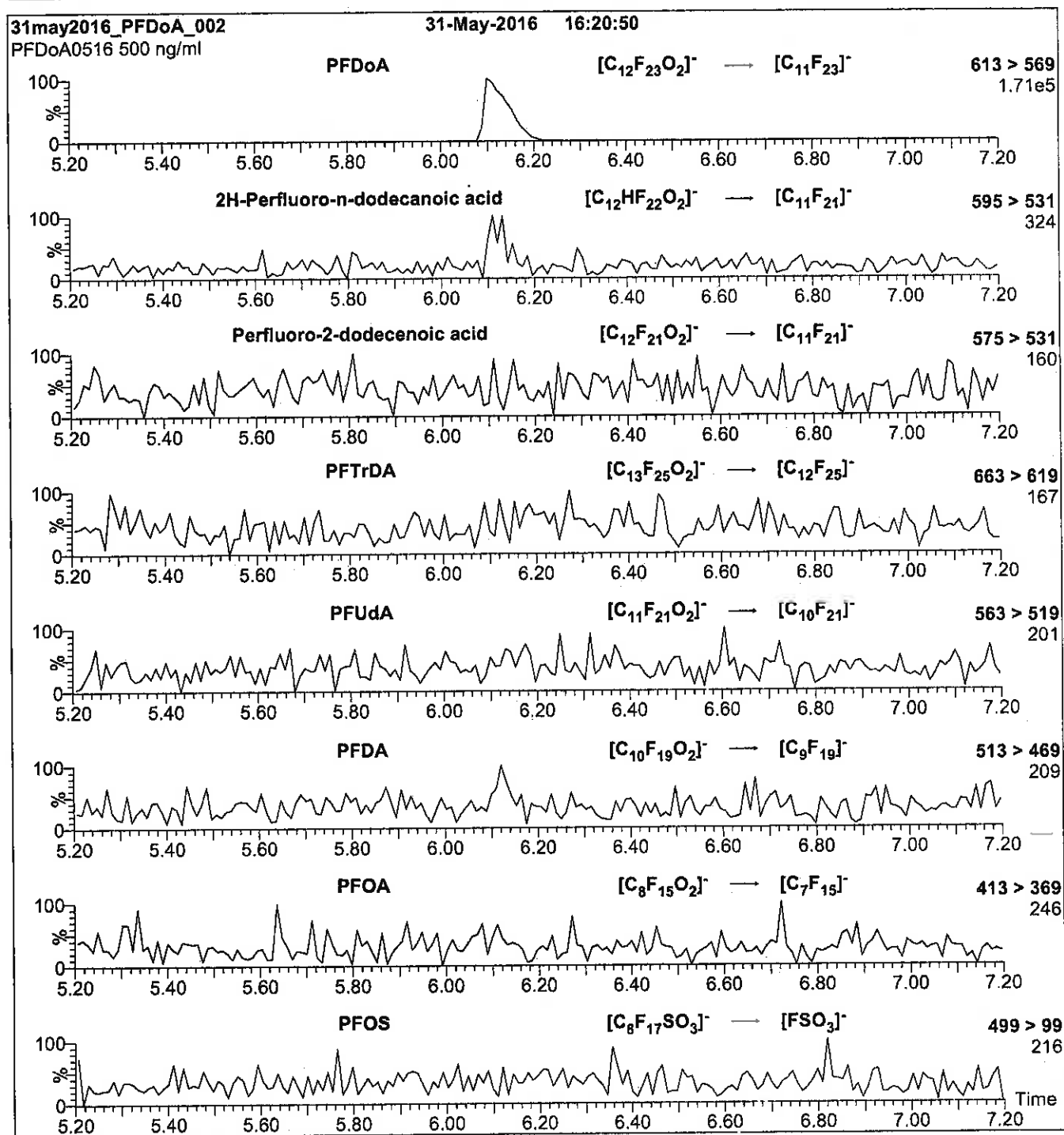
Capillary Voltage (kV) = 2.00

Cone Voltage (V) = 20.00

Cone Gas Flow (l/hr) = 100

Desolvation Gas Flow (l/hr) = 750

Figure 2: PFDaA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFDaA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00008

P: 10/20/17 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFDaA

LOT NUMBER:

PFDaA0517

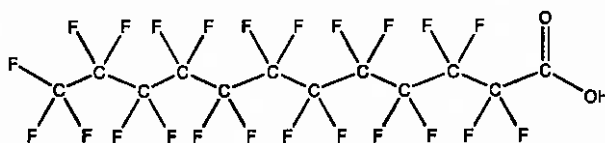
COMPOUND:

Perfluoro-n-dodecanoic acid

STRUCTURE:

CAS #:

307-55-1



MOLECULAR FORMULA:

$C_{12}H_2F_{23}O_2$

MOLECULAR WEIGHT:

614.10

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/29/2017

EXPIRY DATE: (mm/dd/yyyy)

05/29/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 05/30/2017

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

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SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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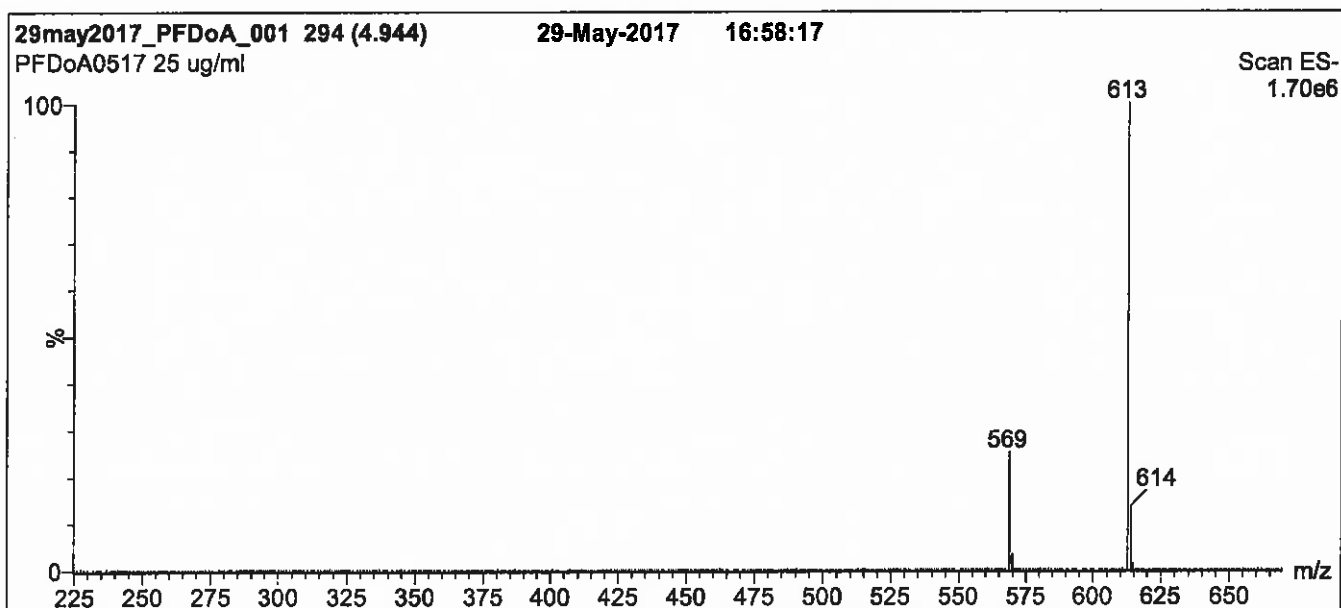
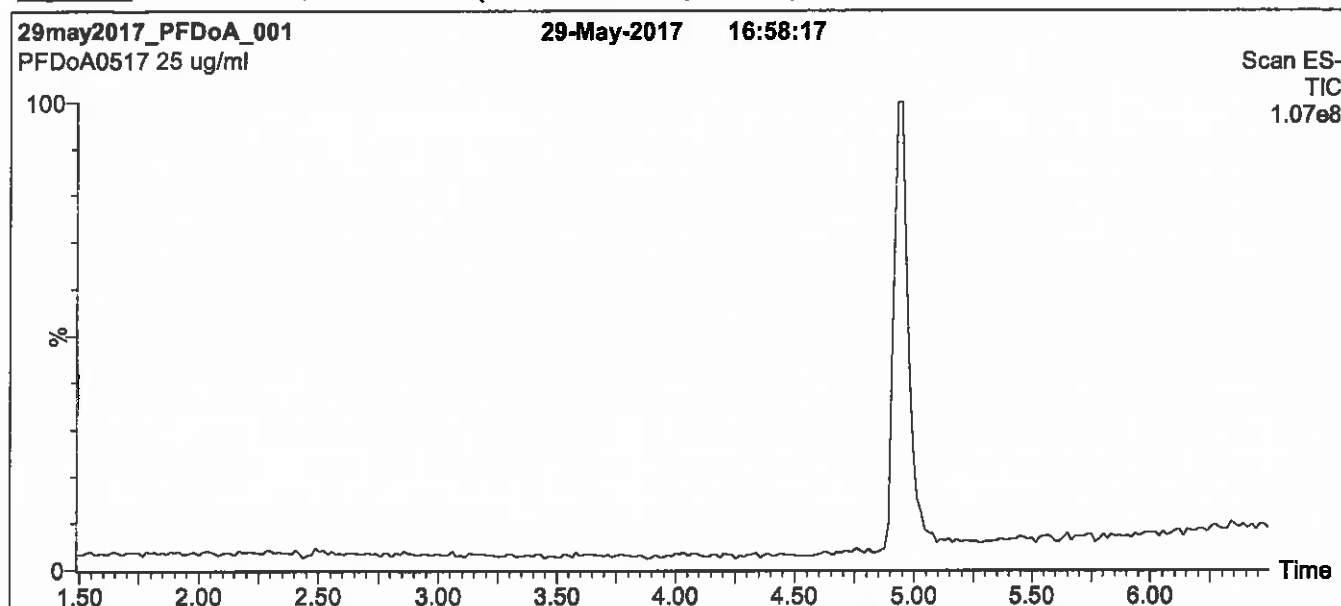
QUALITY MANAGEMENT:

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Figure 1: PFDoA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

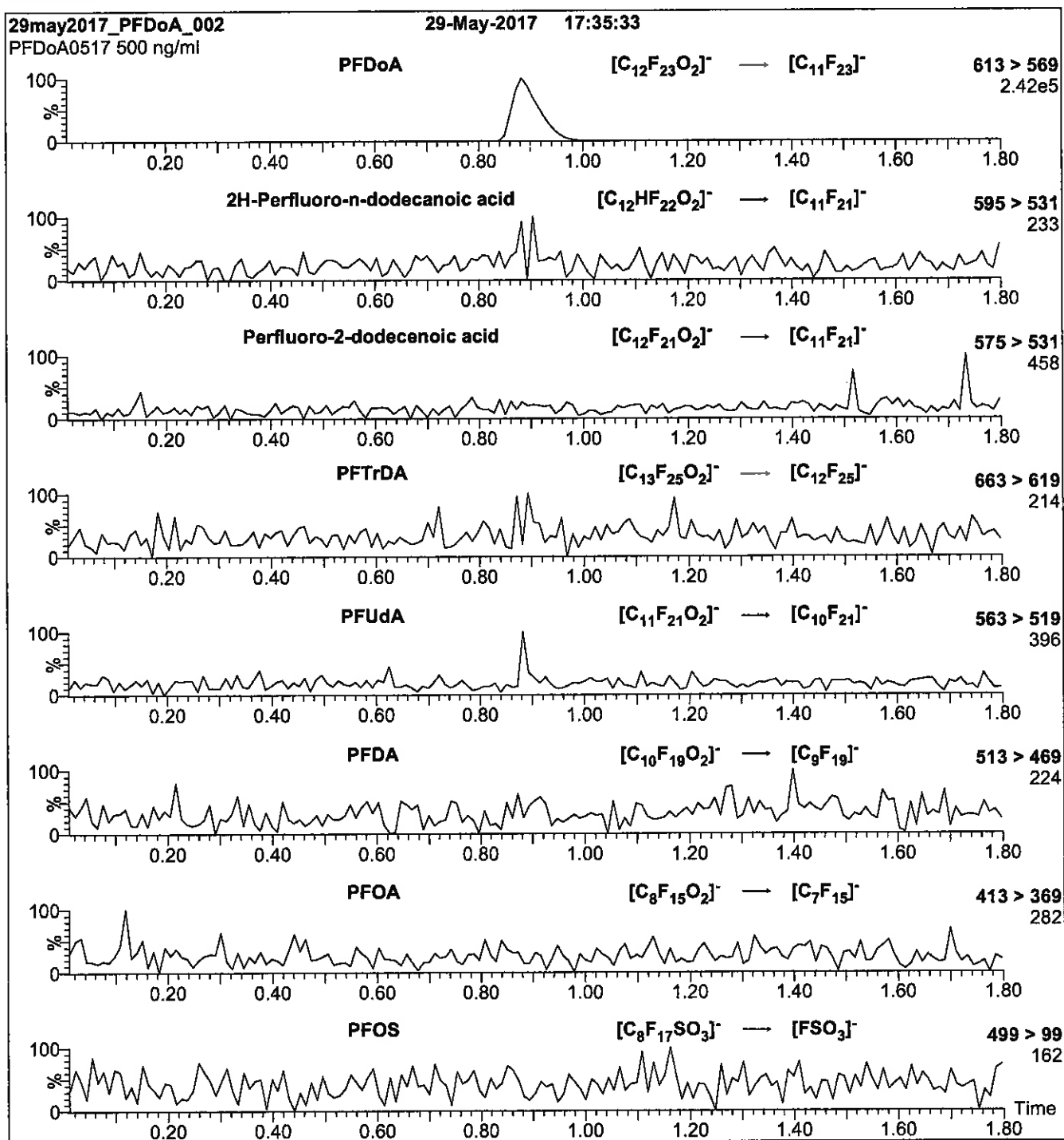
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFDaA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFDaA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 13

Reagent

LCPFDSA_00002



WELLINGTON LABORATORIES

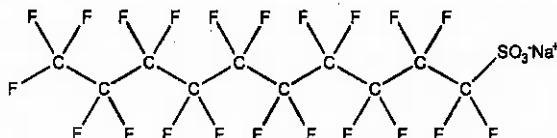
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDS
COMPOUND: Sodium perfluoro-1-decanesulfonate

LOT NUMBER: LPFDS0516

STRUCTURE:

CAS #: 2806-15-7



MOLECULAR FORMULA: $C_{10}F_{21}SO_3Na$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)
 $48.2 \pm 2.4 \mu\text{g/ml}$ (PFDS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/24/2016
EXPIRY DATE: (mm/dd/yyyy) 05/24/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 622.13
SOLVENT(S): Methanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/26/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

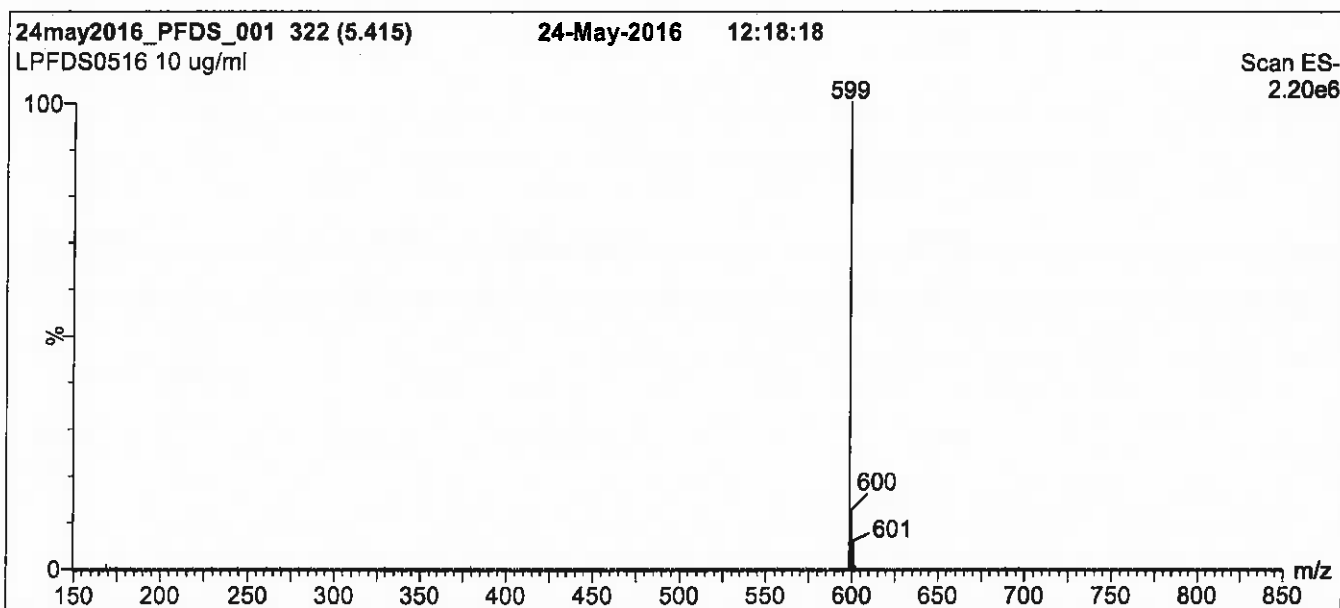
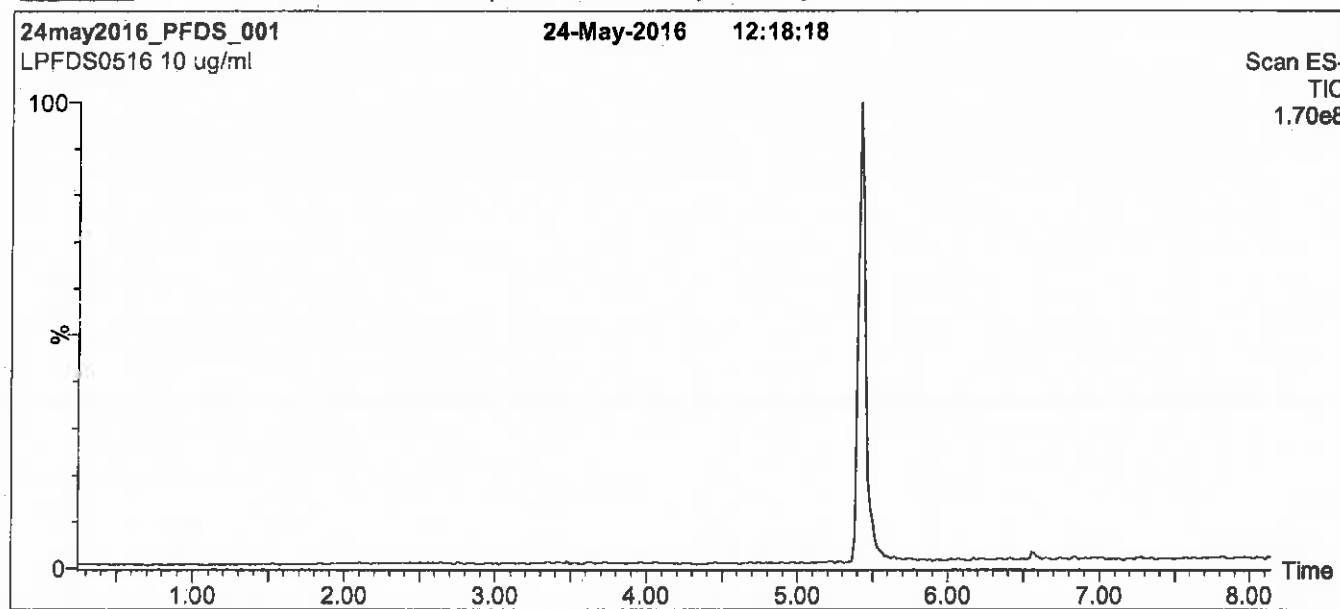
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: L-PFDS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈,
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

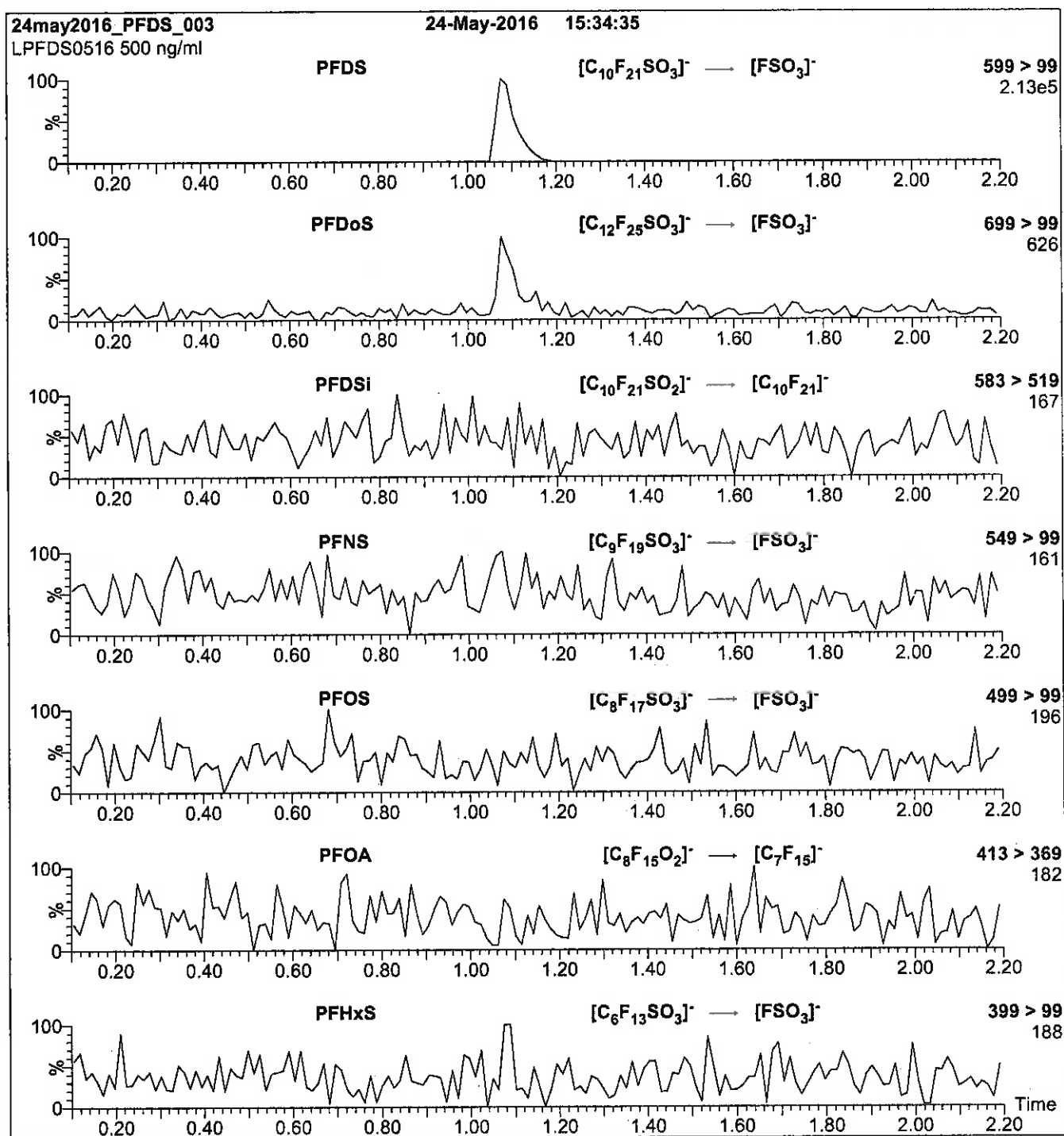
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 70.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFDS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFDS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.70e-3
Collision Energy (eV) = 50

Reagent

LCPFHpA_00008



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHpA

LOT NUMBER:

PFHpA1216

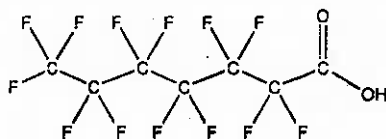
COMPOUND:

Perfluoro-n-heptanoic acid

STRUCTURE:

CAS #:

375-85-9



MOLECULAR FORMULA:

$C_7H_{13}O_2$

MOLECULAR WEIGHT:

364.06

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/02/2016

EXPIRY DATE: (mm/dd/yyyy)

12/02/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/12/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

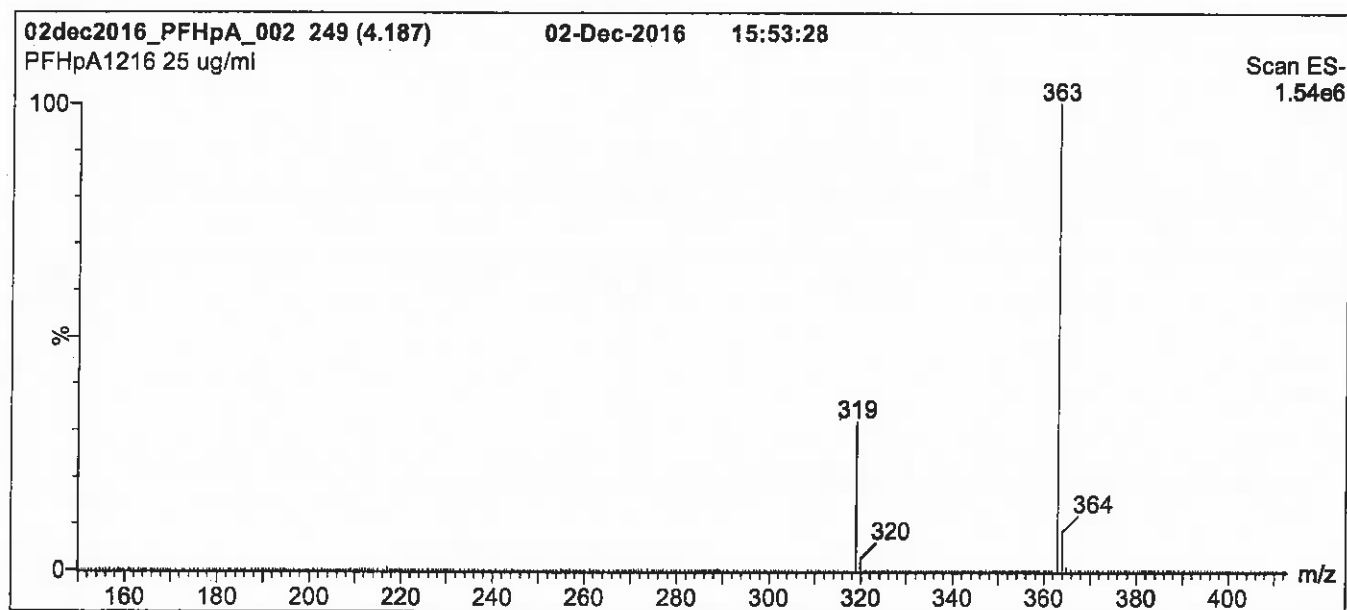
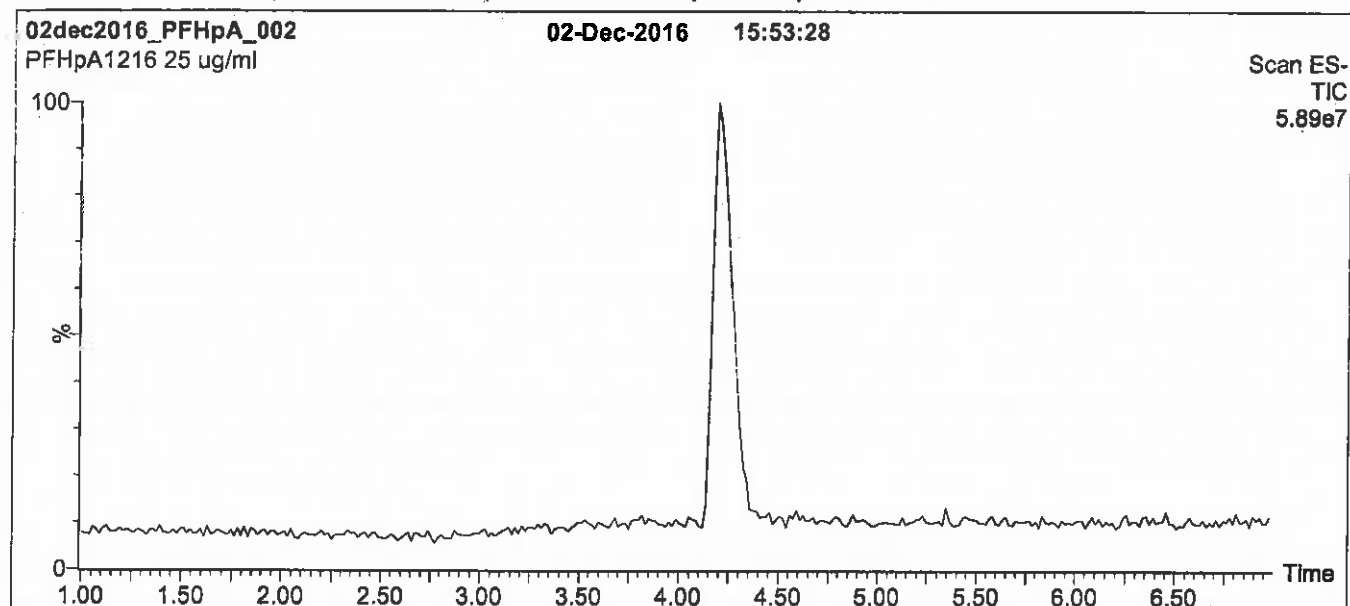
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFHpA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

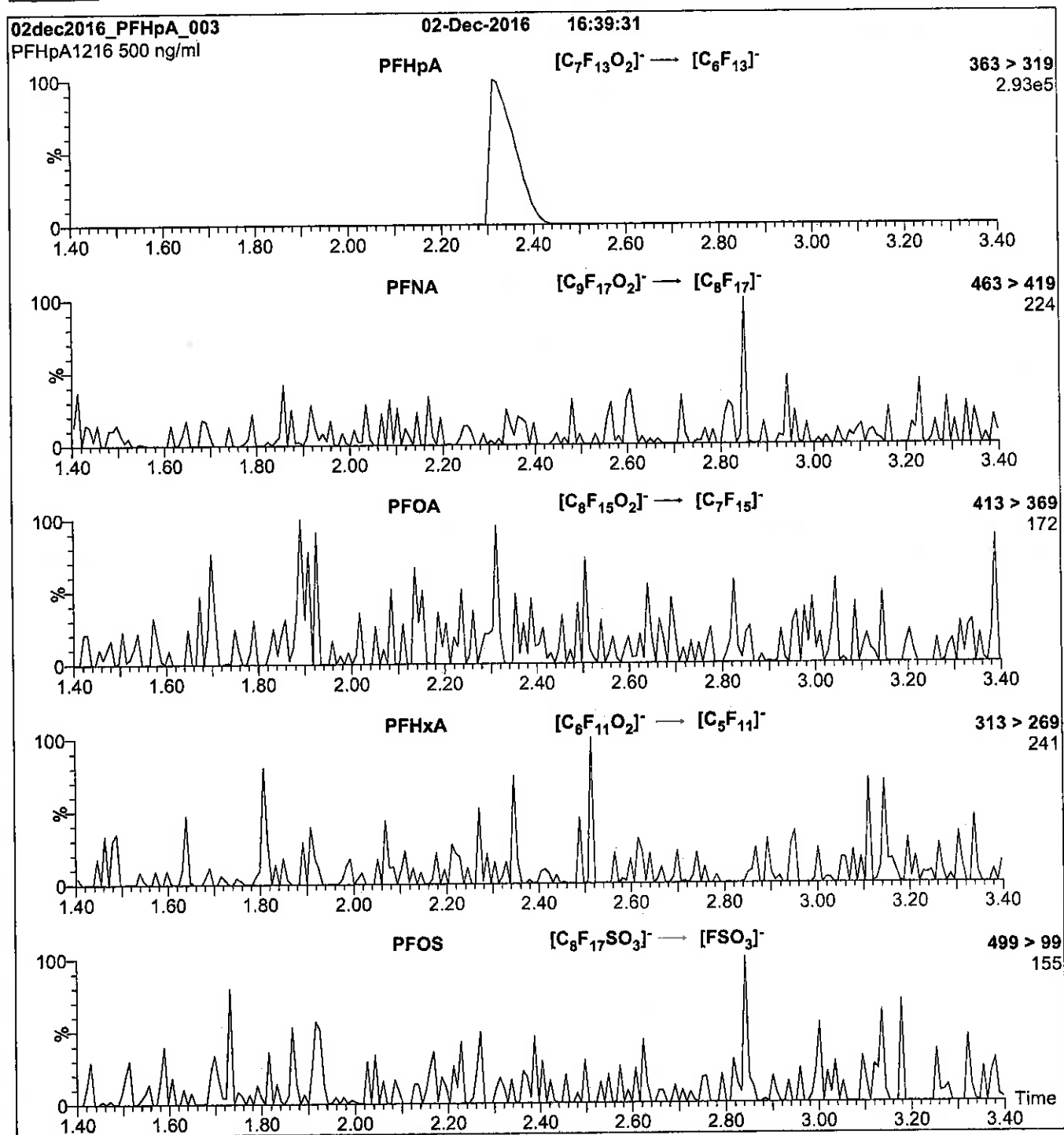
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHpA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHpA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = $3.50e-3$
Collision Energy (eV) = 11

Reagent

LCPFHpSA_00003

RS 9/21/17 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFHpS

LOT NUMBER:

LPFHpS0817

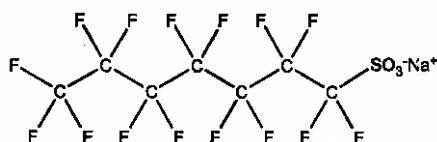
COMPOUND:

Sodium perfluoro-1-heptanesulfonate

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

$C_7F_{15}SO_3Na$

MOLECULAR WEIGHT:

472.10

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)

SOLVENT(S):

Methanol

$47.6 \pm 2.4 \mu\text{g/ml}$ (PFHpS anion)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/01/2017

EXPIRY DATE: (mm/dd/yyyy)

09/01/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.2% of L-PFHxS ($C_8F_{13}SO_3Na$) and ~ 0.1% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 09/07/2017

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • Info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

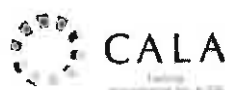
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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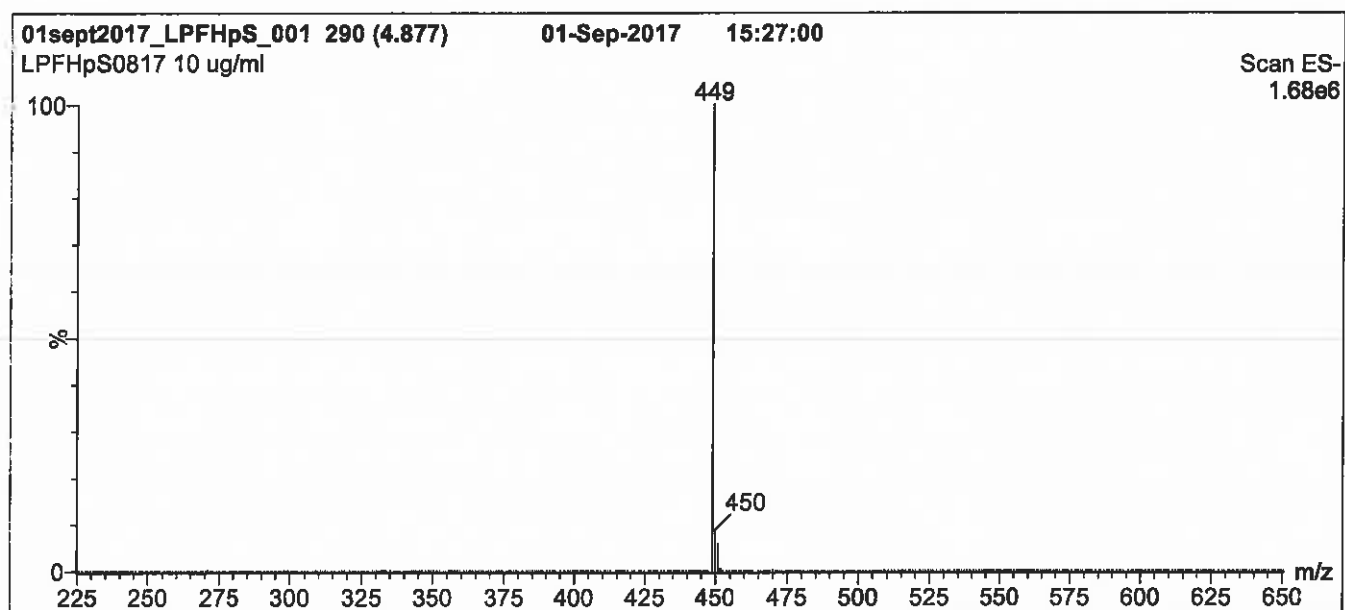
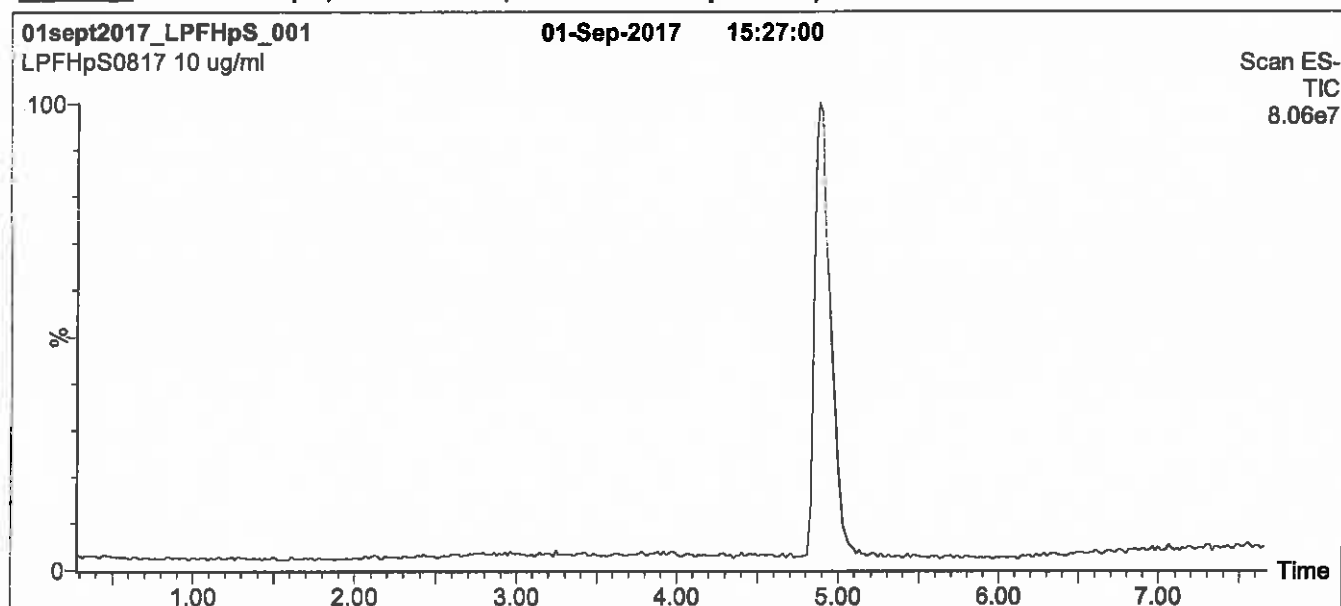
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: L-PFHpS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold
for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)

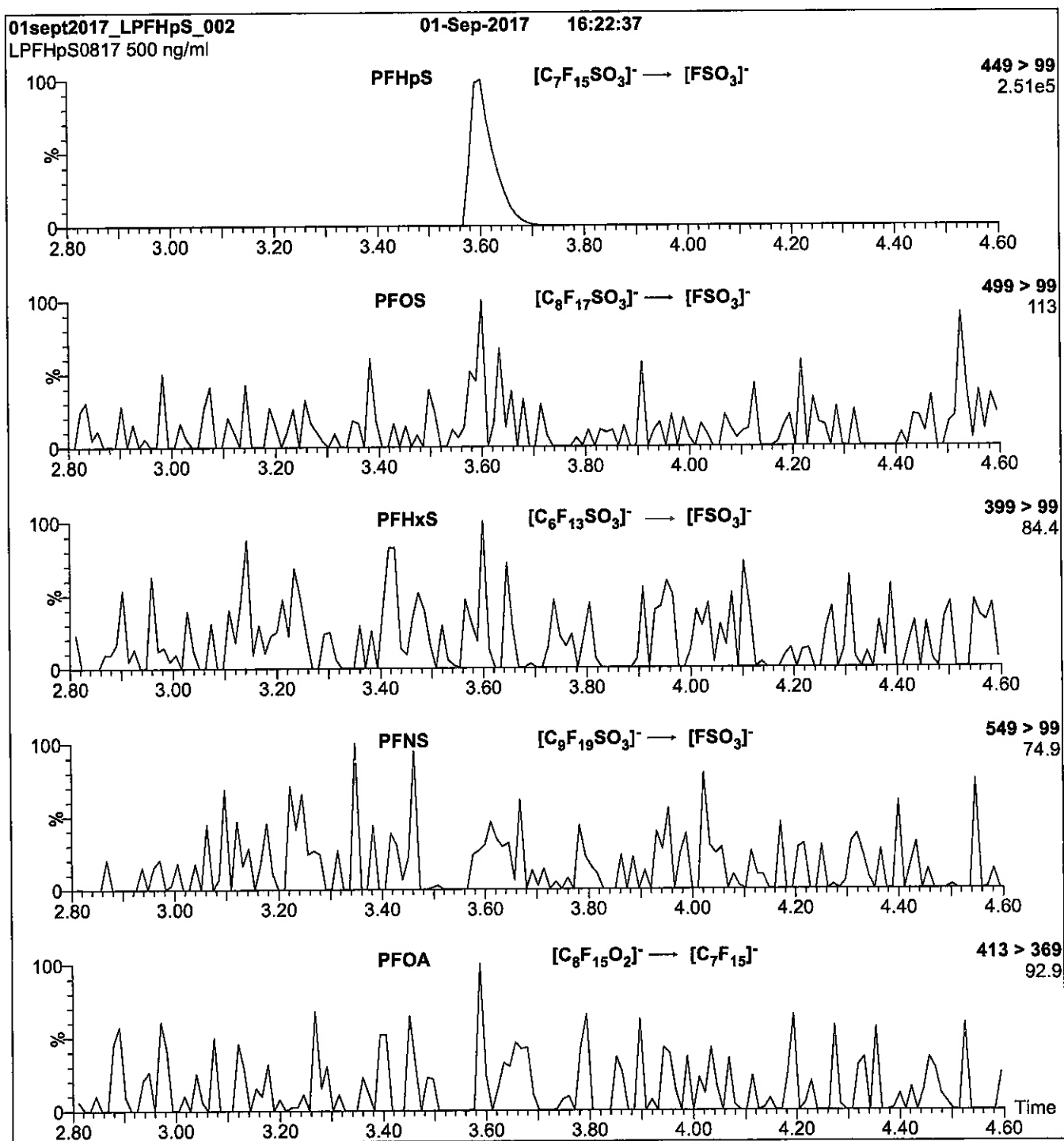
Capillary Voltage (kV) = 2.00

Cone Voltage (V) = 60.00

Cone Gas Flow (l/hr) = 60

Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFHpS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml L-PFHpS)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3

Collision Energy (eV) = 35

Reagent

LCPFHxA_00007



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHxA

LOT NUMBER:

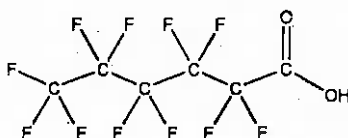
PFHxA1215

COMPOUND:

Perfluoro-n-hexanoic acid

STRUCTURE:**CAS #:**

307-24-4

**MOLECULAR FORMULA:** $C_6H_{11}F_{11}O_2$ **MOLECULAR WEIGHT:**

314.05

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

12/22/2015

EXPIRY DATE: (mm/dd/yyyy)

12/22/2020

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of Perfluoro-n-pentanoic acid (PFPeA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/23/2015

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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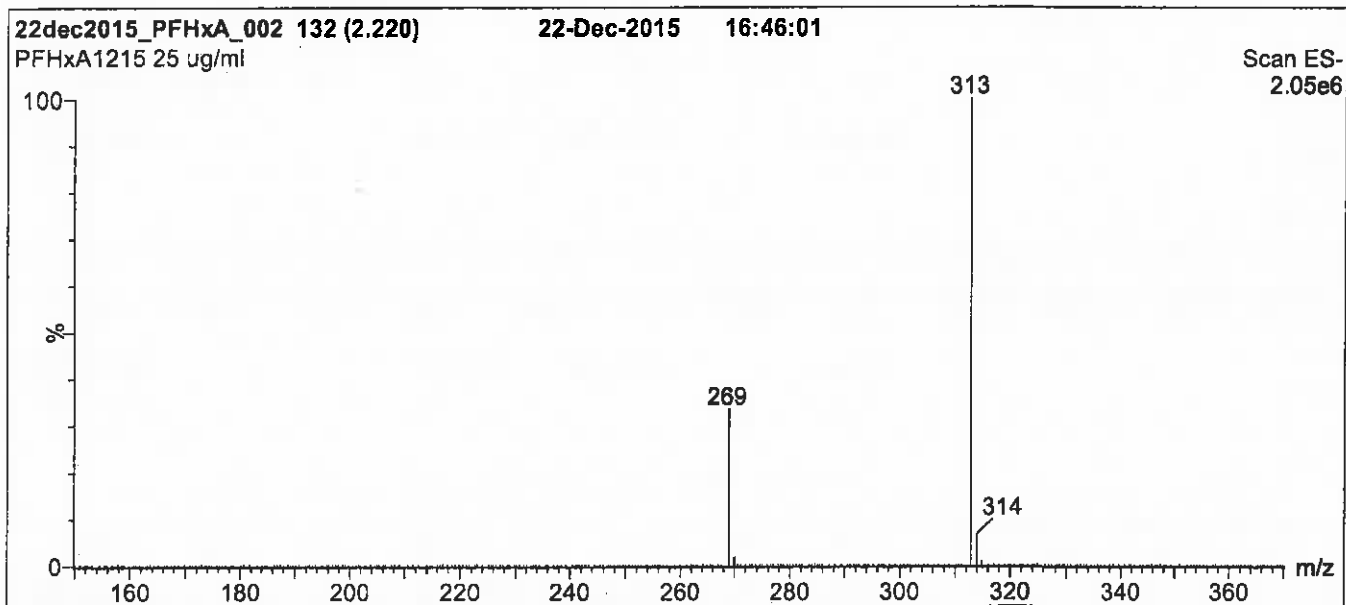
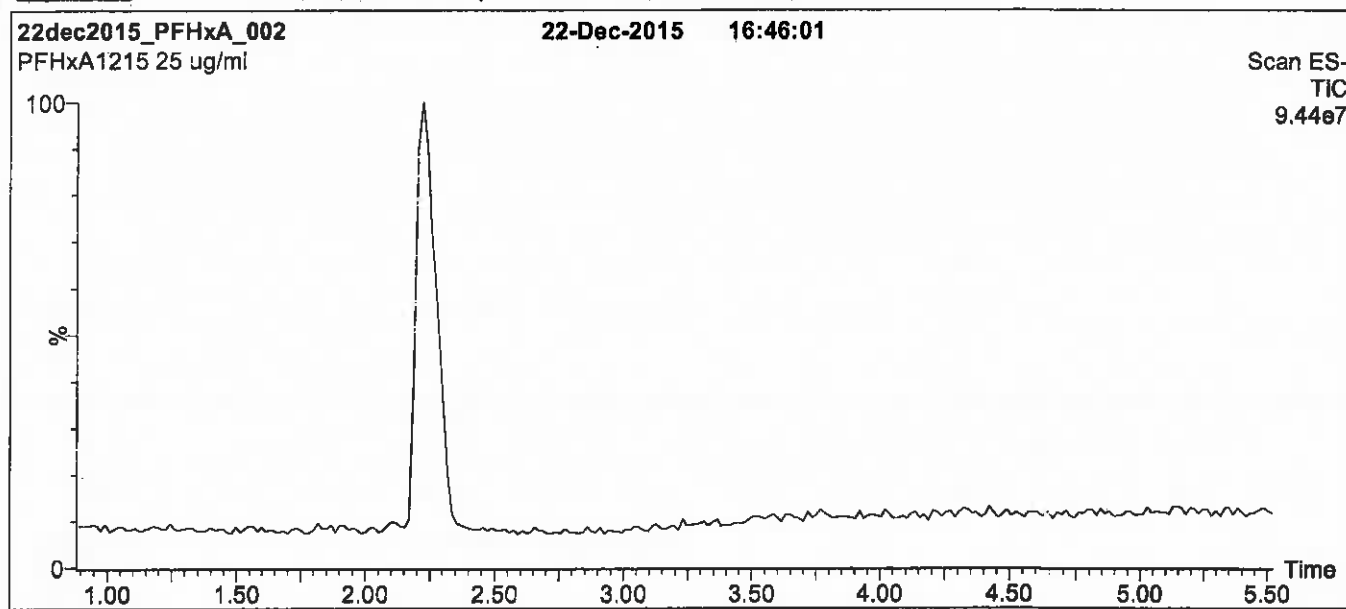
QUALITY MANAGEMENT:

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Figure 1: PFHxA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

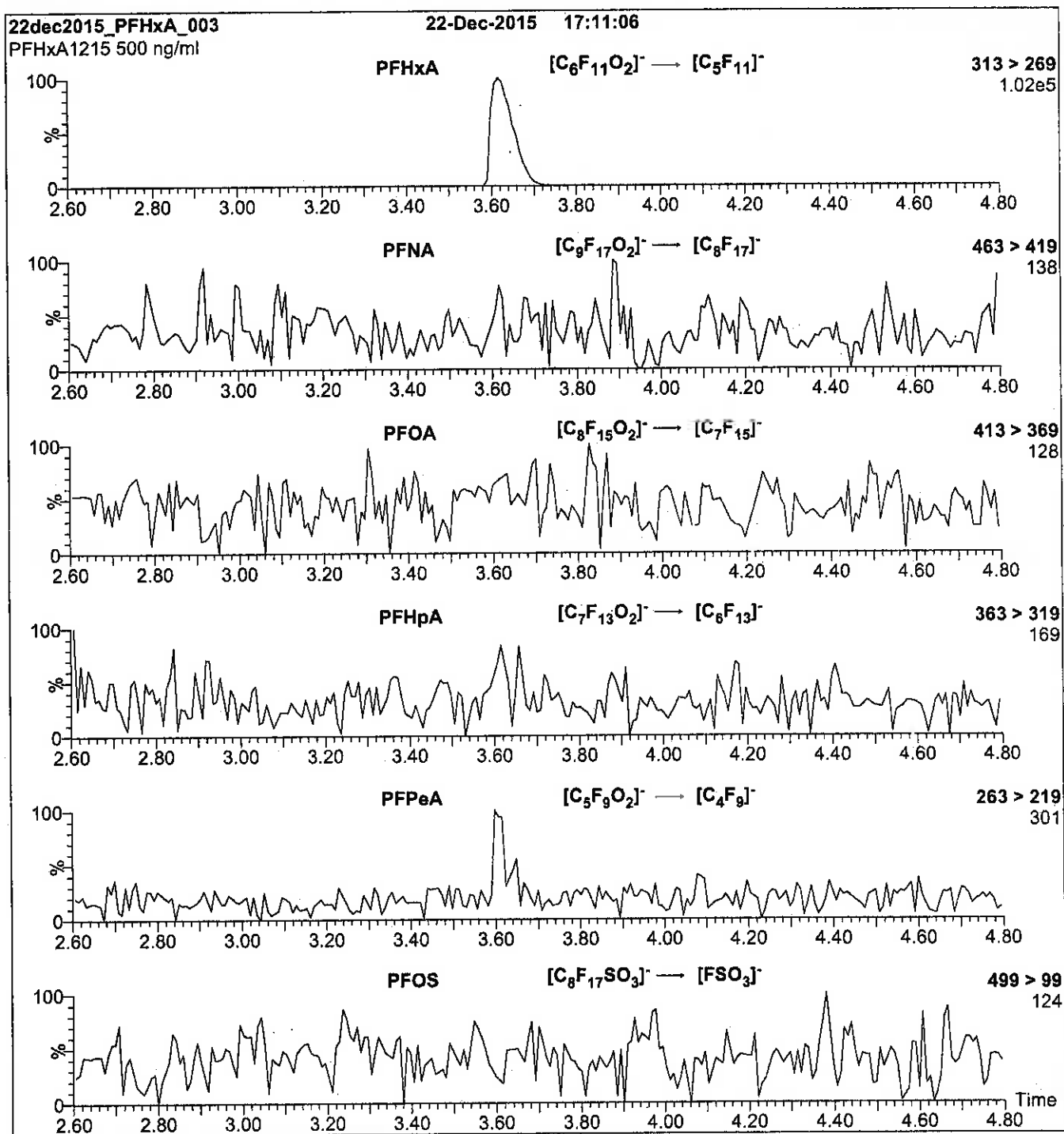
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHxA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHxA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCPFHxDA_00008

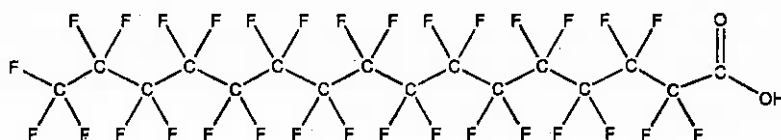


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxDA **LOT NUMBER:** PFHxDA0516
COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE: **CAS #:** 67905-19-5



MOLECULAR FORMULA: $C_{16}H_{31}O_2$ **MOLECULAR WEIGHT:** 814.13
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/25/2016
EXPIRY DATE: (mm/dd/yyyy) 05/25/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
 Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.4% of PFODA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/27/2016
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
 519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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HAZARDS:

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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

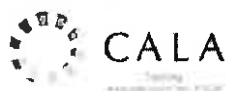
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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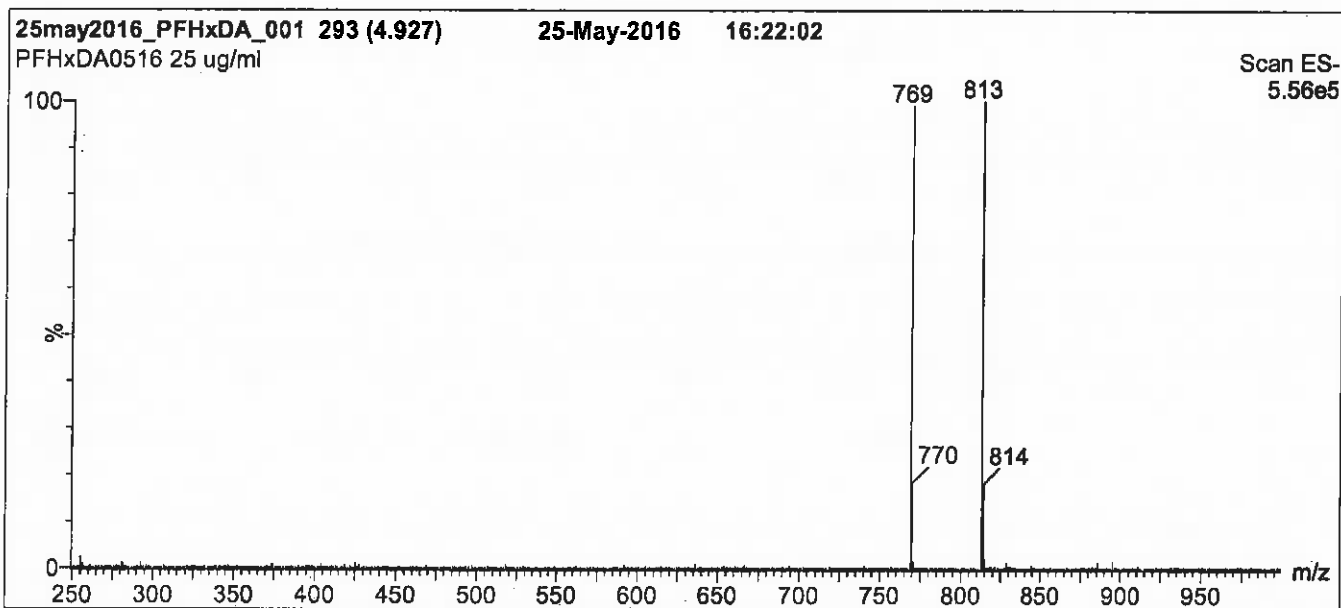
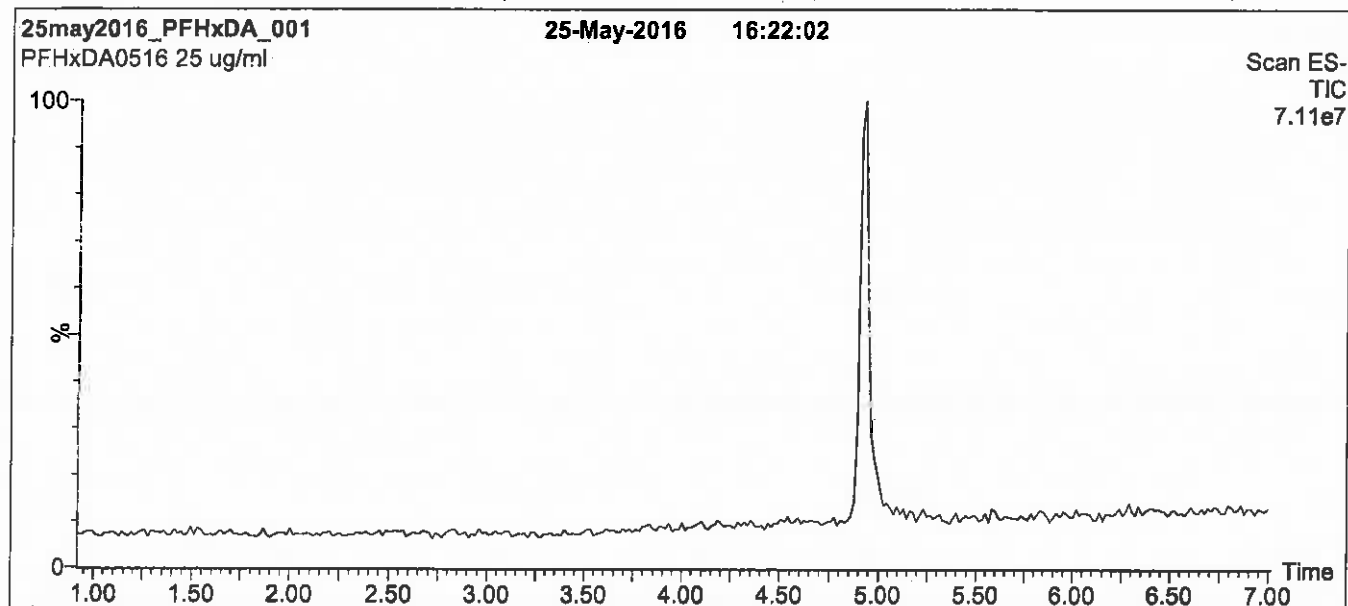
QUALITY MANAGEMENT:

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Figure 1: PFHxDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 95% organic over 6 min and hold for 2.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

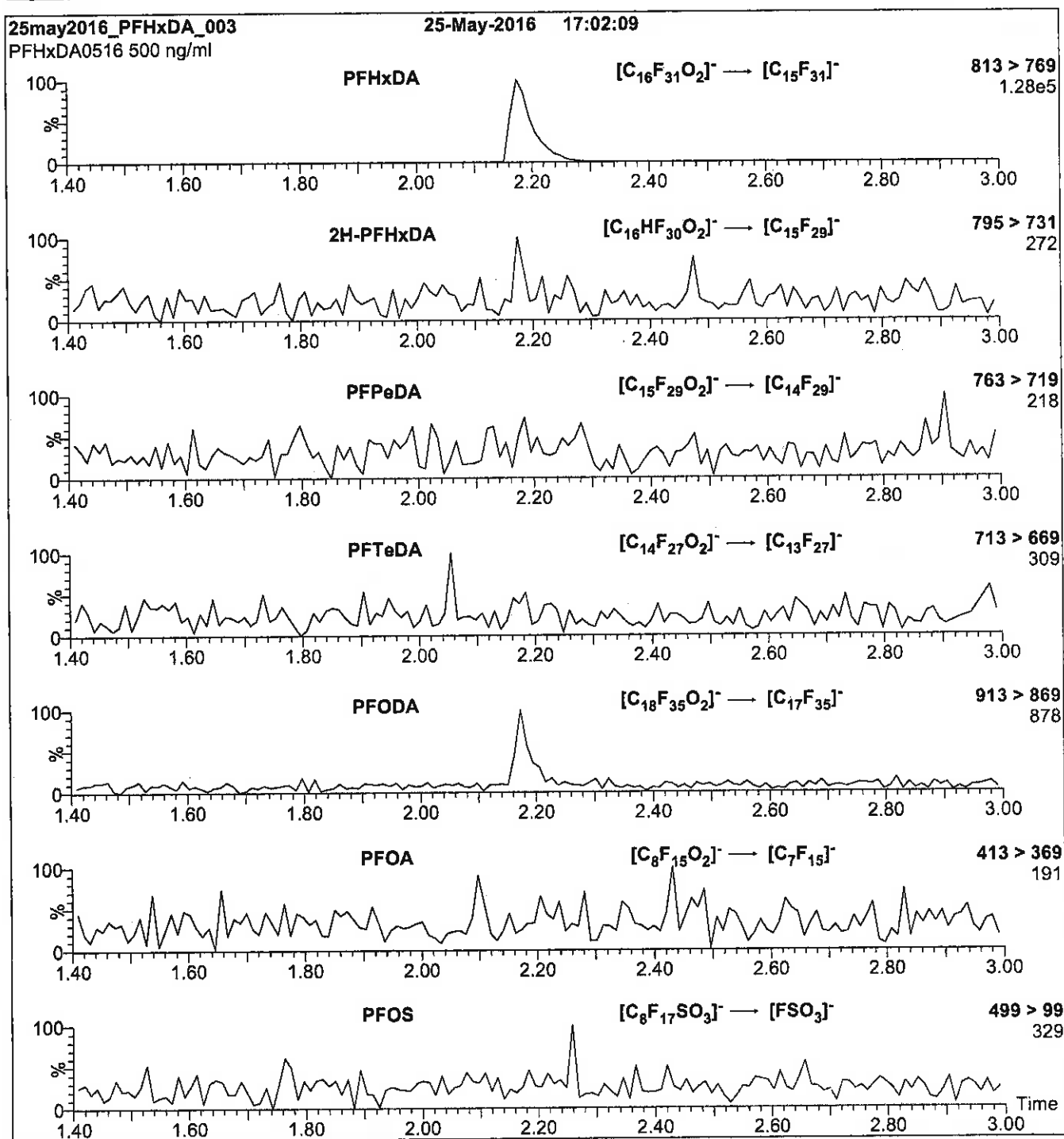
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFHxDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFHxDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 15

Reagent

LCPFHxS-br_00004

CERTIFICATE OF ANALYSIS DOCUMENTATION

**Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers**

brPFHxSK0615 (1 of 6)
rev1

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compounds it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

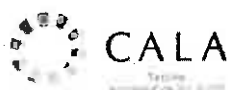
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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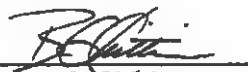
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: br-PFHxSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-hexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{SO}_3^-\text{K}^+)\text{CF}_3 \\ \\ \text{CF}_3 \end{array}$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3\text{C}(\text{CF}_3)_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

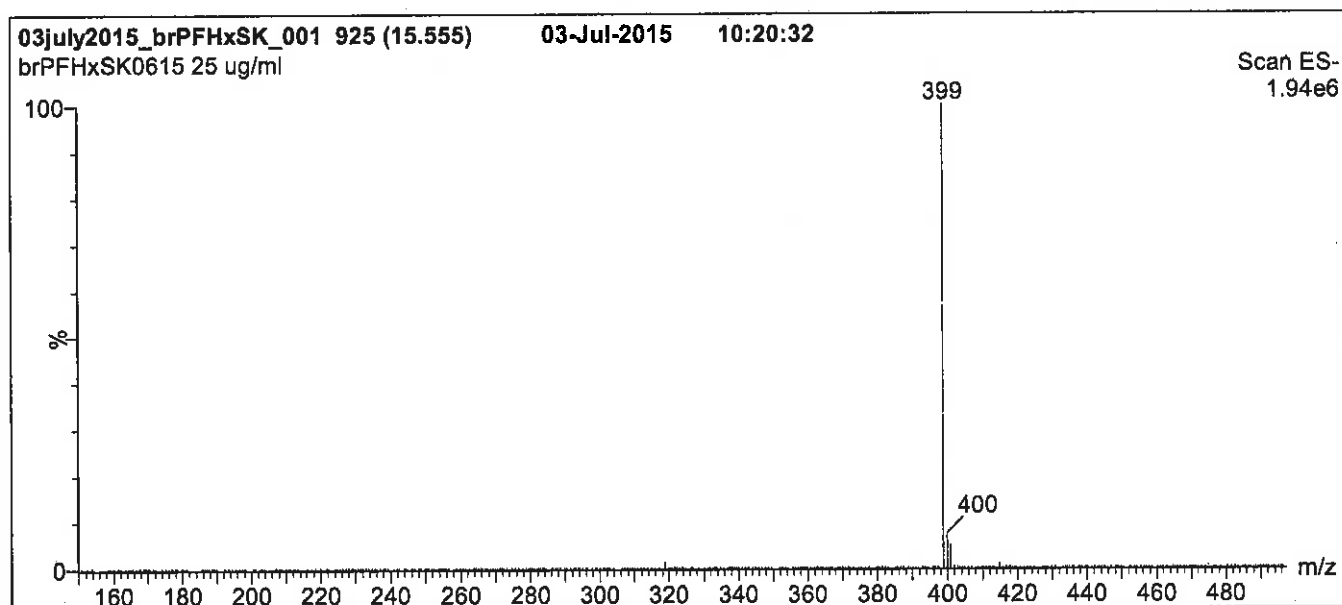
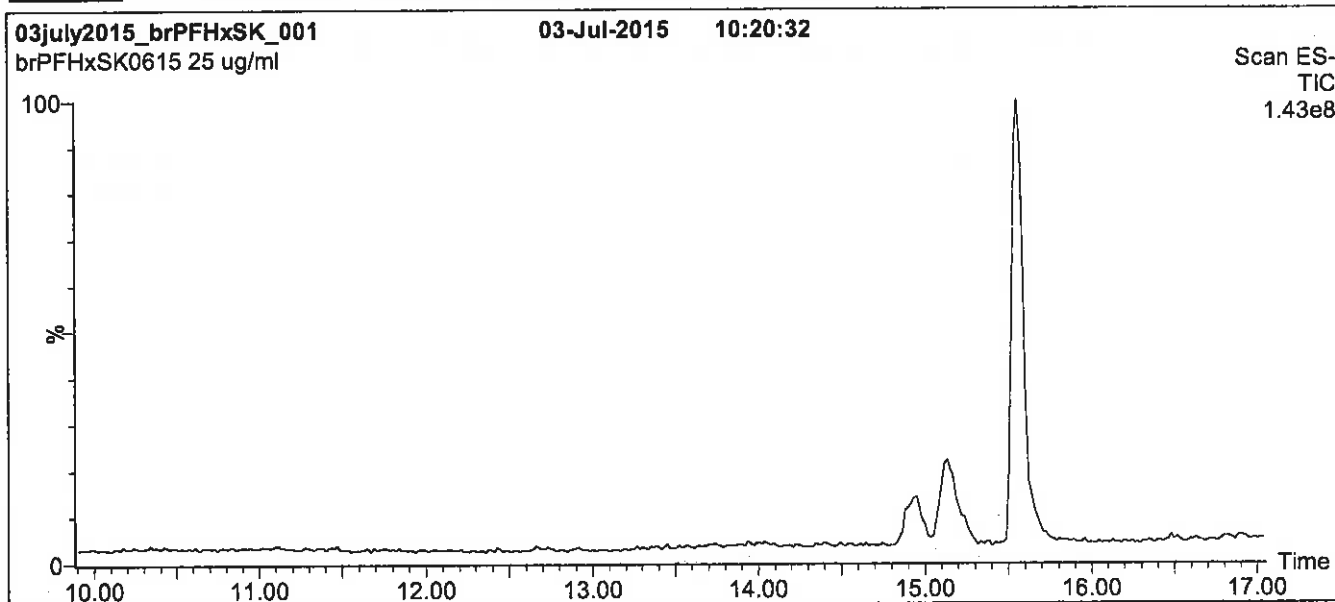
Certified By:


B.G. Chittim

Date: 09/27/2016

(mm/dd/yyyy)

Figure 1: br-PFHxSK; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

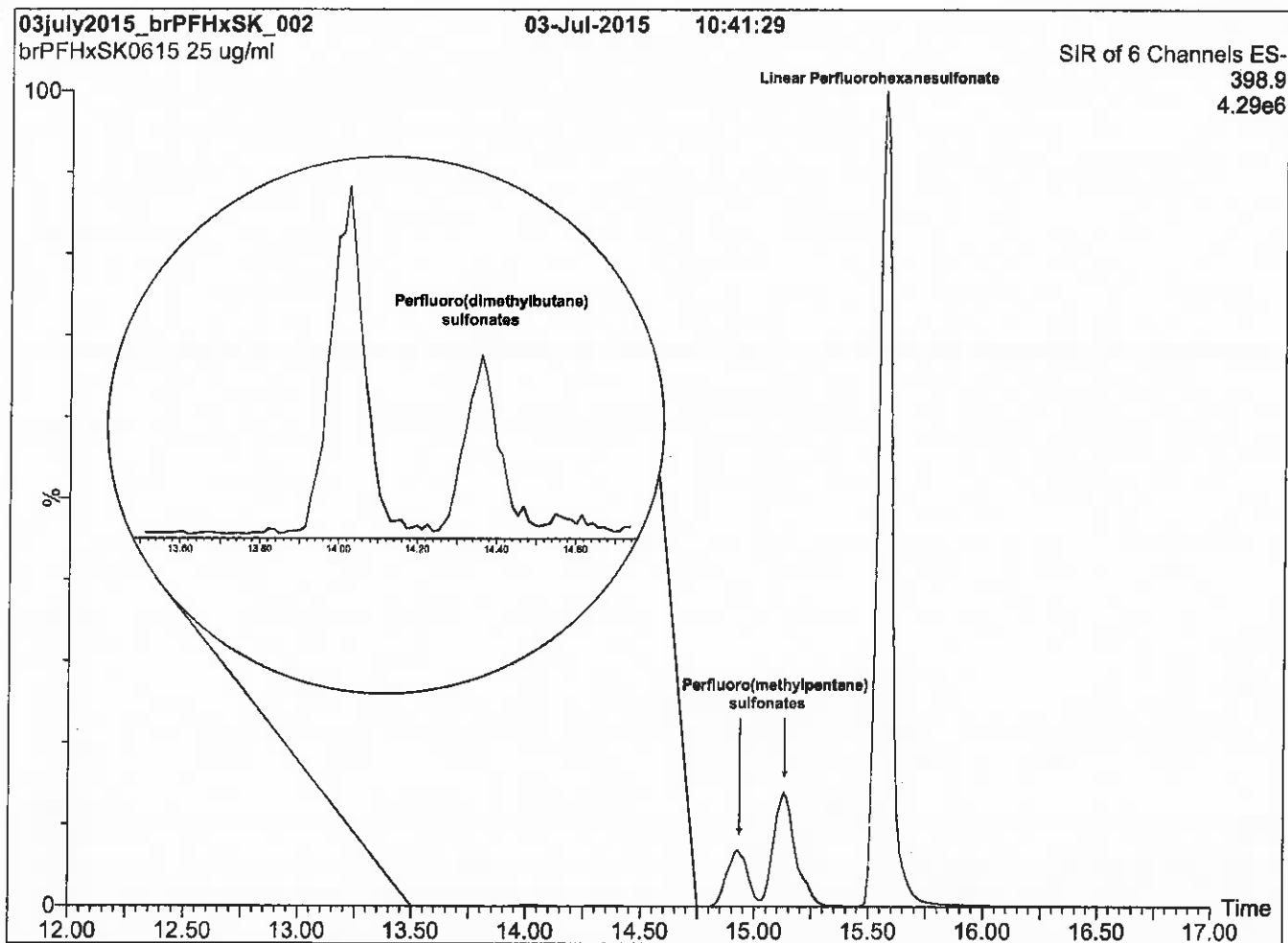
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: br-PFHxSK; LC/MS Data



Conditions for Figure 2:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 20% (80:20 MeOH:ACN) / 80% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 50% organic over 14 min. Ramp to
90% organic over 3 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 20 min

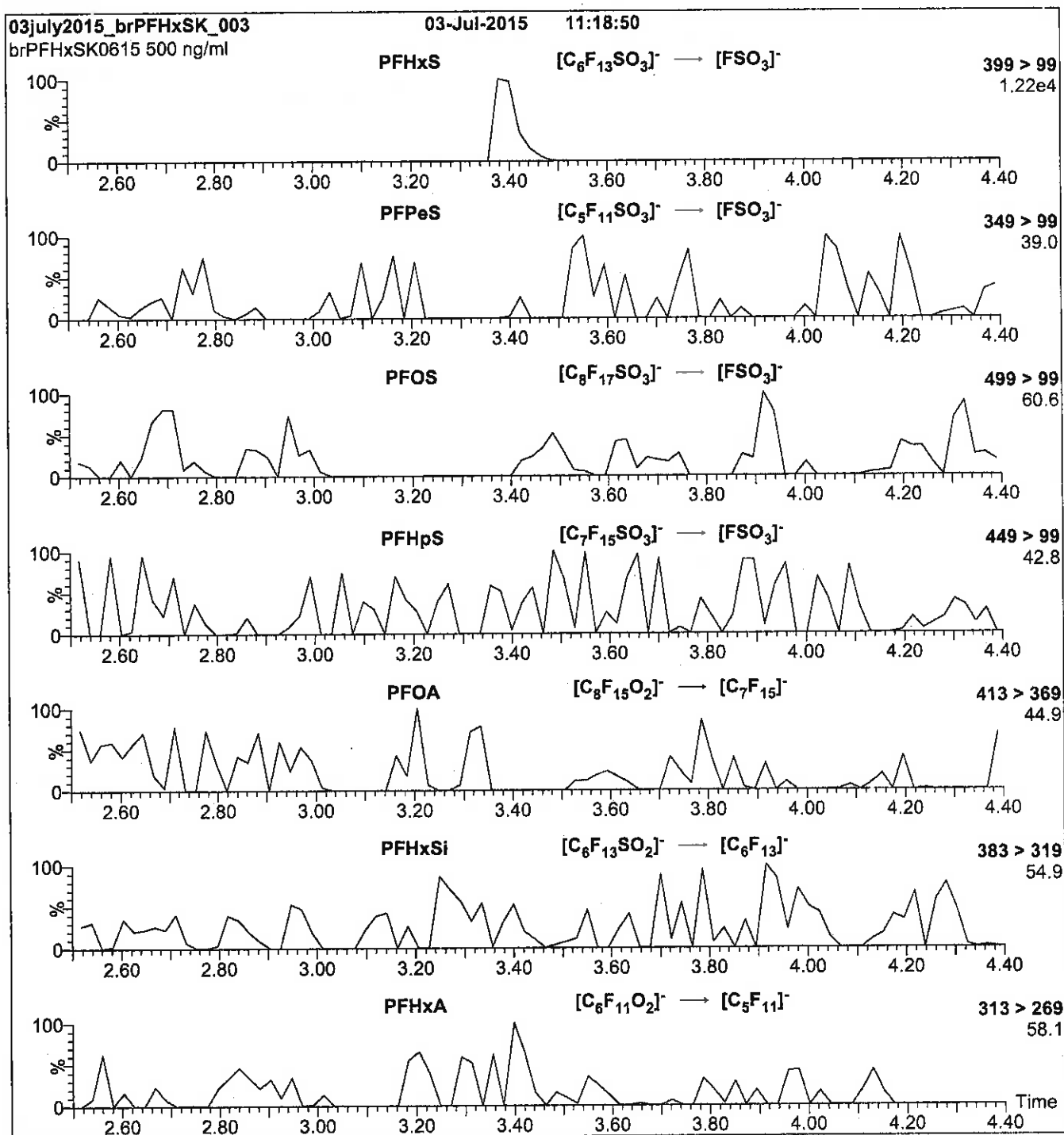
Flow: 300 μ l/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 50.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 3: br-PFHxSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: Direct loop injection
10 μ l (500 ng/ml br-PFHxSK)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 30

Reagent

LCPFNA_00009

r: 9/21/17 skv



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFNA

LOT NUMBER:

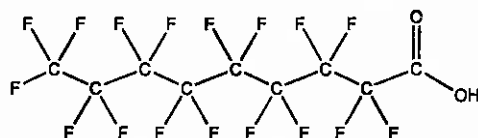
PFNA0717

COMPOUND:

Perfluoro-n-nonanoic acid

STRUCTURE:**CAS #:**

375-95-1

**MOLECULAR FORMULA:** $C_9H_{17}O_2$ **MOLECULAR WEIGHT:**

464.08

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

07/20/2017

EXPIRY DATE: (mm/dd/yyyy)

07/20/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUdA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 07/24/2017

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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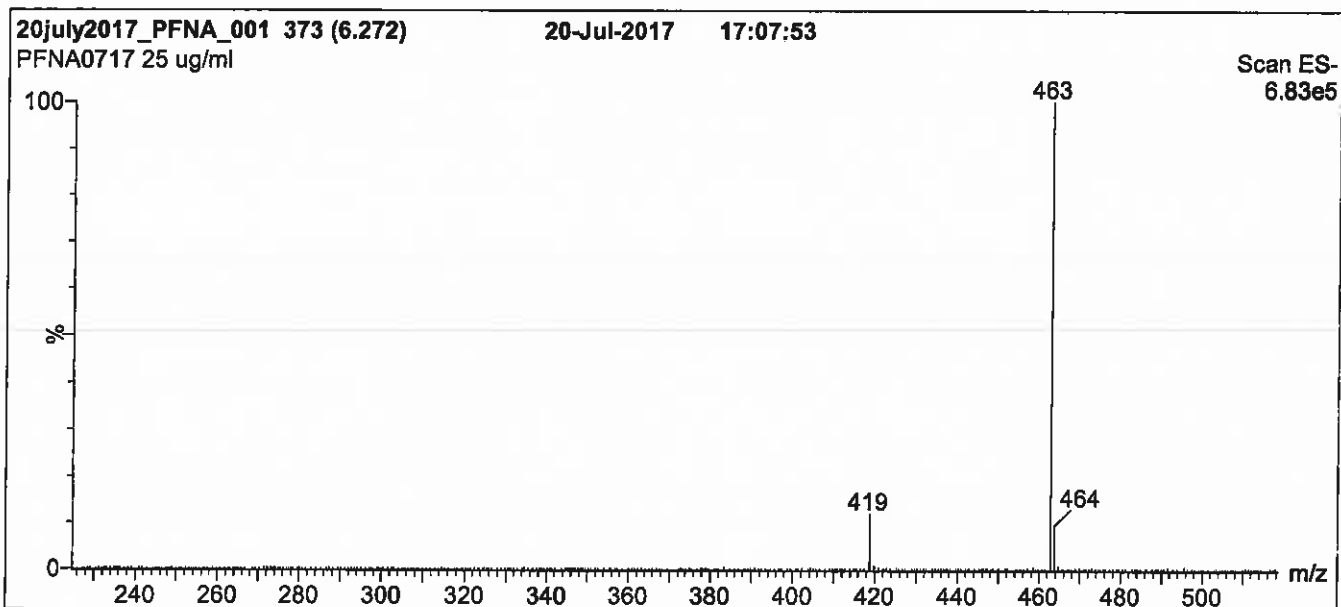
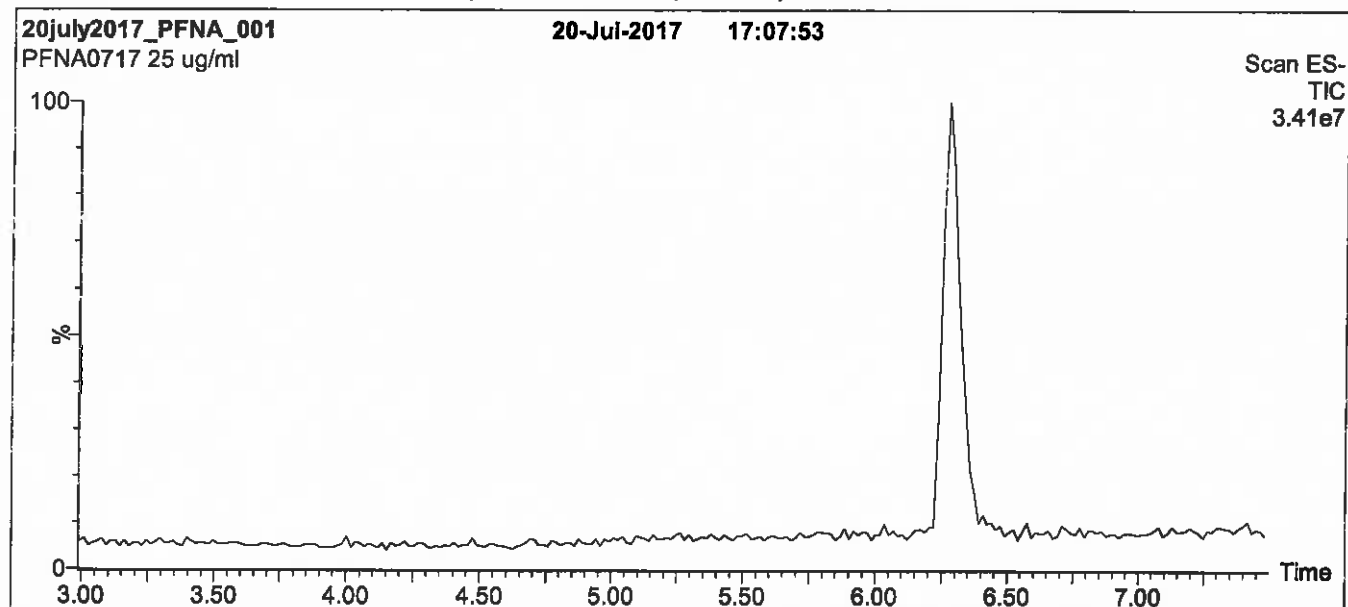
QUALITY MANAGEMENT:

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For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Hold for 1 min. Ramp to 90% organic over 7 min and hold
for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

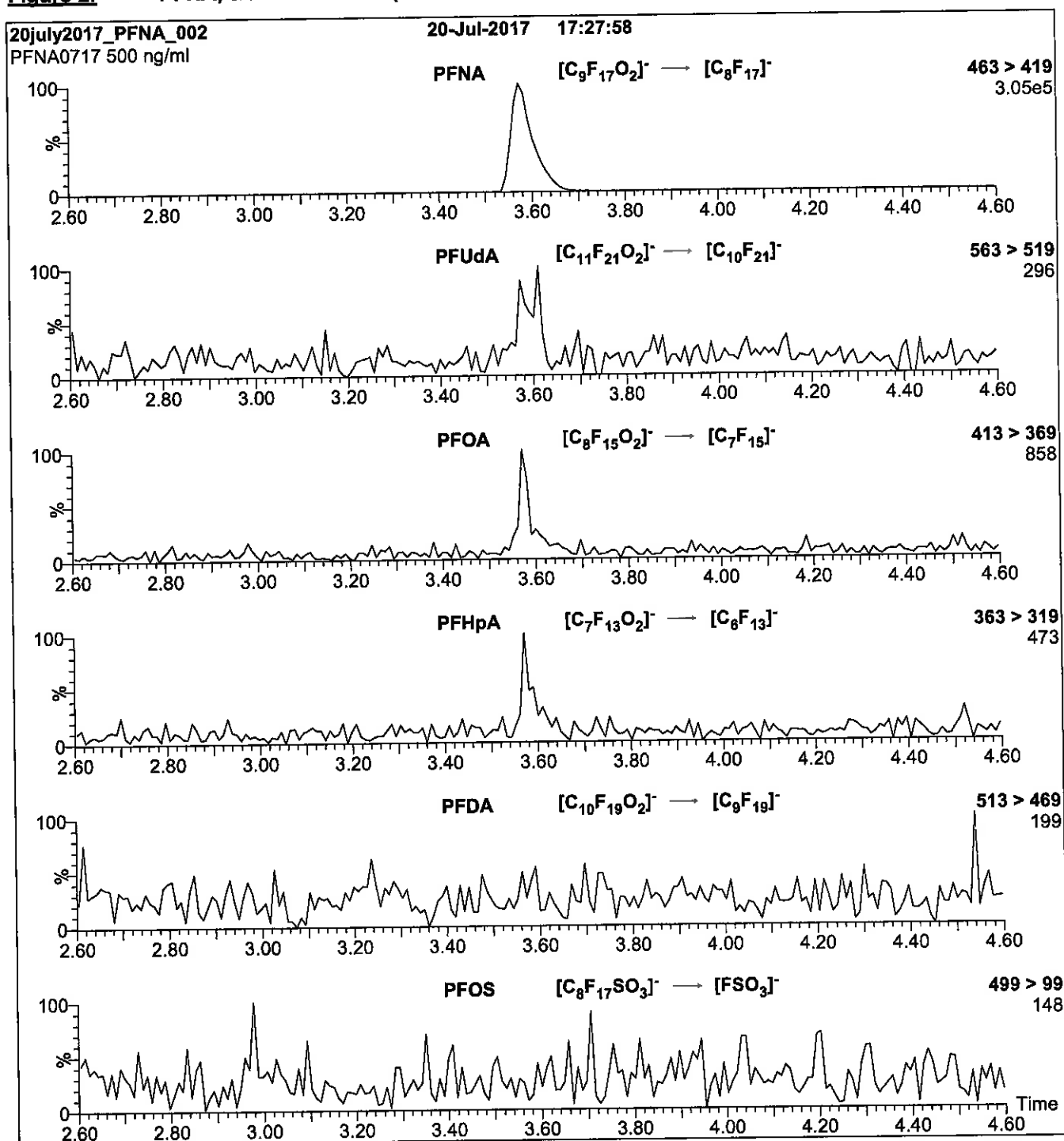
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFNA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFNA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 11

Reagent

LCPFOA_00008

n: 12/24/16 Spd



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFOA

LOT NUMBER:

PFOA0716

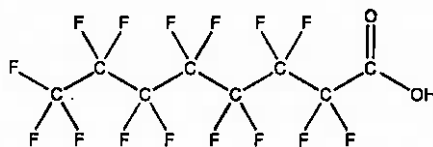
COMPOUND:

Perfluoro-n-octanoic acid

STRUCTURE:

CAS #:

335-67-1



MOLECULAR FORMULA:

$C_8H_{16}F_{16}O_2$

MOLECULAR WEIGHT:

414.07

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

08/02/2016

EXPIRY DATE: (mm/dd/yyyy)

08/02/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/05/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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where x is expressed as a relative standard uncertainty of the individual parameter.

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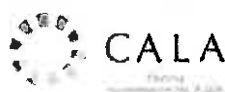
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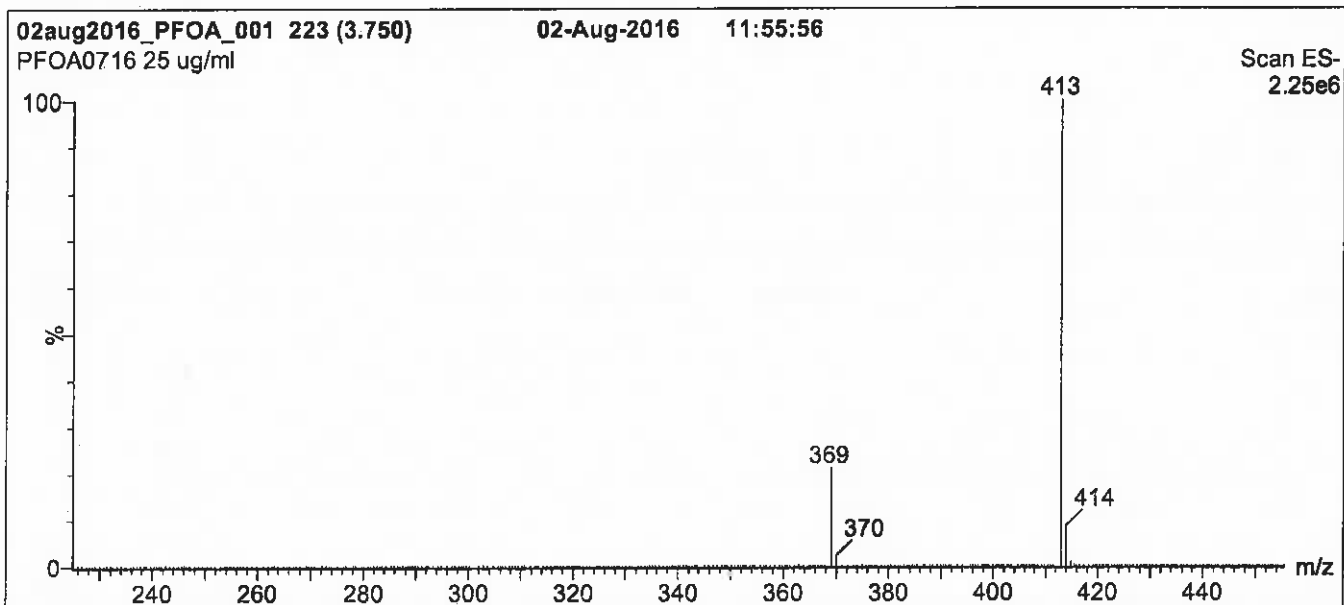
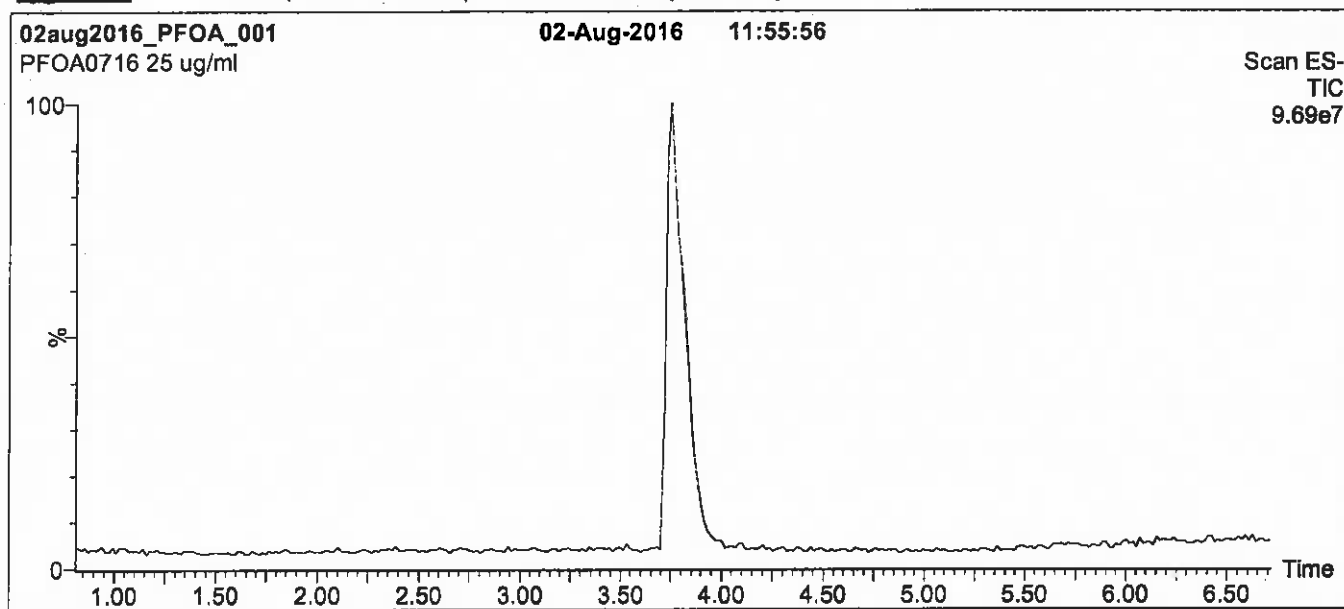
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Figure 1: PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

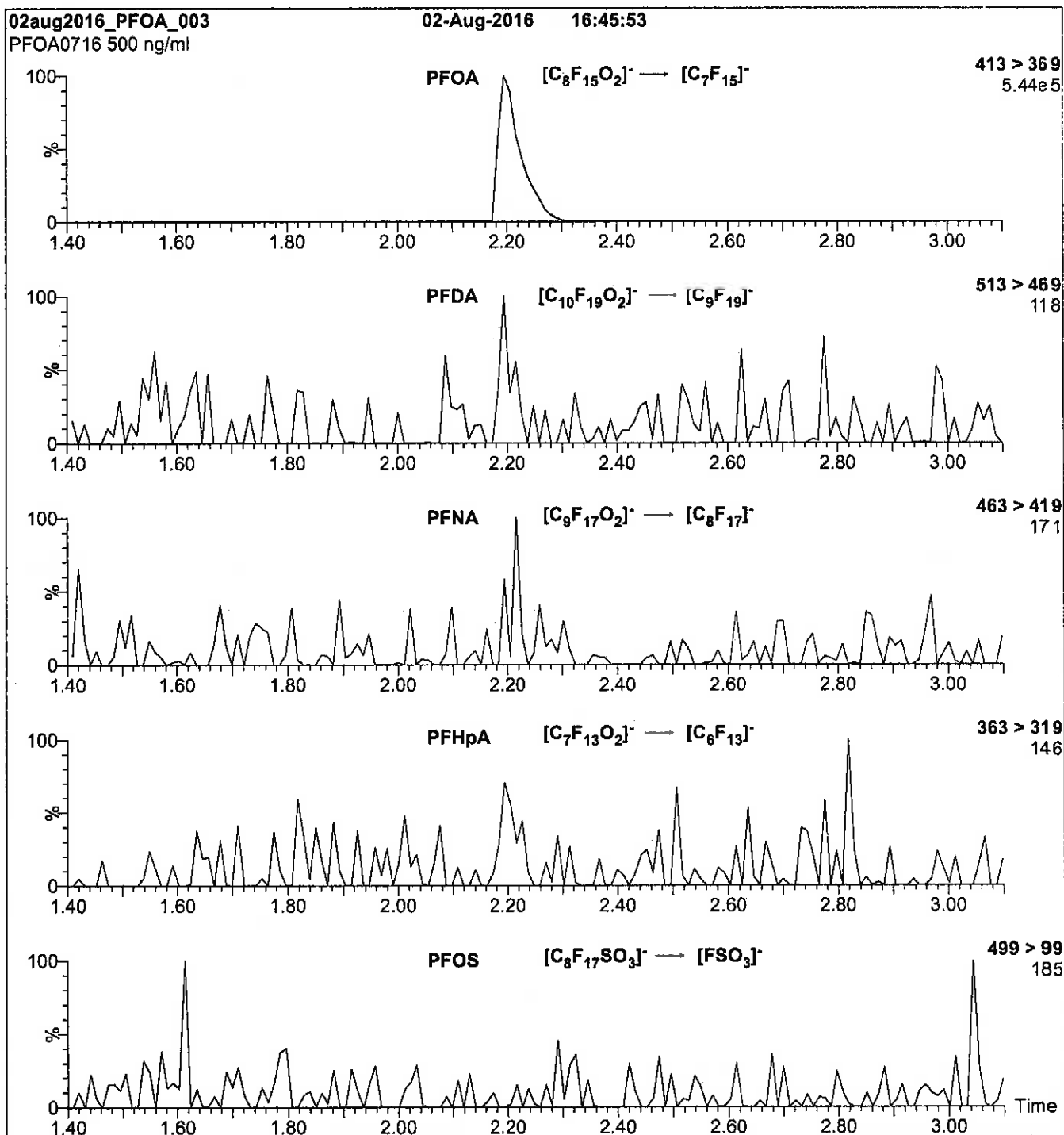
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCPFOA_00009

P: 10/2017 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFOA

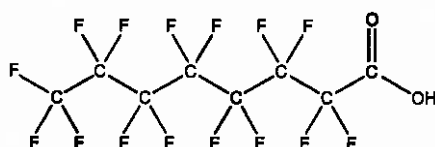
LOT NUMBER: PFOA0917

COMPOUND:

Perfluoro-n-octanoic acid

STRUCTURE:

CAS #: 335-67-1



MOLECULAR FORMULA:

$C_8H_{15}O_2$

MOLECULAR WEIGHT: 414.07

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/27/2017

EXPIRY DATE: (mm/dd/yyyy)

09/27/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


B.G. Chittim, General Manager

Date: 09/28/2017

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

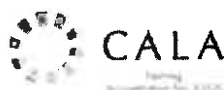
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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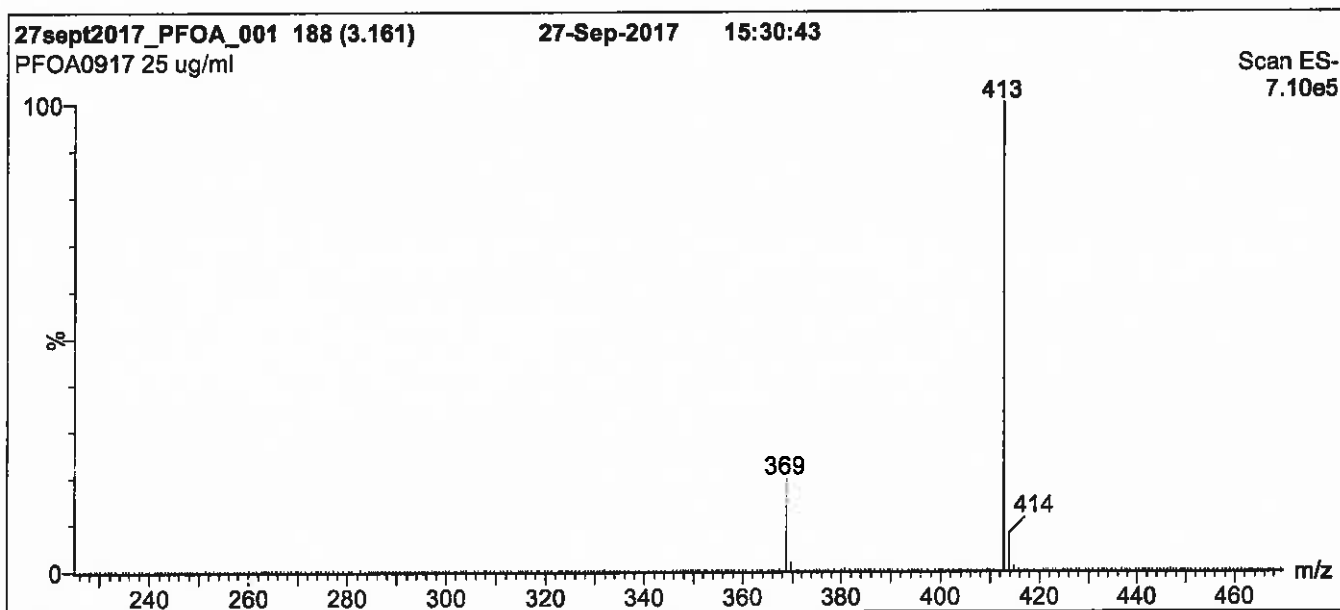
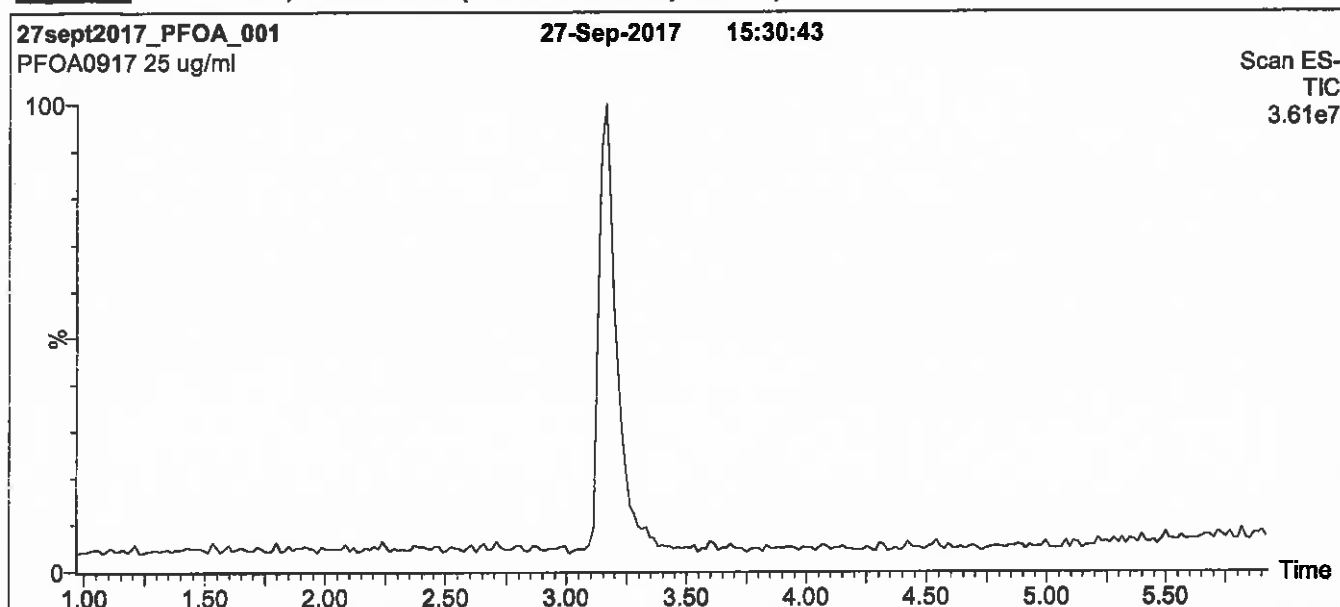
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

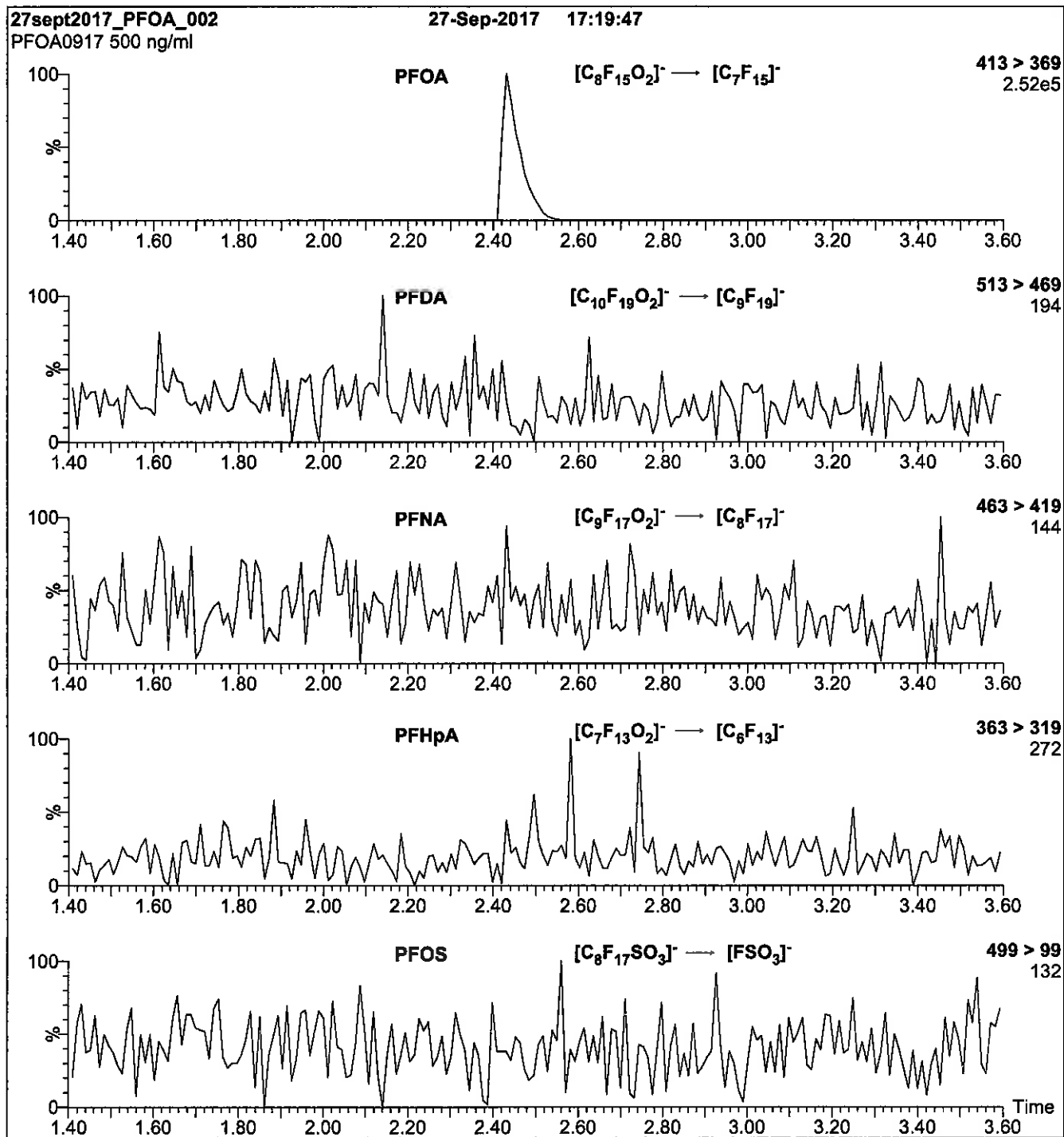
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFOA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFOA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 11

Reagent

LCPFODA_00008

R: 12/22/16 SFV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFODA

LOT NUMBER:

PFODA0416

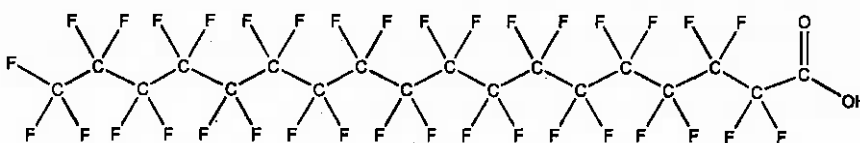
COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #:

16517-11-6



MOLECULAR FORMULA:

$C_{18}H_{36}O_2$

MOLECULAR WEIGHT:

914.14

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

04/29/2016

EXPIRY DATE: (mm/dd/yyyy)

04/29/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 05/20/2016

(mm/dd/yyyy)

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

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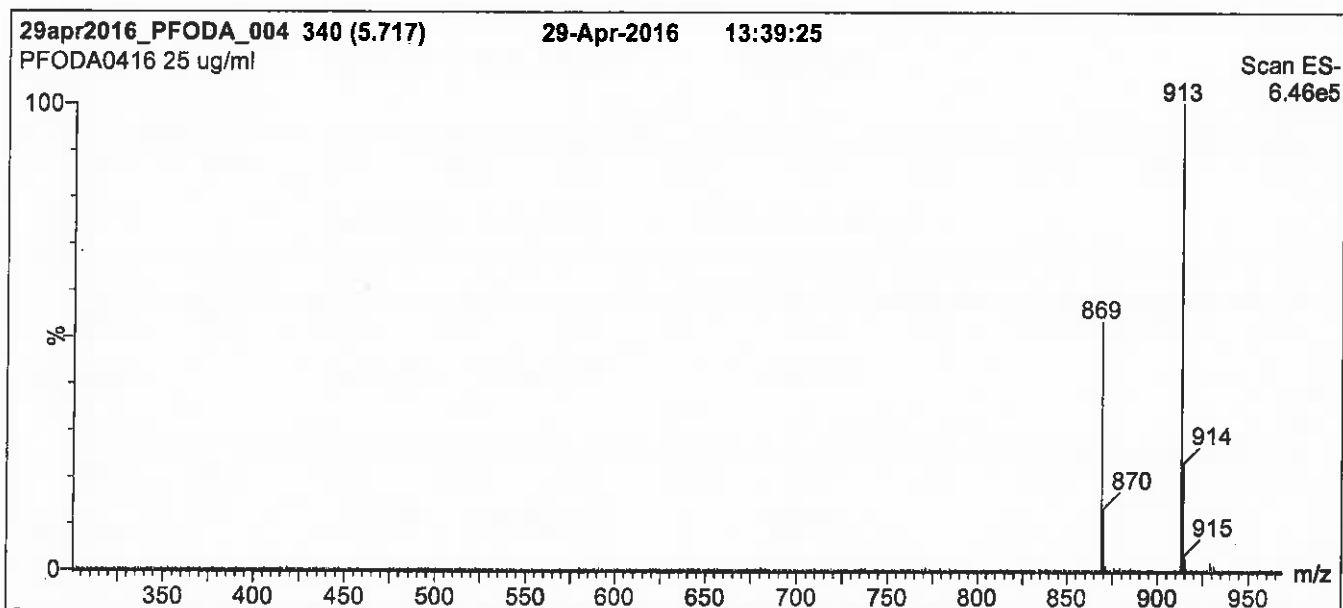
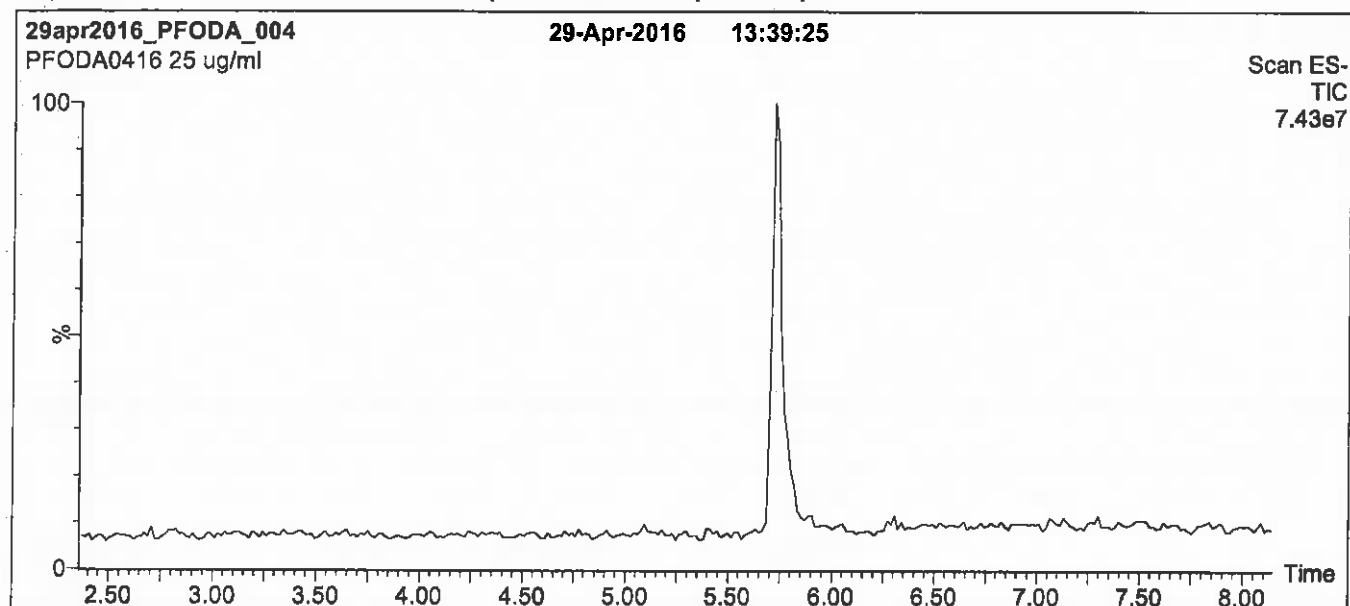
QUALITY MANAGEMENT:

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Figure 1: PFODA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 70% (80:20 MeOH:ACN) / 30% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 95% organic over 6 min and hold for
2.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

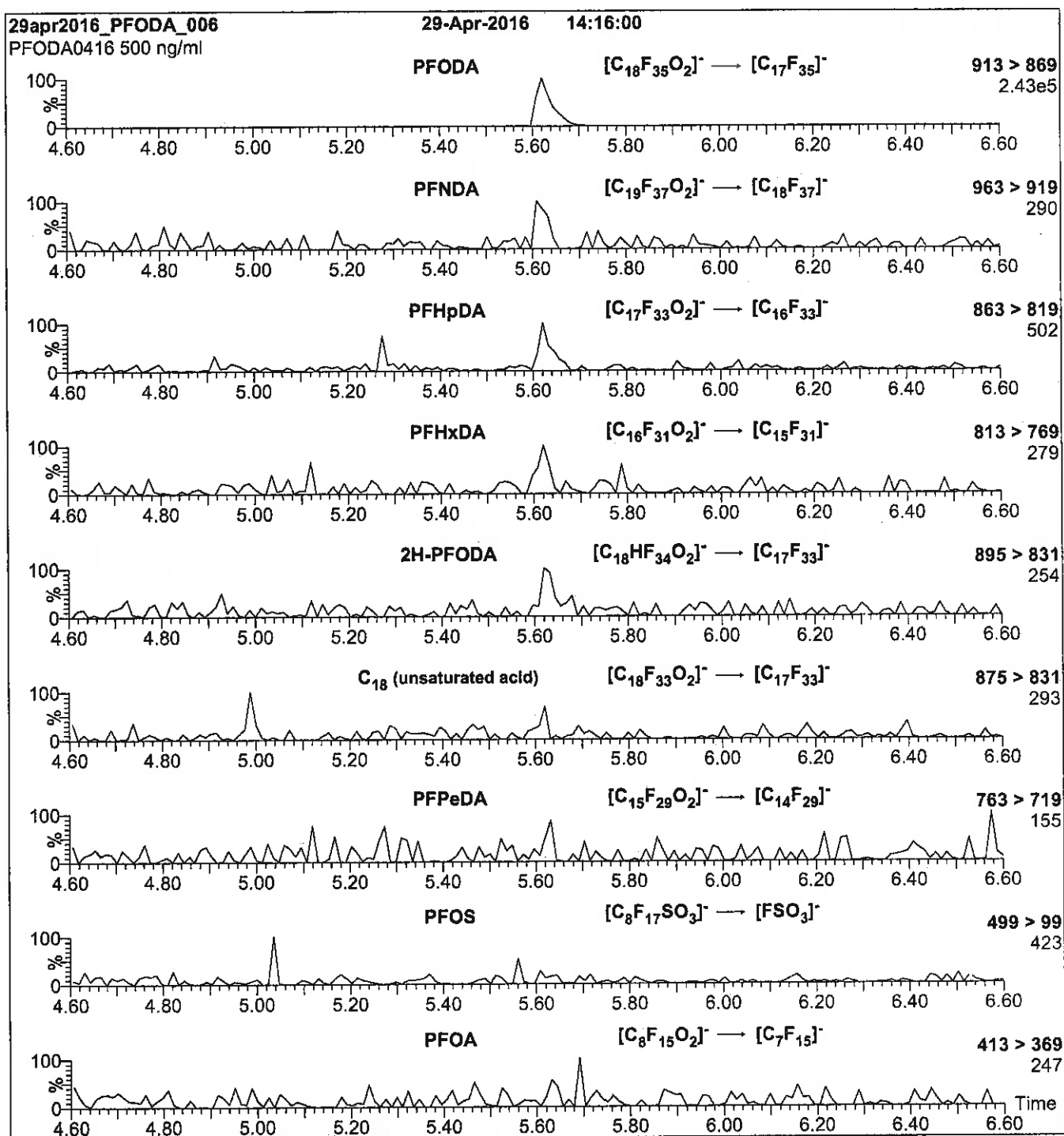
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFODA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFODA)

Mobile phase: Isocratic 90% (80:20 MeOH:ACN) / 10% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCPFOS-br_00004



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

<u>PRODUCT CODE:</u>	br-PFOSK
<u>LOT NUMBER:</u>	brPFOSK1015
<u>CONCENTRATION:</u>	50 ± 2.5 µg/ml (total potassium salt) 46.4 ± 2.3 µg/ml (total PFOS anion)
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	10/13/2015
<u>LAST TESTED:</u> (mm/dd/yyyy)	10/14/2015
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	10/14/2020
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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EXPIRY DATE / PERIOD OF VALIDITY:

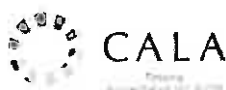
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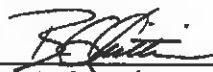
For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com

Table A: br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F -NMR)*

Isomer	Name	Structure	Percent Composition by ^{19}F -NMR
1	Potassium perfluoro-1-octanesulfonate	$\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{CF}_3)\text{SO}_3\text{K}^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{SO}_3\text{K}^+$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$\text{CF}_3\text{CF}_2\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$\text{CF}_3\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$\text{CF}_3\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$\text{CF}_3\text{CF}_2\text{C}(\text{CF}_3)_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$\text{CF}_3\text{CF}_2\text{C}(\text{CF}_3)_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$\text{CF}_3\text{CF}(\text{CF}_3)\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$\text{CF}_3\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}(\text{CF}_3)\text{CF}_2\text{CF}_2\text{SO}_3\text{K}^+$	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.
 ** Systematic Name: Potassium perfluorooctane-2-sulfonate.

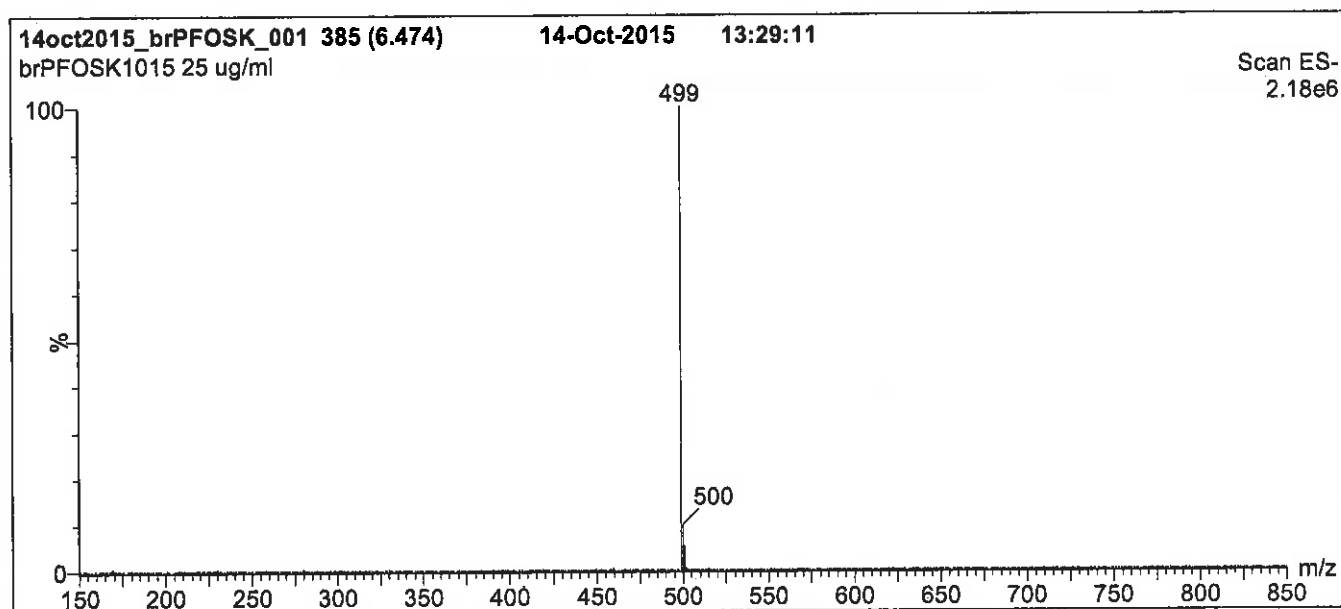
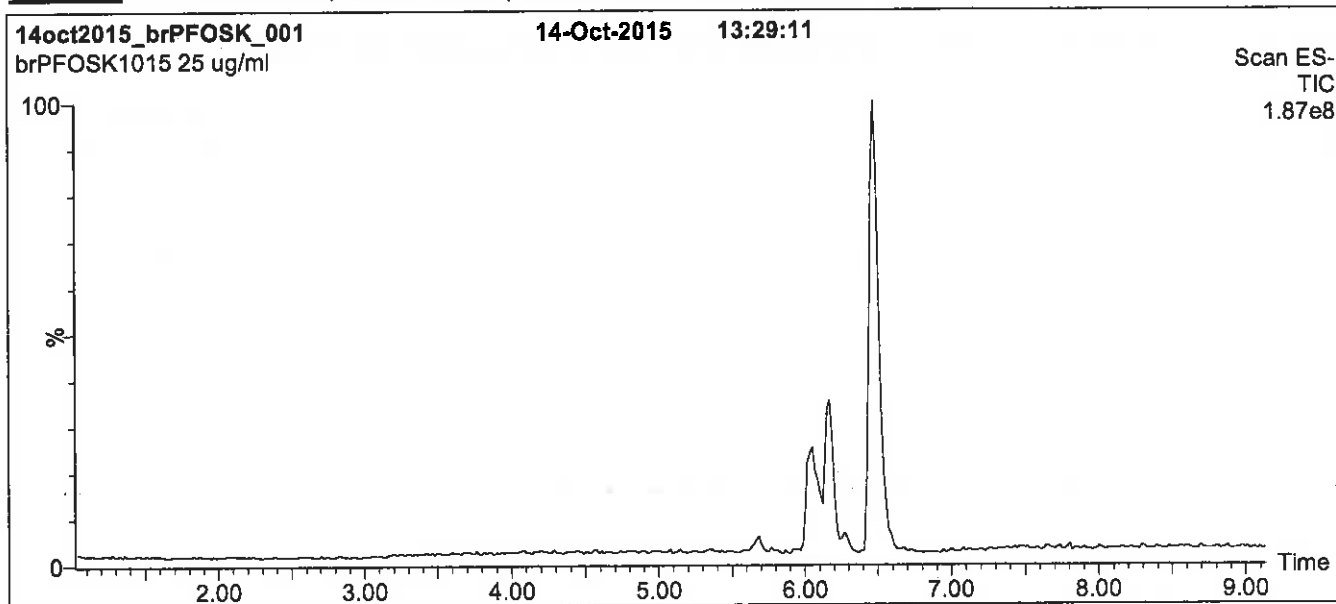
Certified By:


 B.G. Chittim

Date: 10/15/2015

(mm/dd/yyyy)

Figure 1: br-PFOSK; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient

Start: 45% (80:20 MeOH:ACN) / 55% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)

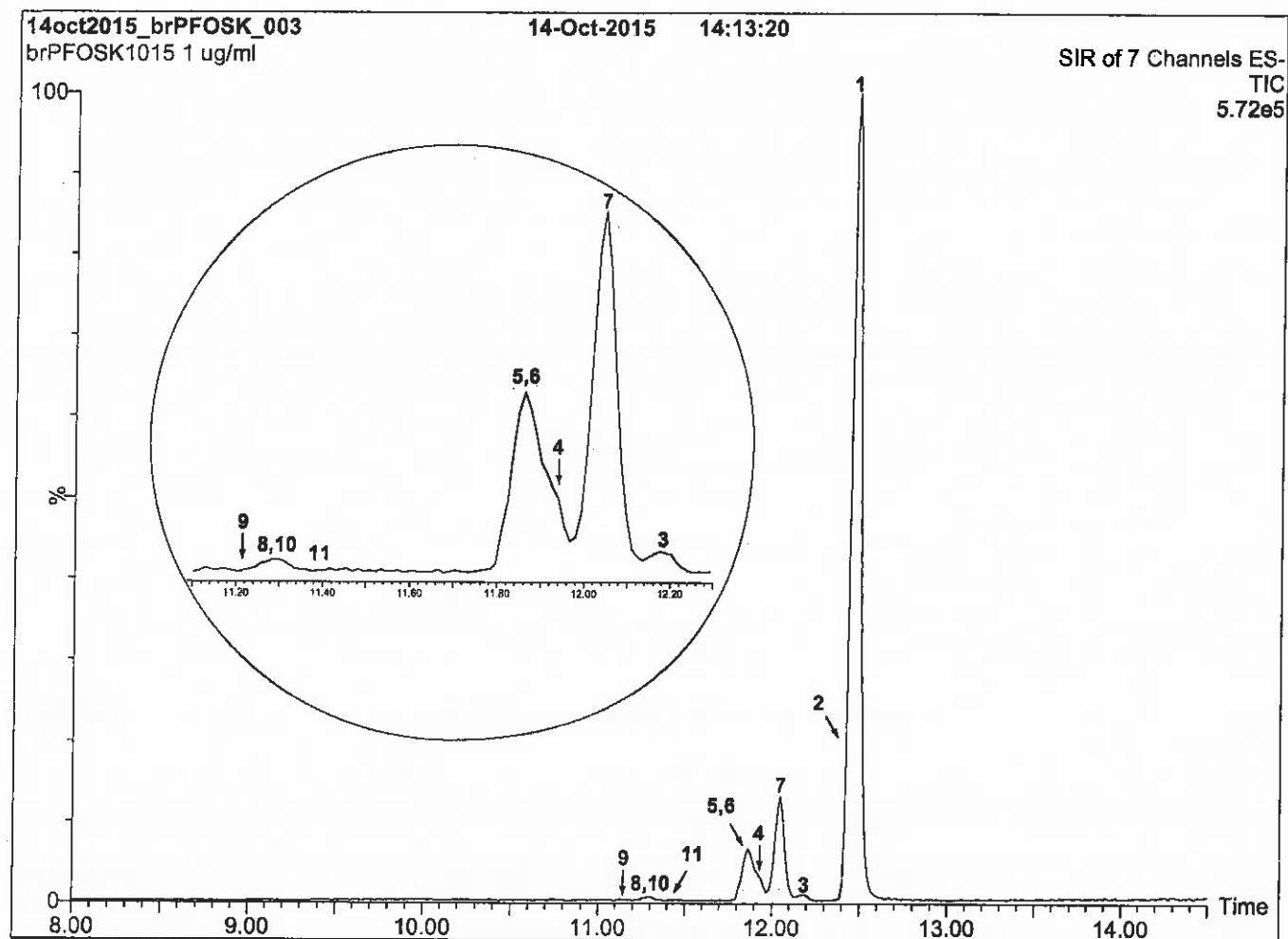
Capillary Voltage (kV) = 2.00

Cone Voltage (V) = 60.00

Cone Gas Flow (l/hr) = 50

Desolvation Gas Flow (l/hr) = 750

Figure 2: br-PFOSK; LC/MS Data (SIR)



Conditions for Figure 2:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

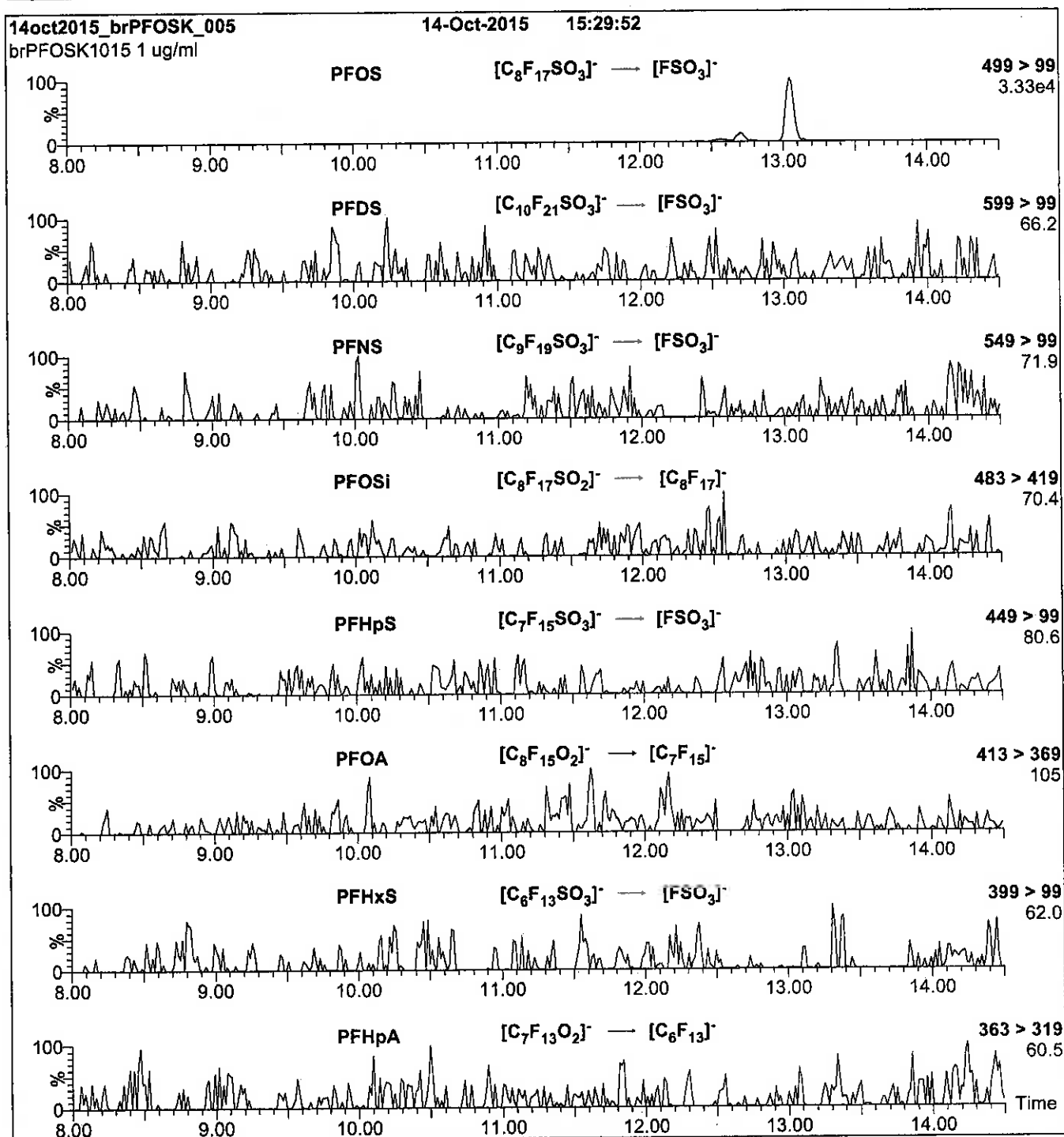
Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈ (1.7 μ m, 2.1 x 100 mm)
Injection: 1.0 μ g/ml of br-PFOSK
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H₂O (both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min
Flow: 300 μ l/min

MS Conditions:

SIR (ES)
Source = 110 °C
Desolvation = 325 °C
Cone Voltage = 60V

Figure 3: br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.06e-3

Collision Energy (eV) = 11-50 (variable)

Reagent

LCPFOSA_00010

12/20/16 SFL



WELLINGTON LABORATORIES

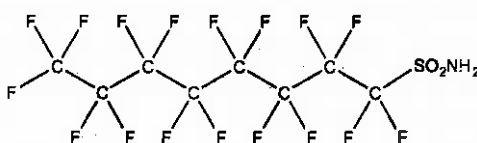
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FOSA-I
COMPOUND: Perfluoro-1-octanesulfonamide

LOT NUMBER: FOSA0916I

STRUCTURE:

CAS #: 754-91-6



MOLECULAR FORMULA: $C_8H_2F_{17}NO_2S$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 499.14
SOLVENT(S): Isopropanol

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

• See page 2 for further details.

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Certified By:

B.G. Chittim

Date: 10/07/2016
(mm/dd/yyyy)

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HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given diluent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS, LC/MS/MS and/or SFC/UV/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

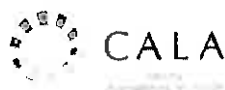
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

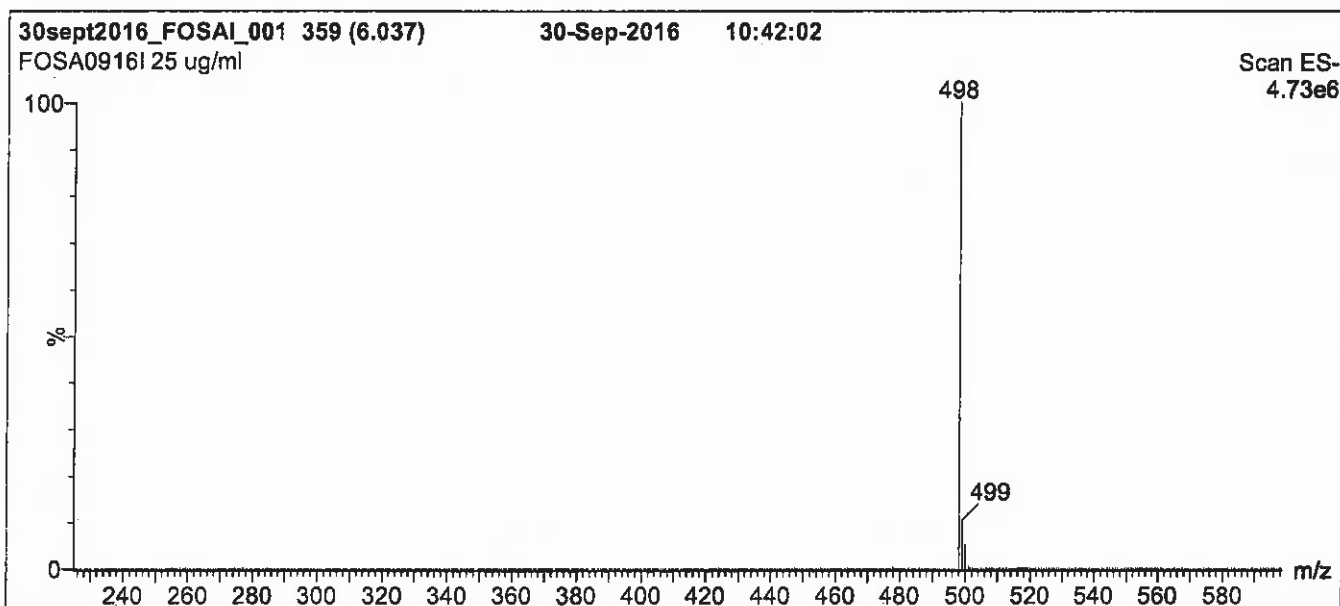
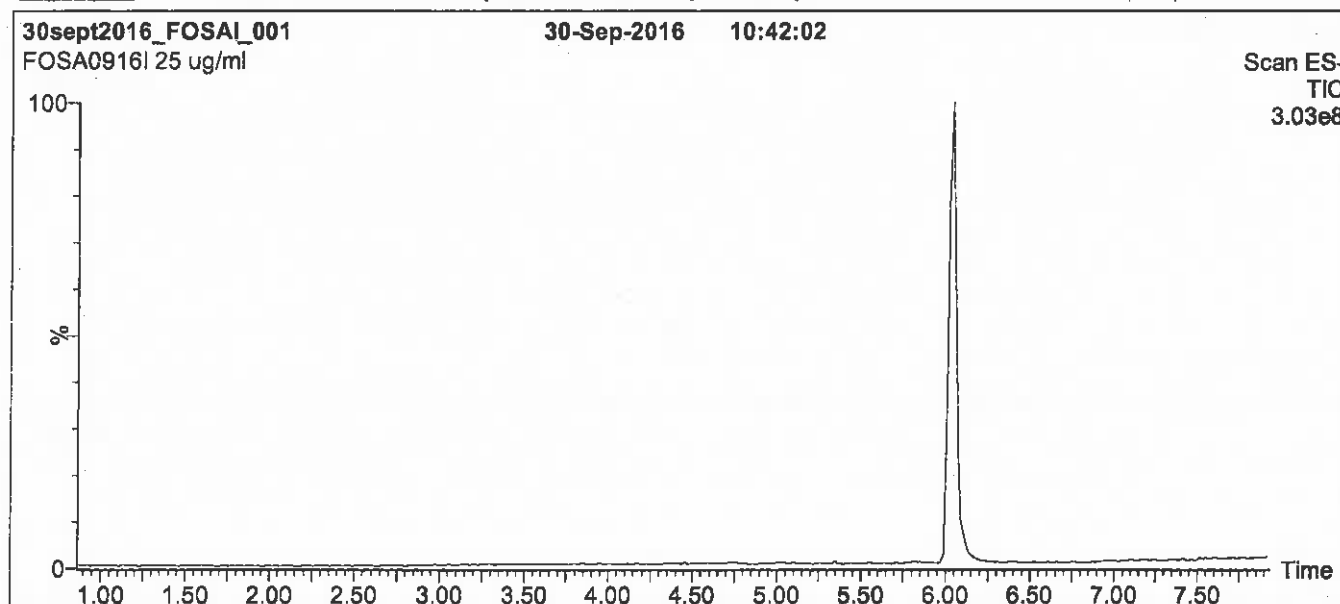
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: FOSA-I; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈,
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

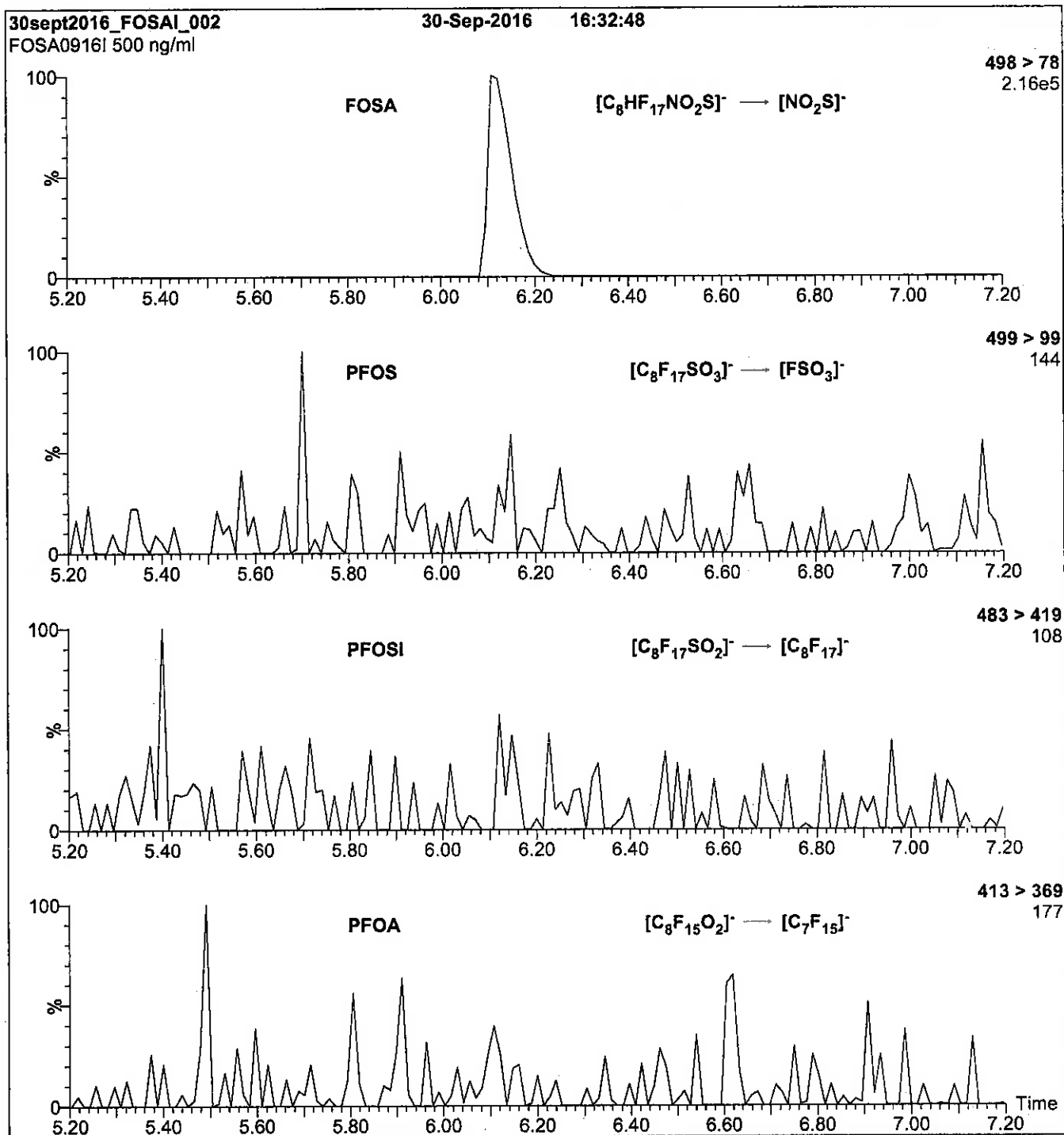
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: FOSA-I; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml FOSA-I)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 30

Reagent

LCPFPeA_00007

r: 12/20/16 Std
s: 1/6/17 Std



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFPeA

LOT NUMBER:

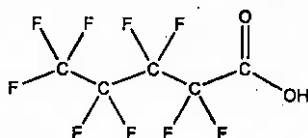
PFPeA0516

COMPOUND:

Perfluoro-n-pentanoic acid

STRUCTURE:**CAS #:**

2706-90-3

**MOLECULAR FORMULA:** $C_5HF_8O_2$ **MOLECULAR WEIGHT:**

264.05

CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):**

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/31/2016

EXPIRY DATE: (mm/dd/yyyy)

05/31/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_8H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 06/02/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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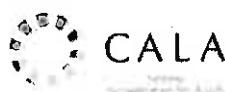
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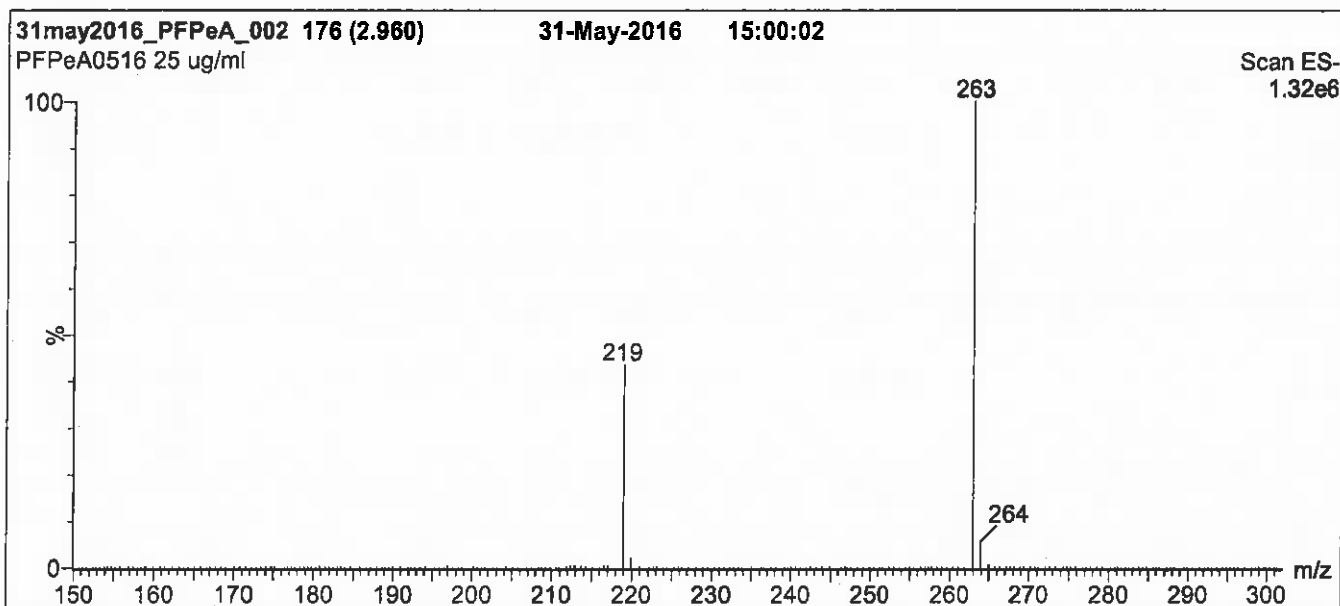
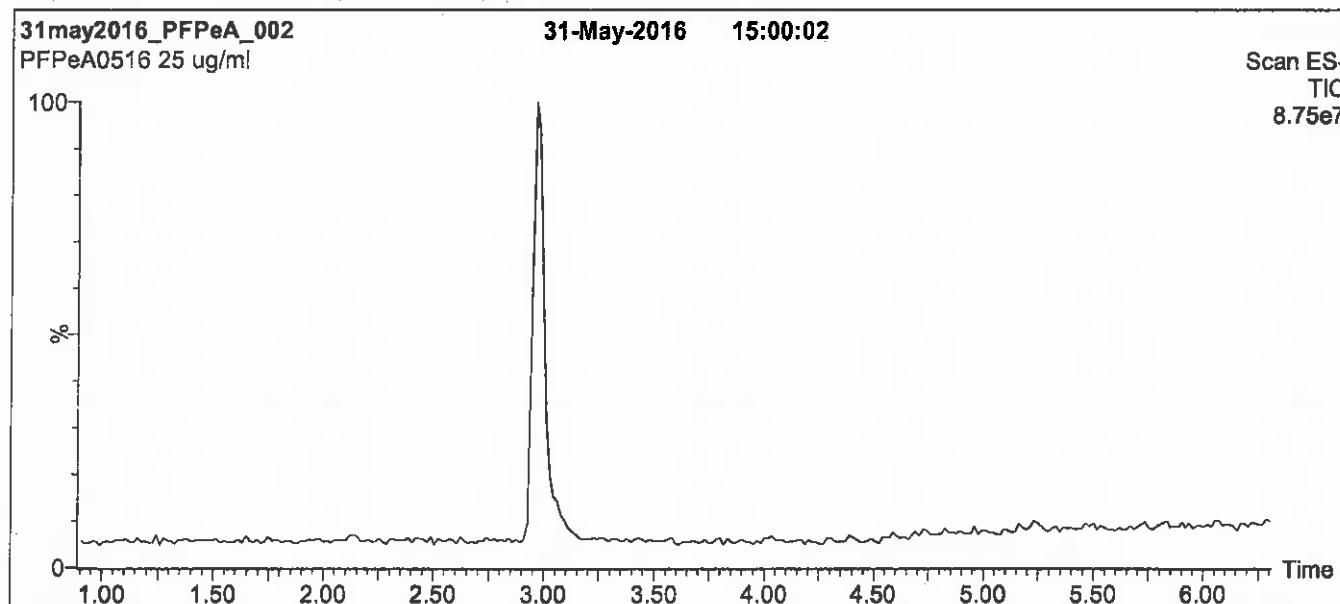
QUALITY MANAGEMENT:

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Figure 1: PFPeA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

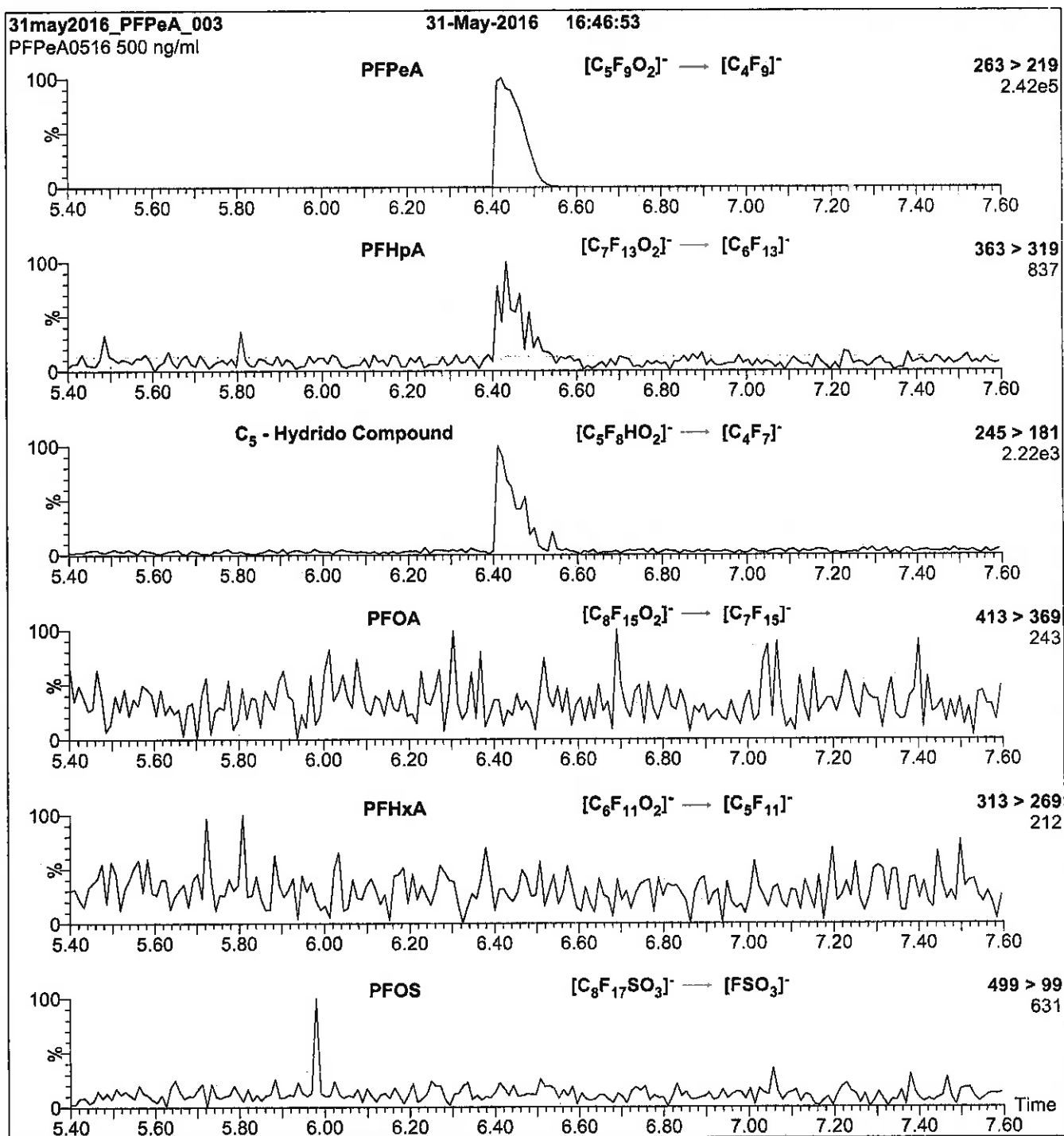
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFPeA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFPeA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 9

Reagent

LCPFTeDA_00006

P: SBG 9/13/16



730645
ID: LCPFTeDA_00005
Exp: 12/09/20 Prod: SBC
PF-n-tetradecanoic acid



730659
ID: LCPFTeDA_00006
Exp: 12/09/20 Prod: SBC
PF-n-tetradecanoic acid



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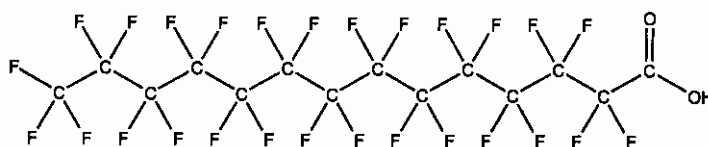
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTeDA
COMPOUND: Perfluoro-n-tetradecanoic acid

LOT NUMBER: PFTeDA1215

STRUCTURE:

CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT: 714.11
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/09/2015
EXPIRY DATE: (mm/dd/yyyy) 12/09/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{16}HF_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/09/2015
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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where x is expressed as a relative standard uncertainty of the individual parameter.

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EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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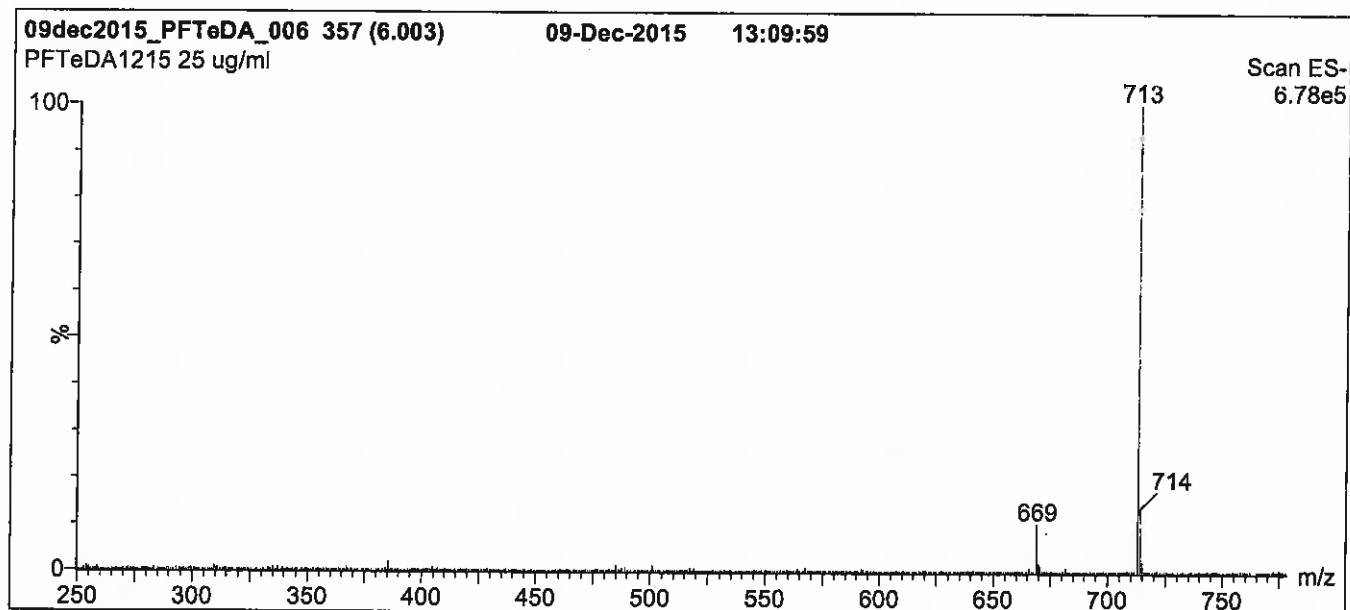
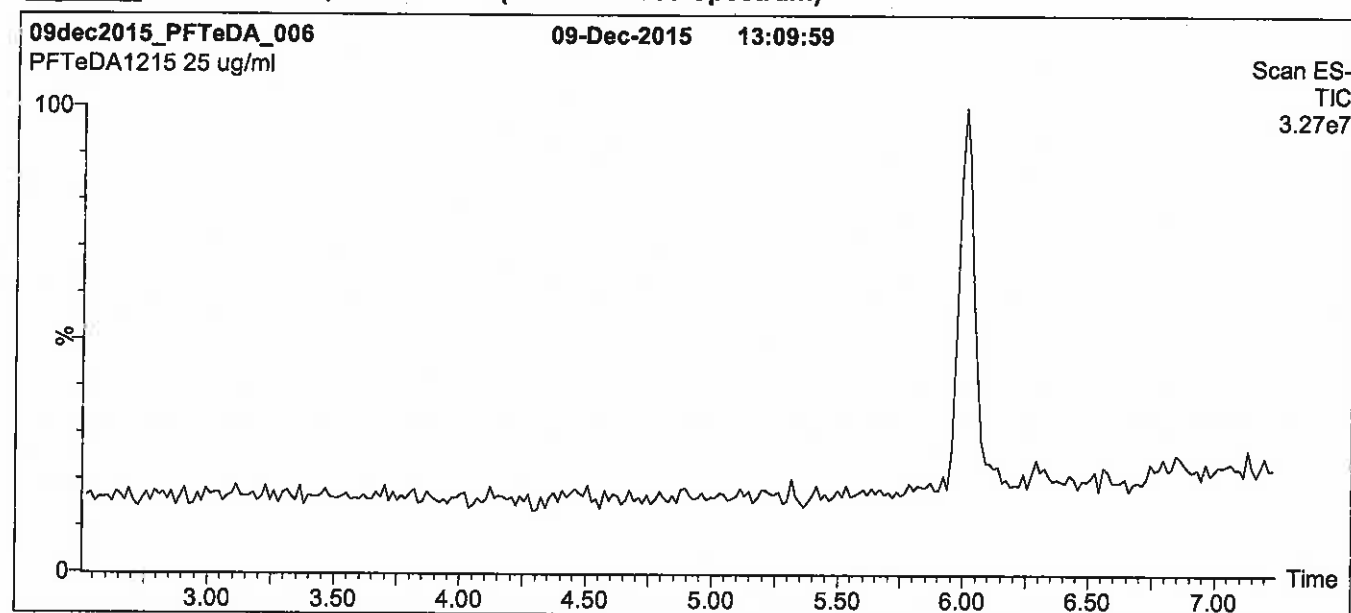
QUALITY MANAGEMENT:

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Figure 1: PFTeDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

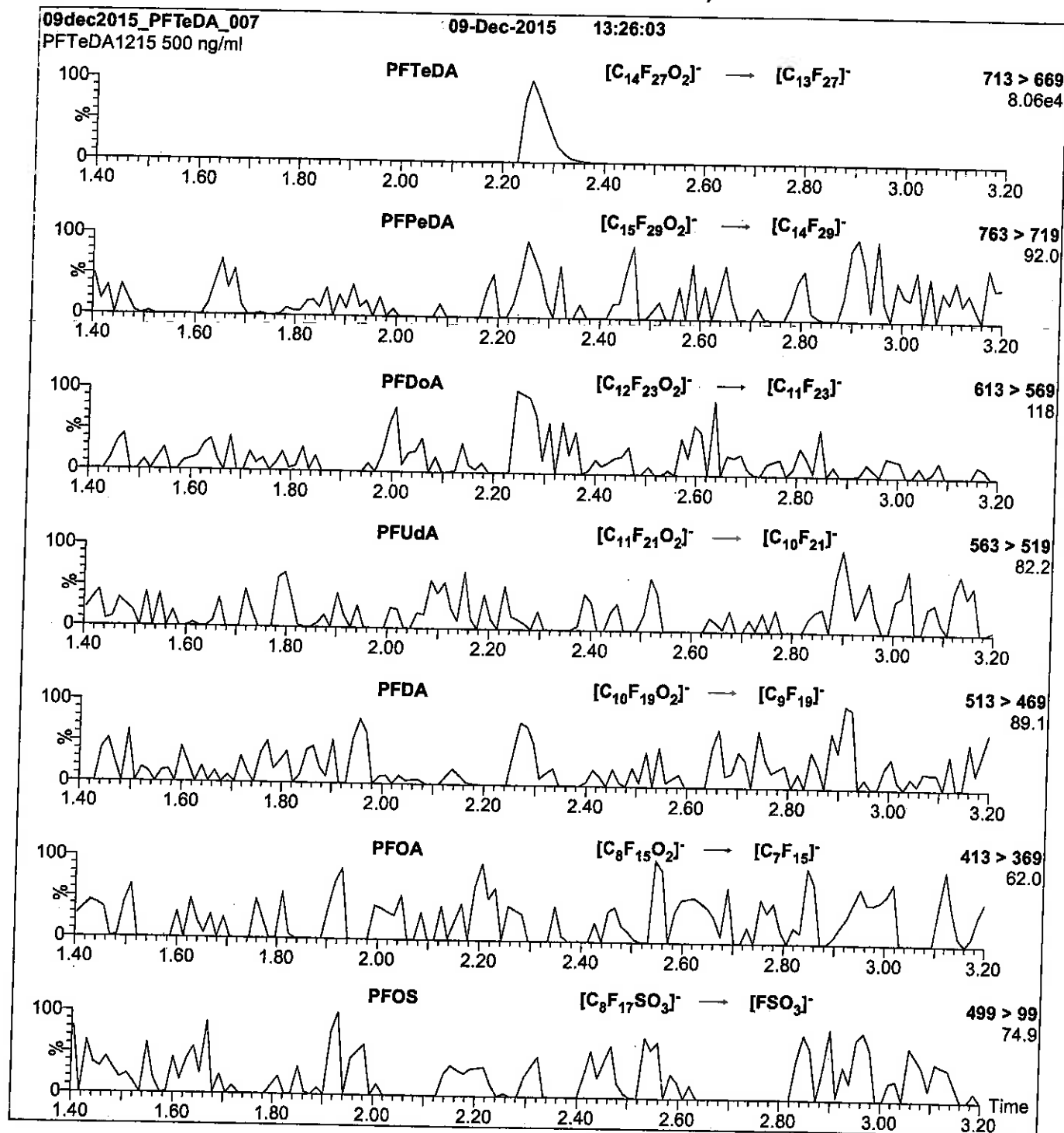
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

LCPFTeDA_00007



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFTeDA

LOT NUMBER:

PFTeDA0916

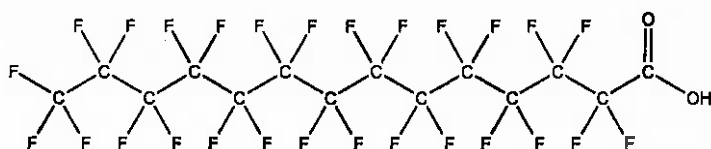
COMPOUND:

Perfluoro-n-tetradecanoic acid

STRUCTURE:

CAS #:

376-06-7



MOLECULAR FORMULA:

$C_{14}H_{27}O_2$

MOLECULAR WEIGHT:

714.11

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

09/30/2016

EXPIRY DATE: (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDa ($C_{12}H_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}H_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/05/2016

(mm/dd/yyyy)

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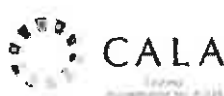
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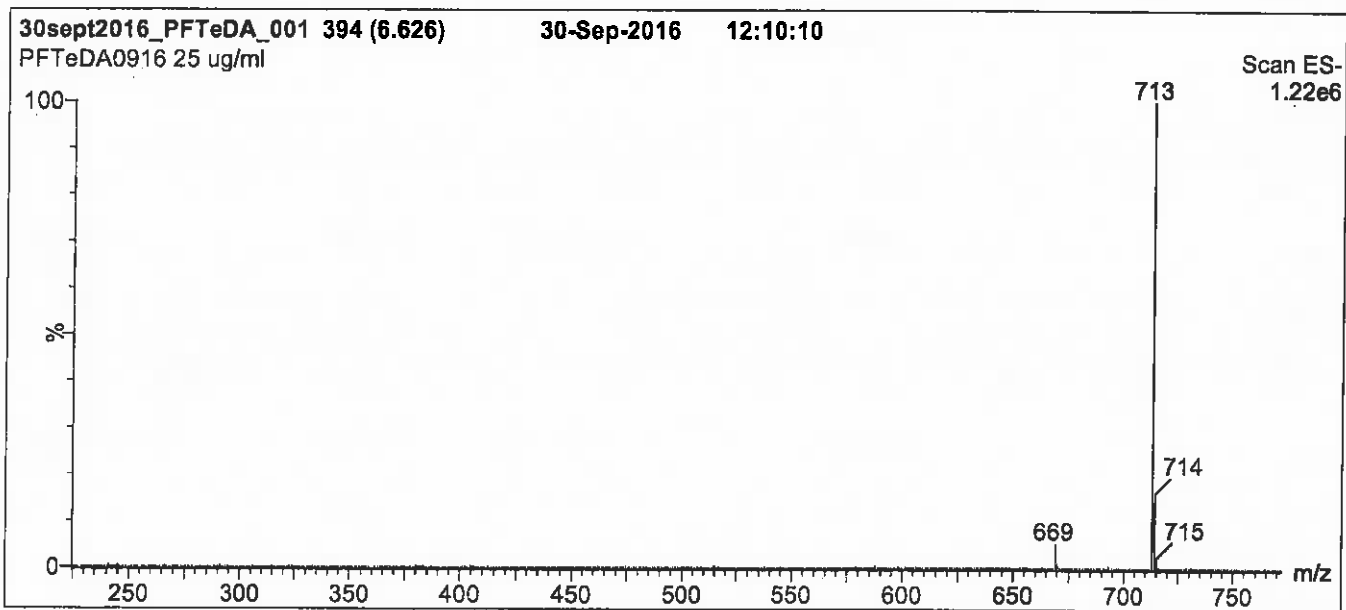
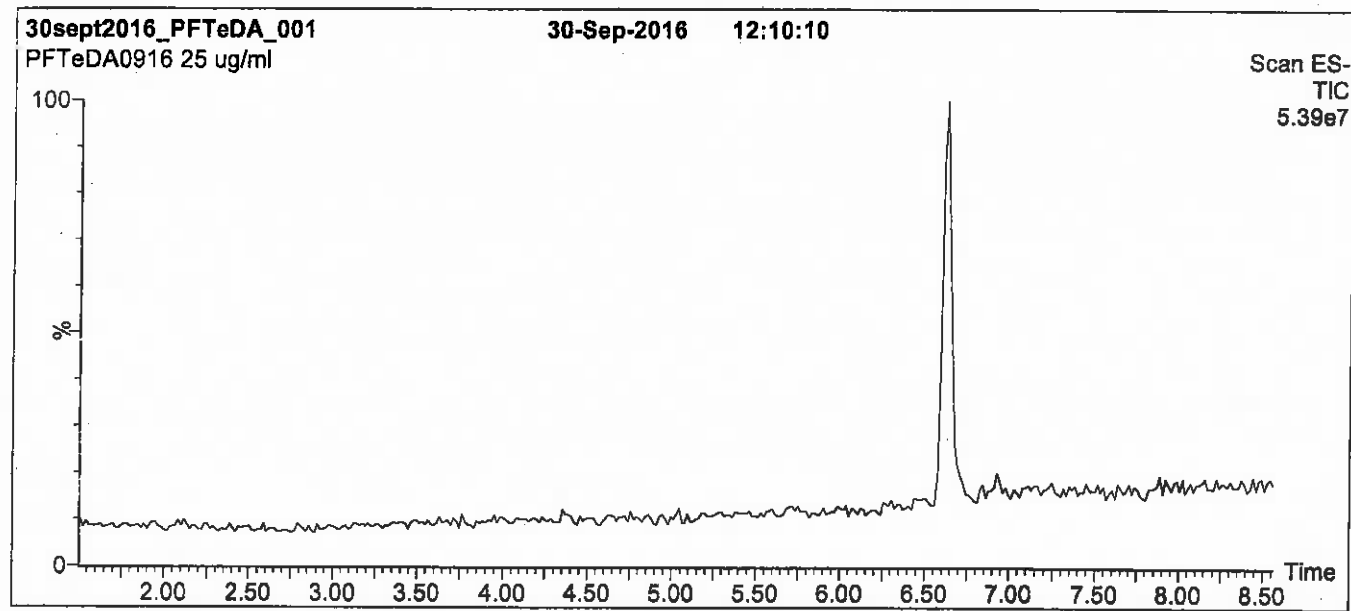
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Figure 1: PFTeDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

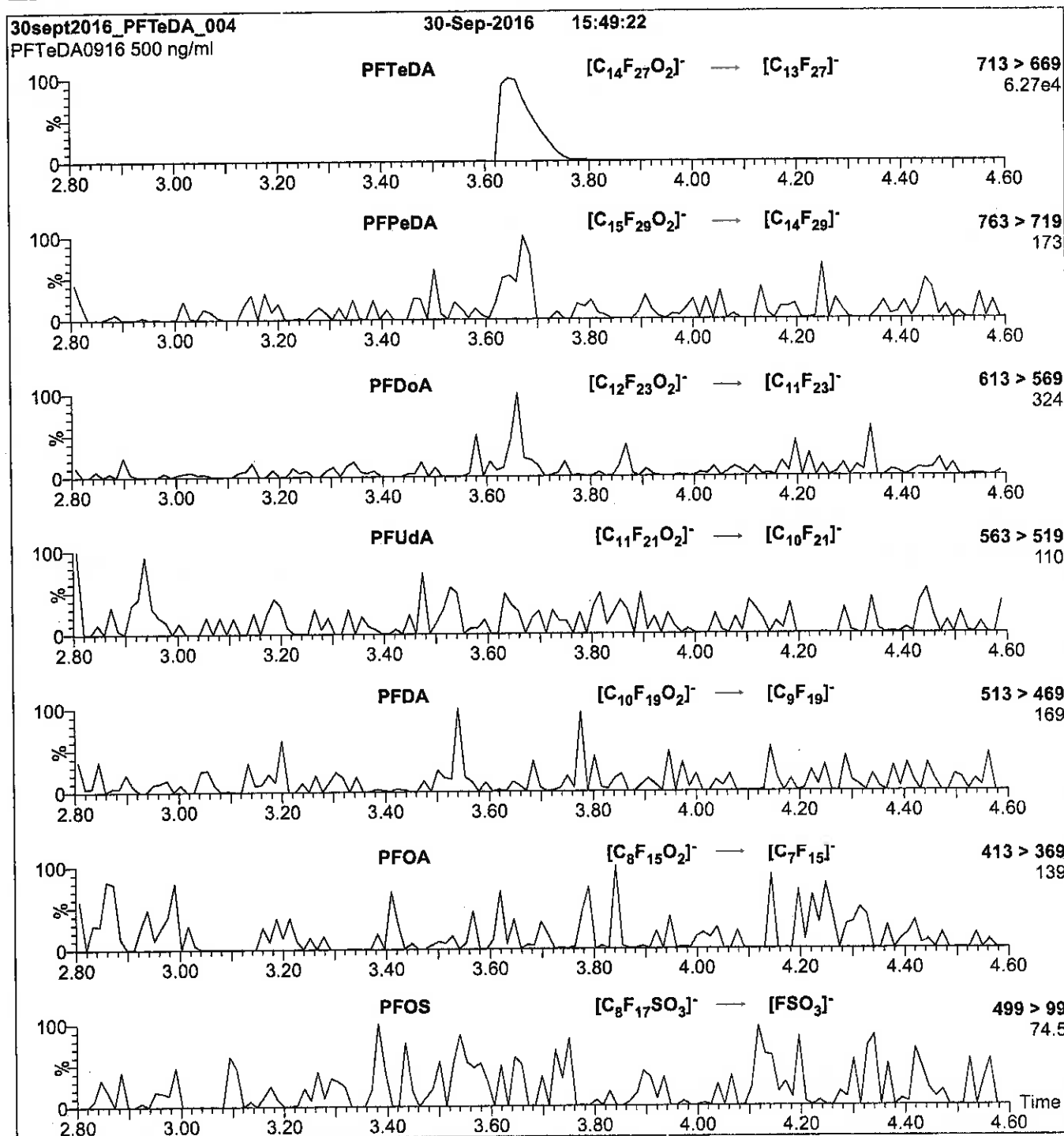
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFTeDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTeDA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 14

Reagent

LCPFT_rDA_00006

R: SBC 9/13/16



730665
ID: LCPFTDA_00005
Exp: 02/12/21 Prod: SBC
PF-n-tridecanoic acid



730666
ID: LCPFTDA_00006
Exp: 02/12/21 Prod: SBC
PF-n-tridecanoic acid



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LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFTTrDA

LOT NUMBER:

PFTTrDA0216

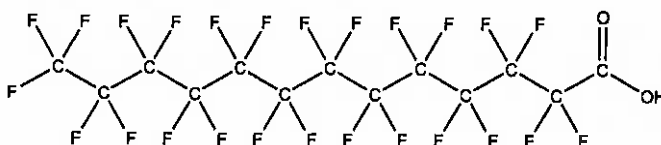
COMPOUND:

Perfluoro-n-tridecanoic acid

STRUCTURE:

CAS #:

72629-94-8



MOLECULAR FORMULA:

$C_{13}H_{25}O_2$

MOLECULAR WEIGHT:

664.11

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

02/12/2016

EXPIRY DATE: (mm/dd/yyyy)

02/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUDA ($C_{11}H_{21}O_2$), ~ 0.4% of PFDa ($C_{12}H_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}H_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/16/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. This certified reference material (CRM) was designed to be used as a standard for the identification and/or quantification of the specific chemical compound it contains.

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection, and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Safety Data Sheets (SDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, SFC/UV/MS/MS, x-ray crystallography, and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters $x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

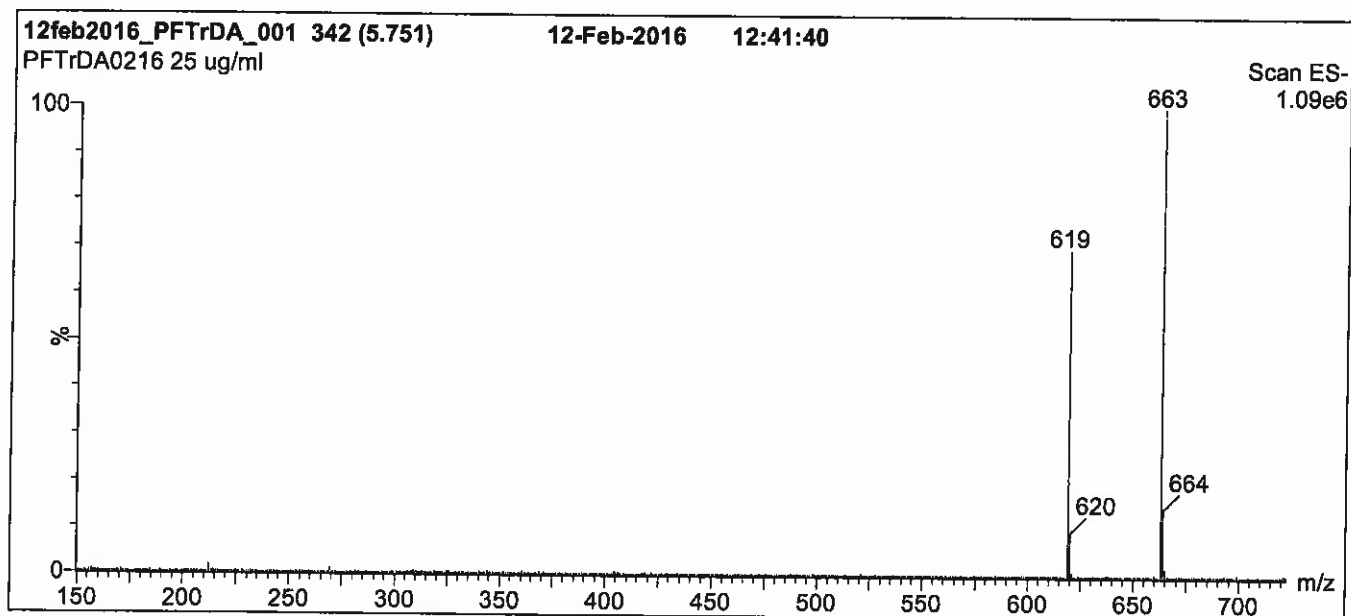
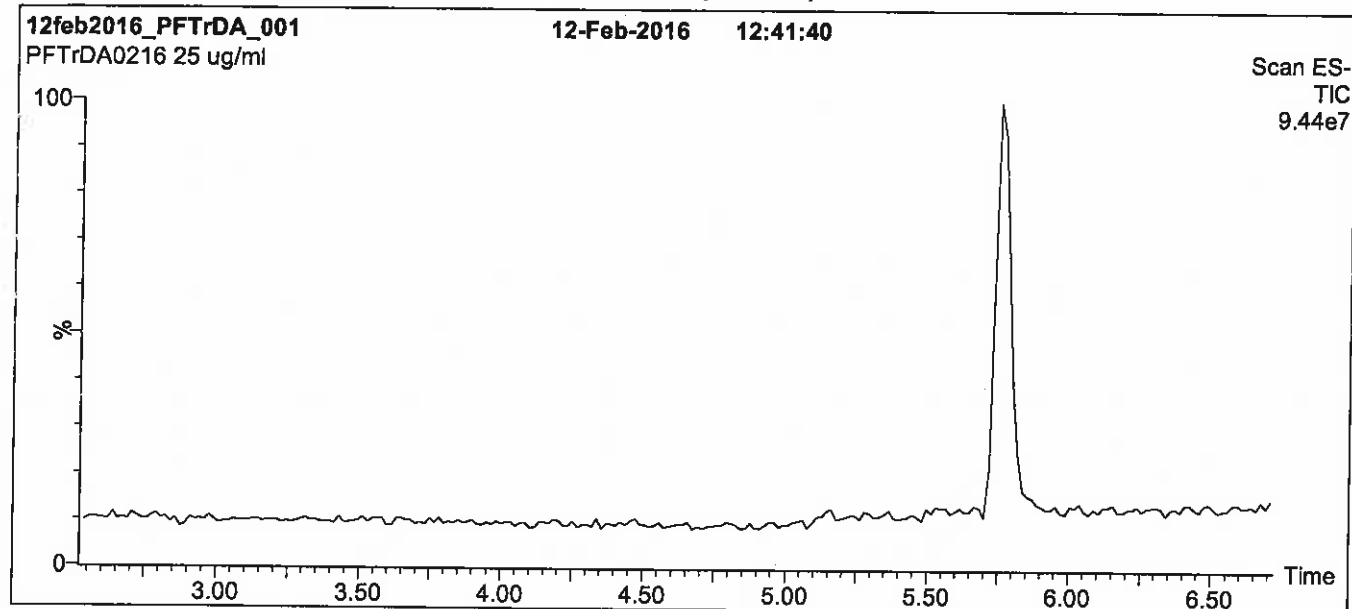
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: PFTrDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

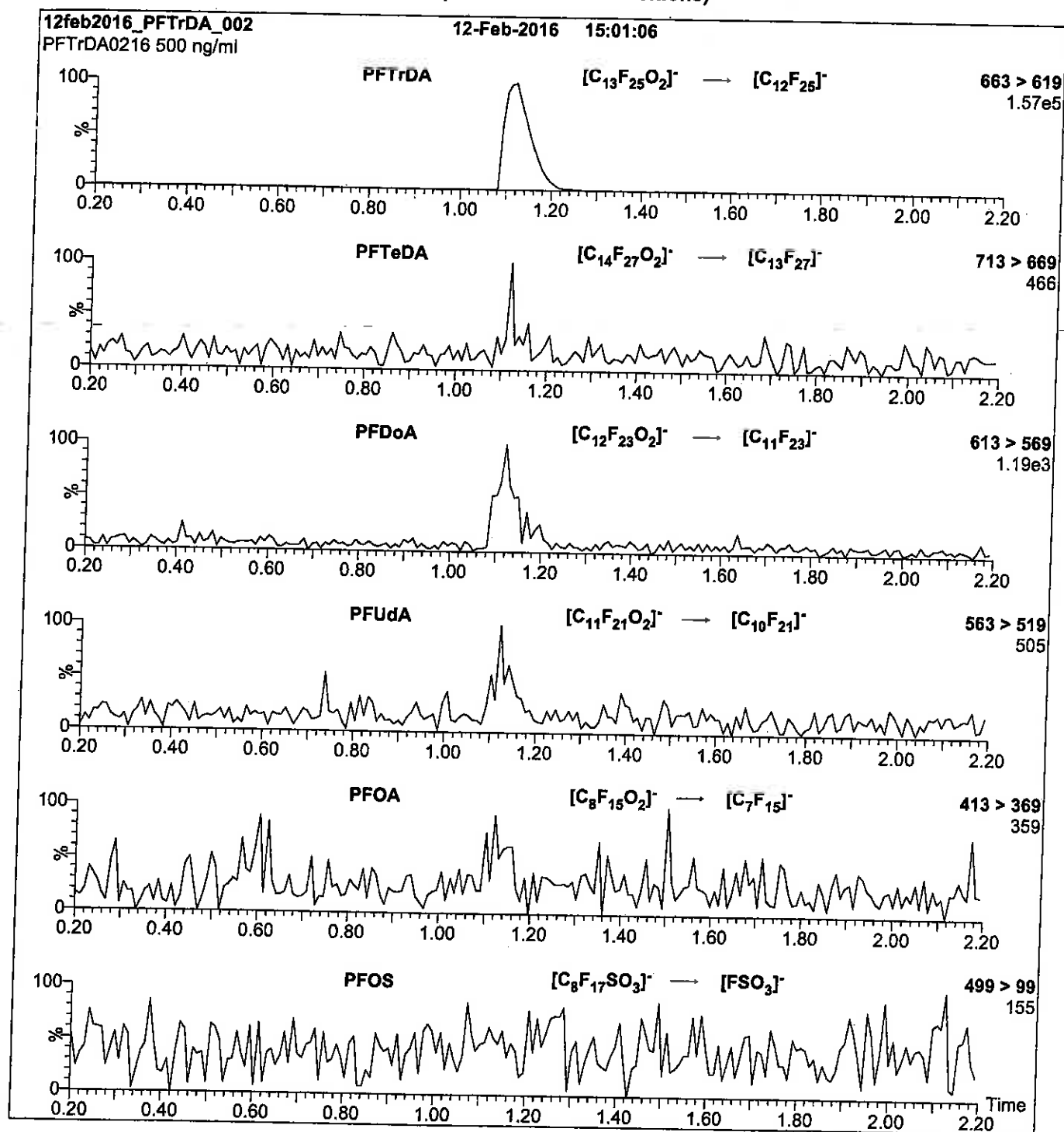
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

Figure 2: PFTrDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTTrDA)

Mobile phase: Isocratic 80% MeOH / 20% H₂O

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

Reagent

LCPFT_rDA_00007



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFTrDA

LOT NUMBER:

PFTrDA0216

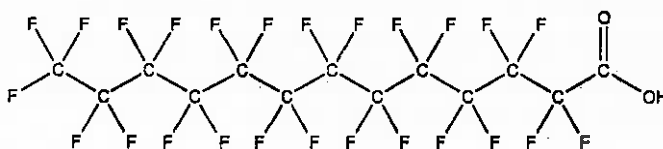
COMPOUND:

Perfluoro-n-tridecanoic acid

STRUCTURE:

CAS #:

72629-94-8



MOLECULAR FORMULA:

$C_{13}H_{25}O_2$

MOLECULAR WEIGHT:

664.11

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

02/12/2016

EXPIRY DATE: (mm/dd/yyyy)

02/12/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of PFUdA ($C_{11}H_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}H_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}H_{27}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 02/16/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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SYNTHESIS / CHARACTERIZATION:

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$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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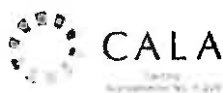
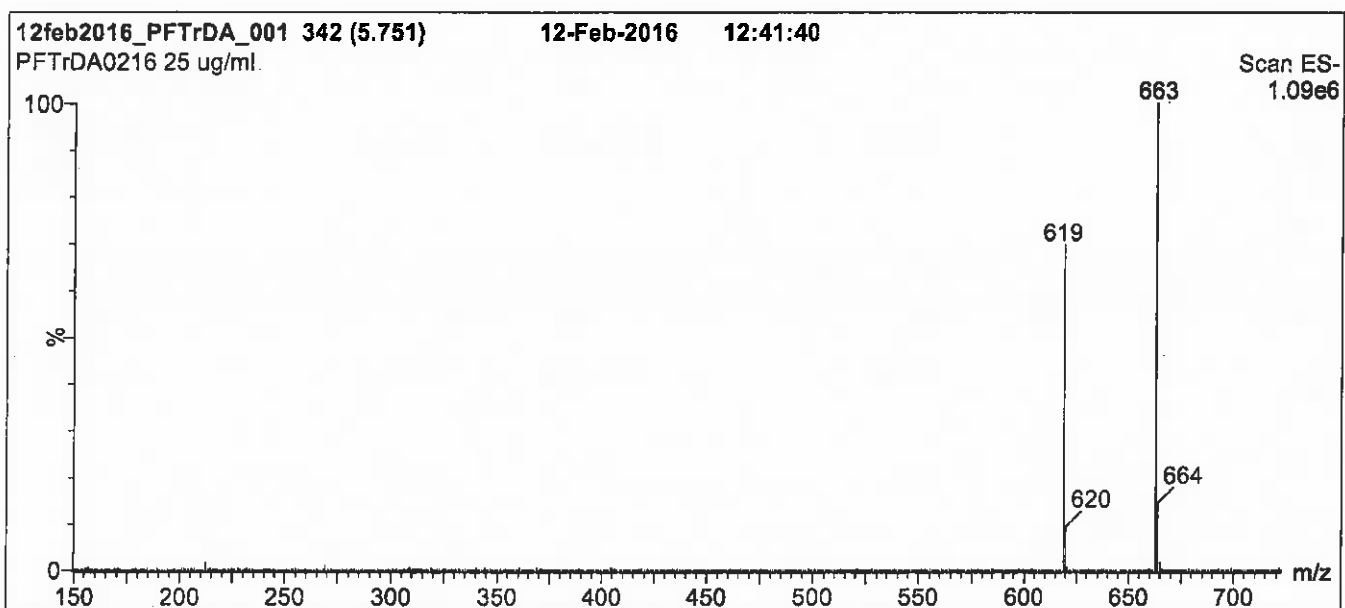
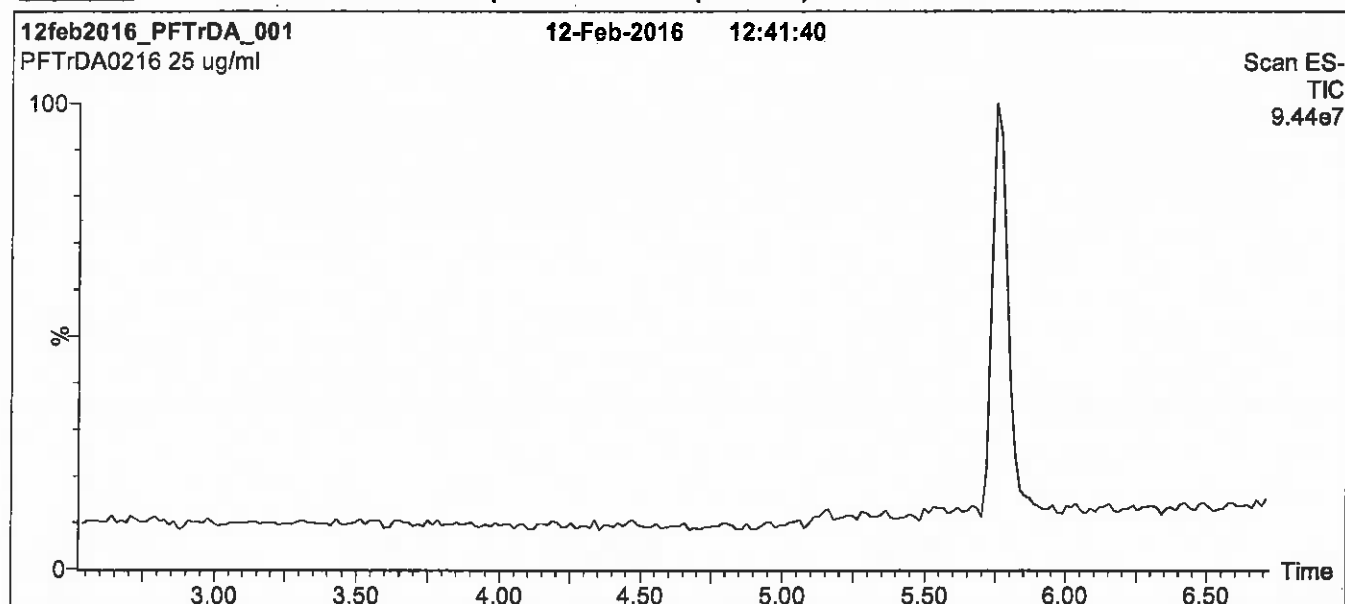


Figure 1: PFTTrDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

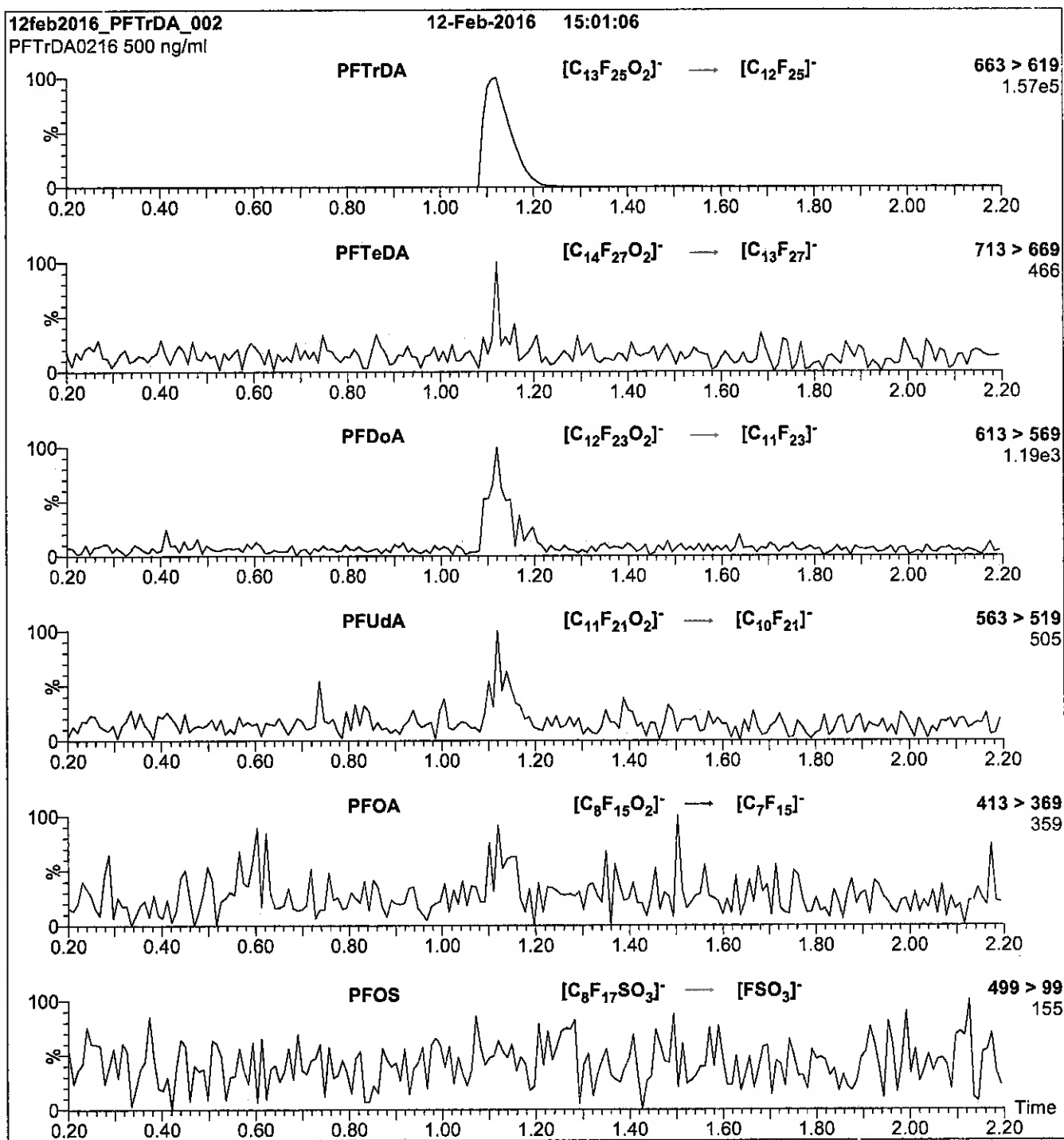
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

Figure 2: PFTrDA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFTTrDA)

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 15

Reagent

LCPFUdA_00007

r: 12/20/16 SK



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFUdA

LOT NUMBER:

PFUdA1016

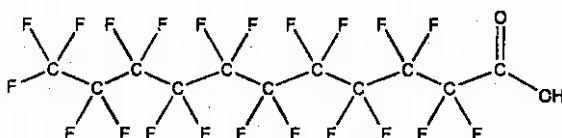
COMPOUND:

Perfluoro-n-undecanoic acid

STRUCTURE:

CAS #:

2058-94-8



MOLECULAR FORMULA:

$C_{11}HF_{21}O_2$

MOLECULAR WEIGHT:

564.09

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

10/18/2016

EXPIRY DATE: (mm/dd/yyyy)

10/18/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/19/2016

(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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EXPIRY DATE / PERIOD OF VALIDITY:

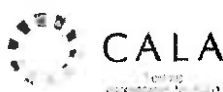
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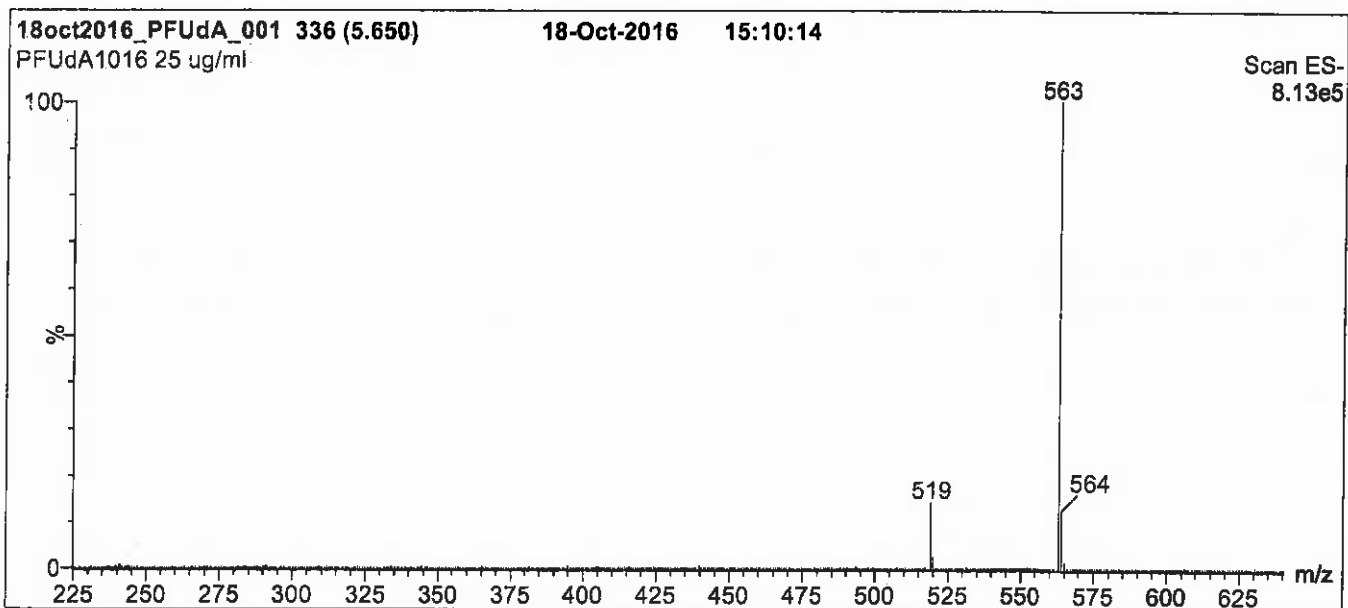
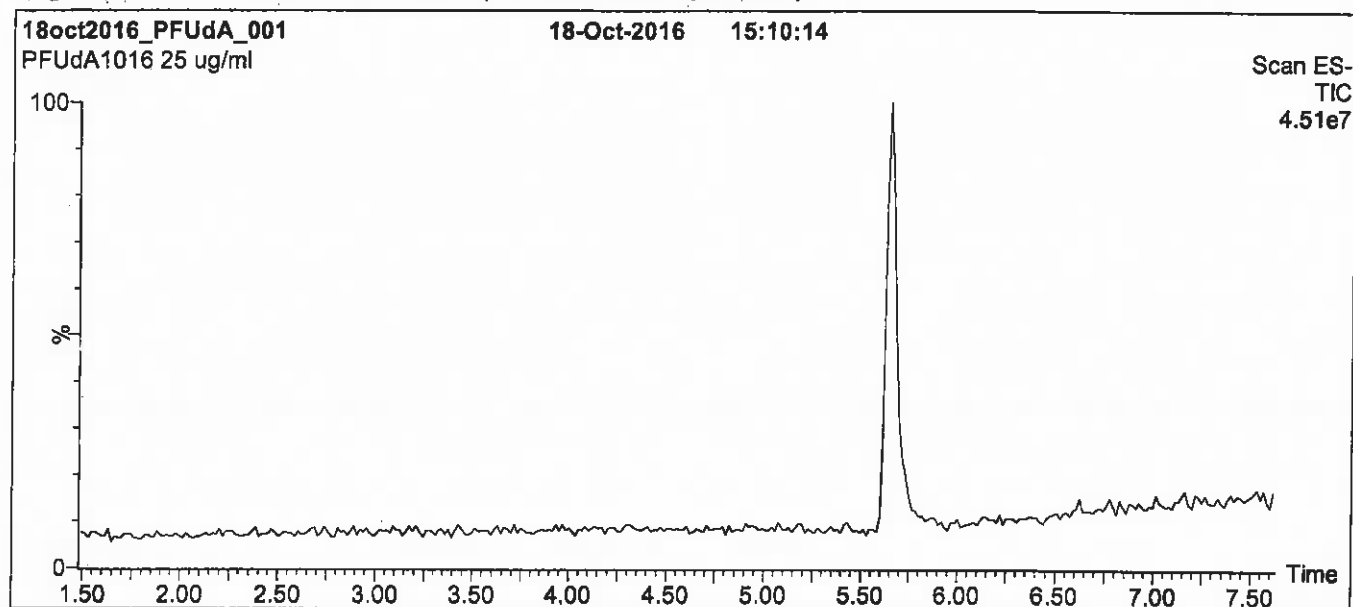
QUALITY MANAGEMENT:

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Figure 1: PFUdA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Micromass Quattro *micro* API MS

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

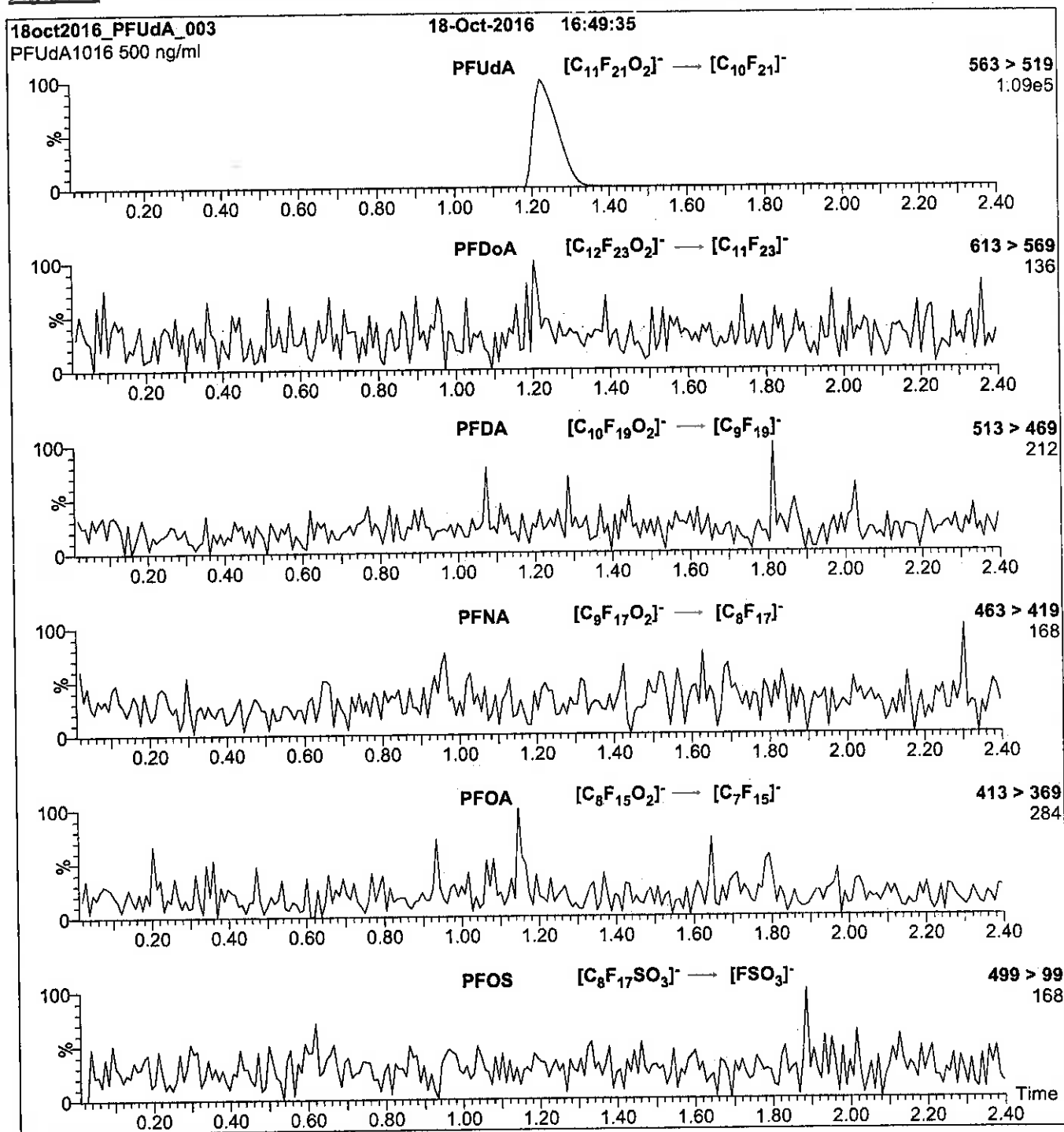
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 65
Desolvation Gas Flow (l/hr) = 750

Figure 2: PFUdA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFUdA)

Mobile phase: Isocratic 80% (80:20 MeOH:ACN) / 20% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 11

Method PFC DOD

Fluorinated Hydrocarbons (LC/MS) by
Method PFAS_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Matrix: Water Level: Low
 GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFBS #	PFHxA #	PFHpA #	PFHxS #	PFOA #	PFNA #
TP-PFC-027-TPI	320-36665-1	97	103	97	90	101	93	86	111
TP-PFC-027-TPI DL	320-36665-1 DL	85	87	90	88	92	84	89	91
TP-PFC-027-MID CARBON	320-36665-2	86	82	78	83	93	81	90	94
TP-PFC-027-TPE	320-36665-3	80	77	74	78	87	79	91	89
TP-PFC-027-TPE-D	320-36665-4	89	86	85	86	86	87	88	89
	MB 320-212840/1-A	82	79	78	82	87	79	90	94
	LCS 320-212840/2-A	84	80	77	80	89	82	92	91

	<u>QC LIMITS</u>
PFBA = 13C4 PFBA	50-150
PFPeA = 13C5 PFPeA	50-150
PFBS = 13C3-PFBS	50-150
PFHxA = 13C2 PFHxA	50-150
PFHpA = 13C4-PFHpA	50-150
PFHxS = 18O2 PFHxS	50-150
PFOA = 13C4 PFOA	50-150
PFNA = 13C5 PFNA	50-150

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFOS #	PFOSA #	PFDA #	PFUnA #	PFDoA #	PFTDA #
TP-PFC-027-TPI	320-36665-1	98	96	115	108	102	113
TP-PFC-027-TPI DL	320-36665-1 DL	80	80	92	87	76	80
TP-PFC-027-MID CARBON	320-36665-2	83	78	97	96	81	93
TP-PFC-027-TPE	320-36665-3	76	76	89	92	81	91
TP-PFC-027-TPE-D	320-36665-4	88	82	85	83	81	90
	MB 320-212840/1-A	82	76	95	95	80	94
	LCS 320-212840/2-A	81	76	99	90	80	88

	<u>QC LIMITS</u>
PFOS = 13C4 PFOS	50-150
PFOSA = 13C8 FOSA	50-150
PFDA = 13C2 PFDA	50-150
PFUnA = 13C2 PFUnA	50-150
PFDoA = 13C2 PFDoA	50-150
PFTDA = 13C2-PFTeDA	50-150

Column to be used to flag recovery values

FORM II EPA 537 (Mod)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.03.15LLAAX_026.d
 Lab ID: LCS 320-212840/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	40.0	43.5	109	83-118	
Perfluoropentanoic acid (PFPeA)	40.0	41.1	103	83-108	
Perfluorohexanoic acid (PFHxA)	40.0	42.7	107	83-109	
Perfluoroheptanoic acid (PFHpA)	40.0	42.0	105	80-113	
Perfluorooctanoic acid (PFOA)	40.0	40.7	102	80-107	
Perfluorononanoic acid (PFNA)	40.0	42.3	106	83-113	
Perfluorodecanoic acid (PFDA)	40.0	39.7	99	85-113	
Perfluoroundecanoic acid (PFUnA)	40.0	41.2	103	76-105	
Perfluorododecanoic acid (PFDoA)	40.0	47.0	117	87-116	Q
Perfluorotridecanoic Acid (PFTriA)	40.0	44.6	112	75-129	
Perfluorotetradecanoic acid (PFTeA)	40.0	42.5	106	82-115	
Perfluorobutanesulfonic acid (PFBS)	35.4	40.1	113	87-120	
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.3	94	81-106	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.2	106	80-117	
Perfluorooctanesulfonic acid (PFOS)	37.1	38.0	102	82-112	
Perfluorodecanesulfonic acid (PFDS)	38.6	40.7	105	81-114	
Perfluorooctane Sulfonamide (FOSA)	40.0	42.8	107	85-114	
13C8 FOSA	100	76.5	76	50-150	
13C4 PFBA	100	83.6	84	50-150	
13C5 PFPeA	100	80.4	80	50-150	
13C2 PFHxA	100	79.6	80	50-150	
13C4-PFHpA	100	89.2	89	50-150	
13C4 PFOA	100	92.0	92	50-150	
13C5 PFNA	100	90.9	91	50-150	
13C2 PFDA	100	99.5	99	50-150	
13C2 PFUnA	100	90.0	90	50-150	
13C2 PFDoA	100	79.8	80	50-150	
18O2 PFHxS	94.6	77.8	82	50-150	
13C2-PFTeDA	100	88.1	88	50-150	
13C4 PFOS	95.6	77.5	81	50-150	
13C3-PFBS	93.0	71.5	77	50-150	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab File ID: 2018.03.15LLAAX_025.d Lab Sample ID: MB 320-212840/1-A
 Matrix: Water Date Extracted: 03/14/2018 10:07
 Instrument ID: A8_N Date Analyzed: 03/16/2018 00:56
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-212840/2-A	2018.03.15L LAAX 026.d	03/16/2018 01:04
TP-PFC-027-TPI	320-36665-1	2018.03.15L LAAX 027.d	03/16/2018 01:11
TP-PFC-027-MID CARBON	320-36665-2	2018.03.15L LAAX 028.d	03/16/2018 01:19
TP-PFC-027-TPE	320-36665-3	2018.03.15L LAAX 029.d	03/16/2018 01:27
TP-PFC-027-TPE-D	320-36665-4	2018.03.16L LBX 034.d	03/17/2018 00:43
TP-PFC-027-TPI DL	320-36665-1 DL	2018.03.16L LBX 036.d	03/17/2018 00:59

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Sample No.: IC 320-212932/5 Date Analyzed: 03/14/2018 14:23
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.14LLICAL_00 Heated Purge: (Y/N) N
 Calibration ID: 38157

	13PFOA					
	AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT	4298154	2.59				
UPPER LIMIT	6447231	2.79				
LOWER LIMIT	2149077	2.39				
LAB SAMPLE ID	CLIENT SAMPLE ID					
ICB 320-212932/9		4150772	2.60			
ICV 320-212932/10		4088076	2.58			
CCV 320-213304/3 CCVIS		4349599	2.62			

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Sample No.: CCV 320-213304/3 Date Analyzed: 03/16/2018 00:48
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.15LLAAX_024 Heated Purge: (Y/N) N
 Calibration ID: 38157

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4349599	2.62				
UPPER LIMIT		6524399	2.82				
LOWER LIMIT		2174800	2.42				
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-212840/1-A		5182368	2.58				
LCS 320-212840/2-A		5070276	2.60				
320-36665-1	TP-PFC-027-TPI	4196322	2.58				
320-36665-2	TP-PFC-027-MID CARBON	4983928	2.58				
320-36665-3	TP-PFC-027-TPE	5414086	2.60				
CCV 320-213304/14		4539638	2.61				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Sample No.: IC 320-213555/5 Date Analyzed: 03/16/2018 23:33
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.16ICAL_005. Heated Purge: (Y/N) N
 Calibration ID: 38194

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		4548538	2.68				
UPPER LIMIT		6822807	2.88				
LOWER LIMIT		2274269	2.48				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 320-213555/9		4410810	2.68				
ICV 320-213555/10		4328656	2.67				
CCB 320-213555/11		4468132	2.67				
CCVL 320-213555/12		4596356	2.68				
CCV 320-213558/1		4519451	2.68				
320-36665-4	TP-PFC-027-TPE-D	5259260	2.68				
320-36665-1 DL	TP-PFC-027-TPI DL	532884	2.68				
CCV 320-213558/8		4690619	2.67				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPI</u>	Lab Sample ID: <u>320-36665-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_027.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 08:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>252.6(mL)</u>	Date Analyzed: <u>03/16/2018 01:11</u>
Con. Extract Vol.: <u>10.0(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	71		2.0	1.5	0.58
2706-90-3	Perfluoropentanoic acid (PFPeA)	180		2.0	0.99	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	350		2.0	0.99	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	69		2.0	1.5	0.60
335-67-1	Perfluorooctanoic acid (PFOA)	1300	E M	2.0	1.5	0.53
375-95-1	Perfluorononanoic acid (PFNA)	2.3		2.0	1.5	0.51
335-76-2	Perfluorodecanoic acid (PFDA)	0.73	J	2.0	0.99	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.71
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	1.5	0.51
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	3.0	0.75
376-06-7	Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	3.0	0.82
375-73-5	Perfluorobutanesulfonic acid (PFBS)	48		2.0	0.99	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	350		2.0	0.99	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	7.6		2.0	0.99	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	330	M	4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.55
754-91-6	Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPI</u>	Lab Sample ID: <u>320-36665-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_027.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 08:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>252.6(mL)</u>	Date Analyzed: <u>03/16/2018 01:11</u>
Con. Extract Vol.: <u>10.0(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	96		50-150
STL00992	13C4 PFBA	97		50-150
STL01893	13C5 PFPeA	103		50-150
STL00993	13C2 PFHxA	90		50-150
STL01892	13C4-PFHpA	101		50-150
STL00990	13C4 PFOA	86		50-150
STL00995	13C5 PFNA	111		50-150
STL00996	13C2 PFDA	115		50-150
STL00997	13C2 PFUnA	108		50-150
STL00998	13C2 PFDoA	102		50-150
STL00994	18O2 PFHxS	93		50-150
STL02116	13C2-PFTeDA	113		50-150
STL00991	13C4 PFOS	98		50-150
STL02337	13C3-PFBS	97		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_027.d
 Lims ID: 320-36665-A-1-A
 Client ID: TP-PFC-027-TPI
 Sample Type: Client
 Inject. Date: 16-Mar-2018 01:11:54 ALS Bottle#: 15 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36665-a-1-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 10:13:47 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK040

First Level Reviewer: hannigana Date: 16-Mar-2018 08:10:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.429	1.435	-0.006	1.000	3841188	1.79			1616	
D 1 13C4 PFBA										
217.00 > 172.00	1.429	1.440	-0.011	0.554	5813313	2.43		97.2	84228	
D 3 13C5-PFPeA										
267.90 > 223.00	1.656	1.664	-0.008	0.642	4111805	2.56		103	56085	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.656	1.674	-0.018	1.000	8771300	4.55			1679	
D 47 13C3-PFBS										
301.90 > 83.00	1.692	1.691	0.001	0.656	94592	2.26		97.2	375	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.692	1.709	-0.017	1.000	3778297	1.22			3468	
298.90 > 99.00	1.692	1.709	-0.017	1.000	1588714		2.38(1.25-3.74)		3219	
D 7 13C2 PFHxA										
315.00 > 270.00	1.925	1.904	0.021	0.747	3926452	2.25		89.9	111057	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.925	1.936	-0.011	1.000	13835858	8.73			16090	
313.00 > 119.00	1.925	1.936	-0.011	1.000	1099767		12.58(5.03-15.10)		19710	
D 9 13C4-PFHpA										
367.00 > 322.00	2.226	2.215	0.011	0.863	4167241	2.52		101	124817	
D 11 18O2 PFHxS										
403.00 > 84.00	2.238	2.226	0.012	0.868	5380540	2.20		93.0	94724	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.226	2.251	-0.025	1.000	3091819	1.74			3077	
363.00 > 169.00	2.226	2.251	-0.025	1.000	1190810		2.60(1.13-3.40)		14462	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.238	2.264	-0.026	1.000	22851869	8.95			34376	
399.00 > 99.00	2.238	2.264	-0.026	1.000	7724011		2.96(1.50-4.49)		20372	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.579	2.586	-0.007	1.000	3414301	2.14		85.7	99400	
* 62 13C2-PFOA										
415.00 > 370.00	2.579	2.602	-0.023		4196322	2.50			96785	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.587	2.602	-0.015	1.003	54014730	34.0			22271	E
413.00 > 169.00	2.579	2.602	-0.023	1.000	37857763		1.43(0.84-2.52)		64684	M
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.587	2.602	-0.015	1.000	432143	0.1924			194	
449.00 > 99.00	2.587	2.602	-0.015	1.000	127426		3.39(1.94-5.82)		363	
D 19 13C5 PFNA										
468.00 > 423.00	2.954	2.960	-0.006	1.145	3445961	2.78		111	94506	
D 18 13C4 PFOS										
503.00 > 80.00	2.954	2.960	-0.006	1.145	3954625	2.35		98.5	48239	
20 Perfluorononanoic acid										
463.00 > 419.00	2.954	2.967	-0.013	1.000	80399	0.0581			74.6	
463.00 > 169.00	2.954	2.967	-0.013	1.000	21529		3.73(1.90-5.69)		154	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.954	2.967	-0.013	1.000	14457653	8.32			23201	M
499.00 > 99.00	2.948	2.967	-0.019	0.998	3304379		4.38(2.31-6.93)		31423	
D 21 13C8 FOSA										
506.00 > 78.00	3.313	3.297	0.016	1.285	5854315	2.39		95.6	58391	
D 23 13C2 PFDA										
515.00 > 470.00	3.321	3.312	0.009	1.288	2891844	2.88		115	42073	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.305	3.321	-0.016	0.998	9605	0.004191			36.1	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.321	3.329	-0.008	1.000	21433	0.0184			51.6	
513.00 > 169.00	3.321	3.329	-0.008	1.000	3613		5.93(2.36-7.09)		57.6	
D 30 13C2 PFUnA										
565.00 > 520.00	3.641	3.638	0.002	1.412	2008411	2.70		108	88455	
D 36 13C2 PFDaA										
615.00 > 570.00	3.905	3.932	-0.027	1.514	1931496	2.56		102	10349	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.373	4.437	-0.064	1.695	1883125	2.82		113	12635	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_027.d

Injection Date: 16-Mar-2018 01:11:54

Instrument ID: A8_N

Lims ID: 320-36665-A-1-A

Lab Sample ID: 320-36665-1

Client ID: TP-PFC-027-TPI

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

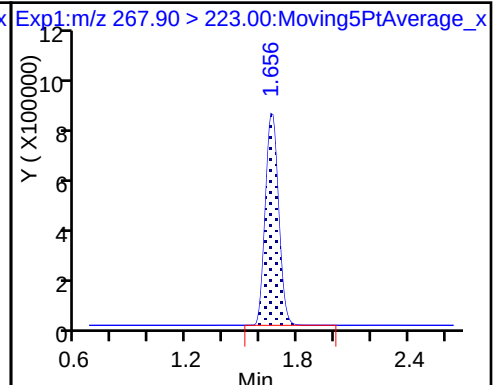
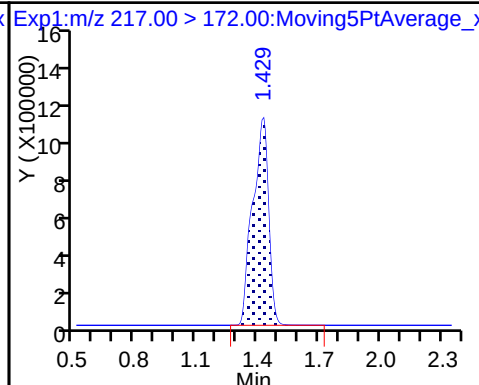
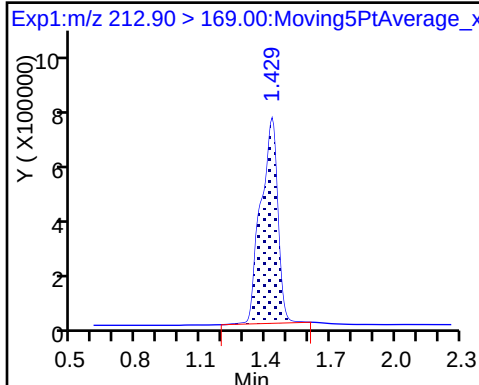
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

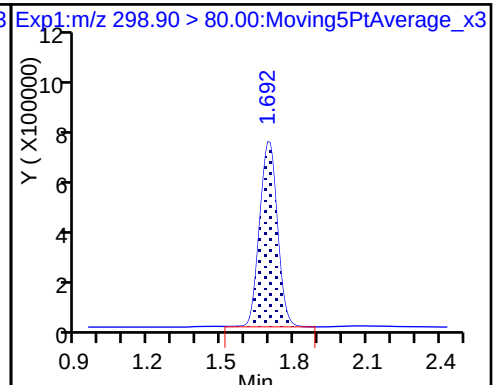
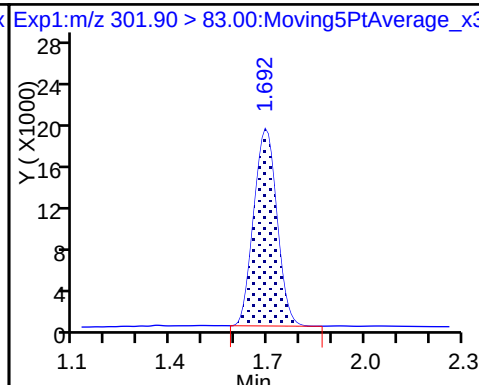
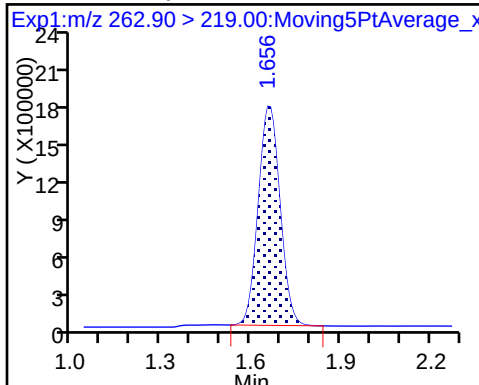
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

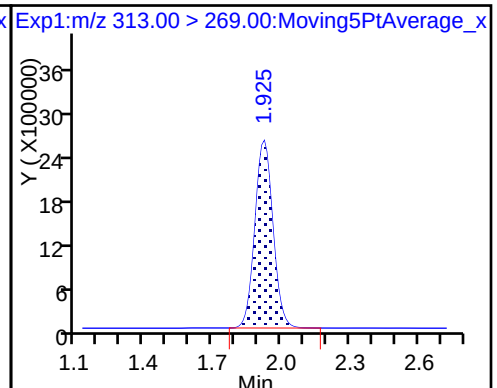
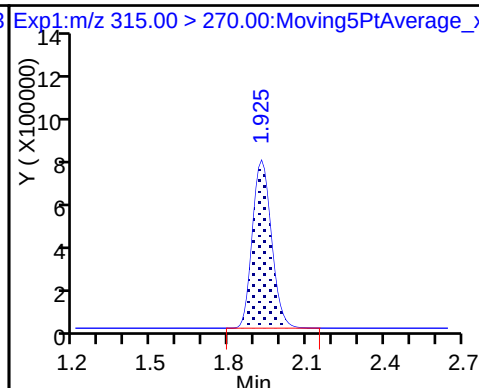
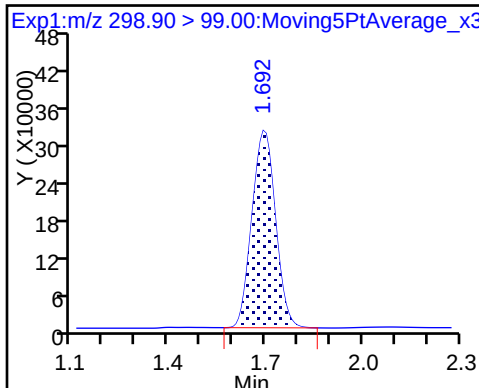
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

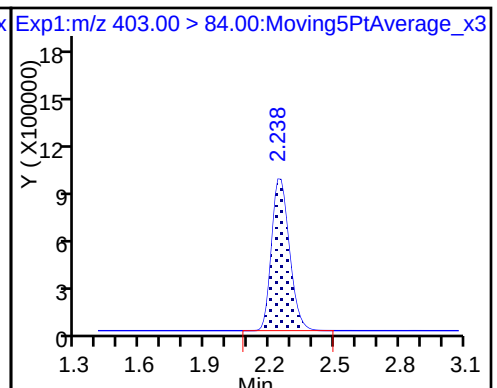
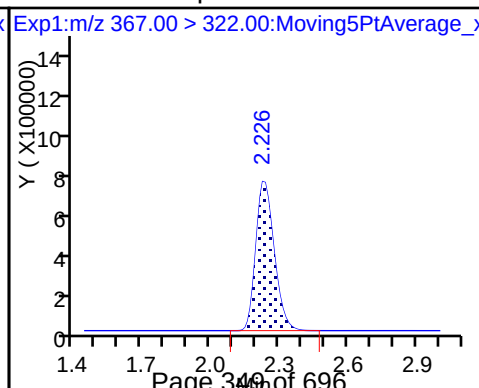
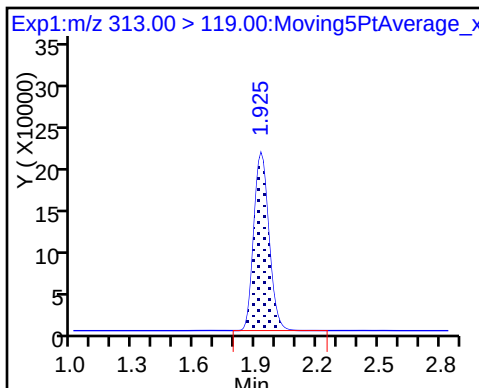
6 Perfluorohexanoic acid

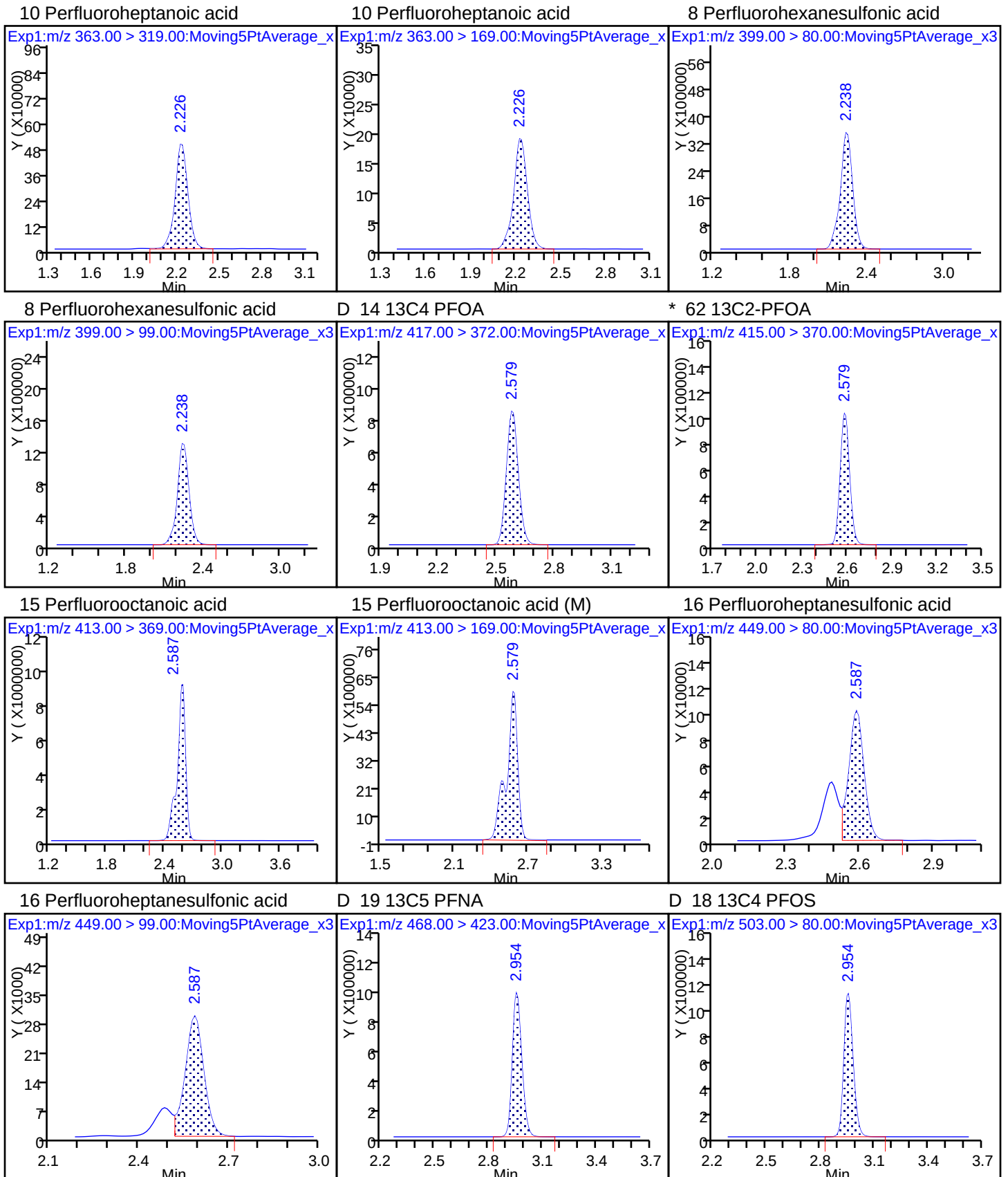


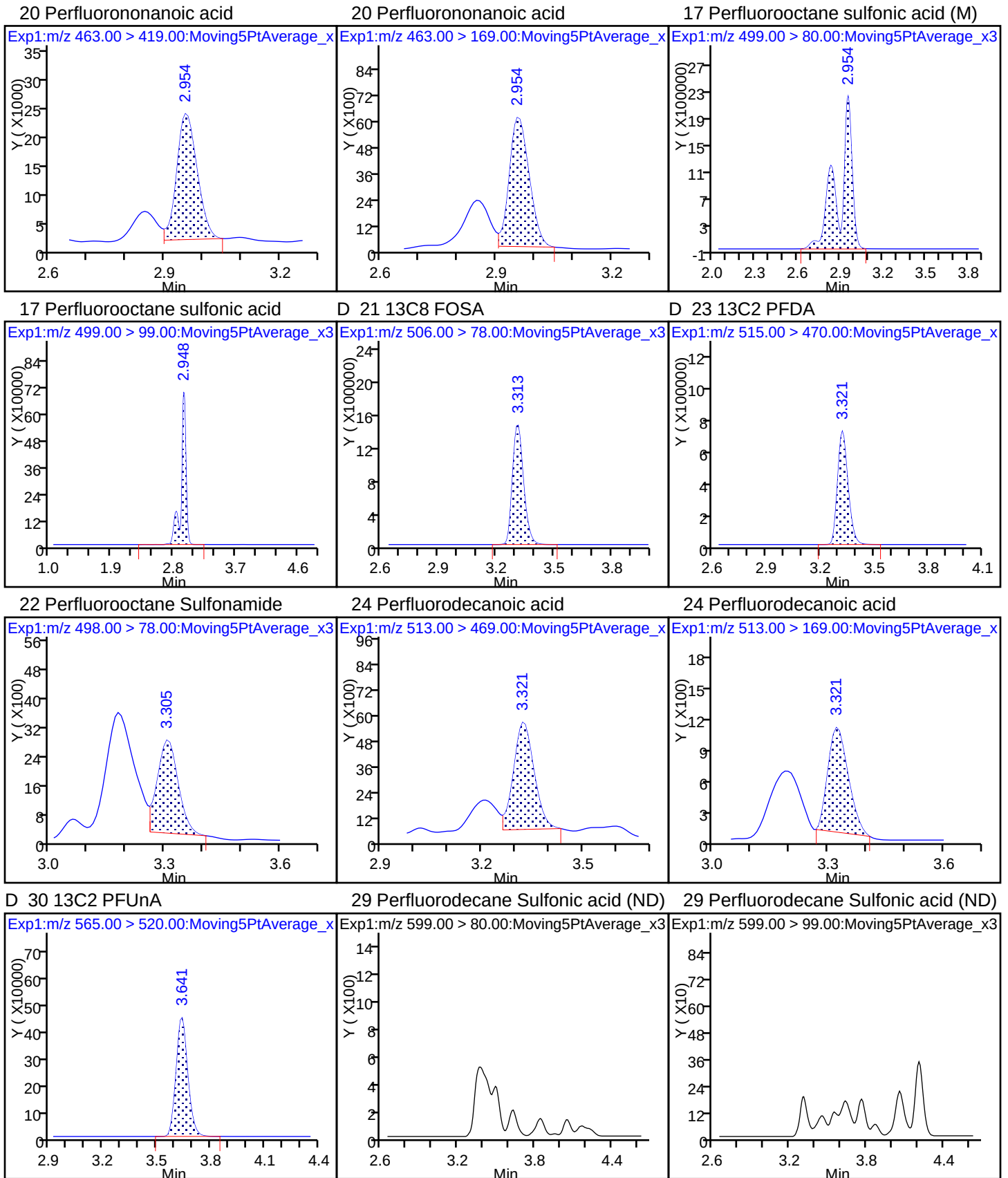
6 Perfluorohexanoic acid

D 9 13C4-PFHpA

D 11 18O2 PFHxS



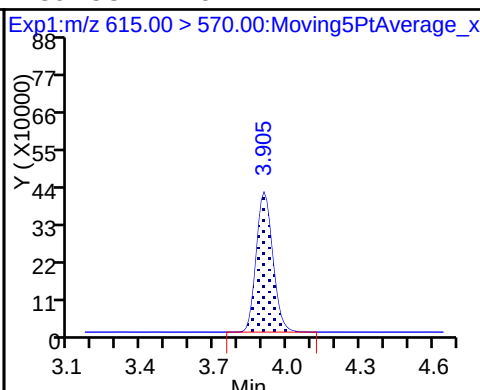
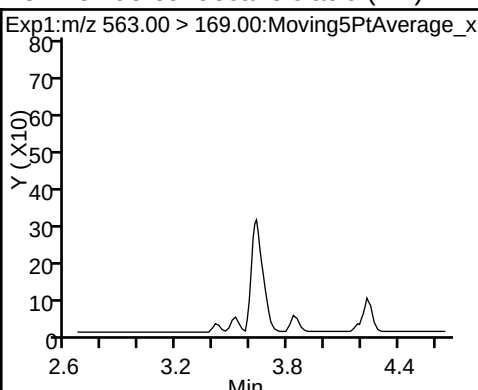
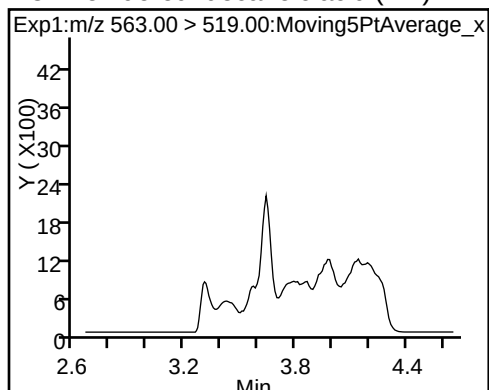




31 Perfluoroundecanoic acid (ND)

31 Perfluoroundecanoic acid (ND)

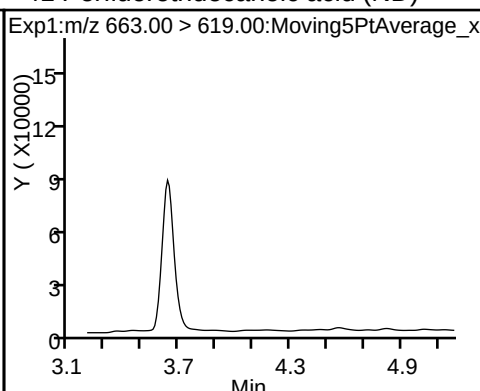
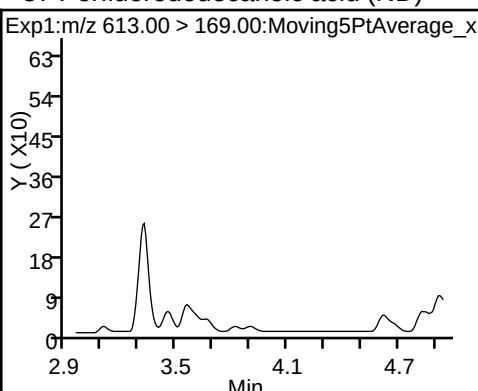
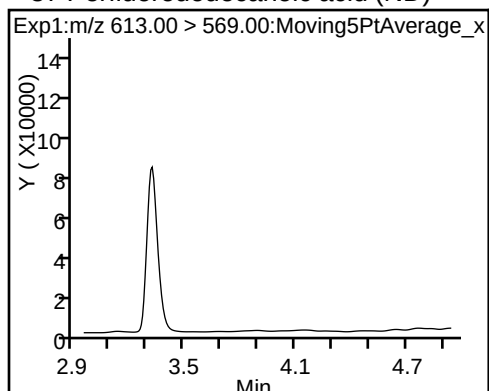
D 36 13C2 PFDaA



37 Perfluorododecanoic acid (ND)

37 Perfluorododecanoic acid (ND)

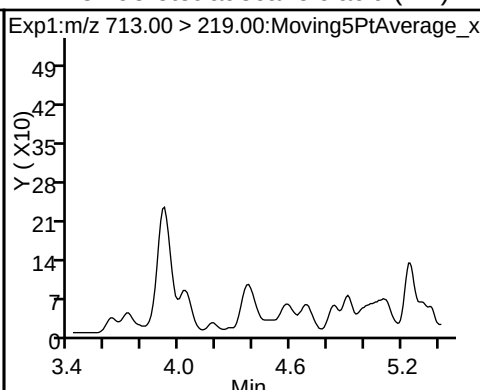
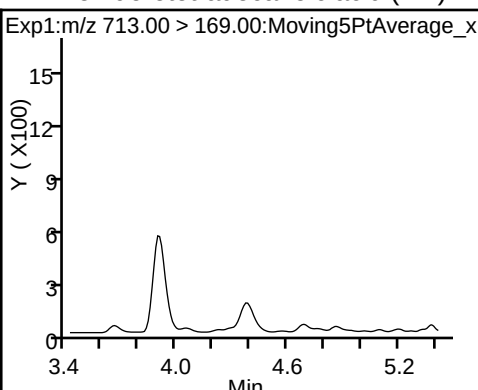
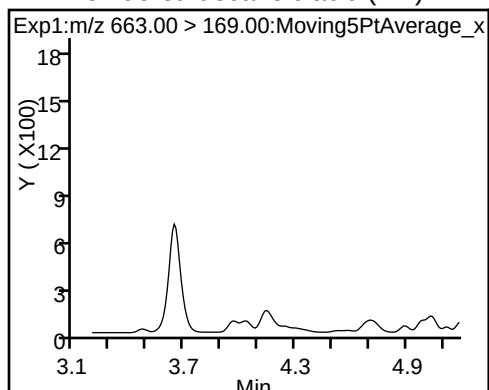
41 Perfluorotridecanoic acid (ND)



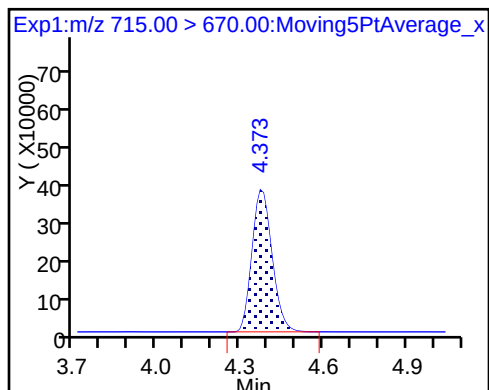
41 Perfluorotridecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



TestAmerica Sacramento

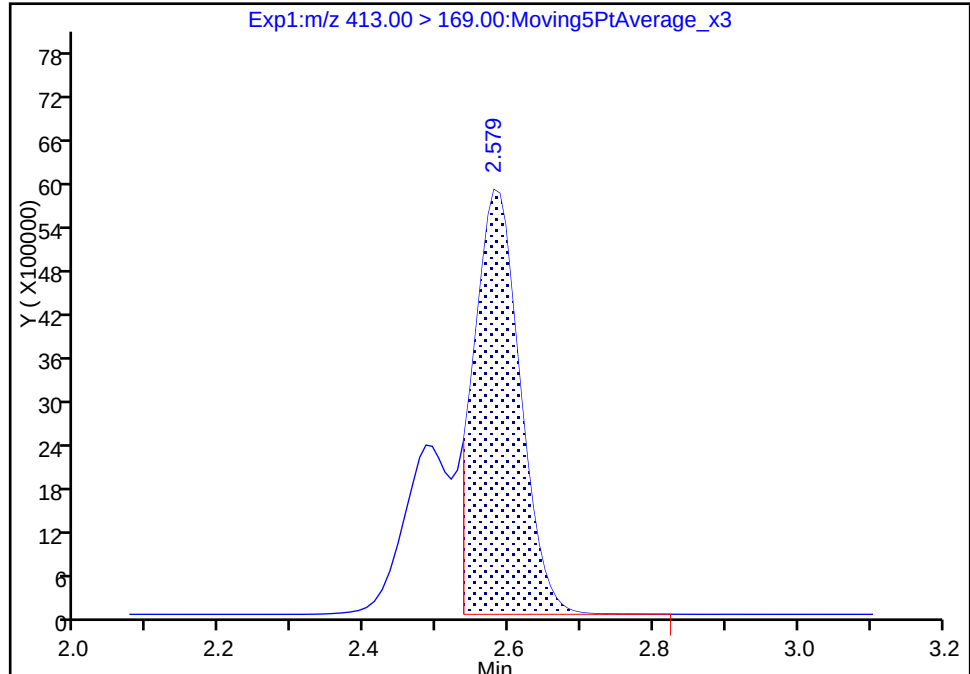
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_027.d				
Injection Date:	16-Mar-2018 01:11:54	Instrument ID:	A8_N		
Lims ID:	320-36665-A-1-A	Lab Sample ID:	320-36665-1		
Client ID:	TP-PFC-027-TPI				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

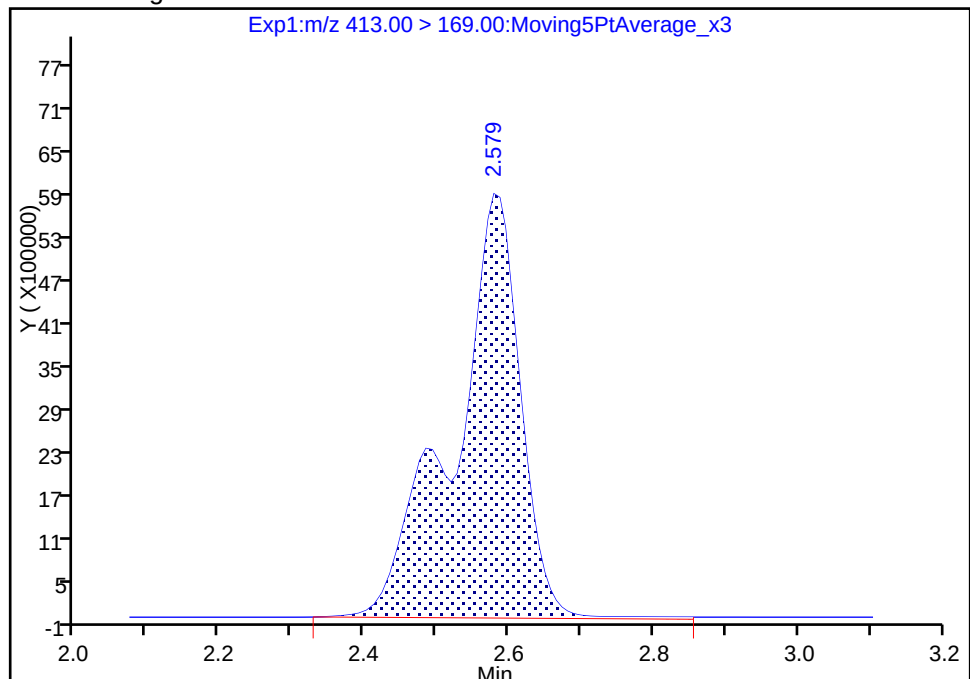
RT: 2.58
Area: 25551063
Amount: 34.009929
Amount Units: ng/ml

Processing Integration Results



RT: 2.58
Area: 37857763
Amount: 34.009929
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 16-Mar-2018 07:57:46

Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento

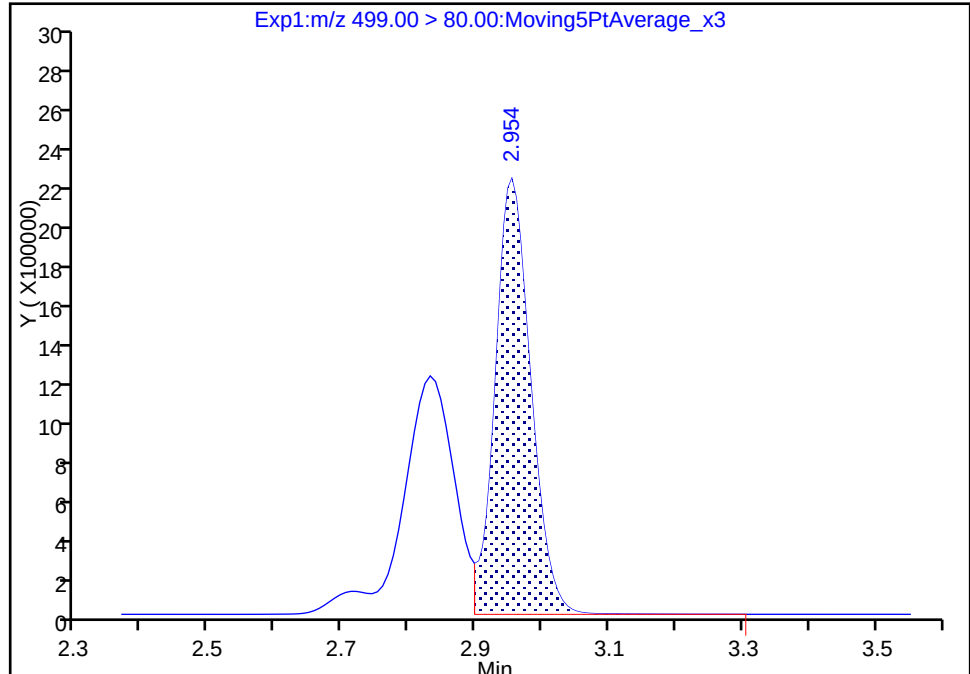
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_027.d				
Injection Date:	16-Mar-2018 01:11:54	Instrument ID:	A8_N		
Lims ID:	320-36665-A-1-A	Lab Sample ID:	320-36665-1		
Client ID:	TP-PFC-027-TPI				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	15	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

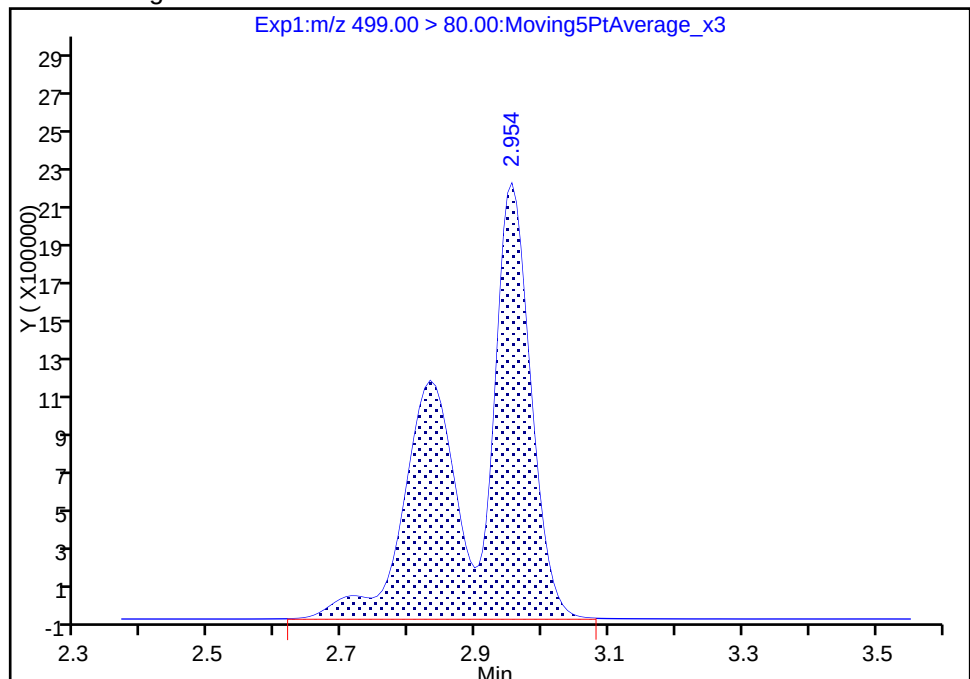
RT: 2.95
Area: 8042937
Amount: 4.629914
Amount Units: ng/ml

Processing Integration Results



RT: 2.95
Area: 14457653
Amount: 8.322543
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 16-Mar-2018 08:04:58

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPI DL</u>	Lab Sample ID: <u>320-36665-1 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.16LLBX_036.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 08:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>252.6 (mL)</u>	Date Analyzed: <u>03/17/2018 00:59</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>10</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213558</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	72	D	20	15	5.8
2706-90-3	Perfluoropentanoic acid (PFPeA)	180	D	20	9.9	4.3
307-24-4	Perfluorohexanoic acid (PFHxA)	340	D	20	9.9	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	70	D	20	15	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	1800	D M	20	15	5.3
375-95-1	Perfluorononanoic acid (PFNA)	15	U	20	15	5.1
335-76-2	Perfluorodecanoic acid (PFDA)	9.9	U	20	9.9	4.8
2058-94-8	Perfluoroundecanoic acid (PFUnA)	15	U	20	15	7.1
307-55-1	Perfluorododecanoic acid (PFDoA)	15	U Q	20	15	5.1
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	30	U	40	30	7.5
376-06-7	Perfluorotetradecanoic acid (PFTeA)	30	U	40	30	8.2
375-73-5	Perfluorobutanesulfonic acid (PFBS)	45	D	20	9.9	4.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	380	D	20	9.9	3.8
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	8.9	J D	20	9.9	3.7
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	340	D	40	30	11
335-77-3	Perfluorodecanesulfonic acid (PFDS)	15	U	20	15	5.5
754-91-6	Perfluorooctane Sulfonamide (FOSA)	30	U	40	30	13

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPI DL</u>	Lab Sample ID: <u>320-36665-1 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.16LLBX_036.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 08:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>252.6(mL)</u>	Date Analyzed: <u>03/17/2018 00:59</u>
Con. Extract Vol.: <u>10.0(mL)</u>	Dilution Factor: <u>10</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213558</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	80		50-150
STL00992	13C4 PFBA	85		50-150
STL01893	13C5 PFPeA	87		50-150
STL00993	13C2 PFHxA	88		50-150
STL01892	13C4-PFHpA	92		50-150
STL00990	13C4 PFOA	89		50-150
STL00995	13C5 PFNA	91		50-150
STL00996	13C2 PFDA	92		50-150
STL00997	13C2 PFUnA	87		50-150
STL00998	13C2 PFDoA	76		50-150
STL00994	18O2 PFHxS	84		50-150
STL02116	13C2-PFTeDA	80		50-150
STL00991	13C4 PFOS	80		50-150
STL02337	13C3-PFBS	90		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\2018.03.16LLBX_036.d
 Lims ID: 320-36665-A-1-A
 Client ID: TP-PFC-027-TPI
 Sample Type: Client
 Inject. Date: 17-Mar-2018 00:59:09 ALS Bottle#: 3 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 10.0000
 Sample Info: 320-36665-a-1-a 10X
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 10:41:28 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK040

First Level Reviewer: hannigana Date: 19-Mar-2018 10:22:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.440	1.440	0.0	0.537	581073	0.2136		85.4	12304	
2 Perfluorobutyric acid										
212.90 > 169.00	1.440	1.441	-0.001	1.000	394263	0.1829			269	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.634	417202	0.2173		86.9	11547	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.700	0.0	1.000	910568	0.4671			313	
D 47 13C3-PFBS										
301.90 > 83.00	1.735	1.730	0.005	0.647	9934	0.2097		90.2	65.4	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.735	1.736	-0.001	1.000	372093	0.1125			164	
298.90 > 99.00	1.735	1.736	-0.001	1.000	161588		2.30(1.25-3.74)		159	
D 7 13C2 PFHxA										
315.00 > 270.00	1.986	1.979	0.007	0.741	470592	0.2198		87.9	17136	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.976	1.987	-0.011	0.995	1647800	0.8675			3971	
313.00 > 119.00	1.976	1.987	-0.011	0.995	131770		12.51(5.03-15.10)		3423	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.864	480861	0.2310		92.4	20266	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.315	0.0	1.000	352115	0.1766			561	
363.00 > 169.00	2.315	2.315	0.0	1.000	141281		2.49(1.13-3.40)		1926	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.869	552607	0.1990		84.1	18666	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.328	0.0	1.000	2531623	0.9714			325	
399.00 > 99.00	2.328	2.328	0.0	1.000	787071		3.22(1.50-4.49)		306	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.680	2.678	0.002	1.000	446620	0.2222		88.9	20958	
* 62 13C2-PFOA										
415.00 > 370.00	2.680	2.681	-0.001		532884	0.2500			17890	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.680	2.681	-0.001	1.000	8843783	4.43			3397	
413.00 > 169.00	2.680	2.681	-0.001	1.000	5328474		1.66(0.84-2.52)		17934	M
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.688	2.689	-0.001	1.000	46063	0.0225			162	
449.00 > 99.00	2.688	2.689	-0.001	1.000	11068		4.16(1.94-5.82)		118	
D 18 13C4 PFOS										
503.00 > 80.00	3.051	3.050	0.001	1.138	372501	0.1918		80.2	9473	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.052	0.006	1.141	367366	0.2284		91.4	15551	
20 Perfluorononanoic acid										
463.00 > 419.00	3.058	3.058	0.0	1.000	7605	0.005076			21.2	
463.00 > 169.00	3.058	3.058	0.0	1.000	1614		4.71(1.90-5.69)		49.9	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.051	3.058	-0.007	1.000	1455834	0.8628			3647	
499.00 > 99.00	3.051	3.058	-0.007	1.000	342534		4.25(2.31-6.93)		3310	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.388	0.001	1.264	562746	0.2001		80.0	9819	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.389	0.0	1.000	1826	0.000835			33.3	
D 23 13C2 PFDA										
515.00 > 470.00	3.416	3.416	0.0	1.275	308729	0.2298		91.9	7673	
D 30 13C2 PFUnA										
565.00 > 520.00	3.750	3.747	0.003	1.399	228068	0.2168		86.7	9504	
D 36 13C2 PFDaA										
615.00 > 570.00	4.049	4.041	0.008	1.510	189075	0.1895		75.8	1401	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.544	4.545	-0.001	1.695	181139	0.1989		79.6	1892	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\2018.03.16LLBX_036.d

Injection Date: 17-Mar-2018 00:59:09

Instrument ID: A8_N

Lims ID: 320-36665-A-1-A

Lab Sample ID: 320-36665-1

Client ID: TP-PFC-027-TPI

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 10.0000

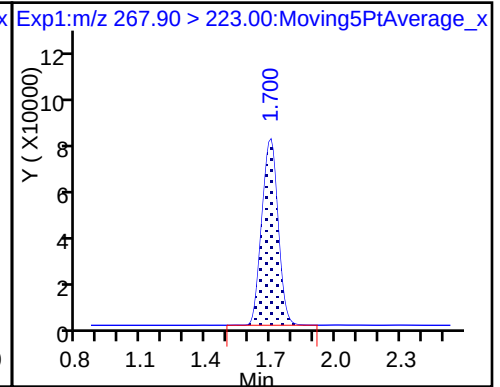
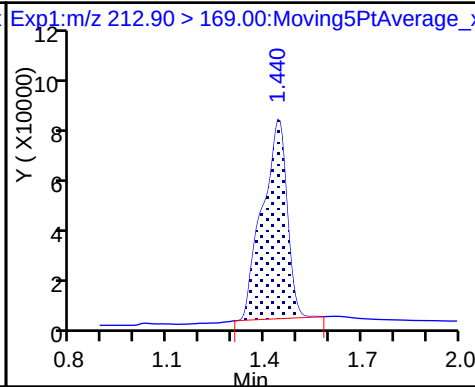
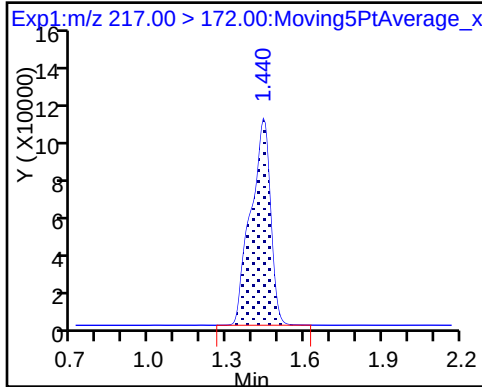
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

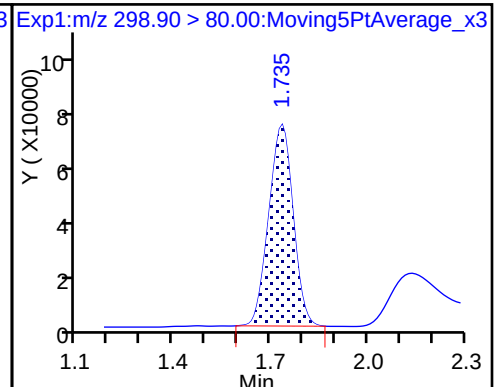
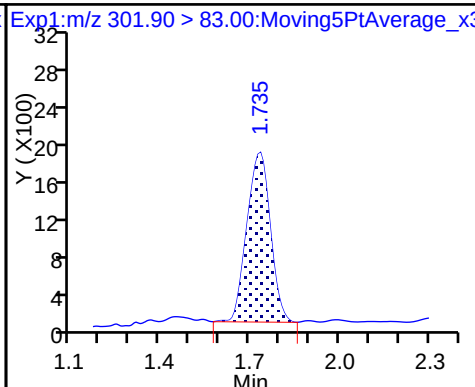
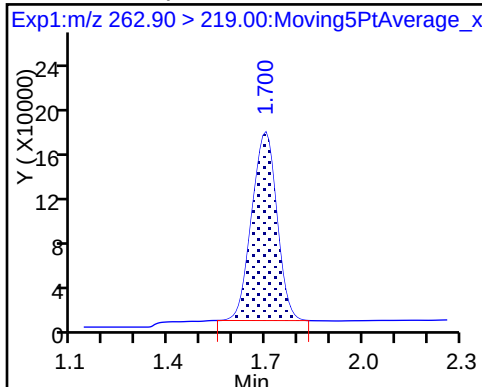
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

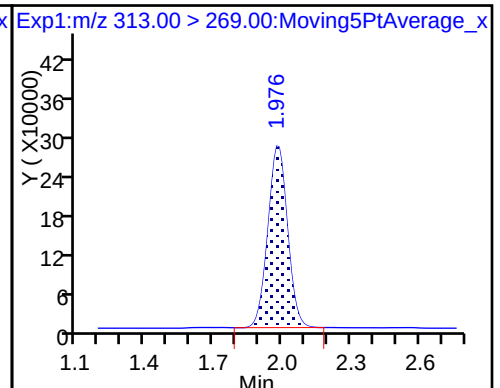
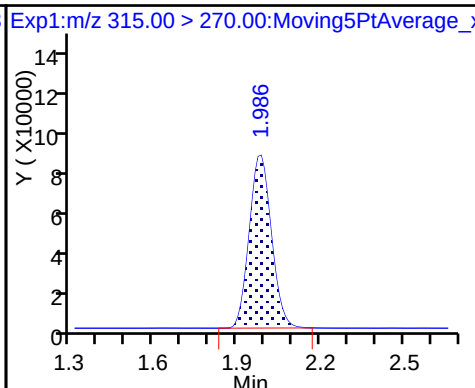
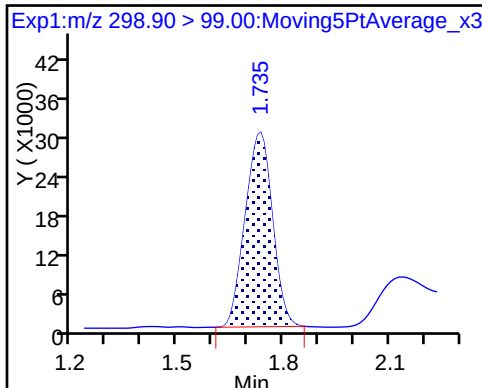
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

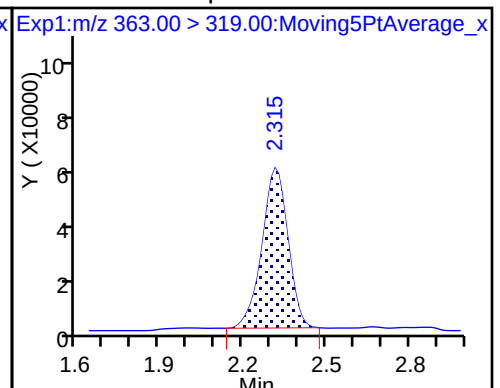
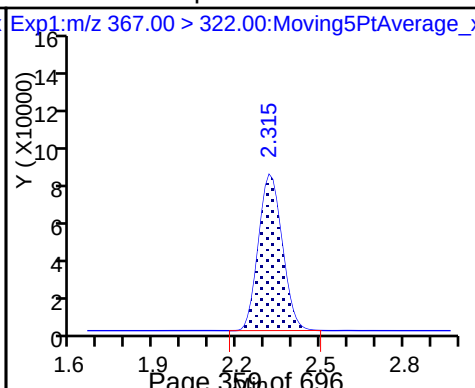
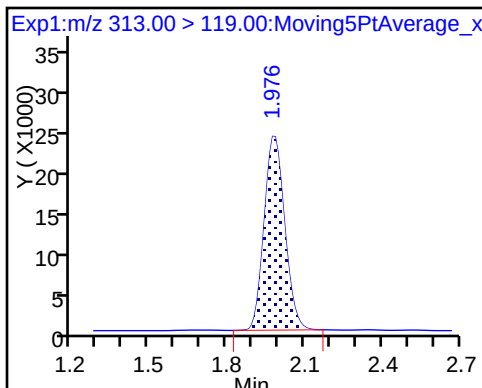
6 Perfluorohexanoic acid

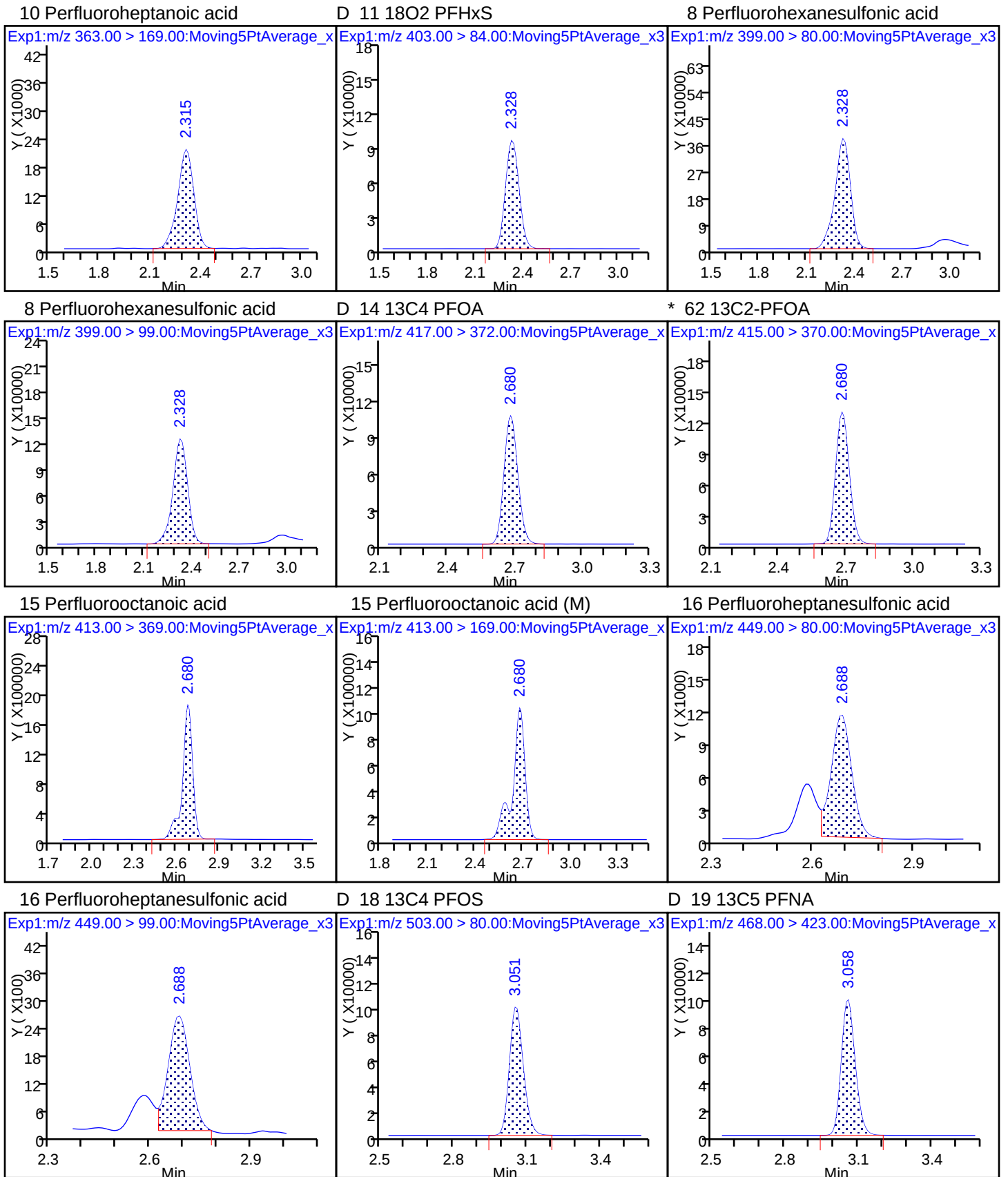


6 Perfluorohexanoic acid

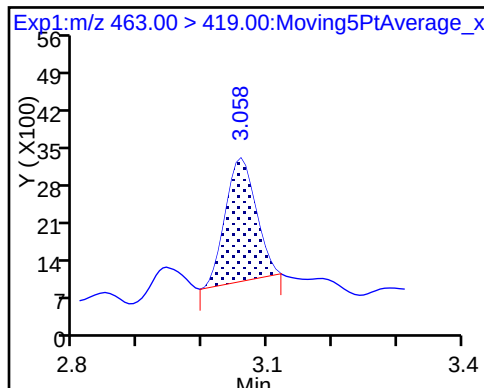
D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

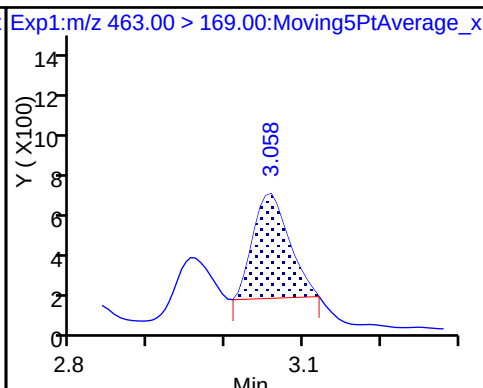




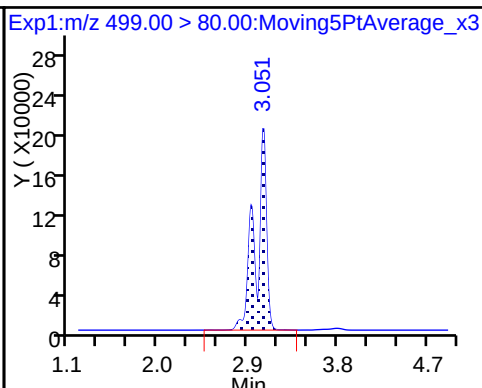
20 Perfluorononanoic acid



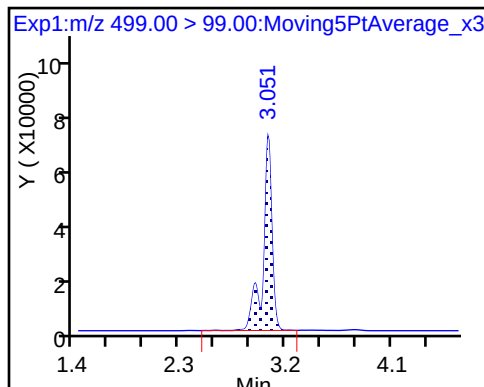
20 Perfluorononanoic acid



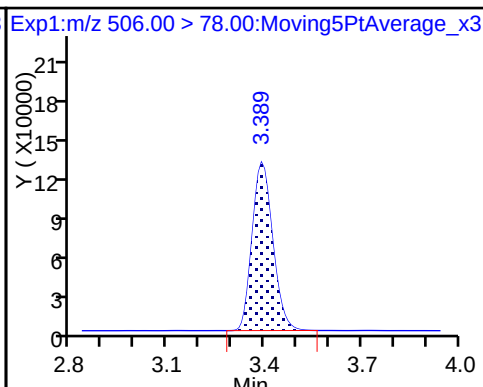
17 Perfluorooctane sulfonic acid



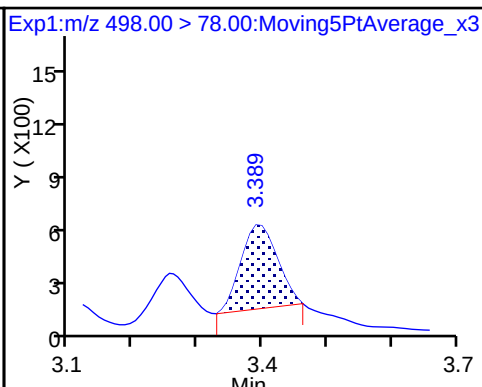
17 Perfluorooctane sulfonic acid



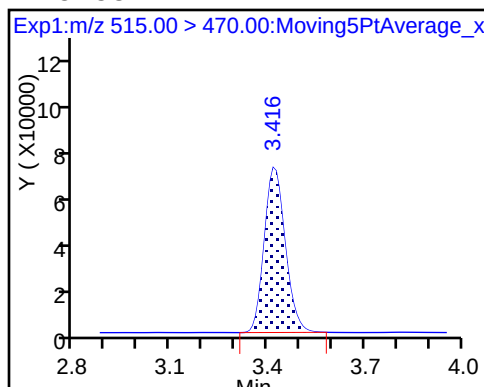
D 21 13C8 FOSA



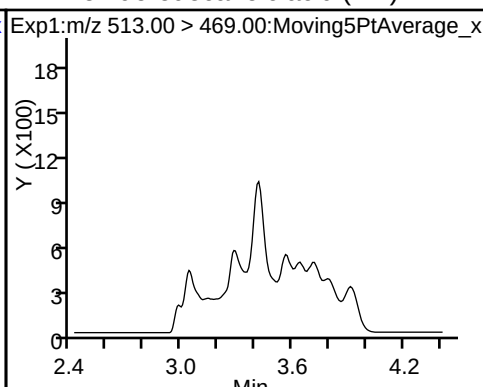
22 Perfluorooctane Sulfonamide



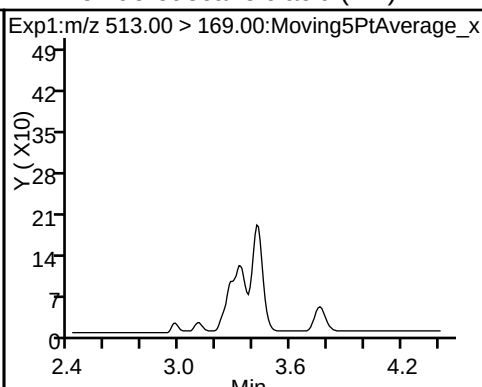
D 23 13C2 PFDA



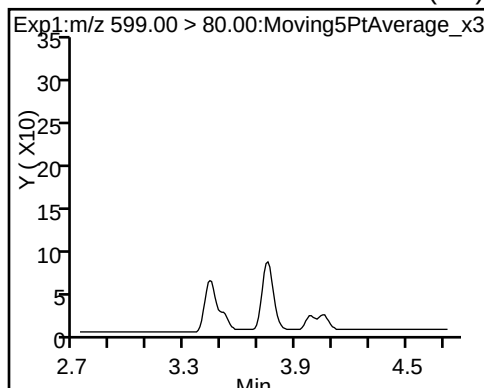
24 Perfluorodecanoic acid (ND)



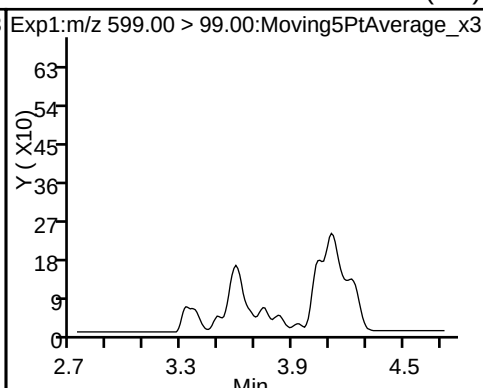
24 Perfluorodecanoic acid (ND)



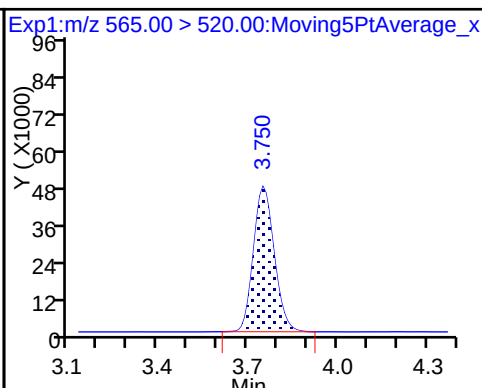
29 Perfluorodecane Sulfonic acid (ND)



29 Perfluorodecane Sulfonic acid (ND)



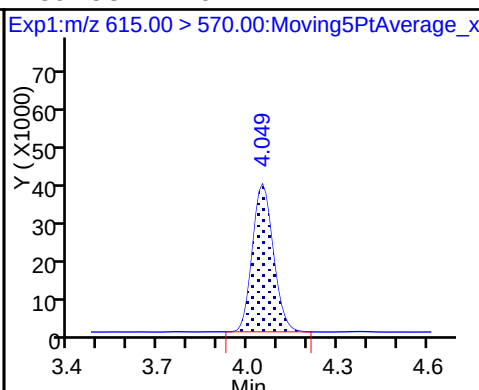
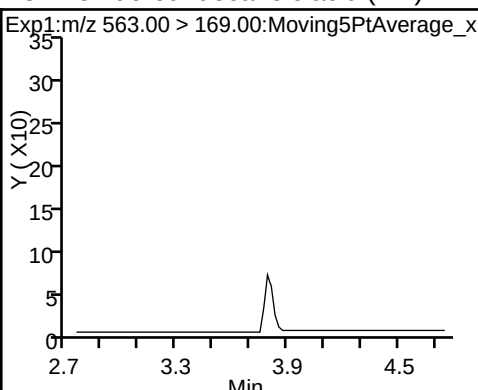
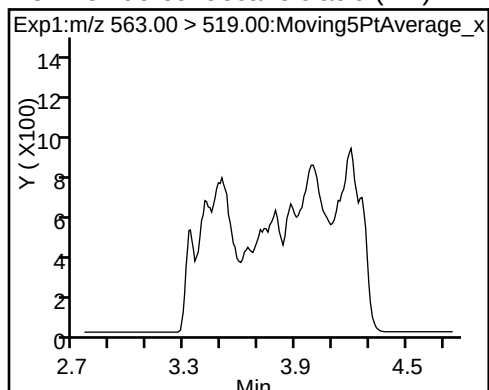
D 30 13C2 PFUnA



31 Perfluoroundecanoic acid (ND)

31 Perfluoroundecanoic acid (ND)

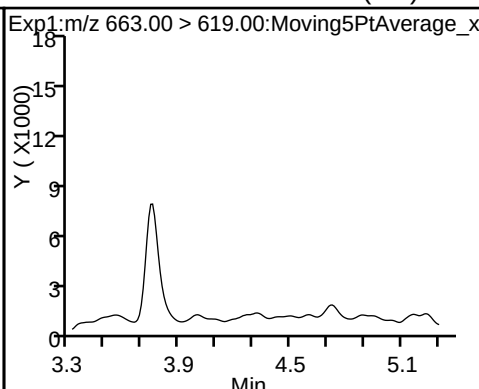
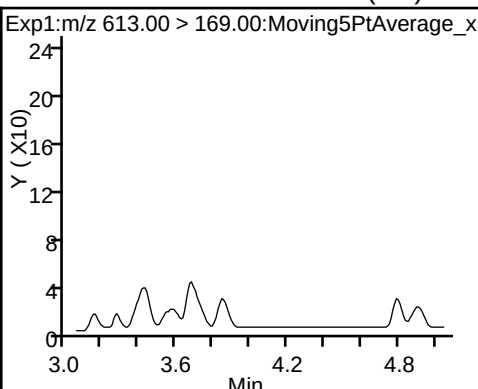
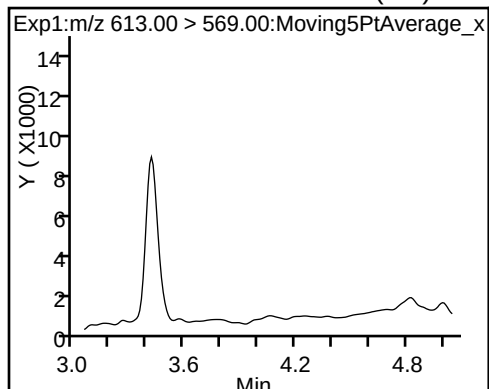
D 36 13C2 PFDaA



37 Perfluorododecanoic acid (ND)

37 Perfluorododecanoic acid (ND)

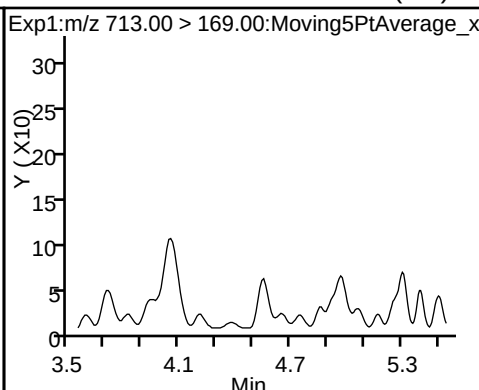
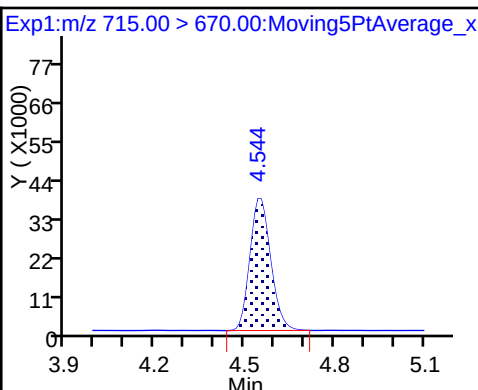
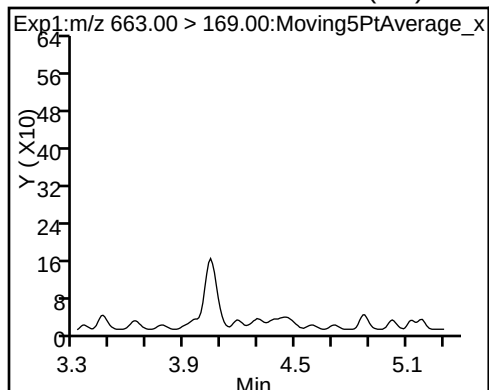
41 Perfluorotridecanoic acid (ND)



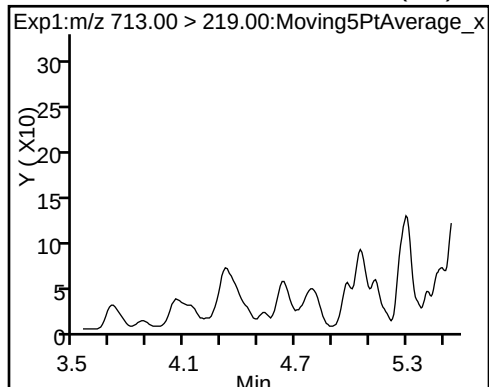
41 Perfluorotridecanoic acid (ND)

D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



TestAmerica Sacramento

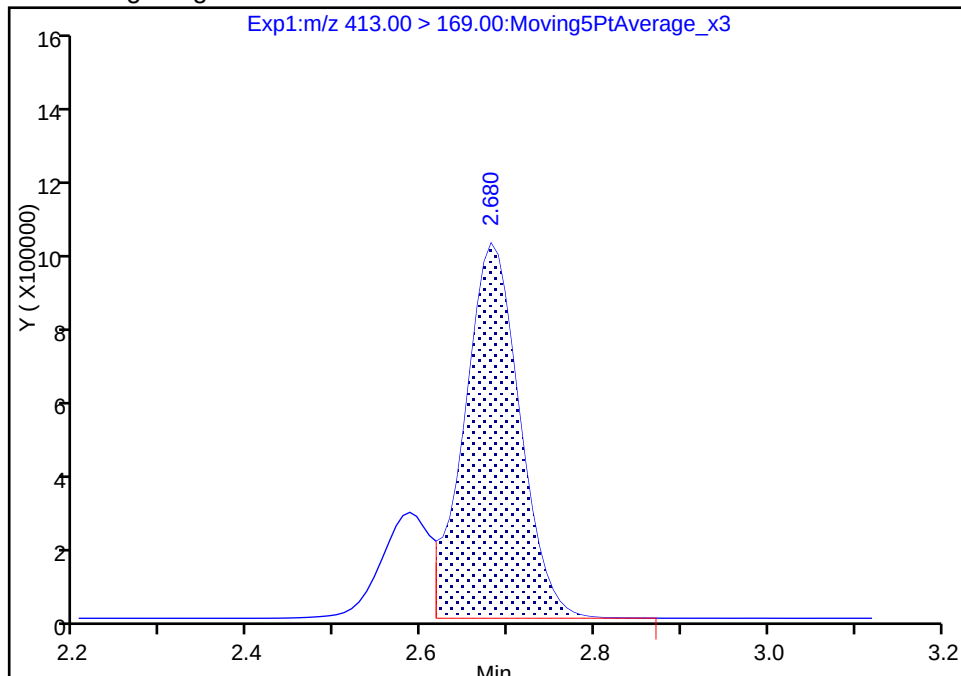
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\2018.03.16LLBX_036.d				
Injection Date:	17-Mar-2018 00:59:09	Instrument ID:	A8_N		
Lims ID:	320-36665-A-1-A	Lab Sample ID:	320-36665-1		
Client ID:	TP-PFC-027-TPI				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	3	Worklist Smp#:	4
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

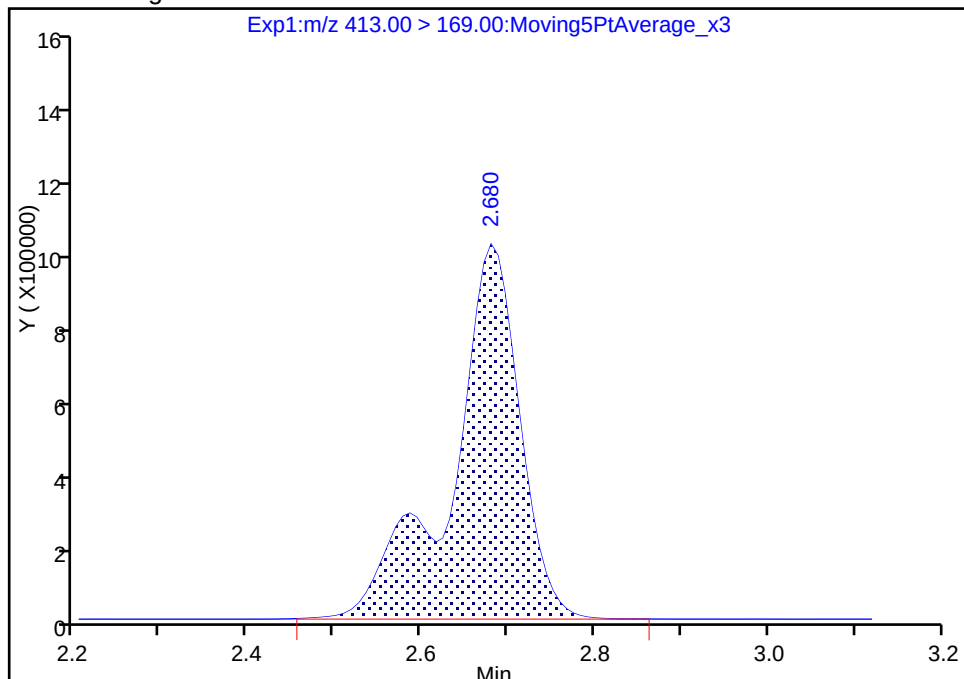
RT: 2.68
Area: 4263547
Amount: 4.434354
Amount Units: ng/ml

Processing Integration Results



RT: 2.68
Area: 5328474
Amount: 4.434354
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 19-Mar-2018 10:22:03

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-MID CARBON</u>	Lab Sample ID: <u>320-36665-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_028.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 09:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>251.1 (mL)</u>	Date Analyzed: <u>03/16/2018 01:19</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	120		2.0	1.5	0.59
2706-90-3	Perfluoropentanoic acid (PFPeA)	190		2.0	1.0	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	110		2.0	1.0	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8		2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	21	M	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.0	1.0	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	1.5	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	3.0	0.76
376-06-7	Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	3.0	0.83
375-73-5	Perfluorobutanesulfonic acid (PFBS)	3.2		2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.5	J	2.0	1.0	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.0	U	2.0	1.0	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.56
754-91-6	Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-MID CARBON</u>	Lab Sample ID: <u>320-36665-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_028.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 09:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>251.1 (mL)</u>	Date Analyzed: <u>03/16/2018 01:19</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	78		50-150
STL00992	13C4 PFBA	86		50-150
STL01893	13C5 PFPeA	82		50-150
STL00993	13C2 PFHxA	83		50-150
STL01892	13C4-PFHpA	93		50-150
STL00990	13C4 PFOA	90		50-150
STL00995	13C5 PFNA	94		50-150
STL00996	13C2 PFDA	97		50-150
STL00997	13C2 PFUnA	96		50-150
STL00998	13C2 PFDoA	81		50-150
STL00994	18O2 PFHxS	81		50-150
STL02116	13C2-PFTeDA	93		50-150
STL00991	13C4 PFOS	83		50-150
STL02337	13C3-PFBS	78		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_028.d
 Lims ID: 320-36665-A-2-A
 Client ID: TP-PFC-027-MID CARBON
 Sample Type: Client
 Inject. Date: 16-Mar-2018 01:19:46 ALS Bottle#: 16 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36665-a-2-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 10:13:47 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK040

First Level Reviewer: hannigana

Date: 19-Mar-2018 10:01:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.434	1.435	-0.001	1.000	6823754	3.04			3803	
D 1 13C4 PFBA										
217.00 > 172.00	1.434	1.440	-0.006	0.556	6070982	2.14		85.5	104612	
D 3 13C5-PFPeA										
267.90 > 223.00	1.673	1.664	0.009	0.649	3907007	2.05		82.1	88004	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.664	1.674	-0.010	0.995	8870835	4.85			2854	
D 47 13C3-PFBS										
301.90 > 83.00	1.700	1.691	0.009	0.659	90662	1.82		78.4	525	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.700	1.709	-0.009	1.000	237748	0.0798			456	
298.90 > 99.00	1.700	1.709	-0.009	1.000	112960		2.10(1.25-3.74)		402	
D 7 13C2 PFHxA										
315.00 > 270.00	1.925	1.904	0.021	0.746	4287521	2.07		82.7	139445	
6 Perfluorohexanoic acid										R
313.00 > 269.00	1.925	1.936	-0.011	1.000	4786302	2.77			14890	R
313.00 > 119.00	1.935	1.936	-0.001	1.005	301115		15.90(5.03-15.10)		5853	
D 9 13C4-PFHpA										
367.00 > 322.00	2.237	2.215	0.022	0.868	4581561	2.33		93.4	103452	
D 11 18O2 PFHxS										
403.00 > 84.00	2.250	2.226	0.024	0.873	5596261	1.93		81.5	99513	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.226	2.251	-0.025	0.995	184199	0.0945			273	
363.00 > 169.00	2.226	2.251	-0.025	0.995	77299		2.38(1.13-3.40)		1101	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.237	2.264	-0.027	0.994	102877	0.0387			652	
399.00 > 99.00	2.237	2.264	-0.027	0.994	30858		3.33(1.50-4.49)		108	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.578	2.586	-0.008	1.000	4276688	2.26		90.4	113543	
* 62 13C2-PFOA										
415.00 > 370.00	2.578	2.602	-0.024		4983928	2.50			132077	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.578	2.602	-0.024	1.000	1032481	0.5190			329	M
413.00 > 169.00	2.578	2.602	-0.024	1.000	674046		1.53(0.84-2.52)		1154	
D 19 13C5 PFNA										
468.00 > 423.00	2.942	2.960	-0.018	1.141	3473715	2.36		94.3	86944	
D 18 13C4 PFOS										
503.00 > 80.00	2.942	2.960	-0.018	1.141	3980074	1.99		83.5	94277	
D 21 13C8 FOSA										
506.00 > 78.00	3.297	3.297	0.0	1.279	5703621	1.96		78.5	55216	
D 23 13C2 PFDA										
515.00 > 470.00	3.305	3.312	-0.007	1.282	2881916	2.42		96.8	33802	
D 30 13C2 PFUnA										
565.00 > 520.00	3.648	3.638	0.010	1.415	2108317	2.39		95.6	51139	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.648	3.659	-0.011	1.000	6249	0.006819			18.0	
563.00 > 169.00	3.657	3.659	-0.002	1.003	1513		4.13(2.12-6.36)		121	
D 36 13C2 PFDoA										
615.00 > 570.00	3.944	3.932	0.012	1.530	1820816	2.03		81.2	8293	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.405	4.437	-0.032	1.708	1836104	2.32		92.7	11556	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_028.d

Injection Date: 16-Mar-2018 01:19:46

Instrument ID: A8_N

Lims ID: 320-36665-A-2-A

Lab Sample ID: 320-36665-2

Client ID: TP-PFC-027-MID CARBON

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

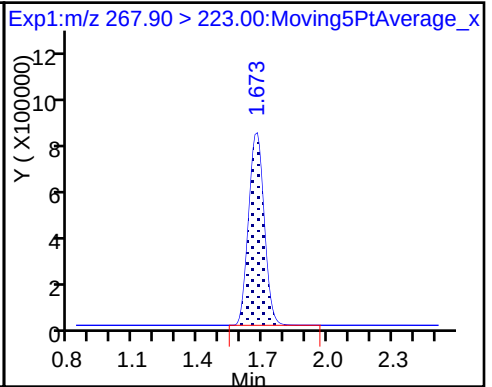
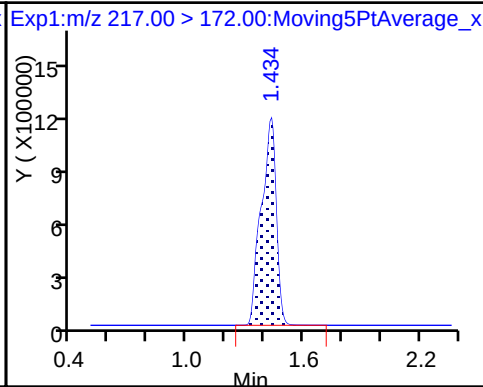
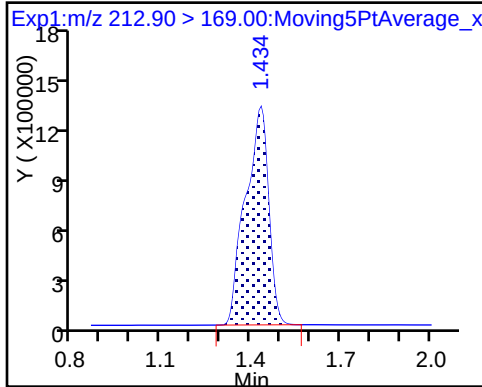
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

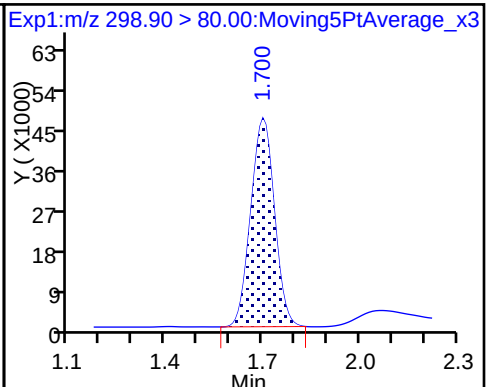
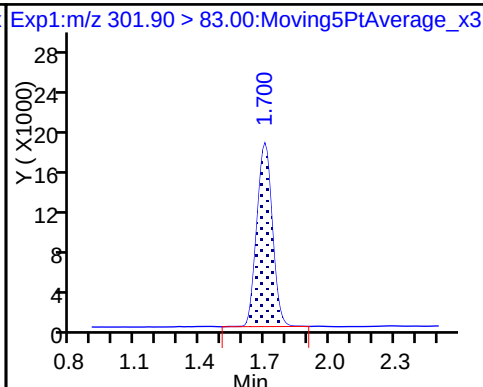
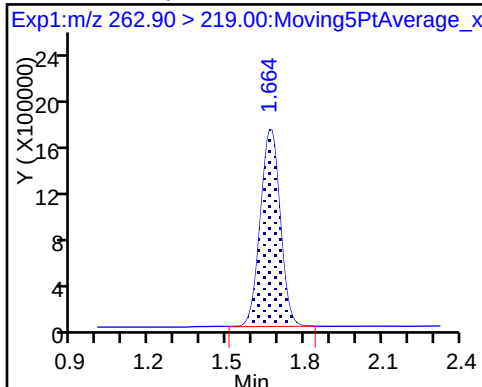
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

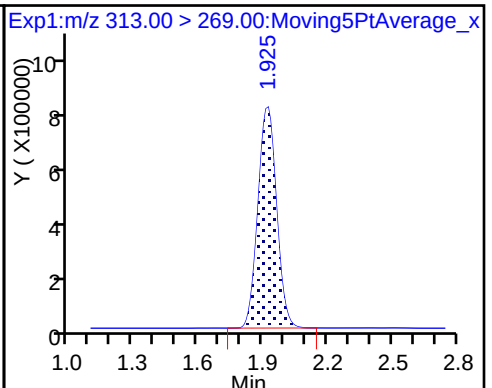
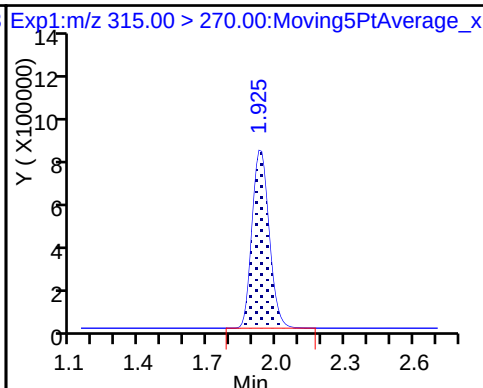
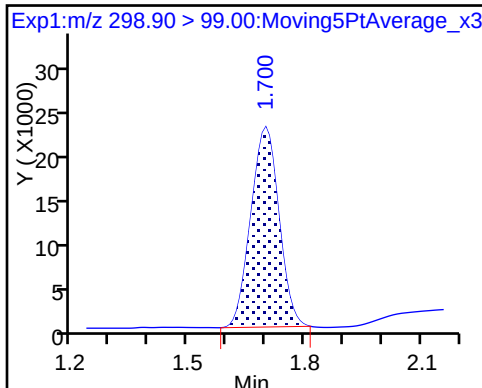
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

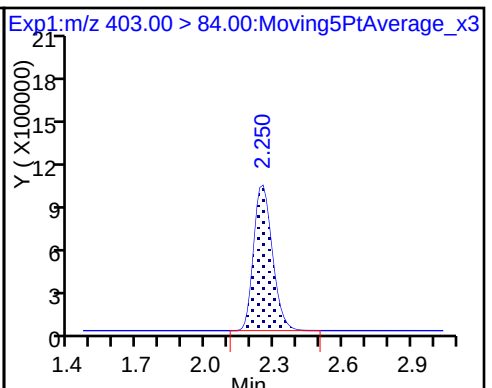
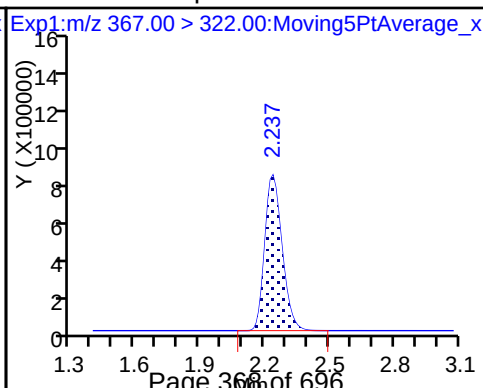
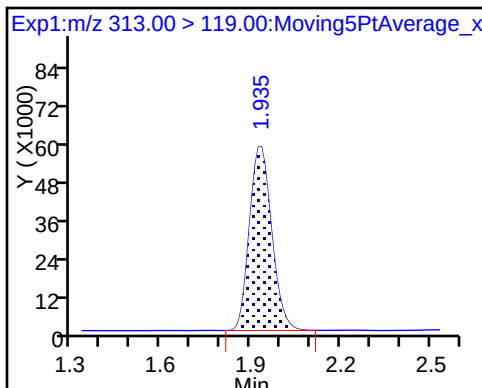
6 Perfluorohexanoic acid

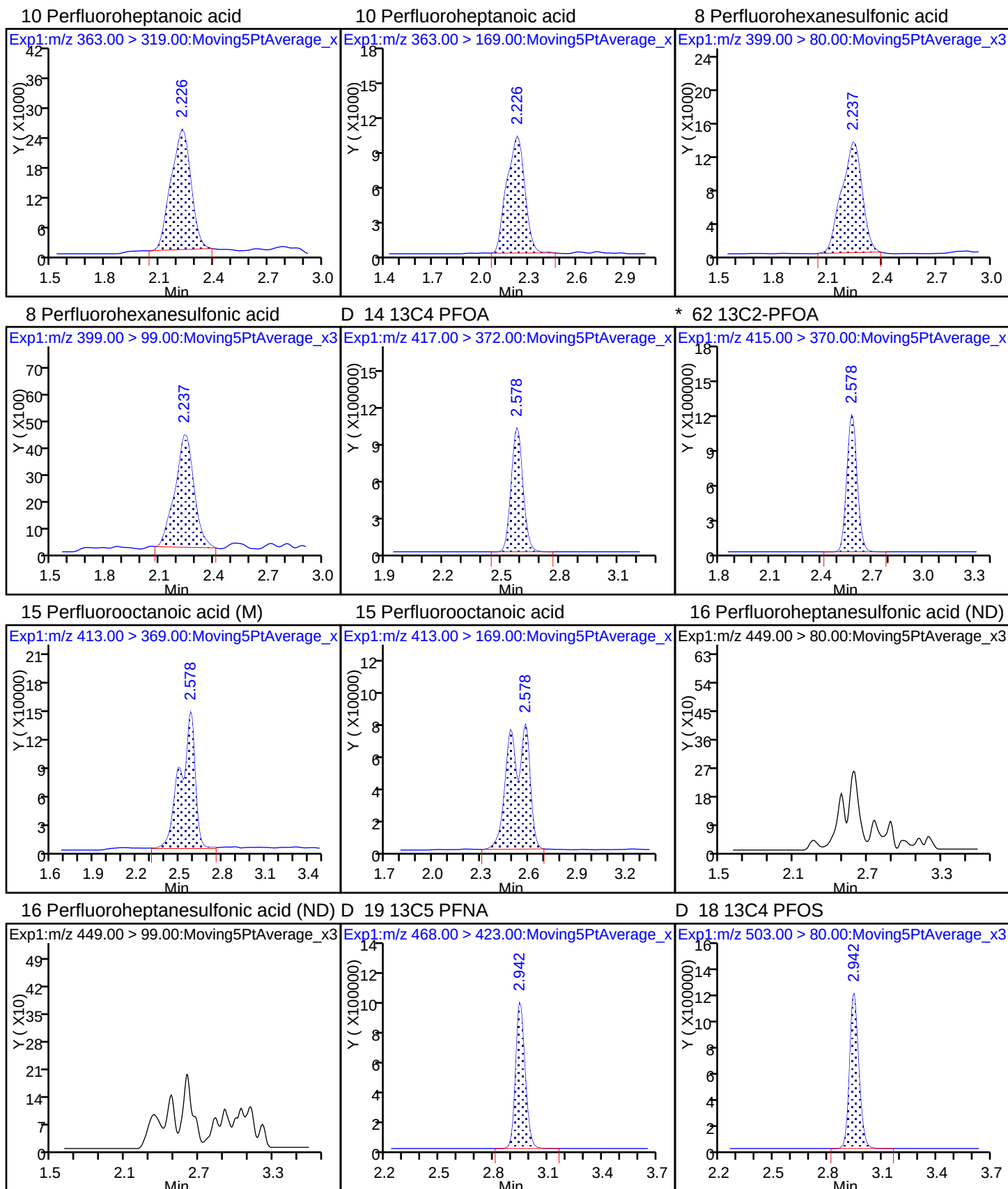


6 Perfluorohexanoic acid

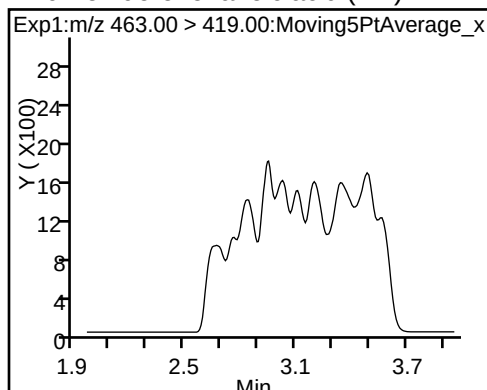
D 9 13C4-PFHpA

D 11 18O2 PFHxS

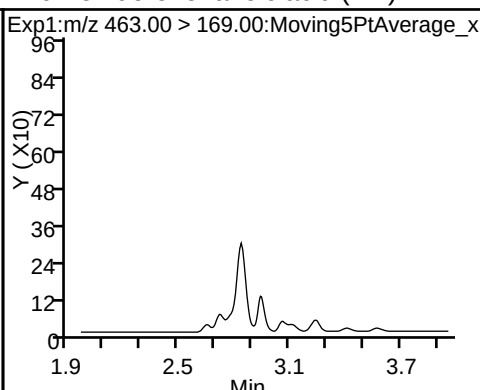




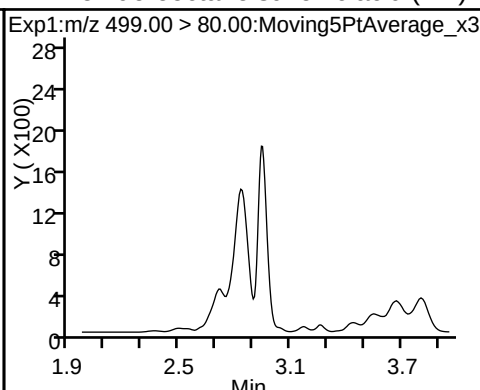
20 Perfluorononanoic acid (ND)



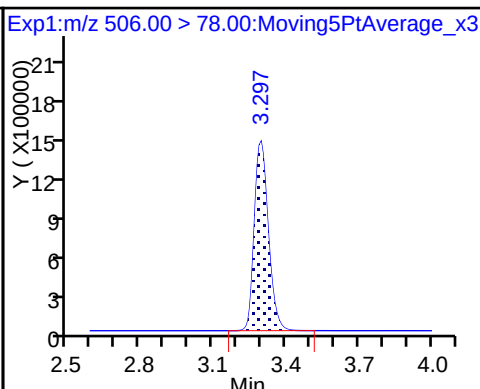
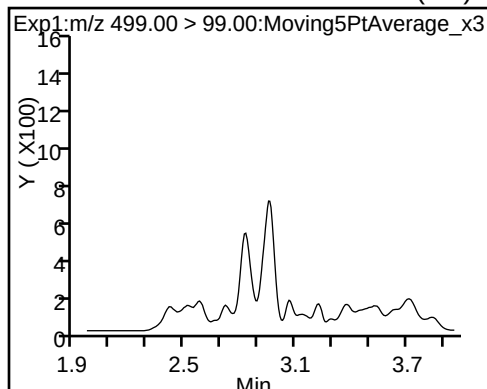
20 Perfluorononanoic acid (ND)



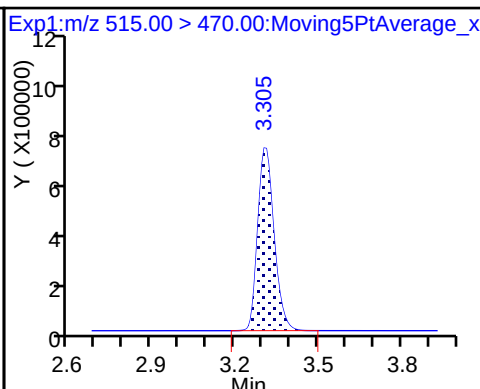
17 Perfluorooctane sulfonic acid (ND)



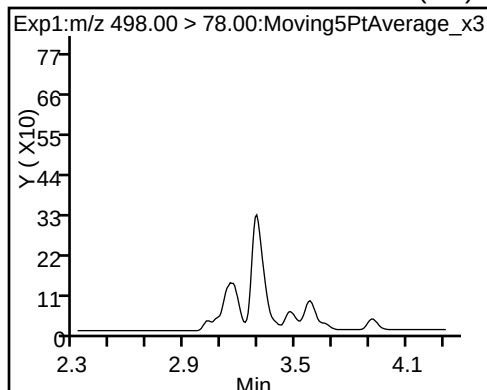
17 Perfluorooctane sulfonic acid (ND) D 21 13C8 FOSA



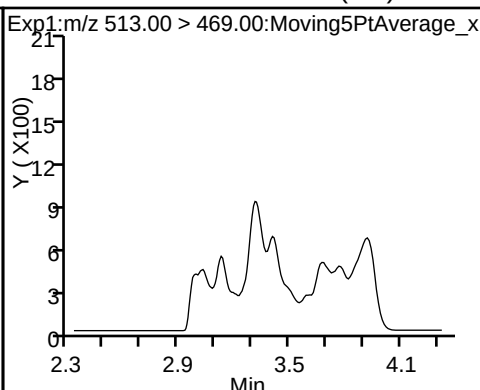
D 23 13C2 PFDA



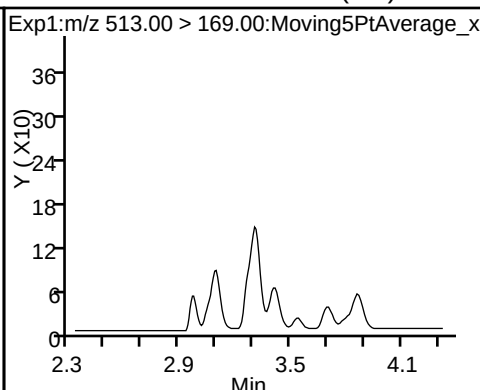
22 Perfluorooctane Sulfonamide (ND)



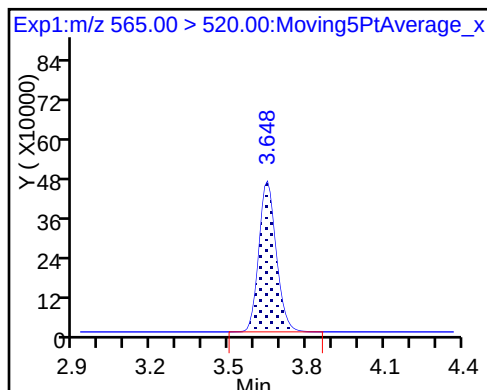
24 Perfluorodecanoic acid (ND)



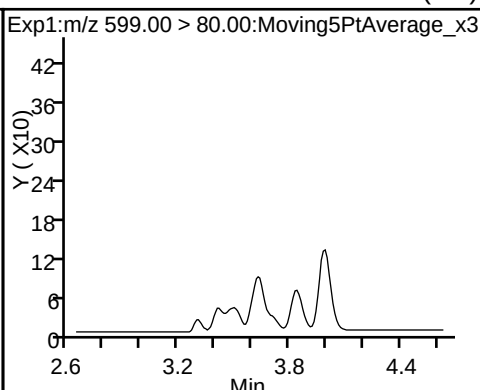
24 Perfluorodecanoic acid (ND)



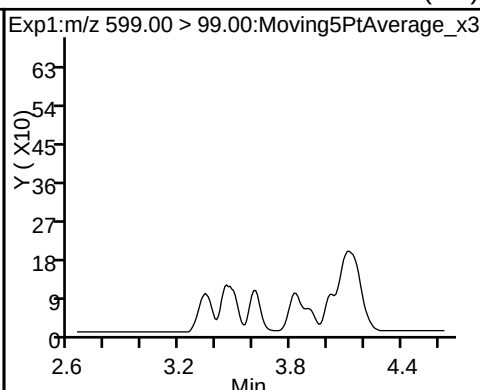
D 30 13C2 PFUnA



29 Perfluorodecane Sulfonic acid (ND)



29 Perfluorodecane Sulfonic acid (ND)

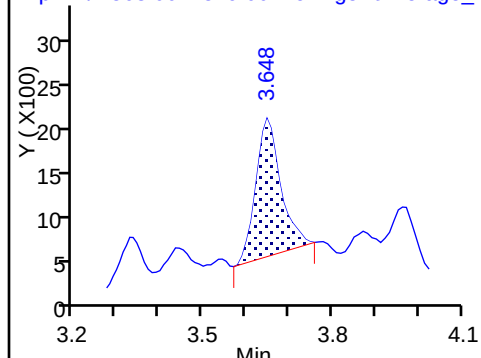


31 Perfluoroundecanoic acid

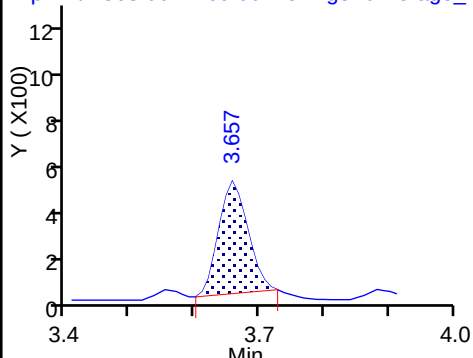
31 Perfluoroundecanoic acid

D 36 13C2 PFDaA

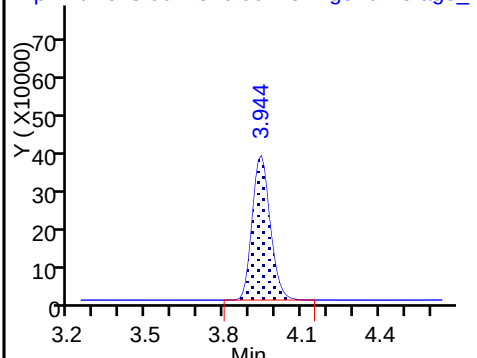
Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x



Exp1:m/z 563.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x

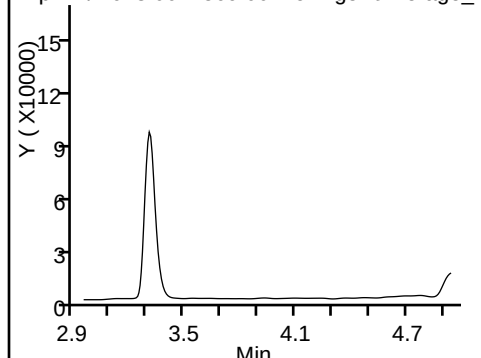


37 Perfluorododecanoic acid (ND)

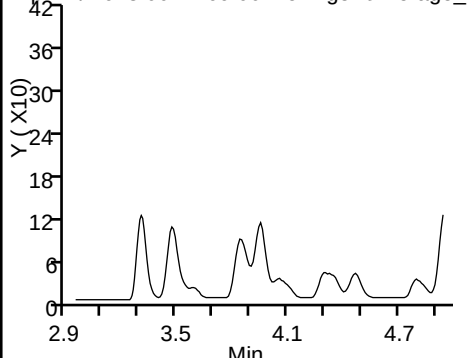
37 Perfluorododecanoic acid (ND)

41 Perfluorotridecanoic acid (ND)

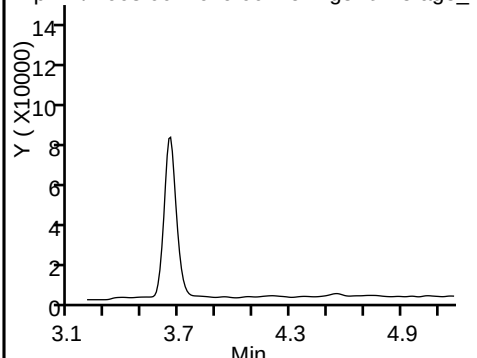
Exp1:m/z 613.00 > 569.00:Moving5PtAverage_x



Exp1:m/z 613.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 663.00 > 619.00:Moving5PtAverage_x

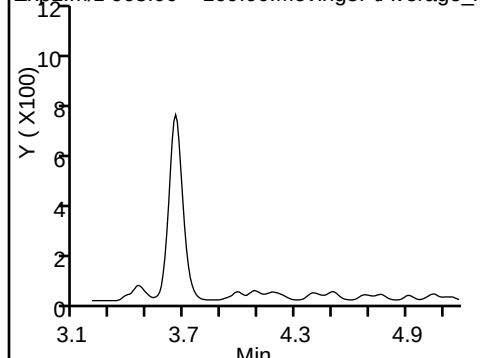


41 Perfluorotridecanoic acid (ND)

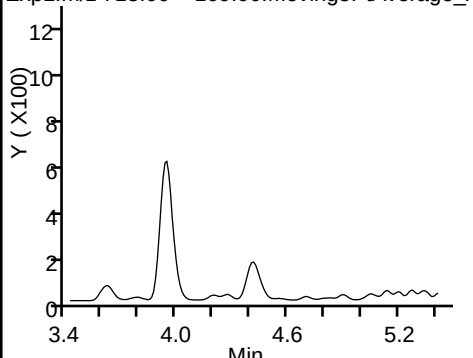
42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)

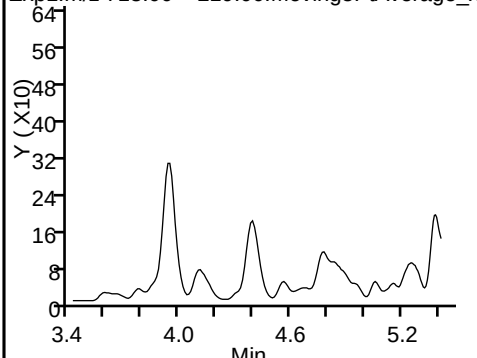
Exp1:m/z 663.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 169.00:Moving5PtAverage_x

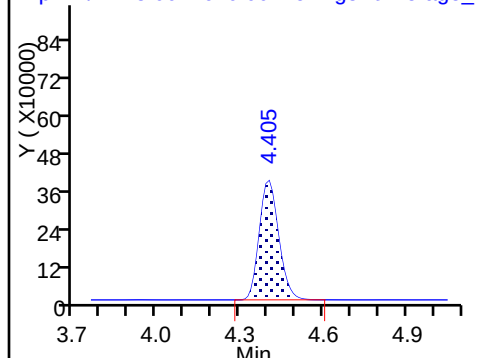


Exp1:m/z 713.00 > 219.00:Moving5PtAverage_x



D 43 13C2-PFTeDA

Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



TestAmerica Sacramento

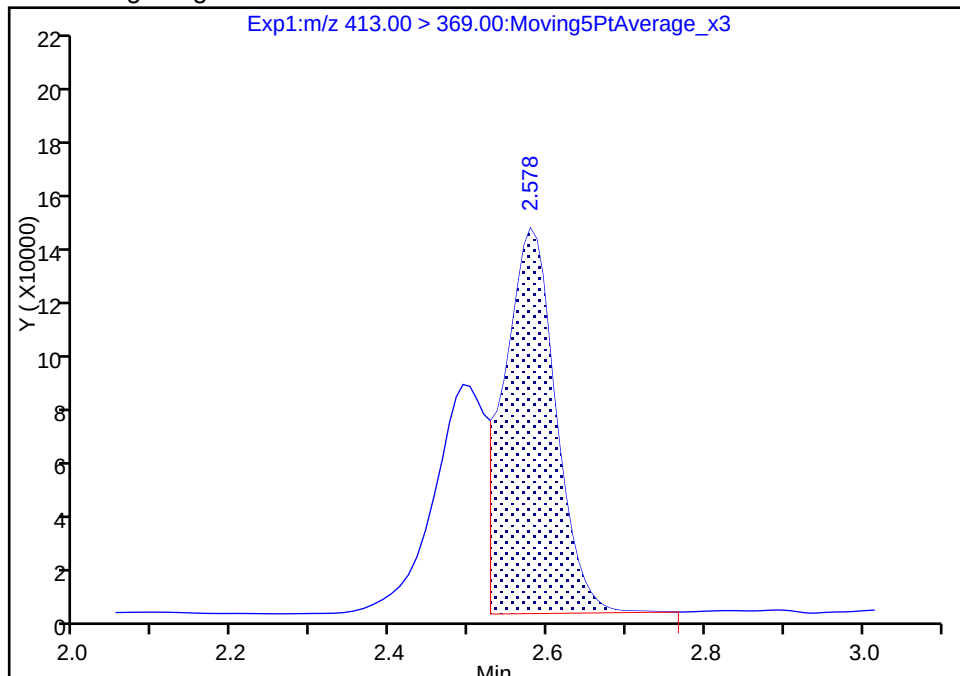
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_028.d				
Injection Date:	16-Mar-2018 01:19:46	Instrument ID:	A8_N		
Lims ID:	320-36665-A-2-A	Lab Sample ID:	320-36665-2		
Client ID:	TP-PFC-027-MID CARBON				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	16	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

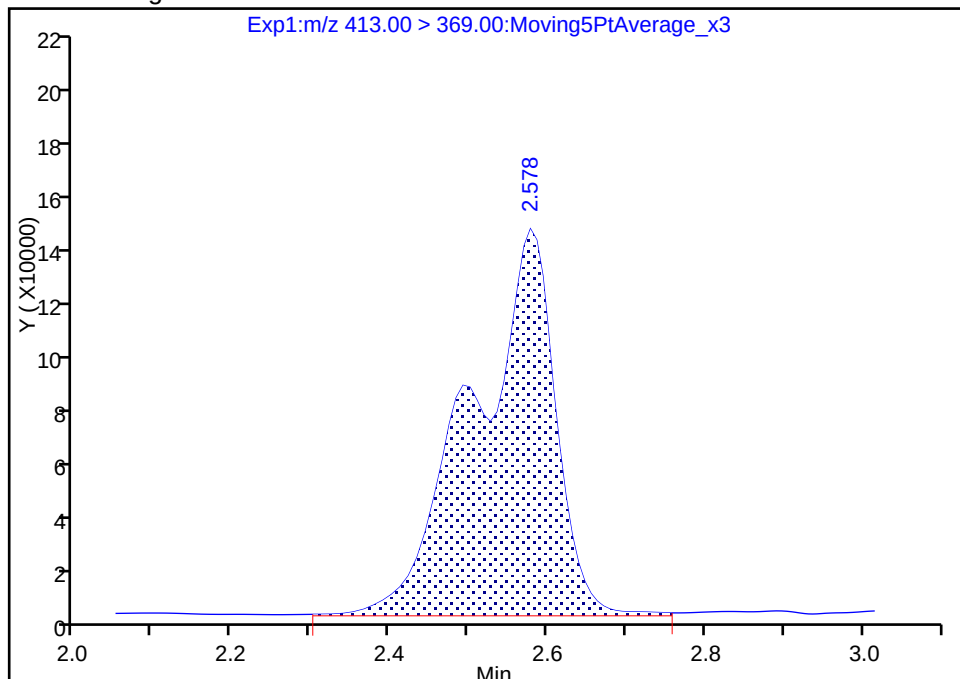
RT: 2.58
Area: 630787
Amount: 0.317081
Amount Units: ng/ml

Processing Integration Results



RT: 2.58
Area: 1032481
Amount: 0.519003
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 19-Mar-2018 10:01:02

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPE</u>	Lab Sample ID: <u>320-36665-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_029.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 09:05</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>255.8 (mL)</u>	Date Analyzed: <u>03/16/2018 01:27</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	130		2.0	1.5	0.58
2706-90-3	Perfluoropentanoic acid (PFPeA)	140		2.0	0.98	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	43		2.0	0.98	0.46
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.76	J M	2.0	1.5	0.60
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	J M	2.0	1.5	0.53
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.51
335-76-2	Perfluorodecanoic acid (PFDA)	0.98	U	2.0	0.98	0.47
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.70
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	1.5	0.51
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.9	U	3.9	2.9	0.74
376-06-7	Perfluorotetradecanoic acid (PFTeA)	2.9	U	3.9	2.9	0.81
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.74	J	2.0	0.98	0.45
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.38	J	2.0	0.98	0.37
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.98	U	2.0	0.98	0.36
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	2.9	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.55
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.9	U	3.9	2.9	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPE</u>	Lab Sample ID: <u>320-36665-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_029.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 09:05</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>255.8 (mL)</u>	Date Analyzed: <u>03/16/2018 01:27</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	76		50-150
STL00992	13C4 PFBA	80		50-150
STL01893	13C5 PFPeA	77		50-150
STL00993	13C2 PFHxA	78		50-150
STL01892	13C4-PFHpA	87		50-150
STL00990	13C4 PFOA	91		50-150
STL00995	13C5 PFNA	89		50-150
STL00996	13C2 PFDA	89		50-150
STL00997	13C2 PFUnA	92		50-150
STL00998	13C2 PFDoA	81		50-150
STL00994	18O2 PFHxS	79		50-150
STL02116	13C2-PFTeDA	91		50-150
STL00991	13C4 PFOS	76		50-150
STL02337	13C3-PFBS	74		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_029.d
 Lims ID: 320-36665-A-3-A
 Client ID: TP-PFC-027-TPE
 Sample Type: Client
 Inject. Date: 16-Mar-2018 01:27:38 ALS Bottle#: 17 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36665-a-3-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 20-Mar-2018 11:36:38 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK039

First Level Reviewer: hannigana Date: 19-Mar-2018 10:03:05

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.428	1.435	-0.007	1.004	7349273	3.22			4183	
D 1 13C4 PFBA										
217.00 > 172.00	1.422	1.440	-0.018	0.548	6167826	2.00		80.0	115267	
D 3 13C5-PFPeA										
267.90 > 223.00	1.665	1.664	0.001	0.642	3985869	1.93		77.1	92088	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.665	1.674	-0.009	1.000	6745377	3.61			2026	
D 47 13C3-PFBS										
301.90 > 83.00	1.691	1.691	0.0	0.652	93128	1.72		74.1	565	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.691	1.709	-0.018	1.000	57653	0.0188			109	
298.90 > 99.00	1.691	1.709	-0.018	1.000	32015		1.80(1.25-3.74)		116	
D 7 13C2 PFHxA										
315.00 > 270.00	1.925	1.904	0.021	0.742	4391476	1.95		78.0	142865	
6 Perfluorohexanoic acid										R
313.00 > 269.00	1.915	1.936	-0.021	0.995	1963506	1.11			6066	R
313.00 > 119.00	1.935	1.936	-0.001	1.005	96116		20.43(5.03-15.10)		2083	
D 9 13C4-PFHpA										
367.00 > 322.00	2.238	2.215	0.023	0.862	4628947	2.17		86.8	117765	
D 11 18O2 PFHxS										
403.00 > 84.00	2.251	2.226	0.025	0.867	5904288	1.87		79.1	104130	
10 Perfluoroheptanoic acid										M
363.00 > 319.00	2.204	2.251	-0.047	0.985	38378	0.0195			44.1	M
363.00 > 169.00	2.226	2.251	-0.025	0.995	13241		2.90(1.13-3.40)		162	M
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.251	2.264	-0.013	1.000	26988	0.009628			215	
399.00 > 99.00	2.251	2.264	-0.013	1.000	8025		3.36(1.50-4.49)		31.4	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.595	2.586	0.009	1.000	4690603	2.28		91.3	141526	
* 62 13C2-PFOA										
415.00 > 370.00	2.595	2.602	-0.007		5414086	2.50			130177	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.595	2.602	-0.007	1.000	106495	0.0488			27.0	M
413.00 > 169.00	2.502	2.602	-0.100	0.964	77234		1.38(0.84-2.52)		122	
D 19 13C5 PFNA										
468.00 > 423.00	2.960	2.960	0.0	1.141	3556081	2.22		88.9	74577	
D 18 13C4 PFOS										
503.00 > 80.00	2.954	2.960	-0.006	1.138	3919152	1.81		75.7	63829	
D 21 13C8 FOSA										
506.00 > 78.00	3.297	3.297	0.0	1.271	5976619	1.89		75.7	56327	
D 23 13C2 PFDA										
515.00 > 470.00	3.313	3.312	0.001	1.277	2875531	2.22		88.9	37563	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.305	3.321	-0.016	1.002	3668	0.001568			125	
D 30 13C2 PFUnA										
565.00 > 520.00	3.629	3.638	-0.009	1.399	2207724	2.30		92.1	69060	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.629	3.659	-0.030	1.000	6618	0.006896			17.1	
563.00 > 169.00	3.620	3.659	-0.039	0.997	1151		5.75(2.12-6.36)		108	
D 36 13C2 PFDaA										
615.00 > 570.00	3.903	3.932	-0.029	1.504	1983229	2.04		81.4	8737	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.372	4.437	-0.065	1.685	1952659	2.27		90.7	12721	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_029.d

Injection Date: 16-Mar-2018 01:27:38

Instrument ID: A8_N

Lims ID: 320-36665-A-3-A

Lab Sample ID: 320-36665-3

Client ID: TP-PFC-027-TPE

Operator ID: SACINSTLCMS01

ALS Bottle#: 17

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

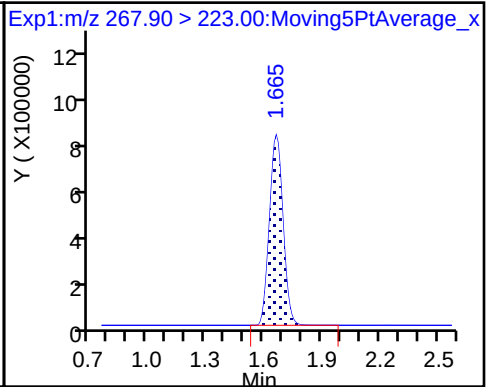
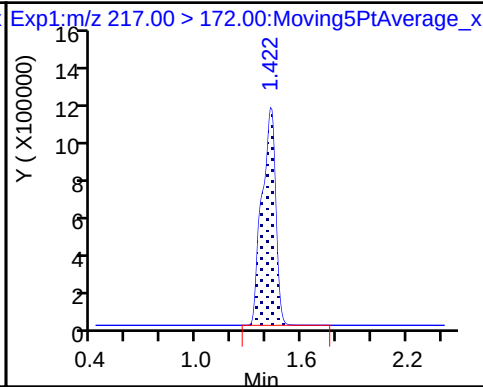
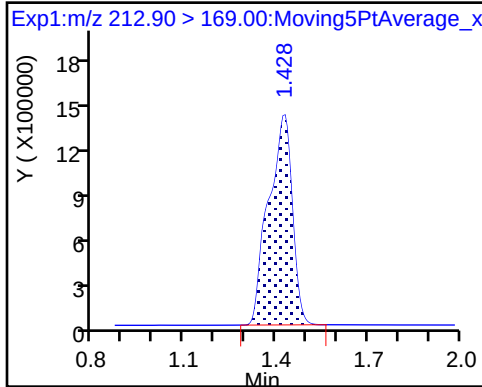
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

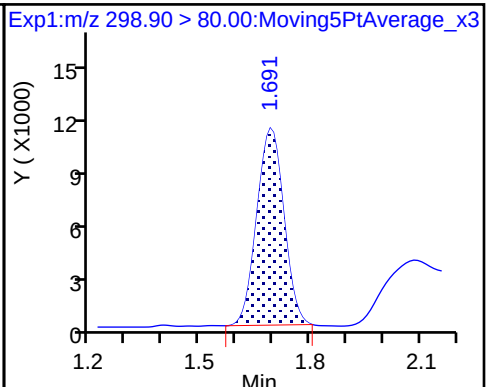
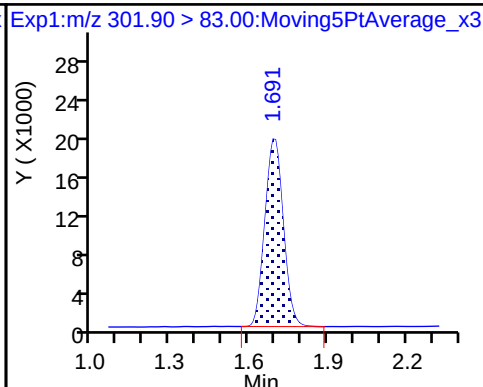
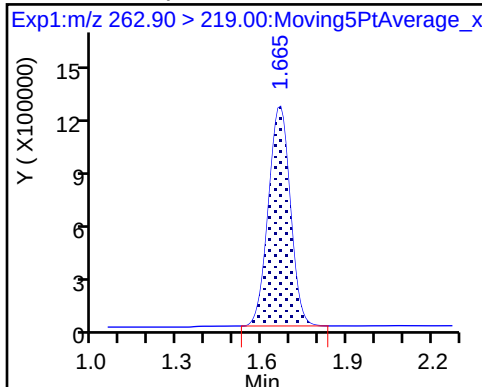
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

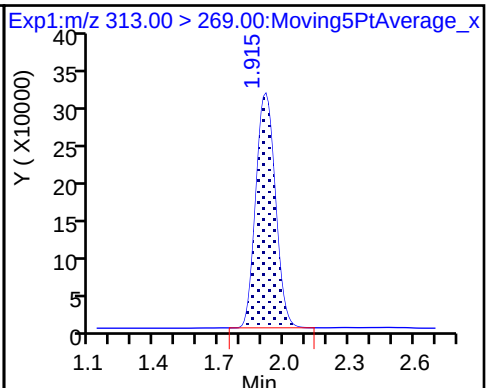
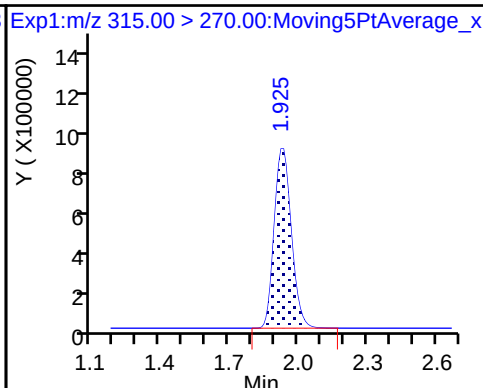
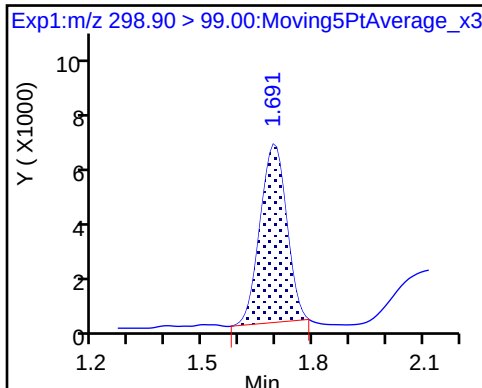
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

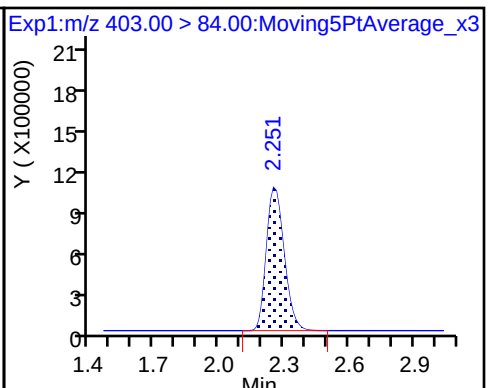
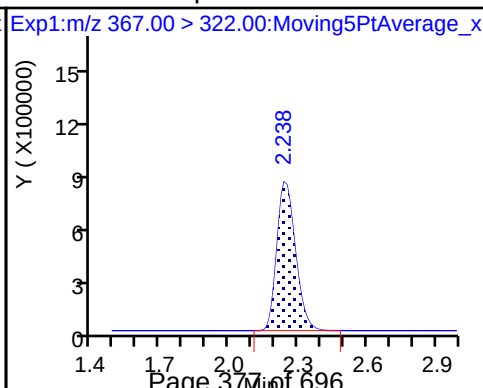
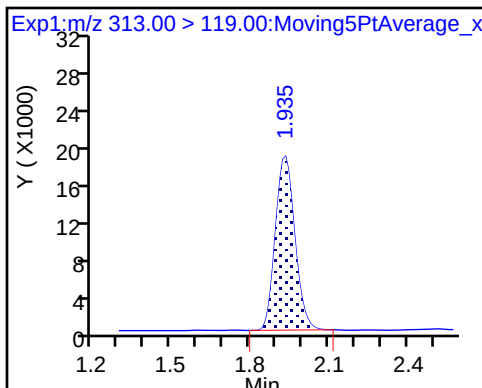
6 Perfluorohexanoic acid

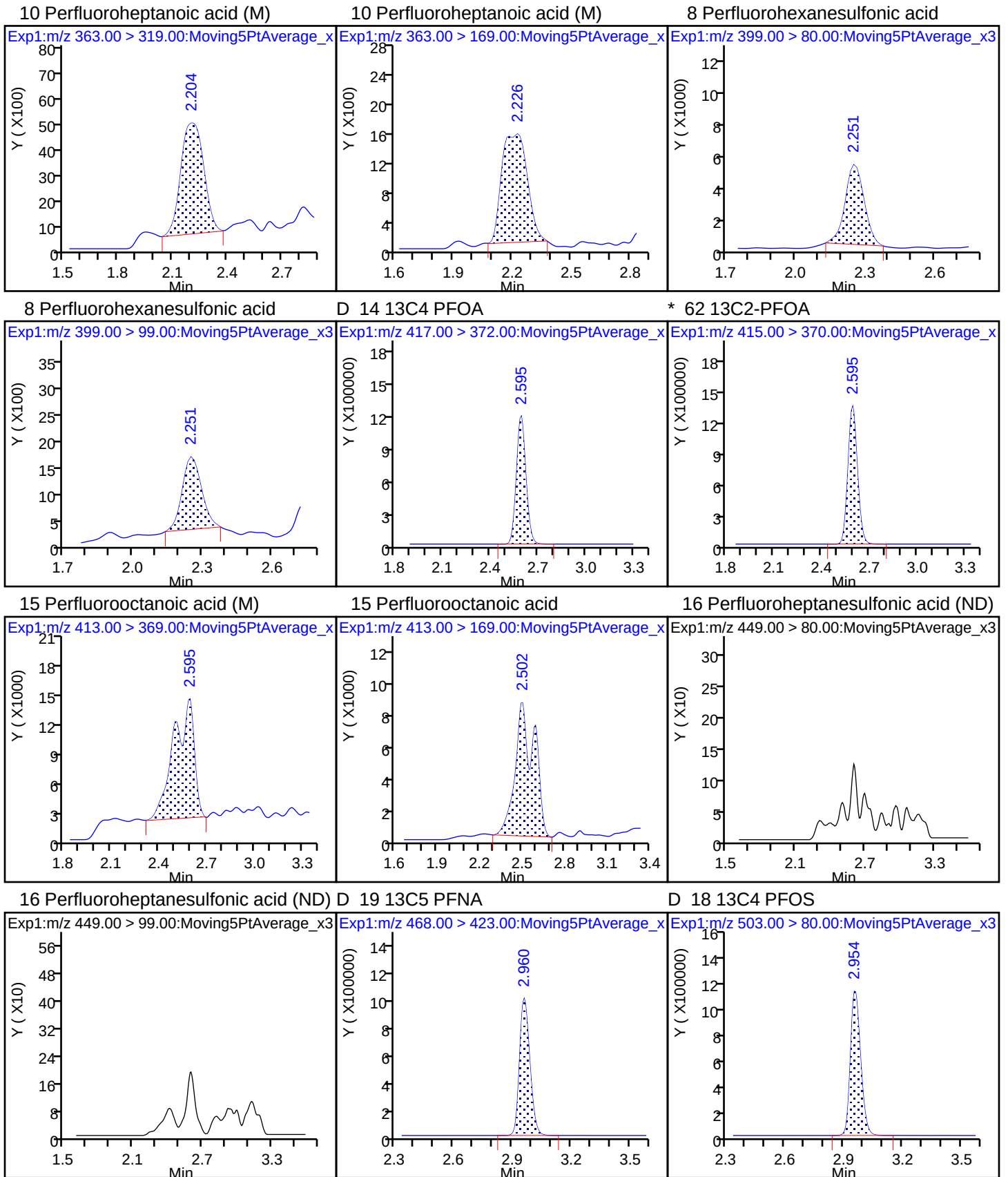


6 Perfluorohexanoic acid

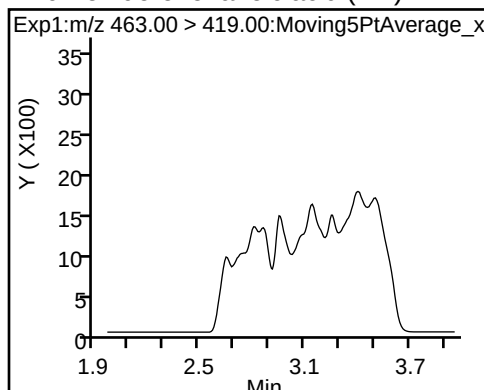
D 9 13C4-PFHpA

D 11 18O2 PFHxS

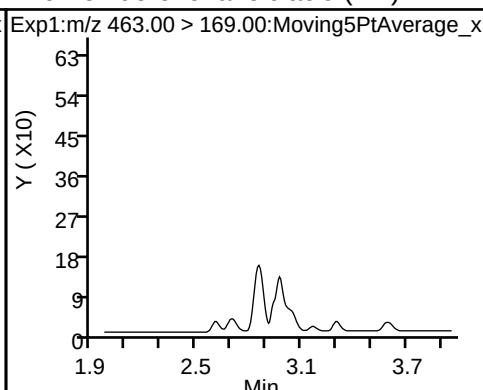




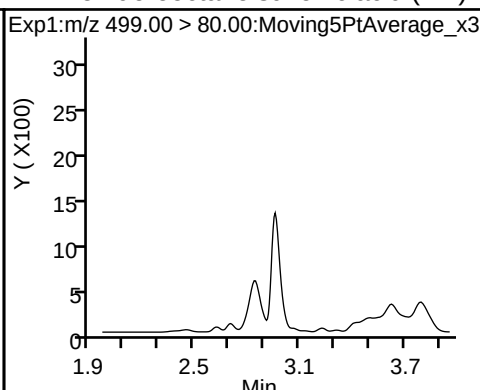
20 Perfluorononanoic acid (ND)



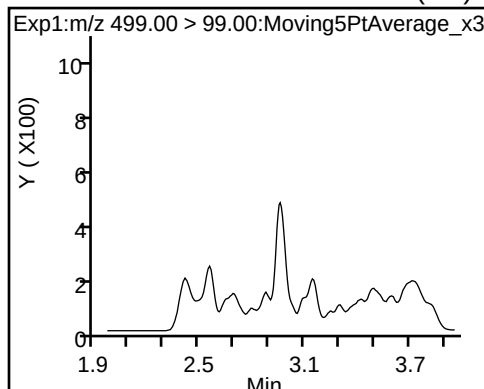
20 Perfluorononanoic acid (ND)



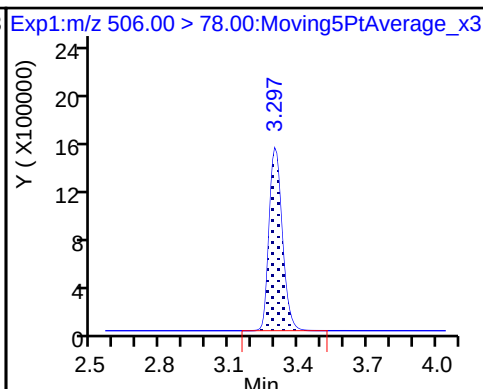
17 Perfluorooctane sulfonic acid (ND)



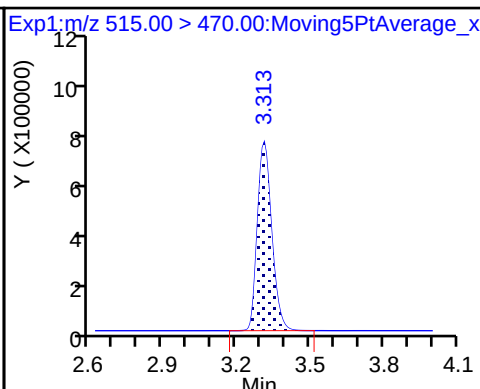
17 Perfluorooctane sulfonic acid (ND) D 21 13C8 FOSA



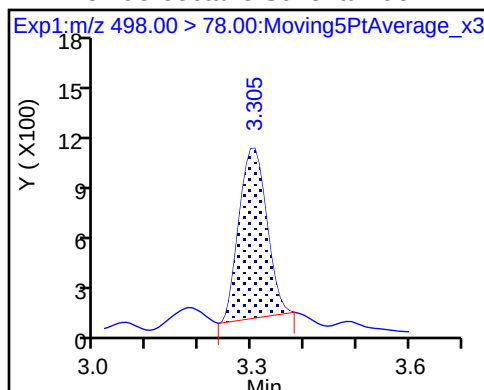
D 21 13C8 FOSA



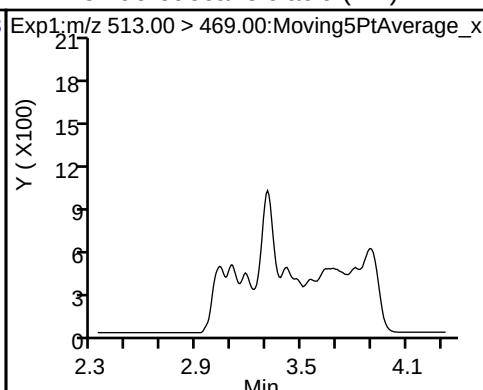
D 23 13C2 PFDA



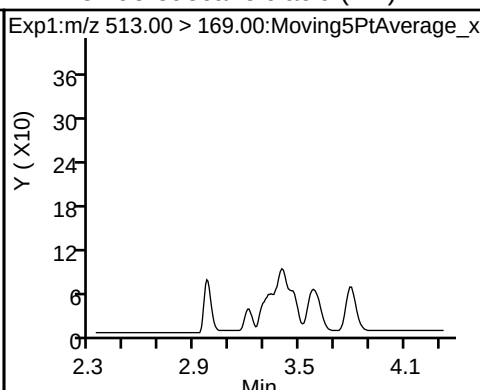
22 Perfluorooctane Sulfonamide



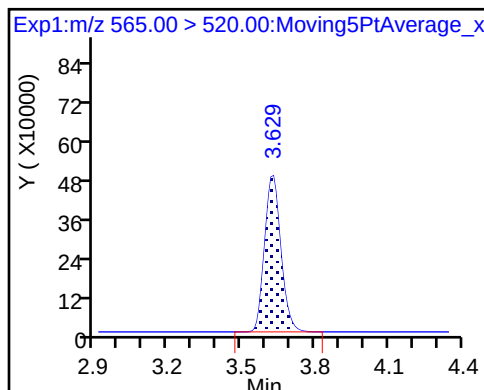
24 Perfluorodecanoic acid (ND)



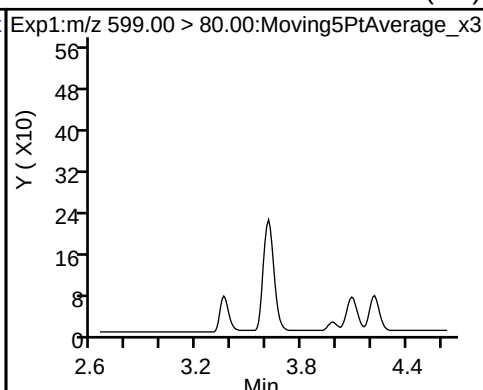
24 Perfluorodecanoic acid (ND)



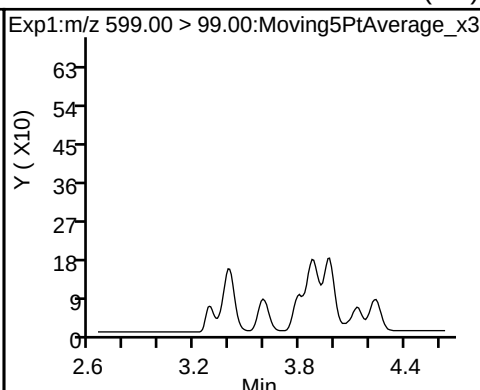
D 30 13C2 PFUnA



29 Perfluorodecane Sulfonic acid (ND)



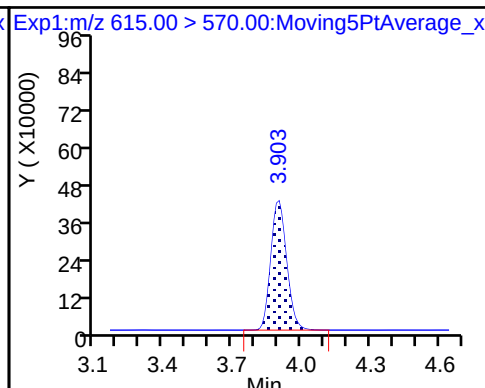
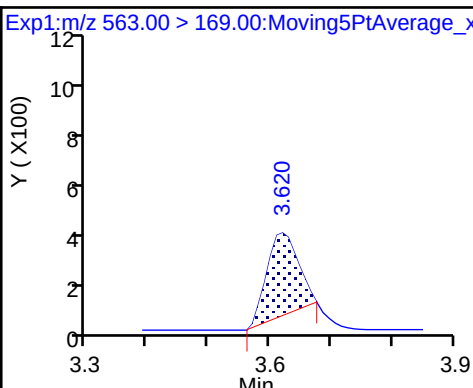
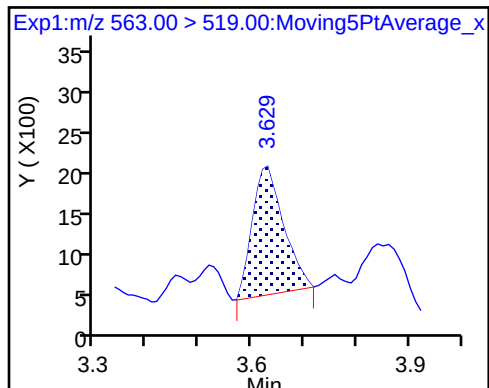
29 Perfluorodecane Sulfonic acid (ND)



31 Perfluoroundecanoic acid

31 Perfluoroundecanoic acid

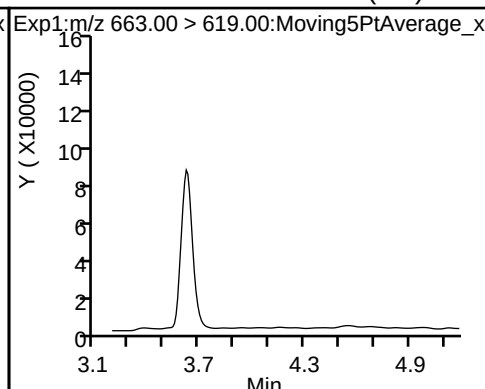
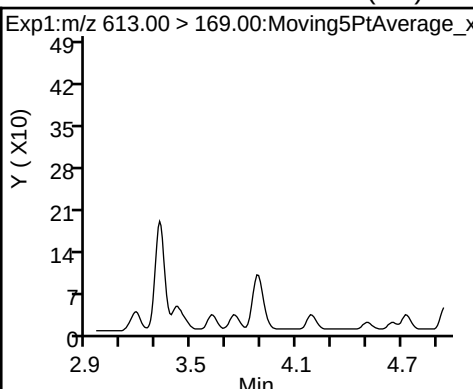
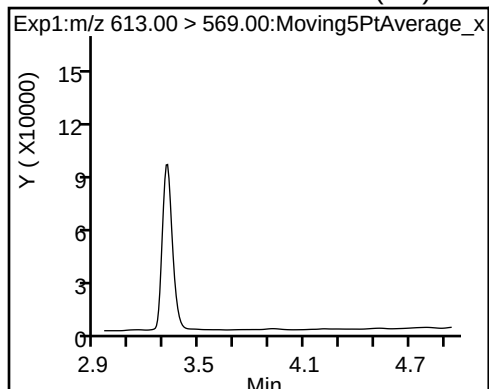
D 36 13C2 PFDaA



37 Perfluorododecanoic acid (ND)

37 Perfluorododecanoic acid (ND)

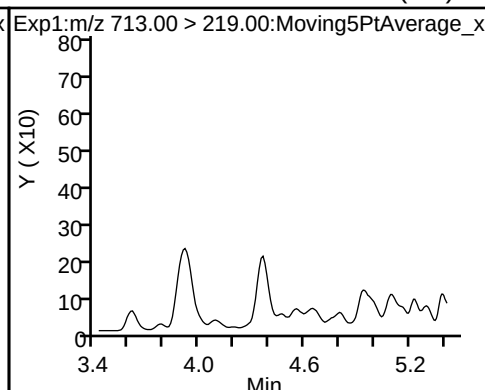
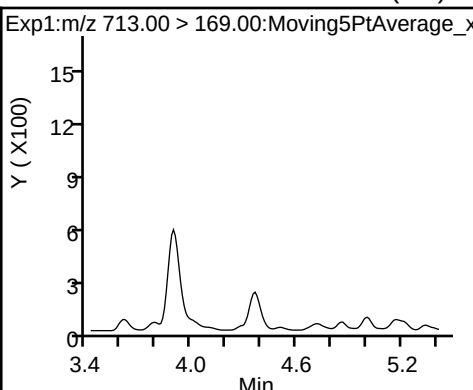
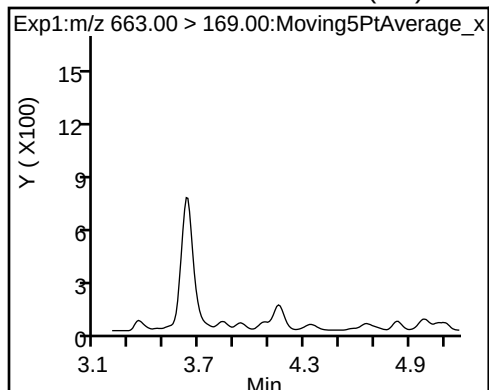
41 Perfluorotridecanoic acid (ND)



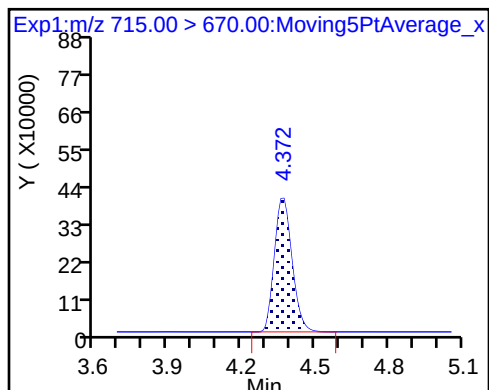
41 Perfluorotridecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



TestAmerica Sacramento

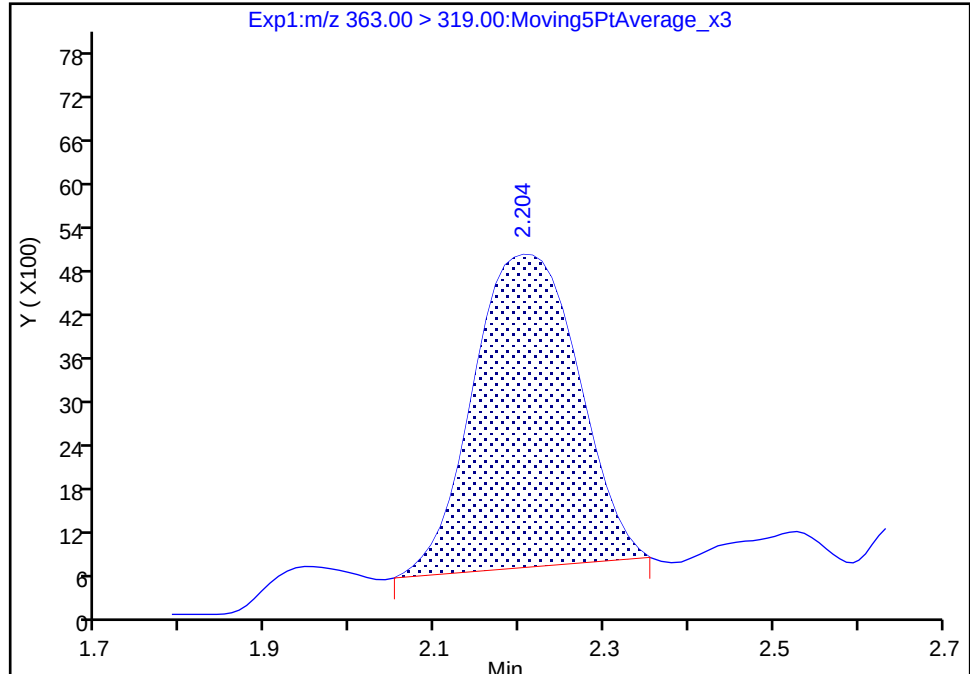
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_029.d				
Injection Date:	16-Mar-2018 01:27:38	Instrument ID:	A8_N		
Lims ID:	320-36665-A-3-A	Lab Sample ID:	320-36665-3		
Client ID:	TP-PFC-027-TPE				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL		
Column:		Detector	EXP1		

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

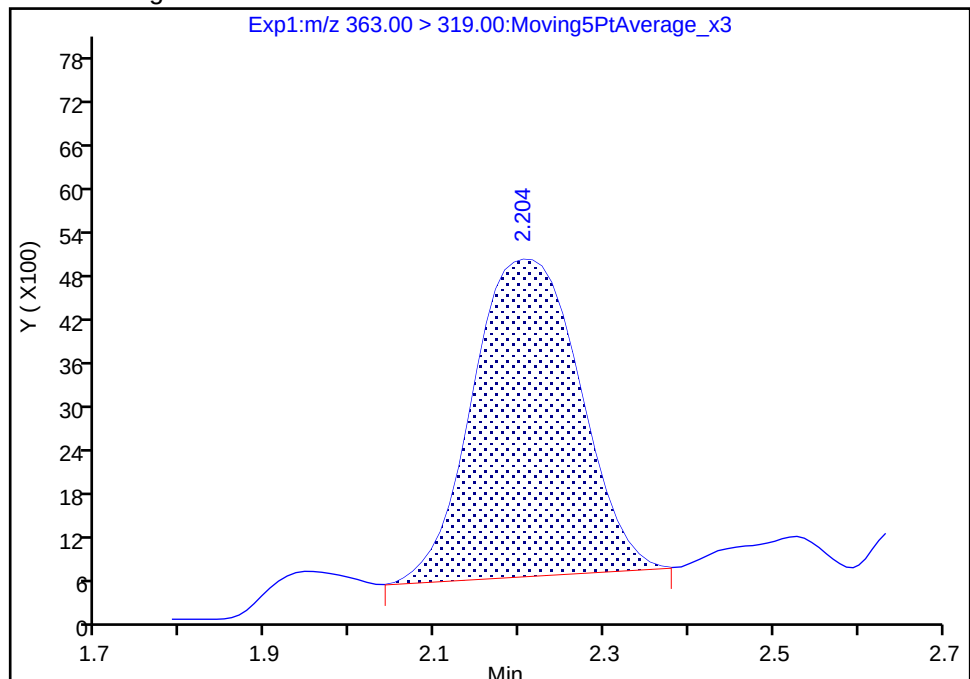
RT: 2.20
Area: 37203
Amount: 0.018898
Amount Units: ng/ml

Processing Integration Results



RT: 2.20
Area: 38378
Amount: 0.019495
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 19-Mar-2018 10:04:21

Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

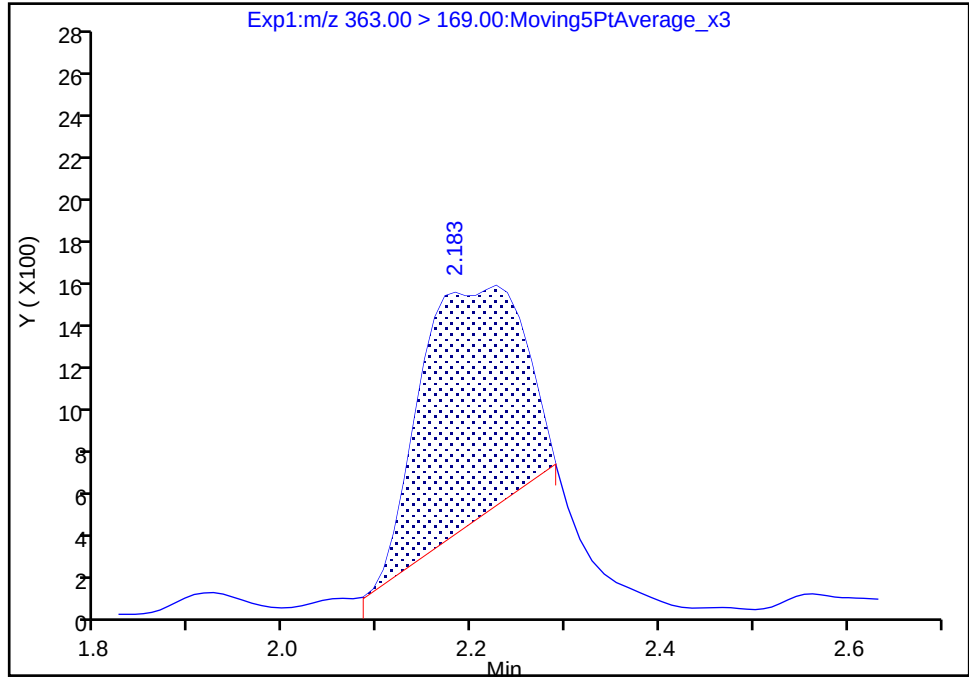
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_029.d
Injection Date: 16-Mar-2018 01:27:38 Instrument ID: A8_N
Lims ID: 320-36665-A-3-A Lab Sample ID: 320-36665-3
Client ID: TP-PFC-027-TPE
Operator ID: SACINSTLCMS01 ALS Bottle#: 17 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 2

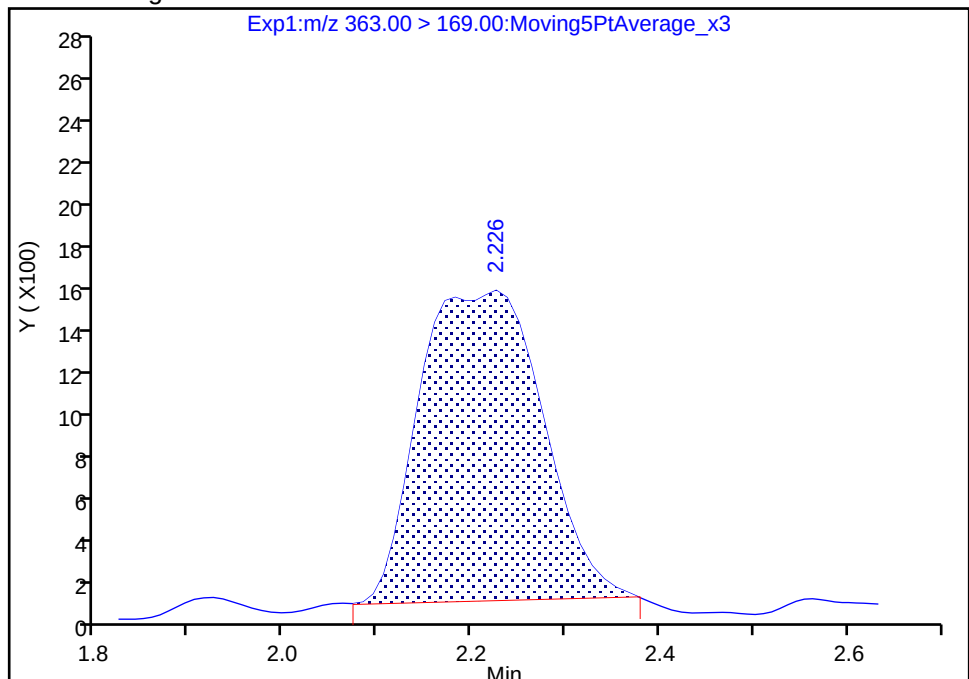
RT: 2.18
Area: 8479
Amount: 0.018898
Amount Units: ng/ml

Processing Integration Results



RT: 2.23
Area: 13241
Amount: 0.019495
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 20-Mar-2018 11:36:24

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

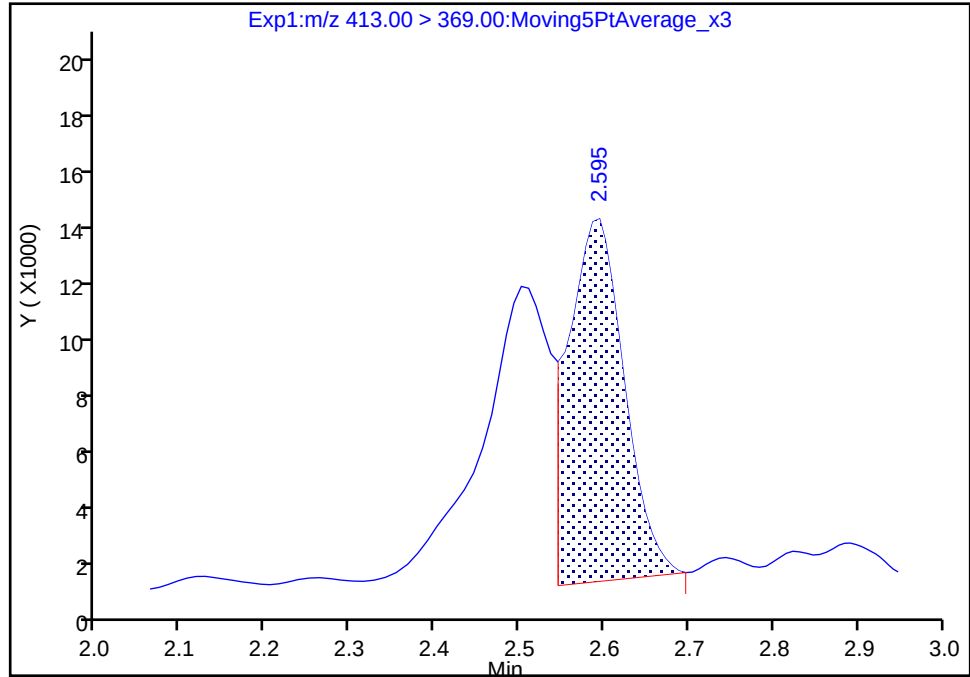
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_029.d		
Injection Date:	16-Mar-2018 01:27:38	Instrument ID:	A8_N
Lims ID:	320-36665-A-3-A	Lab Sample ID:	320-36665-3
Client ID:	TP-PFC-027-TPE		
Operator ID:	SACINSTLCMS01	ALS Bottle#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_QSM5-1 ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	8

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

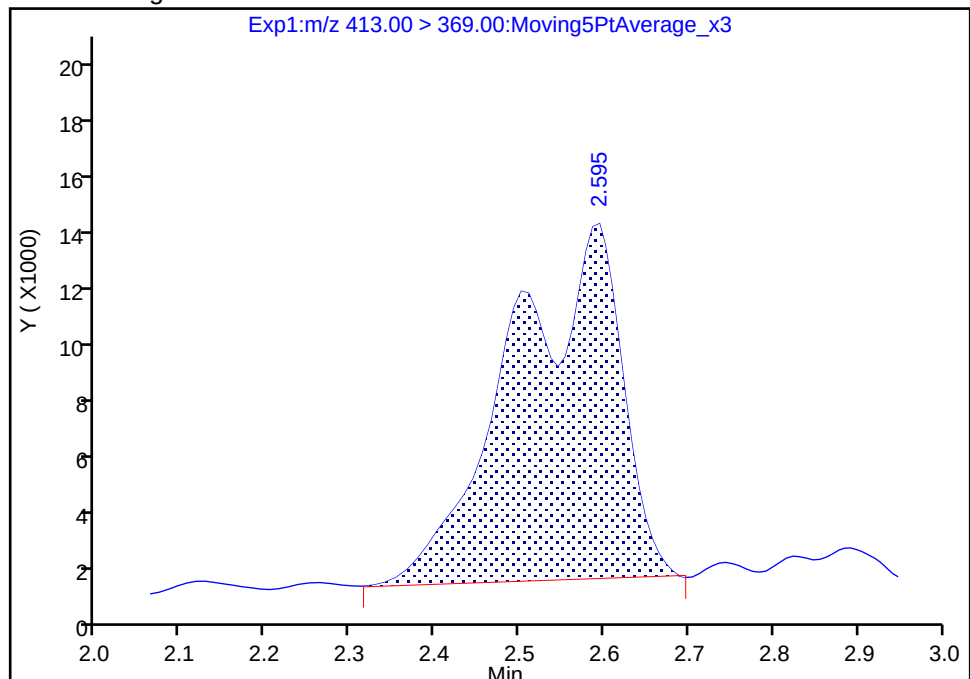
RT: 2.59
Area: 54318
Amount: 0.024895
Amount Units: ng/ml

Processing Integration Results



RT: 2.59
Area: 106495
Amount: 0.048809
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 19-Mar-2018 10:05:45

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPE-D</u>	Lab Sample ID: <u>320-36665-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.16LLBX_034.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>251.7 (mL)</u>	Date Analyzed: <u>03/17/2018 00:43</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213558</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	130		2.0	1.5	0.59
2706-90-3	Perfluoropentanoic acid (PFPeA)	140		2.0	0.99	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	44		2.0	0.99	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.76	J	2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	1.7	J	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
335-76-2	Perfluorodecanoic acid (PFDA)	0.99	U	2.0	0.99	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	1.5	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	3.0	0.75
376-06-7	Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	3.0	0.82
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.72	J	2.0	0.99	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.99	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.99	U	2.0	0.99	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.56
754-91-6	Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPE-D</u>	Lab Sample ID: <u>320-36665-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.16LLBX_034.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>251.7(mL)</u>	Date Analyzed: <u>03/17/2018 00:43</u>
Con. Extract Vol.: <u>10.0(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213558</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	82		50-150
STL00992	13C4 PFBA	89		50-150
STL01893	13C5 PFPeA	86		50-150
STL00993	13C2 PFHxA	86		50-150
STL01892	13C4-PFHpA	86		50-150
STL00990	13C4 PFOA	88		50-150
STL00995	13C5 PFNA	89		50-150
STL00996	13C2 PFDA	85		50-150
STL00997	13C2 PFUnA	83		50-150
STL00998	13C2 PFDoA	81		50-150
STL00994	18O2 PFHxS	87		50-150
STL02116	13C2-PFTeDA	90		50-150
STL00991	13C4 PFOS	88		50-150
STL02337	13C3-PFBS	85		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\2018.03.16LLBX_034.d
 Lims ID: 320-36665-A-4-A
 Client ID: TP-PFC-027-TPE-D
 Sample Type: Client
 Inject. Date: 17-Mar-2018 00:43:30 ALS Bottle#: 1 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-36665-a-4-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 10:41:28 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK040

First Level Reviewer: hannigana

Date: 19-Mar-2018 10:20:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.440	0.001	0.537	5996329	2.23		89.3	114253	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.441	0.0	1.000	7032136	3.16			5187	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.634	4090599	2.16		86.4	135803	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.691	1.700	-0.009	0.995	6968983	3.65			2819	
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.730	-0.003	0.644	92473	1.98		85.1	473	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.727	1.736	-0.009	1.000	55633	0.0181			25.8	
298.90 > 99.00	1.727	1.736	-0.009	1.000	30764		1.81(1.25-3.74)		32.3	
D 7 13C2 PFHxA										
315.00 > 270.00	1.987	1.979	0.008	0.741	4538670	2.15		85.9	121989	
6 Perfluorohexanoic acid										R
313.00 > 269.00	1.966	1.987	-0.021	0.990	2042490	1.11			5411	R
313.00 > 119.00	1.976	1.987	-0.011	0.995	96138		21.25(5.03-15.10)		1625	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.864	4411236	2.15		85.9	127157	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.277	2.315	-0.038	0.983	35175	0.0192			48.9	
363.00 > 169.00	2.302	2.315	-0.013	0.994	11524		3.05(1.13-3.40)		130	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.869	5609510	2.05		86.5	108389	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.328	0.0	1.000	21227	0.008024			3.2	
399.00 > 99.00	2.328	2.328	0.0	1.000	9006		2.36(1.50-4.49)		4.0	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.678	0.003	1.000	4376159	2.21		88.2	95523	
* 62 13C2-PFOA										
415.00 > 370.00	2.681	2.681	0.0		5259260	2.50			126056	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.595	2.681	-0.086	0.968	82367	0.0421			12.4	
413.00 > 169.00	2.579	2.681	-0.102	0.962	71427		1.15(0.84-2.52)		171	
D 18 13C4 PFOS										
503.00 > 80.00	3.058	3.050	0.008	1.141	4025108	2.10		87.8	87373	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.052	0.006	1.141	3519614	2.22		88.7	75482	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.388	0.001	1.264	5691857	2.05		82.0	59180	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.389	0.0	1.000	5742	0.002595			131	
D 23 13C2 PFDA										
515.00 > 470.00	3.417	3.416	0.001	1.274	2817057	2.12		85.0	37295	
D 30 13C2 PFUnA										
565.00 > 520.00	3.750	3.747	0.003	1.399	2152848	2.07		82.9	64723	
D 36 13C2 PFDaA										
615.00 > 570.00	4.049	4.041	0.008	1.510	1983763	2.01		80.6	11211	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.544	4.545	-0.001	1.695	2022507	2.25		90.0	15005	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\2018.03.16LLBX_034.d

Injection Date: 17-Mar-2018 00:43:30

Instrument ID: A8_N

Lims ID: 320-36665-A-4-A

Lab Sample ID: 320-36665-4

Client ID: TP-PFC-027-TPE-D

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

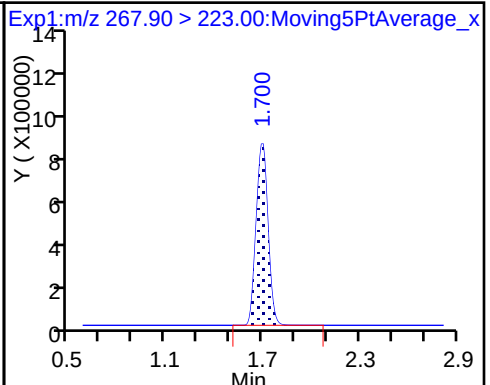
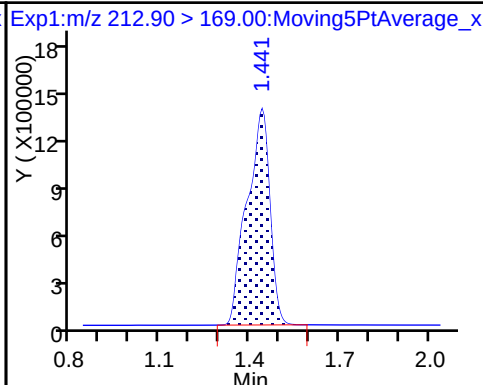
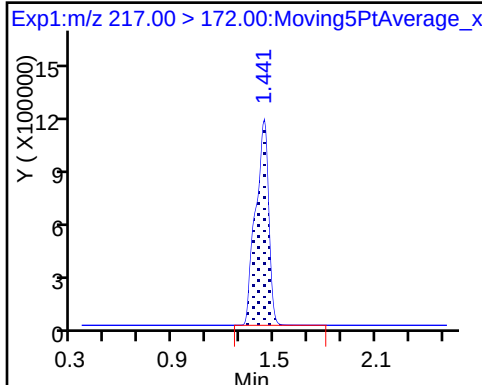
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

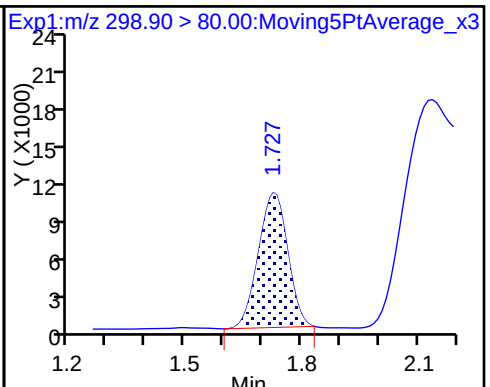
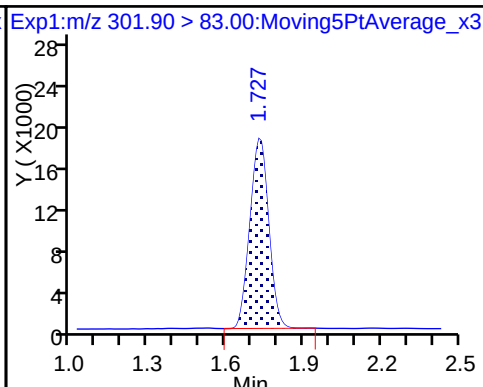
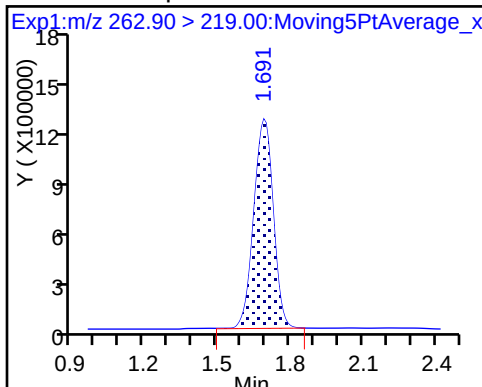
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

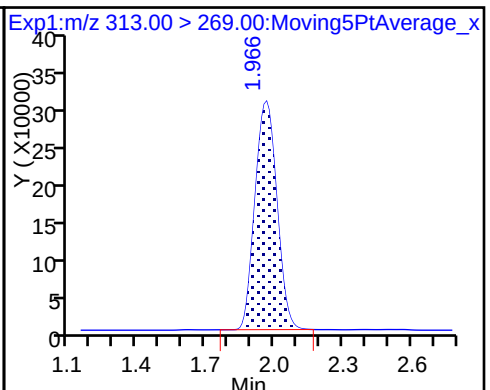
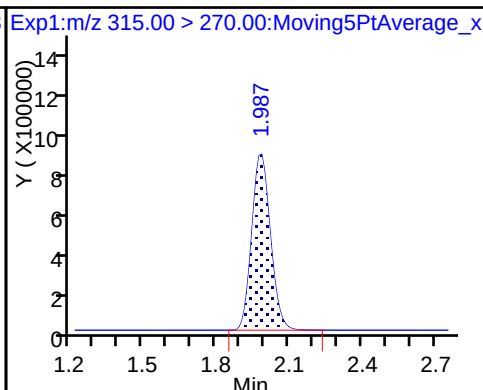
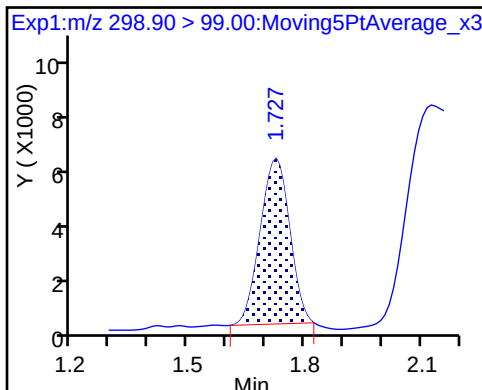
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

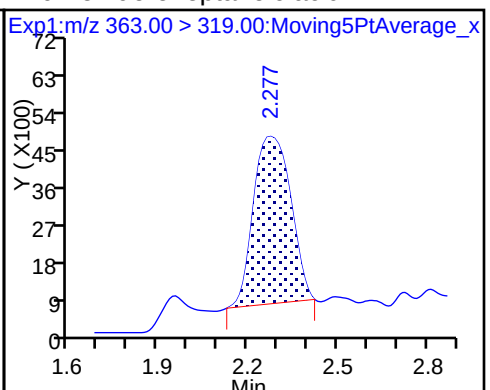
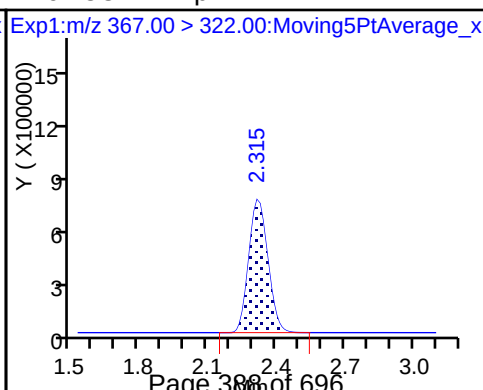
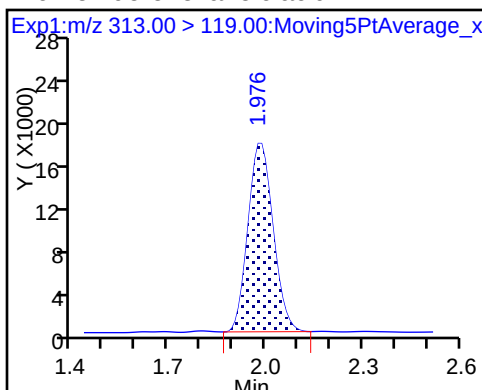
6 Perfluorohexanoic acid

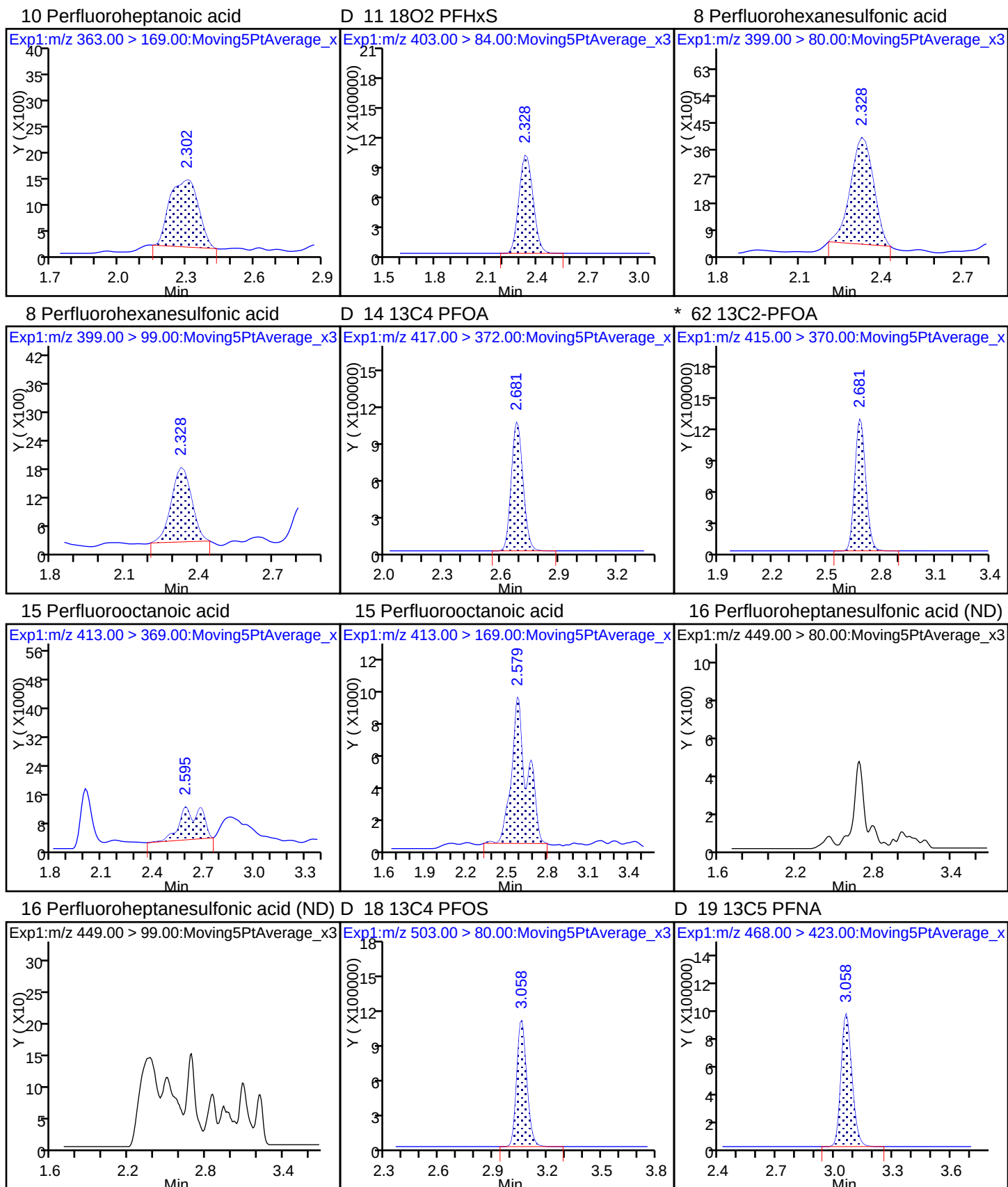


6 Perfluorohexanoic acid

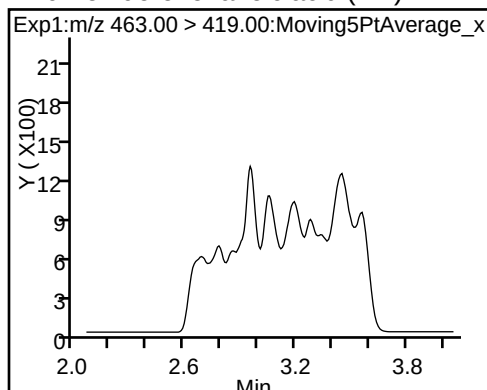
D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

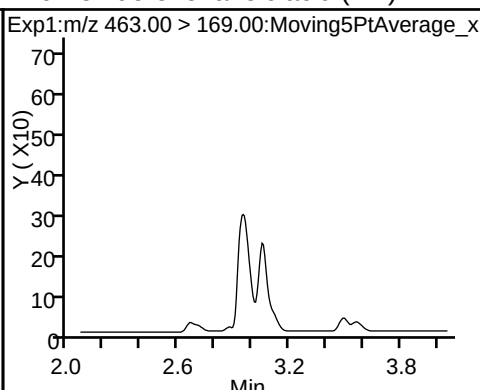




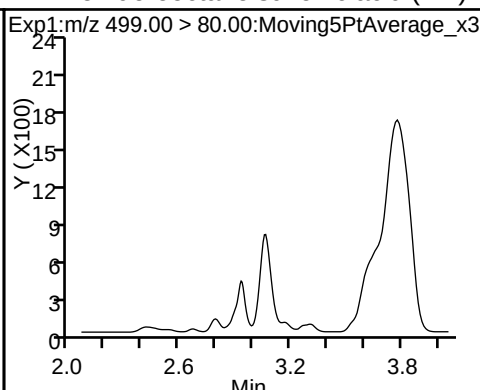
20 Perfluorononanoic acid (ND)



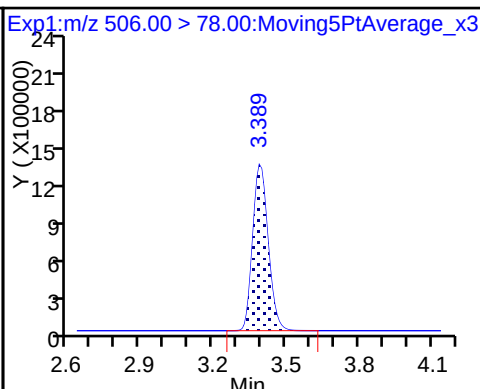
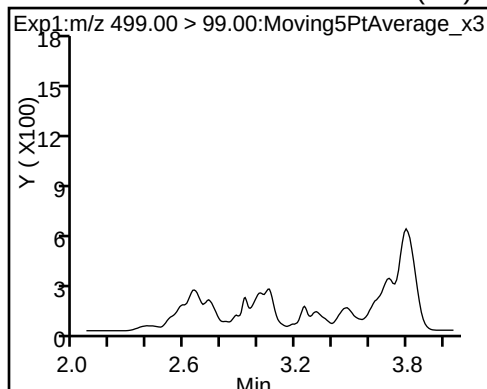
20 Perfluorononanoic acid (ND)



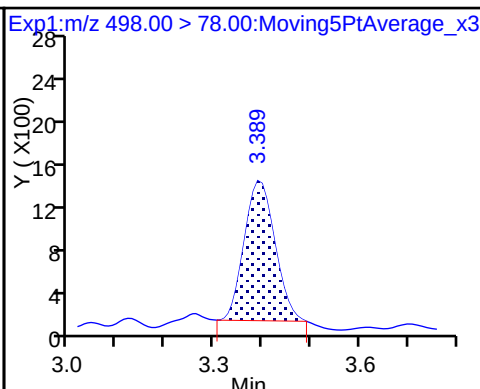
17 Perfluorooctane sulfonic acid (ND)



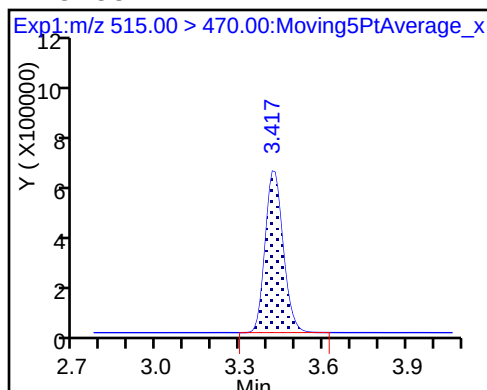
17 Perfluorooctane sulfonic acid (ND) D 21 13C8 FOSA



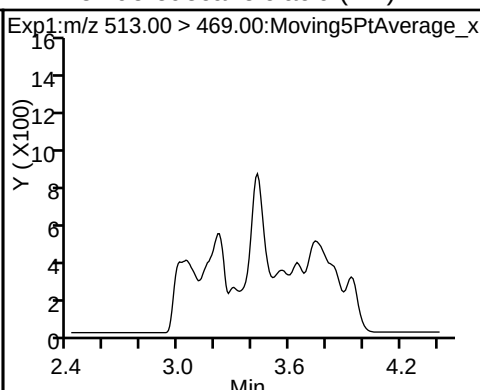
22 Perfluorooctane Sulfonamide



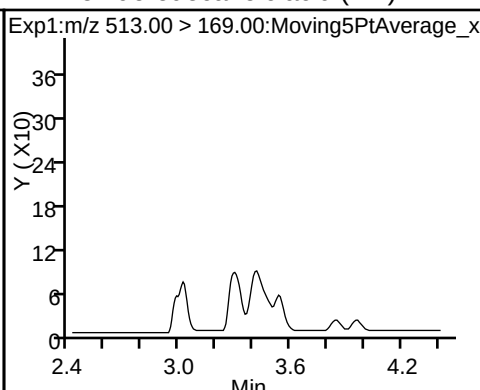
D 23 13C2 PFDA



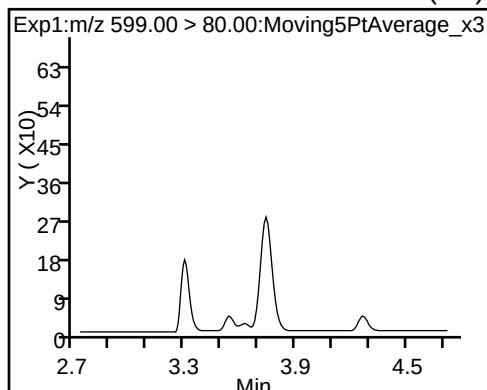
24 Perfluorodecanoic acid (ND)



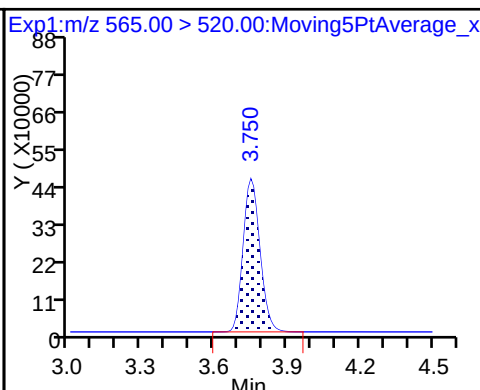
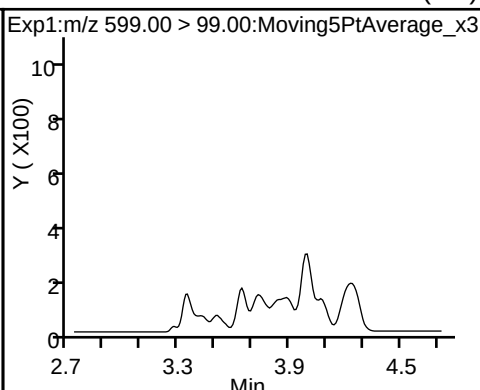
24 Perfluorodecanoic acid (ND)



29 Perfluorodecane Sulfonic acid (ND)



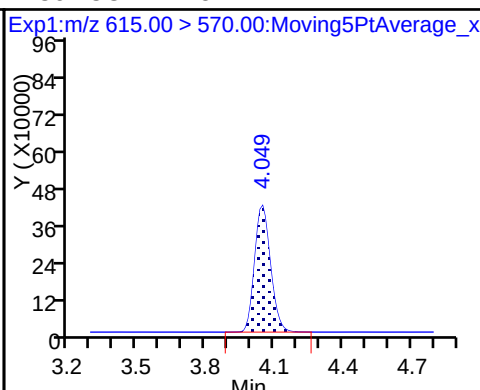
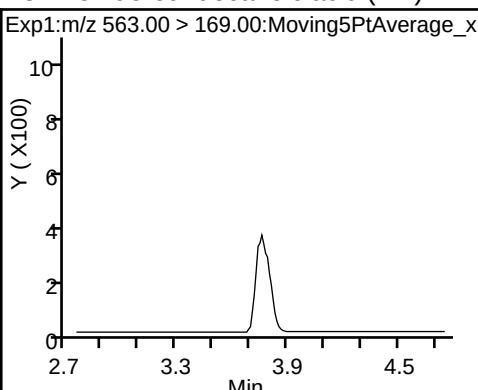
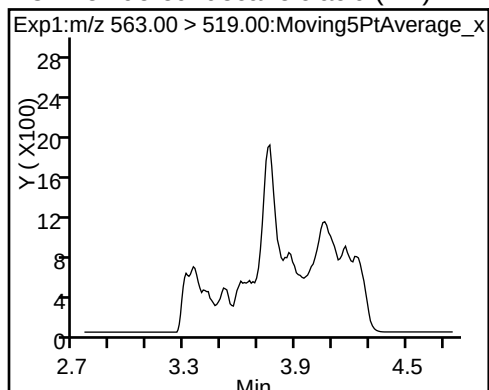
29 Perfluorodecane Sulfonic acid (ND) D 30 13C2 PFUnA



31 Perfluoroundecanoic acid (ND)

31 Perfluoroundecanoic acid (ND)

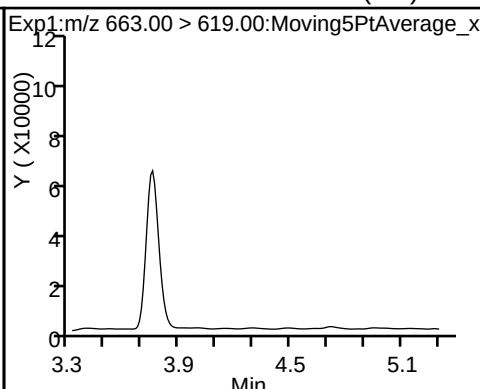
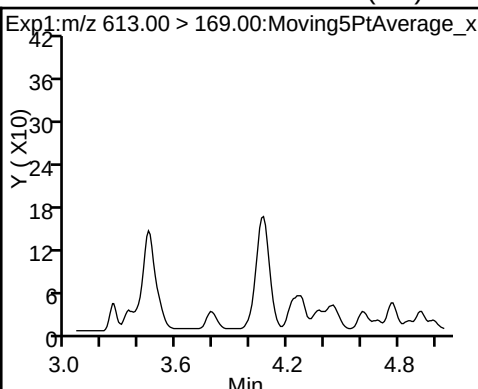
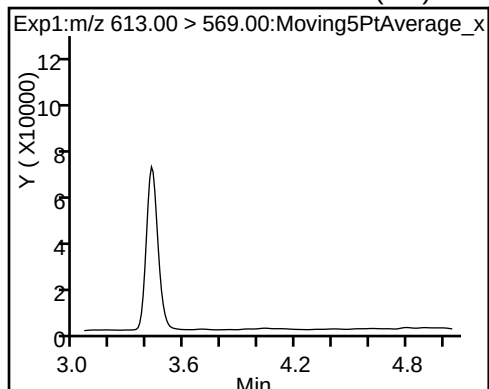
D 36 13C2 PFDaA



37 Perfluorododecanoic acid (ND)

37 Perfluorododecanoic acid (ND)

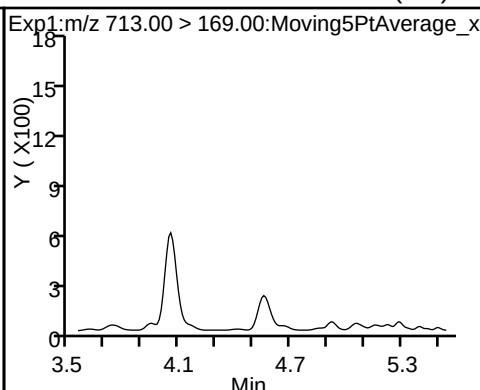
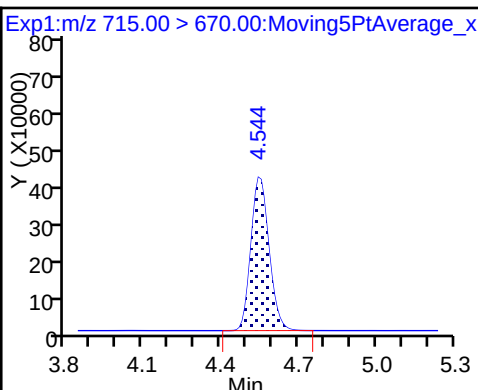
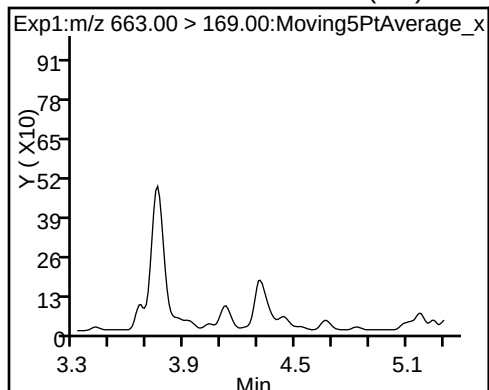
41 Perfluorotridecanoic acid (ND)



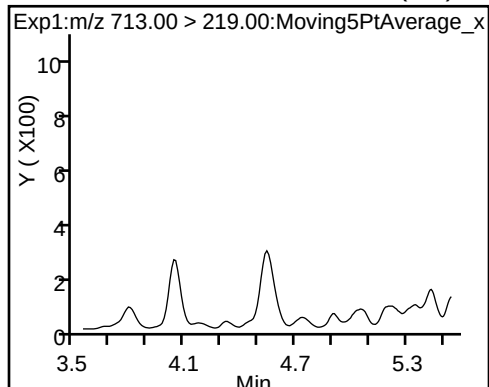
41 Perfluorotridecanoic acid (ND)

D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-212932/2	2018.03.14LLICAL_002.d
Level 2	IC 320-212932/3	2018.03.14LLICAL_003.d
Level 3	IC 320-212932/4	2018.03.14LLICAL_004.d
Level 4	IC 320-212932/5	2018.03.14LLICAL_005.d
Level 5	IC 320-212932/6	2018.03.14LLICAL_006.d
Level 6	IC 320-212932/7	2018.03.14LLICAL_007.d
Level 7	IC 320-212932/8	2018.03.14LLICAL_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	0.9317 0.9738	0.9063 0.9322	0.9012	0.8916	0.9398	AveID		0.9252				3.0		20.0			
Perfluoropentanoic acid (PFPeA)	1.2405 1.2012	1.2193 1.1512	1.0796	1.1277	1.1788	AveID		1.1712				4.8		20.0			
Perfluorobutanesulfonic acid (PFBS)	70.494 77.528	78.826 72.379	76.673	77.940	80.784	AveID		76.375				4.8		20.0			
4:2 FTS	17.516 16.056	17.204 14.725	16.255	16.599	16.439	AveID		16.399				5.5		20.0			
Perfluorohexanoic acid (PFHxA)	1.0397 1.0246	1.0518 0.9709	0.9835	0.9668	1.0227	AveID		1.0086				3.4		20.0			
Perfluoroheptanoic acid (PFHpA)	1.0246 1.0718	1.0508 1.1008	1.0687	1.0020	1.1237	AveID		1.0632				3.9		20.0			
Perfluorohexanesulfonic acid (PFHxS)	1.3410 1.0927	1.1477 1.0558	1.0902	1.0284	1.1040	AveID		1.1228				9.2		20.0			
6:2FTS	1.6981 1.7541	1.7486 1.7769	1.6836	1.5419	1.7505	AveID		1.7077				4.7		20.0			
Perfluorooctanoic acid (PFOA)	1.3914 1.1423	1.2335 1.0968	1.0689	1.0639	1.1436	AveID		1.1629				10.0		20.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.3012 1.4054	1.4164 1.2954	1.3091	1.3541	1.4189	AveID		1.3572				4.1		20.0			
Perfluorooctanesulfonic acid (PFOS)	1.0405 1.0577	1.0713 1.0543	1.0500	1.0222	1.0530	AveID		1.0499				1.5		20.0			
Perfluorononanoic acid (PFNA)	0.9668 1.0888	0.9442 1.0147	0.9920	0.9885	1.0292	AveID		1.0035				4.7		20.0			
Perfluorooctane Sulfonamide (FOSA)	0.9935 1.0071	0.9446 0.9129	0.9684	0.9978	1.0264	AveID		0.9787				4.0		20.0			
8:2FTS	1.1828 1.3485	1.3217 1.3257	1.1832	1.1821	1.1954	AveID		1.2485				6.3		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorodecanoic acid (PFDA)	1.0148 1.0164	0.9581 0.9847	1.0665	0.9763	1.0320	AveID		1.0070				3.7		20.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	1.0288 1.0948	1.1014 +++++	1.0032	0.9927	1.0268	AveID		1.0413				4.4		20.0			
Perfluorodecanesulfonic acid (PFDS)	0.5138 0.6915	0.6400 0.6415	0.6209	0.6211	0.6750	AveID		0.6291				9.1		20.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.9036 0.9525	1.1702 0.9505	0.9700	0.9247	0.9230	AveID		0.9706				9.4		20.0			
Perfluoroundecanoic acid (PFUnA)	1.1292 1.2278	1.1171 0.9333	1.1400	0.9627	1.0968	AveID		1.0867				9.5		20.0			
Perfluorododecanoic acid (PFDoA)	1.1538 1.0168	1.0199 1.0931	0.9993	0.8611	0.9855	AveID		1.0185				9.0		20.0			
Perfluorotridecanoic Acid (PFTriA)	1.0604 1.0741	0.9738 1.0364	0.9296	0.8471	0.9312	AveID		0.9789				8.5		20.0			
Perfluorotetradecanoic acid (PFTeA)	0.2598 0.2521	0.2552 0.2622	0.2561	0.2368	0.2614	AveID		0.2548				3.4		20.0			
13C4 PFBA	1.3690 1.4585	1.3988 1.5176	1.4039	1.3931	1.4309	Ave		1.4245				3.5		20.0			
13C5 PFPeA	0.9105 0.9595	0.9508 0.9993	0.9689	0.9431	0.9546	Ave		0.9553				2.8		20.0			
13C3-PFBS	0.0238 0.0263	0.0240 0.0272	0.0244	0.0240	0.0249	Ave		0.0249				5.2		20.0			
13C2 PFHxA	1.0267 1.0454	1.0273 1.0486	1.0381	1.0354	1.0624	Ave		1.0405				1.2		20.0			
13C4-PFHpA	0.9748 0.9867	1.0242 0.9569	0.9906	1.0006	0.9595	Ave		0.9847				2.4		20.0			
18O2 PFHxS	1.4122 1.4976	1.4298 1.5163	1.4231	1.4747	1.4470	Ave		1.4573				2.7		20.0			
M2-6:2FTS	0.2491 0.2741	0.2567 0.2550	0.2539	0.2727	0.2747	Ave		0.2623				4.2		20.0			
13C4 PFOA	0.9462 0.9301	0.9543 0.9355	0.9619	0.9406	0.9753	Ave		0.9491				1.7		20.0			
13C4 PFOS	0.9640 1.0419	0.9652 1.0726	0.9913	0.9769	0.9938	Ave		1.0008				4.1		20.0			
13C5 PFNA	0.7108 0.7220	0.7403 0.7392	0.7736	0.7520	0.7345	Ave		0.7389				2.7		20.0			
13C8 FOSA	1.4091 1.4645	1.4558 1.5155	1.4836	1.4004	1.4816	Ave		1.4586				2.8		20.0			
M2-8:2FTS	0.2571 0.2570	0.2674 0.2531	0.2804	0.2582	0.2623	Ave		0.2622				3.5		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
 Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C2 PFDA	0.6033 0.5878	0.6229 0.5840	0.5971	0.6002	0.5868	Ave		0.5974				2.2		20.0			
d3-NMeFOSAA	0.1863 0.2048	0.1878 +++++	0.1828	0.2027	0.2043	Ave		0.1948				5.2		20.0			
d5-NEtFOSAA	0.1987 0.2143	0.2118 0.2100	0.2154	0.2080	0.2206	Ave		0.2113				3.3		20.0			
13C2 PFUnA	0.4480 0.4153	0.4473 0.4016	0.4587	0.4501	0.4778	Ave		0.4427				5.9		20.0			
13C2 PFDoA	0.4145 0.4331	0.4673 0.4628	0.4337	0.4709	0.4660	Ave		0.4498				4.9		20.0			
13C2-PFTeDA	0.3788 0.4197	0.3765 0.4323	0.3881	0.3904	0.3973	Ave		0.3976				5.3		20.0			
13C2-PFHxDA	0.7956 0.7525	0.7230 0.8094	0.7427	0.7378	0.7840	Ave		0.7636				4.3		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-212932/2	2018.03.14LLICAL_002.d
Level 2	IC 320-212932/3	2018.03.14LLICAL_003.d
Level 3	IC 320-212932/4	2018.03.14LLICAL_004.d
Level 4	IC 320-212932/5	2018.03.14LLICAL_005.d
Level 5	IC 320-212932/6	2018.03.14LLICAL_006.d
Level 6	IC 320-212932/7	2018.03.14LLICAL_007.d
Level 7	IC 320-212932/8	2018.03.14LLICAL_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	55368 11035941	107080 20465640	538630	2135395	5442114	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	49030 8955564	97934 16643085	445329	1828513	4554126	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	64517 14018860	141035 25157098	705287	2838516	7196018	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	16938 3067449	32523 5407650	157984	638735	1547164	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	46338 8322619	91268 14728676	434674	1721120	4396908	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanoic acid (PFHpA)		AveID	43357 8217290	90904 15239764	450709	1723802	4363135	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	74808 11570747	126142 21076868	601108	2372721	5883216	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
6:2FTS		AveID	17409 3541999	35948 6214880	172556	685355	1844839	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	57153 8254965	99440 14845460	437730	1720392	4513615	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	51839 10831503	109944 19136926	525960	2165087	5432633	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorooctanesulfonic acid (PFOS)		AveID	40409 7946100	81060 15183603	411222	1593171	3930025	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)		AveID	29831 6107971	59051 10850588	326734	1278096	3059094	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctane Sulfonamide (FOSA)		AveID	60774 11459354	116163 20017278	611619	2402477	6154228	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
8:2FTS		AveID	12649 2579923	28600 4649520	135310	502781	1215769	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorodecanoic acid (PFDA)		AveID	26577 4641972	50417 8319158	271134	1007443	2450527	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	8319 1742154	17472 +++++	78085	345992	849018	0.0250 5.00	0.0500 +++++	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	20726 5396895	50302 9596144	252605	1005551	2616932	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	7794 1585656	20933 2887942	88954	330726	823932	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	21960 3962001	42207 5423061	222626	744959	2120834	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid (PFDoA)		AveID	20759 3422264	40258 7319601	184508	697101	1858687	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	19077 3614945	38439 6940025	171629	685794	1756243	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	4271 822206	8117 1640040	42319	158940	420346	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	5943002 5666362	5907827 5488770	5976824	5987787	5790839	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C5 PFPeA	13PF OA	Ave	3952391 3727810	4016016 3614376	4125093	4053545	3863265	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	96284 95116	94115 91415	96773	95786	93712	2.33 2.33	2.33 2.33	2.33	2.33	2.33
13C2 PFHxA	13PF OA	Ave	4456675 4061548	4338762 3792481	4419581	4450458	4299284	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PF OA	Ave	4231431 3833431	4325636 3460967	4217304	4300707	3882850	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5799398 5503944	5713010 5188043	5731606	5996185	5539746	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	1027377 1011755	1030064 876238	1027059	1113542	1056146	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	4107442 3613402	4030734 3383697	4095323	4042821	3947007	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	4000772 3869709	3897319 3708881	4034460	4014112	3844762	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	3085683 2804832	3126930 2673393	3293525	3232270	2972367	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	6116928 5689527	6148839 5481492	6316094	6019215	5995855	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	1069393 956603	1081959 876818	1143567	1063315	1017048	2.40 2.40	2.40 2.40	2.40	2.40	2.40
13C2 PFDA	13PF OA	Ave	2618994 2283470	2631089 2112175	2542258	2579687	2374640	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	808599 795679	793186 +++++	778323	871338	826844	2.50 2.50	2.50 +++++	2.50	2.50	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
d5-NEtFOSAA	13PF OA	Ave	862558 832409	894414 759604	917080	894155	892685	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFUnA	13PF OA	Ave	1944744 1613432	1889085 1452593	1952789	1934488	1933584	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDaA	13PF OA	Ave	1799119 1682803	1973562 1674041	1846309	2023893	1886034	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	1644167 1630645	1590115 1563578	1652398	1678172	1607962	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	3453839 2923634	3053517 2927472	3161940	3171057	3172627	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-212932/2	2018.03.14LLICAL_002.d
Level 2	IC 320-212932/3	2018.03.14LLICAL_003.d
Level 3	IC 320-212932/4	2018.03.14LLICAL_004.d
Level 4	IC 320-212932/5	2018.03.14LLICAL_005.d
Level 5	IC 320-212932/6	2018.03.14LLICAL_006.d
Level 6	IC 320-212932/7	2018.03.14LLICAL_007.d
Level 7	IC 320-212932/8	2018.03.14LLICAL_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid (PFBA)	0.7 0.8	-2.0	-2.6	-3.6	1.6	5.3	30 30	30	30	30	30	30
Perfluoropentanoic acid (PFPeA)	5.9 -1.7	4.1	-7.8	-3.7	0.7	2.6	30 30	30	30	30	30	30
Perfluorobutanesulfonic acid (PFBS)	-7.7 -5.2	3.2	0.4	2.0	5.8	1.5	30 30	30	30	30	30	30
4:2 FTS	6.8 -10.2	4.9	-0.9	1.2	0.2	-2.1	30 30	30	30	30	30	30
Perfluorohexanoic acid (PFHxA)	3.1 -3.7	4.3	-2.5	-4.1	1.4	1.6	30 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-3.6 3.5	-1.2	0.5	-5.8	5.7	0.8	30 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	19.4 -6.0	2.2	-2.9	-8.4	-1.7	-2.7	30 30	30	30	30	30	30
6:2FTS	-0.6 4.1	2.4	-1.4	-9.7	2.5	2.7	30 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	19.7 -5.7	6.1	-8.1	-8.5	-1.7	-1.8	30 30	30	30	30	30	30
Perfluoroheptanesulfonic Acid (PFHpS)	-4.1 -4.6	4.4	-3.5	-0.2	4.5	3.6	30 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-0.9 0.4	2.0	0.0	-2.6	0.3	0.7	30 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-3.7 1.1	-5.9	-1.1	-1.5	2.6	8.5	30 30	30	30	30	30	30
Perfluorooctane Sulfonamide (FOSA)	1.5 -6.7	-3.5	-1.1	2.0	4.9	2.9	30 30	30	30	30	30	30
8:2FTS	-5.3 6.2	5.9	-5.2	-5.3	-4.3	8.0	30 30	30	30	30	30	30
Perfluorodecanoic acid (PFDA)	0.8 -2.2	-4.9	5.9	-3.0	2.5	0.9	30 30	30	30	30	30	30

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	-1.2 ++++	5.8	-3.7	-4.7	-1.4	5.1	30	30	30	30	30	30
Perfluorodecanesulfonic acid (PFDS)	-18.3 2.0	1.7	-1.3	-1.3	7.3	9.9	30 30	30	30	30	30	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	-6.9 -2.1	20.6	-0.1	-4.7	-4.9	-1.9	30 30	30	30	30	30	30
Perfluoroundecanoic acid (PFUnA)	3.9 -14.1	2.8	4.9	-11.4	0.9	13.0	30 30	30	30	30	30	30
Perfluorododecanoic acid (PFDoA)	13.3 7.3	0.1	-1.9	-15.5	-3.2	-0.2	30 30	30	30	30	30	30
Perfluorotridecanoic Acid (PFTriA)	8.3 5.9	-0.5	-5.0	-13.5	-4.9	9.7	30 30	30	30	30	30	30
Perfluorotetradecanoic acid (PFTeA)	1.9 2.9	0.2	0.5	-7.1	2.6	-1.1	30 30	30	30	30	30	30

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_002.d
 Lims ID: IC L1 Full
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 14-Mar-2018 13:59:42 ALS Bottle#: 10 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 15-Mar-2018 08:29:44 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK055

First Level Reviewer: hannigana

Date: 14-Mar-2018 14:55:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.434	1.433	0.001	0.553	5943002	2.40		96.1	115065	
2 Perfluorobutyric acid										
212.90 > 169.00	1.434	1.433	0.001	1.000	55368	0.0252		101	29.3	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.673	1.673	0.0	1.000	49030	0.0265		106	12.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.673	1.673	0.0	0.645	3952391	2.38		95.3	152321	
D 47 13C3-PFBS										
301.90 > 83.00	1.700	1.703	-0.003	0.655	96284	2.22		95.6	447	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.709	1.707	0.002	1.005	64517	0.0204		92.3	114	
298.90 > 99.00	1.700	1.707	-0.007	1.000	28137		2.29(1.25-3.74)	92.3	101	
D 60 M2-4:2FTS										
329.00 > 81.00	1.894	1.900	-0.006	0.730	728461	NC			10732	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.904	1.902	0.002	1.000	16938	0.0249		107	1121	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.935	1.938	-0.003	1.000	46338	0.0258		103	137	
313.00 > 119.00	1.925	1.938	-0.013	0.995	3230		14.35(5.03-15.10)	103	50.2	
D 7 13C2 PFHxA										
315.00 > 270.00	1.935	1.938	-0.003	0.746	4456675	2.47		98.7	139059	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.237	2.249	-0.012	1.000	43357	0.0241		96.4	76.0	
363.00 > 169.00	2.237	2.249	-0.012	1.000	15855		2.73(1.13-3.40)	96.4	303	
D 9 13C4-PFHpA										
367.00 > 322.00	2.237	2.249	-0.012	0.862	4231431	2.47		99.0	91390	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.250	2.262	-0.012	1.000	74808	0.0272		119	483	
399.00 > 99.00	2.250	2.262	-0.012	1.000	26332		2.84(1.50-4.49)	119	83.9	
D 11 18O2 PFHxS										
403.00 > 84.00	2.250	2.262	-0.012	0.867	5799398	2.29		96.9	82608	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.571	2.577	-0.006	1.000	17409	0.0236		99.4	818	
D 12 M2-6:2FTS										
429.00 > 81.00	2.571	2.577	-0.006	0.991	1027377	2.26		95.0	28938	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.594	2.602	-0.008	1.000	57153	0.0299		120	24.1	
413.00 > 169.00	2.594	2.602	-0.008	1.000	28318		2.02(0.84-2.52)	120	105	
* 62 13C2-PFOA										
415.00 > 370.00	2.594	2.602	-0.008		4340977	2.50			112630	
D 14 13C4 PFOA										
417.00 > 372.00	2.594	2.602	-0.008	1.000	4107442	2.49		99.7	86320	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.594	2.607	-0.013	1.000	51839	0.0228		95.9	2417	
449.00 > 99.00	2.594	2.607	-0.013	1.000	16325		3.18(1.94-5.82)	95.9	310	
D 18 13C4 PFOS										
503.00 > 80.00	2.960	2.966	-0.006	1.141	4000772	2.30		96.3	59794	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.967	2.969	-0.002	1.002	40409	0.0230		99.1	506	
499.00 > 99.00	2.960	2.969	-0.009	1.000	10462		3.86(2.31-6.93)	99.1	122	
D 19 13C5 PFNA										
468.00 > 423.00	2.967	2.972	-0.005	1.144	3085683	2.40		96.2	62221	
20 Perfluorononanoic acid										
463.00 > 419.00	2.967	2.973	-0.006	1.000	29831	0.0241		96.3	42.0	
463.00 > 169.00	2.967	2.973	-0.006	1.000	7454		4.00(1.90-5.69)	96.3	266	
D 21 13C8 FOSA										
506.00 > 78.00	3.305	3.305	0.0	1.274	6116928	2.42		96.6	41232	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.305	3.307	-0.002	1.000	60774	0.0254		102	2560	
D 26 M2-8:2FTS										
529.00 > 81.00	3.313	3.320	-0.007	1.277	1069393	2.35		98.1	32231	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.313	3.320	-0.007	1.000	12649	0.0227		94.7	318	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.321	3.331	-0.011	0.998	26577	0.0252		101	113	R
513.00 > 169.00	3.328	3.331	-0.003	1.000	3668		7.25(2.36-7.09)	101	220	R
D 23 13C2 PFDA										
515.00 > 470.00	3.328	3.332	-0.004	1.283	2618994	2.52		101	33011	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.481	3.482	-0.001	1.342	808599	2.39		95.6	25520	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.481	3.488	-0.007	1.000	8319	0.0247		98.8	134	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.629	3.636	-0.007	1.000	20726	0.0197		81.7	1163	
599.00 > 99.00	3.629	3.636	-0.007	1.000	8469		2.45(1.39-4.16)	81.7	154	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.648	3.649	-0.001	1.406	862558	2.35		94.1	1447	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.657	3.655	0.002	1.003	21960	0.0260		104	56.9	
563.00 > 169.00	3.648	3.655	-0.007	1.000	4297		5.11(2.12-6.36)	104	534	
D 30 13C2 PFUnA										
565.00 > 520.00	3.648	3.655	-0.007	1.406	1944744	2.53		101	42743	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.648	3.655	-0.007	1.000	7794	0.0233		93.1	261	
D 36 13C2 PFDoA										
615.00 > 570.00	3.933	3.942	-0.009	1.516	1799119	2.30		92.1	7078	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.933	3.942	-0.009	1.000	20759	0.0283		113	2.7	
613.00 > 169.00	3.933	3.942	-0.009	1.000	5075		4.09(2.13-6.40)	113	180	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.190	4.196	-0.006	1.000	19077	0.0271		108	2.7	R
663.00 > 169.00	4.190	4.196	-0.006	1.000	4989		3.82(1.25-3.76)	108	57.7	R
D 43 13C2-PFTeDA										
715.00 > 670.00	4.427	4.430	-0.003	1.706	1644167	2.38		95.3	9805	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.427	4.430	-0.003	1.000	4271	0.0255		102	56.5	
713.00 > 219.00	4.416	4.430	-0.014	0.998	2416		1.77(0.71-2.13)	102	26.0	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.811	4.824	-0.013	1.000	56404	NC			3.7	
813.00 > 169.00	4.811	4.824	-0.013	1.000	9361		6.03(2.86-8.58)		131	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.811	4.825	-0.014	1.854	3453839	2.60		104	11900	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.151	5.170	-0.019	1.000	25730	NC			4.7	
913.00 > 169.00	5.143	5.170	-0.027	0.998	3037		8.47(3.83-11.48)		38.3	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Reagents:

LCPFC_LL1_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_002.d

Injection Date: 14-Mar-2018 13:59:42

Instrument ID: A8_N

Lims ID: IC L1 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 10

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

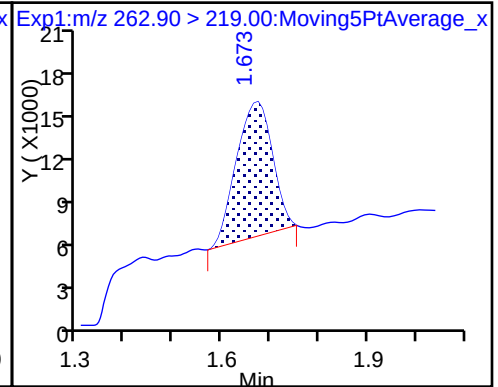
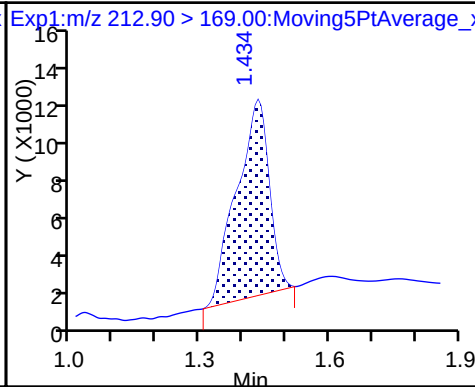
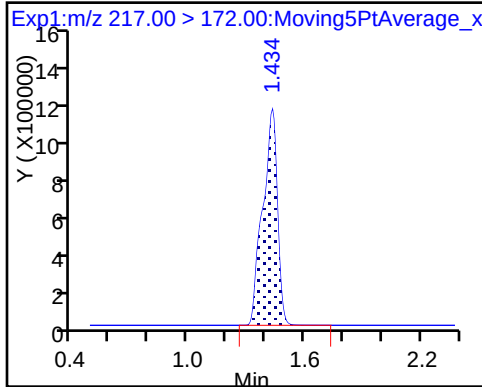
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

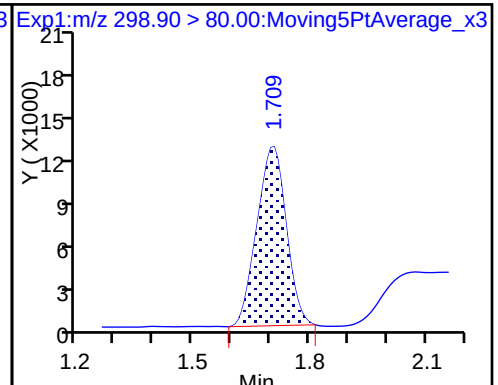
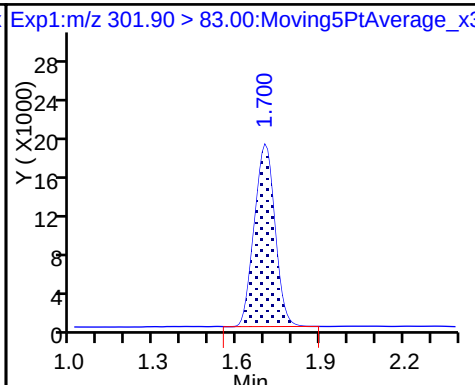
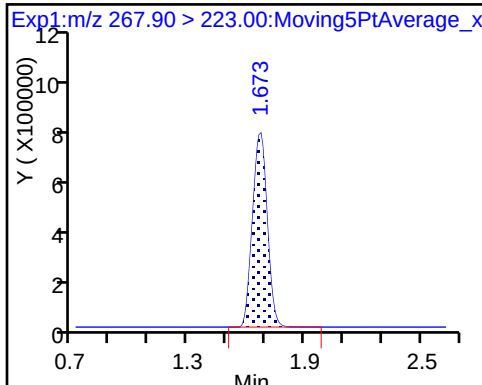
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

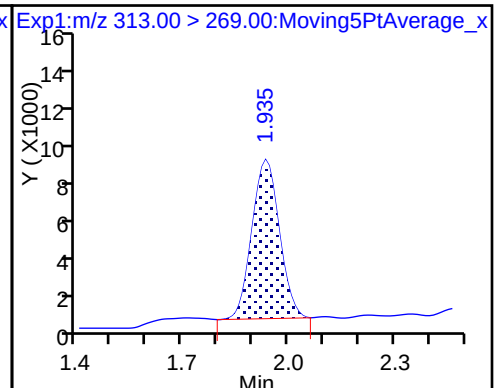
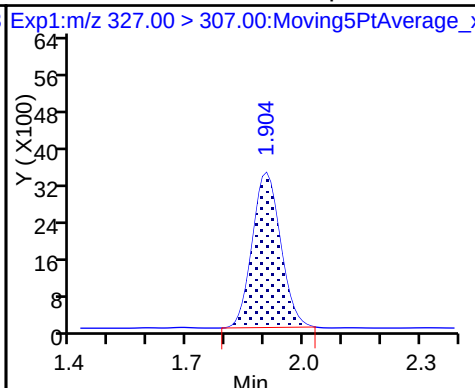
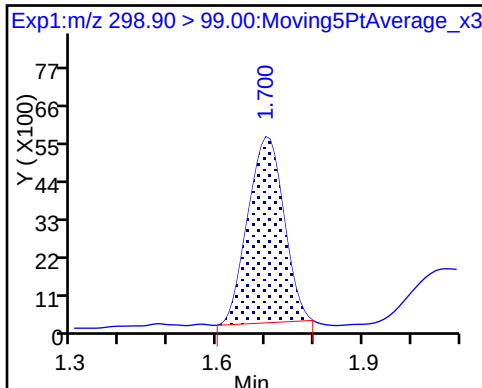
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

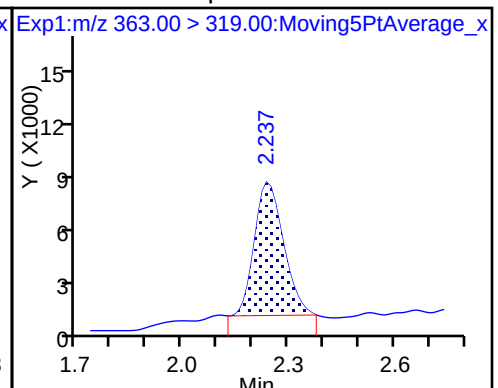
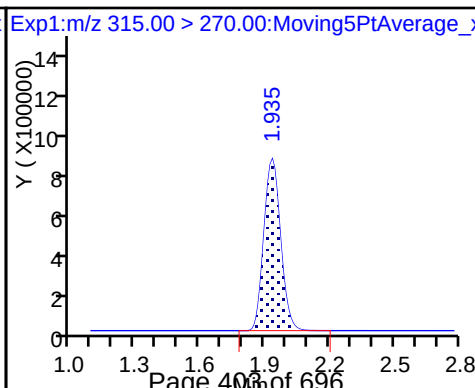
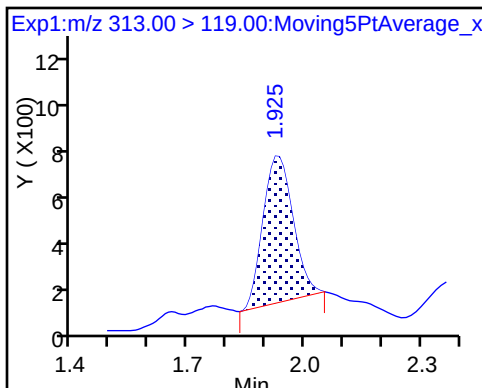
6 Perfluorohexanoic acid

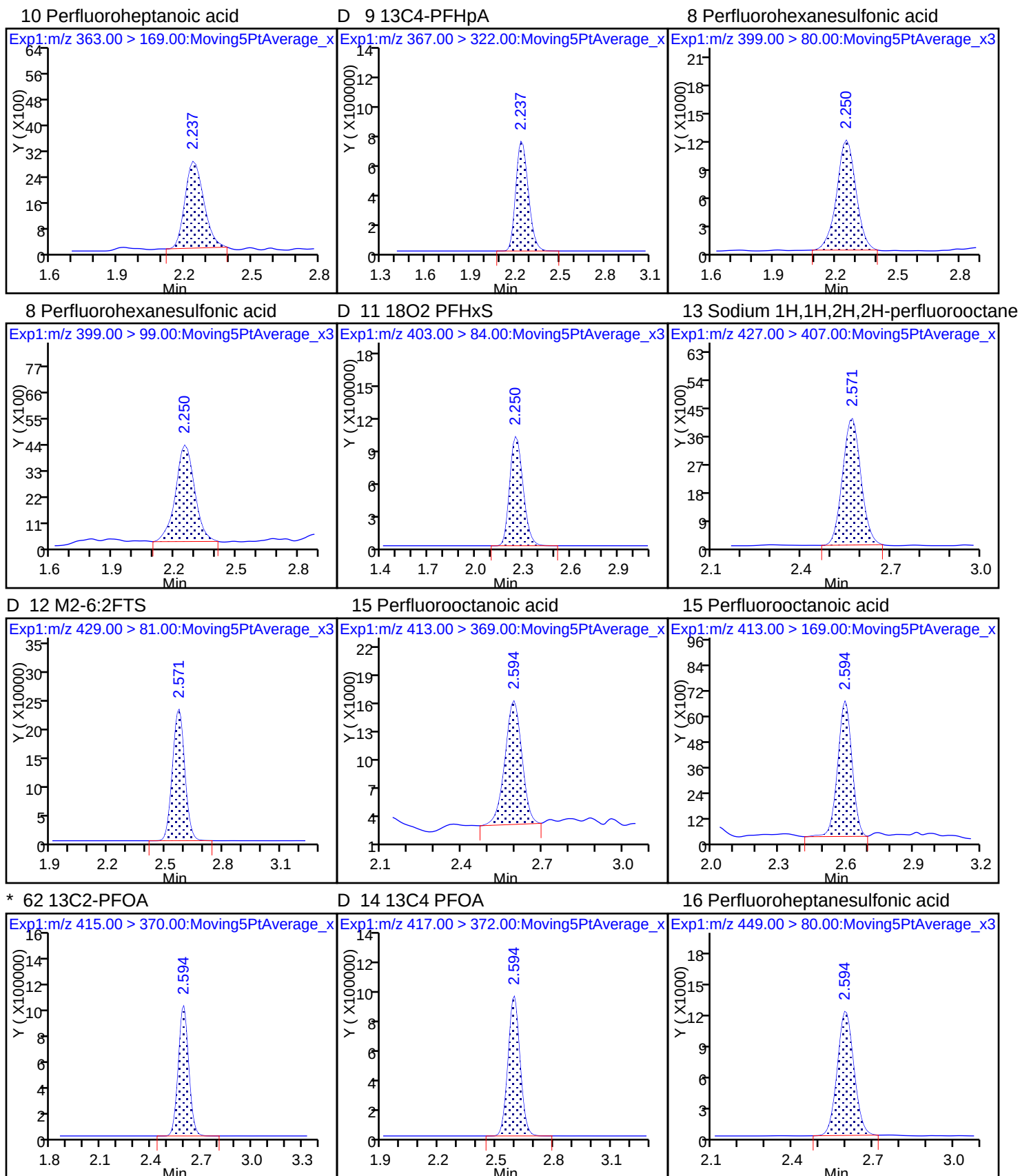


6 Perfluorohexanoic acid

D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

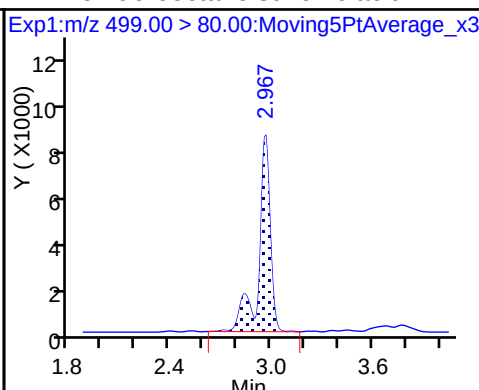
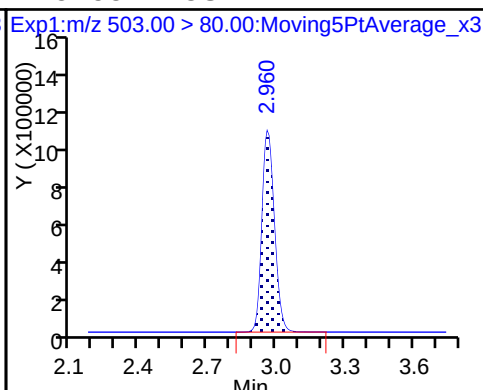
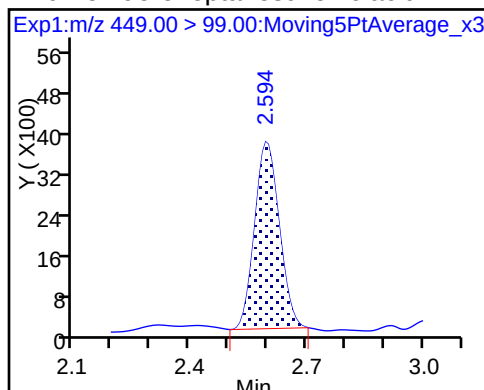




16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

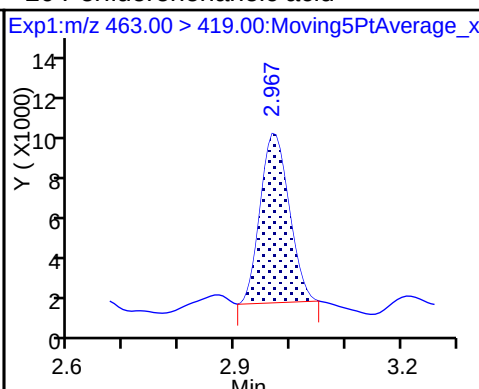
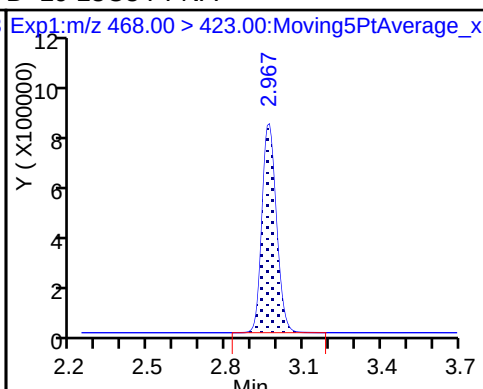
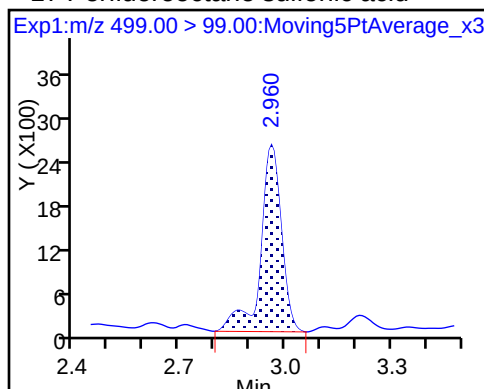
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

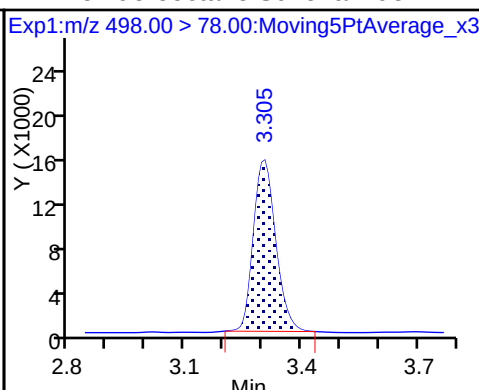
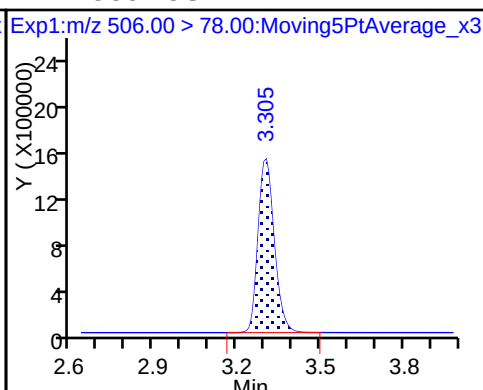
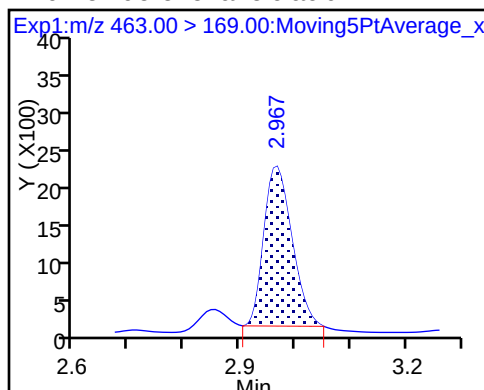
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

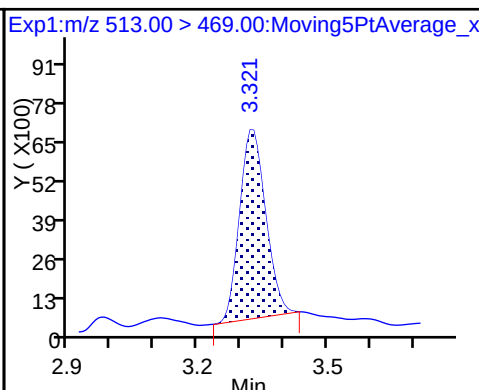
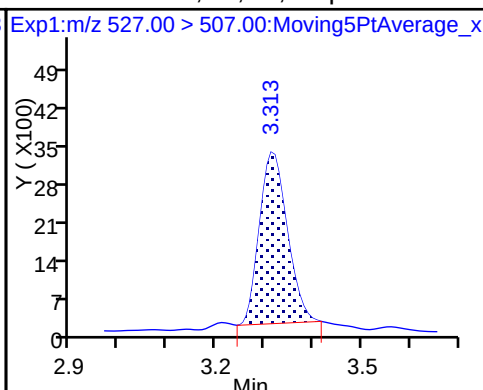
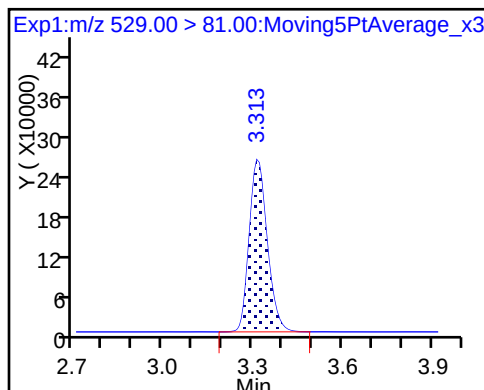
22 Perfluorooctane Sulfonamide



D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

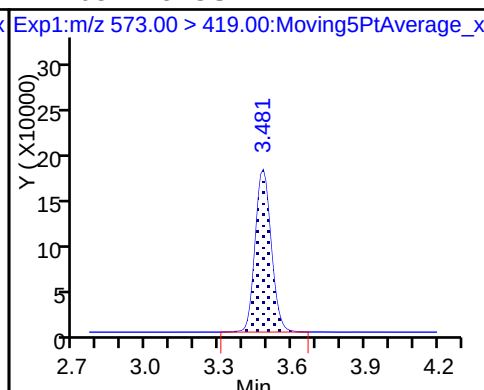
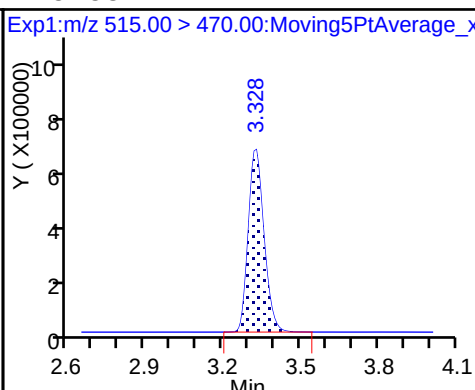
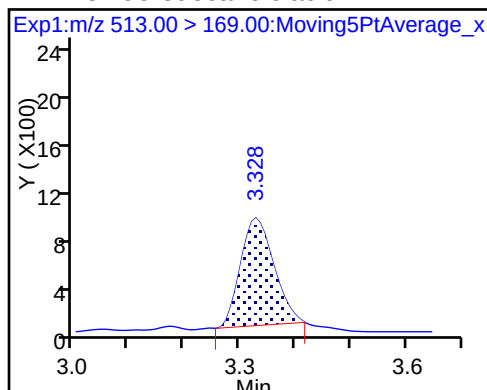
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

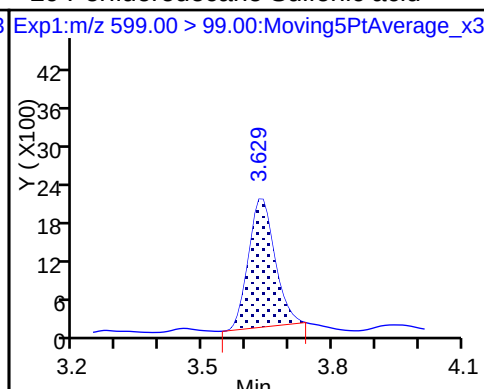
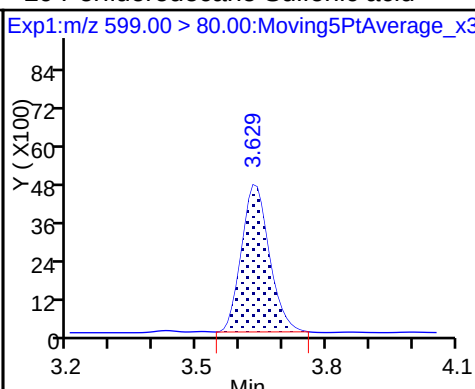
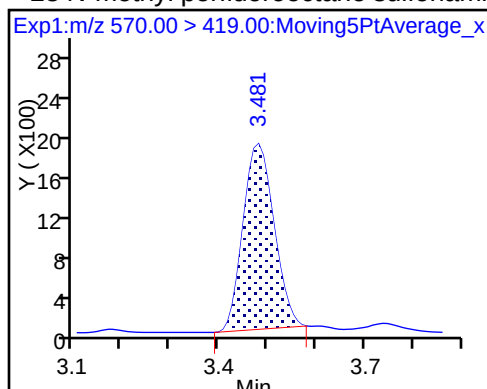
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonamid

29 Perfluorodecane Sulfonic acid

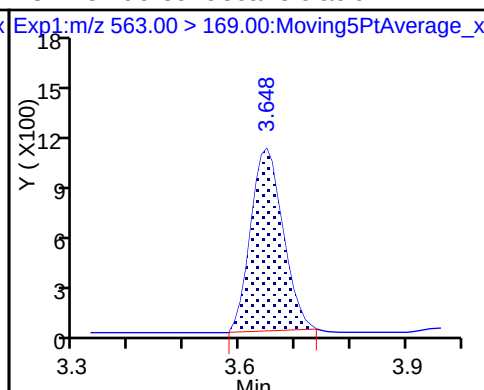
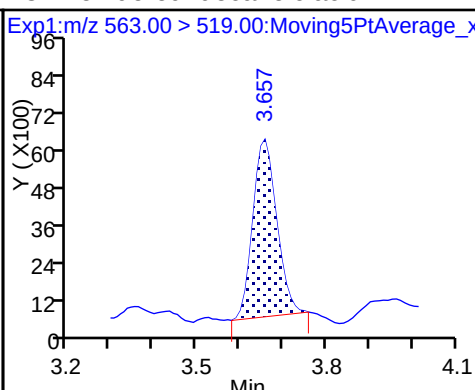
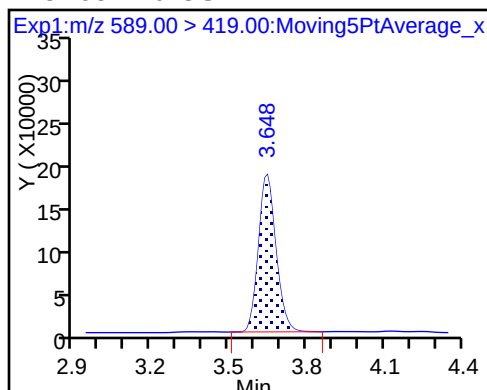
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid

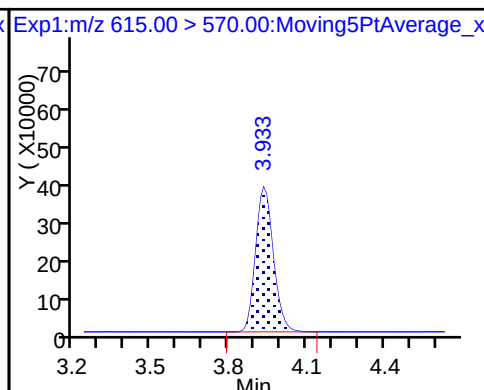
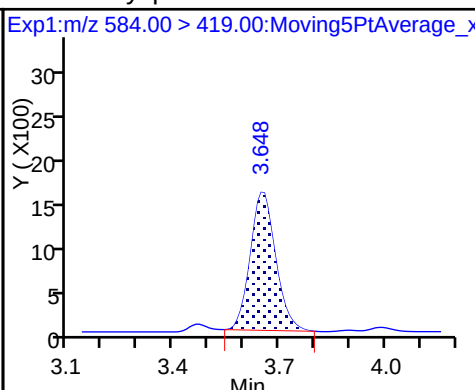
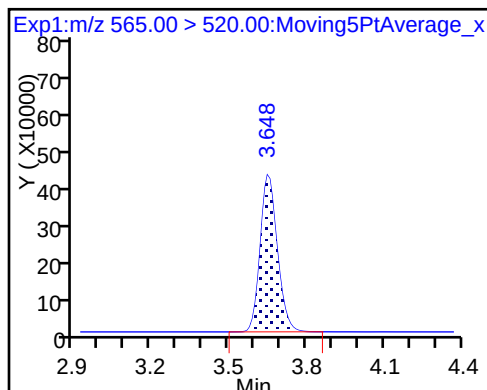
31 Perfluoroundecanoic acid



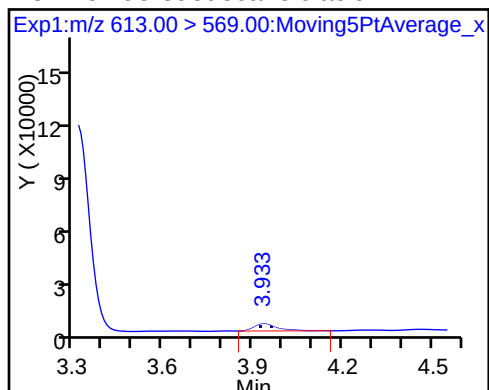
D 30 13C2 PFUnA

33 N-ethyl perfluorooctane sulfonamid

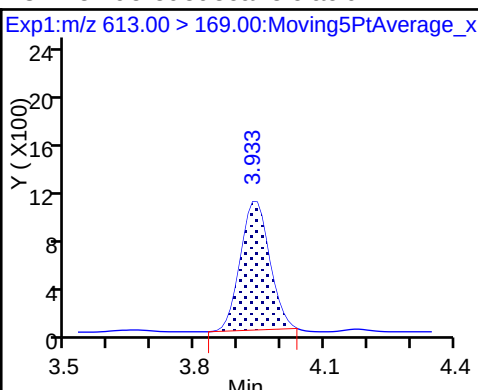
D 36 13C2 PFDaA



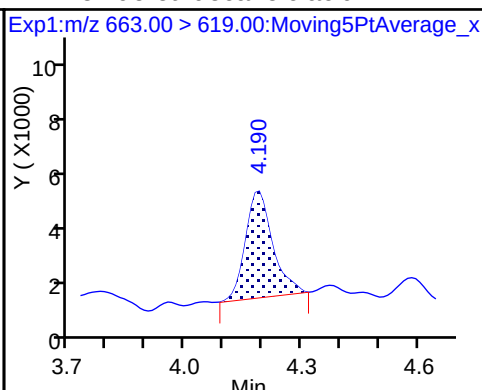
37 Perfluorododecanoic acid



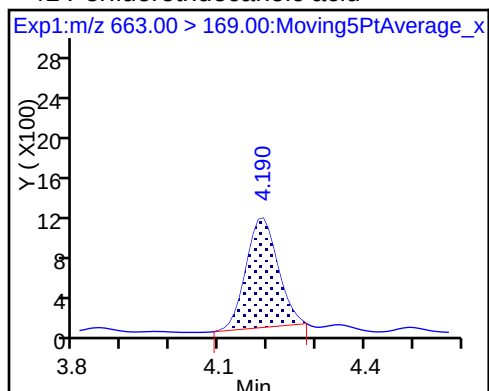
37 Perfluorododecanoic acid



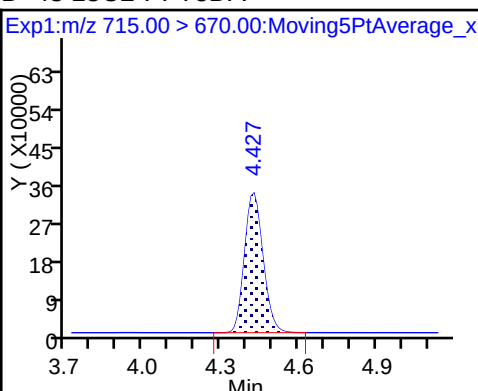
41 Perfluorotridecanoic acid



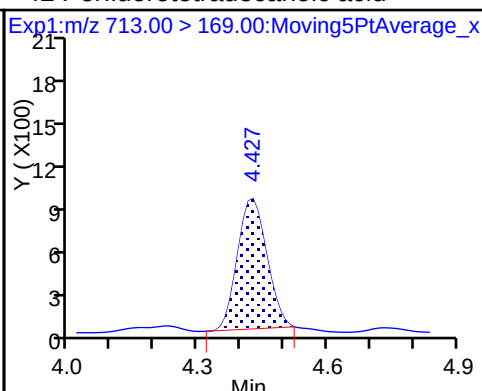
41 Perfluorotridecanoic acid



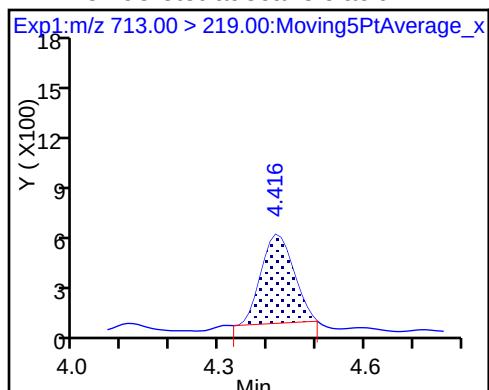
D 43 13C2-PFTeDA



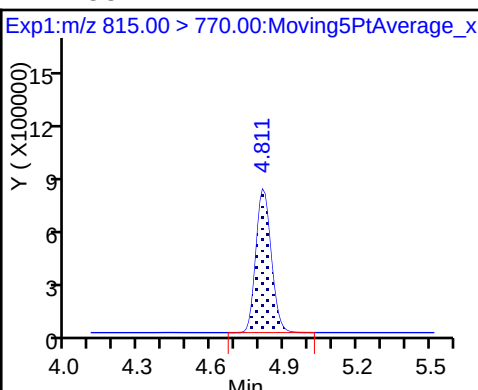
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_003.d
 Lims ID: IC L2 Full
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 14-Mar-2018 14:07:33 ALS Bottle#: 11 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 15-Mar-2018 08:29:47 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK055

First Level Reviewer: hannigana

Date: 14-Mar-2018 14:57:20

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.433	0.002	1.000	107080	0.0490		98.0	57.6	
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.433	0.002	0.553	5907827	2.45		98.2	125723	
D 3 13C5-PFPeA										
267.90 > 223.00	1.665	1.673	-0.008	0.642	4016016	2.49		99.5	195400	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.665	1.673	-0.008	1.000	97934	0.0521		104	25.7	
D 47 13C3-PFBS										
301.90 > 83.00	1.701	1.703	-0.002	0.656	94115	2.23		96.1	436	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.701	1.707	-0.006	1.000	141035	0.0456		103	257	
298.90 > 99.00	1.701	1.707	-0.006	1.000	61103		2.31(1.25-3.74)	103	225	
D 60 M2-4:2FTS										
329.00 > 81.00	1.895	1.900	-0.005	0.731	742002	NC			9599	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.895	1.902	-0.007	1.000	32523	0.0490		105	2125	
D 7 13C2 PFHxA										
315.00 > 270.00	1.925	1.938	-0.013	0.742	4338762	2.47		98.7	160688	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.925	1.938	-0.013	1.000	91268	0.0521		104	288	
313.00 > 119.00	1.925	1.938	-0.013	1.000	7586		12.03(5.03-15.10)	104	119	
D 9 13C4-PFHpA										
367.00 > 322.00	2.238	2.249	-0.011	0.863	4325636	2.60		104	93609	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.238	2.249	-0.011	1.000	90904	0.0494		98.8	160	
363.00 > 169.00	2.238	2.249	-0.011	1.000	34400		2.64(1.13-3.40)	98.8	727	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.251	2.262	-0.011	0.868	5713010	2.32		98.1	75276	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.251	2.262	-0.011	1.000	126142	0.0465		102	926	
399.00 > 99.00	2.251	2.262	-0.011	1.000	47857		2.64(1.50-4.49)	102	156	
D 12 M2-6:2FTS										
429.00 > 81.00	2.570	2.577	-0.007	0.991	1030064	2.32		97.9	25854	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.570	2.577	-0.007	1.000	35948	0.0485		102	1187	
D 14 13C4 PFOA										
417.00 > 372.00	2.594	2.602	-0.008	1.000	4030734	2.51		101	93642	
* 62 13C2-PFOA										
415.00 > 370.00	2.594	2.602	-0.008		4223625	2.50			75085	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.594	2.602	-0.008	1.000	99440	0.0530		106	46.5	
413.00 > 169.00	2.594	2.602	-0.008	1.000	49614		2.00(0.84-2.52)	106	192	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.601	2.607	-0.006	1.000	109944	0.0497		104	4320	
449.00 > 99.00	2.594	2.607	-0.013	0.997	25681		4.28(1.94-5.82)	104	516	
D 18 13C4 PFOS										
503.00 > 80.00	2.960	2.966	-0.006	1.141	3897319	2.30		96.4	54997	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.960	2.969	-0.009	1.000	81060	0.0473		102	1294	
499.00 > 99.00	2.960	2.969	-0.009	1.000	18232		4.45(2.31-6.93)	102	190	
D 19 13C5 PFNA										
468.00 > 423.00	2.966	2.972	-0.006	1.144	3126930	2.50		100	90370	
20 Perfluorononanoic acid										
463.00 > 419.00	2.966	2.973	-0.007	1.000	59051	0.0470		94.1	90.6	
463.00 > 169.00	2.966	2.973	-0.007	1.000	16478		3.58(1.90-5.69)	94.1	635	
D 21 13C8 FOSA										
506.00 > 78.00	3.303	3.305	-0.002	1.273	6148839	2.50		99.8	58839	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.303	3.307	-0.004	1.000	116163	0.0483		96.5	3248	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.319	3.320	-0.001	1.000	28600	0.0507		106	941	
D 26 M2-8:2FTS										
529.00 > 81.00	3.319	3.320	-0.001	1.279	1081959	2.44		102	26125	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.327	3.331	-0.004	1.000	50417	0.0476		95.1	221	
513.00 > 169.00	3.327	3.331	-0.004	1.000	9703		5.20(2.36-7.09)	95.1	608	
D 23 13C2 PFDA										
515.00 > 470.00	3.327	3.332	-0.005	1.282	2631089	2.61		104	42148	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.479	3.482	-0.003	1.341	793186	2.41		96.4	35164	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.479	3.488	-0.009	1.000	17472	0.0529		106	269	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.638	3.636	0.002	1.000	50302	0.0490		102	2246	
599.00 > 99.00	3.638	3.636	0.002	1.000	16967		2.96(1.39-4.16)	102	337	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.648	3.649	-0.001	1.406	894414	2.51		100	1475	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.648	3.655	-0.007	0.997	42207	0.0514		103	108	
563.00 > 169.00	3.657	3.655	0.002	1.000	7018		6.01(2.12-6.36)	103	945	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.657	3.655	0.002	1.003	20933	0.0603		121	428	
D 30 13C2 PFUnA										
565.00 > 520.00	3.657	3.655	0.002	1.410	1889085	2.53		101	67727	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.943	3.942	0.001	1.000	40258	0.0501		100	5.6	
613.00 > 169.00	3.943	3.942	0.001	1.000	7426		5.42(2.13-6.40)	100	165	
D 36 13C2 PFDaA										
615.00 > 570.00	3.943	3.942	0.001	1.520	1973562	2.60		104	11115	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.190	4.196	-0.006	1.000	38439	0.0497		99.5	5.9	
663.00 > 169.00	4.190	4.196	-0.006	1.000	11492		3.34(1.25-3.76)	99.5	176	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.427	4.430	-0.003	1.000	8117	0.0501		100	105	
713.00 > 219.00	4.416	4.430	-0.014	0.998	6299		1.29(0.71-2.13)	100	63.2	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.427	4.430	-0.003	1.706	1590115	2.37		94.7	10490	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.820	4.824	-0.004	1.000	91671	NC			6.5	
813.00 > 169.00	4.820	4.824	-0.004	1.000	13635		6.72(2.86-8.58)		166	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.820	4.825	-0.005	1.858	3053517	2.37		94.7	9308	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.167	5.170	-0.003	1.000	45210	NC			8.7	
913.00 > 169.00	5.167	5.170	-0.003	1.000	5394		8.38(3.83-11.48)		62.1	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL2_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_003.d

Injection Date: 14-Mar-2018 14:07:33

Instrument ID: A8_N

Lims ID: IC L2 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 11

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

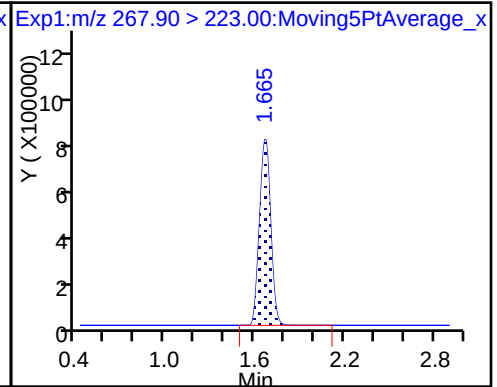
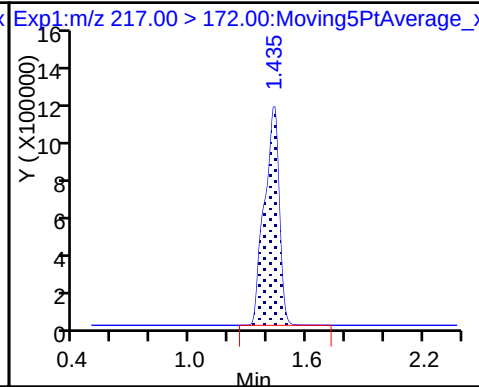
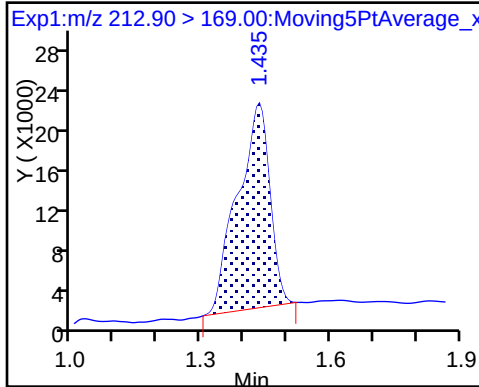
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

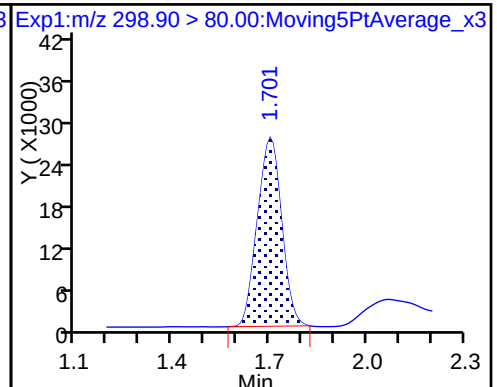
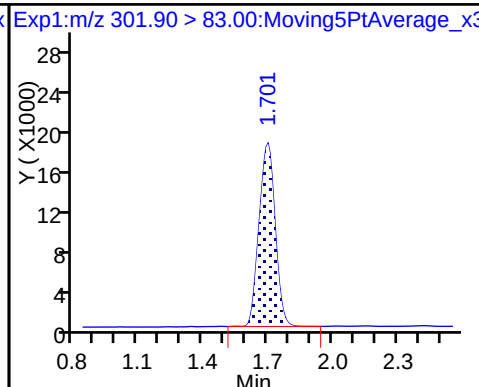
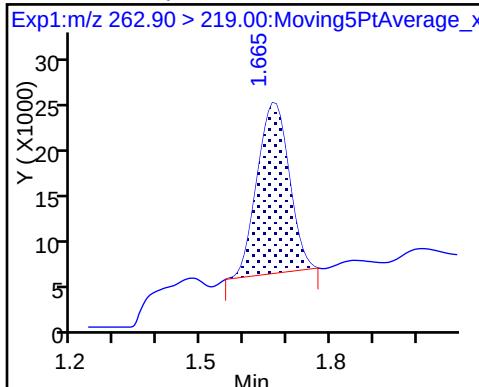
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

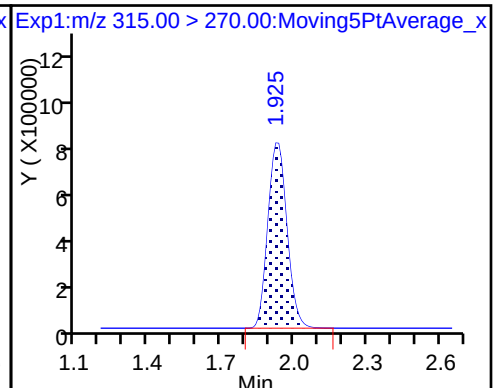
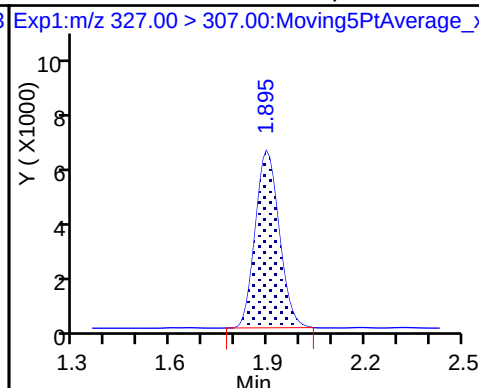
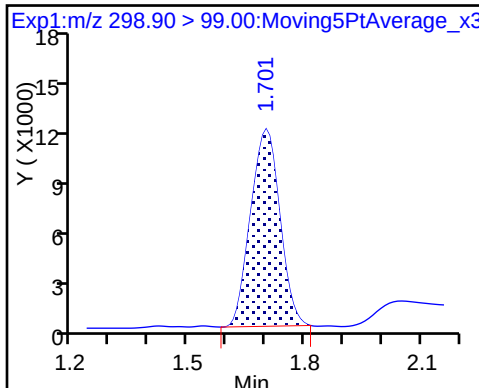
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

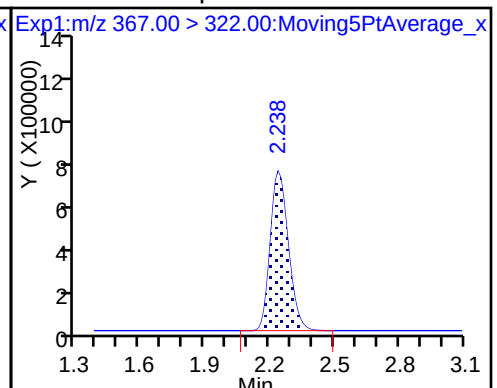
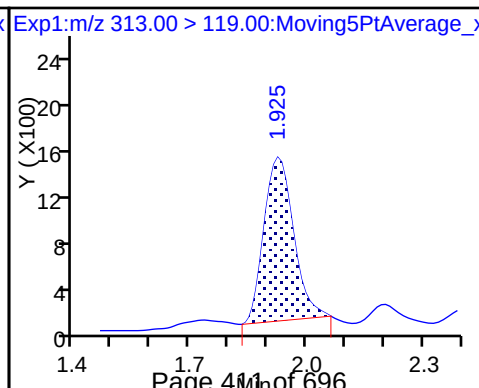
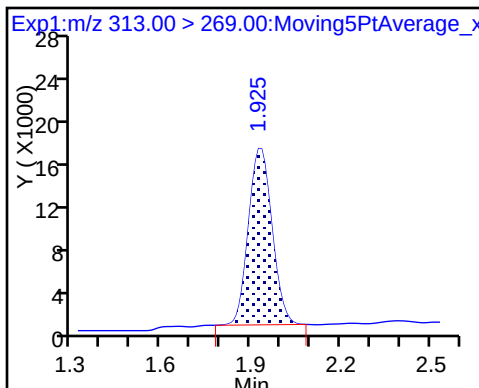
De 7 13C2 PFHxA



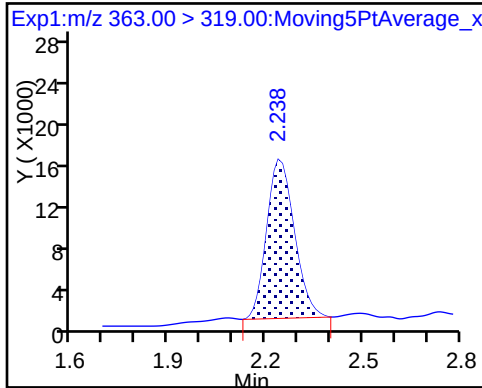
6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

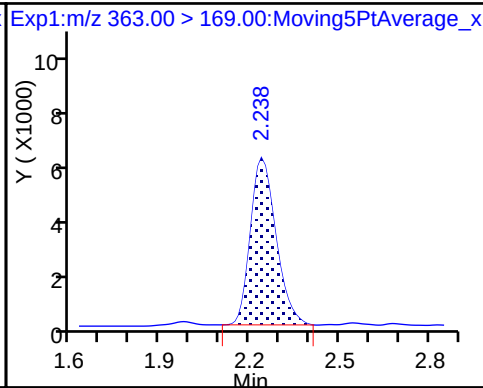
D 9 13C4-PFHpA



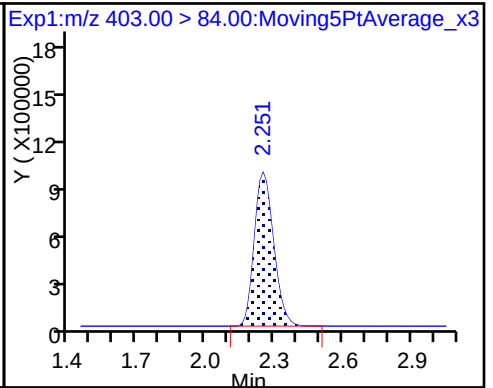
10 Perfluoroheptanoic acid



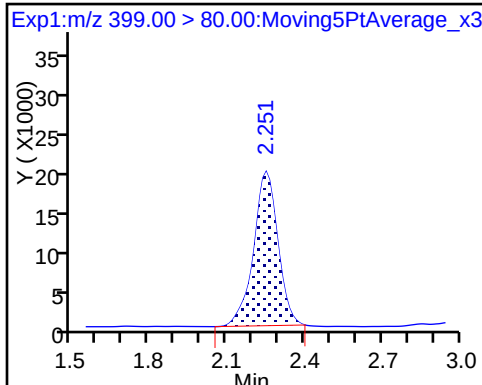
10 Perfluoroheptanoic acid



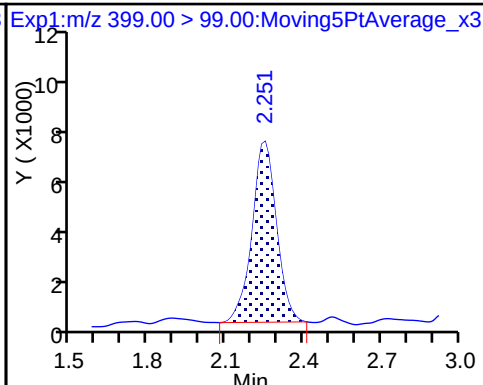
D 11 18O2 PFHxS



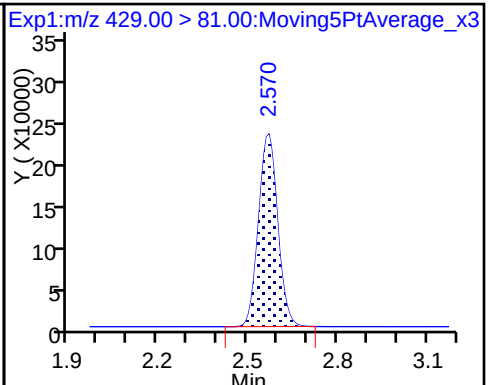
8 Perfluorohexanesulfonic acid



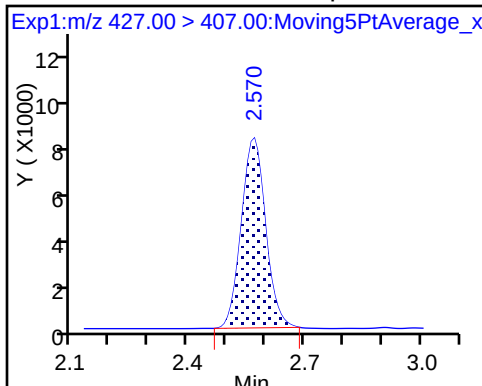
8 Perfluorohexanesulfonic acid



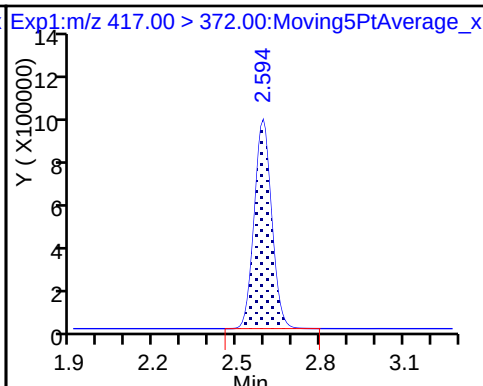
D 12 M2-6:2FTS



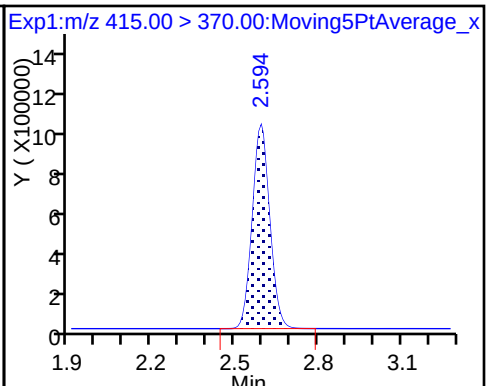
13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate



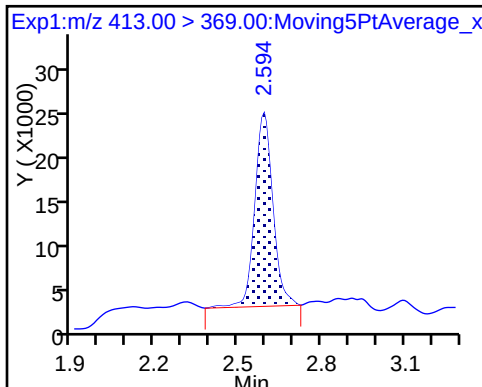
D 14 13C4 PFOA



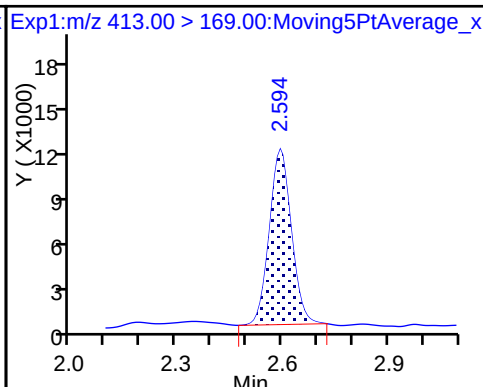
* 62 13C2-PFOA



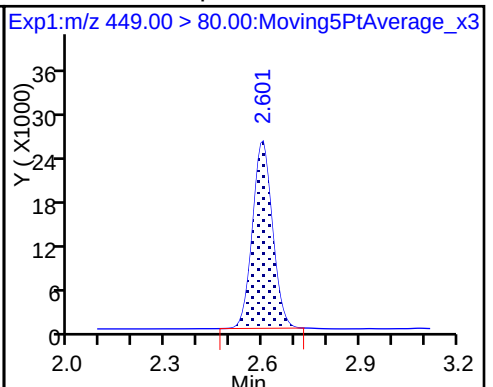
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid



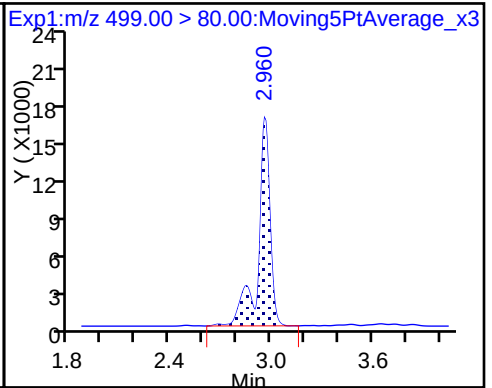
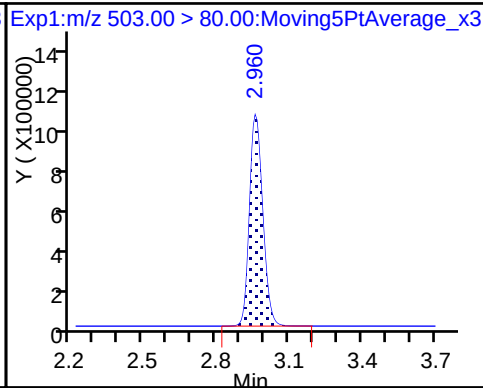
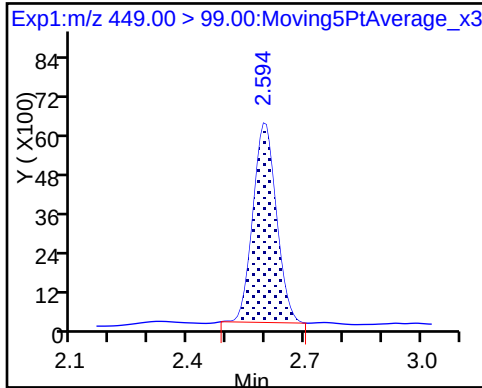
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

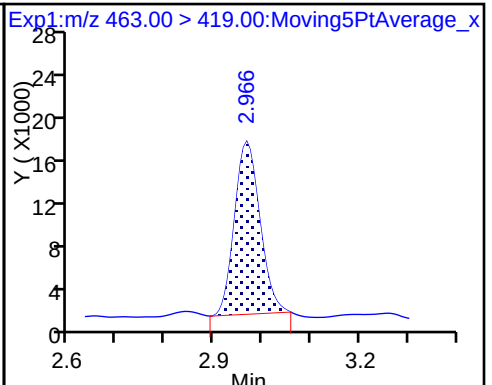
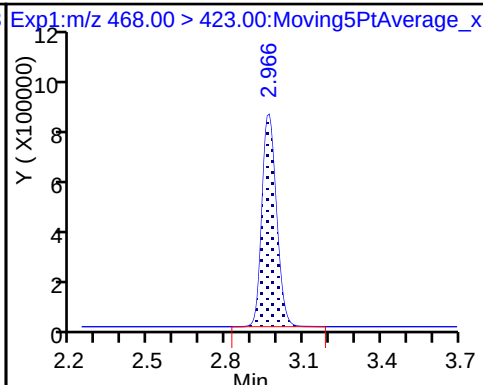
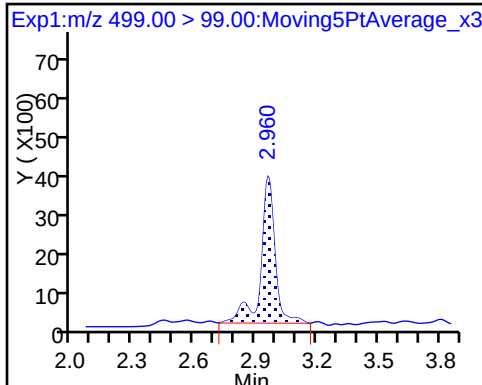
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

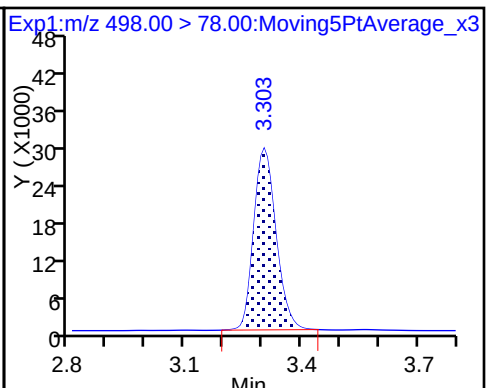
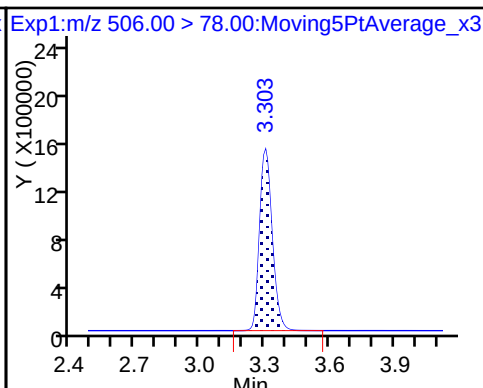
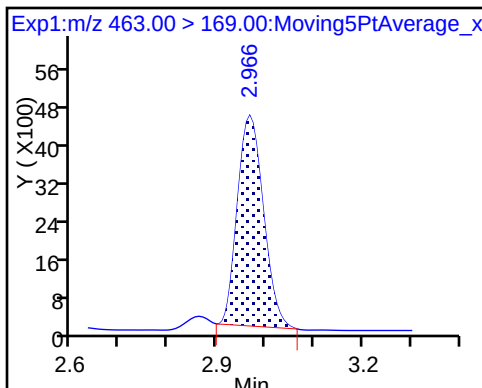
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

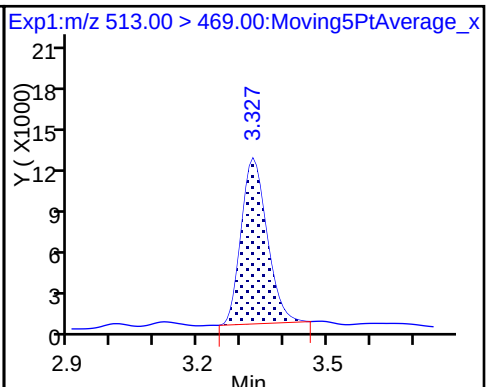
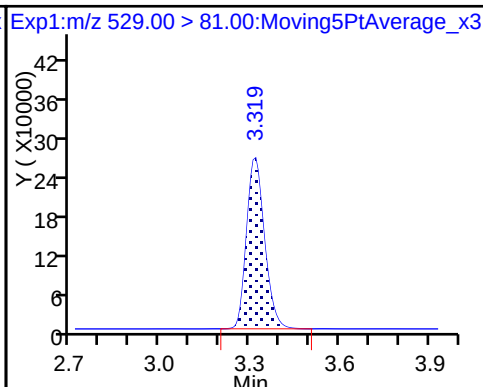
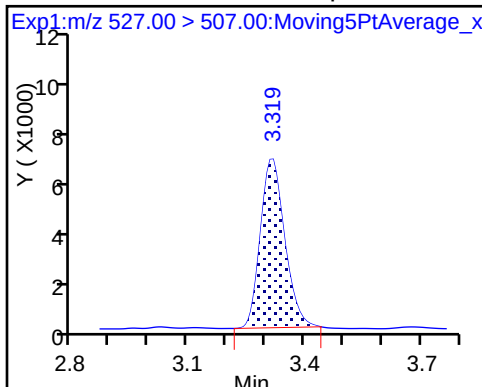
22 Perfluorooctane Sulfonamide



25 Sodium 1H,1H,2H,2H-perfluorodecanoate

De26 M2-8:2FTS

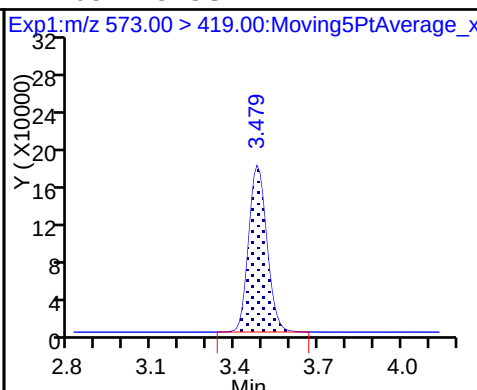
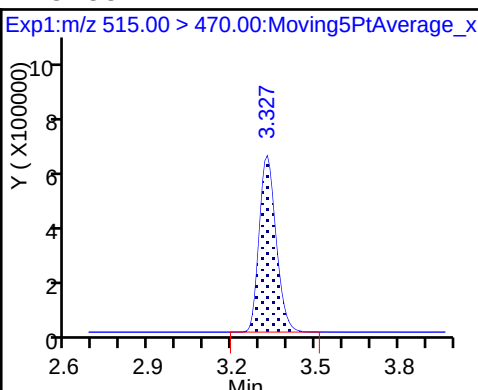
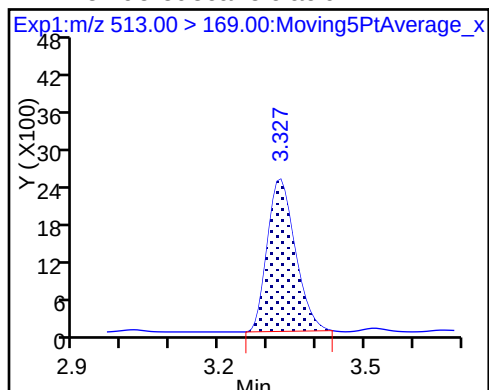
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

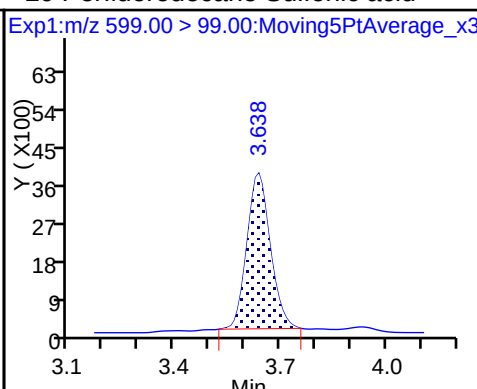
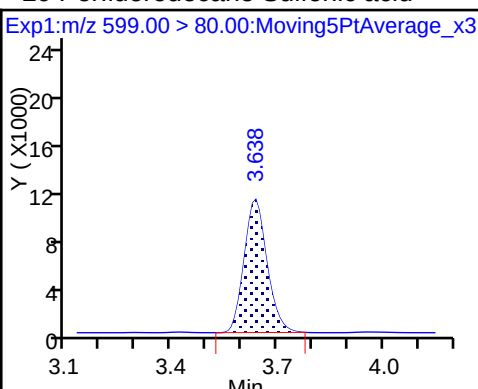
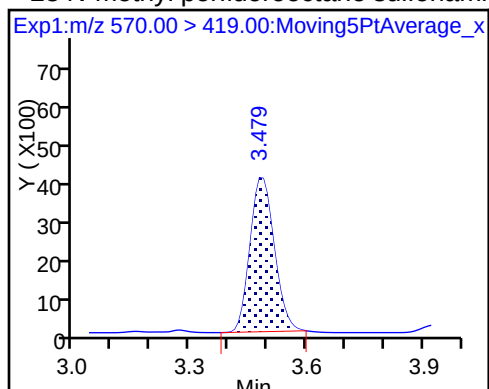
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonamid

29 Perfluorodecane Sulfonic acid

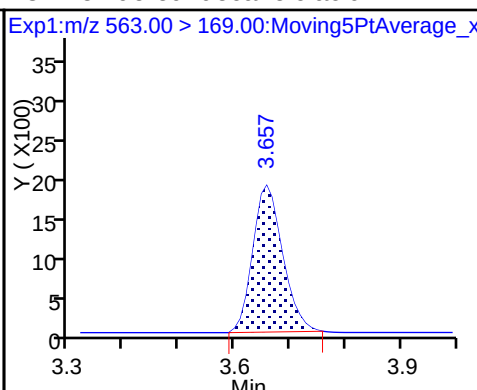
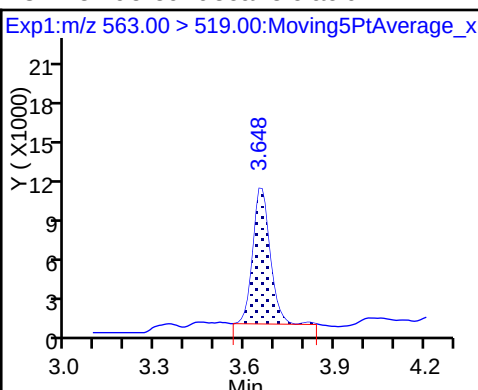
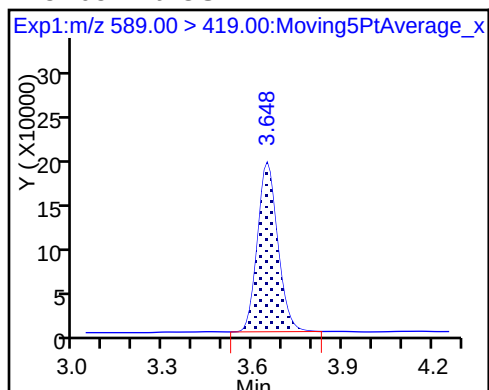
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

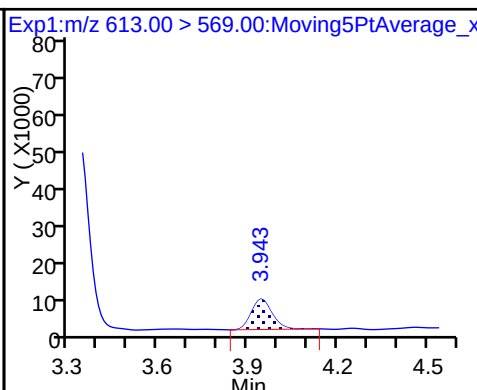
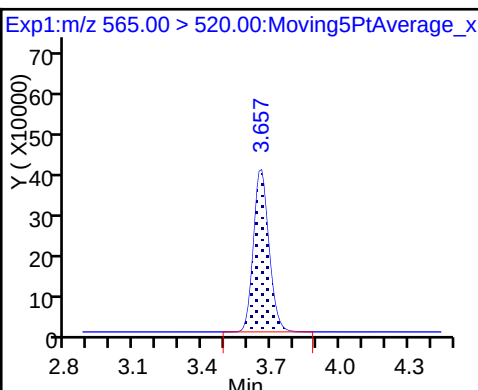
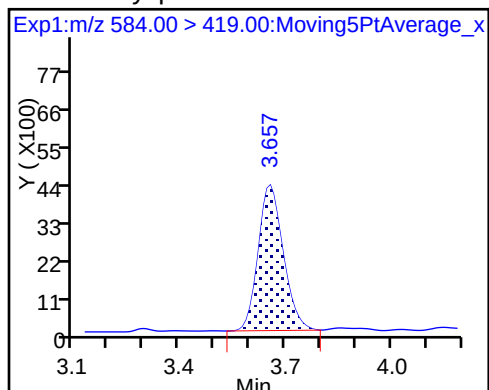
31 Perfluoroundecanoic acid

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

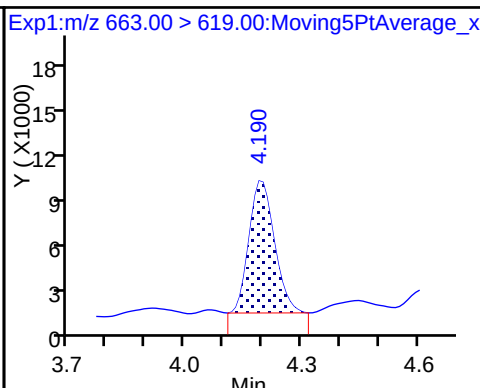
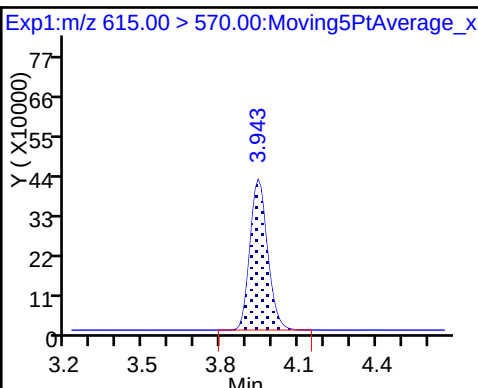
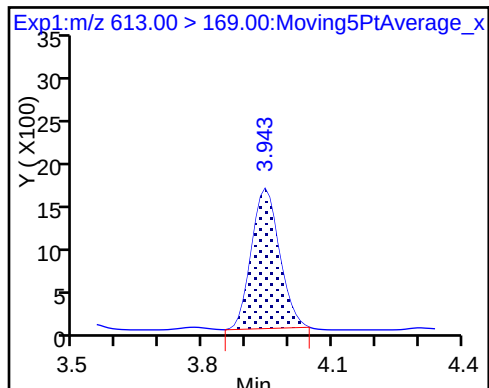
37 Perfluorododecanoic acid



37 Perfluorododecanoic acid

D 36 13C2 PFDaA

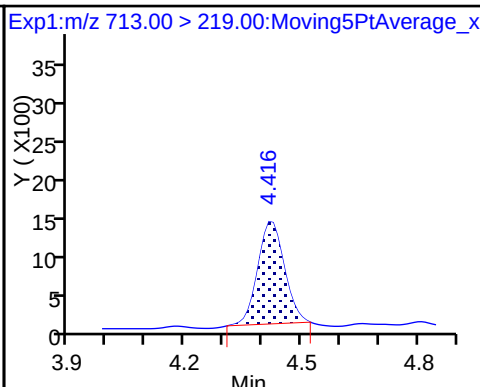
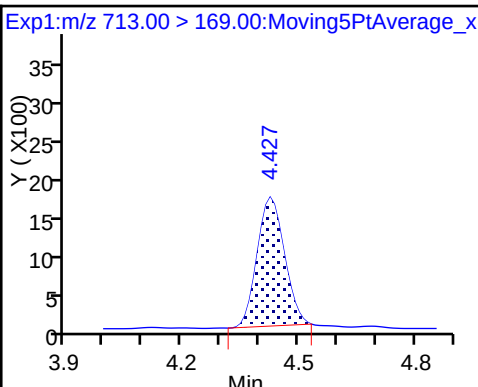
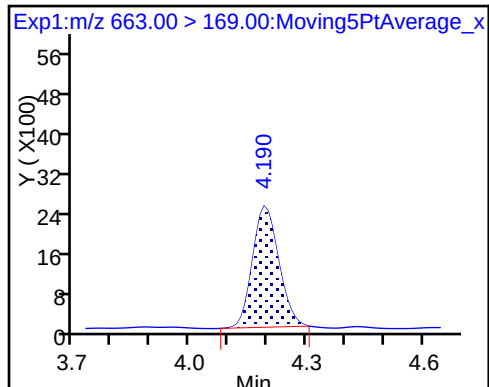
41 Perfluorotridecanoic acid



41 Perfluorotridecanoic acid

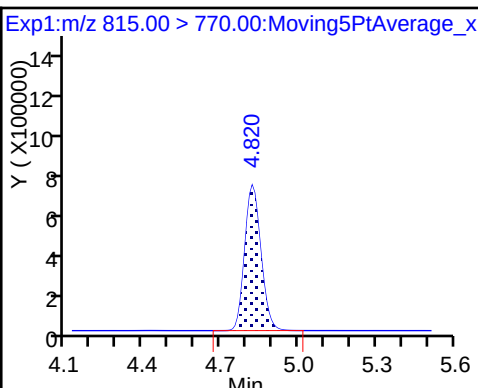
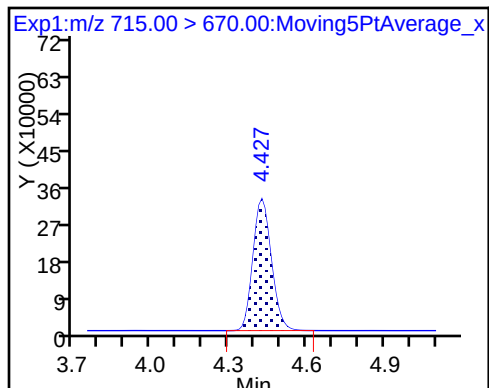
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_004.d
 Lims ID: IC L3 Full
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 14-Mar-2018 14:15:24 ALS Bottle#: 12 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 15-Mar-2018 08:29:50 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK055

First Level Reviewer: hannigana

Date: 14-Mar-2018 14:58:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.434	1.433	0.001	0.554	5976824	2.46		98.6	106004	
2 Perfluorobutyric acid										
212.90 > 169.00	1.434	1.433	0.001	1.000	538630	0.2435		97.4	287	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.673	1.673	0.0	1.000	445329	0.2304		92.2	114	
D 3 13C5-PFPeA										
267.90 > 223.00	1.673	1.673	0.0	0.647	4125093	2.54		101	136243	
D 47 13C3-PFBS										
301.90 > 83.00	1.700	1.703	-0.003	0.657	96773	2.28		98.0	433	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.708	1.707	0.001	1.005	705287	0.2219		100	1411	
298.90 > 99.00	1.708	1.707	0.001	1.005	306940		2.30(1.25-3.74)	100	1183	
D 60 M2-4:2FTS										
329.00 > 81.00	1.904	1.900	0.004	0.736	736761	NC			10266	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.904	1.902	0.002	1.000	157984	0.2314		99.1	10140	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.935	1.938	-0.003	1.000	434674	0.2438		97.5	1460	
313.00 > 119.00	1.935	1.938	-0.003	1.000	44609		9.74(5.03-15.10)	97.5	848	
D 7 13C2 PFHxA										
315.00 > 270.00	1.935	1.938	-0.003	0.748	4419581	2.49		99.8	104566	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.237	2.249	-0.012	1.000	450709	0.2513		101	821	
363.00 > 169.00	2.237	2.249	-0.012	1.000	178880		2.52(1.13-3.40)	101	2817	
D 9 13C4-PFHpA										
367.00 > 322.00	2.237	2.249	-0.012	0.865	4217304	2.51		101	104389	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.250	2.262	-0.012	1.000	601108	0.2209		97.1	3870	
399.00 > 99.00	2.250	2.262	-0.012	1.000	193597		3.10(1.50-4.49)	97.1	608	
D 11 18O2 PFHxS										
403.00 > 84.00	2.250	2.262	-0.012	0.870	5731606	2.31		97.7	61717	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.562	2.577	-0.015	1.000	172556	0.2337		98.6	6631	
D 12 M2-6:2FTS										
429.00 > 81.00	2.562	2.577	-0.015	0.991	1027059	2.30		96.8	29271	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.586	2.602	-0.016	1.000	437730	0.2298		91.9	195	
413.00 > 169.00	2.586	2.602	-0.016	1.000	237343		1.84(0.84-2.52)	91.9	913	
* 62 13C2-PFOA										
415.00 > 370.00	2.586	2.602	-0.016		4257333	2.50			76610	
D 14 13C4 PFOA										
417.00 > 372.00	2.586	2.602	-0.016	1.000	4095323	2.53		101	96281	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.594	2.607	-0.013	1.000	525960	0.2296		96.5	17746	
449.00 > 99.00	2.594	2.607	-0.013	1.000	138984		3.78(1.94-5.82)	96.5	3228	
D 18 13C4 PFOS										
503.00 > 80.00	2.948	2.966	-0.018	1.140	4034460	2.37		99.0	73842	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.953	2.969	-0.016	1.002	411222	0.2320		100	8489	
499.00 > 99.00	2.948	2.969	-0.021	1.000	89511		4.59(2.31-6.93)	100	1047	
D 19 13C5 PFNA										
468.00 > 423.00	2.953	2.972	-0.019	1.142	3293525	2.62		105	79703	
20 Perfluorononanoic acid										
463.00 > 419.00	2.953	2.973	-0.020	1.000	326734	0.2472		98.9	529	
463.00 > 169.00	2.953	2.973	-0.020	1.000	79858		4.09(1.90-5.69)	98.9	2760	
D 21 13C8 FOSA										
506.00 > 78.00	3.296	3.305	-0.009	1.274	6316094	2.54		102	59010	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.296	3.307	-0.011	1.000	611619	0.2474		98.9	15519	
D 26 M2-8:2FTS										
529.00 > 81.00	3.311	3.320	-0.009	1.280	1143567	2.56		107	40140	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.311	3.320	-0.009	1.000	135310	0.2270		94.8	5406	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.319	3.331	-0.012	1.000	271134	0.2648		106	1167	
513.00 > 169.00	3.319	3.331	-0.012	1.000	44848		6.05(2.36-7.09)	106	1496	
D 23 13C2 PFDA										
515.00 > 470.00	3.319	3.332	-0.013	1.283	2542258	2.50		100.0	38679	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.470	3.482	-0.012	1.342	778323	2.35		93.9	24390	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.479	3.488	-0.009	1.003	78085	0.2409		96.3	1086	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.629	3.636	-0.007	1.000	252605	0.2379		98.7	7889	
599.00 > 99.00	3.629	3.636	-0.007	1.000	91273		2.77(1.39-4.16)	98.7	1520	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.639	3.649	-0.010	1.407	917080	2.55		102	1612	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.648	3.655	-0.007	1.000	222626	0.2623		105	694	
563.00 > 169.00	3.648	3.655	-0.007	1.000	43269		5.15(2.12-6.36)	105	3553	
D 30 13C2 PFUnA										
565.00 > 520.00	3.648	3.655	-0.007	1.411	1952789	2.59		104	60835	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.648	3.655	-0.007	1.003	88954	0.2498		99.9	1782	
D 36 13C2 PFDoA										
615.00 > 570.00	3.943	3.942	0.001	1.525	1846309	2.41		96.4	8440	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.943	3.942	0.001	1.000	184508	0.2453		98.1	28.6	
613.00 > 169.00	3.943	3.942	0.001	1.000	52382		3.52(2.13-6.40)	98.1	1366	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.200	4.196	0.004	1.000	171629	0.2374		95.0	26.3	
663.00 > 169.00	4.200	4.196	0.004	1.000	51815		3.31(1.25-3.76)	95.0	620	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.437	4.430	0.007	1.716	1652398	2.44		97.6	11513	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.437	4.430	0.007	1.000	42319	0.2513		101	531	
713.00 > 219.00	4.437	4.430	0.007	1.000	30981		1.37(0.71-2.13)	101	312	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.839	4.824	0.015	0.998	312681	NC			21.1	
813.00 > 169.00	4.848	4.824	0.024	1.000	59741		5.23(2.86-8.58)		686	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.848	4.825	0.023	1.875	3161940	2.43		97.3	10440	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.190	5.170	0.020	1.000	265450	NC			50.0	
913.00 > 169.00	5.190	5.170	0.020	1.000	32997		8.04(3.83-11.48)		388	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL3_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_004.d

Injection Date: 14-Mar-2018 14:15:24

Instrument ID: A8_N

Lims ID: IC L3 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 12

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

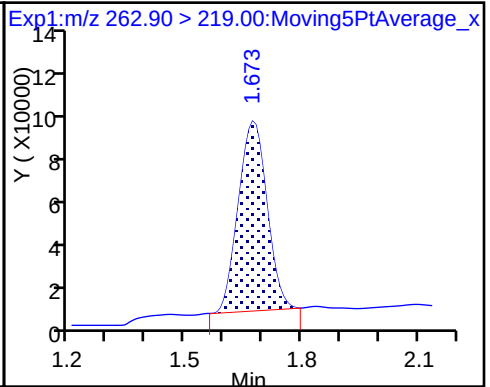
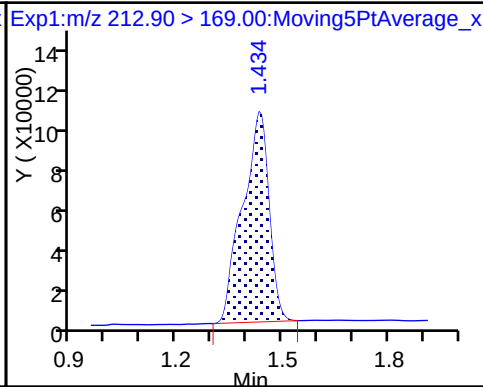
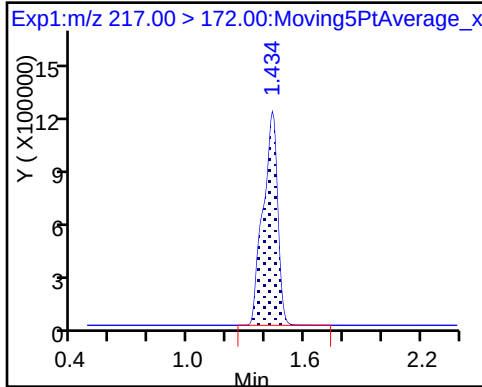
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

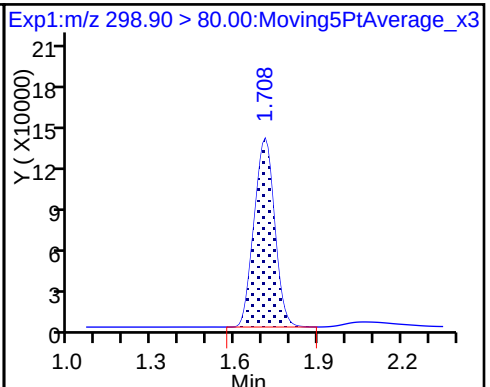
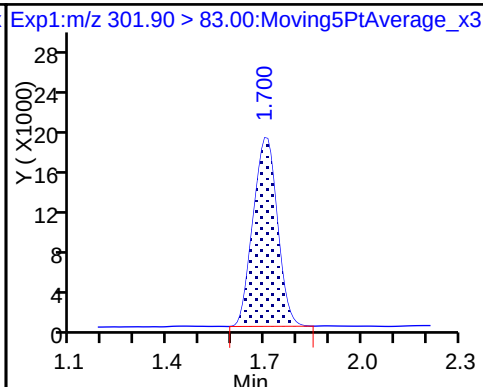
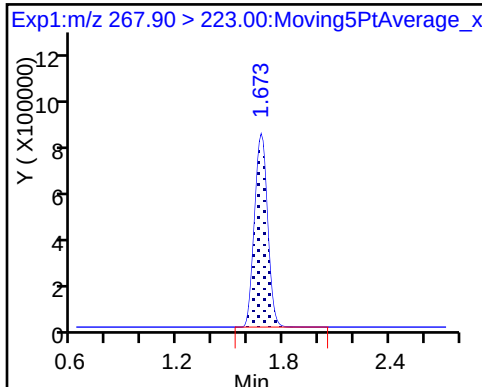
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

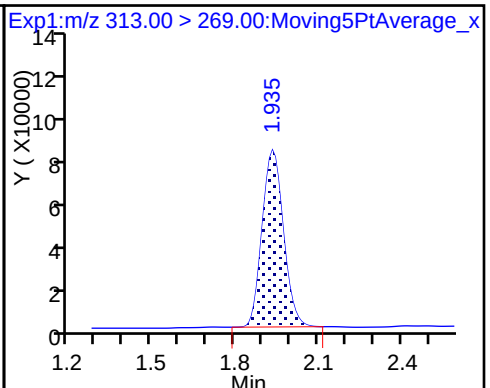
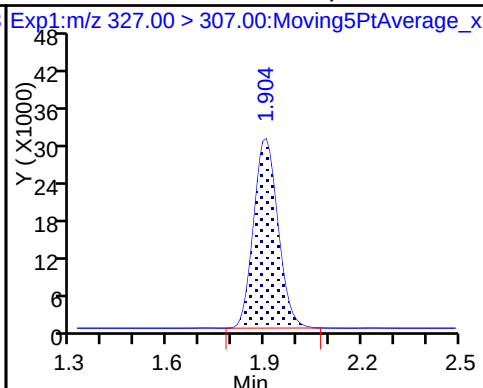
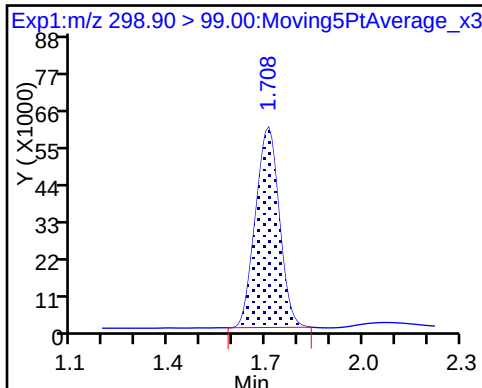
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

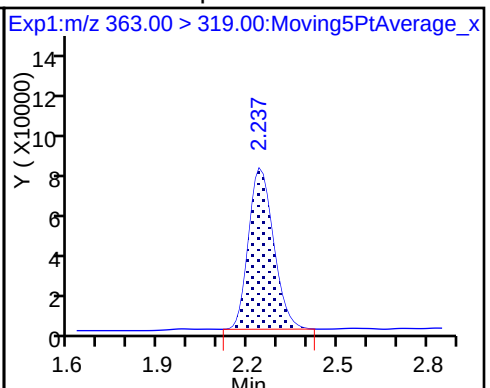
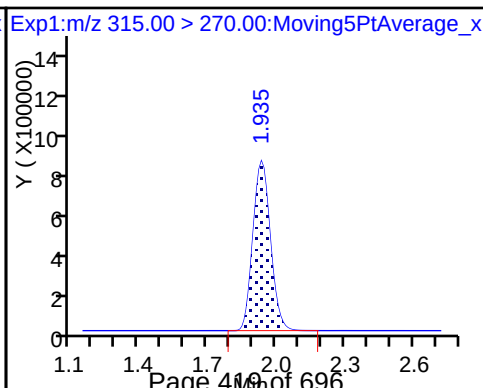
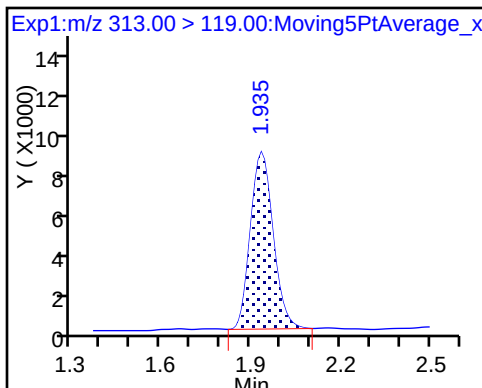
6 Perfluorohexanoic acid



6 Perfluorohexanoic acid

D 7 13C2 PFHxA

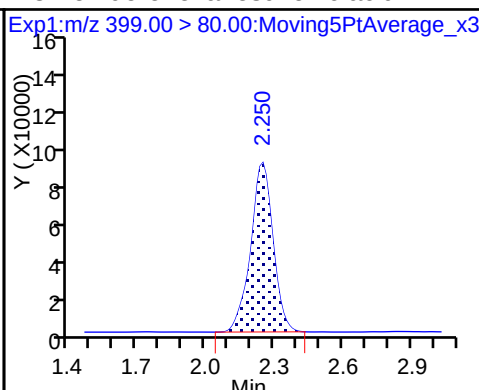
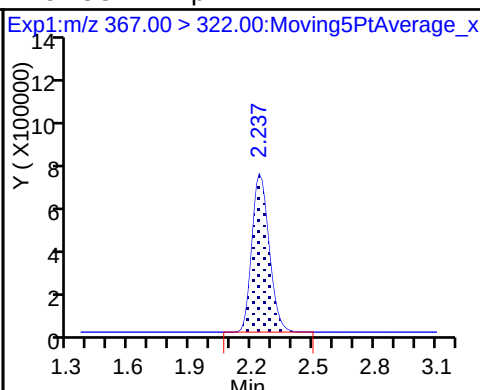
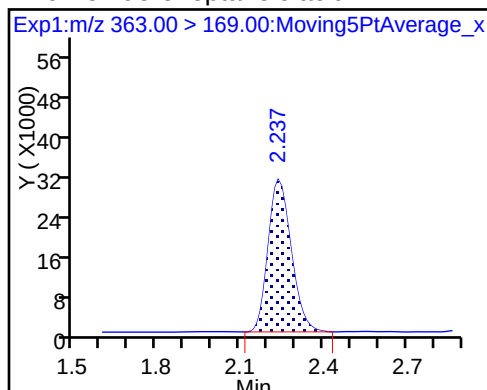
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

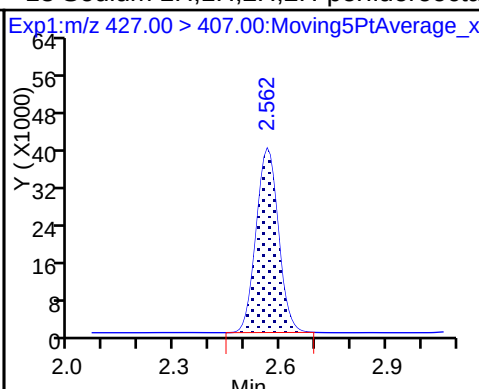
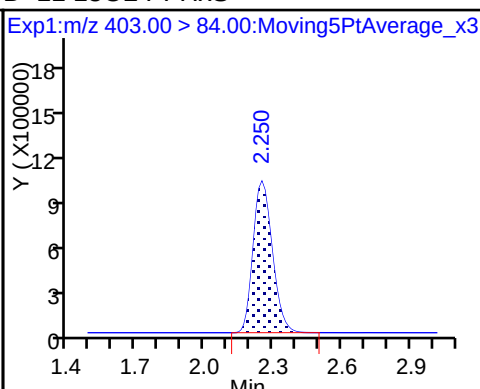
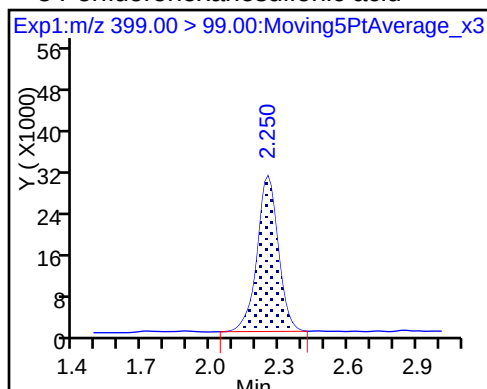
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

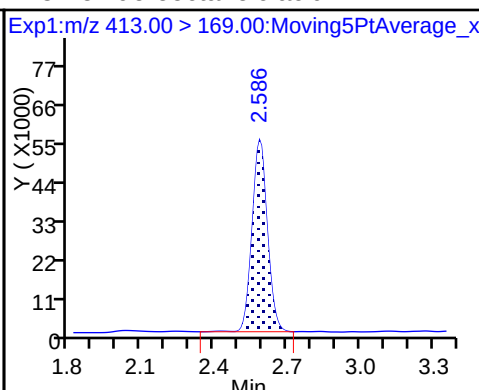
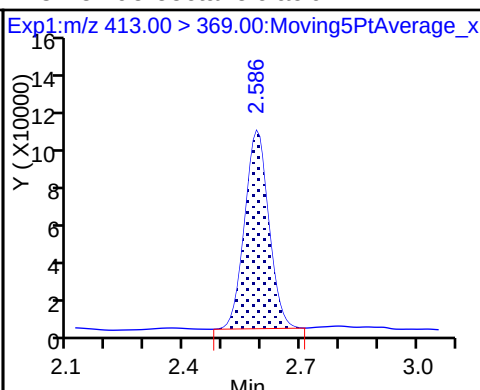
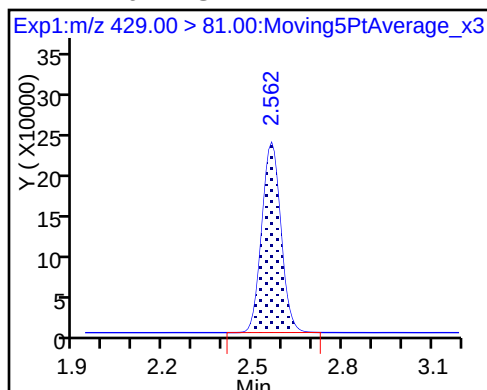
13 Sodium 1H,1H,2H,2H-perfluorooctane



D 12 M2-6:2FTS

15 Perfluorooctanoic acid

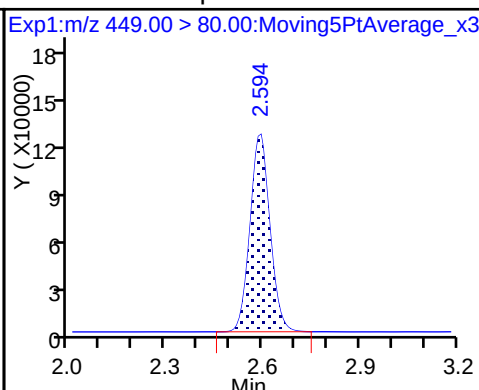
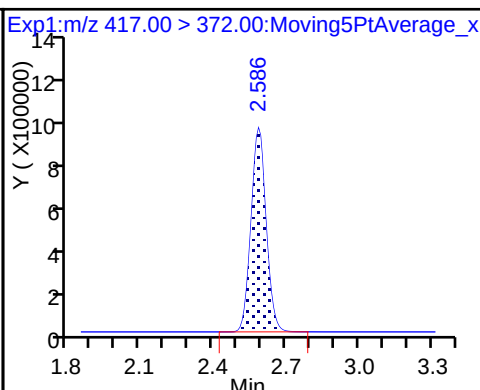
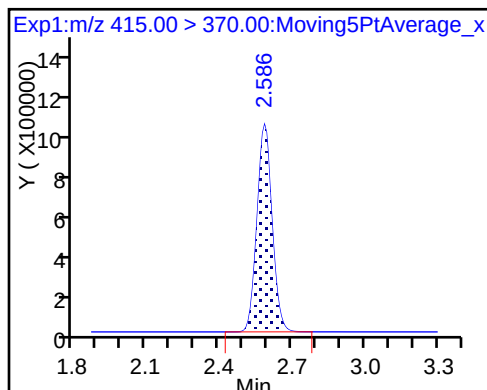
15 Perfluorooctanoic acid



* 62 13C2-PFOA

D 14 13C4 PFOA

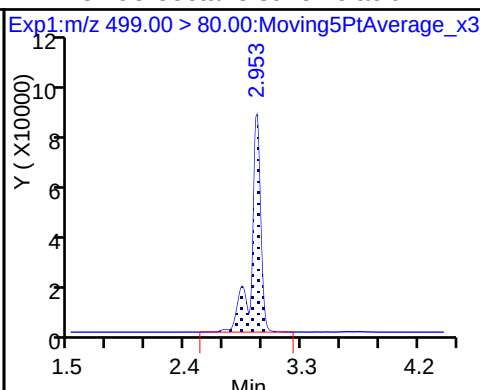
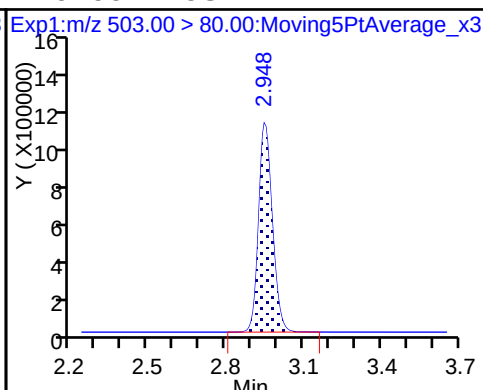
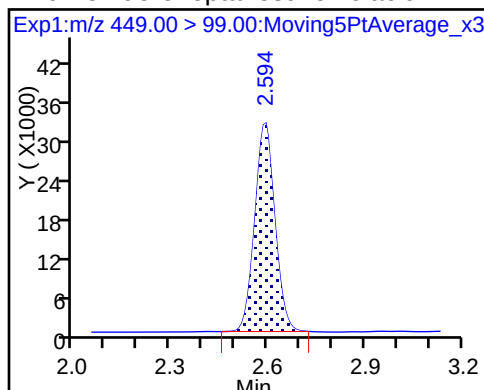
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

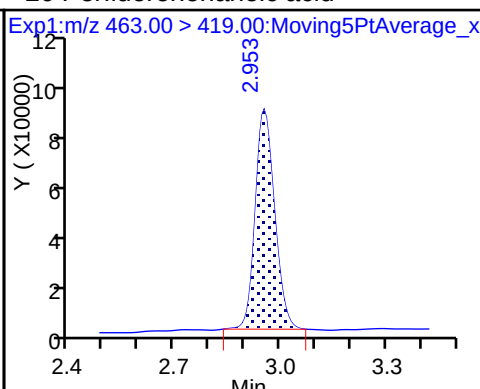
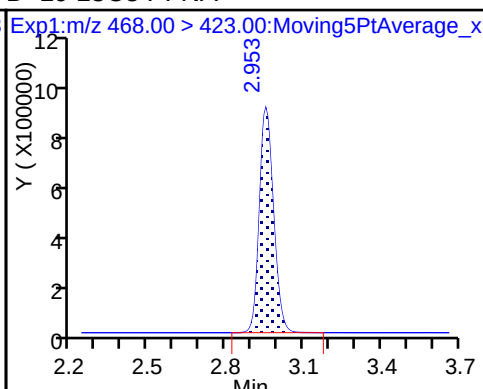
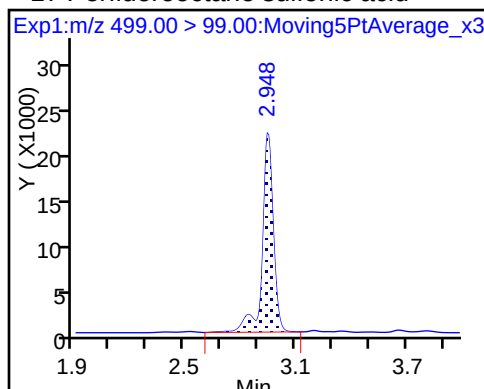
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

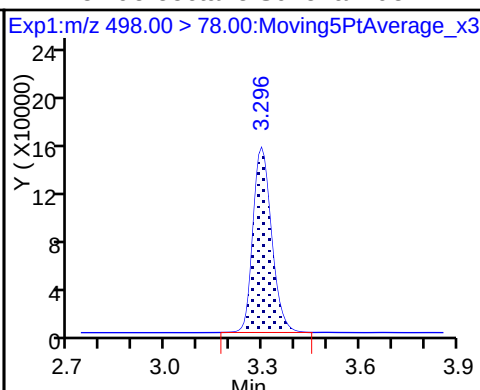
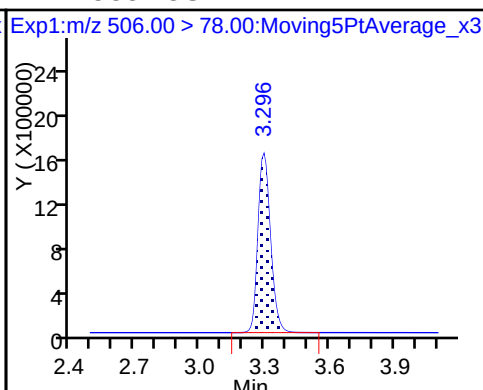
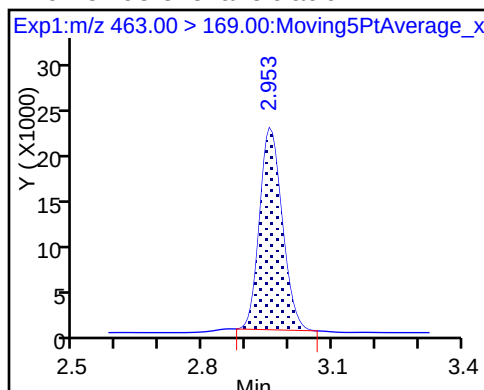
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

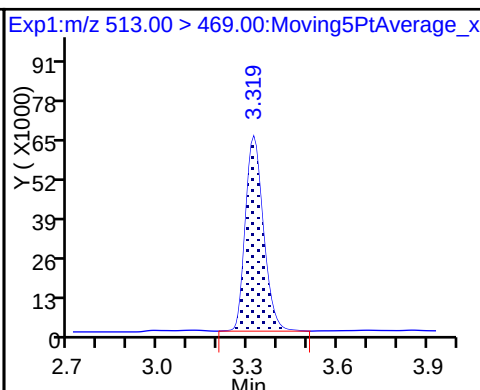
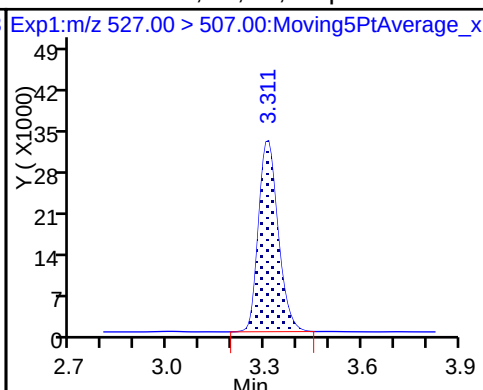
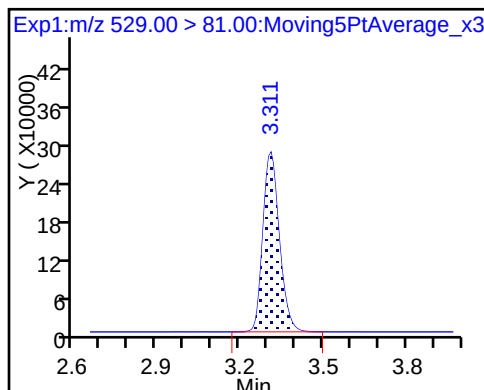
22 Perfluorooctane Sulfonamide



D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

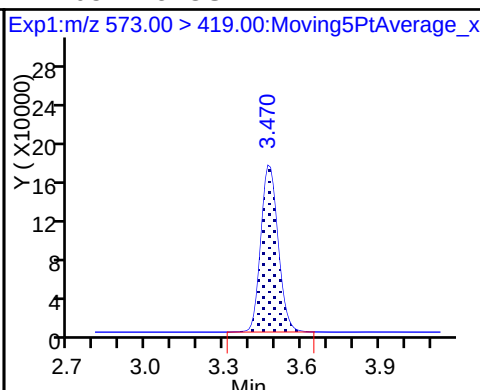
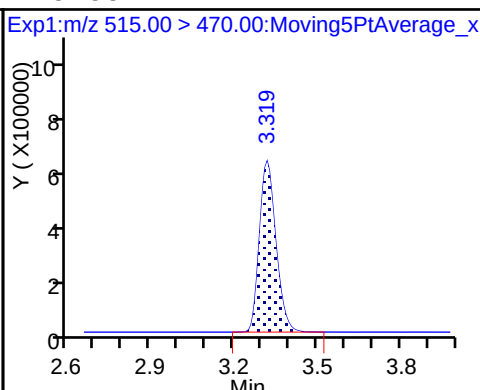
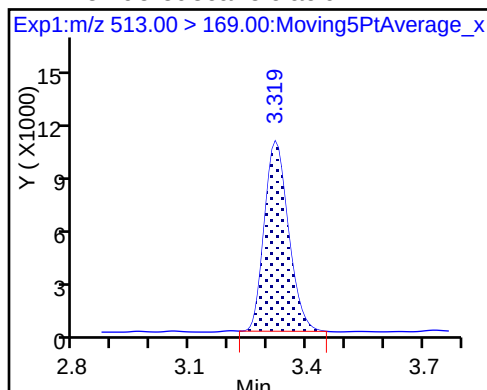
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

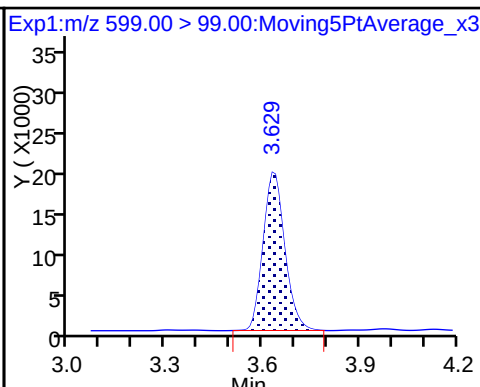
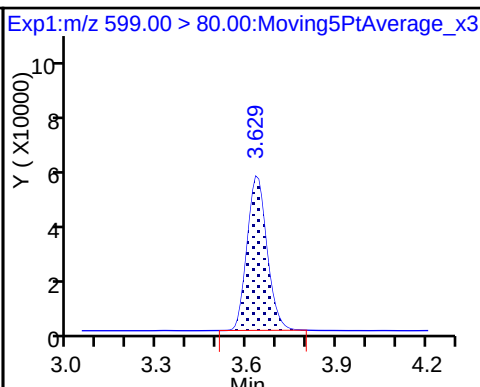
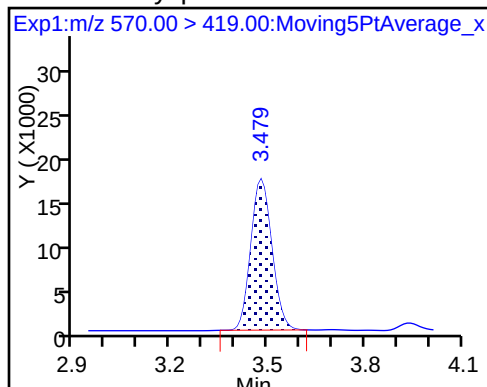
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

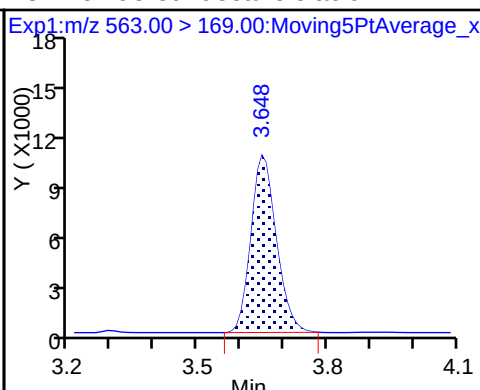
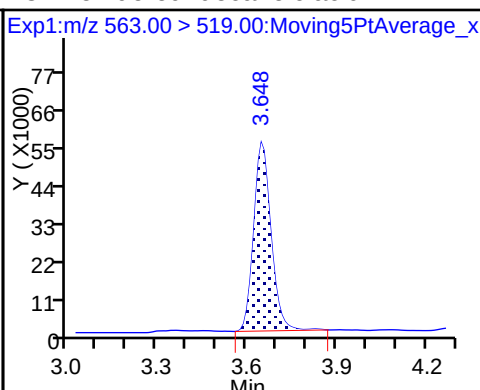
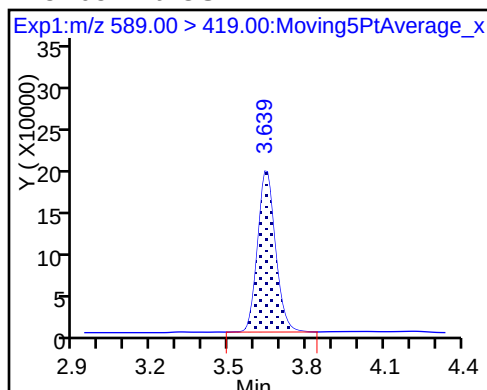
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid

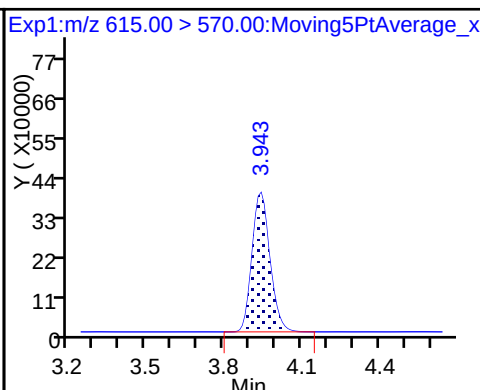
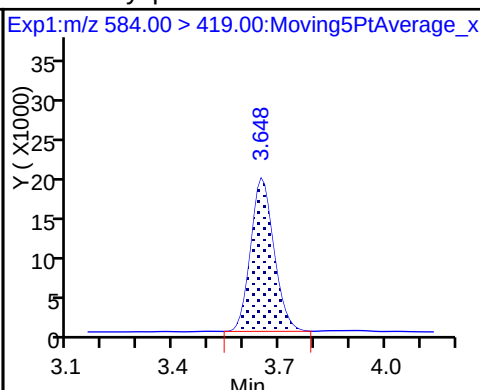
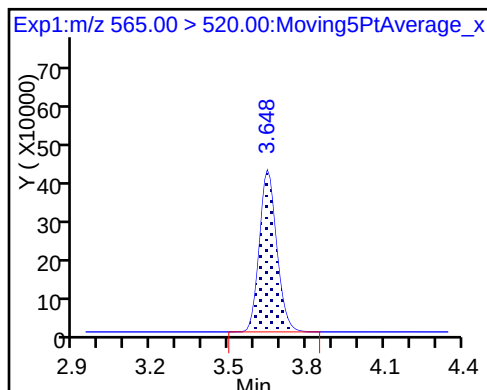
31 Perfluoroundecanoic acid



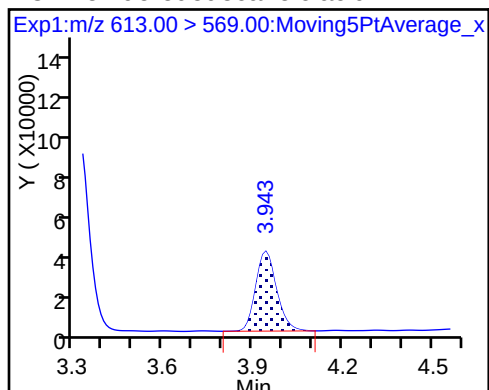
D 30 13C2 PFUnA

33 N-ethyl perfluorooctane sulfonamid

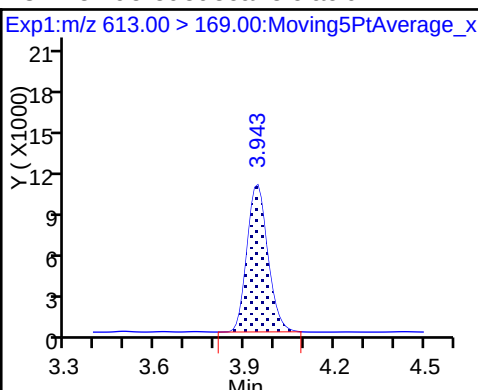
D 36 13C2 PFDaA



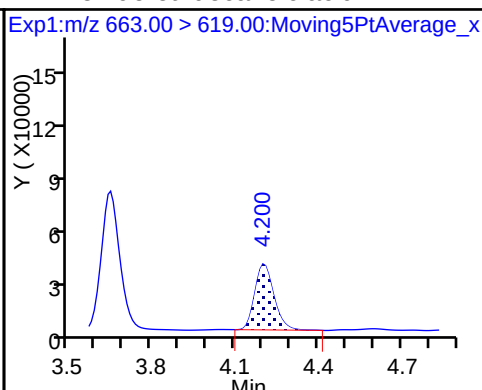
37 Perfluorododecanoic acid



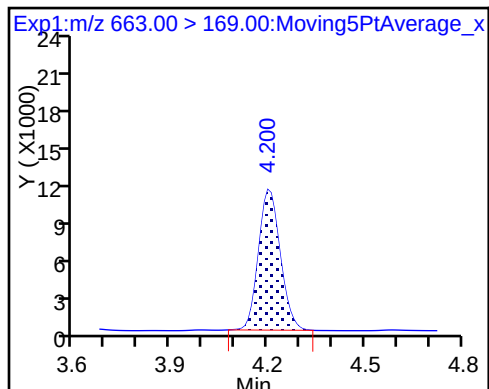
37 Perfluorododecanoic acid



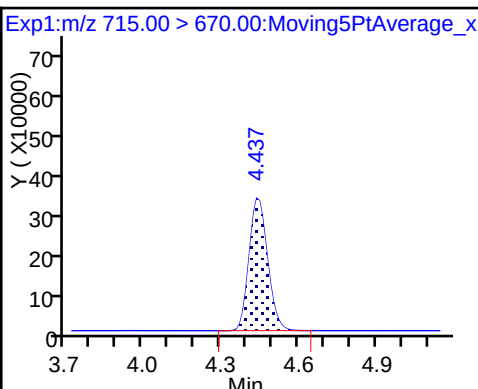
41 Perfluorotridecanoic acid



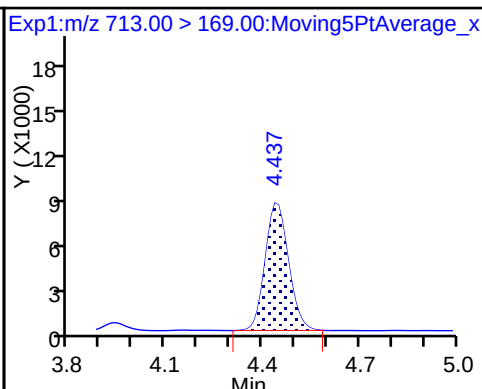
41 Perfluorotridecanoic acid



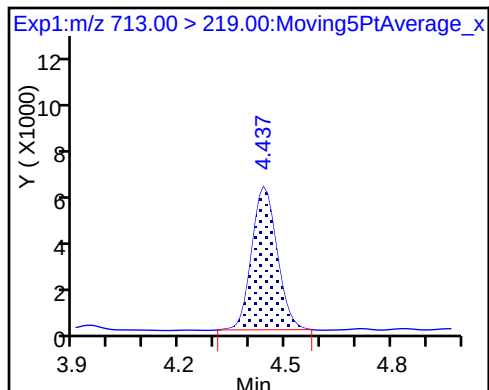
D 43 13C2-PFTeDA



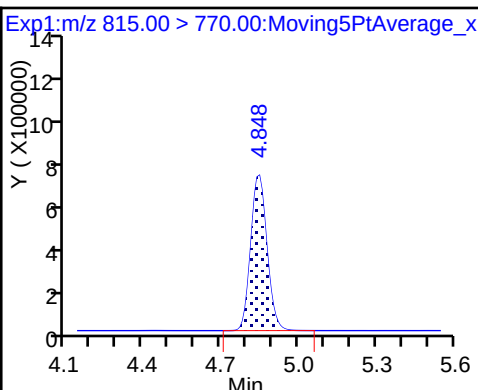
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_005.d
 Lims ID: IC L4 Full
 Client ID:
 Sample Type: ICIS Calib Level: 4
 Inject. Date: 14-Mar-2018 14:23:16 ALS Bottle#: 13 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 15-Mar-2018 08:29:54 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK055

First Level Reviewer: hannigana

Date: 14-Mar-2018 14:59:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.433	0.001	1.000	2135395	0.9636		96.4	1143	
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.433	0.001	0.555	5987787	2.44		97.8	96640	
D 3 13C5-PFPeA										
267.90 > 223.00	1.674	1.673	0.001	0.647	4053545	2.47		98.7	159652	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.674	1.673	0.001	1.000	1828513	0.9629		96.3	537	
D 47 13C3-PFBS										
301.90 > 83.00	1.700	1.703	-0.003	0.657	95786	2.23		96.1	360	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.700	1.707	-0.007	1.000	2838516	0.9021		102	5225	
298.90 > 99.00	1.700	1.707	-0.007	1.000	1168763		2.43(1.25-3.74)	102	4321	
D 60 M2-4:2FTS										
329.00 > 81.00	1.895	1.900	-0.005	0.732	743421	NC			11926	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.895	1.902	-0.007	1.000	638735	0.9454		101	30771	
D 7 13C2 PFHxA										
315.00 > 270.00	1.936	1.938	-0.002	0.748	4450458	2.49		99.5	140228	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.936	1.938	-0.002	1.000	1721120	0.9586		95.9	5528	
313.00 > 119.00	1.936	1.938	-0.002	1.000	160601		10.72(5.03-15.10)	95.9	3785	
D 9 13C4-PFHpA										
367.00 > 322.00	2.238	2.249	-0.011	0.865	4300707	2.54		102	93313	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.238	2.249	-0.011	1.000	1723802	0.9425		94.2	3388	
363.00 > 169.00	2.238	2.249	-0.011	1.000	678381		2.54(1.13-3.40)	94.2	13108	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.251	2.262	-0.011	0.870	5996185	2.39		101	86441	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.251	2.262	-0.011	1.000	2372721	0.8335		91.6	14136	
399.00 > 99.00	2.251	2.262	-0.011	1.000	787312		3.01(1.50-4.49)	91.6	2686	
D 12 M2-6:2FTS										
429.00 > 81.00	2.563	2.577	-0.014	0.991	1113542	2.47		104	35893	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.563	2.577	-0.014	1.000	685355	0.8560		90.3	19442	
D 14 13C4 PFOA										
417.00 > 372.00	2.587	2.602	-0.015	1.000	4042821	2.48		99.1	83557	
* 62 13C2-PFOA										
415.00 > 370.00	2.587	2.602	-0.015		4298154	2.50			82108	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.587	2.602	-0.015	1.000	1720392	0.9148		91.5	966	
413.00 > 169.00	2.587	2.602	-0.015	1.000	946929		1.82(0.84-2.52)	91.5	3299	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.587	2.607	-0.020	1.000	2165087	0.9498		99.8	46091	
449.00 > 99.00	2.587	2.607	-0.020	1.000	565662		3.83(1.94-5.82)	99.8	10071	
D 18 13C4 PFOS										
503.00 > 80.00	2.955	2.966	-0.011	1.142	4014112	2.33		97.6	44508	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.955	2.969	-0.014	1.000	1593171	0.9035		97.4	20518	
499.00 > 99.00	2.955	2.969	-0.014	1.000	364976		4.37(2.31-6.93)	97.4	4029	
D 19 13C5 PFNA										
468.00 > 423.00	2.962	2.972	-0.010	1.145	3232270	2.54		102	64974	
20 Perfluorononanoic acid										
463.00 > 419.00	2.962	2.973	-0.011	1.000	1278096	0.9851		98.5	1920	
463.00 > 169.00	2.962	2.973	-0.011	1.000	308176		4.15(1.90-5.69)	98.5	13337	
D 21 13C8 FOSA										
506.00 > 78.00	3.307	3.305	0.002	1.278	6019215	2.40		96.0	69718	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.315	3.307	0.008	1.002	2402477	1.02		102	44915	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.322	3.320	0.002	1.000	502781	0.9071		94.7	11836	
D 26 M2-8:2FTS										
529.00 > 81.00	3.322	3.320	0.002	1.284	1063315	2.36		98.5	27710	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.338	3.331	0.007	1.000	1007443	0.9696		97.0	4625	
513.00 > 169.00	3.338	3.331	0.007	1.000	194208		5.19(2.36-7.09)	97.0	11632	
D 23 13C2 PFDA										
515.00 > 470.00	3.338	3.332	0.006	1.290	2579687	2.51		100	40435	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.492	3.482	0.010	1.350	871338	2.60		104	24237	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.501	3.488	0.013	1.003	345992	0.9533		95.3	4055	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.651	3.636	0.015	1.000	1005551	0.9517		98.7	36619	
599.00 > 99.00	3.651	3.636	0.015	1.000	358351		2.81(1.39-4.16)	98.7	5631	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.661	3.649	0.012	1.415	894155	2.46		98.5	1618	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.670	3.655	0.015	1.000	744959	0.8859		88.6	2155	
563.00 > 169.00	3.670	3.655	0.015	1.000	161663		4.61(2.12-6.36)	88.6	13750	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.670	3.655	0.015	1.003	330726	0.9527		95.3	11728	
D 30 13C2 PFUnA										
565.00 > 520.00	3.670	3.655	0.015	1.419	1934488	2.54		102	46847	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.957	3.942	0.015	1.000	697101	0.8454		84.5	104	
613.00 > 169.00	3.957	3.942	0.015	1.000	187051		3.73(2.13-6.40)	84.5	4844	
D 36 13C2 PFDaA										
615.00 > 570.00	3.957	3.942	0.015	1.530	2023893	2.62		105	8200	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.213	4.196	0.017	1.000	685794	0.8653		86.5	112	
663.00 > 169.00	4.213	4.196	0.017	1.000	204487		3.35(1.25-3.76)	86.5	2928	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.450	4.430	0.020	1.000	158940	0.9292		92.9	2283	
713.00 > 219.00	4.439	4.430	0.009	0.998	119940		1.33(0.71-2.13)	92.9	1055	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.450	4.430	0.020	1.720	1678172	2.46		98.2	12620	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.840	4.824	0.016	1.000	1149410	NC			77.6	
813.00 > 169.00	4.840	4.824	0.016	1.000	199571		5.76(2.86-8.58)		1984	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.840	4.825	0.015	1.871	3171057	2.42		96.6	10149	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.184	5.170	0.014	1.000	1010788	NC			179	
913.00 > 169.00	5.184	5.170	0.014	1.000	130146		7.77(3.83-11.48)		1286	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_005.d

Injection Date: 14-Mar-2018 14:23:16

Instrument ID: A8_N

Lims ID: IC L4 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

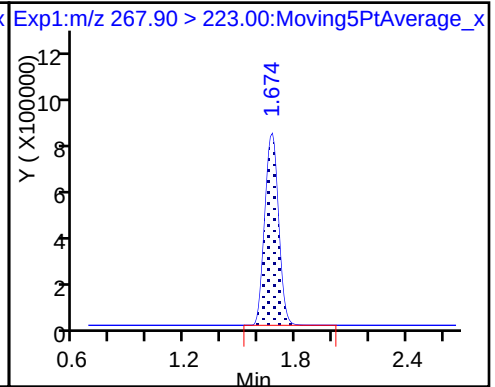
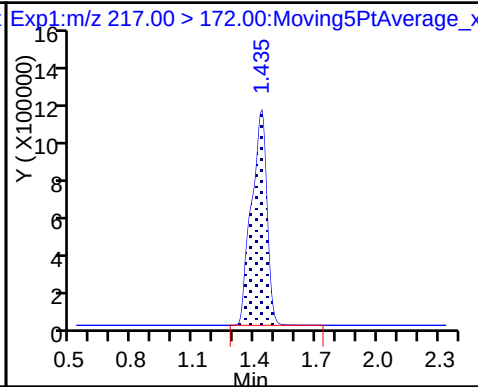
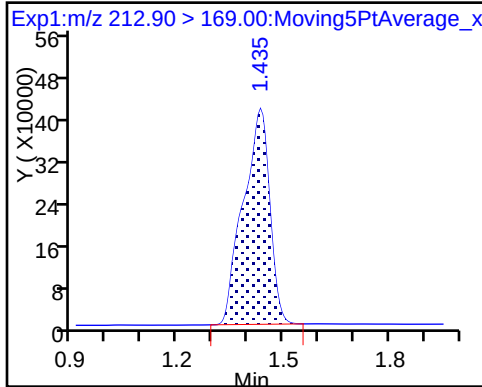
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

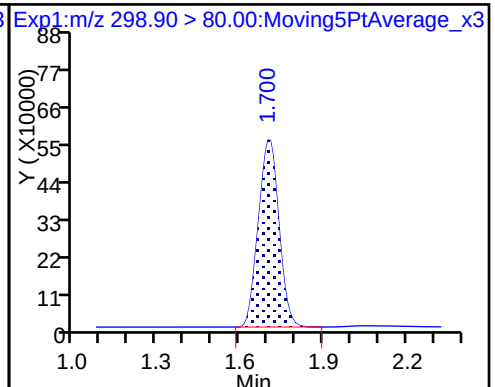
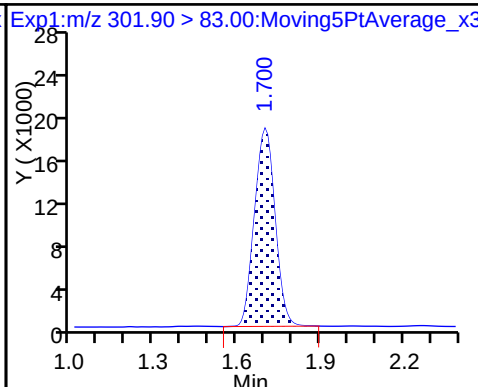
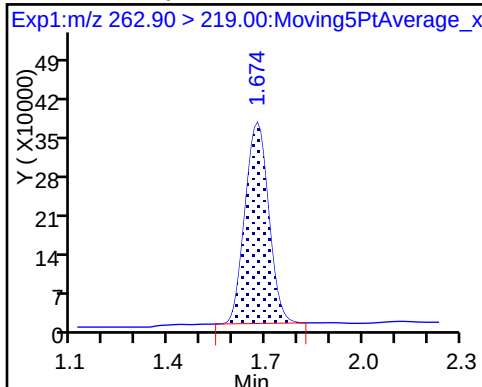
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

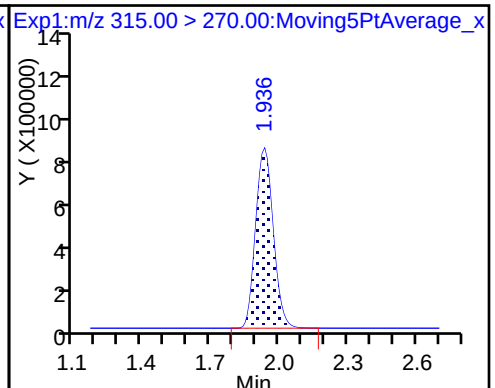
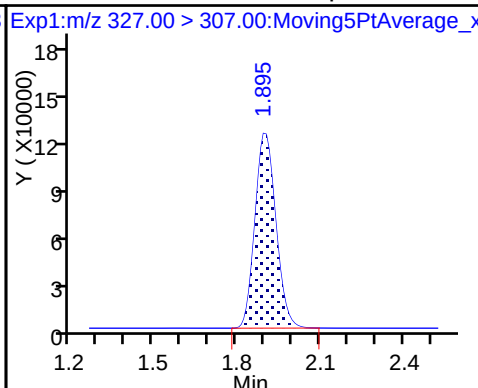
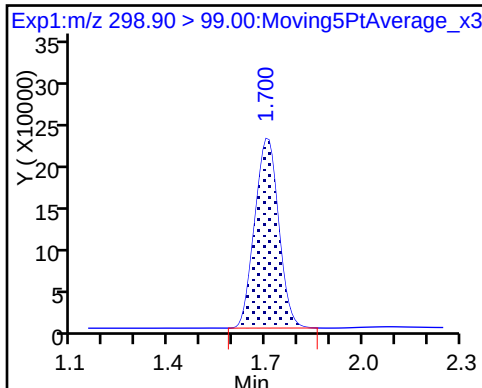
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

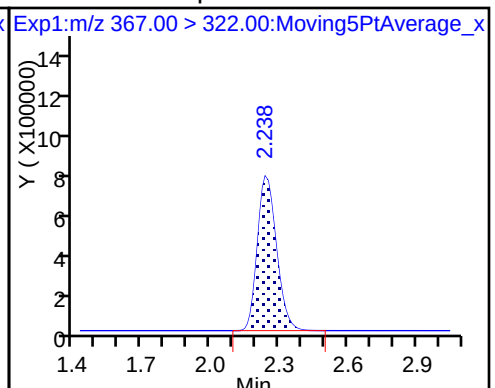
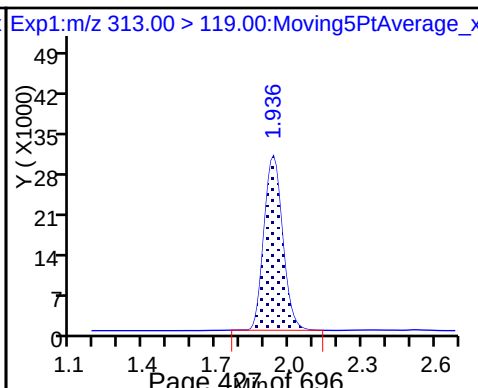
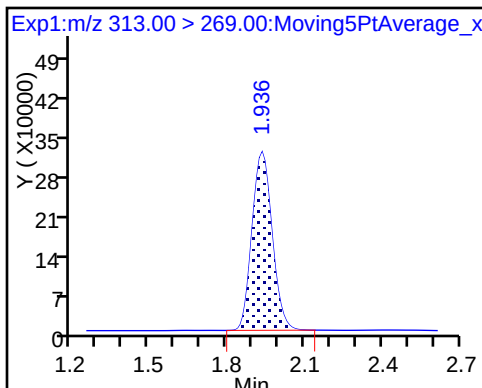
De 7 13C2 PFHxA



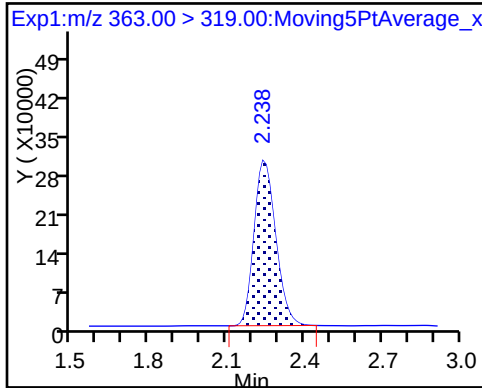
6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

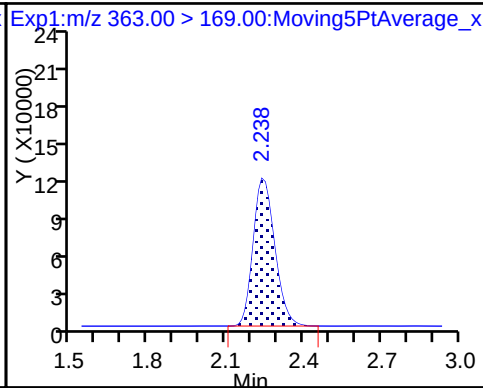
D 9 13C4-PFHpA



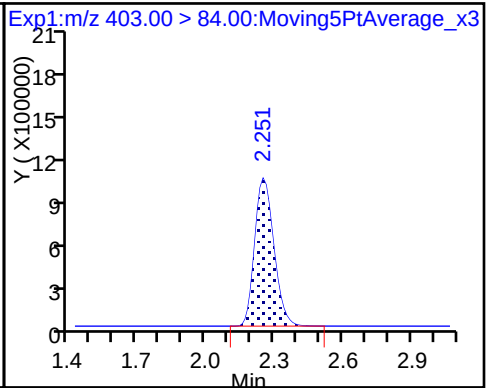
10 Perfluoroheptanoic acid



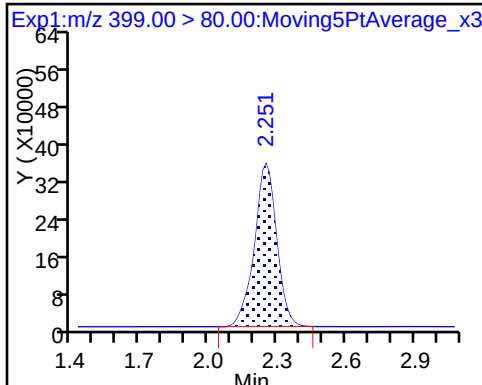
10 Perfluoroheptanoic acid



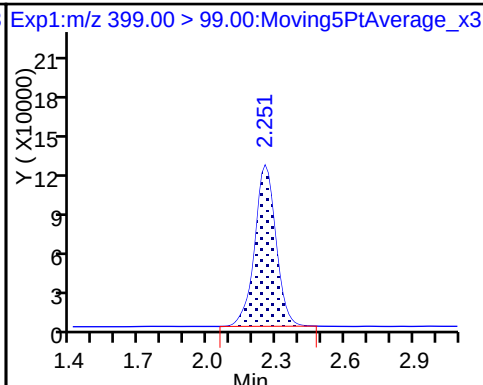
D 11 18O2 PFHxS



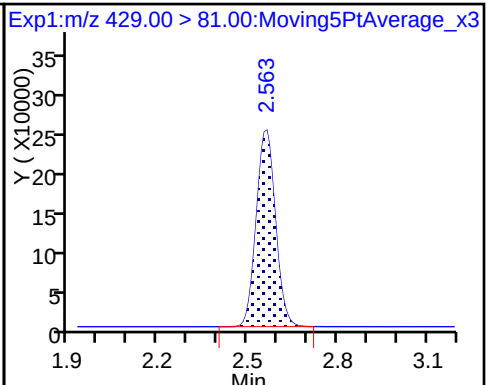
8 Perfluorohexanesulfonic acid



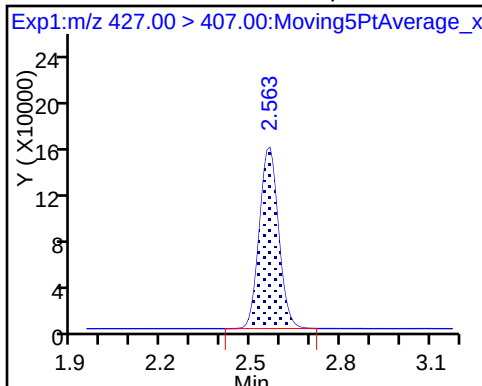
8 Perfluorohexanesulfonic acid



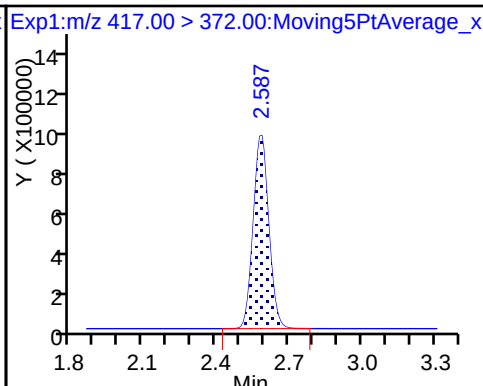
D 12 M2-6:2FTS



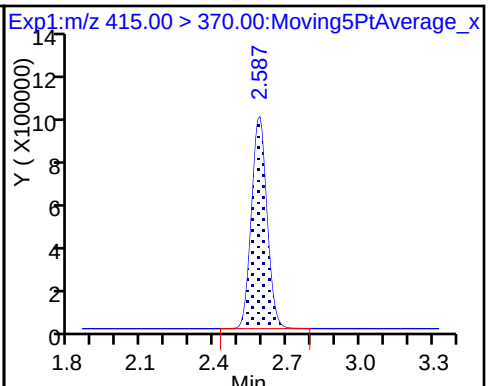
13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate



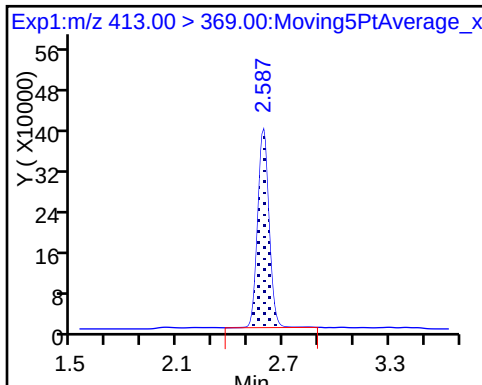
De 14 13C4 PFOA



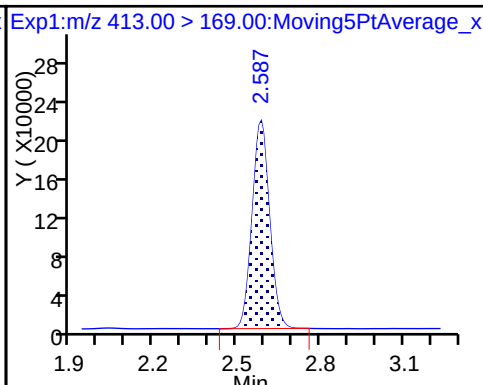
* 62 13C2-PFOA



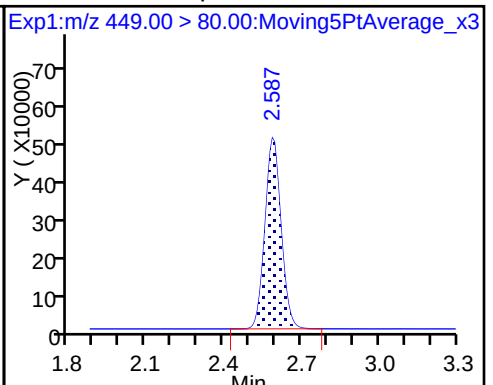
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid



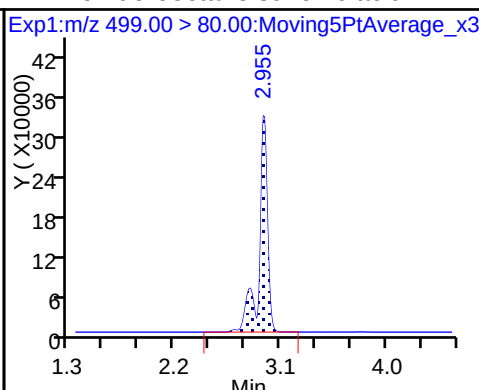
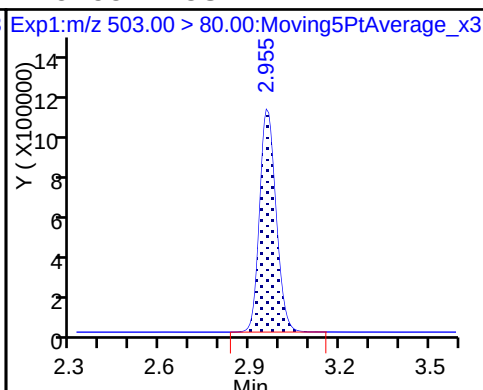
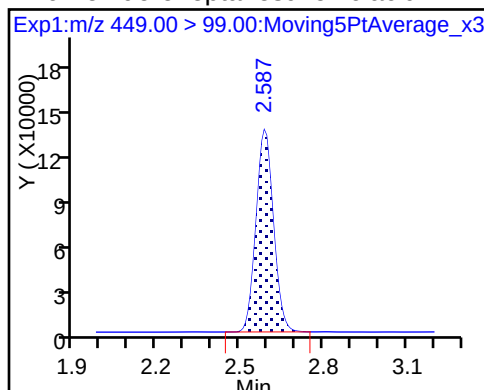
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

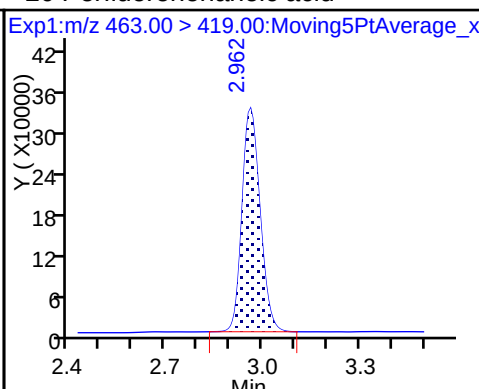
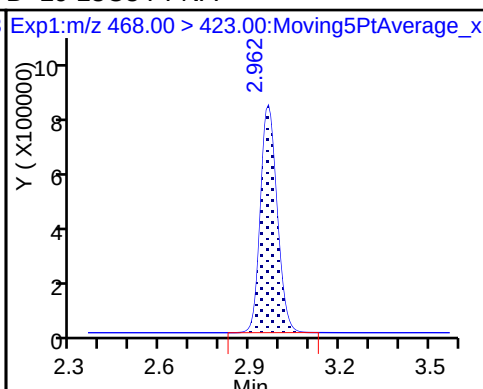
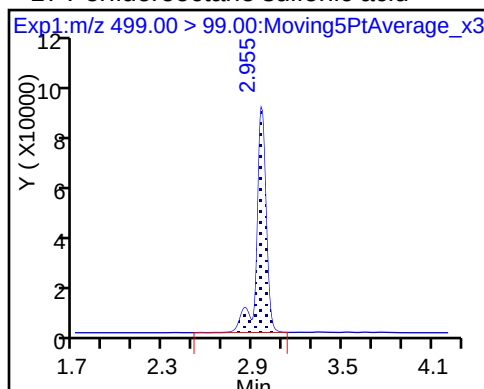
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

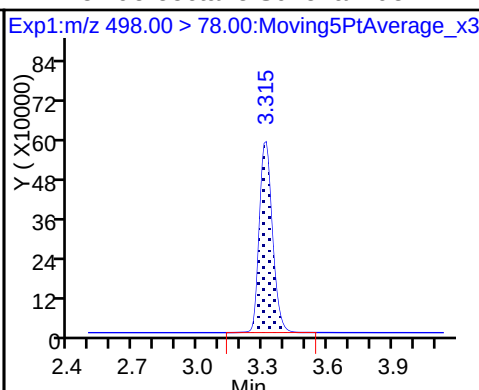
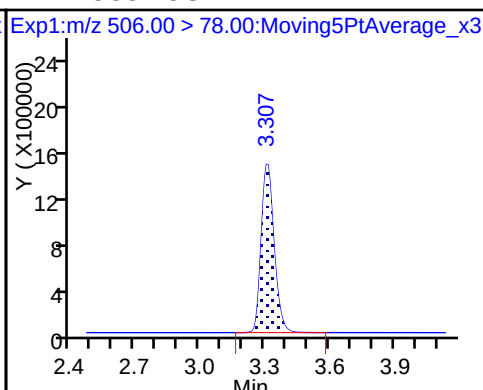
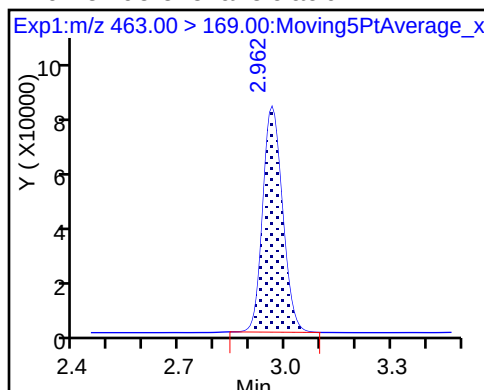
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

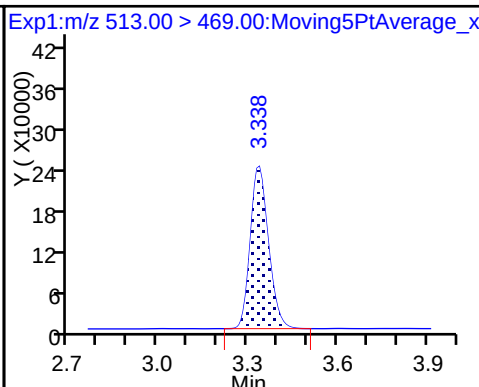
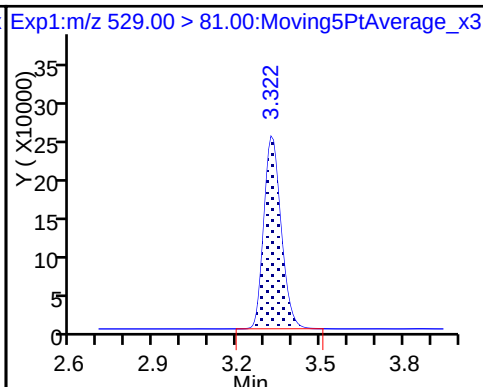
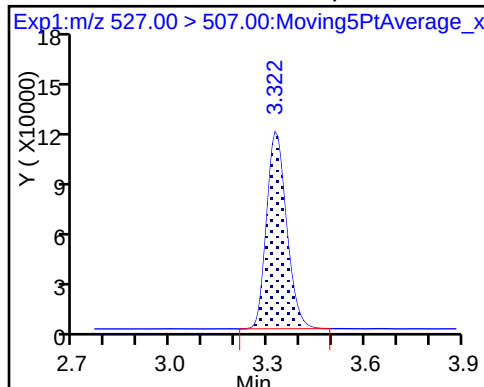
22 Perfluorooctane Sulfonamide



25 Sodium 1H,1H,2H,2H-perfluorodecanoate

De26 M2-8:2FTS

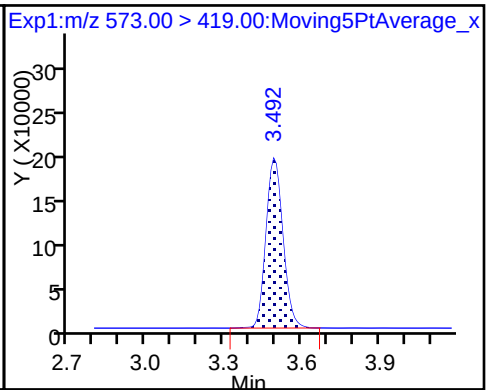
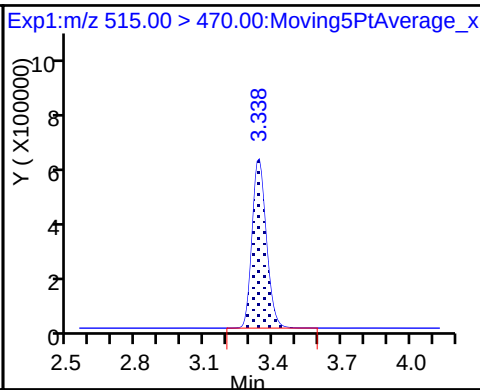
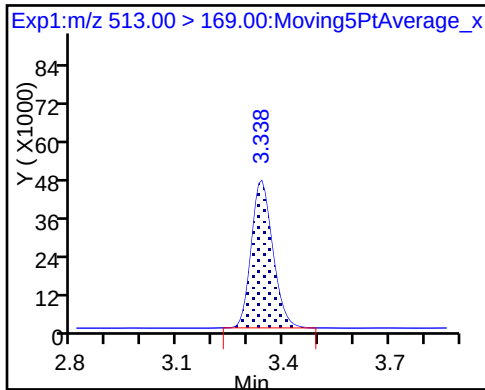
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

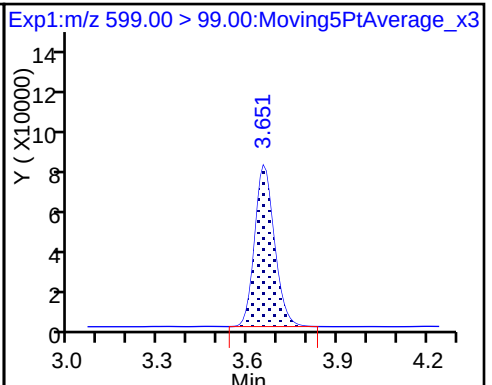
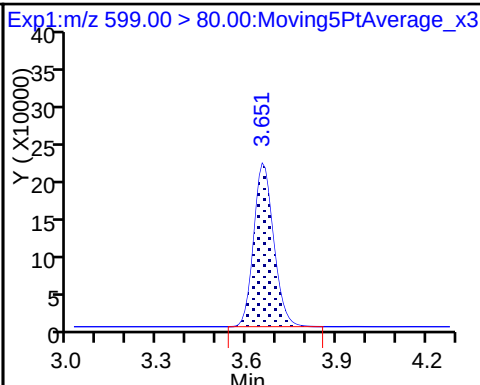
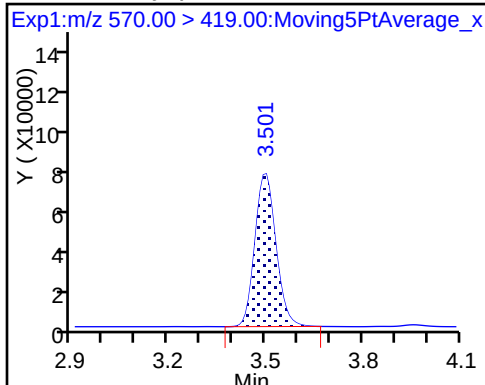
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonamid

29 Perfluorodecane Sulfonic acid

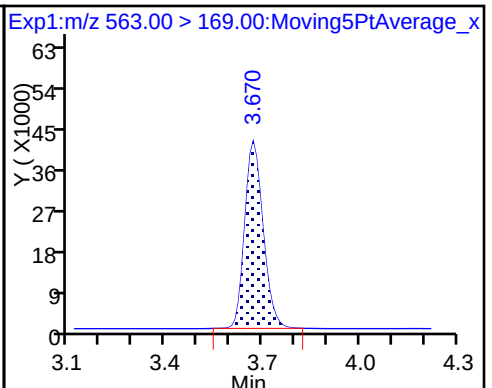
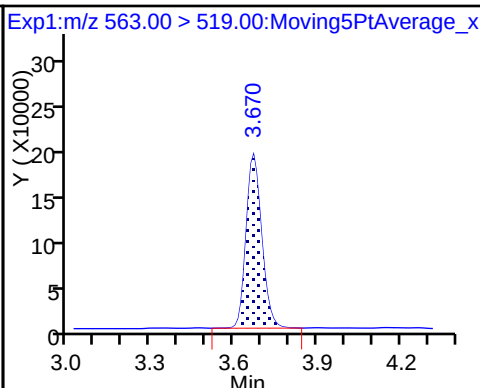
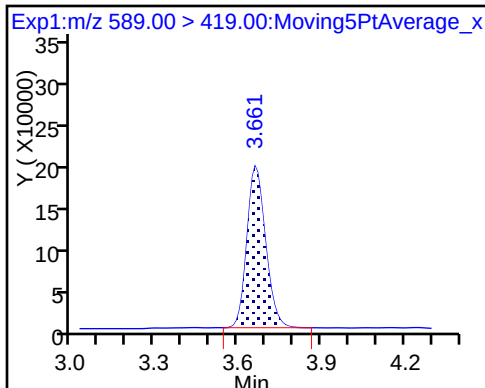
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

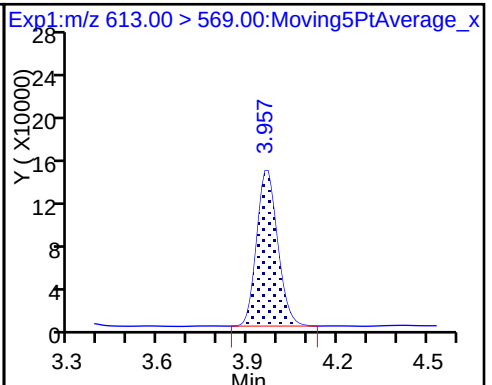
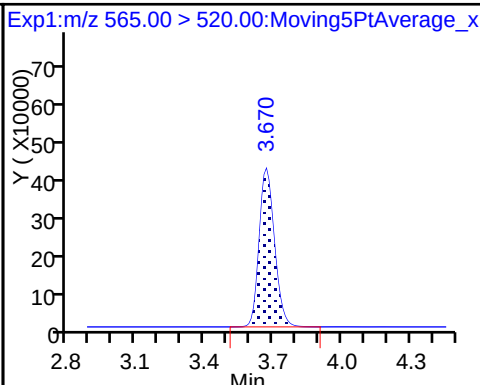
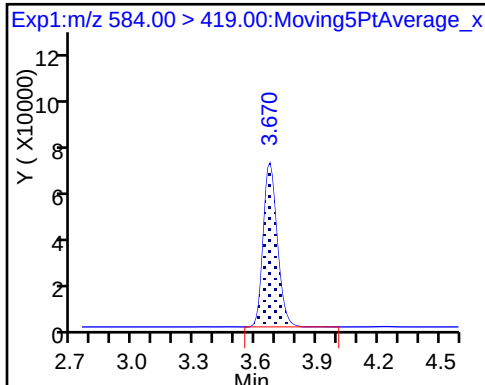
31 Perfluoroundecanoic acid

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

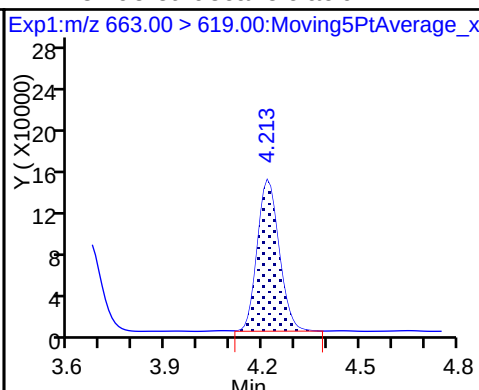
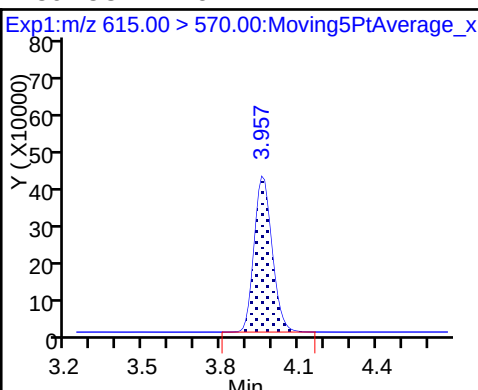
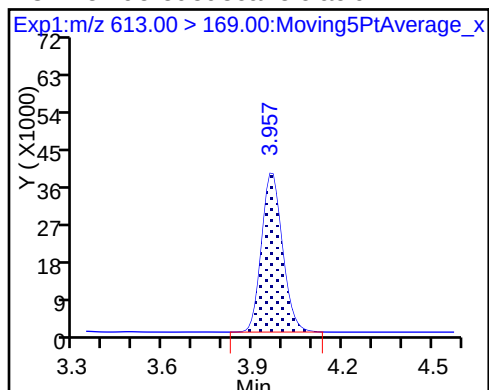
37 Perfluorododecanoic acid



37 Perfluorododecanoic acid

D 36 13C2 PFDaA

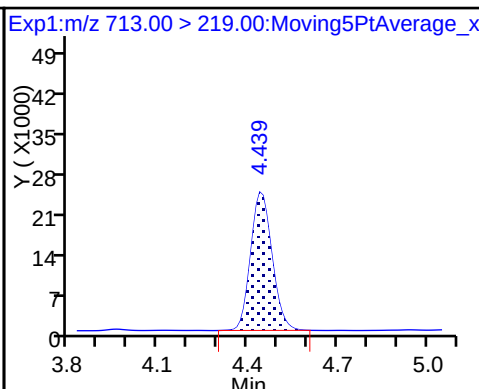
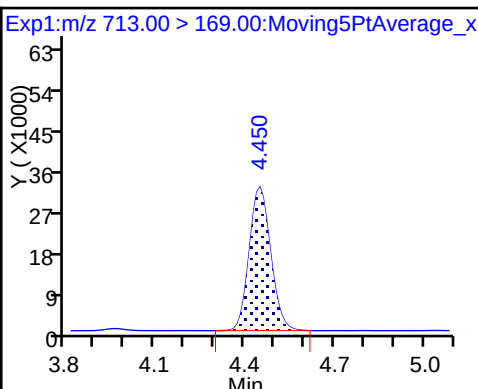
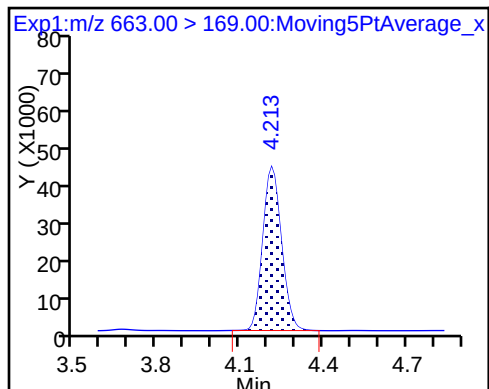
41 Perfluorotridecanoic acid



41 Perfluorotridecanoic acid

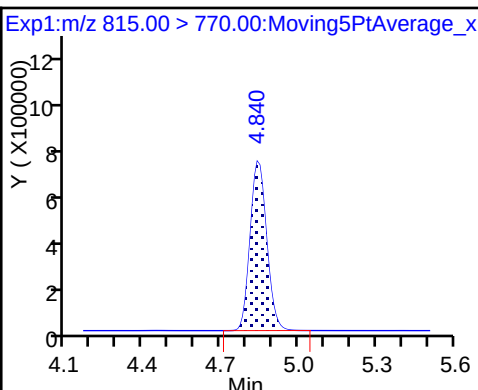
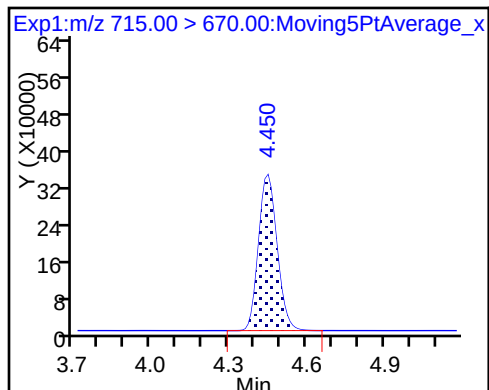
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_006.d
 Lims ID: IC L5 Full
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 14-Mar-2018 14:31:04 ALS Bottle#: 14 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 15-Mar-2018 08:29:57 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK055

First Level Reviewer: hannigana

Date: 14-Mar-2018 15:00:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.432	1.433	-0.001	0.548	5790839	2.51		100	109017	
2 Perfluorobutyric acid										
212.90 > 169.00	1.432	1.433	-0.001	1.000	5442114	2.54		102	2946	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.679	1.673	0.006	1.000	4554126	2.52		101	1301	
D 3 13C5-PFPeA										
267.90 > 223.00	1.679	1.673	0.006	0.643	3863265	2.50		99.9	122302	
D 47 13C3-PFBS										
301.90 > 83.00	1.714	1.703	0.011	0.656	93712	2.32		99.8	442	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.714	1.707	0.007	1.000	7196018	2.34		106	13817	
298.90 > 99.00	1.714	1.707	0.007	1.000	2997759		2.40(1.25-3.74)	106	10371	
D 60 M2-4:2FTS										
329.00 > 81.00	1.909	1.900	0.009	0.731	681924	NC			8974	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.909	1.902	0.007	1.000	1547164	2.34		100	71693	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.950	1.938	0.012	1.000	4396908	2.54		101	17136	
313.00 > 119.00	1.950	1.938	0.012	1.000	401091		10.96(5.03-15.10)	101	8118	
D 7 13C2 PFHxA										
315.00 > 270.00	1.950	1.938	0.012	0.747	4299284	2.55		102	157501	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.271	2.249	0.022	1.000	4363135	2.64		106	8321	
363.00 > 169.00	2.271	2.249	0.022	1.000	1593139		2.74(1.13-3.40)	106	29818	
D 9 13C4-PFHpA										
367.00 > 322.00	2.271	2.249	0.022	0.870	3882850	2.44		97.4	72441	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.284	2.262	0.022	1.000	5883216	2.24		98.3	24062	
399.00 > 99.00	2.284	2.262	0.022	1.000	1940200		3.03(1.50-4.49)	98.3	6119	
D 11 18O2 PFHxS										
403.00 > 84.00	2.284	2.262	0.022	0.874	5539746	2.35		99.3	66250	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.589	2.577	0.012	1.000	1844839	2.43		103	47609	
D 12 M2-6:2FTS										
429.00 > 81.00	2.589	2.577	0.012	0.991	1056146	2.49		105	34902	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.612	2.602	0.010	1.000	4513615	2.46		98.3	2126	
413.00 > 169.00	2.612	2.602	0.010	1.000	2299835		1.96(0.84-2.52)	98.3	7348	
* 62 13C2-PFOA										
415.00 > 370.00	2.612	2.602	0.010		4046885	2.50			85241	
D 14 13C4 PFOA										
417.00 > 372.00	2.612	2.602	0.010	1.000	3947007	2.57		103	102290	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.620	2.607	0.013	1.000	5432633	2.49		105	66048	
449.00 > 99.00	2.620	2.607	0.013	1.000	1459629		3.72(1.94-5.82)	105	22348	
D 18 13C4 PFOS										
503.00 > 80.00	2.969	2.966	0.003	1.137	3844762	2.37		99.3	28106	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.969	2.969	0.0	1.000	3930025	2.33		100	20684	M
499.00 > 99.00	2.969	2.969	0.0	1.000	915213		4.29(2.31-6.93)	100	10700	M
D 19 13C5 PFNA										
468.00 > 423.00	2.969	2.972	-0.003	1.137	2972367	2.49		99.4	64386	
20 Perfluorononanoic acid										
463.00 > 419.00	2.975	2.973	0.002	1.002	3059094	2.56		103	4563	
463.00 > 169.00	2.969	2.973	-0.004	1.000	746066		4.10(1.90-5.69)	103	27691	
D 21 13C8 FOSA										
506.00 > 78.00	3.284	3.305	-0.021	1.257	5995855	2.54		102	51614	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.284	3.307	-0.023	1.000	6154228	2.62		105	82789	
D 26 M2-8:2FTS										
529.00 > 81.00	3.299	3.320	-0.021	1.263	1017048	2.40		100	41344	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.299	3.320	-0.021	1.000	1215769	2.29		95.7	27170	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.315	3.331	-0.016	1.000	2450527	2.56		102	10716	
513.00 > 169.00	3.315	3.331	-0.016	1.000	440933		5.56(2.36-7.09)	102	21807	
D 23 13C2 PFDA										
515.00 > 470.00	3.315	3.332	-0.017	1.269	2374640	2.46		98.2	36347	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.455	3.482	-0.027	1.323	826844	2.62		105	30516	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.464	3.488	-0.024	1.003	849018	2.47		98.6	11261	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.604	3.636	-0.032	1.000	2616932	2.59		107	43393	
599.00 > 99.00	3.604	3.636	-0.032	1.000	887389		2.95(1.39-4.16)	107	13635	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.624	3.649	-0.025	1.387	892685	2.61		104	1366	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.624	3.655	-0.031	1.000	2120834	2.52		101	7352	
563.00 > 169.00	3.624	3.655	-0.031	1.000	399369		5.31(2.12-6.36)	101	19540	
D 30 13C2 PFUnA										
565.00 > 520.00	3.624	3.655	-0.031	1.387	1933584	2.70		108	59741	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.624	3.655	-0.031	1.000	823932	2.38		95.1	29217	
D 36 13C2 PFDoA										
615.00 > 570.00	3.907	3.942	-0.035	1.496	1886034	2.59		104	7159	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.907	3.942	-0.035	1.000	1858687	2.42		96.8	302	
613.00 > 169.00	3.907	3.942	-0.035	1.000	478481		3.88(2.13-6.40)	96.8	10107	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.164	4.196	-0.032	1.000	1756243	2.38		95.1	285	
663.00 > 169.00	4.164	4.196	-0.032	1.000	571853		3.07(1.25-3.76)	95.1	7218	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.399	4.430	-0.031	1.684	1607962	2.50		99.9	10891	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.399	4.430	-0.031	1.000	420346	2.56		103	4406	
713.00 > 219.00	4.399	4.430	-0.031	1.000	279693		1.50(0.71-2.13)	103	2566	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.806	4.824	-0.018	1.000	3272803	NC			237	
813.00 > 169.00	4.806	4.824	-0.018	1.000	476962		6.86(2.86-8.58)		4504	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.806	4.825	-0.019	1.840	3172627	2.57		103	11250	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.154	5.170	-0.016	1.000	2650708	NC			479	
913.00 > 169.00	5.154	5.170	-0.016	1.000	347848		7.62(3.83-11.48)		3301	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL5_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_006.d

Injection Date: 14-Mar-2018 14:31:04

Instrument ID: A8_N

Lims ID: IC L5 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

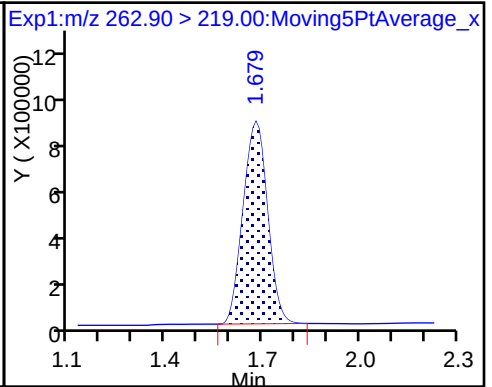
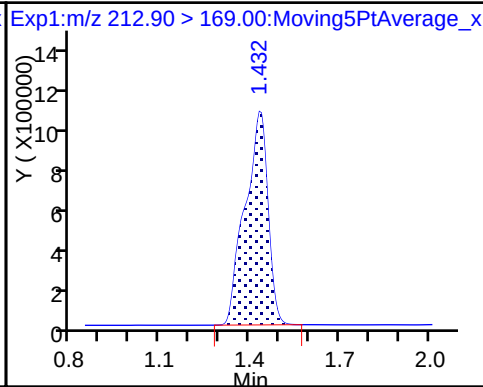
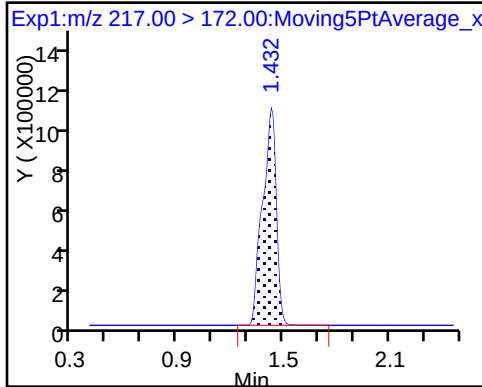
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

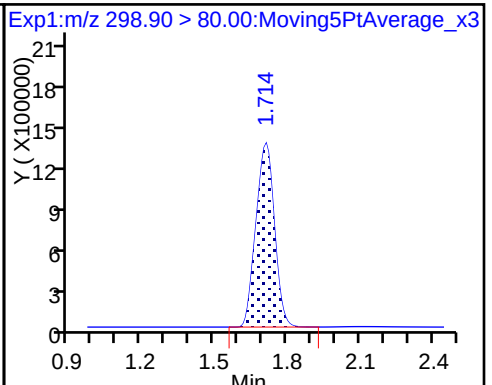
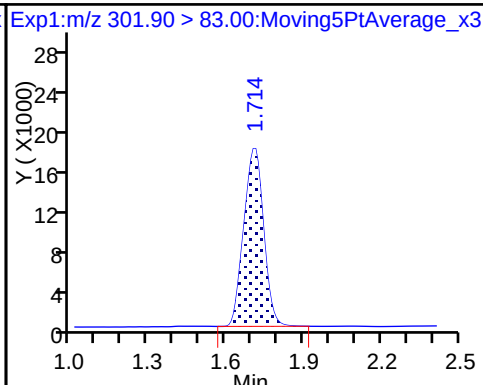
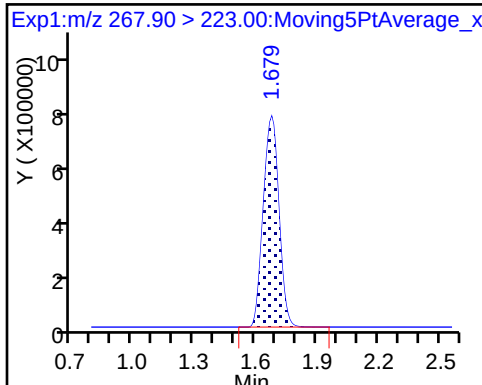
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

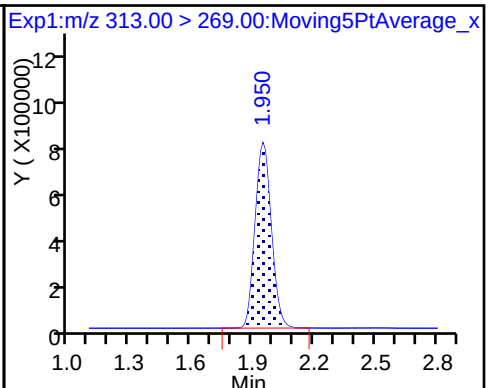
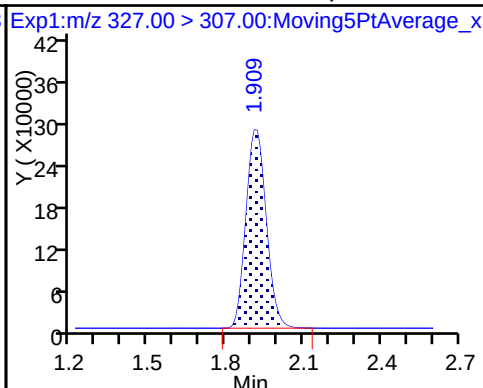
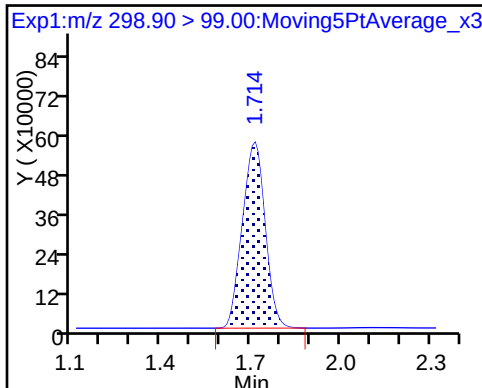
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

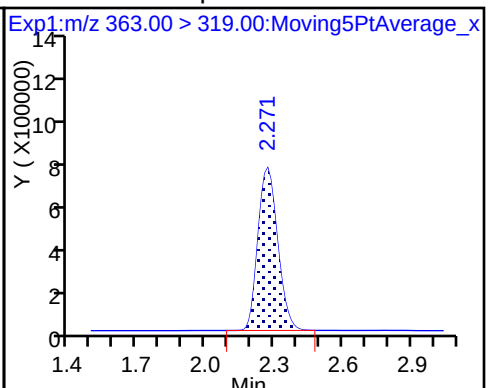
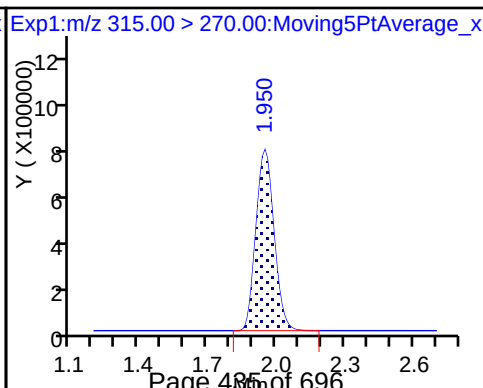
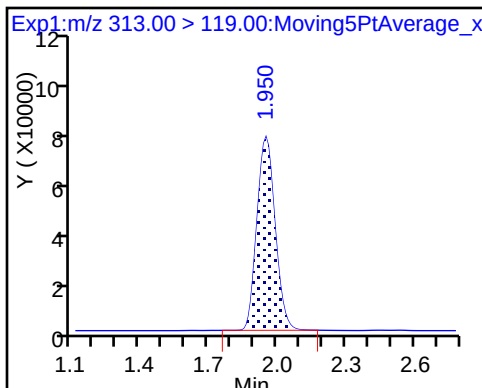
6 Perfluorohexanoic acid

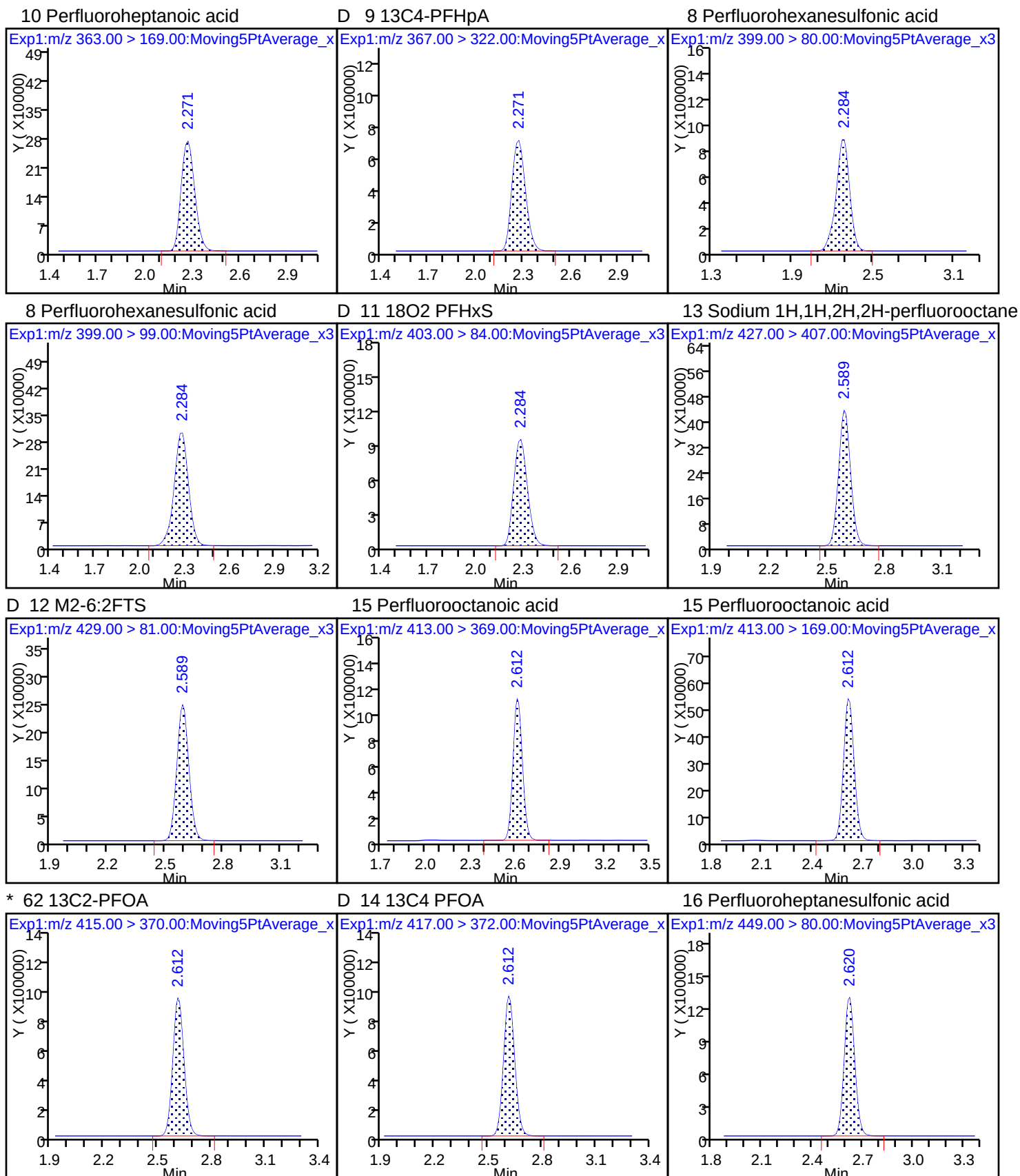


6 Perfluorohexanoic acid

D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

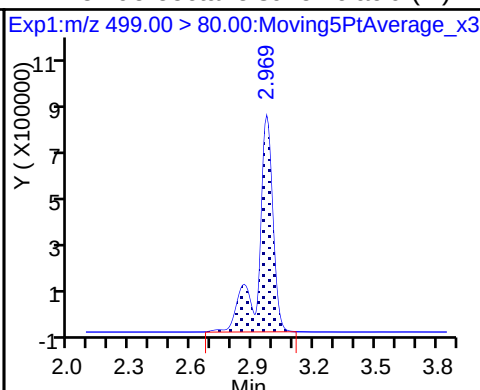
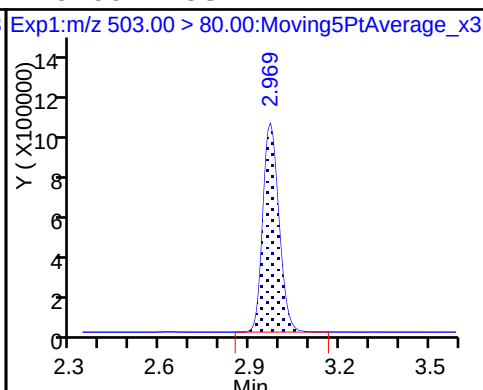
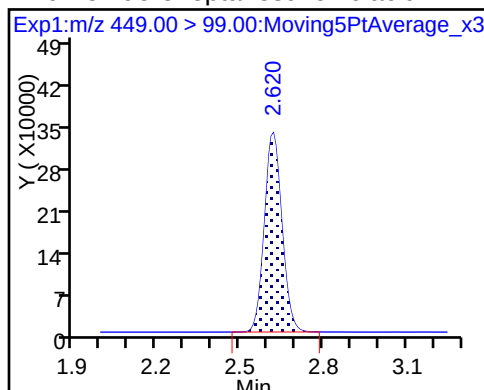




16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

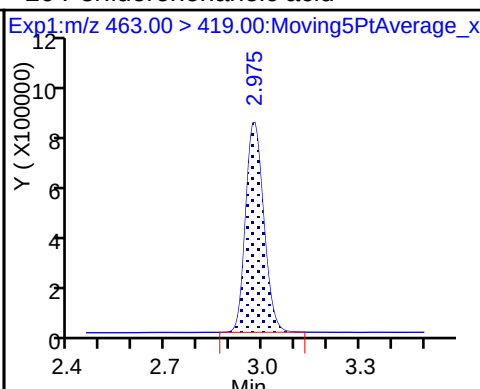
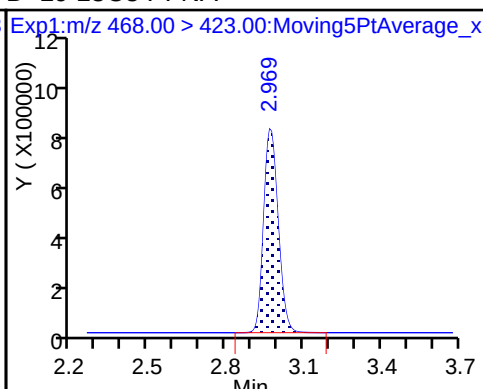
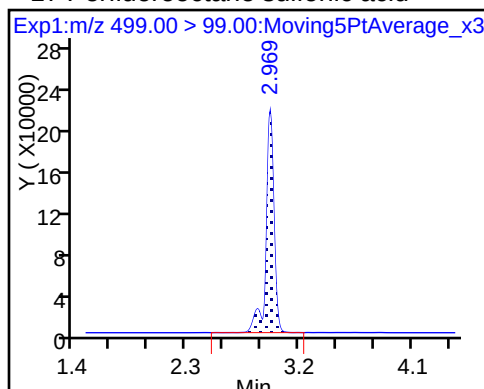
17 Perfluorooctane sulfonic acid (M)



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

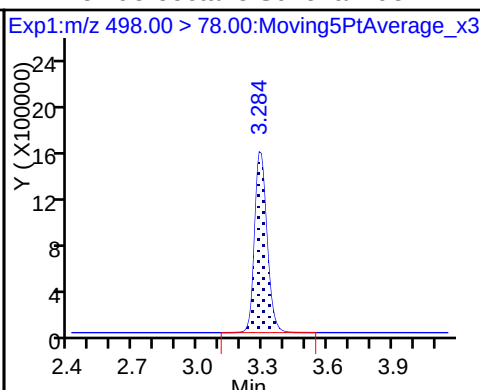
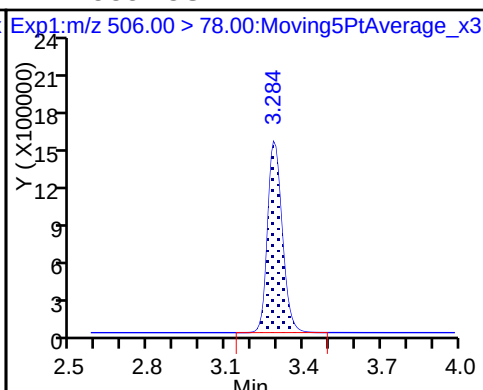
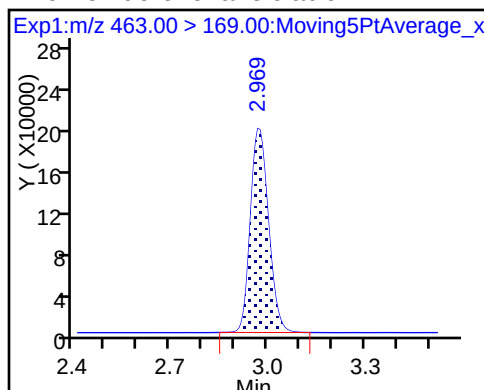
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

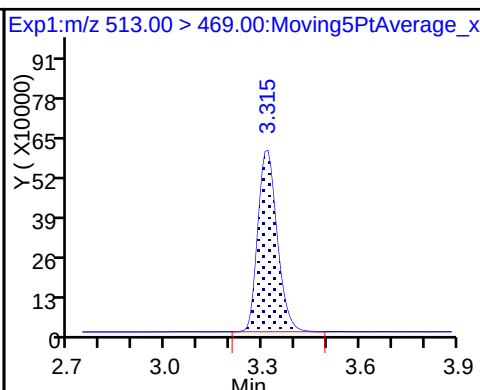
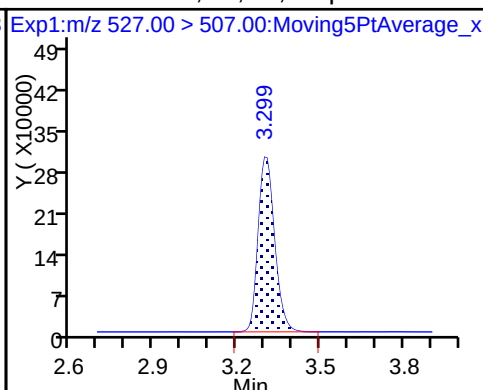
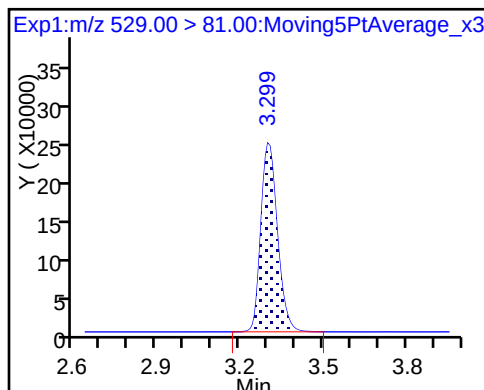
22 Perfluorooctane Sulfonamide



D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

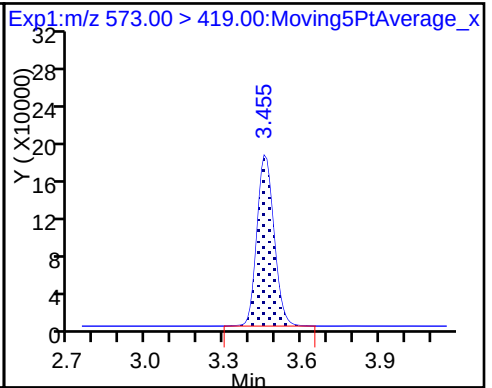
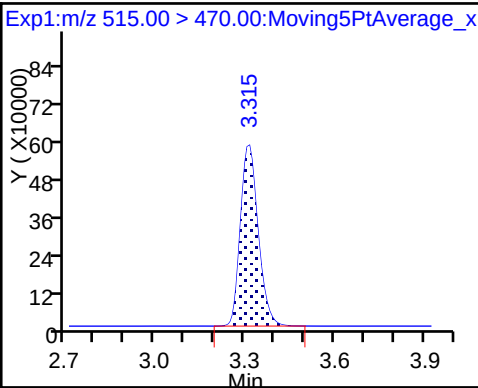
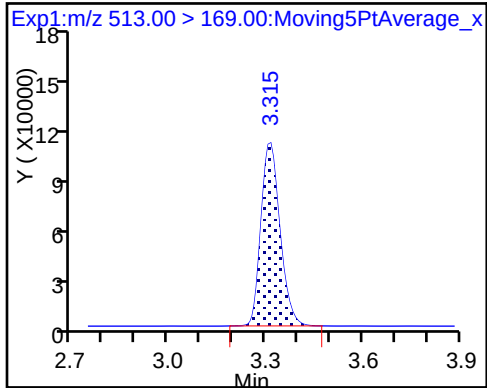
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

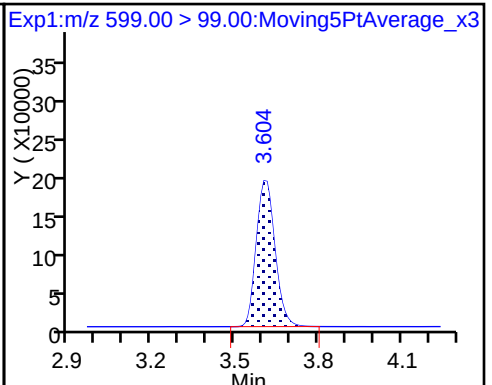
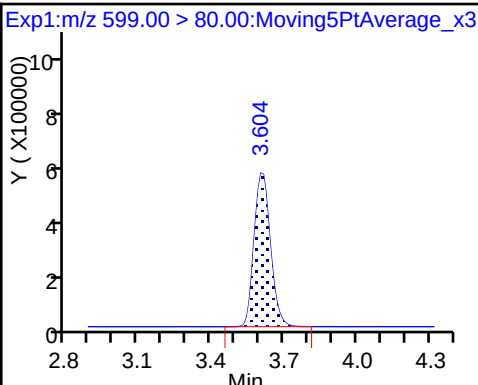
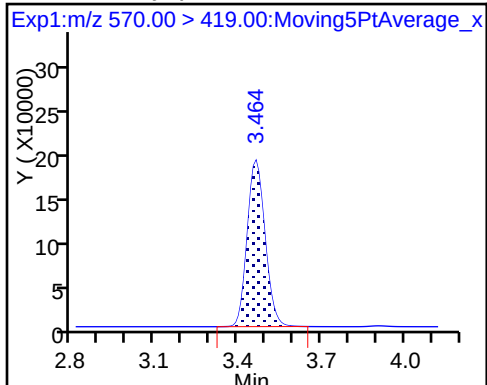
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

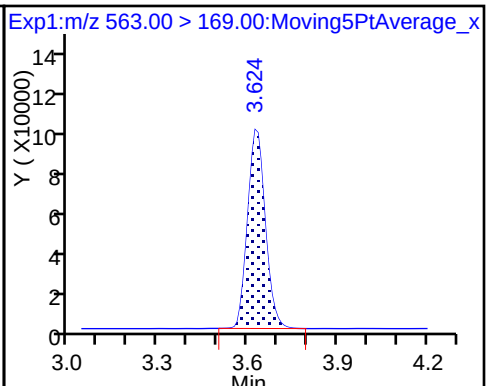
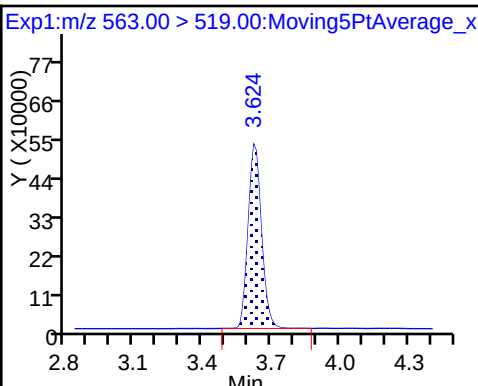
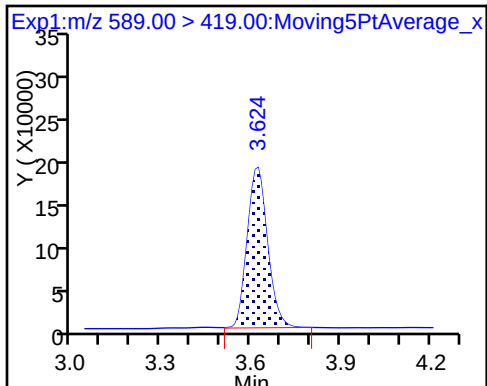
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid

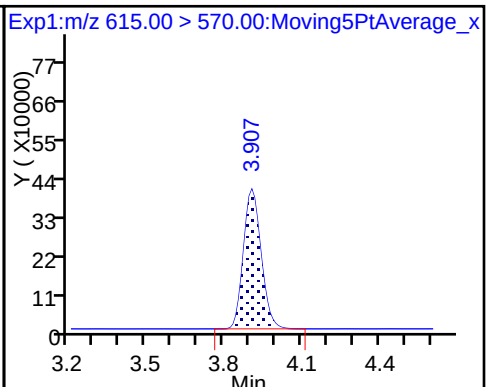
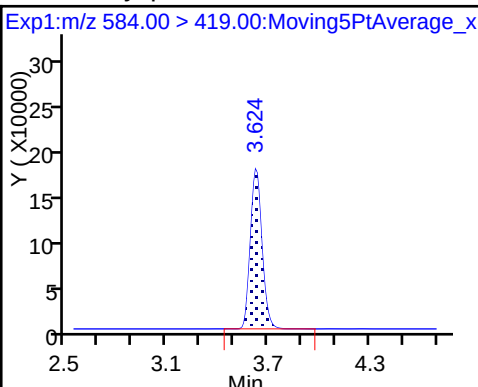
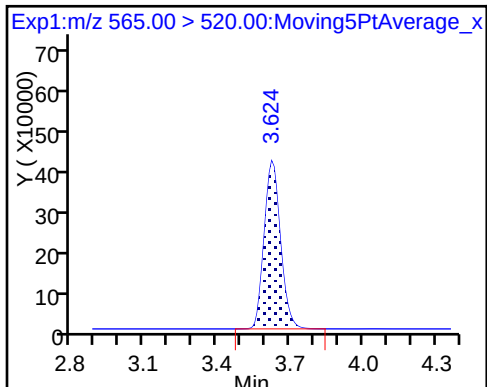
31 Perfluoroundecanoic acid



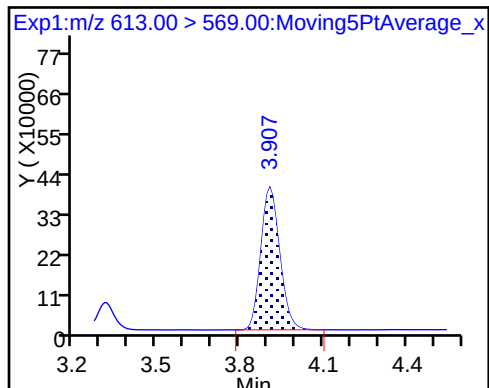
D 30 13C2 PFUnA

33 N-ethyl perfluorooctane sulfonamid

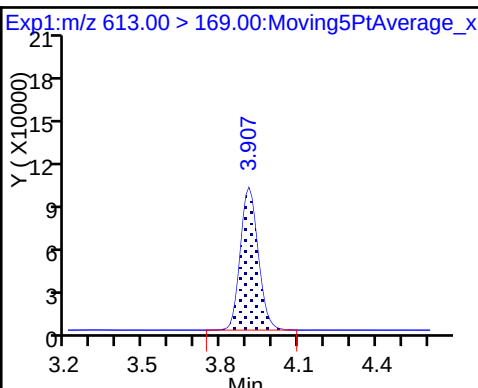
D 36 13C2 PFDaA



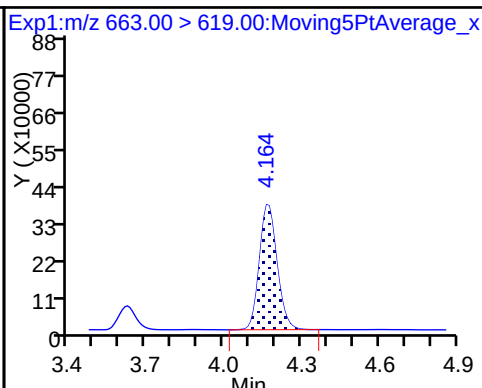
37 Perfluorododecanoic acid



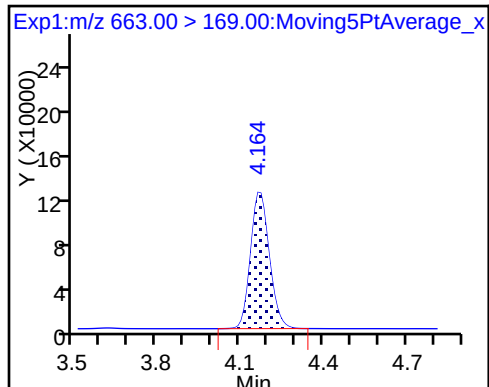
37 Perfluorododecanoic acid



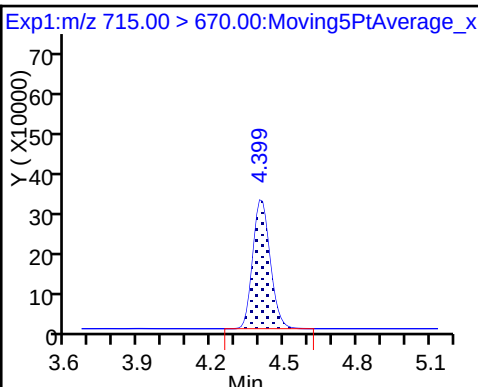
41 Perfluorotridecanoic acid



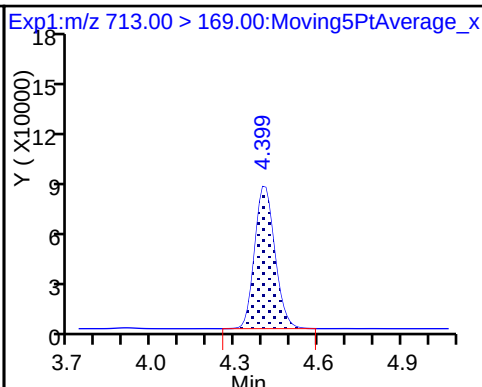
41 Perfluorotridecanoic acid



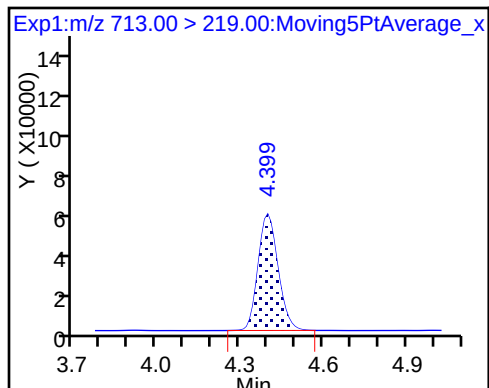
D 43 13C2-PFTeDA



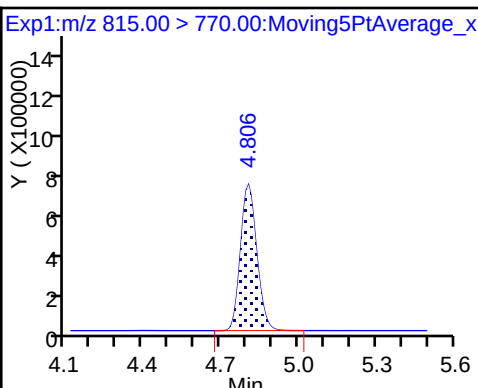
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento

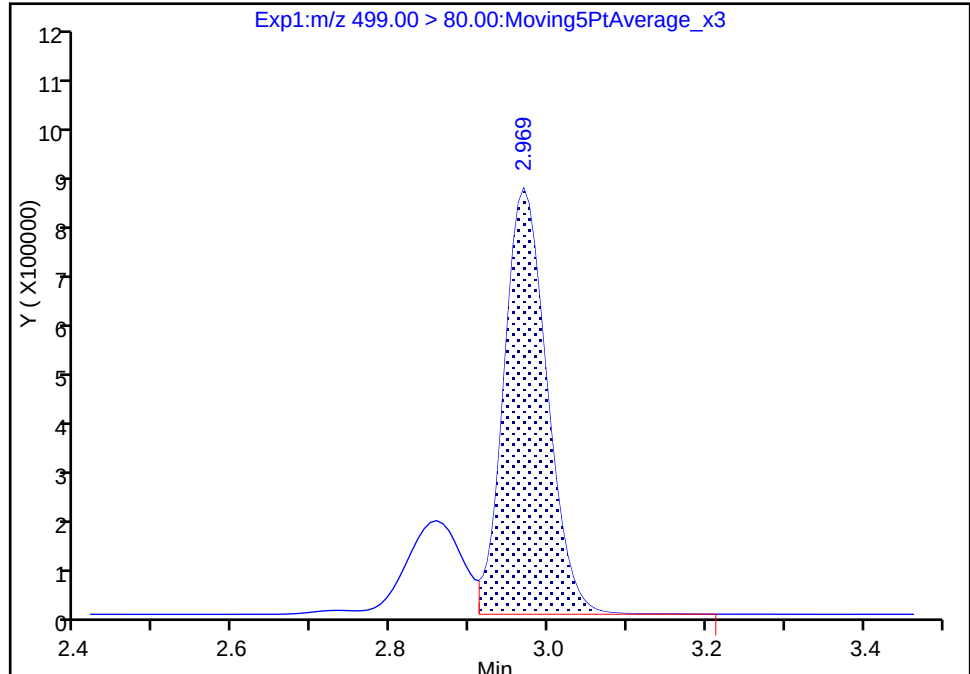
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Injection Date: 14-Mar-2018 14:31:04 Instrument ID: A8_N
Lims ID: IC L5 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

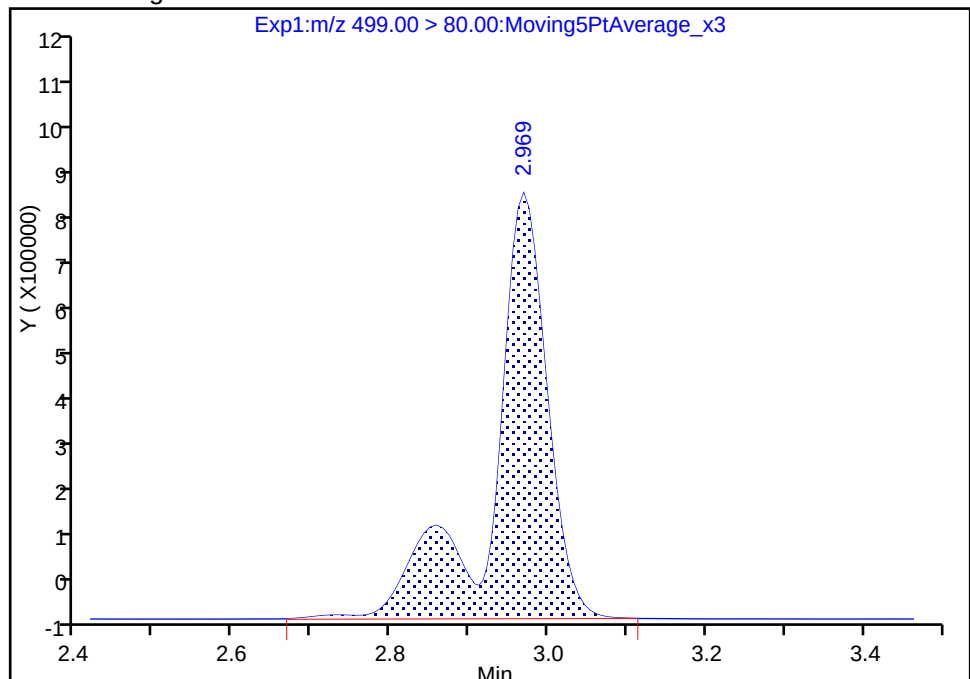
RT: 2.97
Area: 3051503
Amount: 1.896264
Amount Units: ng/ml

Processing Integration Results



RT: 2.97
Area: 3930025
Amount: 2.326963
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 14-Mar-2018 15:00:27

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_007.d
 Lims ID: IC L6 Full
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 14-Mar-2018 14:38:52 ALS Bottle#: 15 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 15-Mar-2018 08:30:00 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK055

First Level Reviewer: hannigana

Date: 14-Mar-2018 15:09:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.433	0.002	1.000	11035941	5.26		105	5558	
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.433	0.002	0.548	5666362	2.56		102	108359	
D 3 13C5-PFPeA										
267.90 > 223.00	1.674	1.673	0.001	0.640	3727810	2.51		100	144525	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.674	1.673	0.001	1.000	8955564	5.13		103	2766	
D 47 13C3-PFBS										
301.90 > 83.00	1.709	1.703	0.006	0.653	95116	2.45		106	383	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.709	1.707	0.002	1.000	14018860	4.49		102	23732	
298.90 > 99.00	1.709	1.707	0.002	1.000	5954186		2.35(1.25-3.74)	102	19256	
D 60 M2-4:2FTS										
329.00 > 81.00	1.905	1.900	0.005	0.728	630680	NC			9894	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.905	1.902	0.003	1.000	3067449	4.57		97.9	144477	
D 7 13C2 PFHxA										
315.00 > 270.00	1.946	1.938	0.008	0.743	4061548	2.51		100	106747	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.946	1.938	0.008	1.000	8322619	5.08		102	29677	
313.00 > 119.00	1.946	1.938	0.008	1.000	763672		10.90(5.03-15.10)	102	12736	
D 9 13C4-PFHpA										
367.00 > 322.00	2.264	2.249	0.015	0.865	3833431	2.51		100	92216	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.264	2.249	0.015	1.000	8217290	5.04		101	15713	
363.00 > 169.00	2.264	2.249	0.015	1.000	3220928		2.55(1.13-3.40)	101	49329	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.277	2.262	0.015	0.870	5503944	2.43		103	66041	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.277	2.262	0.015	1.000	11570747	4.43		97.3	34331	
399.00 > 99.00	2.277	2.262	0.015	1.000	3778698		3.06(1.50-4.49)	97.3	11380	
D 12 M2-6:2FTS										
429.00 > 81.00	2.595	2.577	0.018	0.991	1011755	2.48		104	38768	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.595	2.577	0.018	1.000	3541999	4.87		103	82300	
D 14 13C4 PFOA										
417.00 > 372.00	2.618	2.602	0.016	1.000	3613402	2.45		98.0	102861	
* 62 13C2-PFOA										
415.00 > 370.00	2.618	2.602	0.016		3885057	2.50			63298	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.618	2.602	0.016	1.000	8254965	4.91		98.2	4151	
413.00 > 169.00	2.618	2.602	0.016	1.000	4499477		1.83(0.84-2.52)	98.2	11771	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.626	2.607	0.019	1.000	10831503	4.93		104	66936	
449.00 > 99.00	2.626	2.607	0.019	1.000	2943597		3.68(1.94-5.82)	104	35793	
D 18 13C4 PFOS										
503.00 > 80.00	2.981	2.966	0.015	1.139	3869709	2.49		104	24173	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.981	2.969	0.012	1.000	7946100	4.67		101	40323	
499.00 > 99.00	2.981	2.969	0.012	1.000	1776106		4.47(2.31-6.93)	101	16274	
D 19 13C5 PFNA										
468.00 > 423.00	2.988	2.972	0.016	1.141	2804832	2.44		97.7	50908	
20 Perfluorononanoic acid										
463.00 > 419.00	2.988	2.973	0.015	1.000	6107971	5.43		109	9581	
463.00 > 169.00	2.988	2.973	0.015	1.000	1468151		4.16(1.90-5.69)	109	46876	
D 21 13C8 FOSA										
506.00 > 78.00	3.310	3.305	0.005	1.264	5689527	2.51		100	58200	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.317	3.307	0.010	1.002	11459354	5.14		103	95229	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.325	3.320	0.005	1.000	2579923	5.17		108	54896	
D 26 M2-8:2FTS										
529.00 > 81.00	3.325	3.320	0.005	1.270	956603	2.35		98.0	37106	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.342	3.331	0.011	1.000	4641972	5.05		101	21397	
513.00 > 169.00	3.342	3.331	0.011	1.000	874939		5.31(2.36-7.09)	101	25776	
D 23 13C2 PFDA										
515.00 > 470.00	3.342	3.332	0.010	1.277	2283470	2.46		98.4	35637	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.486	3.482	0.004	1.332	795679	2.63		105	29615	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.496	3.488	0.008	1.003	1742154	5.26		105	16894	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.636	3.636	0.0	1.000	5396895	5.30		110	65356	
599.00 > 99.00	3.646	3.636	0.010	1.003	1792184		3.01(1.39-4.16)	110	25906	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.655	3.649	0.006	1.396	832409	2.54		101	1322	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.655	3.655	0.0	1.000	3962001	5.65		113	12380	
563.00 > 169.00	3.655	3.655	0.0	1.000	733685		5.40(2.12-6.36)	113	45886	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.655	3.655	0.0	1.000	1585656	4.91		98.1	37857	
D 30 13C2 PFUnA										
565.00 > 520.00	3.655	3.655	0.0	1.396	1613432	2.35		93.8	49375	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.942	3.942	0.0	1.000	3422264	4.99		99.8	571	
613.00 > 169.00	3.942	3.942	0.0	1.000	881006		3.88(2.13-6.40)	99.8	18470	
D 36 13C2 PFDaA										
615.00 > 570.00	3.942	3.942	0.0	1.506	1682803	2.41		96.3	7753	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.197	4.196	0.001	1.000	3614945	5.49		110	648	
663.00 > 169.00	4.197	4.196	0.001	1.000	1126383		3.21(1.25-3.76)	110	15207	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.435	4.430	0.005	1.000	822206	4.95		98.9	9732	
713.00 > 219.00	4.424	4.430	-0.006	0.998	572062		1.44(0.71-2.13)	98.9	4750	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.435	4.430	0.005	1.694	1630645	2.64		106	9983	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.837	4.824	0.013	1.000	6354010	NC			438	
813.00 > 169.00	4.837	4.824	0.013	1.000	1038085		6.12(2.86-8.58)		9517	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.837	4.825	0.012	1.848	2923634	2.46		98.6	9910	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.180	5.170	0.010	1.000	4858140	NC			835	
913.00 > 169.00	5.180	5.170	0.010	1.000	618445		7.86(3.83-11.48)		4590	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL6_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_007.d

Injection Date: 14-Mar-2018 14:38:52

Instrument ID: A8_N

Lims ID: IC L6 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

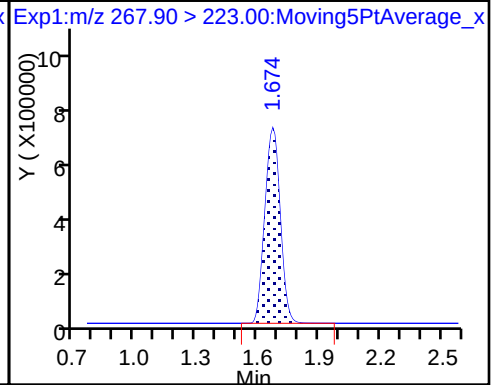
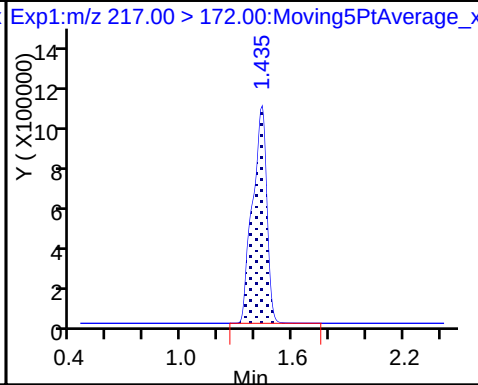
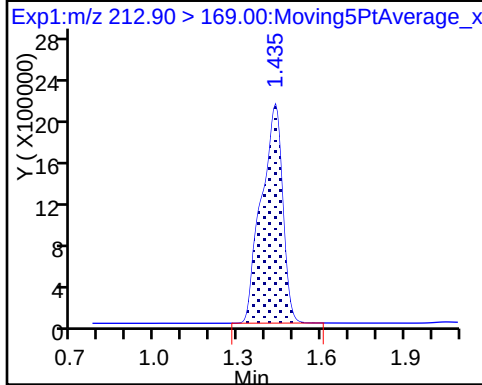
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

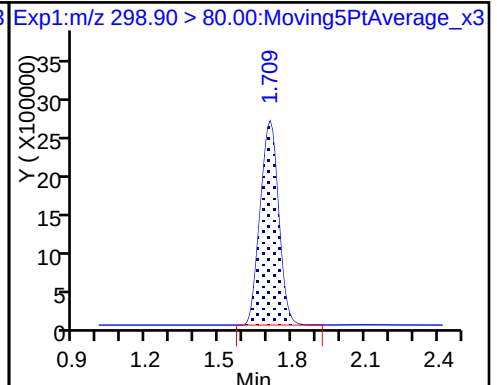
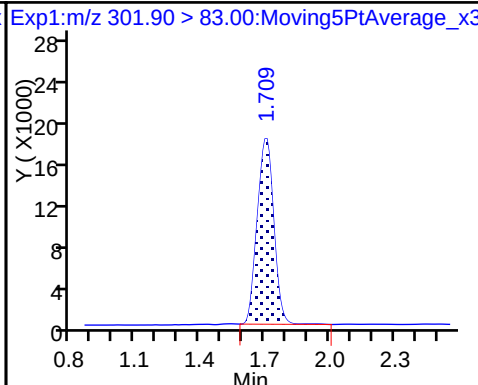
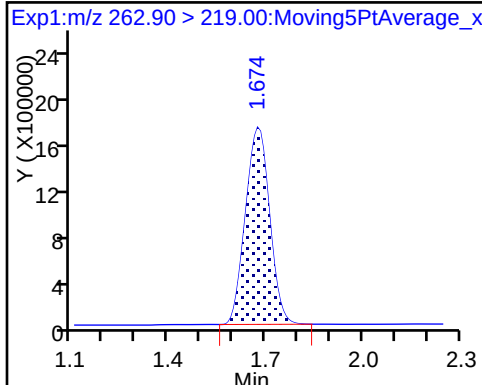
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

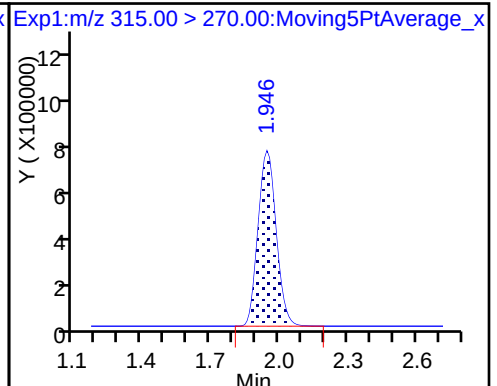
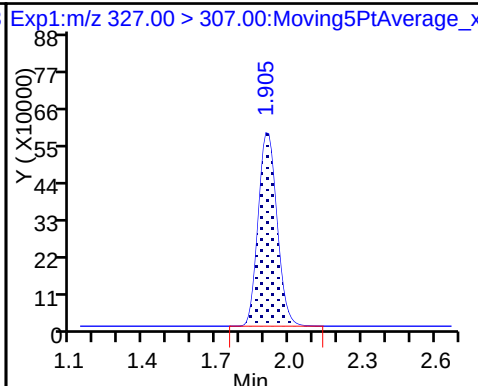
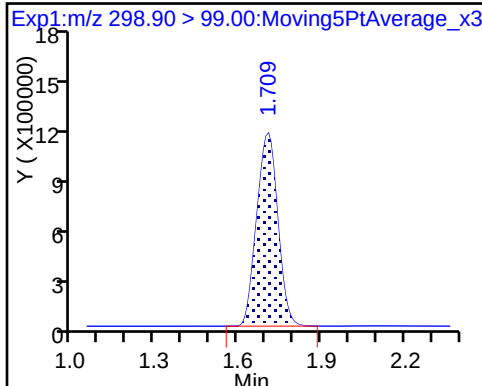
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

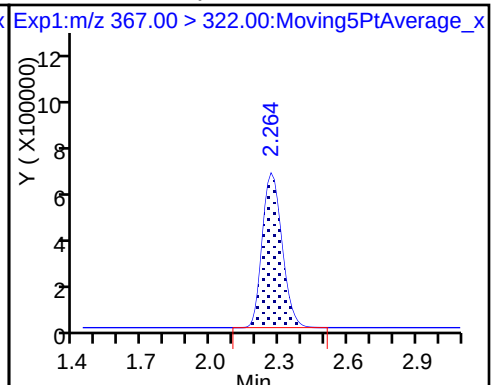
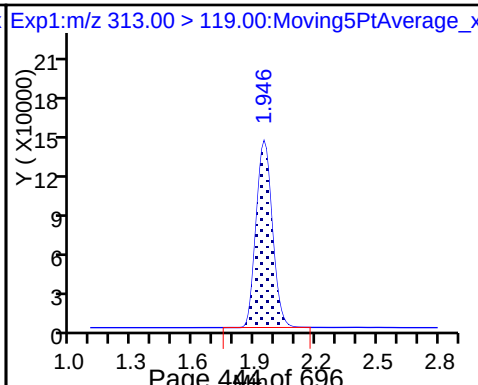
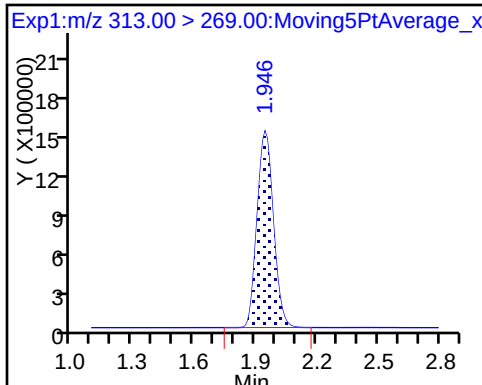
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

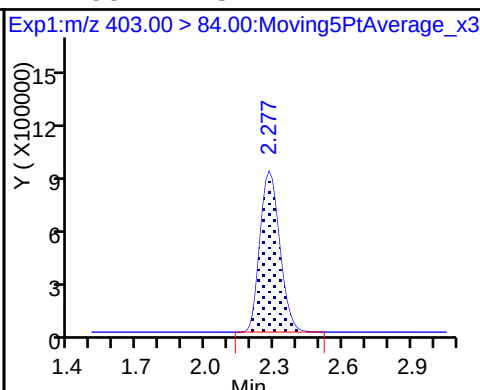
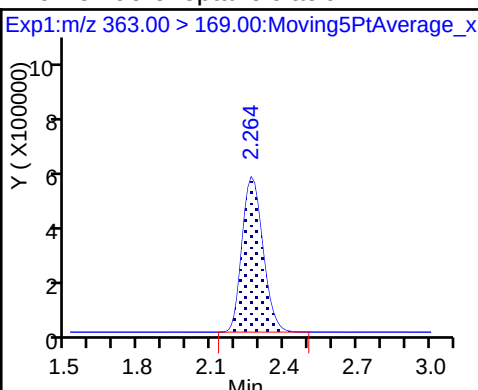
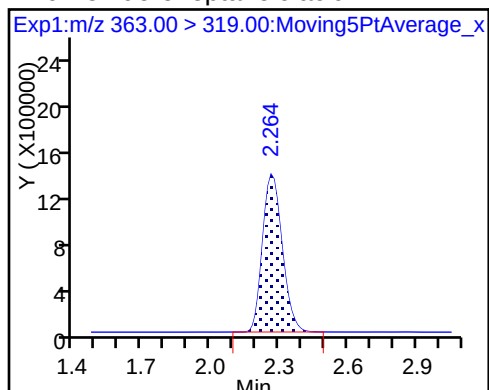
D 9 13C4-PFHpA



10 Perfluoroheptanoic acid

10 Perfluoroheptanoic acid

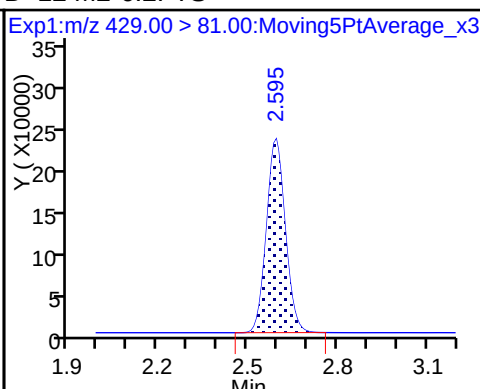
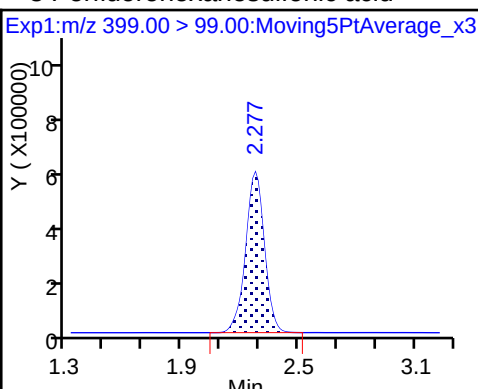
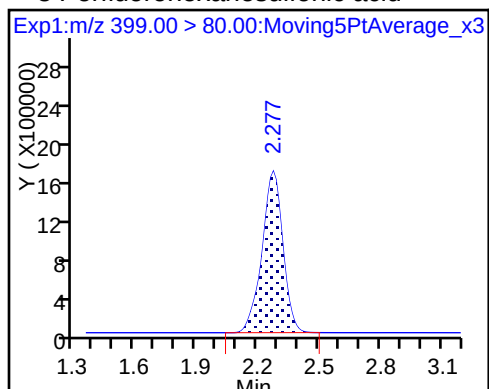
D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid

8 Perfluorohexanesulfonic acid

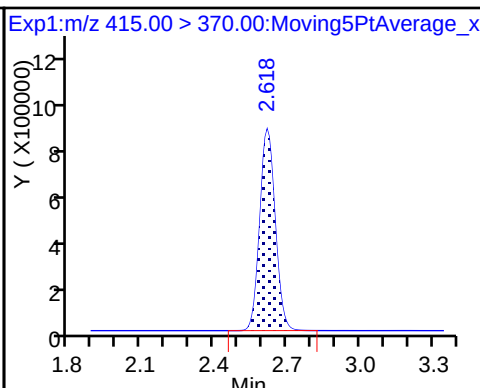
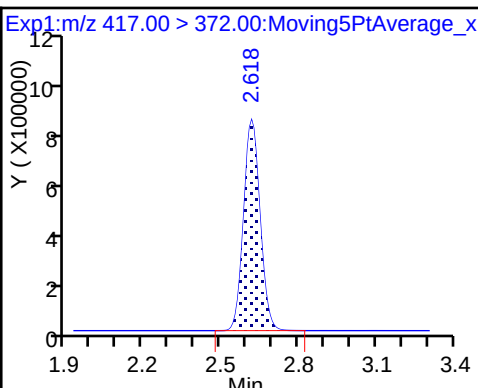
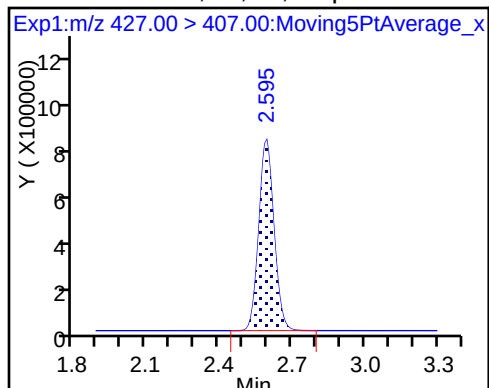
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

D 14 13C4 PFOA

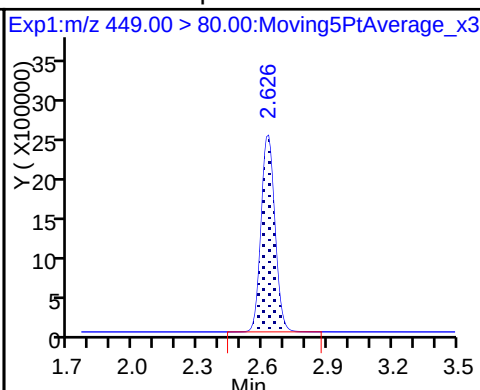
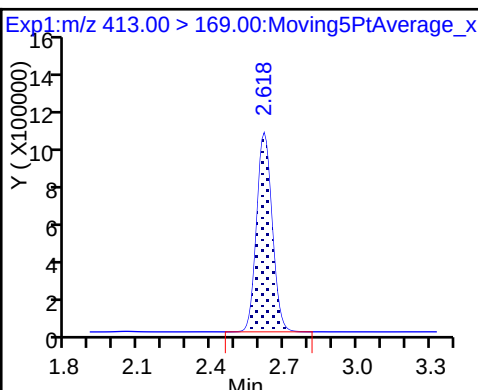
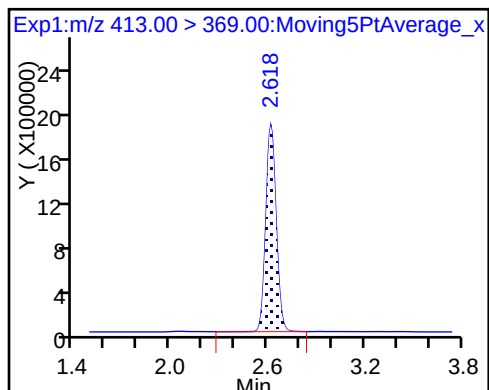
* 62 13C2-PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

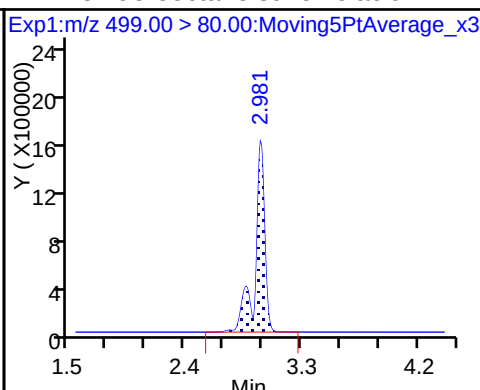
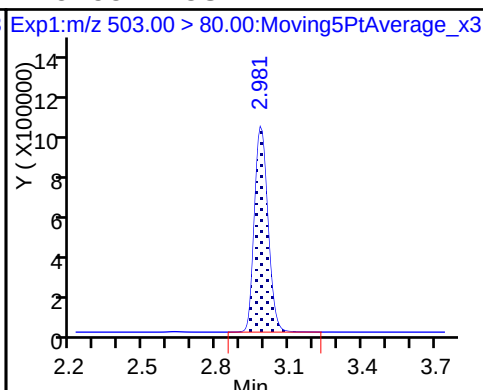
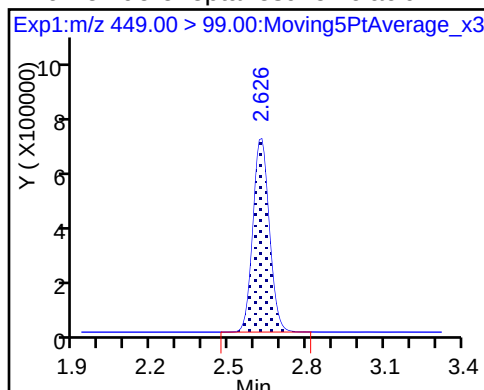
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

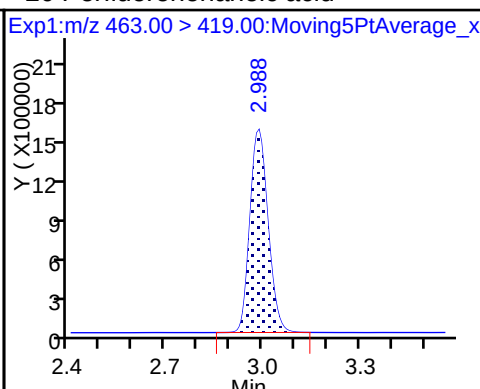
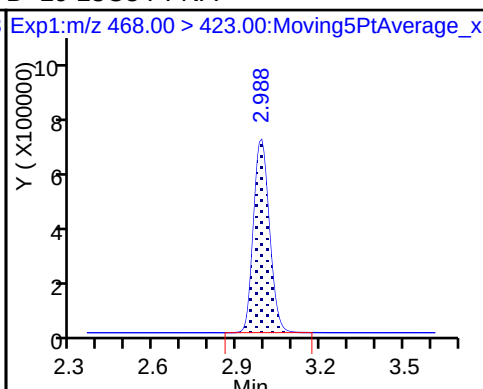
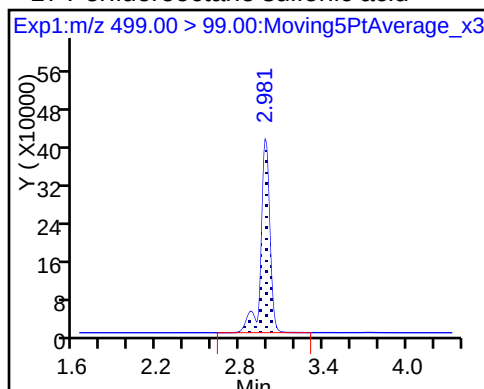
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

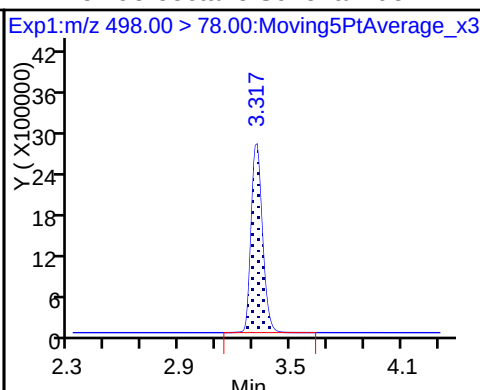
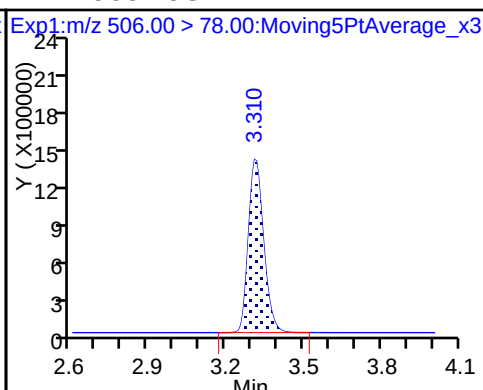
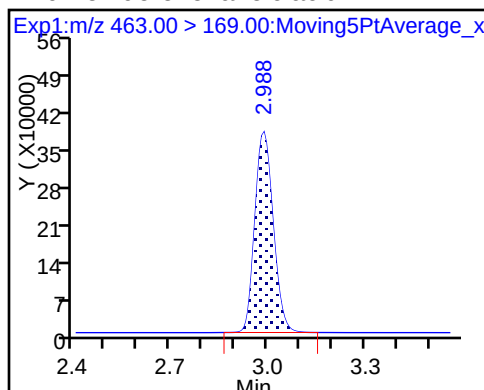
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

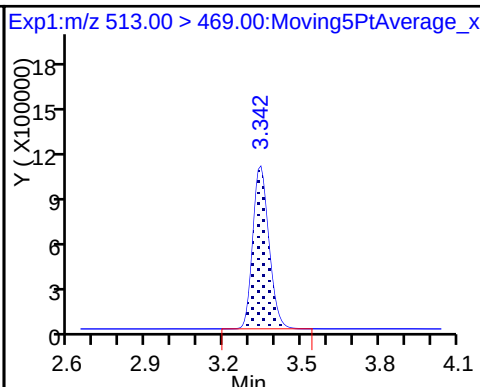
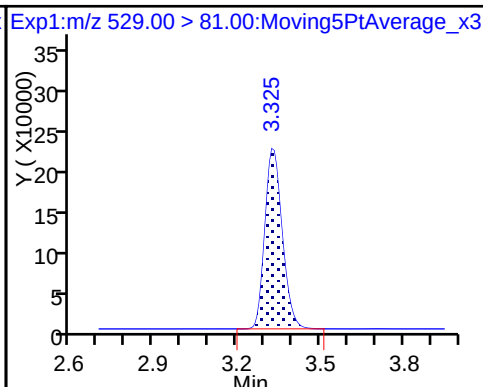
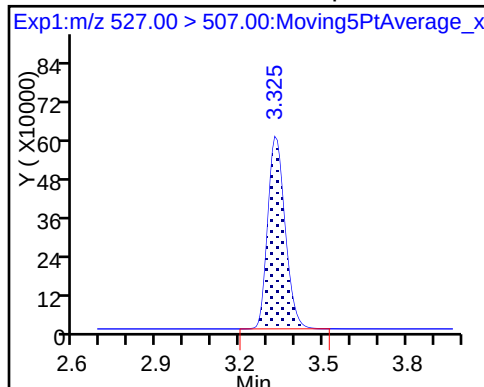
22 Perfluorooctane Sulfonamide



25 Sodium 1H,1H,2H,2H-perfluorodecanoate

De26 M2-8:2FTS

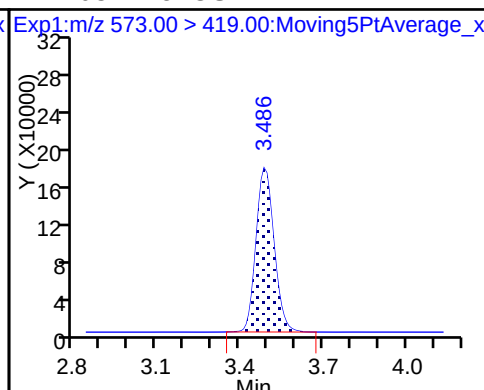
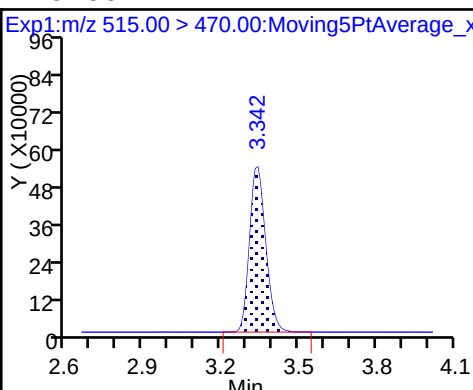
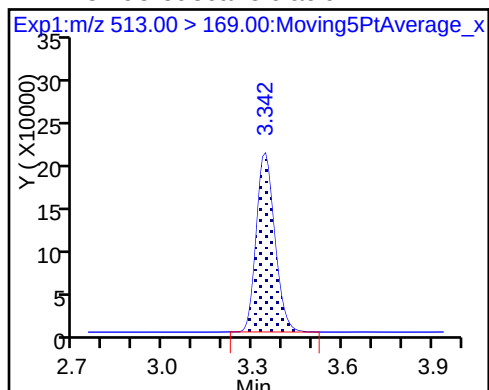
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

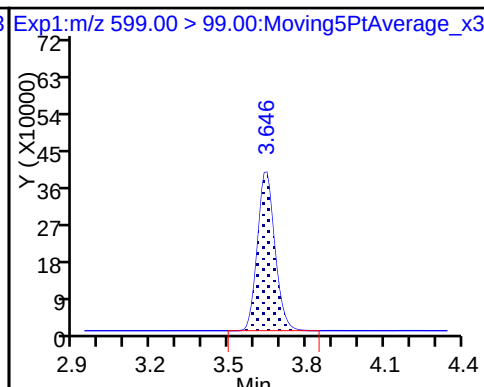
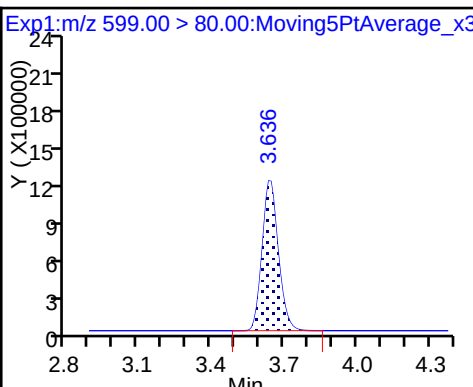
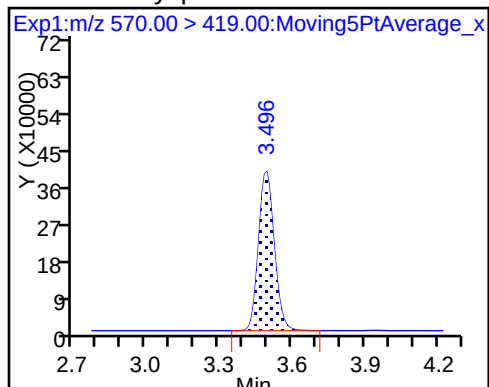
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonamid

29 Perfluorodecane Sulfonic acid

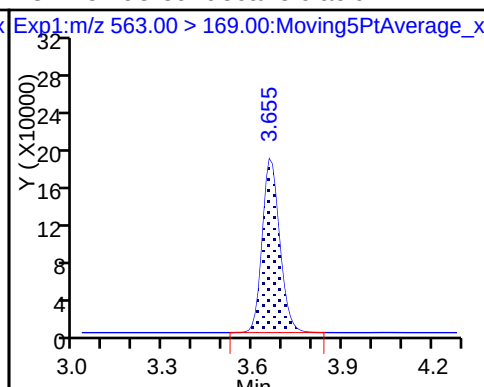
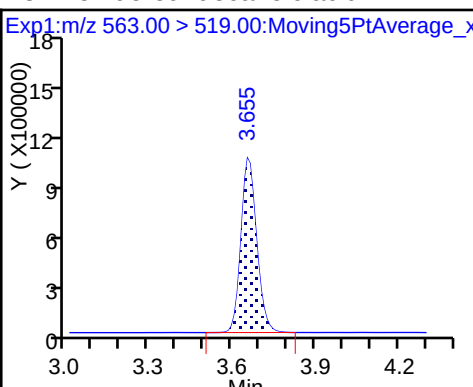
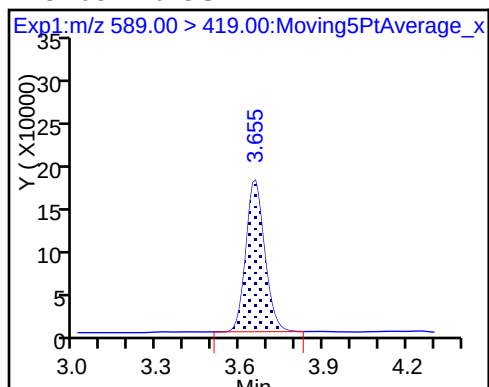
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

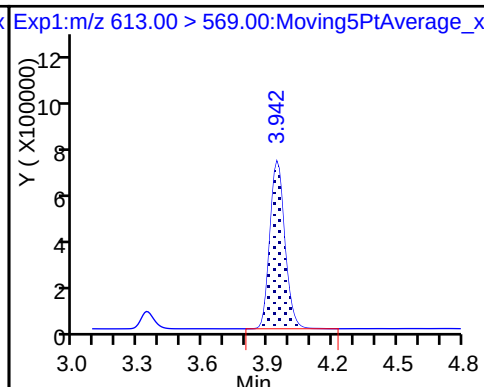
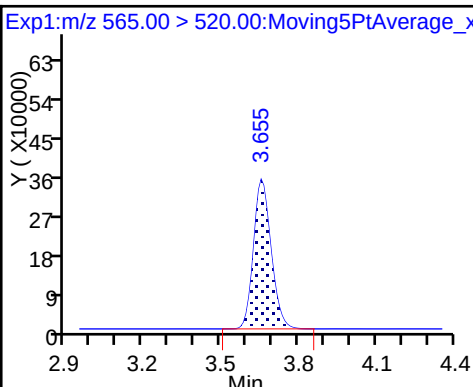
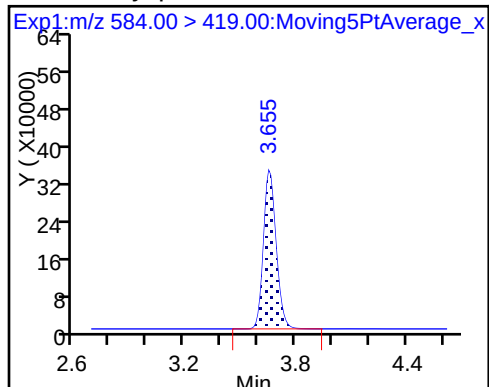
31 Perfluoroundecanoic acid

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

37 Perfluorododecanoic acid

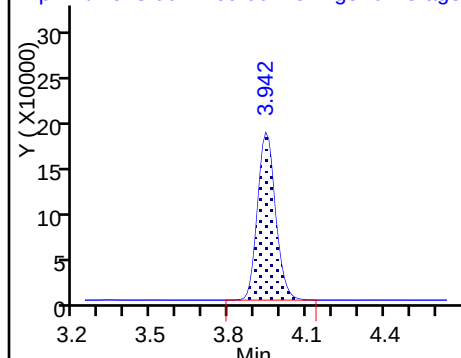


37 Perfluorododecanoic acid

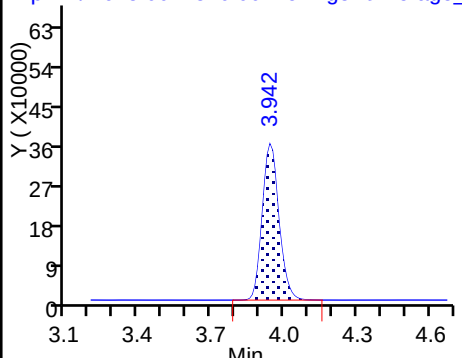
D 36 13C2 PFDaA

41 Perfluorotridecanoic acid

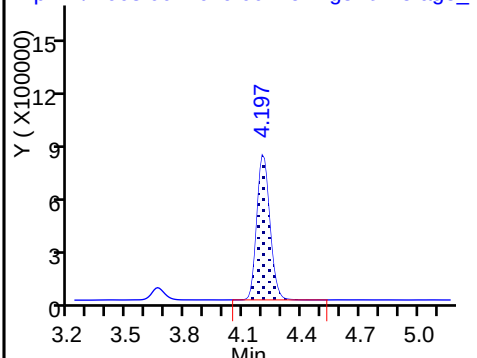
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Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x



Exp1:m/z 663.00 > 619.00:Moving5PtAverage_x

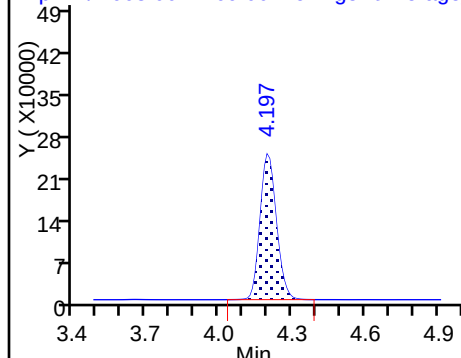


41 Perfluorotridecanoic acid

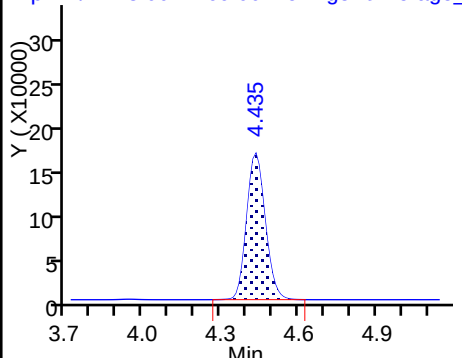
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

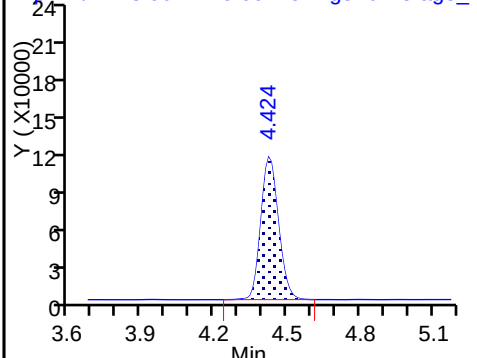
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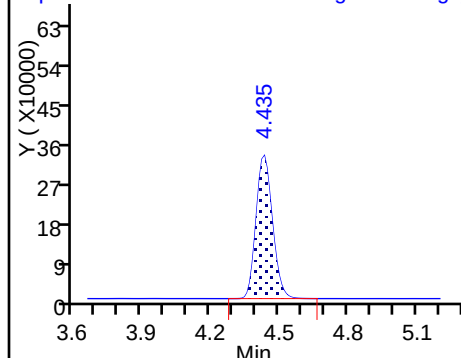
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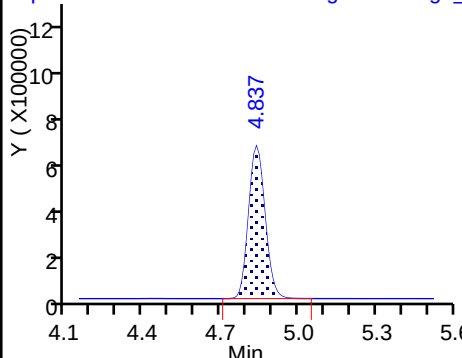
D 43 13C2-PFTeDA

D 44 13C2-PFHxDA

Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d
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 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 14-Mar-2018 14:46:40 ALS Bottle#: 16 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L7-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 15-Mar-2018 08:30:05 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK055

First Level Reviewer: hannigana

Date: 14-Mar-2018 15:09:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.426	1.433	-0.007	0.544	5488770	2.66		107	103891	
2 Perfluorobutyric acid										
212.90 > 169.00	1.426	1.433	-0.007	1.000	20465640	10.1		101	9088	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.670	1.673	-0.003	1.000	16643085	9.83		98.3	6763	
D 3 13C5-PFPeA										
267.90 > 223.00	1.670	1.673	-0.003	0.637	3614376	2.62		105	116242	
D 47 13C3-PFBS										
301.90 > 83.00	1.696	1.703	-0.007	0.647	91415	2.53		109	462	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.705	1.707	-0.002	1.005	25157098	8.38		94.8	43762	
298.90 > 99.00	1.705	1.707	-0.002	1.005	11349947		2.22(1.25-3.74)	94.8	36697	
D 60 M2-4:2FTS										
329.00 > 81.00	1.900	1.900	0.0	0.725	608876	NC			8957	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.900	1.902	-0.002	1.000	5407650	8.39		89.8	170675	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.940	1.938	0.002	1.000	14728676	9.63		96.3	41871	
313.00 > 119.00	1.940	1.938	0.002	1.000	1413648		10.42(5.03-15.10)	96.3	23571	
D 7 13C2 PFHxA										
315.00 > 270.00	1.940	1.938	0.002	0.741	3792481	2.52		101	99659	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.258	2.249	0.009	1.000	15239764	10.4		104	28819	
363.00 > 169.00	2.258	2.249	0.009	1.000	6013377		2.53(1.13-3.40)	104	63638	
D 9 13C4-PFHpA										
367.00 > 322.00	2.258	2.249	0.009	0.862	3460967	2.43		97.2	82976	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.271	2.262	0.009	1.000	21076868	8.56		94.0	45937	
399.00 > 99.00	2.271	2.262	0.009	1.000	7356102		2.87(1.50-4.49)	94.0	18629	
D 11 18O2 PFHxS										
403.00 > 84.00	2.271	2.262	0.009	0.867	5188043	2.46		104	62606	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.590	2.577	0.013	1.000	6214880	9.86		104	108957	
D 12 M2-6:2FTS										
429.00 > 81.00	2.590	2.577	0.013	0.988	876238	2.31		97.2	24497	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.620	2.602	0.018	1.000	14845460	9.43		94.3	6774	
413.00 > 169.00	2.620	2.602	0.018	1.000	8210495		1.81(0.84-2.52)	94.3	17439	
* 62 13C2-PFOA										
415.00 > 370.00	2.620	2.602	0.018		3616836	2.50			102931	
D 14 13C4 PFOA										
417.00 > 372.00	2.620	2.602	0.018	1.000	3383697	2.46		98.6	76565	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.628	2.607	0.021	1.000	19136926	9.09		95.4	122119	
449.00 > 99.00	2.620	2.607	0.013	0.997	5545557		3.45(1.94-5.82)	95.4	50726	
D 18 13C4 PFOS										
503.00 > 80.00	2.990	2.966	0.024	1.141	3708881	2.56		107	13668	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.997	2.969	0.028	1.002	15183603	9.32		100	69414	
499.00 > 99.00	2.990	2.969	0.021	1.000	3460885		4.39(2.31-6.93)	100	51944	
D 19 13C5 PFNA										
468.00 > 423.00	2.997	2.972	0.025	1.144	2673393	2.50		100	66886	
20 Perfluorononanoic acid										
463.00 > 419.00	2.997	2.973	0.024	1.000	10850588	10.1		101	17251	
463.00 > 169.00	2.997	2.973	0.024	1.000	2748917		3.95(1.90-5.69)	101	85927	
D 21 13C8 FOSA										
506.00 > 78.00	3.331	3.305	0.026	1.271	5481492	2.60		104	65678	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.331	3.307	0.024	1.000	20017278	9.33		93.3	116259	
D 26 M2-8:2FTS										
529.00 > 81.00	3.347	3.320	0.027	1.277	876818	2.31		96.5	18090	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.347	3.320	0.027	1.000	4649520	10.2		106	96085	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.355	3.331	0.024	1.000	8319158	9.78		97.8	39348	
513.00 > 169.00	3.355	3.331	0.024	1.000	1572688		5.29(2.36-7.09)	97.8	59606	
D 23 13C2 PFDA										
515.00 > 470.00	3.355	3.332	0.023	1.281	2112175	2.44		97.7	26565	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.511	3.482	0.029	1.340	833367	2.96		118	30905	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.520	3.488	0.032	1.003	3346207	9.64		96.4	21605	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.661	3.636	0.025	1.000	9596144	9.83		102	85566	
599.00 > 99.00	3.661	3.636	0.025	1.000	3208369		2.99(1.39-4.16)	102	52809	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.671	3.649	0.022	1.401	759604	2.49		99.4	1466	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.681	3.655	0.026	1.000	5423061	8.59		85.9	14573	
563.00 > 169.00	3.681	3.655	0.026	1.000	1226002		4.42(2.12-6.36)	85.9	49186	
D 30 13C2 PFUnA										
565.00 > 520.00	3.681	3.655	0.026	1.405	1452593	2.27		90.7	33916	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.681	3.655	0.026	1.003	2887942	9.79		97.9	55129	
D 36 13C2 PFDoA										
615.00 > 570.00	3.969	3.942	0.027	1.515	1674041	2.57		103	6552	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.969	3.942	0.027	1.000	7319601	10.7		107	1313	
613.00 > 169.00	3.969	3.942	0.027	1.000	1822031		4.02(2.13-6.40)	107	38164	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.215	4.196	0.019	1.000	6940025	10.6		106	1397	
663.00 > 169.00	4.205	4.196	0.009	0.998	1940710		3.58(1.25-3.76)	106	21836	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.433	4.430	0.003	1.692	1563578	2.72		109	8600	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.433	4.430	0.003	1.000	1640040	10.3		103	18508	
713.00 > 219.00	4.422	4.430	-0.008	0.998	1108355		1.48(0.71-2.13)	103	8893	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.816	4.824	-0.008	1.000	11085601	NC			791	
813.00 > 169.00	4.816	4.824	-0.008	1.000	2014467		5.50(2.86-8.58)		13570	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.816	4.825	-0.009	1.838	2927472	2.65		106	10915	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.162	5.170	-0.008	1.000	8447970	NC			1385	
913.00 > 169.00	5.162	5.170	-0.008	1.000	1032749		8.18(3.83-11.48)		5592	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL7_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Injection Date: 14-Mar-2018 14:46:40

Instrument ID: A8_N

Lims ID: IC L7 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

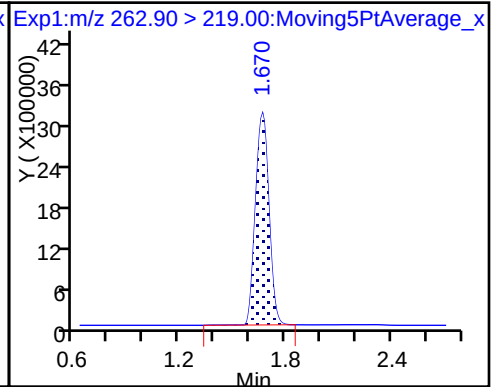
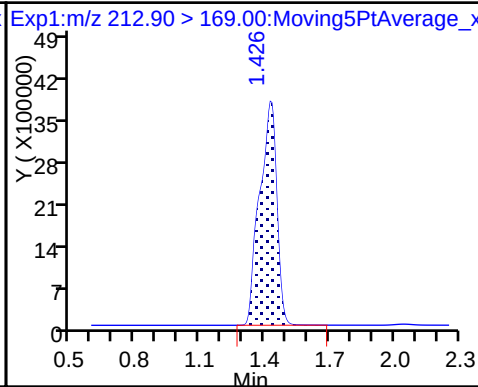
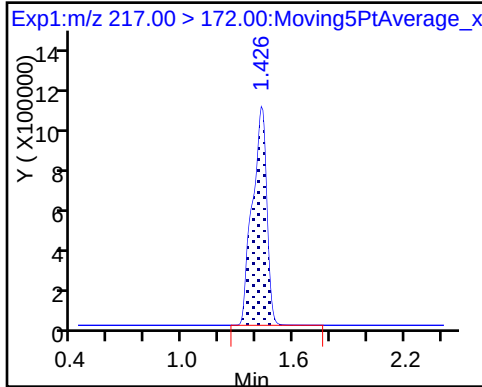
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

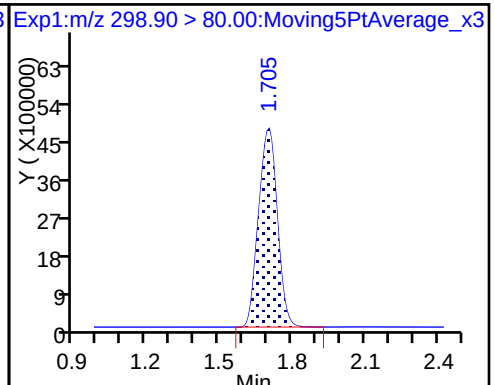
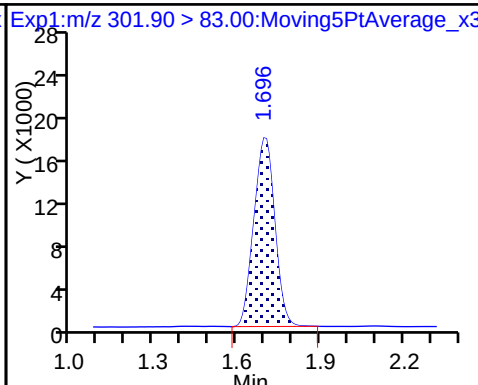
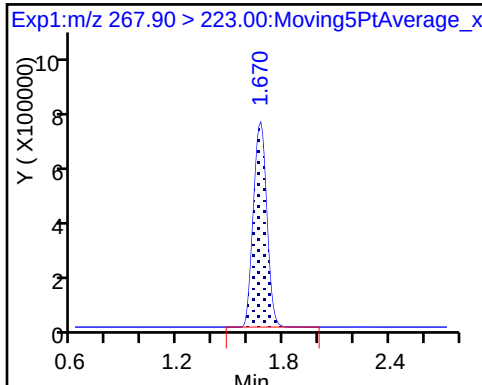
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

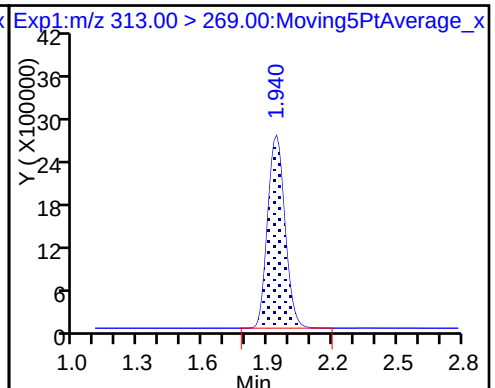
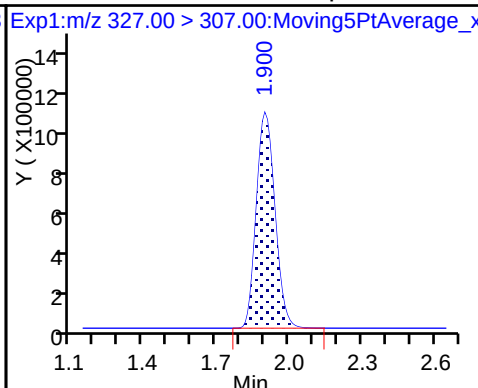
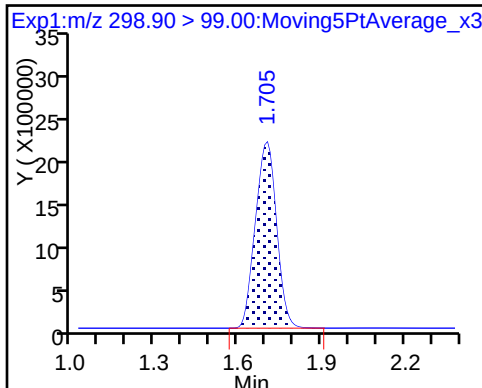
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

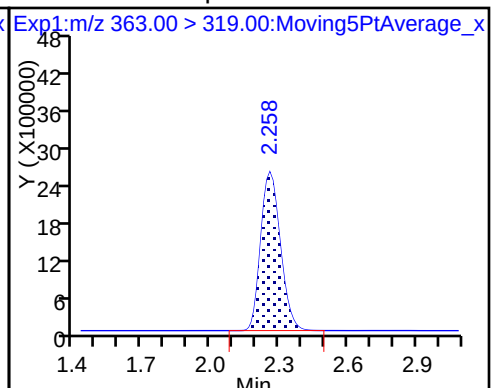
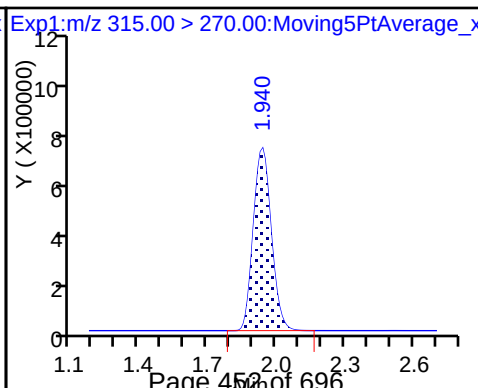
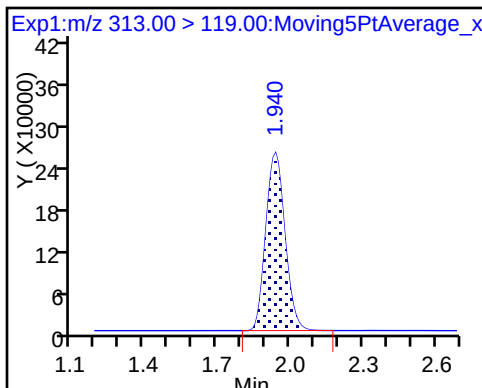
6 Perfluorohexanoic acid

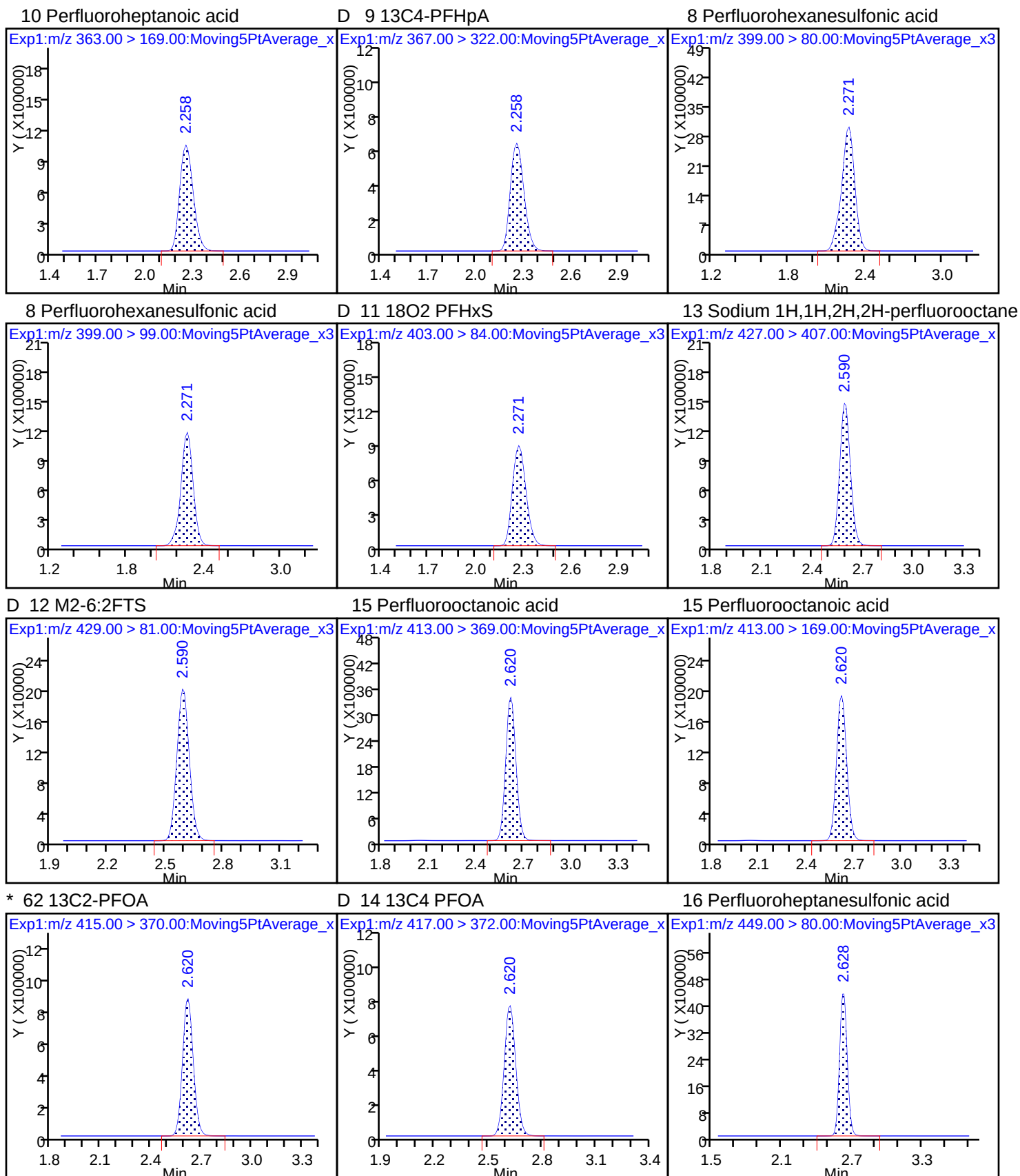


6 Perfluorohexanoic acid

D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

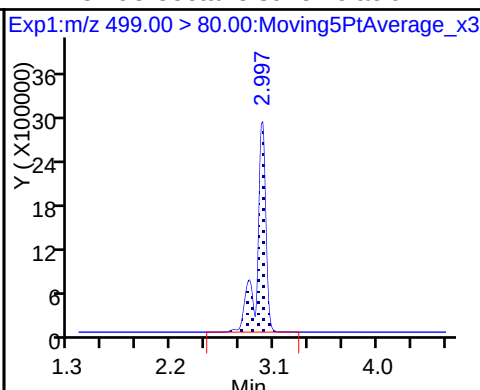
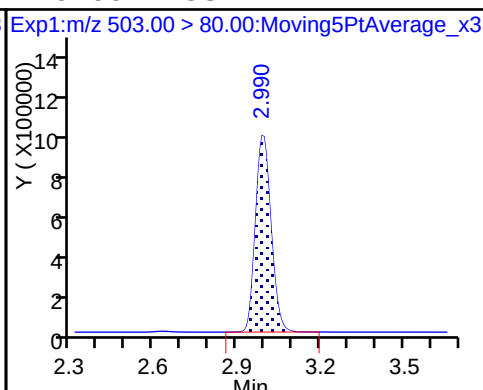
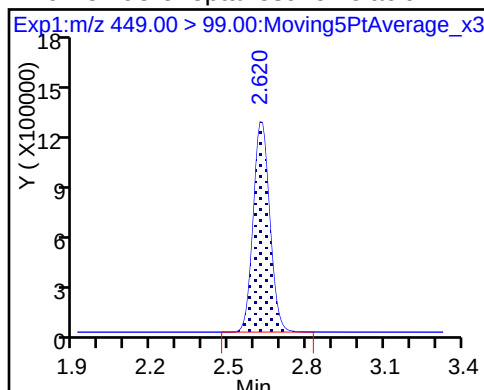




16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

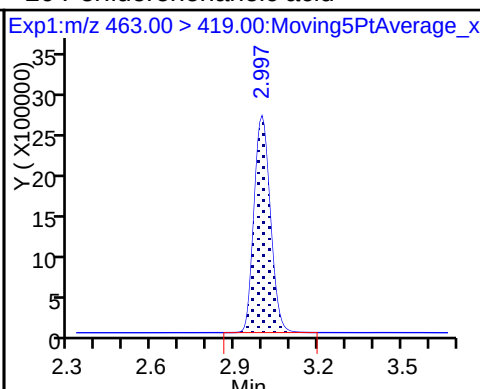
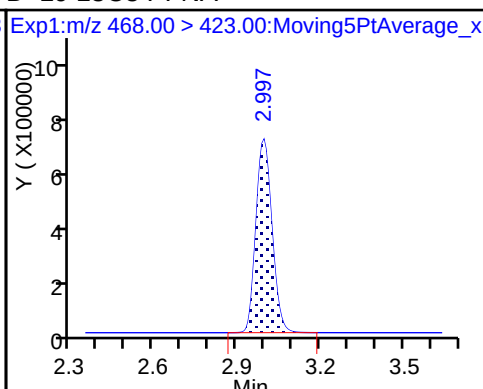
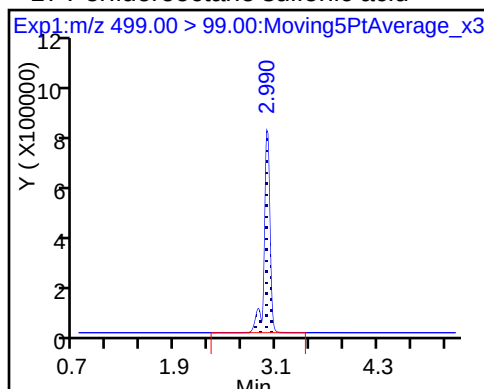
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

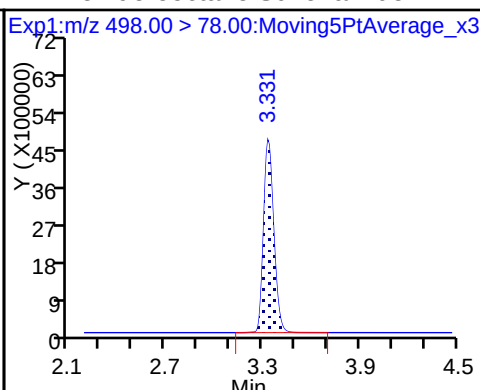
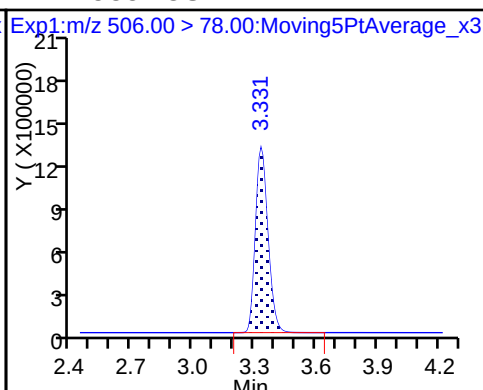
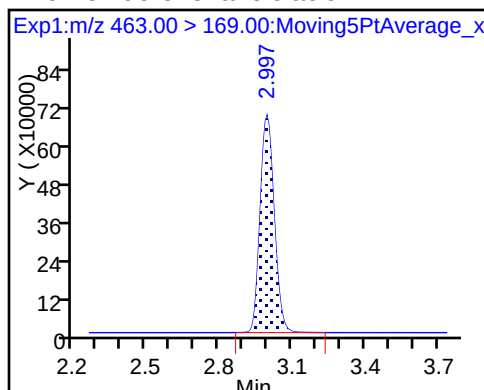
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

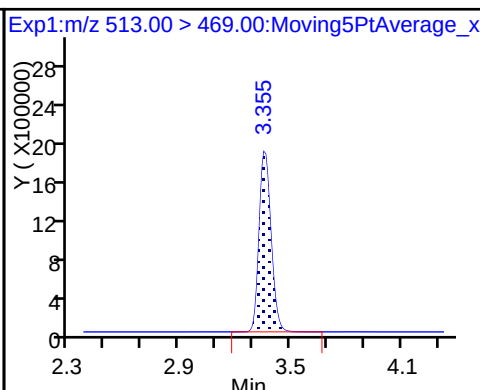
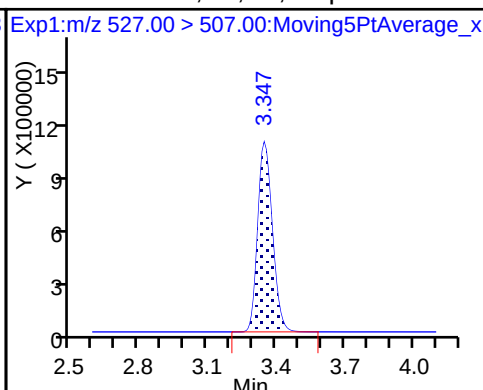
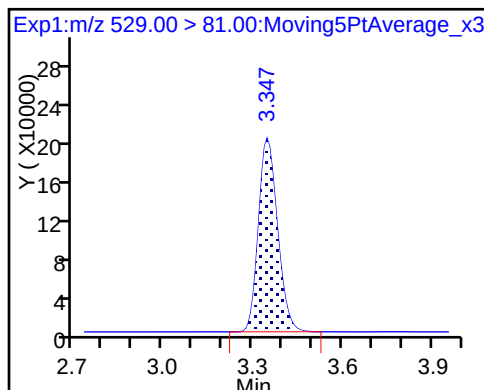
22 Perfluorooctane Sulfonamide



D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodecanoate

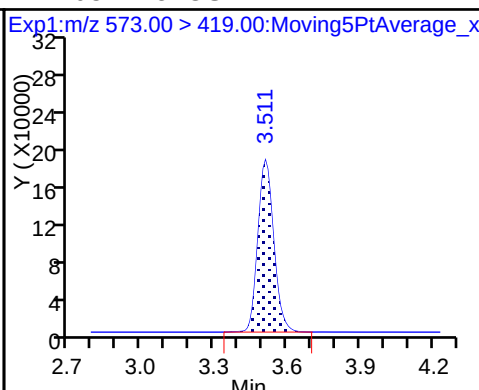
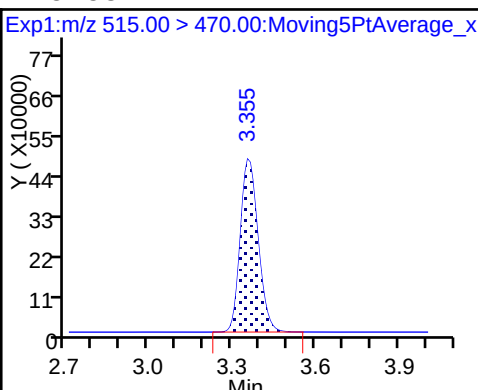
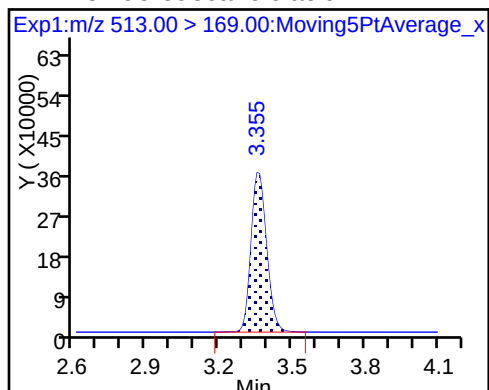
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

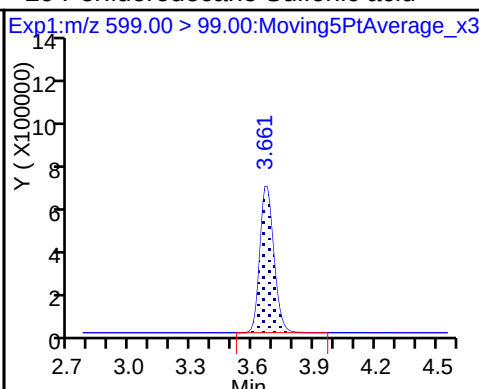
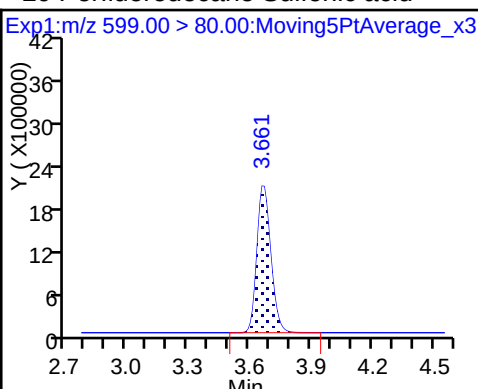
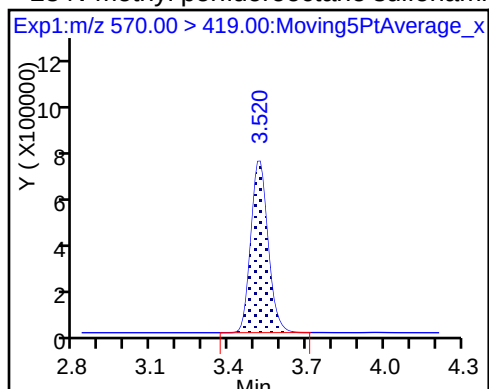
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

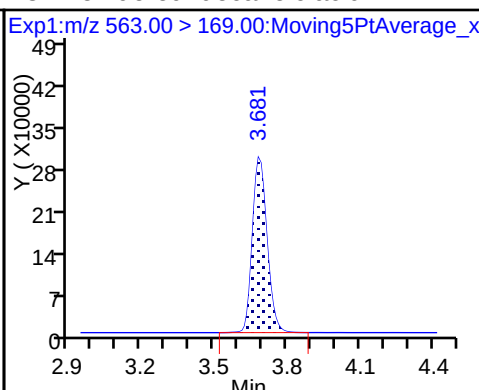
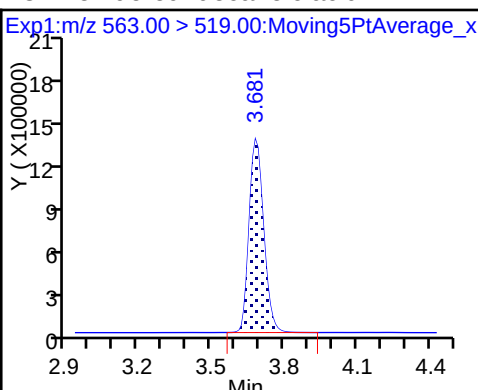
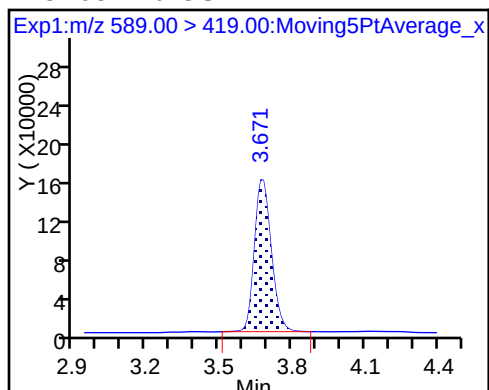
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid

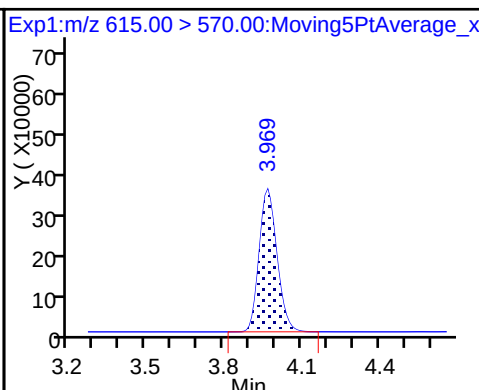
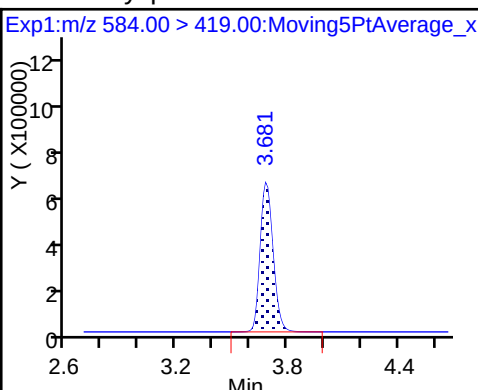
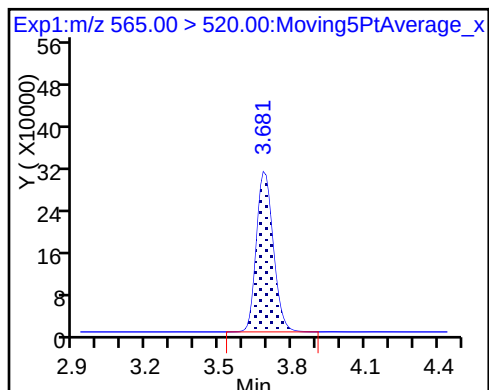
31 Perfluoroundecanoic acid



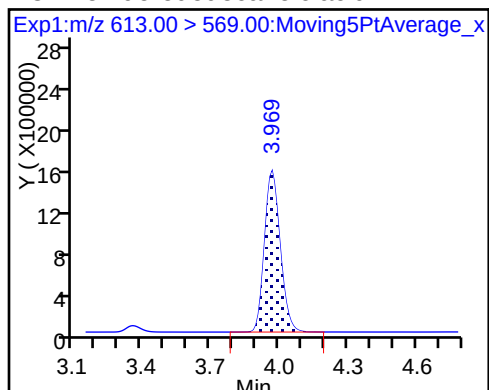
D 30 13C2 PFUnA

33 N-ethyl perfluorooctane sulfonamid

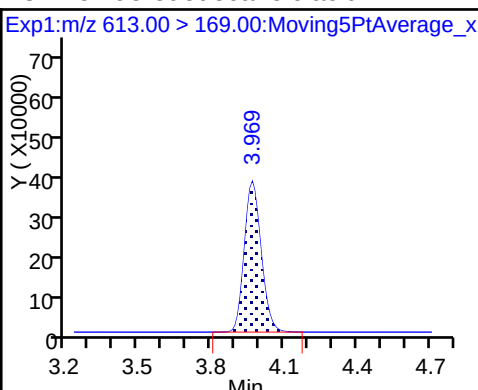
D 36 13C2 PFDaA



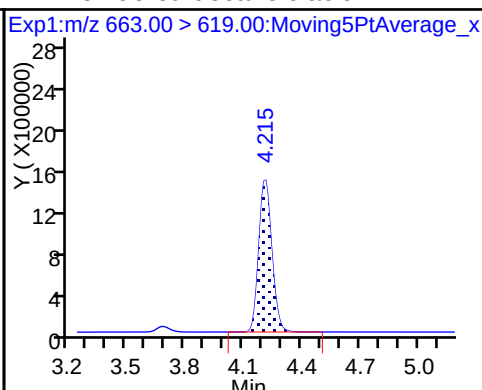
37 Perfluorododecanoic acid



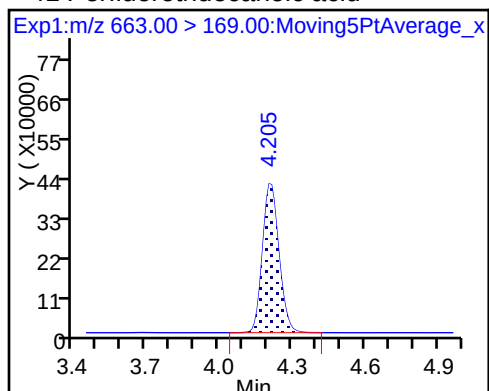
37 Perfluorododecanoic acid



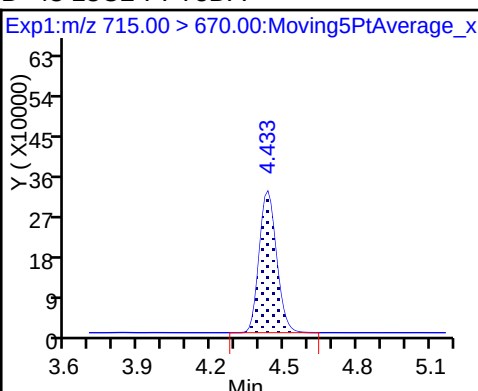
41 Perfluorotridecanoic acid



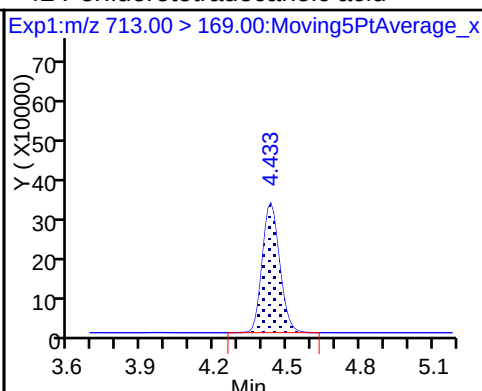
41 Perfluorotridecanoic acid



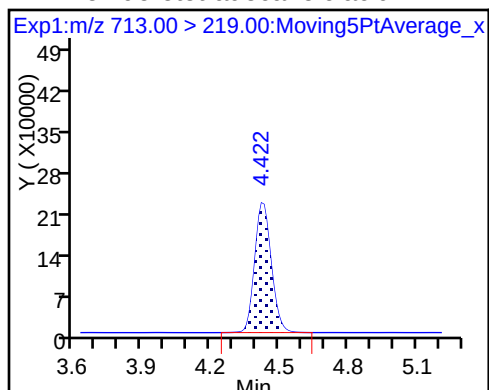
D 43 13C2-PFTeDA



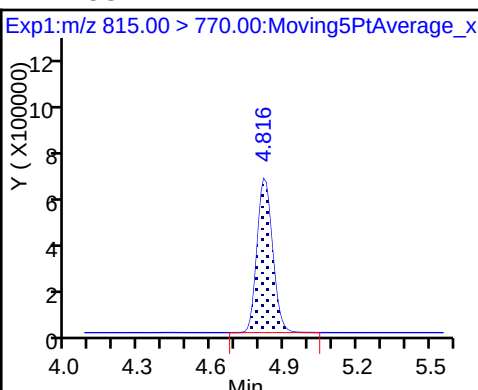
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-213555/2	2018.03.16ICAL_002.d
Level 2	IC 320-213555/3	2018.03.16ICAL_003.d
Level 3	IC 320-213555/4	2018.03.16ICAL_004.d
Level 4	IC 320-213555/5	2018.03.16ICAL_005.d
Level 5	IC 320-213555/6	2018.03.16ICAL_006.d
Level 6	IC 320-213555/7	2018.03.16ICAL_007.d
Level 7	IC 320-213555/8	2018.03.16ICAL_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	0.9031 0.9533	0.9199 0.9384	0.9308	0.8987	0.9480	AveID		0.9274				2.3		20.0			
Perfluoropentanoic acid (PFPeA)	1.2009 1.1519	1.2167 1.1599	1.1152	1.1407	1.1917	AveID		1.1681				3.1		20.0			
Perfluorobutanesulfonic acid (PFBS)	78.227 81.199	75.406 70.304	75.634	77.520	83.350	AveID		77.377				5.5		20.0			
4:2 FTS	16.857 15.350	17.089 14.717	16.180	16.069	16.257	AveID		16.074				5.1		20.0			
Perfluorohexanoic acid (PFHxA)	1.0350 1.0221	1.0062 1.0289	0.9979	0.9561	1.0171	AveID		1.0090				2.6		20.0			
Perfluoroheptanoic acid (PFHpA)	1.0914 1.0923	0.9748 1.0133	1.0620	1.0062	1.0155	AveID		1.0365				4.4		20.0			
Perfluorohexanesulfonic acid (PFHxS)	1.3314 1.0433	1.1983 1.0665	1.0904	0.9939	1.0839	AveID		1.1154				10.2		20.0			
6:2FTS	1.4578 1.7282	1.6726 1.7536	1.7189	1.5984	1.7228	AveID		1.6646				6.3		20.0			
Perfluorooctanoic acid (PFOA)	1.2771 1.1667	1.0727 1.1183	1.0176	1.0536	1.1087	AveID		1.1164				7.7		20.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.2442 1.3776	1.3119 1.2616	1.2979	1.3309	1.3750	AveID		1.3142				3.9		20.0			
Perfluorooctanesulfonic acid (PFOS)	1.1186 1.1281	1.0756 1.0976	1.0125	1.0497	1.0960	AveID		1.0826				3.7		20.0			
Perfluorononanoic acid (PFNA)	0.9418 1.1047	1.0637 1.0209	0.9751	0.9774	1.0532	AveID		1.0196				5.7		20.0			
Perfluorooctane Sulfonamide (FOSA)	0.9443 1.0041	0.9582 0.9184	0.9707	0.9921	1.0142	AveID		0.9717				3.5		20.0			
8:2FTS	1.1650 1.3410	1.2889 1.1925	1.2506	1.2474	1.3153	AveID		1.2573				5.1		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorodecanoic acid (PFDA)	0.8359 1.0050	0.9109 0.9765	0.9435	0.9911	0.9791	AveID		0.9489				6.2		20.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.9706 1.0514	1.1969 1.0691	0.9778	0.9880	1.0369	AveID		1.0415				7.5		20.0			
Perfluorodecanesulfonic acid (PFDS)	0.6130 0.6489	0.6312 0.6417	0.6325	0.6589	0.6434	AveID		0.6385				2.3		20.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	1.0125 1.0565	1.0388 0.9572	0.9286	0.9109	0.9491	AveID		0.9791				5.8		20.0			
Perfluoroundecanoic acid (PFUnA)	1.0505 0.8162	0.9268 0.8167	0.7463	0.7128	0.7970	AveID		0.8380				13.8		20.0			
Perfluorododecanoic acid (PFDoA)	0.9632 1.0357	0.9788 1.0559	1.0311	1.0661	1.0300	AveID		1.0230				3.7		20.0			
Perfluorotridecanoic Acid (PFTriA)	0.8910 1.0818	1.0005 1.0734	1.0473	1.0432	1.0643	AveID		1.0288				6.4		20.0			
Perfluorotetradecanoic acid (PFTeA)	0.3265 0.2648	0.3171 0.2554	0.2524	0.2568	0.2575	AveID		0.2758				11.5		20.0			
13C4 PFBA	1.2265 1.3466	1.2477 1.3727	1.2117	1.2531	1.2775	Ave		1.2765				4.8		20.0			
13C5 PFPeA	0.8872 0.9351	0.9058 0.9286	0.8843	0.8735	0.8895	Ave		0.9006				2.6		20.0			
13C3-PFBS	0.0208 0.0233	0.0220 0.0255	0.0212	0.0213	0.0216	Ave		0.0222				7.4		20.0			
13C2 PFHxA	0.9862 1.0374	1.0207 1.0115	0.9703	1.0040	0.9998	Ave		1.0043				2.2		20.0			
13C4-PFHpA	0.9921 0.9834	1.0180 0.9949	0.9154	0.9647	0.9683	Ave		0.9767				3.3		20.0			
18O2 PFHxS	1.2954 1.3719	1.2605 1.3987	1.2062	1.3166	1.2722	Ave		1.3031				5.1		20.0			
M2-6:2FTS	0.2545 0.2618	0.2468 0.2527	0.2417	0.2487	0.2447	Ave		0.2501				2.7		20.0			
13C4 PFOA	0.9512 0.9322	0.9573 0.9523	0.9243	0.9466	0.9377	Ave		0.9431				1.3		20.0			
13C4 PFOS	0.8639 0.9586	0.8770 1.0055	0.8622	0.8952	0.9169	Ave		0.9113				5.9		20.0			
13C5 PFNA	0.7492 0.7662	0.7527 0.7694	0.7279	0.7580	0.7581	Ave		0.7545				1.8		20.0			
13C8 FOSA	1.2871 1.3566	1.3145 1.3871	1.2648	1.3058	1.3205	Ave		1.3195				3.1		20.0			
M2-8:2FTS	0.2435 0.2384	0.2372 0.2331	0.2312	0.2322	0.2292	Ave		0.2350				2.1		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C2 PFDA	0.6263 0.6332	0.6245 0.6212	0.6276	0.6404	0.6390	Ave		0.6303				1.2		20.0			
d3-NMeFOSAA	0.2079 0.2129	0.1974 0.2312	0.1977	0.2031	0.2066	Ave		0.2081				5.6		20.0			
d5-NEtFOSAA	0.1986 0.1928	0.1988 0.2089	0.1891	0.2048	0.2000	Ave		0.1990				3.4		20.0			
13C2 PFUnA	0.4833 0.5045	0.4984 0.4965	0.4885	0.4973	0.4862	Ave		0.4935				1.6		20.0			
13C2 PFDoA	0.4493 0.4968	0.4705 0.5082	0.4480	0.4436	0.4594	Ave		0.4680				5.4		20.0			
13C2-PFTeDA	0.3906 0.4640	0.4021 0.4788	0.4082	0.4159	0.4304	Ave		0.4272				7.7		20.0			
13C2-PFHxDA	0.5746 0.6782	0.5826 0.6550	0.6045	0.6305	0.6481	Ave		0.6248				6.2		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-213555/2	2018.03.16ICAL_002.d
Level 2	IC 320-213555/3	2018.03.16ICAL_003.d
Level 3	IC 320-213555/4	2018.03.16ICAL_004.d
Level 4	IC 320-213555/5	2018.03.16ICAL_005.d
Level 5	IC 320-213555/6	2018.03.16ICAL_006.d
Level 6	IC 320-213555/7	2018.03.16ICAL_007.d
Level 7	IC 320-213555/8	2018.03.16ICAL_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	50796 10415661	102112 19640198	528325	2048994	5293287	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	48859 8739905	98047 16422736	461977	1812805	4633188	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	65826 13581651	130200 24136015	662611	2653315	6966452	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	14987 2712672	31176 5338400	149763	581100	1435640	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	46811 8603151	91368 15868989	453548	1746371	4444832	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanoic acid (PFHpA)		AveID	49656 8715974	88286 15371232	455401	1765971	4297988	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	71975 10568253	122279 20699070	560663	2166532	5484826	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
6:2FTS		AveID	16131 3480117	34810 6406487	184494	685622	1746834	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	55709 8824823	91352 16238419	440615	1814577	4544060	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	46925 10200411	97440 18413921	499055	2063678	5246040	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorooctanesulfonic acid (PFOS)		AveID	41124 8142540	77874 15616435	379502	1586675	4076350	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)		AveID	32357 6868229	71226 11976618	332490	1348017	3490132	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctane Sulfonamide (FOSA)		AveID	55737 11053457	112048 19424864	575124	2356961	5854030	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
8:2FTS		AveID	12463 2485319	26051 4059707	129787	504855	1262293	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorodecanoic acid (PFDA)		AveID	24009 5163613	50605 9249996	277398	1154786	2734556	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	9255 1816591	21013 3769629	90574	365056	936613	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	23409 4865112	47472 9484295	246261	1034588	2485881	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	9219 1652592	18367 3048852	82250	339482	829764	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	23282 3341411	41093 6182513	170791	644915	1693687	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid (PFDoA)		AveID	19846 4174943	40972 8183198	216392	860515	2068374	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	18358 4360483	41880 8318181	219791	842010	2137089	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	5848 997084	11344 1864512	48261	194321	484453	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	5624795 5463195	5550000 5232633	5676105	5699617	5583889	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C5 PFPeA	13PF OA	Ave	4068590 3793612	4029181 3539835	4142560	3973031	3888024	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	88526 87984	90825 90294	92166	90021	87930	2.33 2.33	2.33 2.33	2.33	2.33	2.33
13C2 PFHxA	13PF OA	Ave	4522587 4208738	4540073 3855910	4545197	4566628	4369955	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PF OA	Ave	4549638 3989677	4528336 3792427	4288080	4387932	4232279	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5619871 5265275	5304007 5044040	5345110	5665272	5260610	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	1108827 1008963	1042798 915248	1075617	1074637	1016091	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	4362221 3782089	4258090 3630259	4329764	4305669	4098618	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	3787315 3717789	3729283 3664287	3861206	3892764	3831418	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	3435835 3108543	3347940 2932926	3409796	3447867	3313741	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	5902761 5503896	5846985 5287574	5924910	5939465	5771845	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	1069796 926664	1010561 851096	1037774	1011812	959683	2.40 2.40	2.40 2.40	2.40	2.40	2.40
13C2 PFDA	13PF OA	Ave	2872260 2569062	2777841 2368082	2940123	2912792	2792979	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	953572 863871	877839 881475	926313	923680	903252	2.50 2.50	2.50 2.50	2.50	2.50	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
d5-NEtFOSAA	13PF OA	Ave	910554 782136	884068 796299	885725	931709	874289	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFUnA	13PF OA	Ave	2216285 2046915	2216867 1892487	2288527	2262020	2125072	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDaA	13PF OA	Ave	2060387 2015472	2093019 1937420	2098644	2017899	2008069	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	1791304 1882383	1788676 1825202	1912234	1891848	1881480	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	2634864 2751498	2591496 2496909	2831717	2868070	2832854	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-213555/2	2018.03.16ICAL_002.d
Level 2	IC 320-213555/3	2018.03.16ICAL_003.d
Level 3	IC 320-213555/4	2018.03.16ICAL_004.d
Level 4	IC 320-213555/5	2018.03.16ICAL_005.d
Level 5	IC 320-213555/6	2018.03.16ICAL_006.d
Level 6	IC 320-213555/7	2018.03.16ICAL_007.d
Level 7	IC 320-213555/8	2018.03.16ICAL_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid (PFBA)	-2.6 1.2	-0.8	0.4	-3.1	2.2	2.8	30 30	30	30	30	30	30
Perfluoropentanoic acid (PFPeA)	2.8 -0.7	4.2	-4.5	-2.3	2.0	-1.4	30 30	30	30	30	30	30
Perfluorobutanesulfonic acid (PFBS)	1.1 -9.1	-2.5	-2.3	0.2	7.7	4.9	30 30	30	30	30	30	30
4:2 FTS	4.9 -8.4	6.3	0.7	0.0	1.1	-4.5	30 30	30	30	30	30	30
Perfluorohexanoic acid (PFHxA)	2.6 2.0	-0.3	-1.1	-5.3	0.8	1.3	30 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	5.3 -2.2	-6.0	2.5	-2.9	-2.0	5.4	30 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	19.4 -4.4	7.4	-2.2	-10.9	-2.8	-6.5	30 30	30	30	30	30	30
6:2FTS	-12.4 5.3	0.5	3.3	-4.0	3.5	3.8	30 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	14.4 0.2	-3.9	-8.8	-5.6	-0.7	4.5	30 30	30	30	30	30	30
Perfluoroheptanesulfonic Acid (PFHpS)	-5.3 -4.0	-0.2	-1.2	1.3	4.6	4.8	30 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	3.3 1.4	-0.6	-6.5	-3.0	1.2	4.2	30 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-7.6 0.1	4.3	-4.4	-4.1	3.3	8.4	30 30	30	30	30	30	30
Perfluorooctane Sulfonamide (FOSA)	-2.8 -5.5	-1.4	-0.1	2.1	4.4	3.3	30 30	30	30	30	30	30
8:2FTS	-7.3 -5.2	2.5	-0.5	-0.8	4.6	6.7	30 30	30	30	30	30	30
Perfluorodecanoic acid (PFDA)	-11.9 2.9	-4.0	-0.6	4.5	3.2	5.9	30 30	30	30	30	30	30

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	-6.8 2.6	14.9	-6.1	-5.1	-0.4	0.9	30 30	30	30	30	30	30
Perfluorodecanesulfonic acid (PFDS)	-4.0 0.5	-1.1	-0.9	3.2	0.8	1.6	30 30	30	30	30	30	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.4 -2.2	6.1	-5.2	-7.0	-3.1	7.9	30 30	30	30	30	30	30
Perfluoroundecanoic acid (PFUnA)	25.4 -2.5	10.6	-10.9	-14.9	-4.9	-2.6	30 30	30	30	30	30	30
Perfluorododecanoic acid (PFDoA)	-5.8 3.2	-4.3	0.8	4.2	0.7	1.2	30 30	30	30	30	30	30
Perfluorotridecanoic Acid (PFTriA)	-13.4 4.3	-2.7	1.8	1.4	3.5	5.2	30 30	30	30	30	30	30
Perfluorotetradecanoic acid (PFTeA)	18.4 -7.4	15.0	-8.5	-6.9	-6.6	-4.0	30 30	30	30	30	30	30

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_002.d
 Lims ID: IC L1 Full
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 16-Mar-2018 23:09:38 ALS Bottle#: 10 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 18-Mar-2018 12:40:23 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK059

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:22:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.440	1.440	0.0	0.537	5624795	2.40		96.1	97481	
2 Perfluorobutyric acid										
212.90 > 169.00	1.440	1.440	0.0	1.000	50796	0.0243		97.4	35.4	
D 3 13C5-PFPeA										
267.90 > 223.00	1.699	1.696	0.003	0.634	4068590	2.46		98.5	158093	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.699	1.698	0.001	1.000	48859	0.0257		103	18.2	
D 47 13C3-PFBS										
301.90 > 83.00	1.726	1.730	-0.004	0.644	88526	2.17		93.4	449	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.735	1.733	0.002	1.005	65826	0.0223		101	30.6	
298.90 > 99.00	1.735	1.733	0.002	1.005	26391		2.49(1.25-3.74)	101	27.7	
D 60 M2-4:2FTS										
329.00 > 81.00	1.945	1.942	0.002	0.726	664416	NC			6383	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.945	1.944	0.0	1.000	14987	0.0245		105	963	
D 7 13C2 PFHxA										
315.00 > 270.00	1.975	1.979	-0.004	0.737	4522587	2.46		98.2	135381	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.985	1.982	0.003	1.005	46811	0.0256		103	114	
313.00 > 119.00	1.985	1.982	0.003	1.005	3650		12.82(5.03-15.10)	103	71.3	
D 9 13C4-PFHpA										
367.00 > 322.00	2.314	2.311	0.003	0.864	4549638	2.54		102	109297	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.314	2.311	0.003	1.000	49656	0.0263		105	111	
363.00 > 169.00	2.314	2.311	0.003	1.000	17084		2.91(1.13-3.40)	105	311	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.327	2.326	0.001	0.869	5619871	2.35		99.4	87133	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.327	2.326	0.001	1.000	71975	0.0272		119	9.7	
399.00 > 99.00	2.327	2.326	0.001	1.000	21084		3.41(1.50-4.49)	119	8.8	
D 12 M2-6:2FTS										
429.00 > 81.00	2.647	2.651	-0.004	0.988	1108827	2.42		102	28430	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.655	2.652	0.003	1.003	16131	0.0208		87.6	934	
D 14 13C4 PFOA										
417.00 > 372.00	2.678	2.678	0.0	1.000	4362221	2.52		101	92087	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.678	2.678	0.0	1.000	55709	0.0286		114	16.3	
413.00 > 169.00	2.678	2.678	0.0	1.000	27729		2.01(0.84-2.52)	114	123	
* 62 13C2-PFOA										
415.00 > 370.00	2.678	2.678	0.0		4585960	2.50			82370	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.678	2.684	-0.006	1.000	46925	0.0225		94.7	1370	
449.00 > 99.00	2.678	2.684	-0.006	1.000	12121		3.87(1.94-5.82)	94.7	305	
D 18 13C4 PFOS										
503.00 > 80.00	3.050	3.050	0.0	1.139	3787315	2.27		94.8	64073	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.050	3.050	0.0	1.000	41124	0.0240		103	182	
499.00 > 99.00	3.050	3.050	0.0	1.000	9710		4.24(2.31-6.93)	103	77.0	
D 19 13C5 PFNA										
468.00 > 423.00	3.050	3.052	-0.002	1.139	3435835	2.48		99.3	78094	
20 Perfluorononanoic acid										
463.00 > 419.00	3.050	3.052	-0.002	1.000	32357	0.0231		92.4	77.4	
463.00 > 169.00	3.050	3.052	-0.002	1.000	7238		4.47(1.90-5.69)	92.4	195	
D 21 13C8 FOSA										
506.00 > 78.00	3.387	3.388	-0.001	1.265	5902761	2.44		97.5	58949	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.387	3.388	-0.001	1.000	55737	0.0243		97.2	2105	
D 26 M2-8:2FTS										
529.00 > 81.00	3.406	3.406	0.0	1.271	1069796	2.48		104	23969	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.406	3.406	0.0	1.000	12463	0.0222		92.7	395	
D 23 13C2 PFDA										
515.00 > 470.00	3.415	3.416	-0.001	1.275	2872260	2.48		99.4	53902	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.415	3.416	-0.001	1.000	24009	0.0220		88.1	136	
513.00 > 169.00	3.415	3.416	-0.001	1.000	4159		5.77(2.36-7.09)	88.1	203	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.569	3.570	-0.001	1.332	953572	2.50		99.9	25950	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.569	3.571	-0.002	1.000	9255	0.0233		93.2	129	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.727	3.729	-0.002	1.000	23409	0.0231		96.0	834	
599.00 > 99.00	3.727	3.729	-0.002	1.000	8746		2.68(1.39-4.16)	96.0	198	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.737	3.740	-0.003	1.395	910554	2.49		99.8	2200	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.747	3.746	0.001	1.003	9219	0.0259		103	186	
D 30 13C2 PFUnA										
565.00 > 520.00	3.747	3.747	0.0	1.399	2216285	2.45		97.9	57806	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.747	3.750	-0.003	1.000	23282	0.0313		125	69.0	
563.00 > 169.00	3.747	3.750	-0.003	1.000	6053		3.85(2.12-6.36)	125	769	
D 36 13C2 PFDoA										
615.00 > 570.00	4.045	4.041	0.004	1.510	2060387	2.40		96.0	12314	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.045	4.042	0.003	1.000	19846	0.0235		94.2	3.5	
613.00 > 169.00	4.045	4.042	0.003	1.000	6752		2.94(2.13-6.40)	94.2	239	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.306	4.304	0.002	1.000	18358	0.0217		86.6	3.9	
663.00 > 169.00	4.306	4.304	0.002	1.000	6063		3.03(1.25-3.76)	86.6	75.3	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.543	4.545	-0.002	1.696	1791304	2.29		91.4	12132	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.553	4.545	0.008	1.002	5848	0.0296		118	85.1	RM
713.00 > 219.00	4.543	4.545	-0.002	1.000	2605		2.24(0.71-2.13)	118	29.1	R M
D 44 13C2-PFHxDA										
815.00 > 770.00	4.954	4.956	-0.002	1.850	2634864	2.30		92.0	9891	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.954	4.960	-0.006	1.000	51807	NC			4.6	
813.00 > 169.00	4.954	4.960	-0.006	1.000	6716		7.71(2.86-8.58)		95.1	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.322	5.320	0.002	1.000	27160	NC			4.9	
913.00 > 169.00	5.322	5.320	0.002	1.000	3181		8.54(3.83-11.48)		48.6	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL1_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_002.d

Injection Date: 16-Mar-2018 23:09:38

Instrument ID: A8_N

Lims ID: IC L1 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 10

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

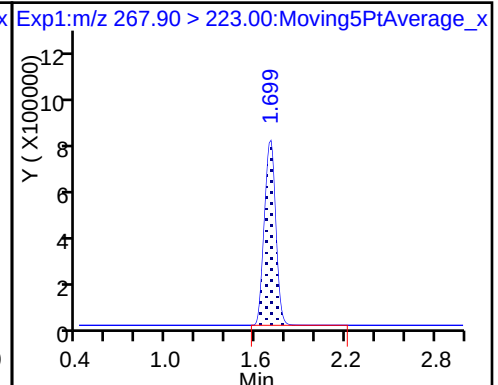
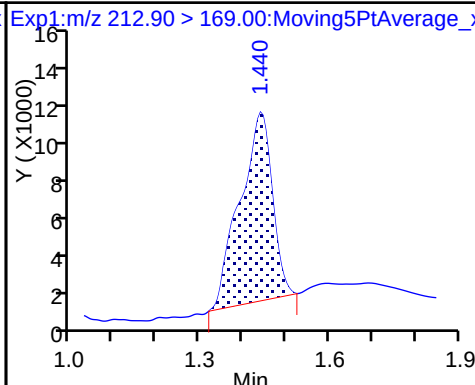
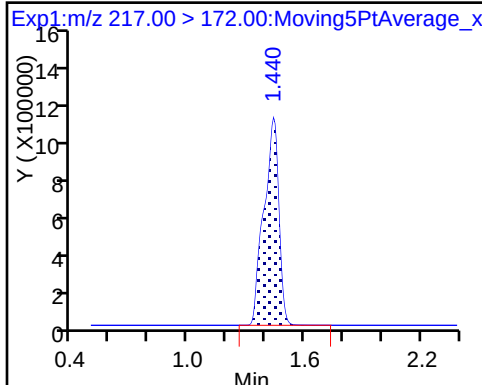
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

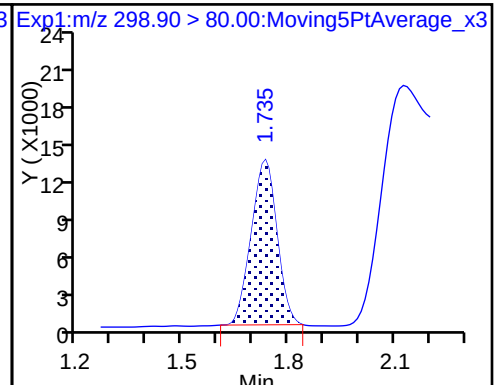
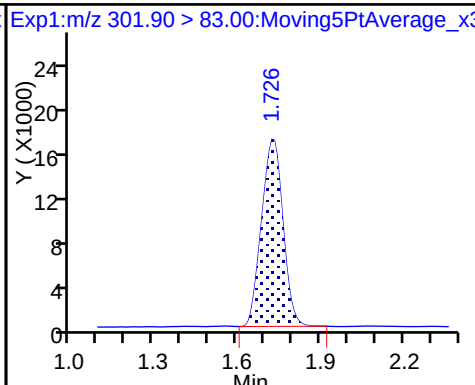
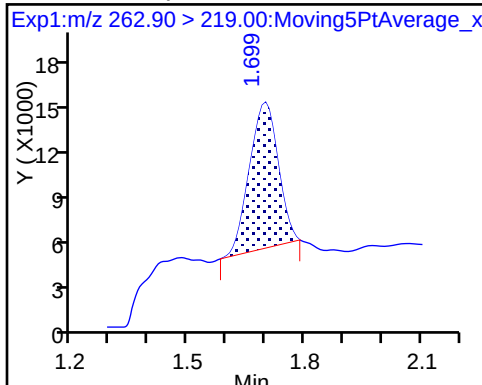
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

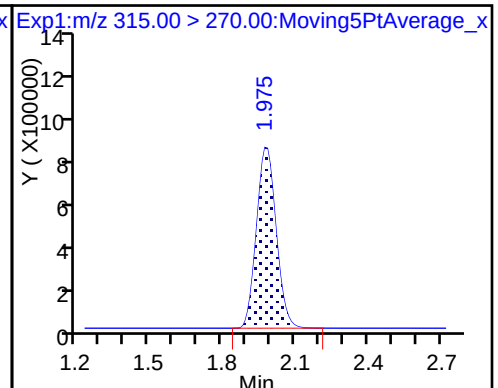
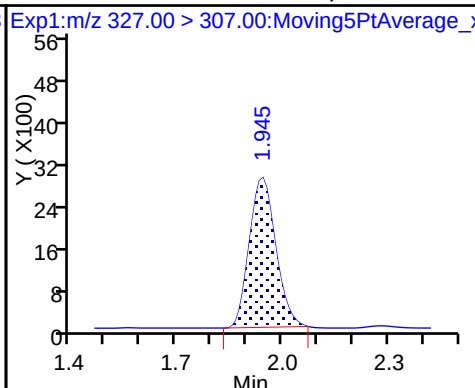
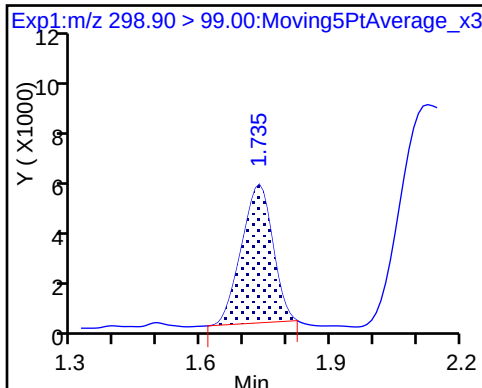
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

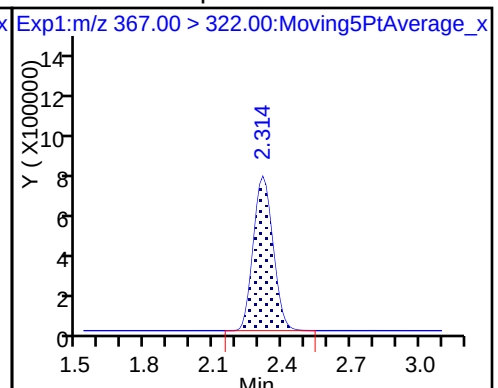
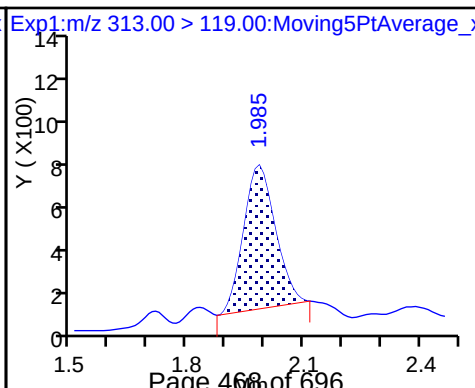
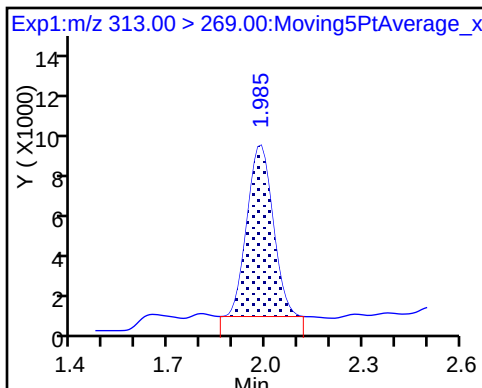
De 7 13C2 PFHxA



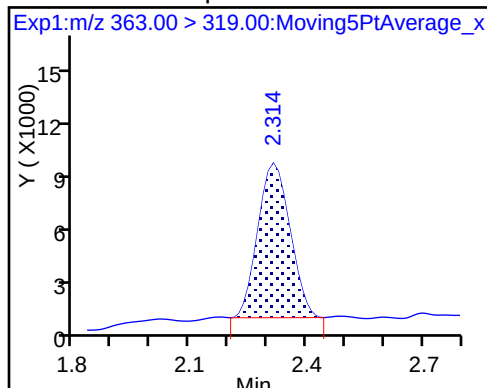
6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

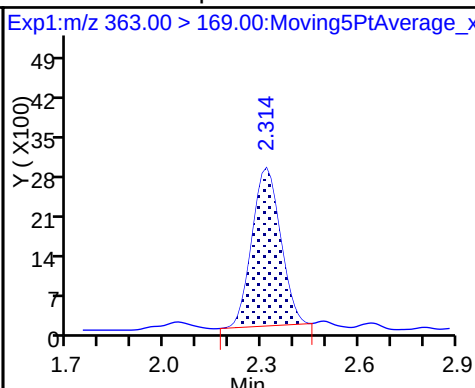
D 9 13C4-PFHpA



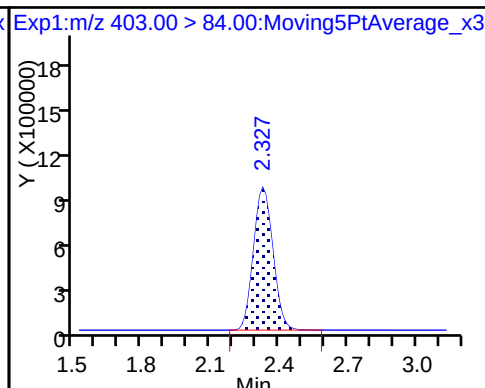
10 Perfluoroheptanoic acid



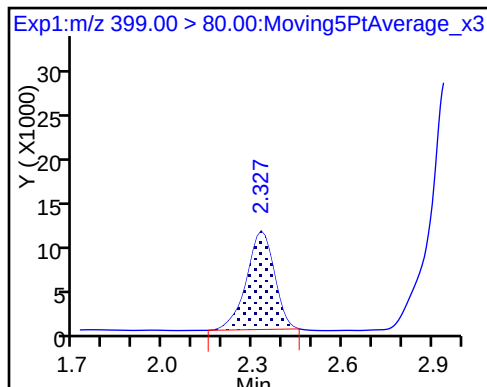
10 Perfluoroheptanoic acid



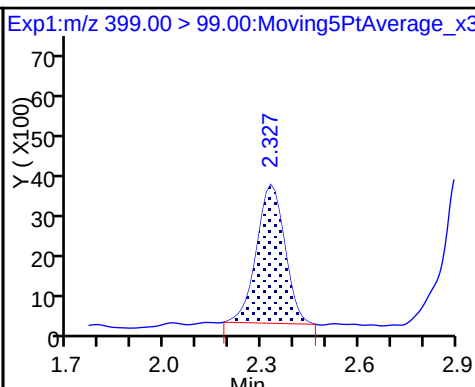
D 11 18O2 PFHxS



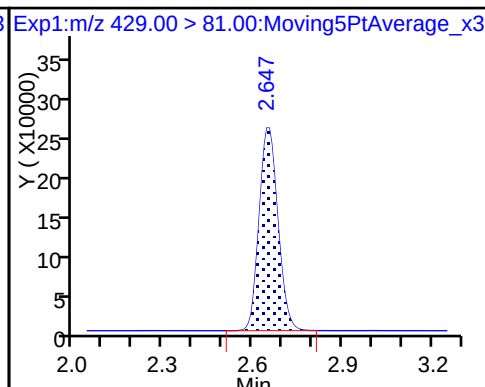
8 Perfluorohexanesulfonic acid



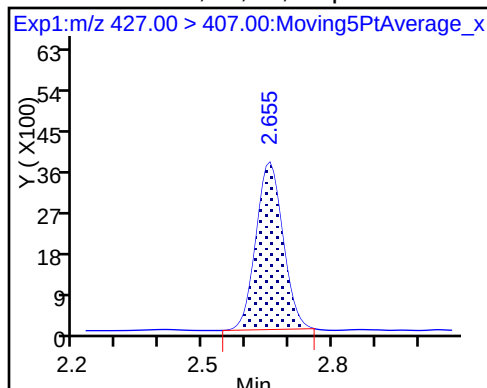
8 Perfluorohexanesulfonic acid



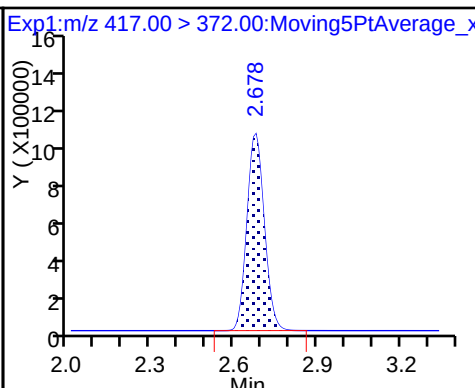
D 12 M2-6:2FTS



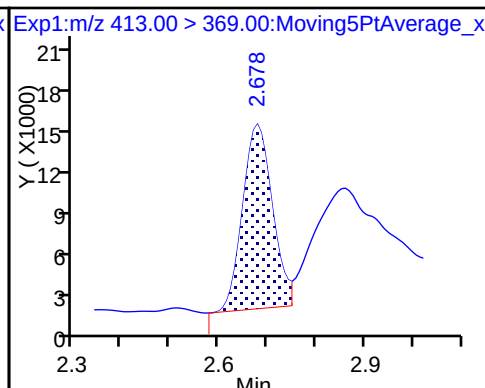
13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate



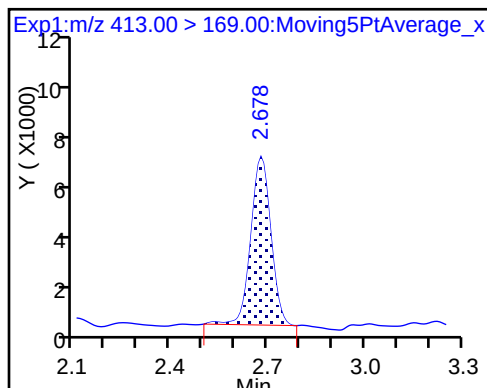
D 14 13C4 PFOA



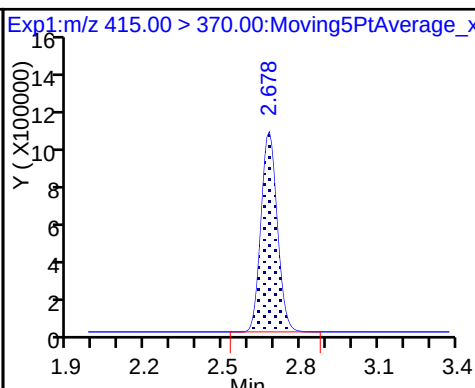
15 Perfluorooctanoic acid



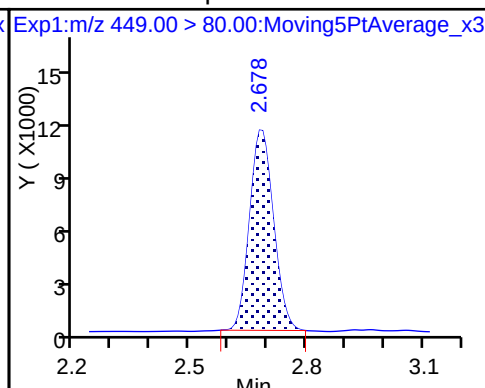
15 Perfluorooctanoic acid



* 62 13C2-PFOA



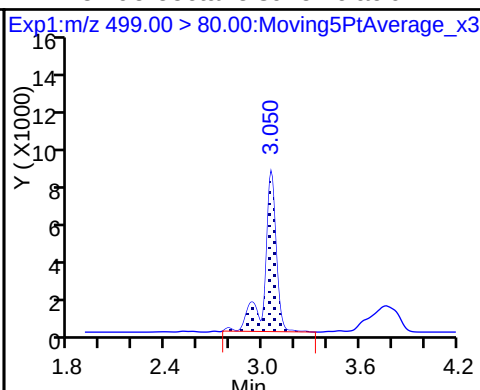
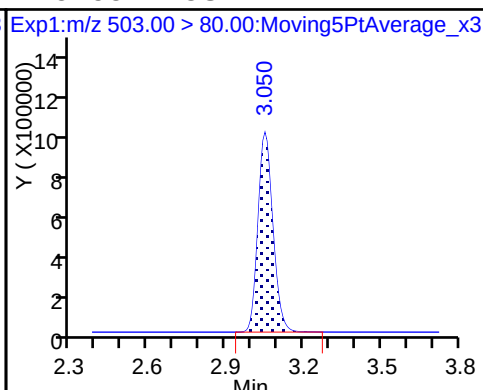
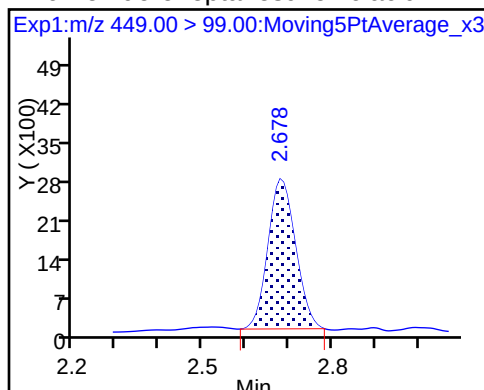
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

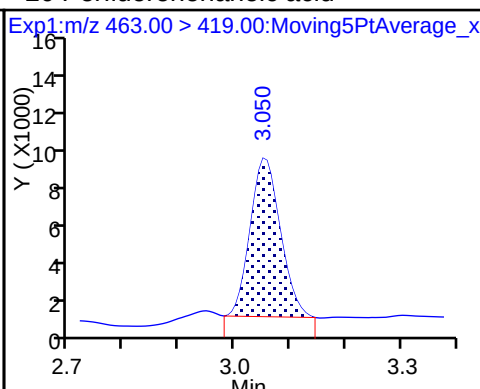
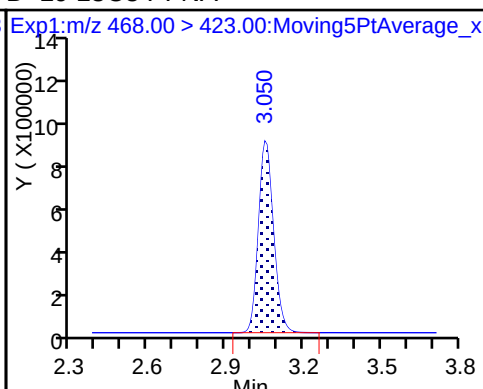
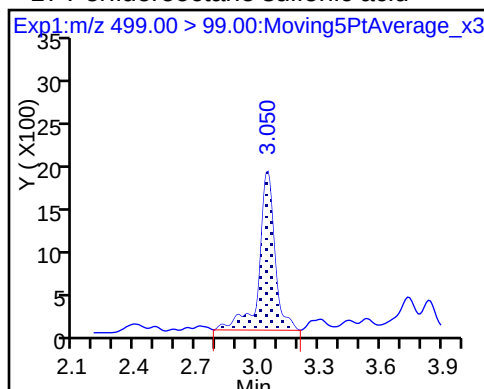
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

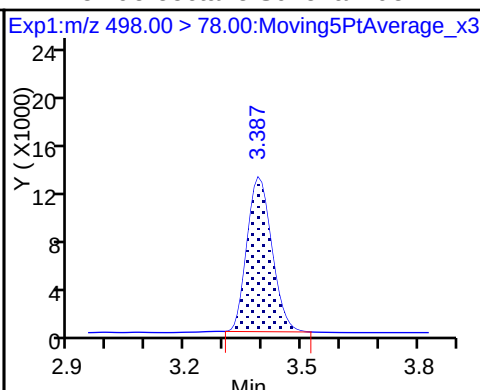
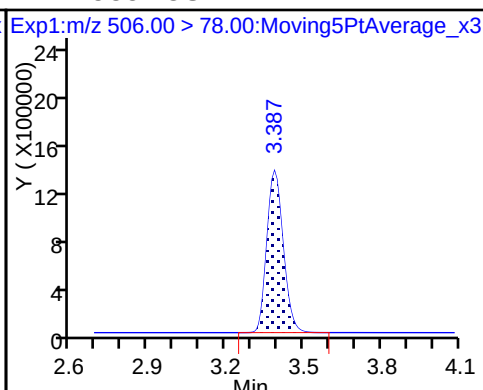
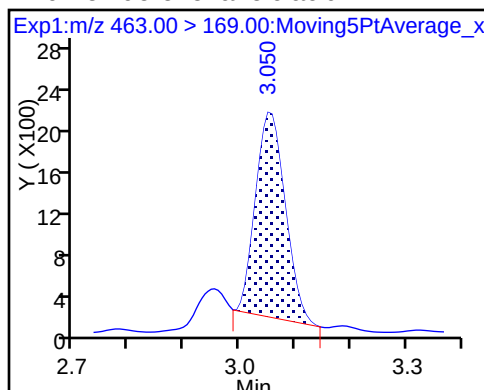
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

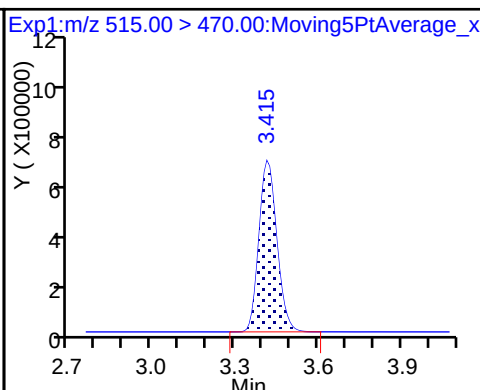
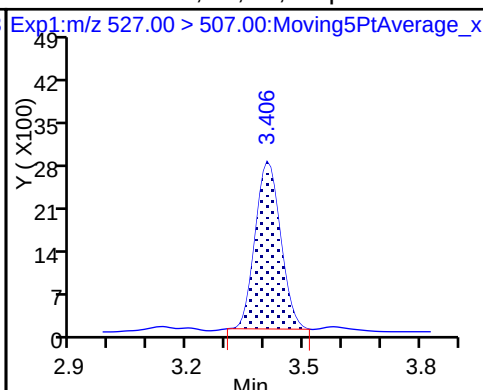
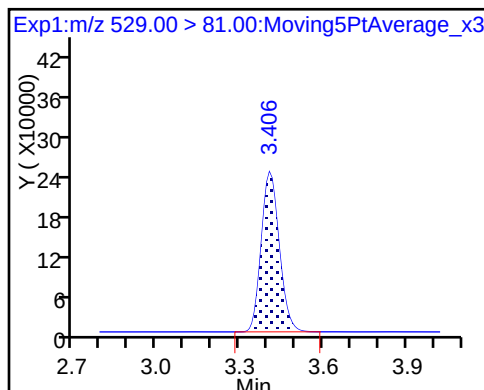
22 Perfluorooctane Sulfonamide



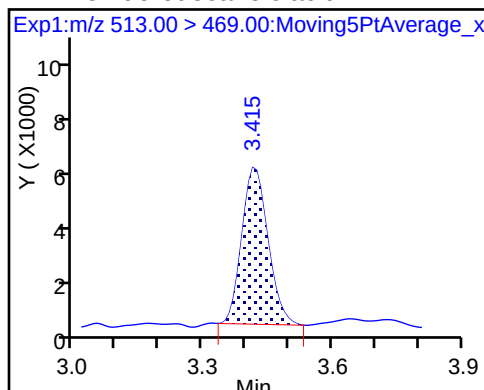
D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodeca

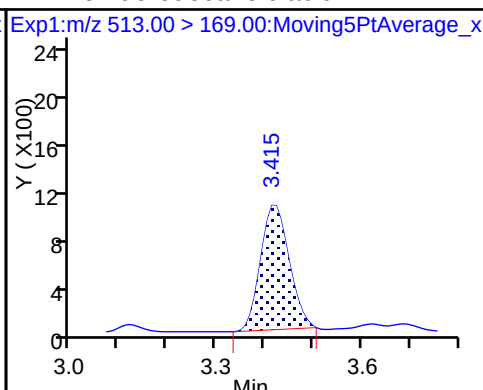
De23 13C2 PFDA



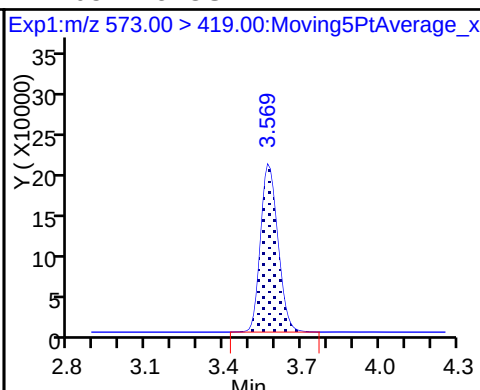
24 Perfluorodecanoic acid



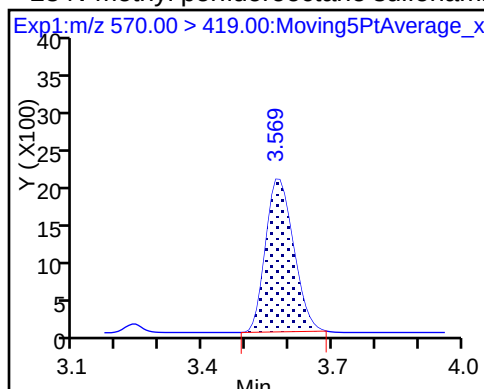
24 Perfluorodecanoic acid



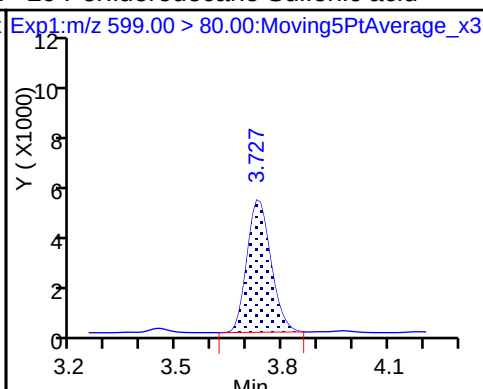
D 27 d3-NMeFOSAA



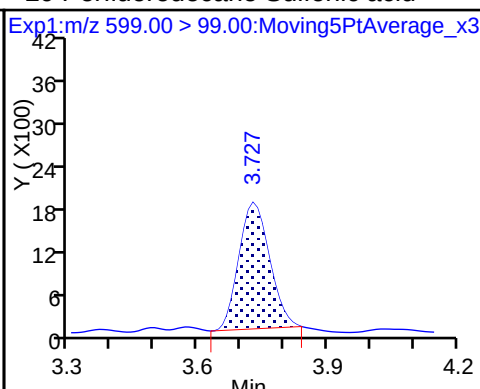
28 N-methyl perfluorooctane sulfonami



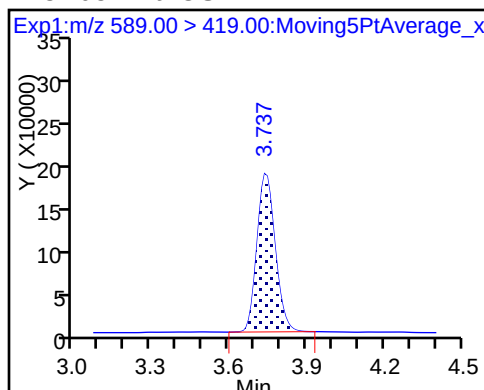
29 Perfluorodecane Sulfonic acid



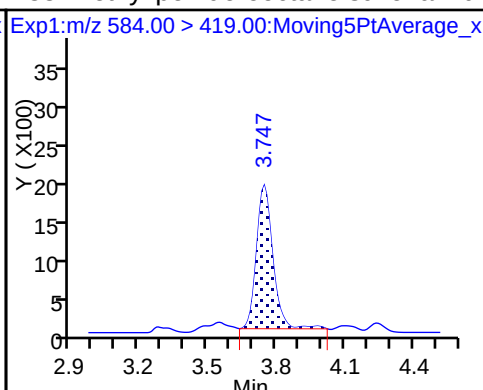
29 Perfluorodecane Sulfonic acid



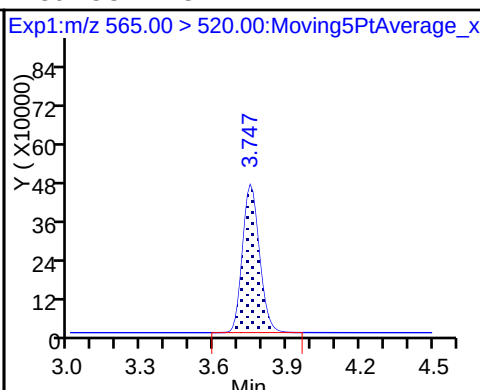
D 32 d5-NEtFOSAA



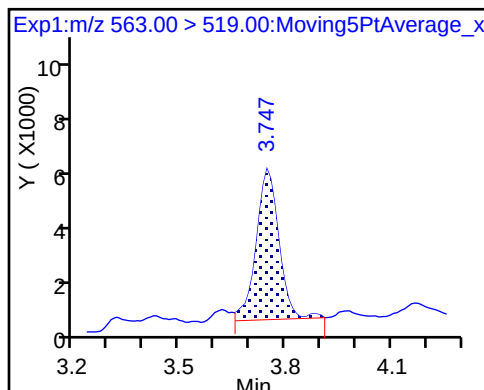
33 N-ethyl perfluorooctane sulfonamid



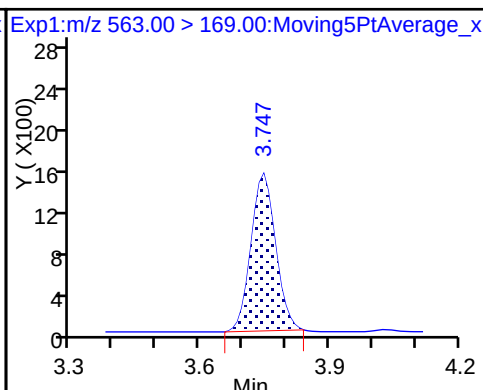
D 30 13C2 PFUnA



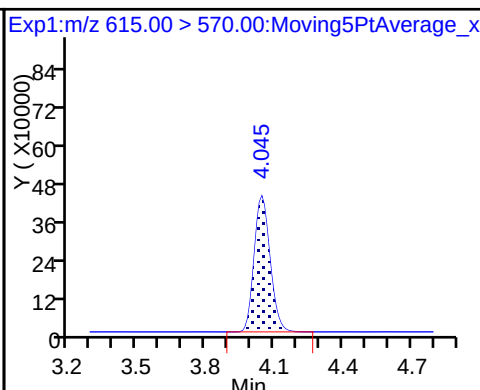
31 Perfluoroundecanoic acid



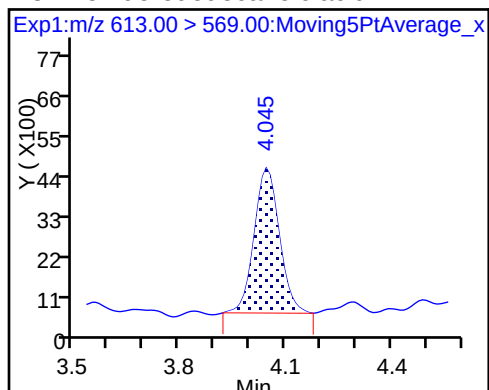
31 Perfluoroundecanoic acid



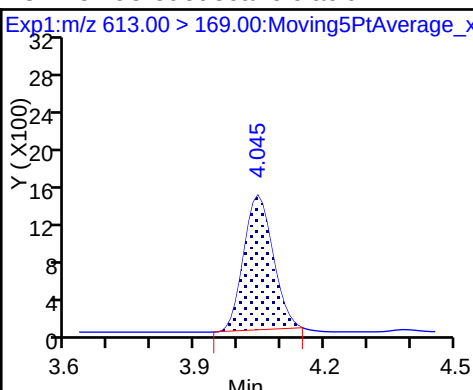
D 36 13C2 PFDaA



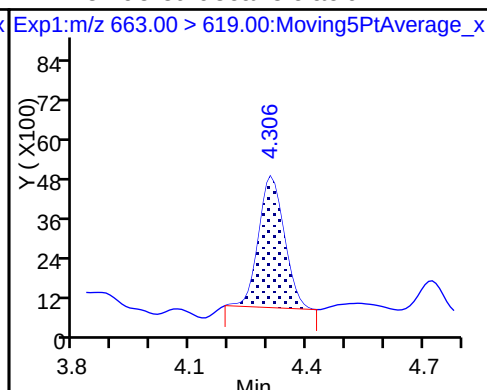
37 Perfluorododecanoic acid



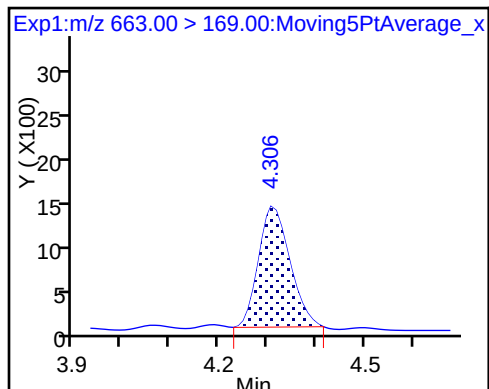
37 Perfluorododecanoic acid



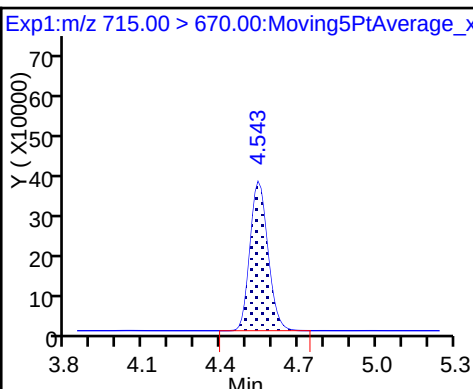
41 Perfluorotridecanoic acid



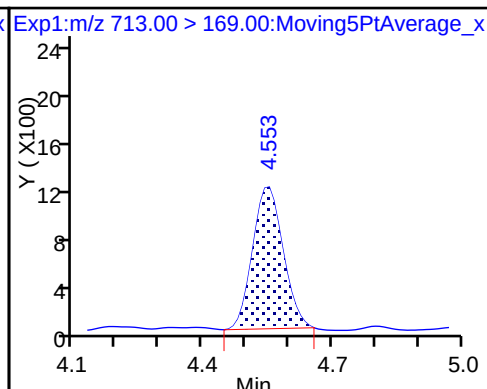
41 Perfluorotridecanoic acid



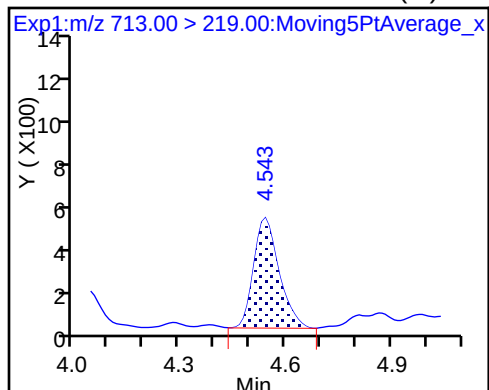
D 43 13C2-PFTeDA



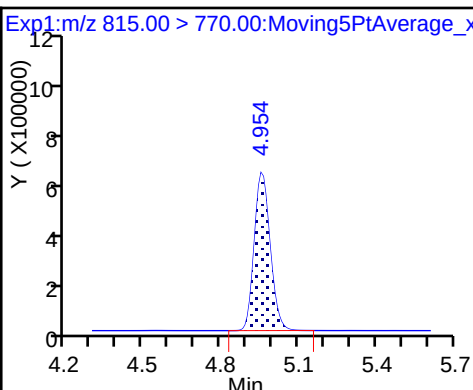
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid (M)



D 44 13C2-PFHxDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_002.d

Injection Date: 16-Mar-2018 23:09:38

Instrument ID: A8_N

Lims ID: IC L1 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 10

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

Column:

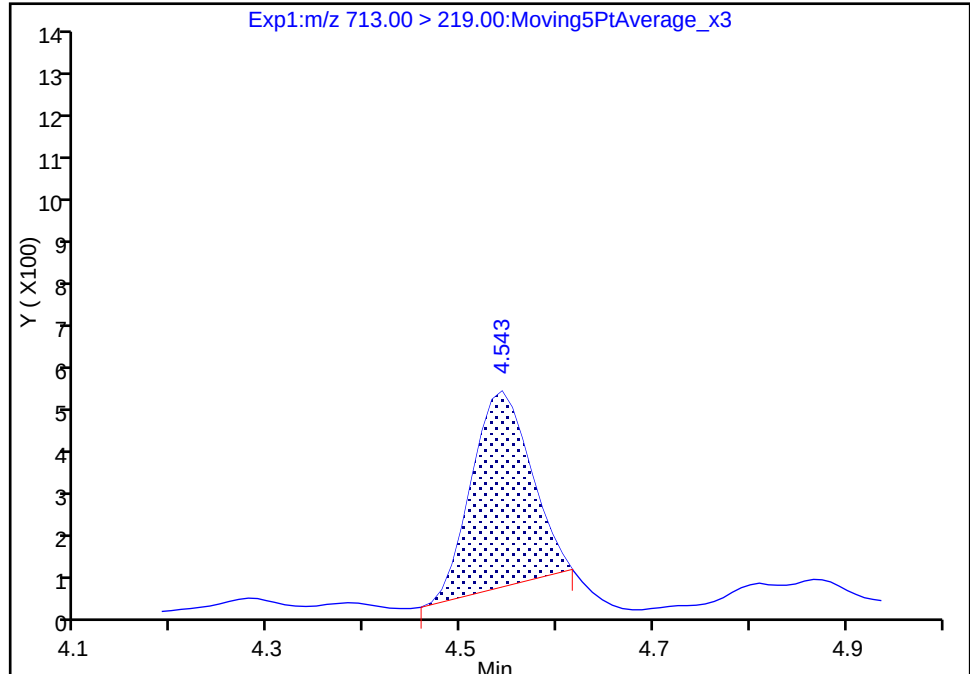
Detector: EXP1

42 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 2

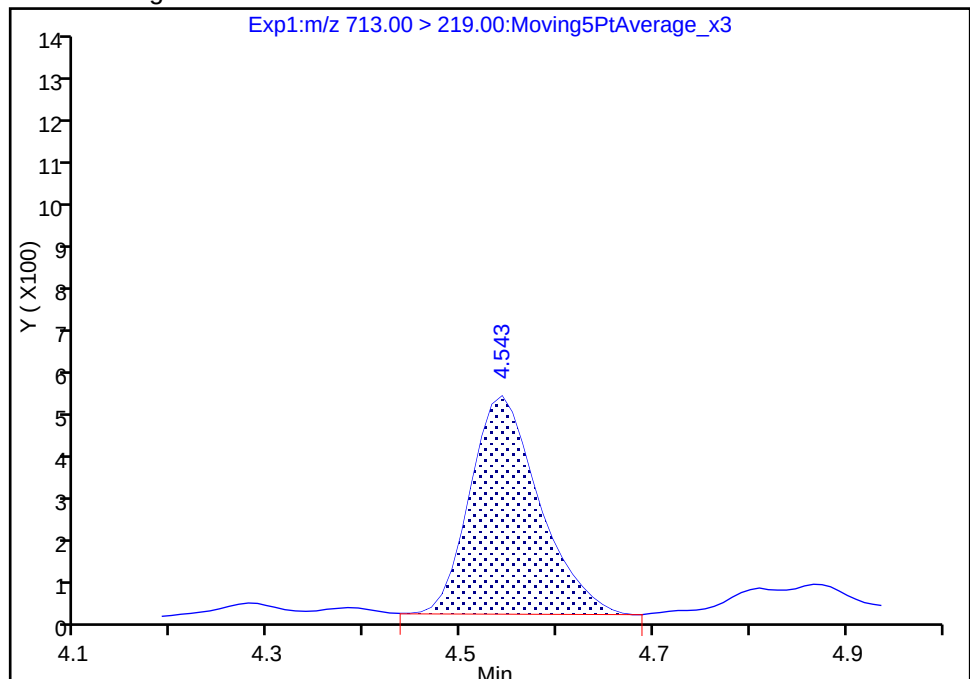
RT: 4.54
Area: 2007
Amount: 0.029595
Amount Units: ng/ml

Processing Integration Results



RT: 4.54
Area: 2605
Amount: 0.029595
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 18-Mar-2018 12:21:46

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_003.d
 Lims ID: IC L2 Full
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 16-Mar-2018 23:17:30 ALS Bottle#: 11 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 18-Mar-2018 12:40:26 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK059

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:26:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.434	1.440	-0.006	1.000	102112	0.0496		99.2	71.6	
D 1 13C4 PFBA										
217.00 > 172.00	1.434	1.440	-0.006	0.537	5550000	2.44		97.7	117440	
D 3 13C5-PFPeA										
267.90 > 223.00	1.691	1.696	-0.005	0.633	4029181	2.51		101	110520	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.691	1.698	-0.007	1.000	98047	0.0521		104	37.0	M
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.730	-0.003	0.646	90825	2.30		98.8	600	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.727	1.733	-0.006	1.000	130200	0.0431		97.5	57.1	
298.90 > 99.00	1.727	1.733	-0.006	1.000	54547		2.39(1.25-3.74)	97.5	56.6	
D 60 M2-4:2FTS										
329.00 > 81.00	1.935	1.942	-0.007	0.724	681561	NC			7423	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.945	1.944	0.001	1.000	31176	0.0496		106	1916	
D 7 13C2 PFHxA										
315.00 > 270.00	1.976	1.979	-0.003	0.739	4540073	2.54		102	165466	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.976	1.982	-0.006	1.000	91368	0.0499		99.7	279	
313.00 > 119.00	1.976	1.982	-0.006	1.000	9865		9.26(5.03-15.10)	99.7	215	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.302	2.311	-0.009	1.000	88286	0.0470		94.0	203	
363.00 > 169.00	2.315	2.311	0.004	1.006	35361		2.50(1.13-3.40)	94.0	603	
D 9 13C4-PFHpA										
367.00 > 322.00	2.302	2.311	-0.009	0.861	4528336	2.61		104	107667	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	122279	0.0489		107	15.0	
399.00 > 99.00	2.315	2.326	-0.011	0.994	38807		3.15(1.50-4.49)	107	15.0	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.871	5304007	2.29		96.7	74003	
D 12 M2-6:2FTS										
429.00 > 81.00	2.649	2.651	-0.002	0.991	1042798	2.34		98.7	24434	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.649	2.652	-0.003	1.000	34810	0.0476		100	2049	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.678	-0.005		4448085	2.50			94177	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.678	-0.005	1.000	91352	0.0480		96.1	29.6	
413.00 > 169.00	2.673	2.678	-0.005	1.000	58410		1.56(0.84-2.52)	96.1	259	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.678	-0.005	1.000	4258090	2.54		102	99222	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.681	2.684	-0.003	1.000	97440	0.0475		99.8	3317	
449.00 > 99.00	2.681	2.684	-0.003	1.000	26688		3.65(1.94-5.82)	99.8	771	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.044	3.050	-0.006	1.000	77874	0.0461		99.4	286	
499.00 > 99.00	3.044	3.050	-0.006	1.000	17535		4.44(2.31-6.93)	99.4	155	
D 18 13C4 PFOS										
503.00 > 80.00	3.044	3.050	-0.006	1.139	3729283	2.30		96.2	62938	
20 Perfluorononanoic acid										
463.00 > 419.00	3.051	3.052	-0.001	1.000	71226	0.0522		104	158	
463.00 > 169.00	3.051	3.052	-0.001	1.000	15976		4.46(1.90-5.69)	104	477	
D 19 13C5 PFNA										
468.00 > 423.00	3.051	3.052	-0.001	1.142	3347940	2.49		99.8	65056	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.388	3.388	0.0	1.000	112048	0.0493		98.6	3219	
D 21 13C8 FOSA										
506.00 > 78.00	3.388	3.388	0.0	1.268	5846985	2.49		99.6	50840	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.406	3.406	0.0	1.000	26051	0.0491		103	818	
D 26 M2-8:2FTS										
529.00 > 81.00	3.406	3.406	0.0	1.274	1010561	2.42		101	20290	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.415	3.416	-0.001	1.000	50605	0.0480		96.0	236	
513.00 > 169.00	3.415	3.416	-0.001	1.000	11137		4.54(2.36-7.09)	96.0	853	
D 23 13C2 PFDA										
515.00 > 470.00	3.415	3.416	-0.001	1.278	2777841	2.48		99.1	52102	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.569	3.570	-0.001	1.335	877839	2.37		94.8	37604	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.569	3.571	-0.002	1.000	21013	0.0575		115	312	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.728	3.729	-0.001	1.000	47472	0.0476		98.9	3260	
599.00 > 99.00	3.728	3.729	-0.001	1.000	17973		2.64(1.39-4.16)	98.9	382	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.738	3.740	-0.002	1.399	884068	2.50		99.9	1895	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.738	3.746	-0.008	1.000	18367	0.0530		106	607	
D 30 13C2 PFUnA										
565.00 > 520.00	3.748	3.747	0.001	1.402	2216867	2.52		101	57832	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.748	3.750	-0.002	1.000	41093	0.0553		111	118	
563.00 > 169.00	3.748	3.750	-0.002	1.000	9481		4.33(2.12-6.36)	111	797	
D 36 13C2 PFDaA										
615.00 > 570.00	4.036	4.041	-0.005	1.510	2093019	2.51		101	12512	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.036	4.042	-0.006	1.000	40972	0.0478		95.7	8.3	
613.00 > 169.00	4.036	4.042	-0.006	1.000	10185		4.02(2.13-6.40)	95.7	283	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.299	4.304	-0.005	1.000	41880	0.0486		97.3	8.6	
663.00 > 169.00	4.299	4.304	-0.005	1.000	13756		3.04(1.25-3.76)	97.3	197	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.544	4.545	-0.001	1.700	1788676	2.35		94.1	13285	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.533	4.545	-0.012	0.998	11344	0.0575		115	184	
713.00 > 219.00	4.533	4.545	-0.012	0.998	6523		1.74(0.71-2.13)	115	75.7	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.955	4.956	-0.001	1.854	2591496	2.33		93.2	9208	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.955	4.960	-0.005	1.000	70421	NC			6.2	
813.00 > 169.00	4.955	4.960	-0.005	1.000	12531		5.62(2.86-8.58)		156	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.315	5.320	-0.005	1.000	50136	NC			9.6	
913.00 > 169.00	5.315	5.320	-0.005	1.000	6133		8.17(3.83-11.48)		92.0	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL2_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_003.d

Injection Date: 16-Mar-2018 23:17:30

Instrument ID: A8_N

Lims ID: IC L2 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 11

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

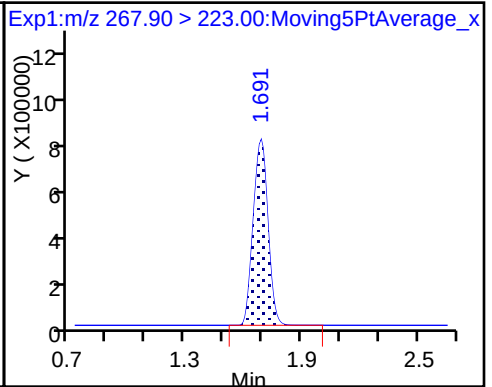
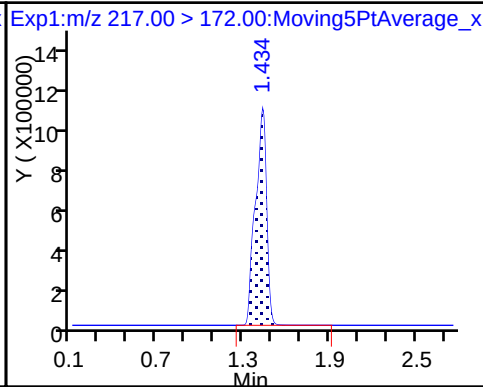
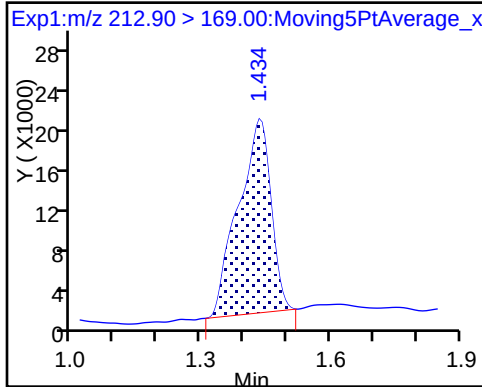
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

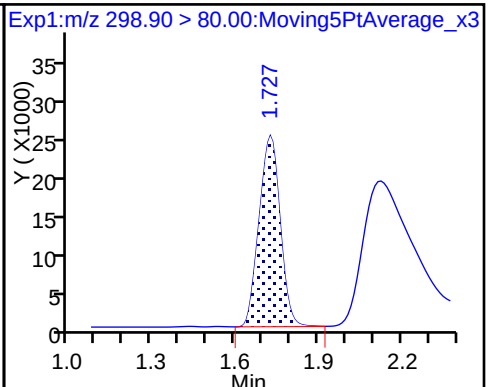
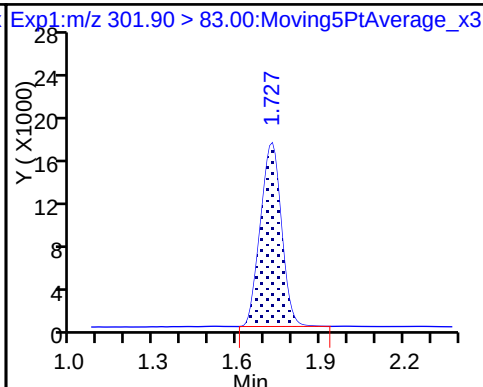
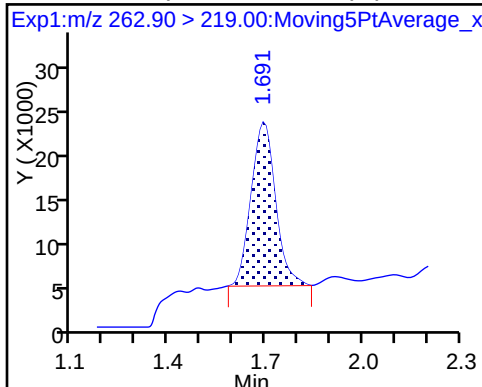
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (M)

D 47 13C3-PFBS

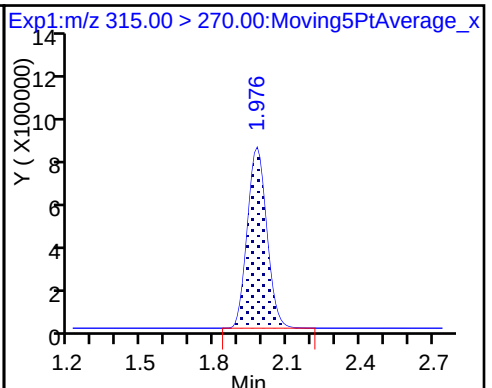
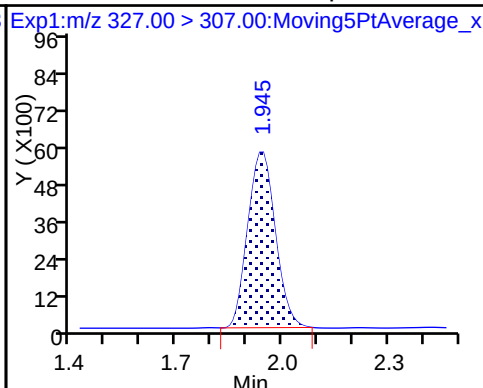
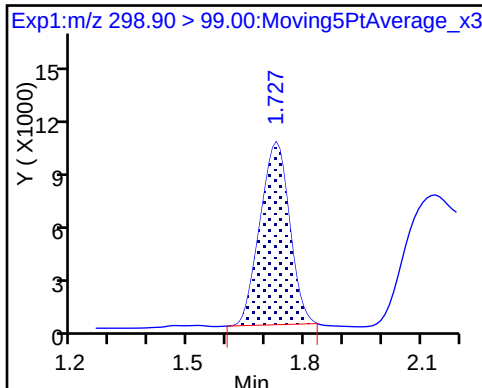
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoate

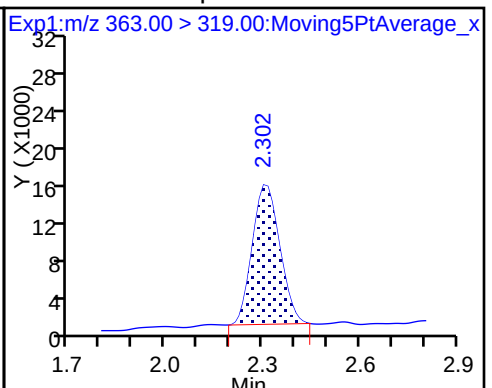
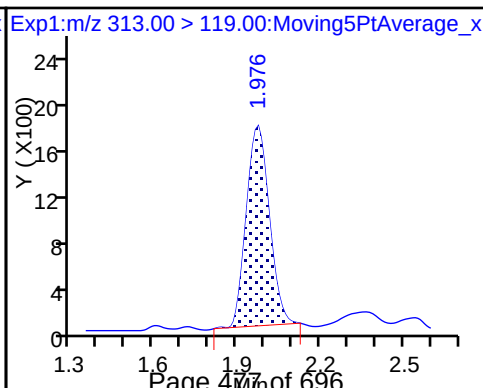
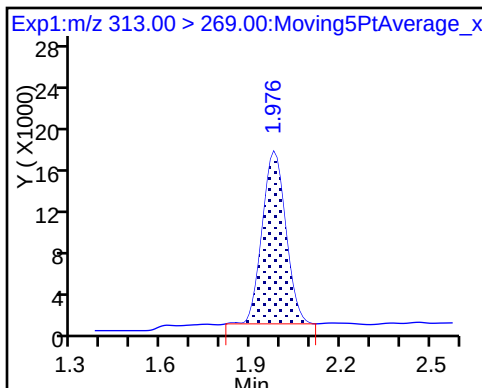
De 7 13C2 PFHxA

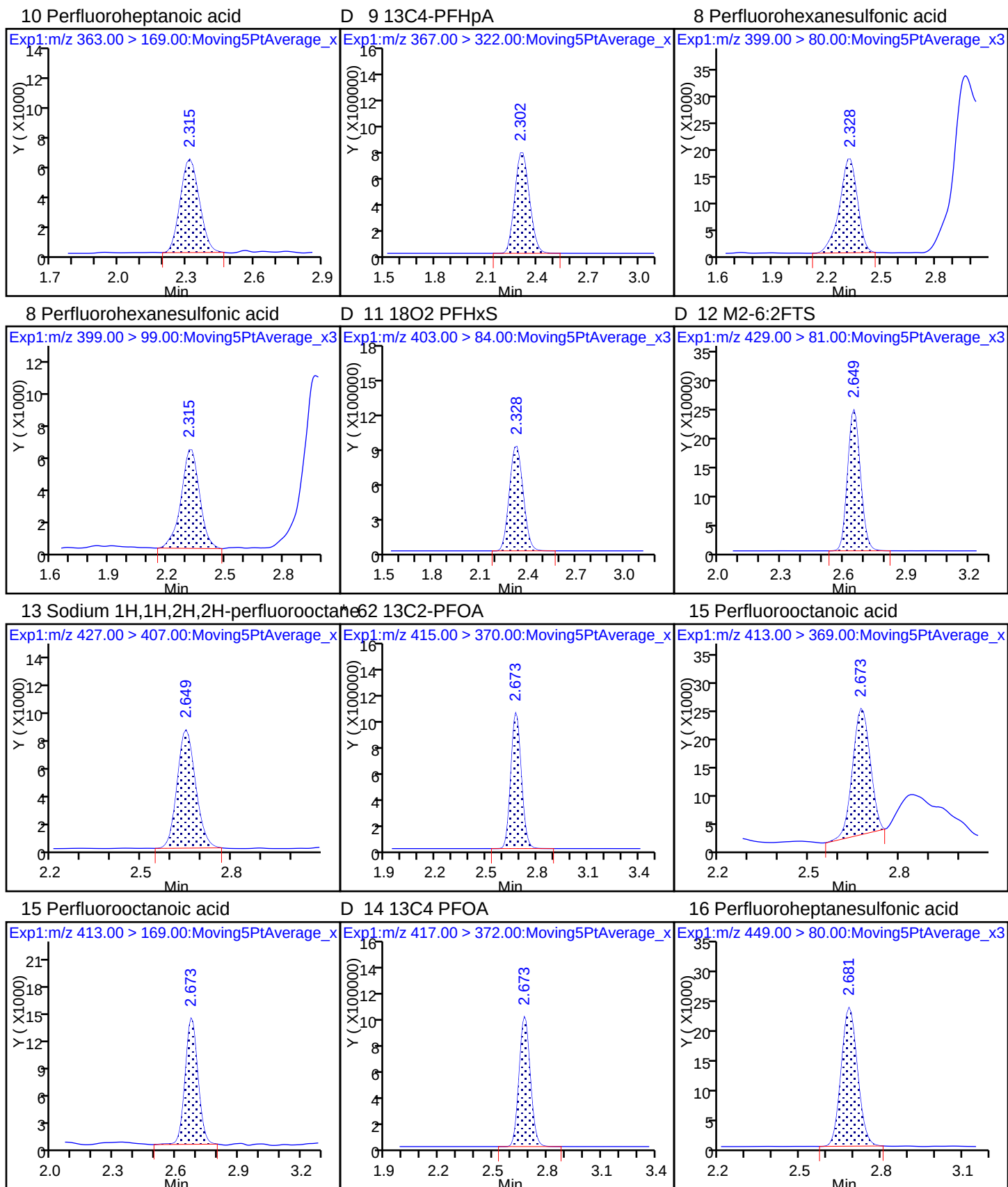


6 Perfluorohexanoic acid

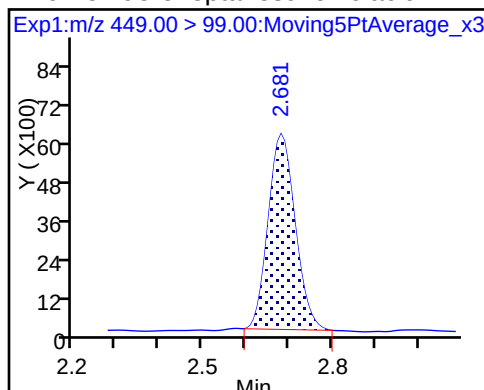
6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid

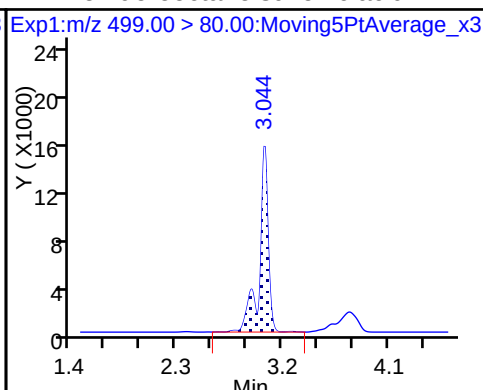




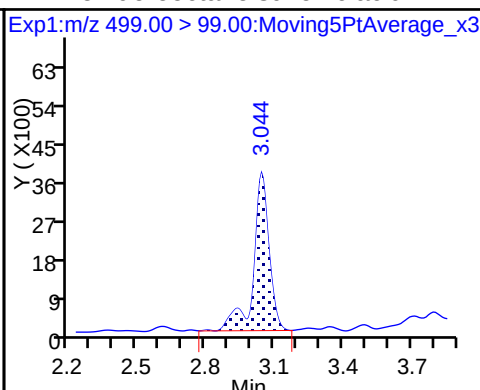
16 Perfluoroheptanesulfonic acid



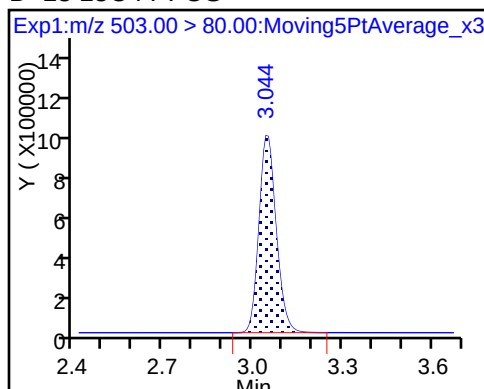
17 Perfluorooctane sulfonic acid



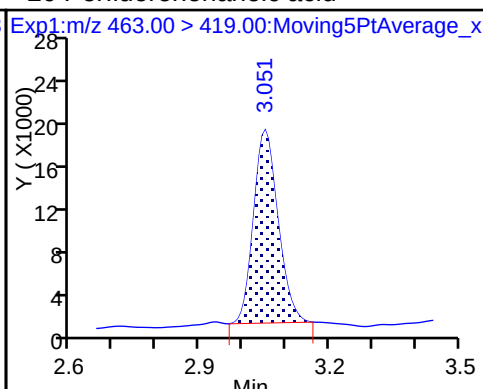
17 Perfluorooctane sulfonic acid



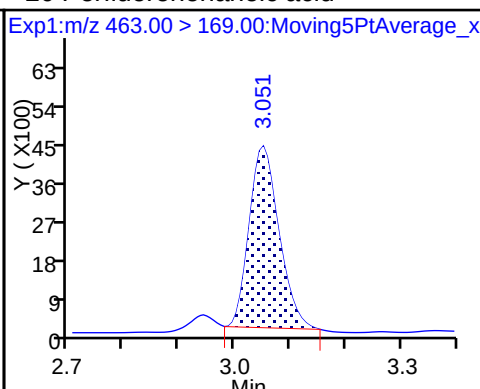
D 18 13C4 PFOS



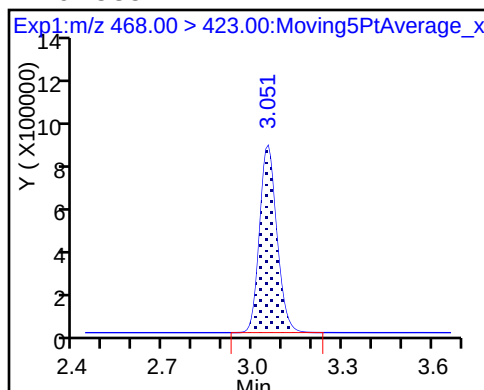
20 Perfluorononanoic acid



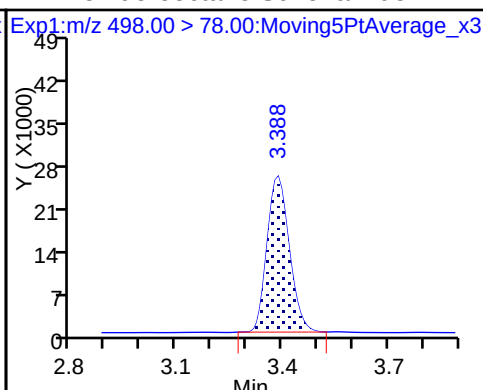
20 Perfluorononanoic acid



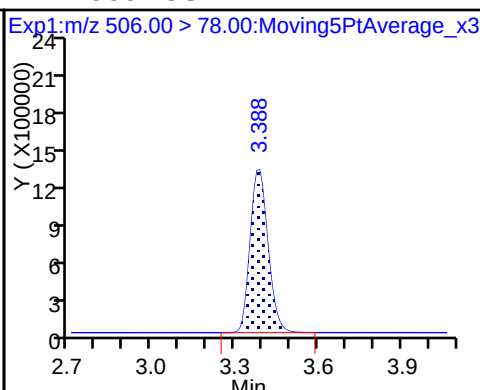
D 19 13C5 PFNA



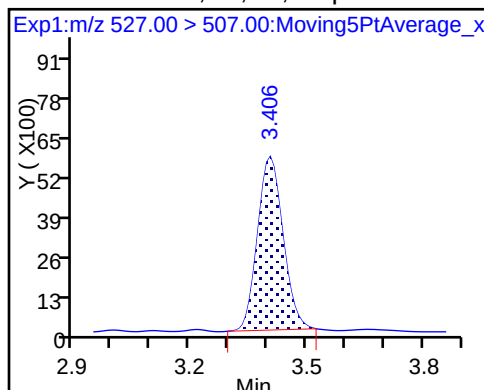
22 Perfluorooctane Sulfonamide



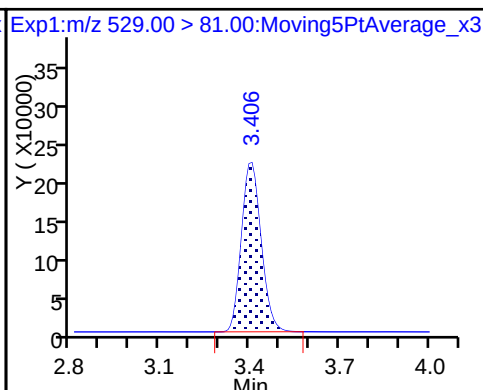
D 21 13C8 FOSA



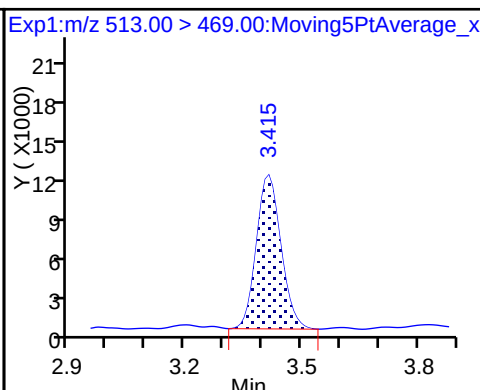
25 Sodium 1H,1H,2H,2H-perfluorodecanoate



De26 M2-8:2FTS



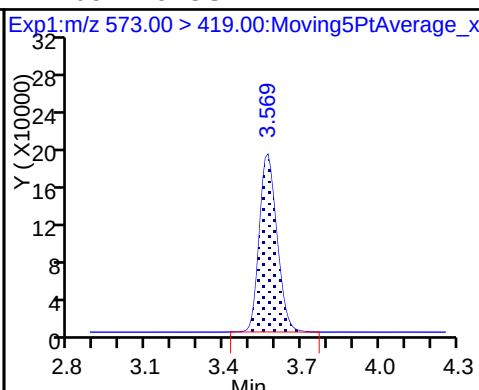
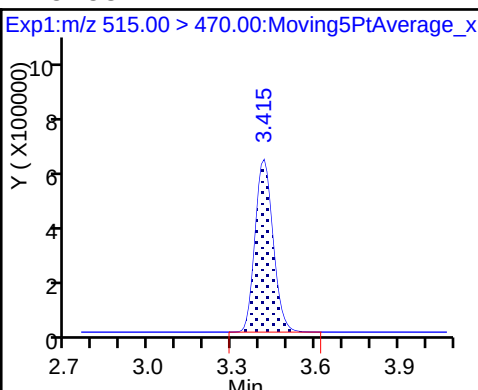
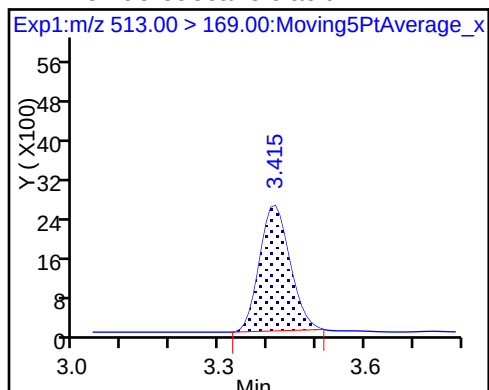
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

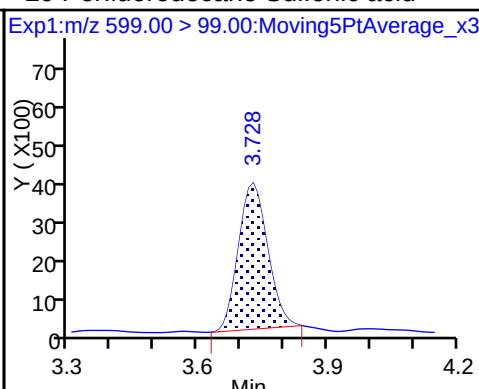
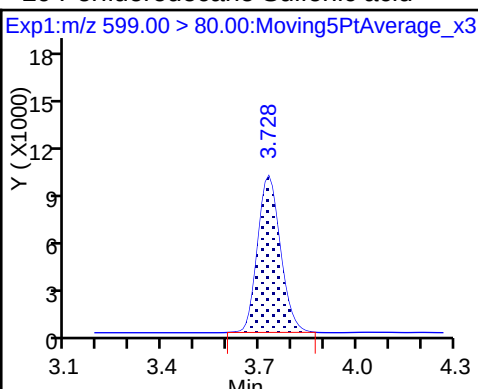
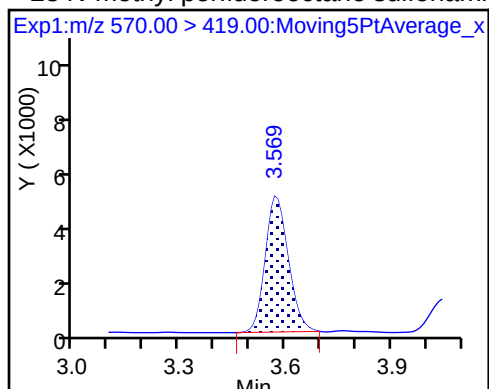
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

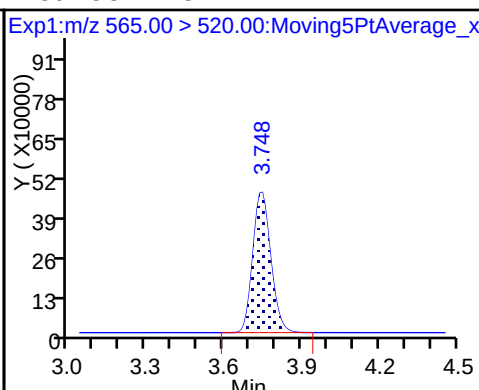
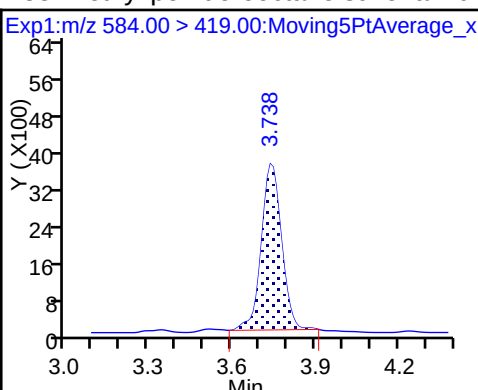
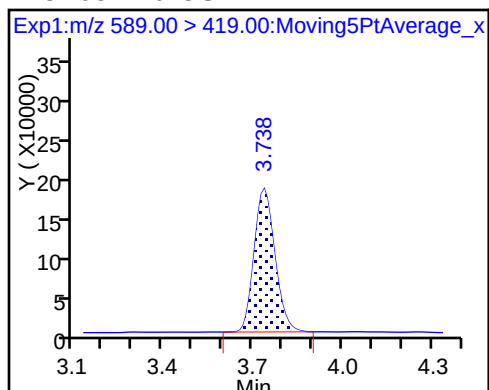
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

33 N-ethyl perfluorooctane sulfonamid

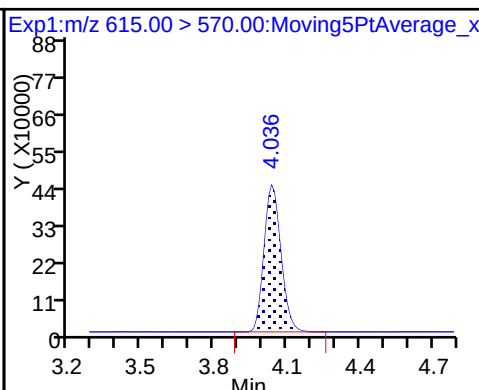
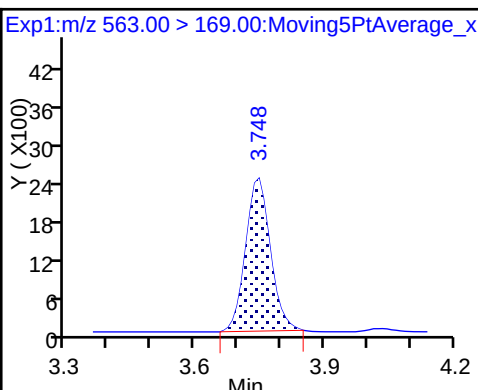
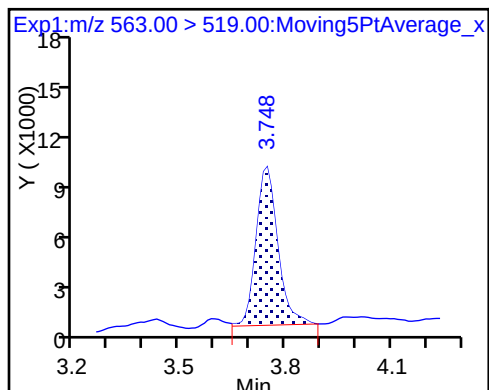
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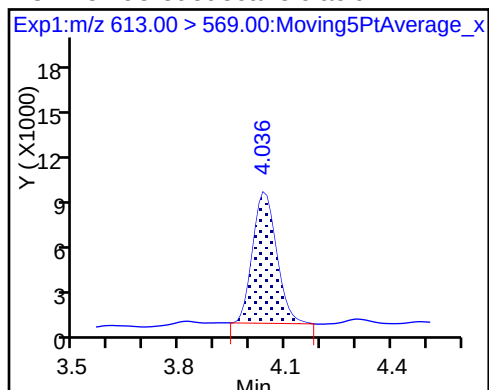
31 Perfluoroundecanoic acid

31 Perfluoroundecanoic acid

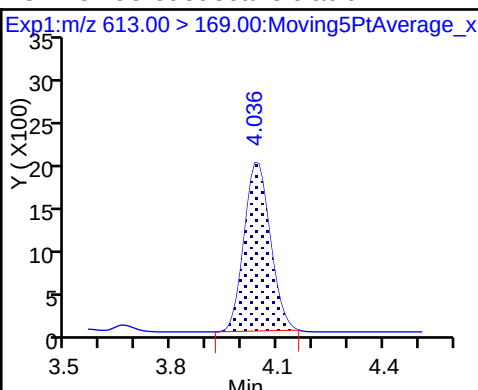
D 36 13C2 PFDoA



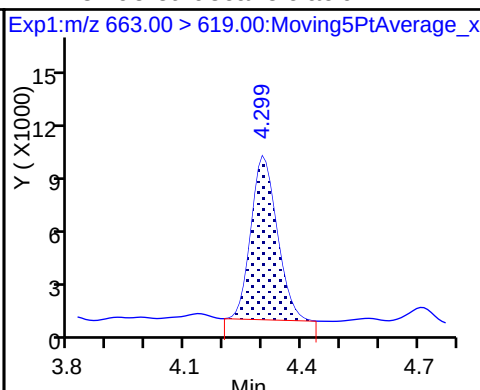
37 Perfluorododecanoic acid



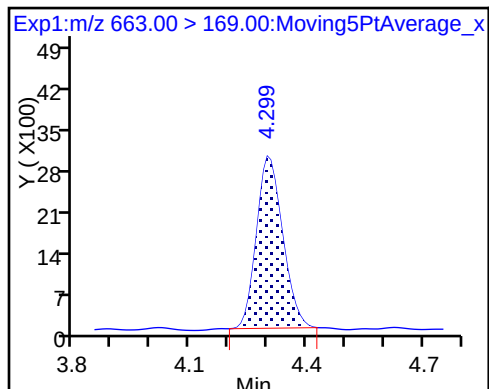
37 Perfluorododecanoic acid



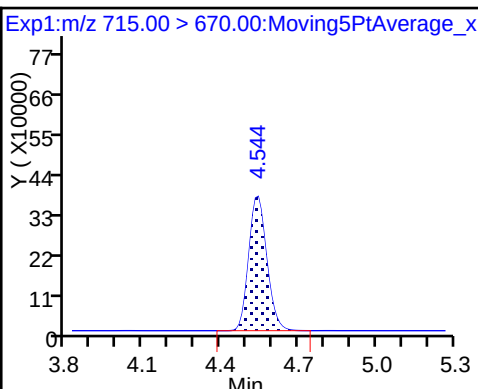
41 Perfluorotridecanoic acid



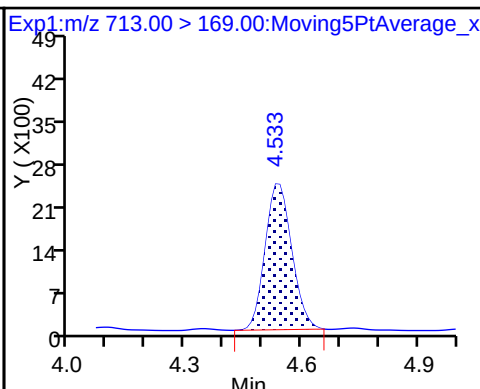
41 Perfluorotridecanoic acid



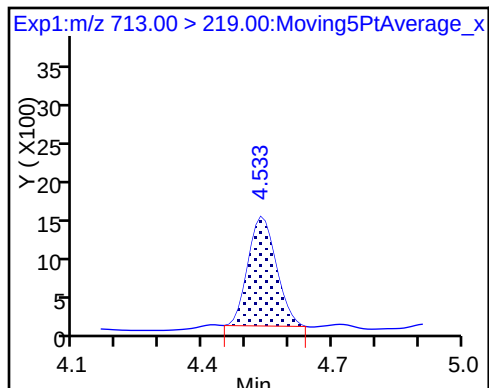
D 43 13C2-PFTeDA



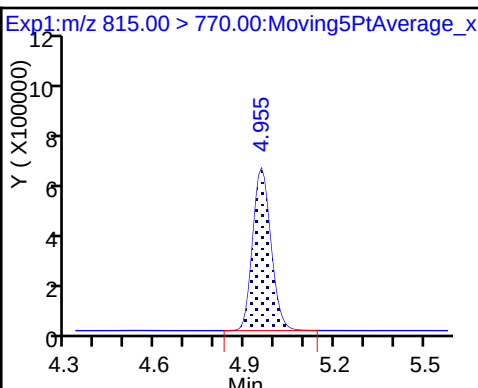
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento

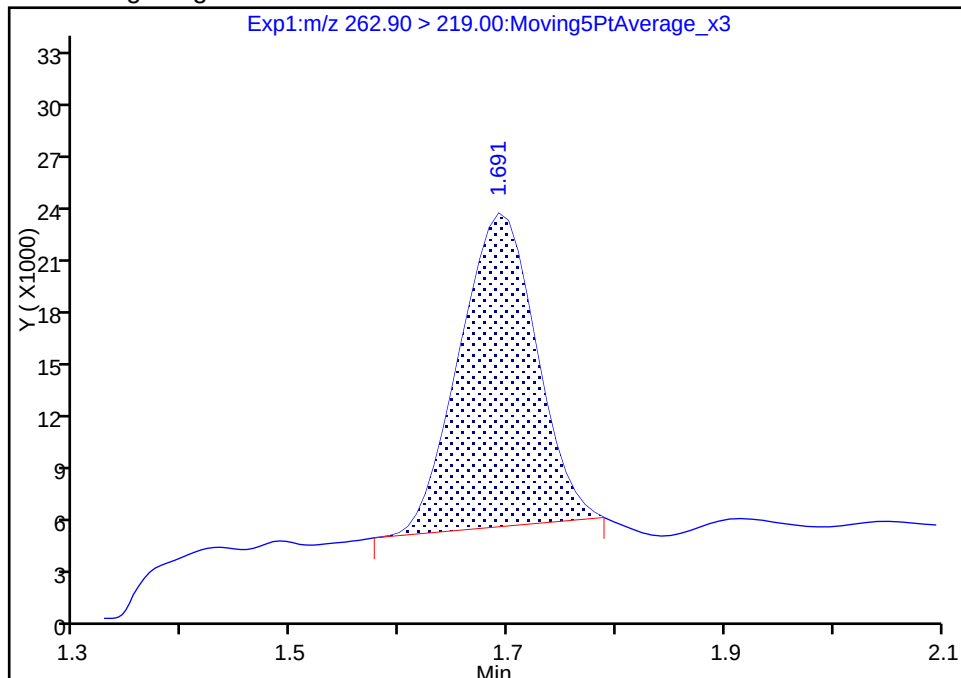
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Injection Date: 16-Mar-2018 23:17:30 Instrument ID: A8_N
Lims ID: IC L2 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

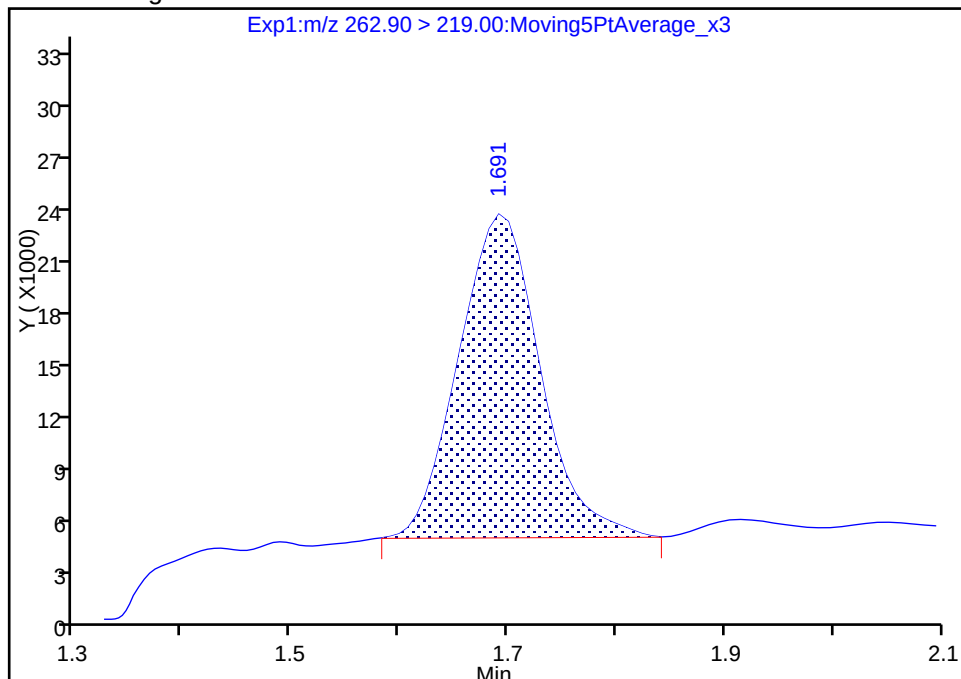
RT: 1.69
Area: 89608
Amount: 0.048214
Amount Units: ng/ml

Processing Integration Results



RT: 1.69
Area: 98047
Amount: 0.052079
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 18-Mar-2018 12:24:49

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_004.d
 Lims ID: IC L3 Full
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 16-Mar-2018 23:25:20 ALS Bottle#: 12 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 18-Mar-2018 12:40:29 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK059

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:26:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.434	1.440	-0.006	0.537	5676105	2.37		94.9	109752	
2 Perfluorobutyric acid										
212.90 > 169.00	1.434	1.440	-0.006	1.000	528325	0.2509		100	384	
D 3 13C5-PFPeA										
267.90 > 223.00	1.691	1.696	-0.005	0.633	4142560	2.45		98.2	134338	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.691	1.698	-0.007	1.000	461977	0.2387		95.5	175	
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.730	-0.003	0.646	92166	2.21		95.2	583	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.727	1.733	-0.006	1.000	662611	0.2160		97.7	292	
298.90 > 99.00	1.727	1.733	-0.006	1.000	285306		2.32(1.25-3.74)	97.7	291	
D 60 M2-4:2FTS										
329.00 > 81.00	1.935	1.942	-0.007	0.724	667108	NC			6920	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.935	1.944	-0.009	1.000	149763	0.2350		101	9381	
D 7 13C2 PFHxA										
315.00 > 270.00	1.976	1.979	-0.003	0.739	4545197	2.42		96.6	103442	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.976	1.982	-0.006	1.000	453548	0.2472		98.9	1336	
313.00 > 119.00	1.976	1.982	-0.006	1.000	39826		11.39(5.03-15.10)	98.9	879	
D 9 13C4-PFHpA										
367.00 > 322.00	2.302	2.311	-0.009	0.861	4288080	2.34		93.7	102910	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.302	2.311	-0.009	1.000	455401	0.2562		102	989	
363.00 > 169.00	2.302	2.311	-0.009	1.000	171167		2.66(1.13-3.40)	102	3577	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.315	2.326	-0.011	0.866	5345110	2.19		92.6	52778	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.315	2.326	-0.011	1.000	560663	0.2224		97.8	68.7	
399.00 > 99.00	2.315	2.326	-0.011	1.000	186807		3.00(1.50-4.49)	97.8	69.9	
D 12 M2-6:2FTS										
429.00 > 81.00	2.641	2.651	-0.010	0.988	1075617	2.29		96.6	22683	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.641	2.652	-0.011	1.000	184494	0.2447		103	10820	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.678	-0.005	1.000	4329764	2.45		98.0	91608	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.678	-0.005	1.000	440615	0.2279		91.2	139	
413.00 > 169.00	2.673	2.678	-0.005	1.000	250016		1.76(0.84-2.52)	91.2	1020	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.678	-0.005		4684467	2.50			99324	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.673	2.684	-0.011	1.000	499055	0.2351		98.8	11674	
449.00 > 99.00	2.673	2.684	-0.011	1.000	131789		3.79(1.94-5.82)	98.8	3882	
D 18 13C4 PFOS										
503.00 > 80.00	3.044	3.050	-0.006	1.139	3861206	2.26		94.6	55017	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.044	3.050	-0.006	1.000	379502	0.2170		93.5	1600	
499.00 > 99.00	3.044	3.050	-0.006	1.000	84823		4.47(2.31-6.93)	93.5	1099	
D 19 13C5 PFNA										
468.00 > 423.00	3.044	3.052	-0.008	1.139	3409796	2.41		96.5	78236	
20 Perfluorononanoic acid										
463.00 > 419.00	3.044	3.052	-0.008	1.000	332490	0.2391		95.6	758	
463.00 > 169.00	3.044	3.052	-0.008	1.000	79660		4.17(1.90-5.69)	95.6	2508	
D 21 13C8 FOSA										
506.00 > 78.00	3.380	3.388	-0.008	1.265	5924910	2.40		95.9	50173	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.380	3.388	-0.008	1.000	575124	0.2497		99.9	21834	
D 26 M2-8:2FTS										
529.00 > 81.00	3.398	3.406	-0.008	1.272	1037774	2.36		98.4	19457	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.398	3.406	-0.008	1.000	129787	0.2382		99.5	5835	
D 23 13C2 PFDA										
515.00 > 470.00	3.407	3.416	-0.009	1.275	2940123	2.49		99.6	50957	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.407	3.416	-0.009	1.000	277398	0.2486		99.4	1278	
513.00 > 169.00	3.407	3.416	-0.009	1.000	47991		5.78(2.36-7.09)	99.4	2723	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.561	3.570	-0.009	1.333	926313	2.38		95.0	22741	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.570	3.571	-0.001	1.002	90574	0.2347		93.9	1811	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.727	3.729	-0.002	1.000	246261	0.2387		99.1	7488	
599.00 > 99.00	3.727	3.729	-0.002	1.000	83238		2.96(1.39-4.16)	99.1	1772	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.738	3.740	-0.002	1.398	885725	2.38		95.0	2102	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.738	3.746	-0.008	1.000	82250	0.2371		94.8	2411	
D 30 13C2 PFUnA										
565.00 > 520.00	3.738	3.747	-0.009	1.398	2288527	2.47		99.0	47946	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.748	3.750	-0.002	1.003	170791	0.2226		89.1	579	
563.00 > 169.00	3.738	3.750	-0.012	1.000	47832		3.57(2.12-6.36)	89.1	3804	
D 36 13C2 PFDoA										
615.00 > 570.00	4.035	4.041	-0.006	1.510	2098644	2.39		95.7	12400	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.035	4.042	-0.007	1.000	216392	0.2520		101	42.4	
613.00 > 169.00	4.035	4.042	-0.007	1.000	56005		3.86(2.13-6.40)	101	1660	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.298	4.304	-0.006	1.000	219791	0.2545		102	46.0	
663.00 > 169.00	4.298	4.304	-0.006	1.000	71054		3.09(1.25-3.76)	102	1089	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.543	4.545	-0.002	1.700	1912234	2.39		95.6	14787	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.543	4.545	-0.002	1.000	48261	0.2288		91.5	592	
713.00 > 219.00	4.533	4.545	-0.012	0.998	37105		1.30(0.71-2.13)	91.5	412	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.955	4.956	-0.001	1.854	2831717	2.42		96.8	9806	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.964	4.960	0.004	1.002	287100	NC			24.5	
813.00 > 169.00	4.964	4.960	0.004	1.002	51630		5.56(2.86-8.58)		604	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.324	5.320	0.004	1.000	261856	NC			47.1	
913.00 > 169.00	5.316	5.320	-0.004	0.999	33024		7.93(3.83-11.48)		438	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL3_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_004.d

Injection Date: 16-Mar-2018 23:25:20

Instrument ID: A8_N

Lims ID: IC L3 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 12

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

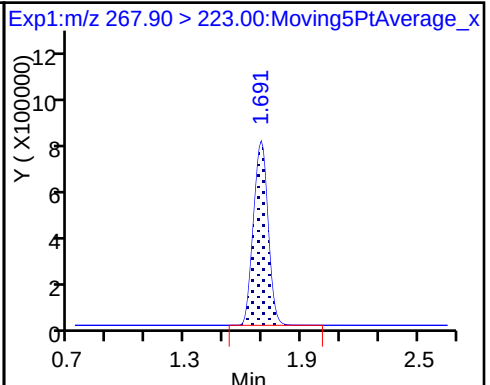
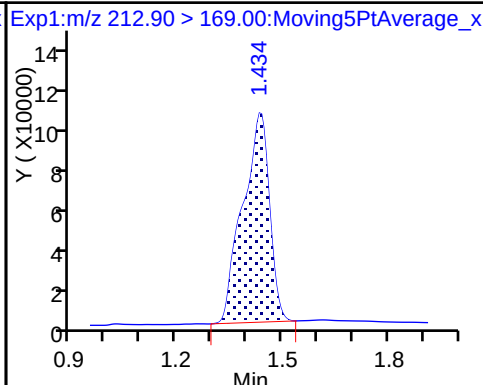
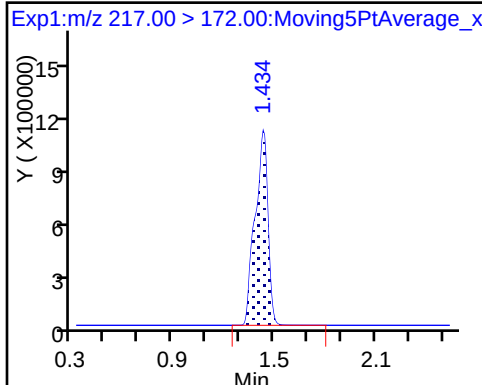
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

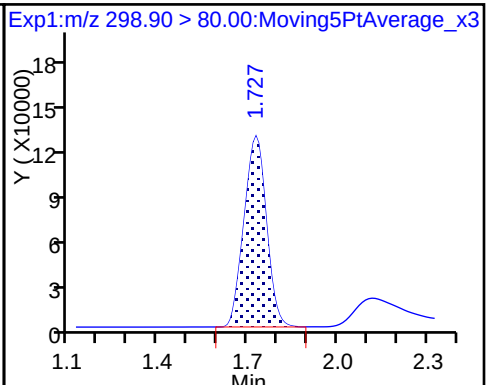
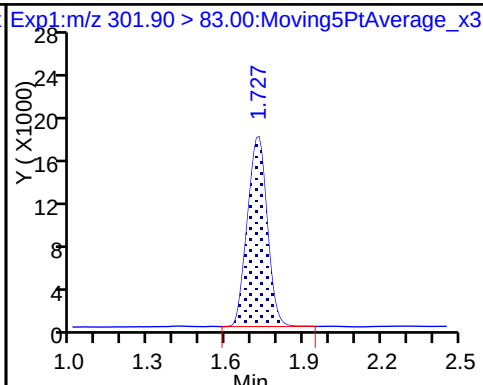
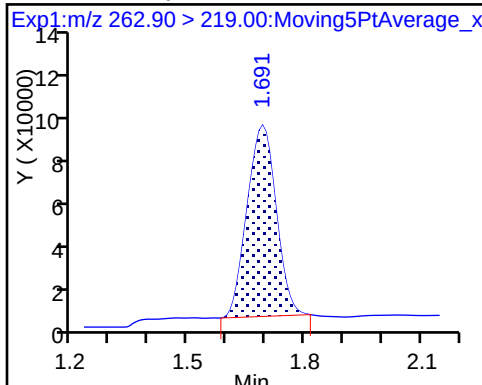
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

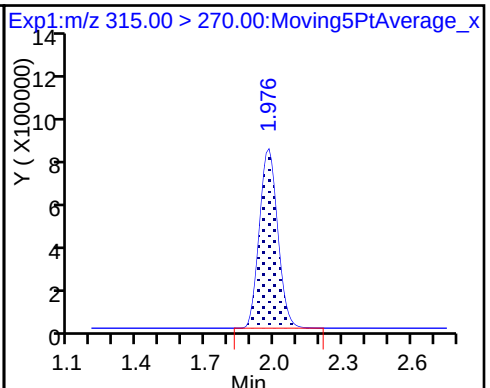
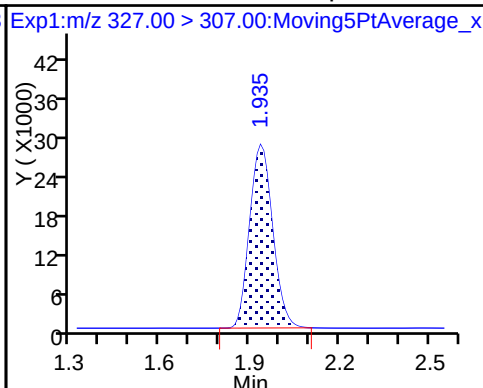
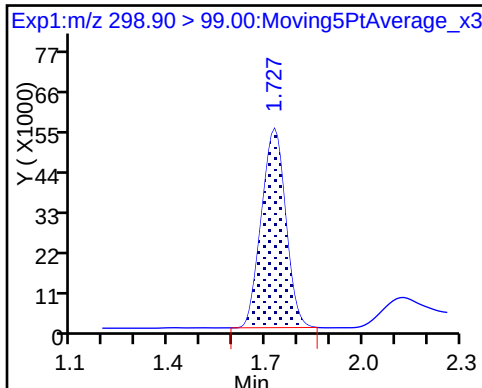
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

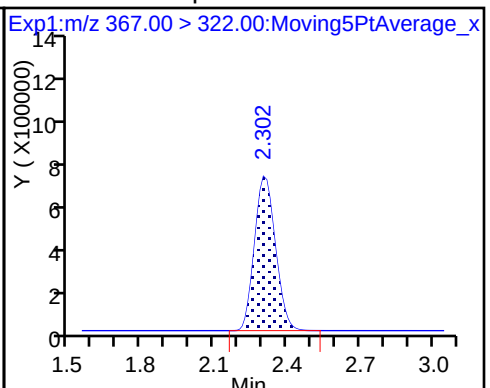
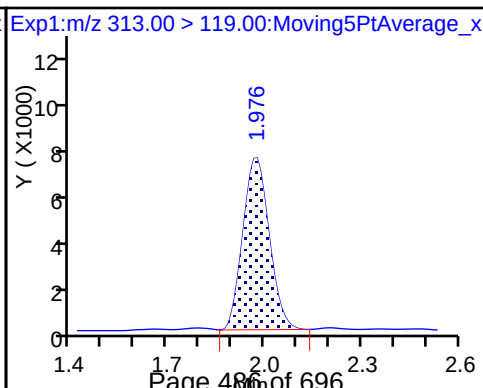
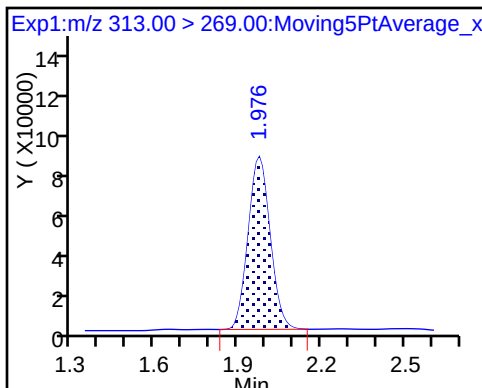
De 7 13C2 PFHxA



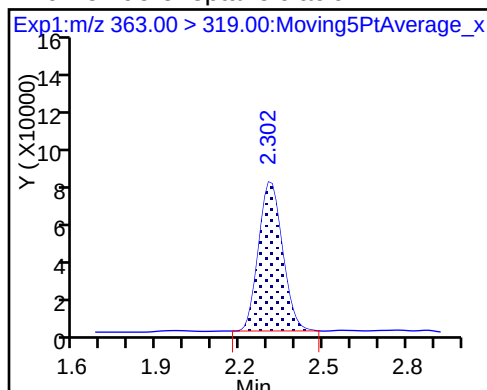
6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

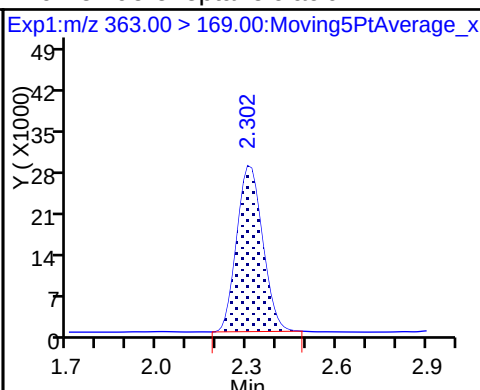
D 9 13C4-PFHpA



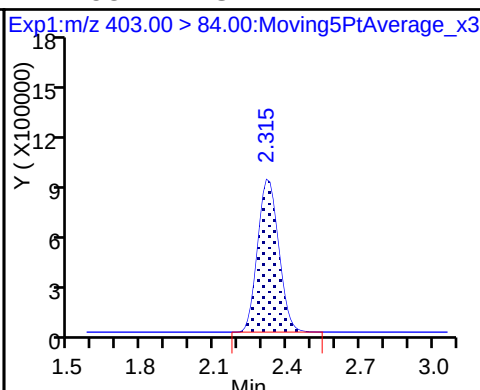
10 Perfluoroheptanoic acid



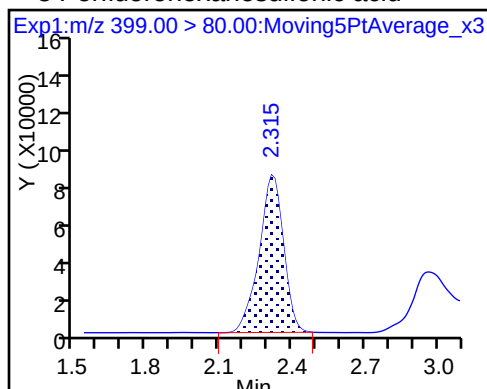
10 Perfluoroheptanoic acid



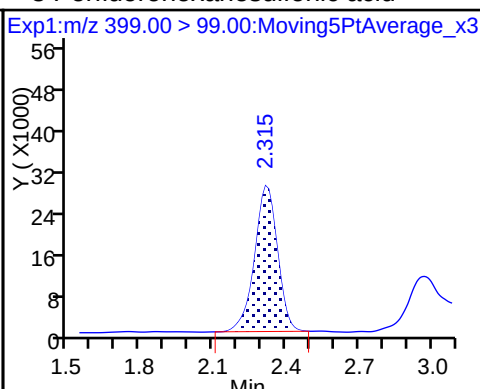
D 11 18O2 PFHxS



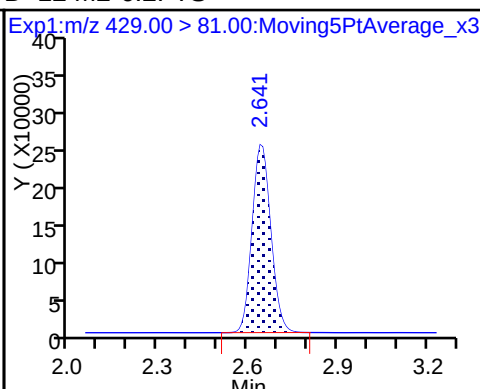
8 Perfluorohexanesulfonic acid



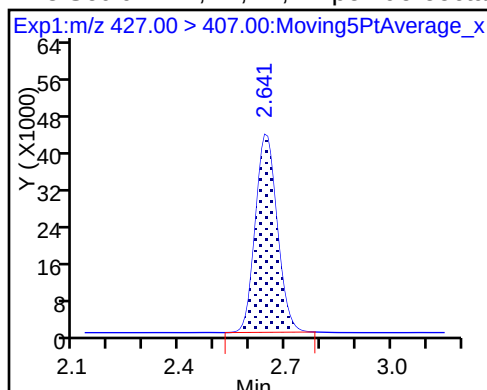
8 Perfluorohexanesulfonic acid



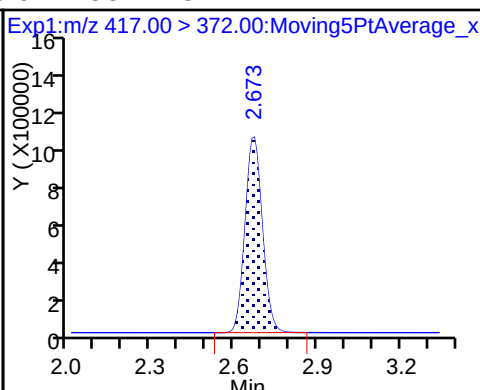
D 12 M2-6:2FTS



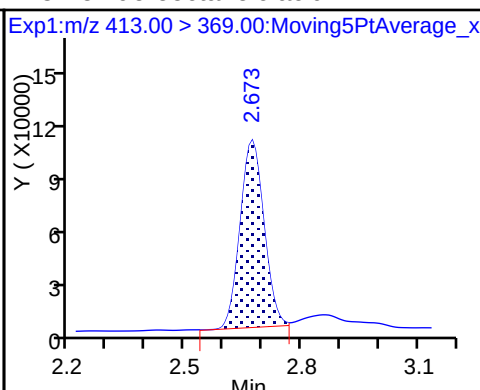
13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate



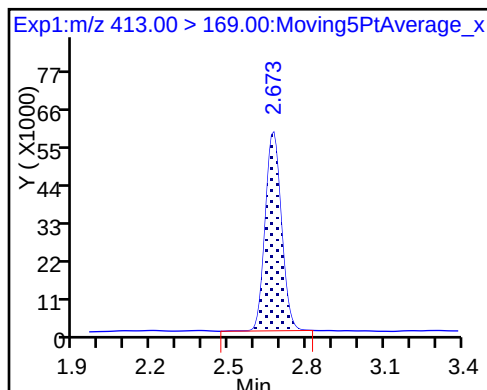
D 14 13C4 PFOA



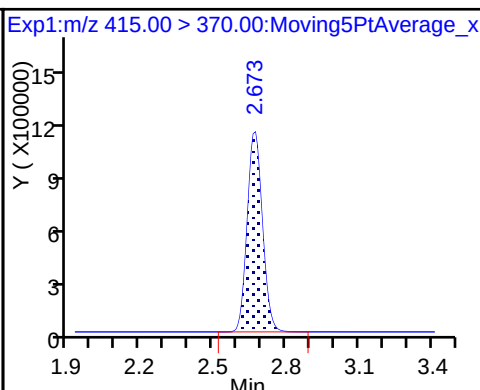
15 Perfluorooctanoic acid



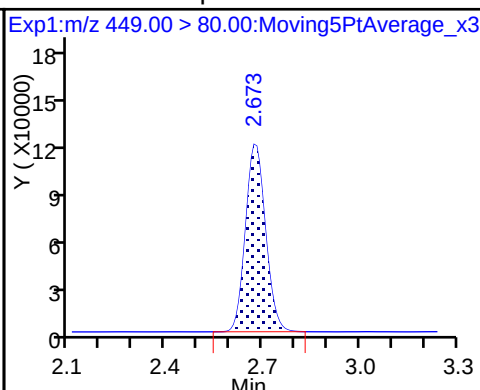
15 Perfluorooctanoic acid



* 62 13C2-PFOA



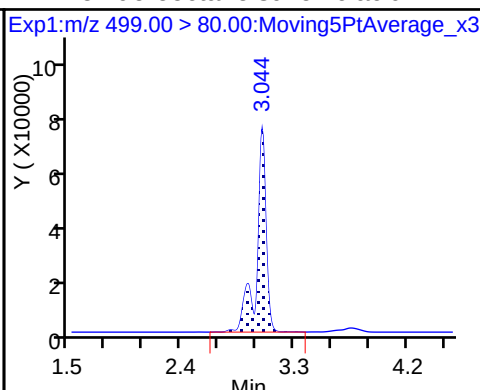
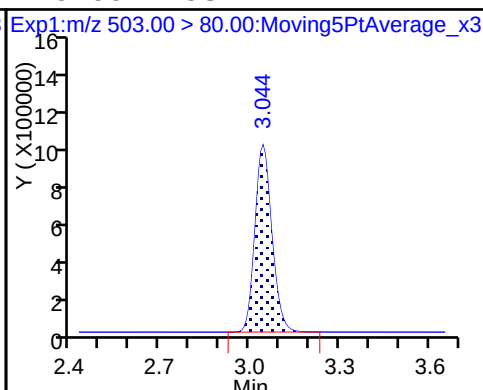
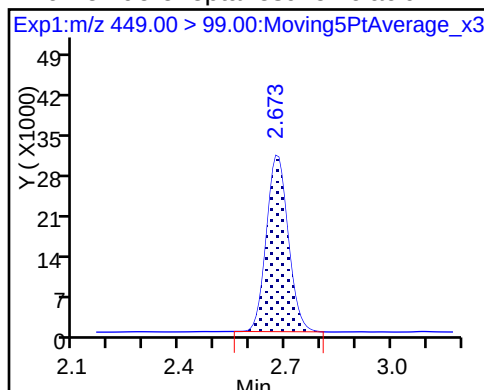
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

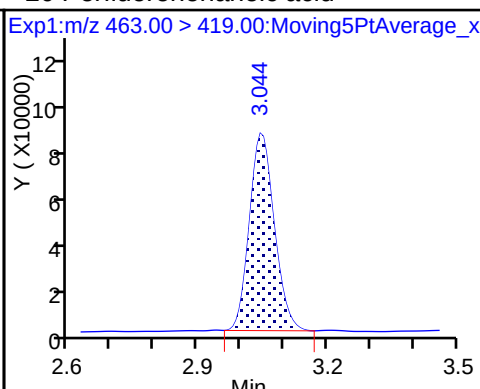
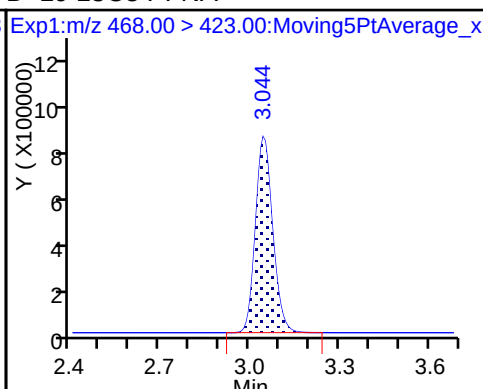
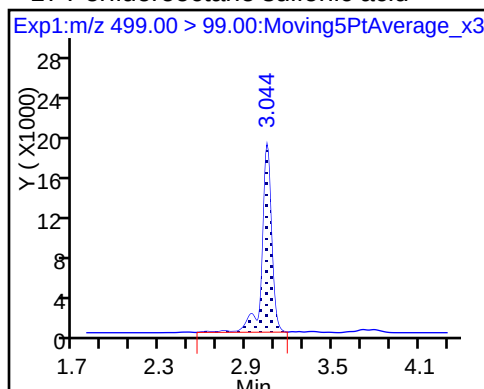
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

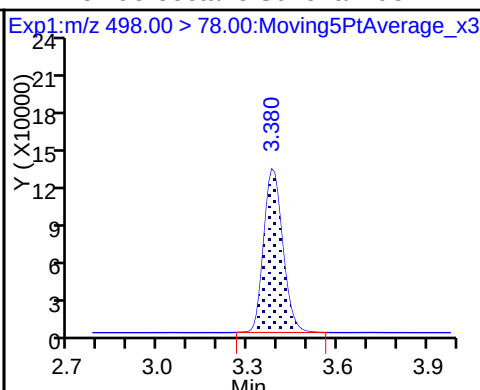
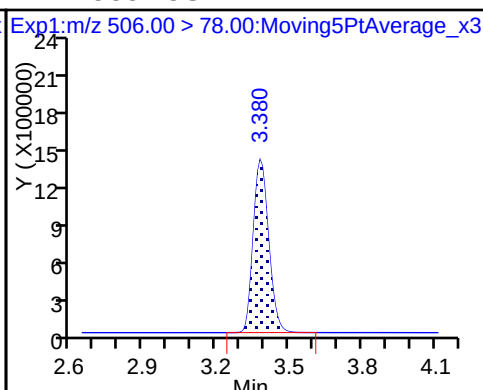
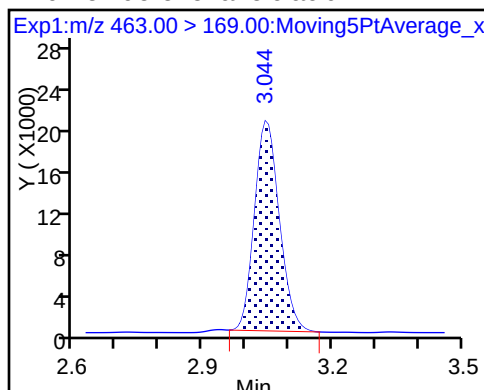
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

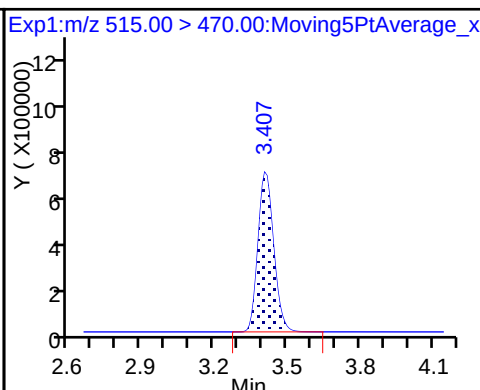
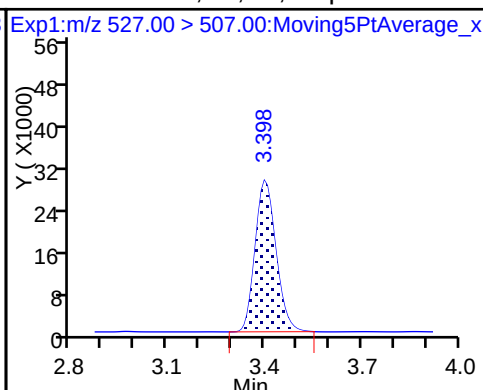
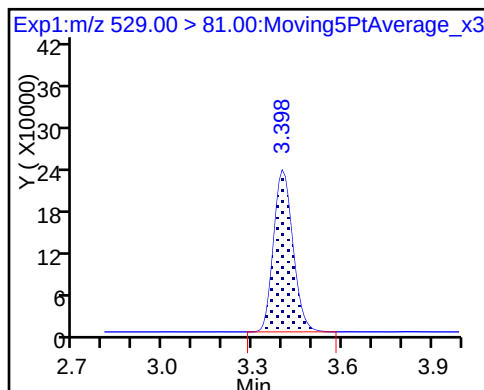
22 Perfluorooctane Sulfonamide



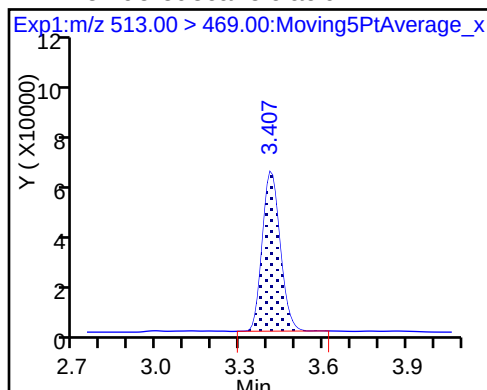
D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodeca

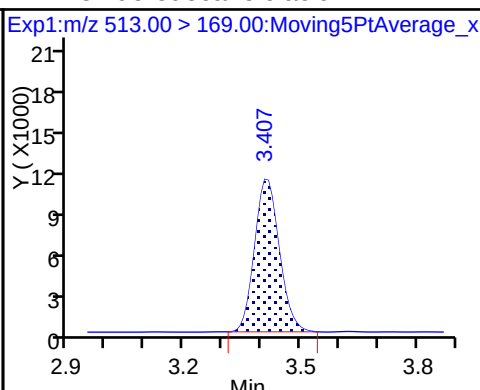
De23 13C2 PFDA



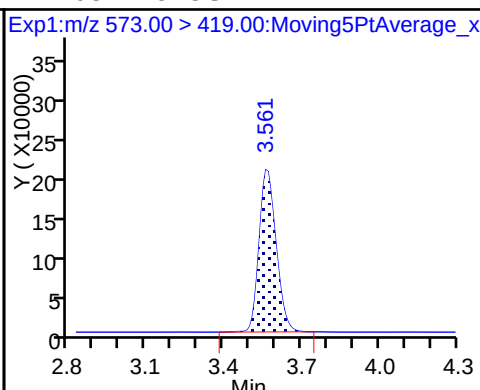
24 Perfluorodecanoic acid



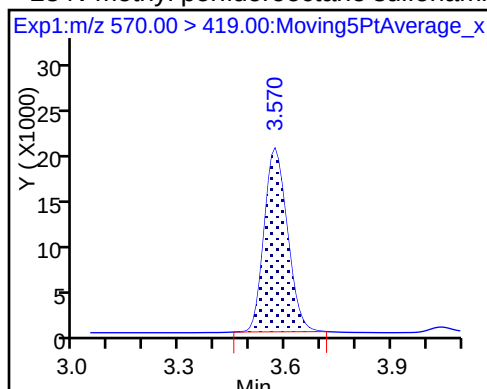
24 Perfluorodecanoic acid



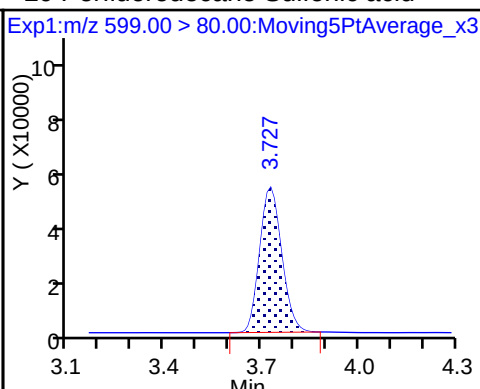
D 27 d3-NMeFOSAA



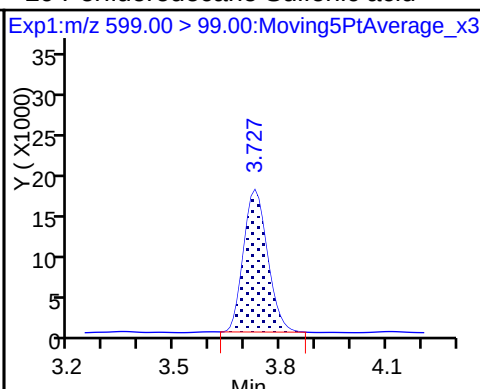
28 N-methyl perfluorooctane sulfonami



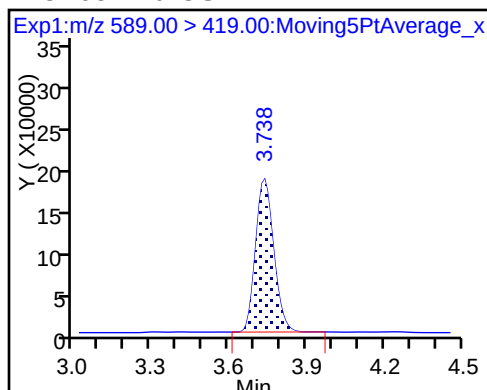
29 Perfluorodecane Sulfonic acid



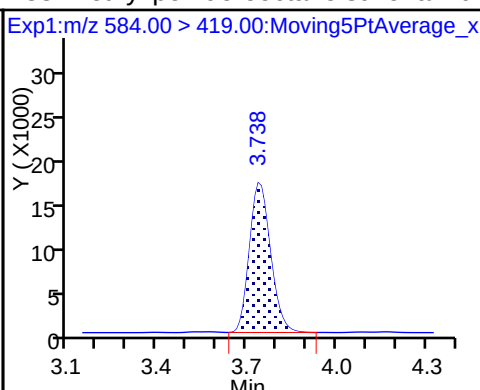
29 Perfluorodecane Sulfonic acid



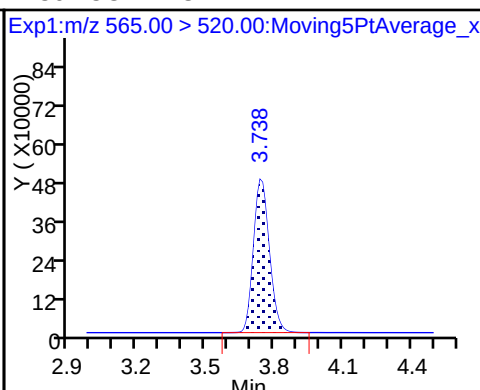
D 32 d5-NEtFOSAA



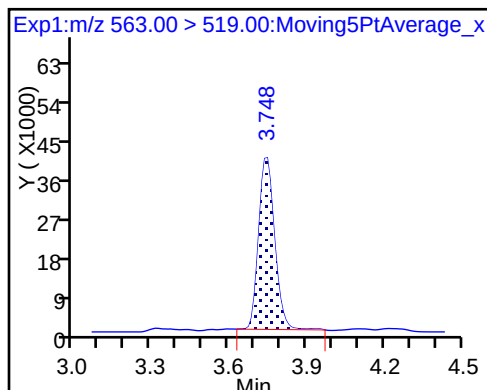
33 N-ethyl perfluorooctane sulfonamid



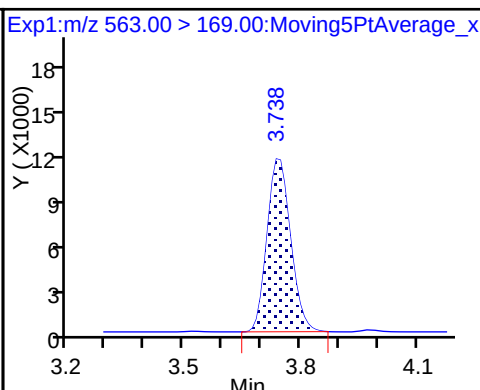
D 30 13C2 PFUnA



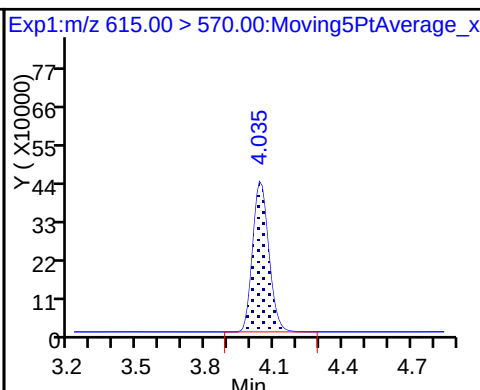
31 Perfluoroundecanoic acid



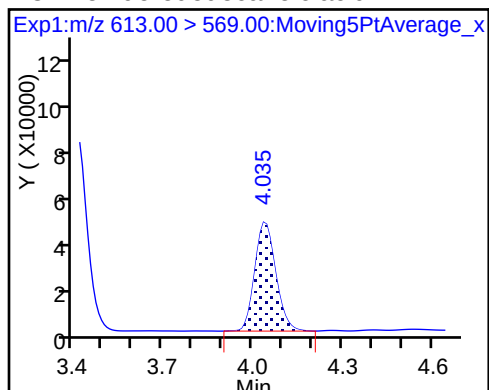
31 Perfluoroundecanoic acid



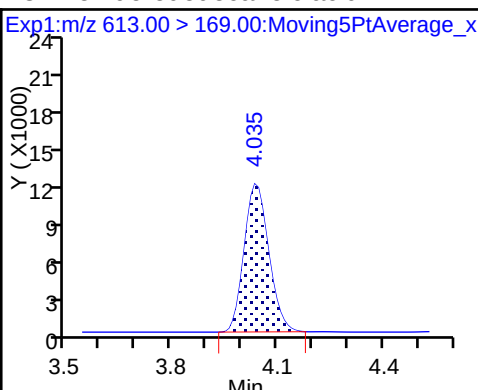
D 36 13C2 PFDaA



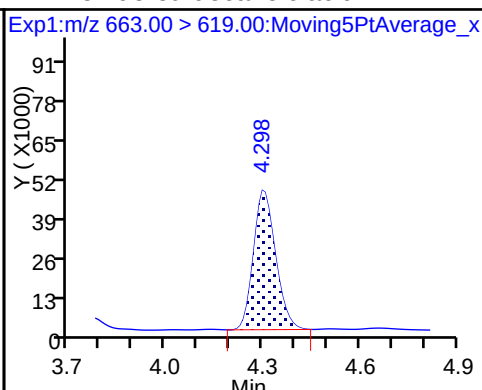
37 Perfluorododecanoic acid



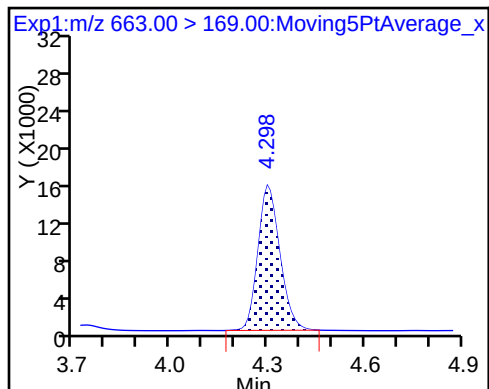
37 Perfluorododecanoic acid



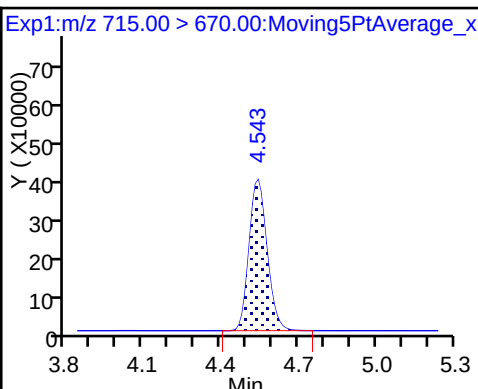
41 Perfluorotridecanoic acid



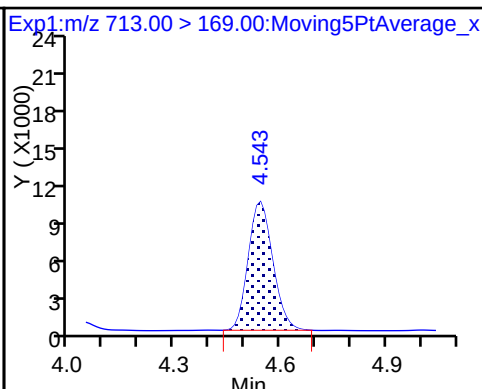
41 Perfluorotridecanoic acid



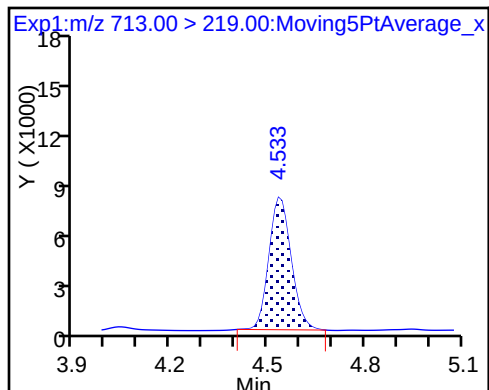
D 43 13C2-PFTeDA



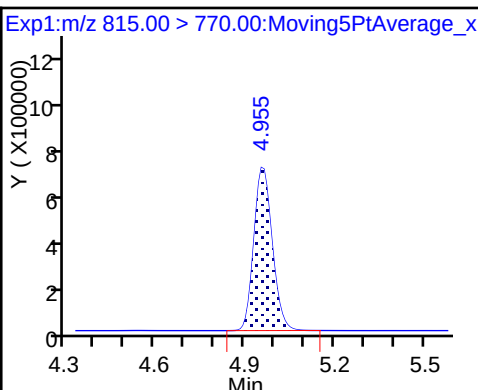
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_005.d
 Lims ID: IC L4 Full
 Client ID:
 Sample Type: ICIS Calib Level: 4
 Inject. Date: 16-Mar-2018 23:33:12 ALS Bottle#: 13 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 18-Mar-2018 12:40:31 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK059

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:27:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.446	1.440	0.006	1.000	2048994	0.9691		96.9	1463	
D 1 13C4 PFBA										
217.00 > 172.00	1.446	1.440	0.006	0.540	5699617	2.45		98.2	108848	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.635	3973031	2.42		97.0	96403	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.698	0.002	1.000	1812805	0.9765		97.7	700	
D 47 13C3-PFBS										
301.90 > 83.00	1.735	1.730	0.005	0.648	90021	2.23		95.8	613	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.735	1.733	0.002	1.000	2653315	0.8856		100	1187	
298.90 > 99.00	1.735	1.733	0.002	1.000	1107170		2.40(1.25-3.74)	100	1201	
D 60 M2-4:2FTS										
329.00 > 81.00	1.945	1.942	0.003	0.726	678619	NC			8368	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.945	1.944	0.001	1.000	581100	0.9337		100.0	36050	
D 7 13C2 PFHxA										
315.00 > 270.00	1.986	1.979	0.007	0.741	4566628	2.50		100.0	103809	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.986	1.982	0.004	1.000	1746371	0.9475		94.7	4897	
313.00 > 119.00	1.986	1.982	0.004	1.000	160043		10.91(5.03-15.10)	94.7	4154	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.311	0.004	1.000	1765971	0.9707		97.1	4174	
363.00 > 169.00	2.315	2.311	0.004	1.000	712366		2.48(1.13-3.40)	97.1	9197	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.864	4387932	2.47		98.8	105925	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	2166532	0.8109		89.1	266	
399.00 > 99.00	2.328	2.326	0.002	1.000	727892		2.98(1.50-4.49)	89.1	289	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.869	5665272	2.39		101	73746	
D 12 M2-6:2FTS										
429.00 > 81.00	2.655	2.651	0.004	0.991	1074637	2.36		99.4	20843	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.655	2.652	0.003	1.000	685622	0.9103		96.0	32328	
* 62 13C2-PFOA										
415.00 > 370.00	2.679	2.678	0.001		4548538	2.50			66870	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.679	2.678	0.001	1.000	1814577	0.9438		94.4	537	
413.00 > 169.00	2.679	2.678	0.001	1.000	996715		1.82(0.84-2.52)	94.4	4229	
D 14 13C4 PFOA										
417.00 > 372.00	2.679	2.678	0.001	1.000	4305669	2.51		100	84376	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.687	2.684	0.003	1.000	2063678	0.9641		101	34981	
449.00 > 99.00	2.687	2.684	0.003	1.000	531695		3.88(1.94-5.82)	101	12416	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.051	3.050	0.001	1.000	1586675	0.8998		97.0	5561	
499.00 > 99.00	3.051	3.050	0.001	1.000	346297		4.58(2.31-6.93)	97.0	3419	
D 18 13C4 PFOS										
503.00 > 80.00	3.051	3.050	0.001	1.139	3892764	2.35		98.2	39597	
20 Perfluorononanoic acid										
463.00 > 419.00	3.051	3.052	-0.001	1.000	1348017	0.9587		95.9	3480	
463.00 > 169.00	3.051	3.052	-0.001	1.000	327207		4.12(1.90-5.69)	95.9	13777	
D 19 13C5 PFNA										
468.00 > 423.00	3.051	3.052	-0.001	1.139	3447867	2.51		100	54153	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.388	0.001	1.000	2356961	1.02		102	67255	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.388	0.001	1.265	5939465	2.47		99.0	44890	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.407	3.406	0.001	1.000	504855	0.9505		99.2	16199	
D 26 M2-8:2FTS										
529.00 > 81.00	3.407	3.406	0.001	1.272	1011812	2.37		98.8	22738	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.417	3.416	0.0	1.000	1154786	1.04		104	7234	
513.00 > 169.00	3.417	3.416	0.0	1.000	206837		5.58(2.36-7.09)	104	11727	
D 23 13C2 PFDA										
515.00 > 470.00	3.417	3.416	0.0	1.275	2912792	2.54		102	59751	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.571	3.570	0.001	1.333	923680	2.44		97.6	28465	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.571	3.571	0.0	1.000	365056	0.9486		94.9	4565	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.730	3.729	0.001	1.000	1034588	0.99		103	36475	
599.00 > 99.00	3.730	3.729	0.001	1.000	336956		3.07(1.39-4.16)	103	6525	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.740	3.740	0.0	1.396	931709	2.57		103	2248	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.750	3.746	0.004	1.003	339482	0.9304		93.0	8733	
D 30 13C2 PFUnA										
565.00 > 520.00	3.750	3.747	0.003	1.400	2262020	2.52		101	67227	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.750	3.750	0.0	1.000	644915	0.8505		85.1	1928	
563.00 > 169.00	3.750	3.750	0.0	1.000	168712		3.82(2.12-6.36)	85.1	13449	
D 36 13C2 PFDoA										
615.00 > 570.00	4.038	4.041	-0.003	1.507	2017899	2.37		94.8	12596	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.049	4.042	0.007	1.003	860515	1.04		104	177	
613.00 > 169.00	4.049	4.042	0.007	1.003	216685		3.97(2.13-6.40)	104	5598	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.307	4.304	0.003	1.000	842010	1.01		101	177	
663.00 > 169.00	4.307	4.304	0.003	1.000	259137		3.25(1.25-3.76)	101	3693	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.544	4.545	-0.001	1.696	1891848	2.43		97.4	14773	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.544	4.545	-0.001	1.000	194321	0.9311		93.1	2372	
713.00 > 219.00	4.544	4.545	-0.001	1.000	138985		1.40(0.71-2.13)	93.1	1610	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.956	4.956	0.0	1.850	2868070	2.52		101	11418	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.964	4.960	0.004	1.002	1031926	NC			89.6	
813.00 > 169.00	4.964	4.960	0.004	1.002	177707		5.81(2.86-8.58)		2206	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.323	5.320	0.003	1.000	1049380	NC			201	
913.00 > 169.00	5.316	5.320	-0.004	0.999	136421		7.69(3.83-11.48)		1641	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_005.d

Injection Date: 16-Mar-2018 23:33:12

Instrument ID: A8_N

Lims ID: IC L4 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

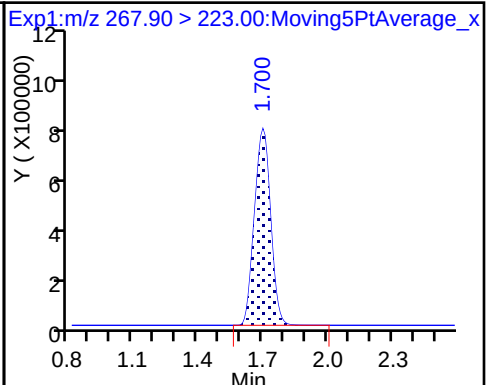
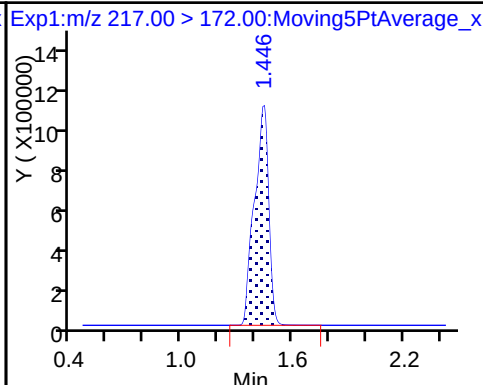
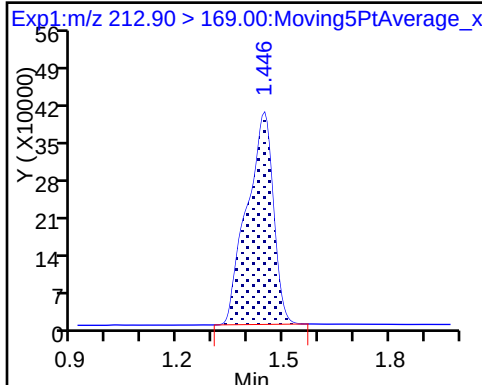
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

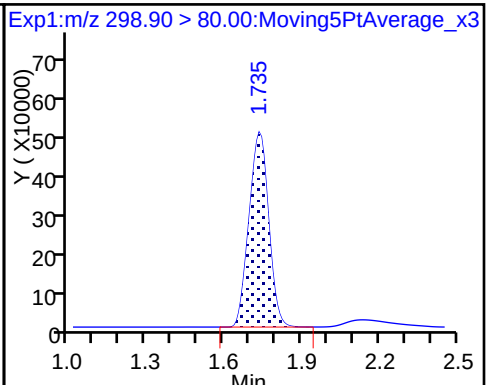
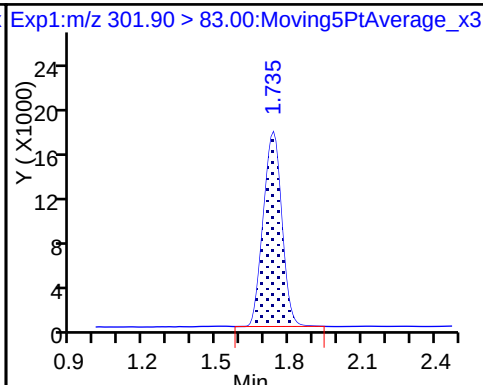
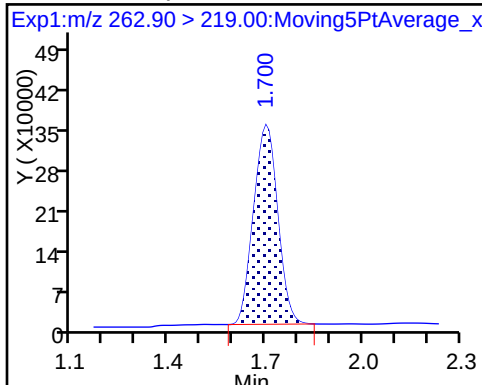
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

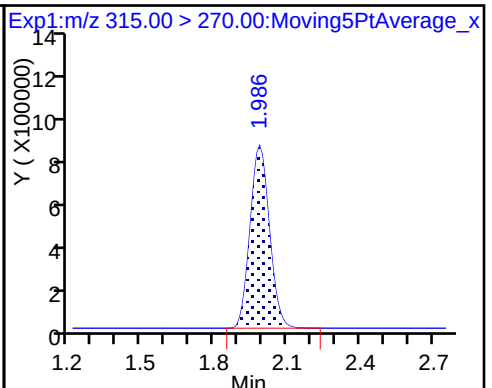
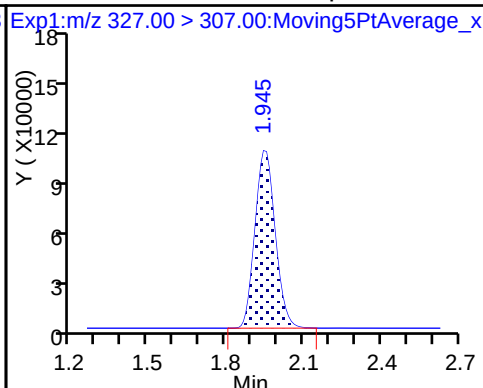
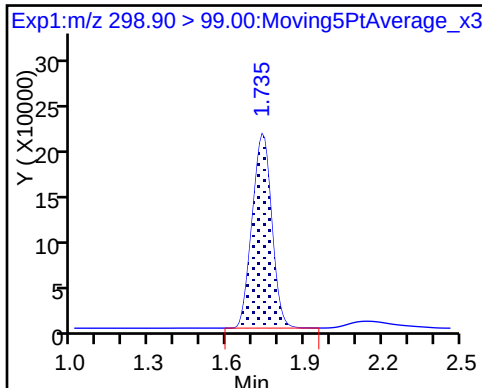
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

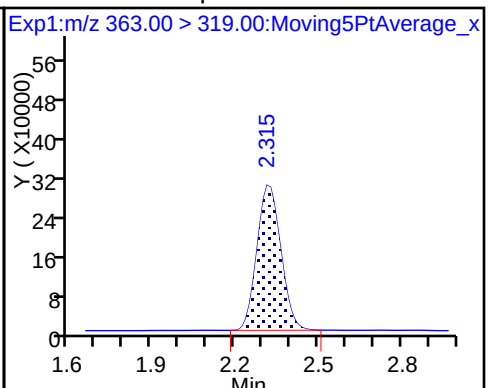
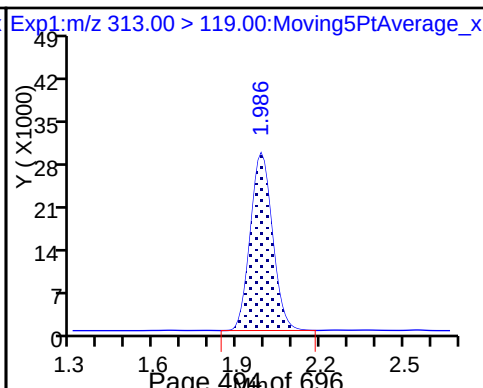
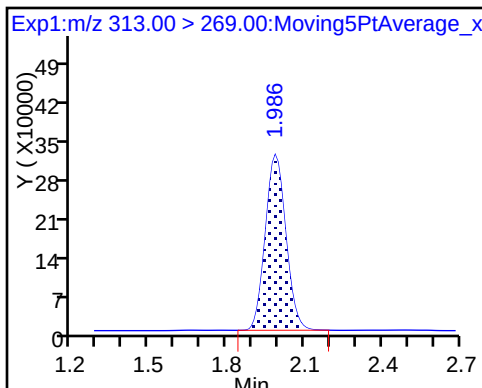
De 7 13C2 PFHxA

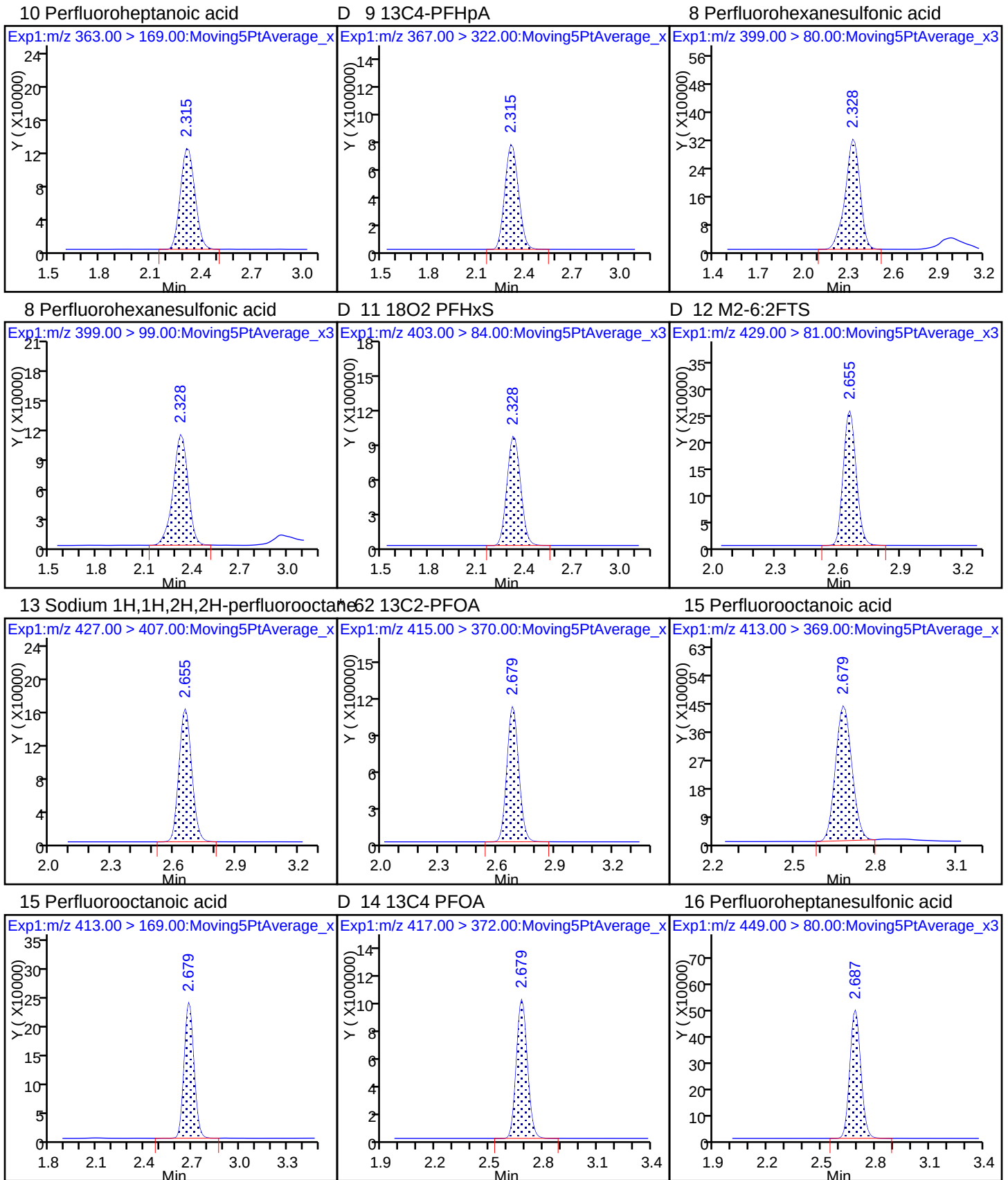


6 Perfluorohexanoic acid

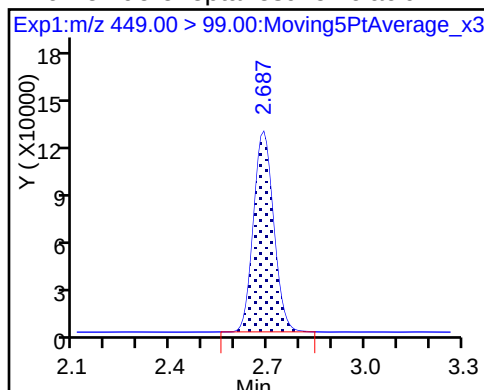
6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid

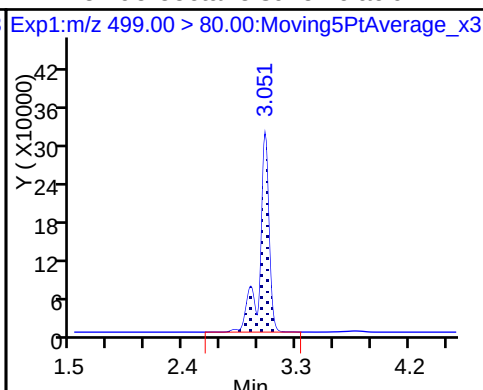




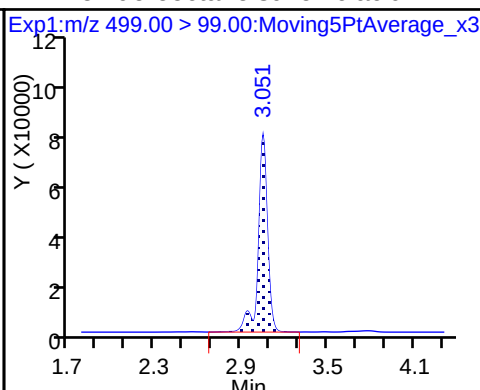
16 Perfluoroheptanesulfonic acid



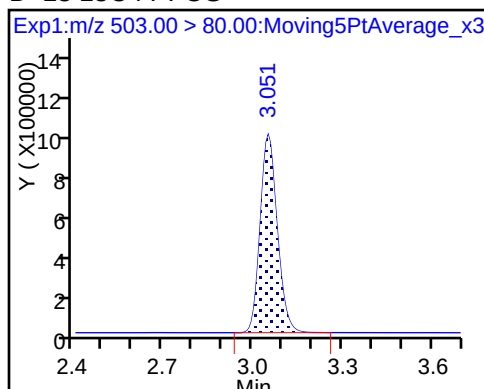
17 Perfluorooctane sulfonic acid



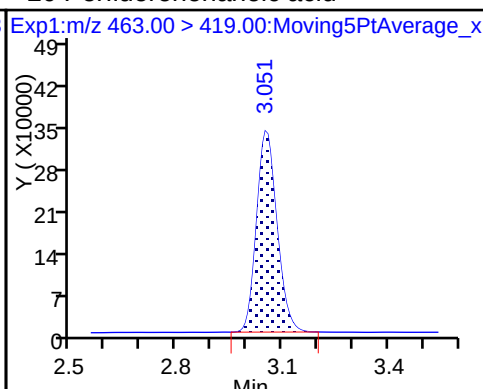
17 Perfluorooctane sulfonic acid



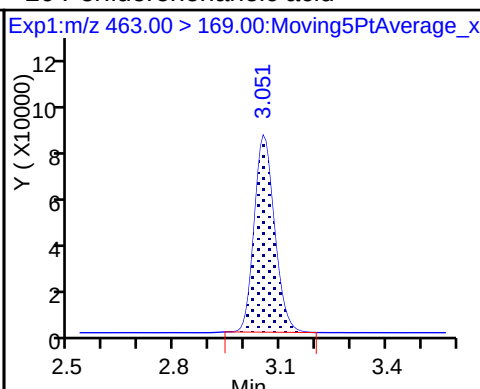
D 18 13C4 PFOS



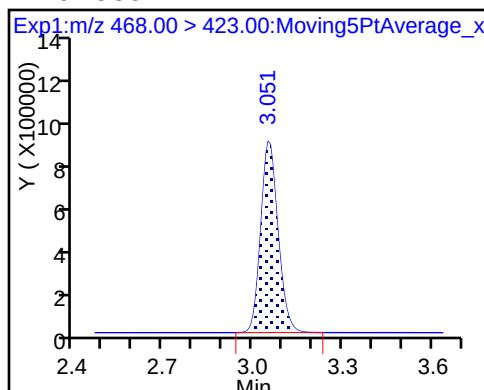
20 Perfluorononanoic acid



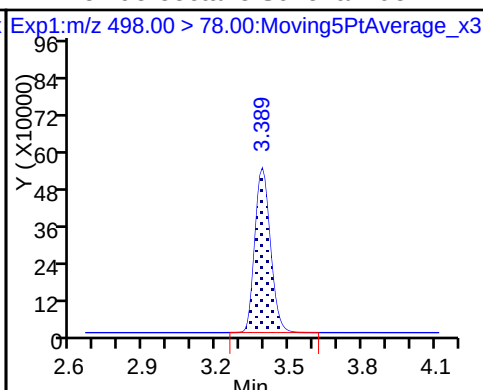
20 Perfluorononanoic acid



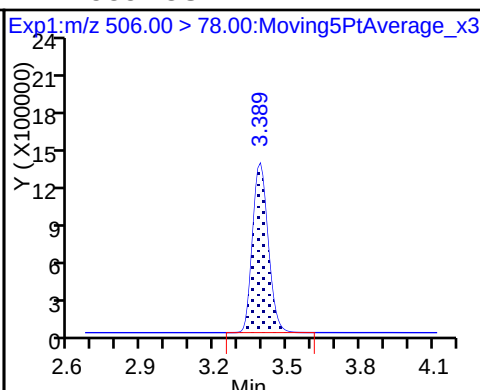
D 19 13C5 PFNA



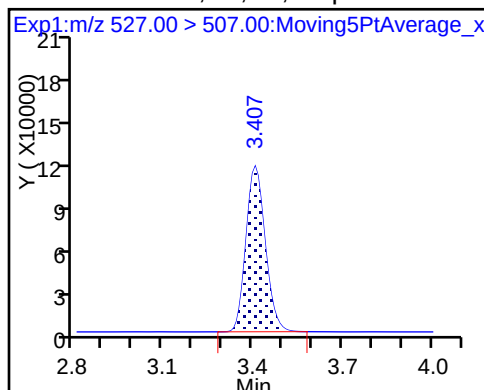
22 Perfluorooctane Sulfonamide



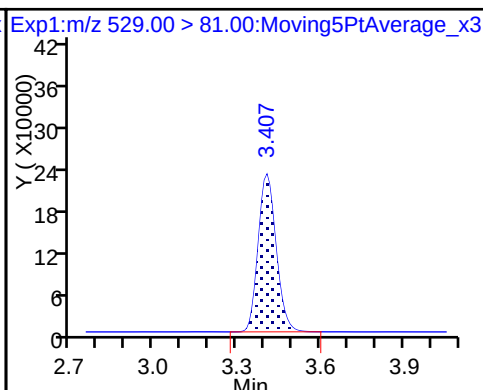
D 21 13C8 FOSA



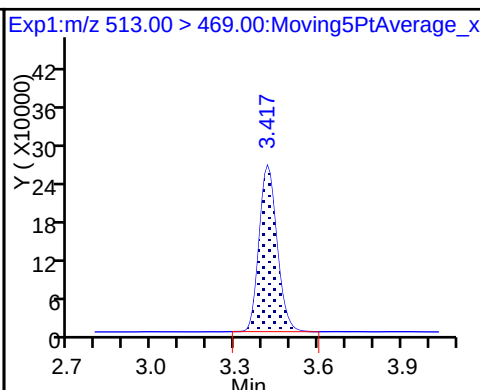
25 Sodium 1H,1H,2H,2H-perfluorodecanoate



De26 M2-8:2FTS



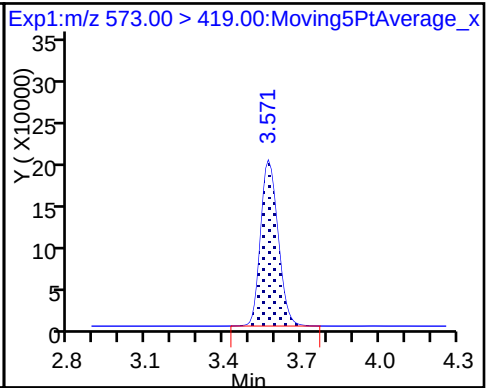
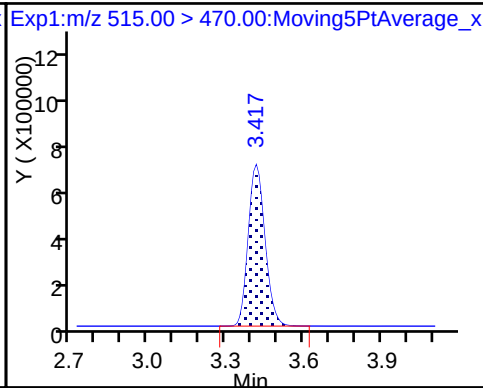
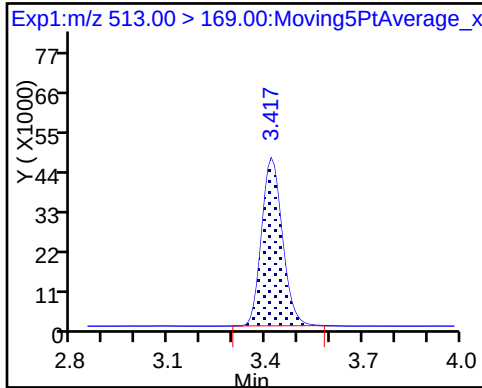
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

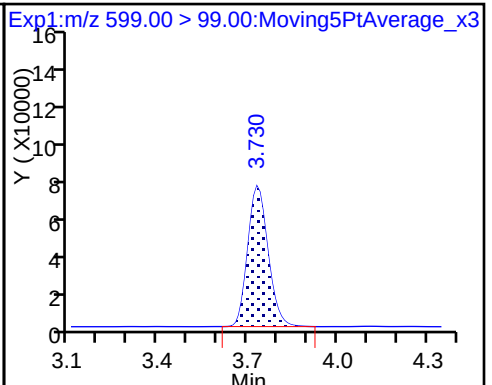
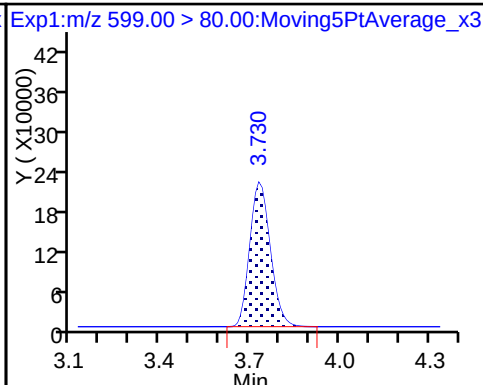
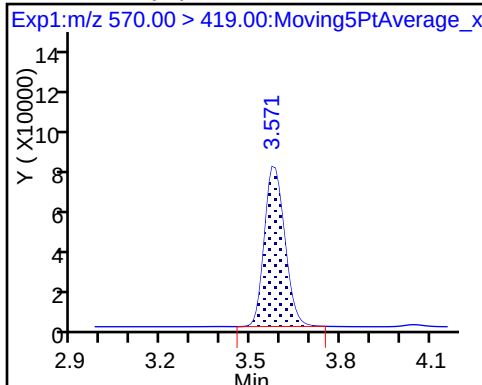
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

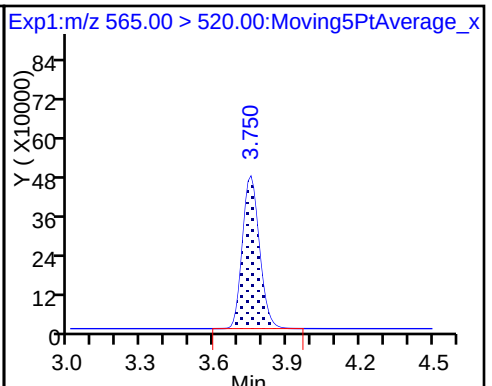
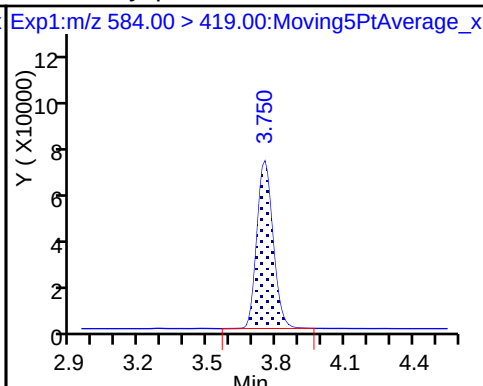
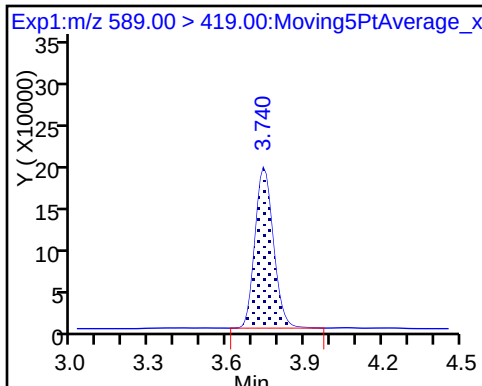
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

33 N-ethyl perfluorooctane sulfonamid

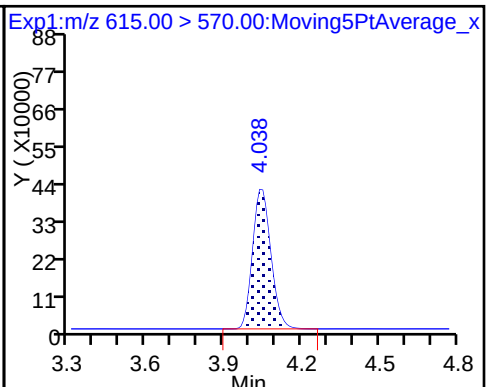
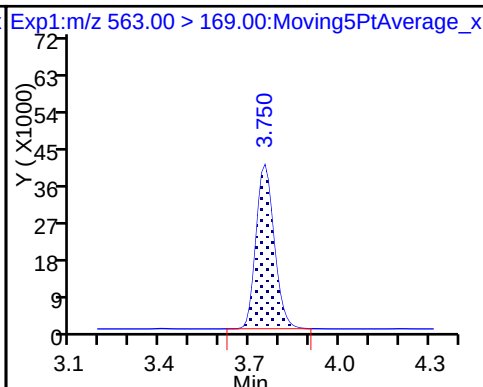
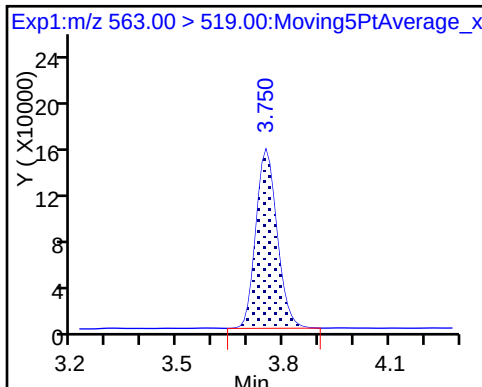
D 30 13C2 PFUnA



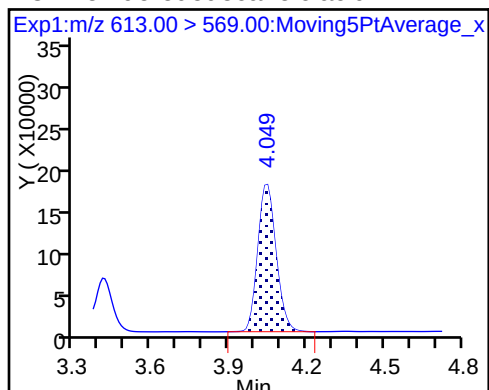
31 Perfluoroundecanoic acid

31 Perfluoroundecanoic acid

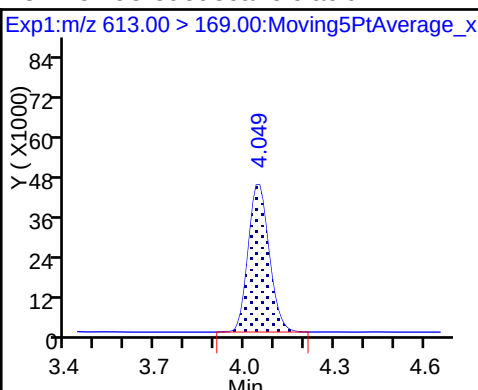
D 36 13C2 PFDaA



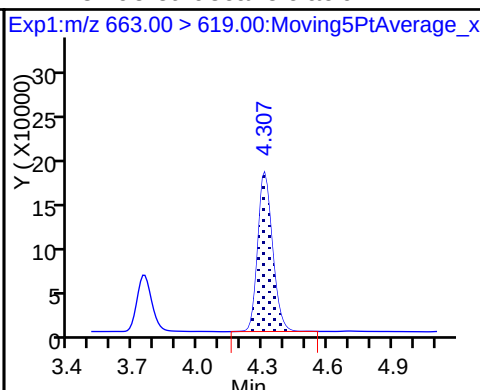
37 Perfluorododecanoic acid



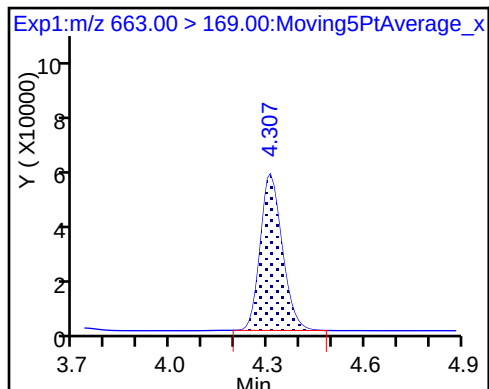
37 Perfluorododecanoic acid



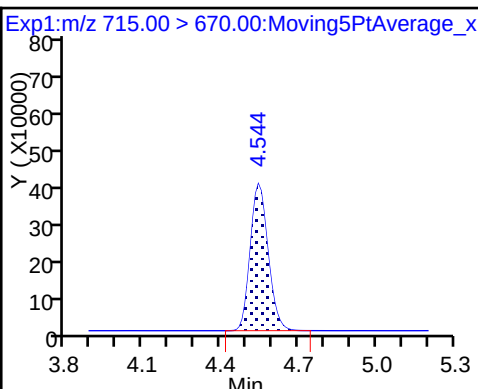
41 Perfluorotridecanoic acid



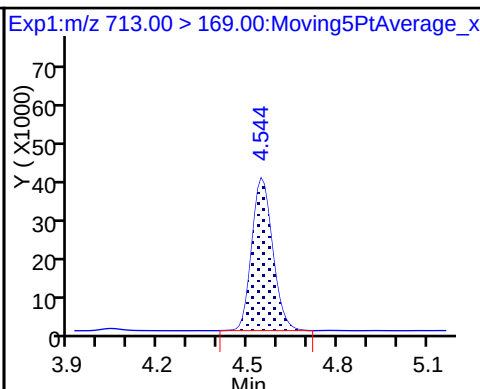
41 Perfluorotridecanoic acid



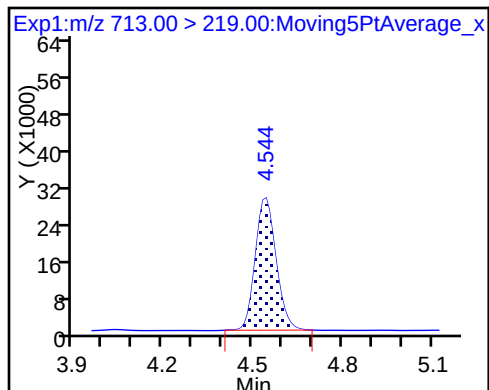
D 43 13C2-PFTeDA



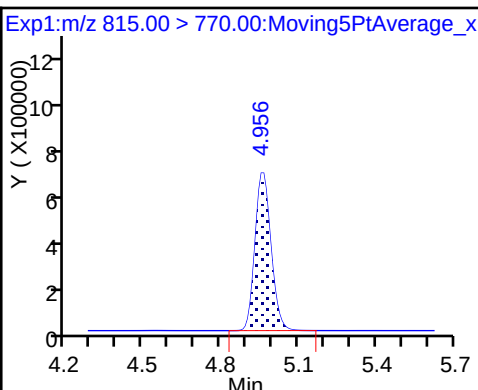
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_006.d
 Lims ID: IC L5 Full
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 16-Mar-2018 23:41:00 ALS Bottle#: 14 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 18-Mar-2018 12:40:34 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK059

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:27:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.440	0.001	0.537	5583889	2.50		100	97262	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.440	0.001	1.000	5293287	2.56		102	3727	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.634	3888024	2.47		98.8	122892	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.698	0.002	1.000	4633188	2.55		102	1776	
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.730	-0.003	0.644	87930	2.26		97.3	430	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.733	0.003	1.005	6966452	2.38		108	3077	
298.90 > 99.00	1.736	1.733	0.003	1.005	2830396		2.46(1.25-3.74)	108	2805	
D 60 M2-4:2FTS										
329.00 > 81.00	1.946	1.942	0.004	0.726	674169	NC			7621	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.946	1.944	0.002	1.000	1435640	2.36		101	52474	
D 7 13C2 PFHxA										
315.00 > 270.00	1.987	1.979	0.008	0.741	4369955	2.49		99.6	129893	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.987	1.982	0.005	1.000	4444832	2.52		101	13990	
313.00 > 119.00	1.987	1.982	0.005	1.000	418029		10.63(5.03-15.10)	101	9309	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.864	4232279	2.48		99.1	100489	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.311	0.004	1.000	4297988	2.45		98.0	8927	
363.00 > 169.00	2.315	2.311	0.004	1.000	1767362		2.43(1.13-3.40)	98.0	24587	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.869	5260610	2.31		97.6	73562	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	5484826	2.21		97.2	681	
399.00 > 99.00	2.328	2.326	0.002	1.000	1779244		3.08(1.50-4.49)	97.2	678	
D 12 M2-6:2FTS										
429.00 > 81.00	2.657	2.651	0.006	0.991	1016091	2.32		97.8	21630	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.657	2.652	0.005	1.000	1746834	2.45		103	50845	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.678	0.003	1.000	4098618	2.49		99.4	95002	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.681	2.678	0.003	1.000	4544060	2.48		99.3	1326	
413.00 > 169.00	2.681	2.678	0.003	1.000	2512882		1.81(0.84-2.52)	99.3	9876	
* 62 13C2-PFOA										
415.00 > 370.00	2.681	2.678	0.003		4371024	2.50			78442	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.689	2.684	0.005	1.000	5246040	2.49		105	56295	
449.00 > 99.00	2.689	2.684	0.005	1.000	1380173		3.80(1.94-5.82)	105	21498	
D 18 13C4 PFOS										
503.00 > 80.00	3.051	3.050	0.001	1.138	3831418	2.40		101	26391	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.051	3.050	0.001	1.000	4076350	2.35		101	13303	
499.00 > 99.00	3.051	3.050	0.001	1.000	872560		4.67(2.31-6.93)	101	7654	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.052	0.006	1.141	3313741	2.51		100	68947	
20 Perfluorononanoic acid										
463.00 > 419.00	3.058	3.052	0.006	1.000	3490132	2.58		103	8593	
463.00 > 169.00	3.058	3.052	0.006	1.000	871364		4.01(1.90-5.69)	103	27131	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.388	0.001	1.264	5771845	2.50		100	52306	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.388	0.001	1.000	5854030	2.61		104	55097	
D 26 M2-8:2FTS										
529.00 > 81.00	3.407	3.406	0.001	1.271	959683	2.34		97.5	23723	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.407	3.406	0.001	1.000	1262293	2.51		105	40259	
D 23 13C2 PFDA										
515.00 > 470.00	3.417	3.416	0.001	1.275	2792979	2.53		101	45181	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.417	3.416	0.001	1.000	2734556	2.58		103	14321	
513.00 > 169.00	3.417	3.416	0.001	1.000	464662		5.89(2.36-7.09)	103	15026	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.571	3.570	0.001	1.332	903252	2.48		99.3	32461	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.571	3.571	0.0	1.000	936613	2.49		99.6	10122	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.730	3.729	0.001	1.000	2485881	2.43		101	74404	
599.00 > 99.00	3.730	3.729	0.001	1.000	853763		2.91(1.39-4.16)	101	20150	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.740	3.740	0.0	1.395	874289	2.51		101	1957	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.750	3.746	0.004	1.003	829764	2.42		96.9	24200	
D 30 13C2 PFUnA										
565.00 > 520.00	3.750	3.747	0.003	1.399	2125072	2.46		98.5	88600	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.750	3.750	0.0	1.000	1693687	2.38		95.1	6339	
563.00 > 169.00	3.750	3.750	0.0	1.000	443503		3.82(2.12-6.36)	95.1	34848	
D 36 13C2 PFDaA										
615.00 > 570.00	4.038	4.041	-0.003	1.506	2008069	2.45		98.2	11583	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.038	4.042	-0.004	1.000	2068374	2.52		101	393	
613.00 > 169.00	4.038	4.042	-0.004	1.000	574695		3.60(2.13-6.40)	101	11882	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.307	4.304	0.003	1.000	2137089	2.59		103	451	
663.00 > 169.00	4.307	4.304	0.003	1.000	681261		3.14(1.25-3.76)	103	10326	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.544	4.545	-0.001	1.695	1881480	2.52		101	16479	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.544	4.545	-0.001	1.000	484453	2.33		93.4	7772	
713.00 > 219.00	4.544	4.545	-0.001	1.000	341862		1.42(0.71-2.13)	93.4	3917	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.956	4.956	0.0	1.849	2832854	2.59		104	11035	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.956	4.960	-0.004	1.000	2577679	NC			239	
813.00 > 169.00	4.956	4.960	-0.004	1.000	464123		5.55(2.86-8.58)		5007	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.316	5.320	-0.004	1.000	2839194	NC			547	
913.00 > 169.00	5.316	5.320	-0.004	1.000	355131		7.99(3.83-11.48)		3172	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_006.d

Injection Date: 16-Mar-2018 23:41:00

Instrument ID: A8_N

Lims ID: IC L5 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

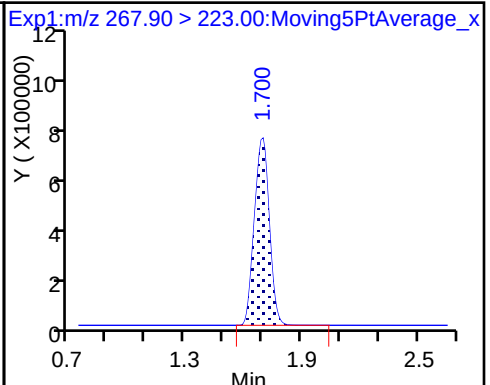
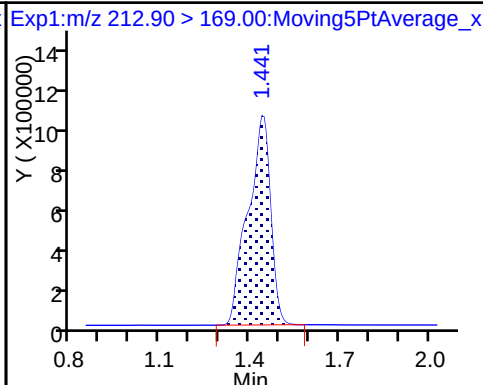
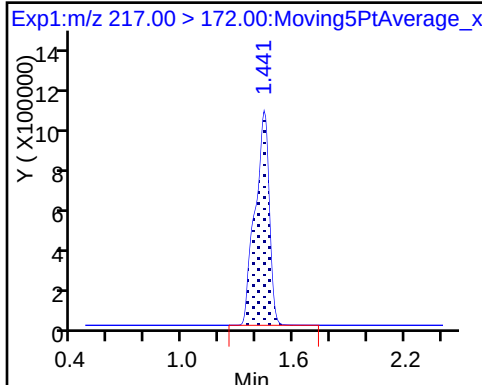
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

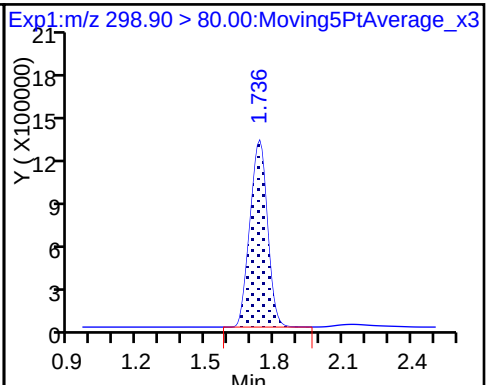
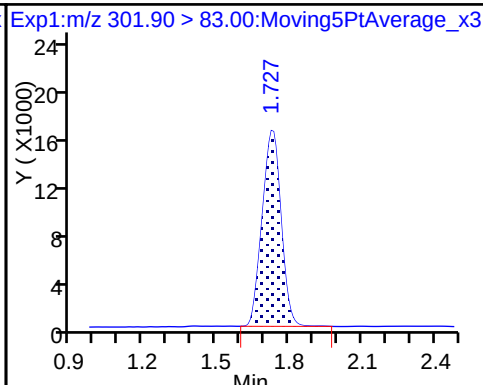
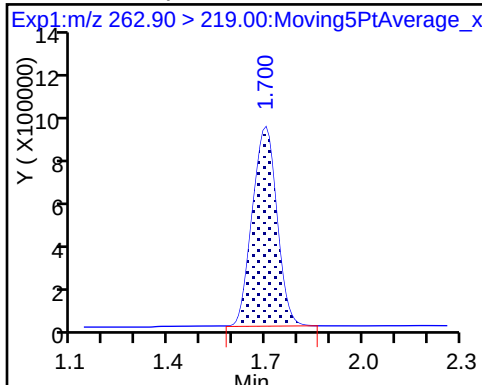
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

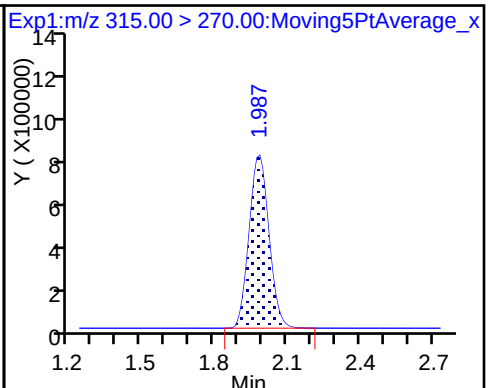
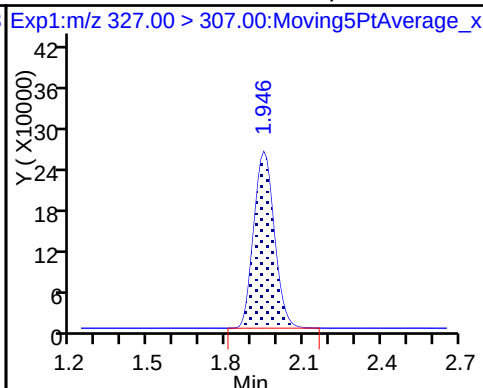
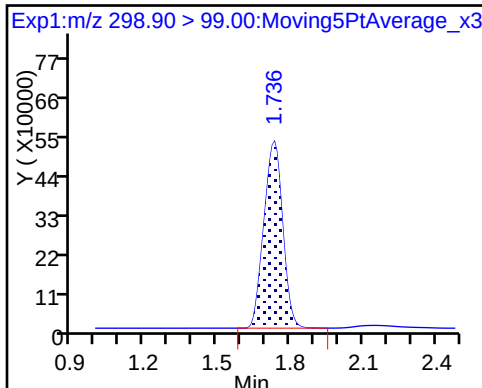
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

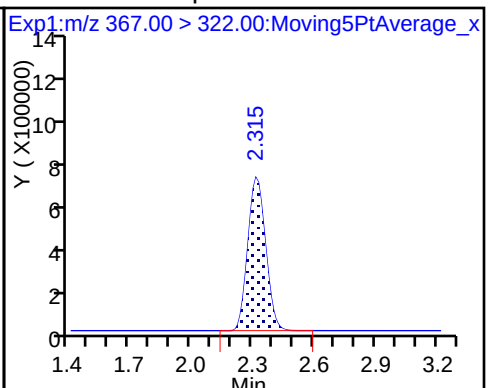
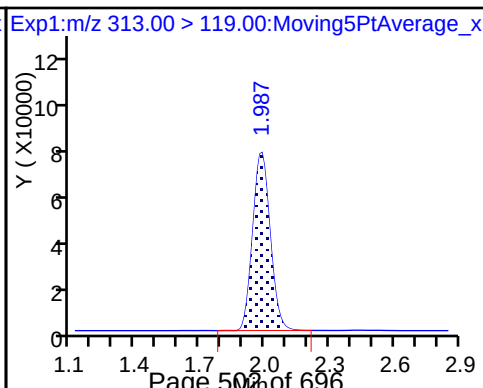
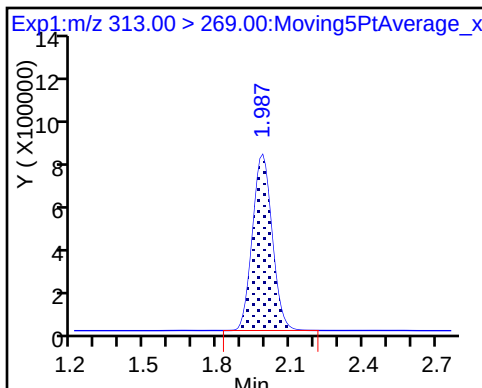
De 7 13C2 PFHxA



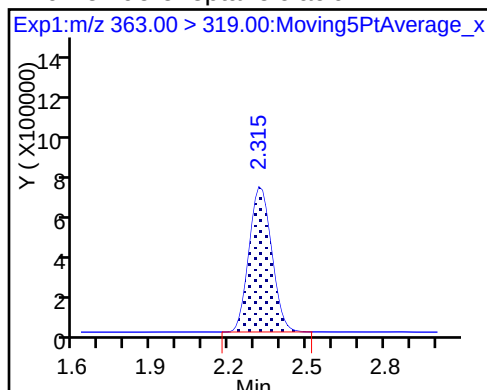
6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

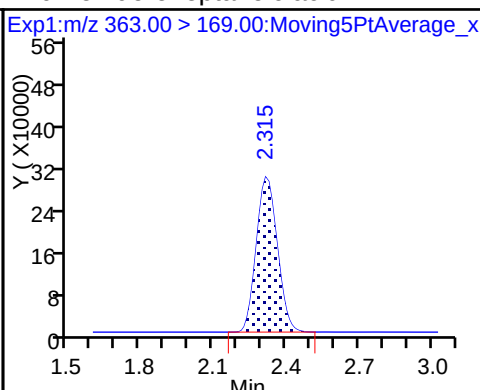
D 9 13C4-PFHpA



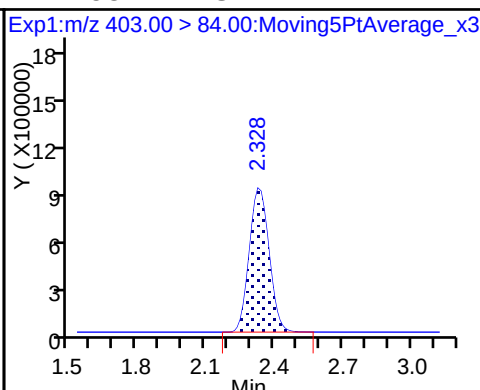
10 Perfluoroheptanoic acid



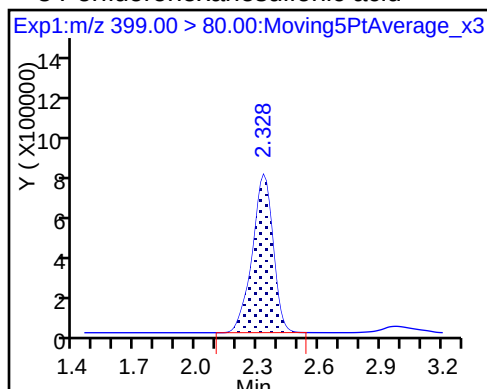
10 Perfluoroheptanoic acid



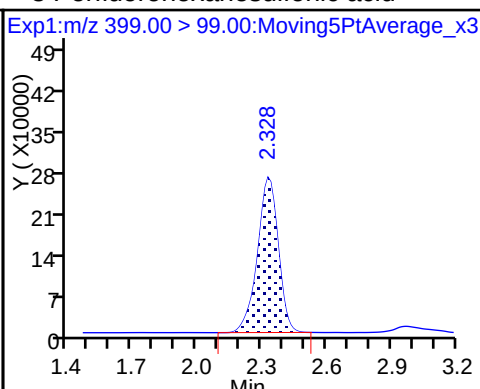
D 11 18O2 PFHxS



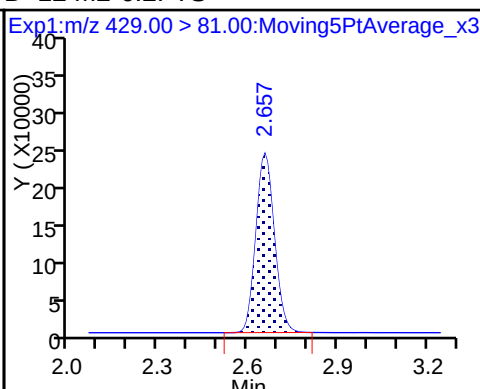
8 Perfluorohexanesulfonic acid



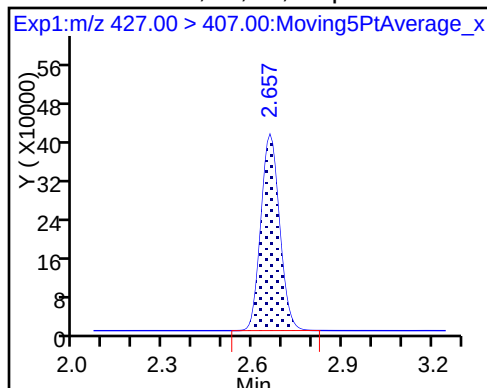
8 Perfluorohexanesulfonic acid



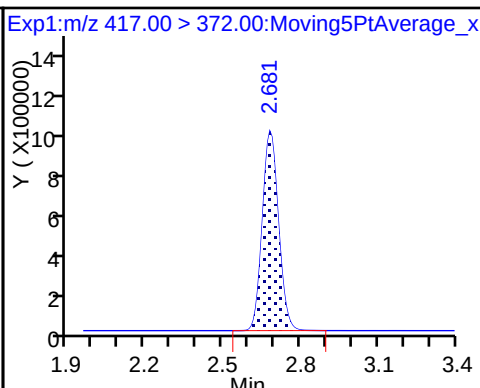
D 12 M2-6:2FTS



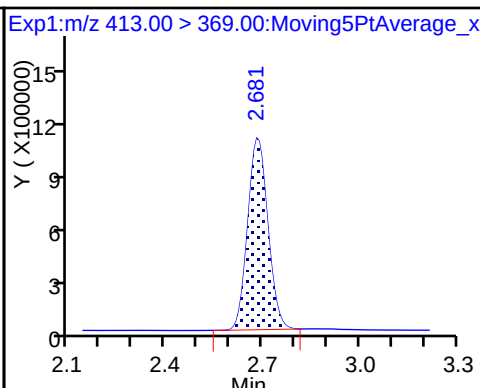
13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate



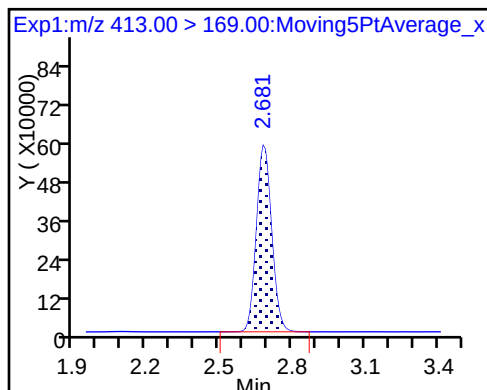
D 14 13C4 PFOA



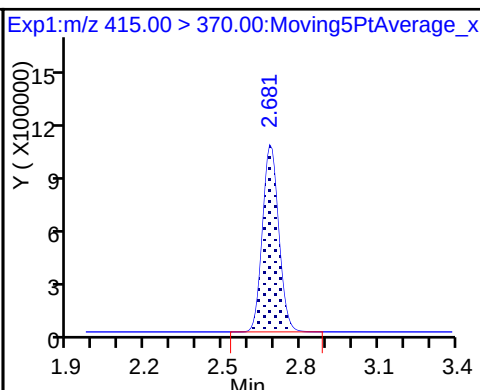
15 Perfluorooctanoic acid



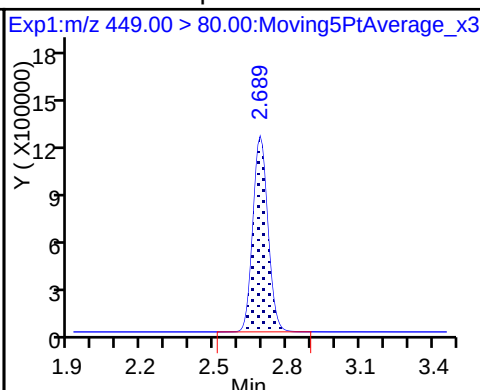
15 Perfluorooctanoic acid



* 62 13C2-PFOA



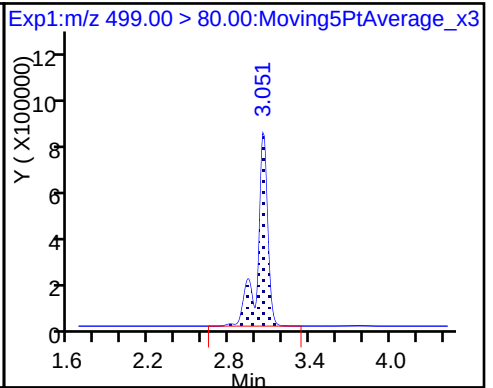
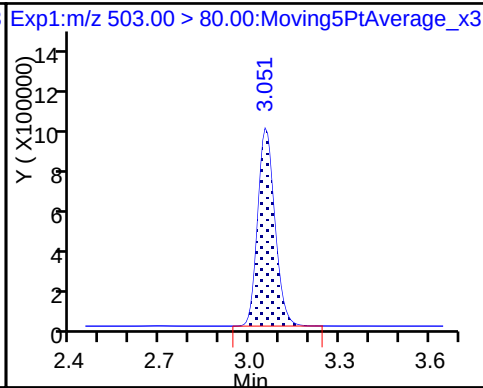
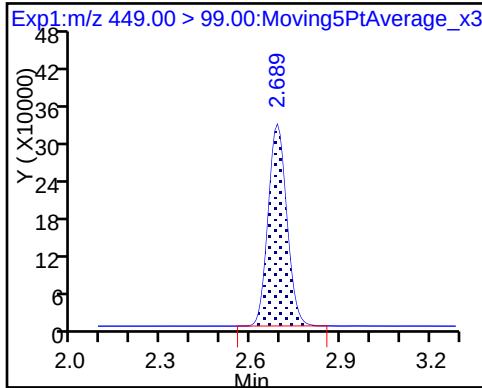
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

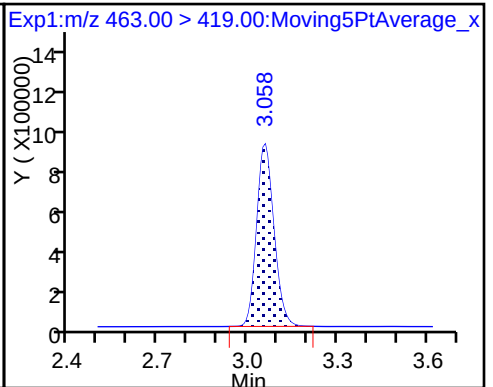
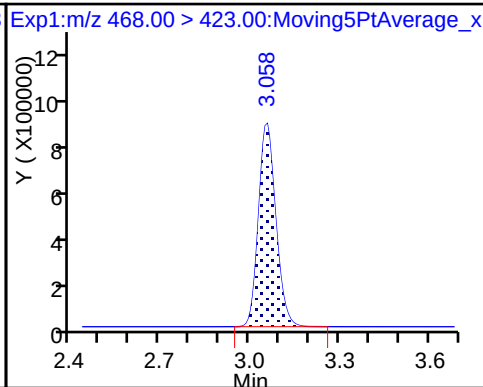
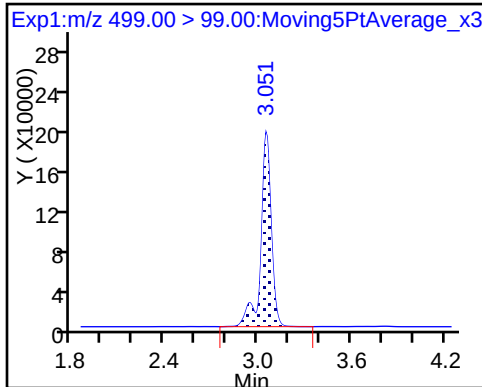
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

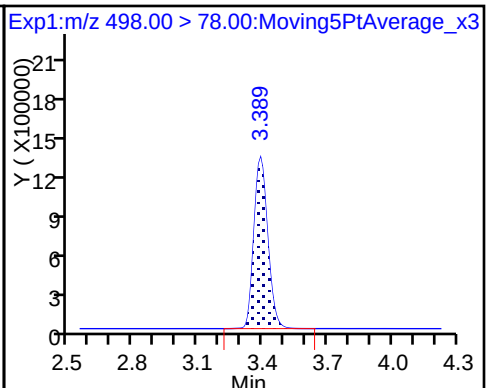
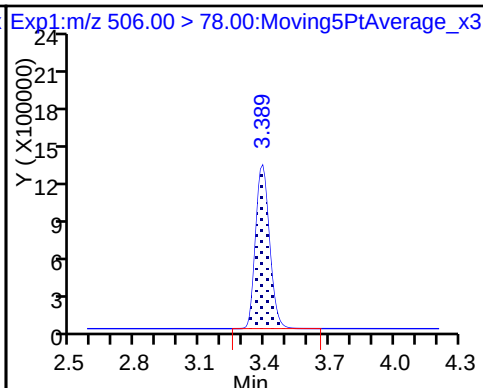
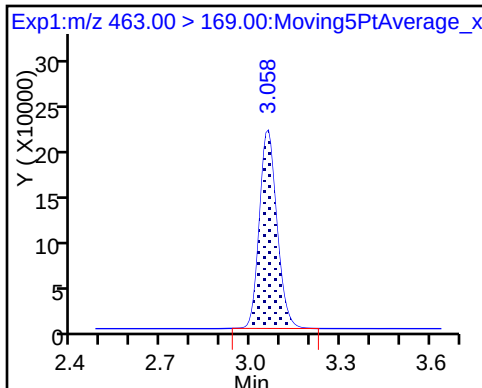
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

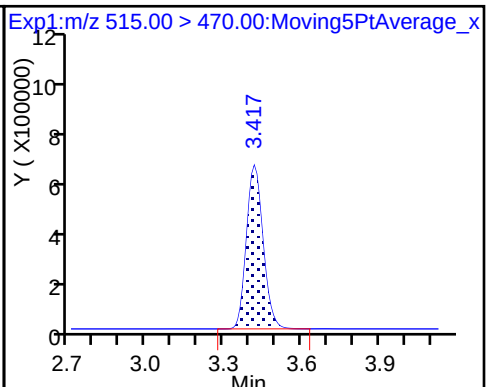
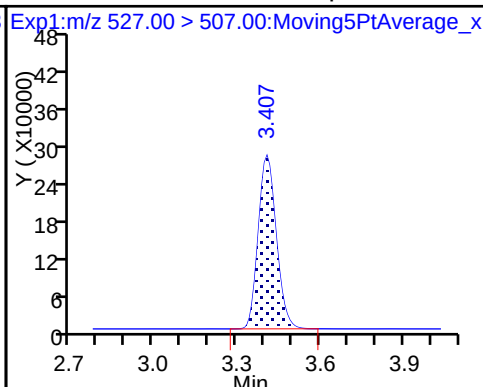
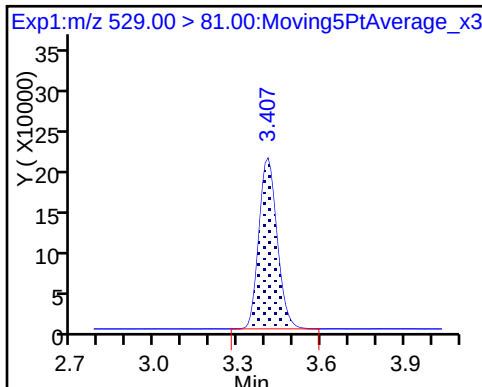
22 Perfluorooctane Sulfonamide



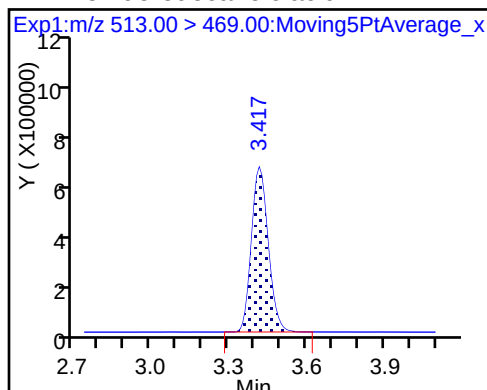
D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodeca

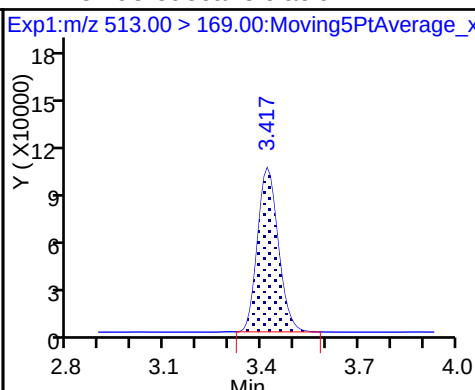
De23 13C2 PFDA



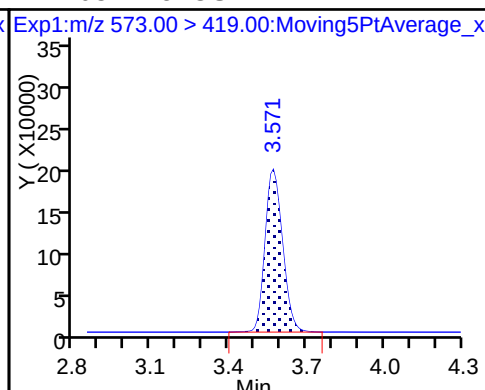
24 Perfluorodecanoic acid



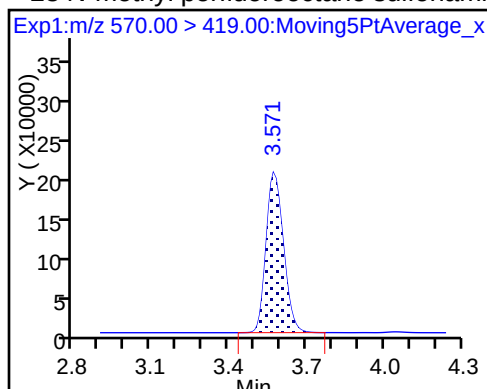
24 Perfluorodecanoic acid



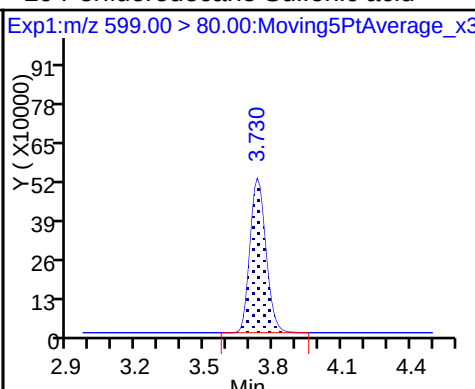
D 27 d3-NMeFOSAA



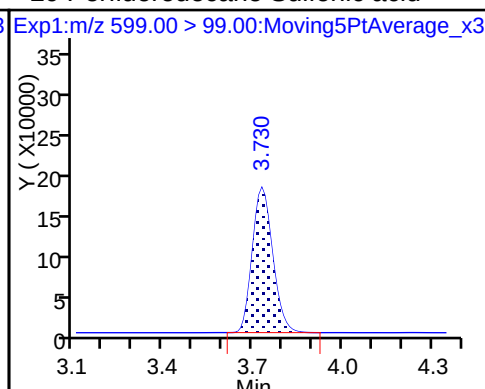
28 N-methyl perfluorooctane sulfonami



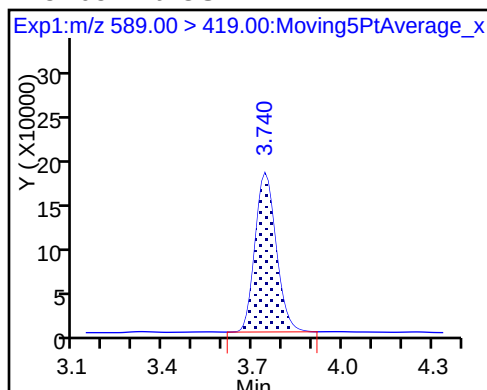
29 Perfluorodecane Sulfonic acid



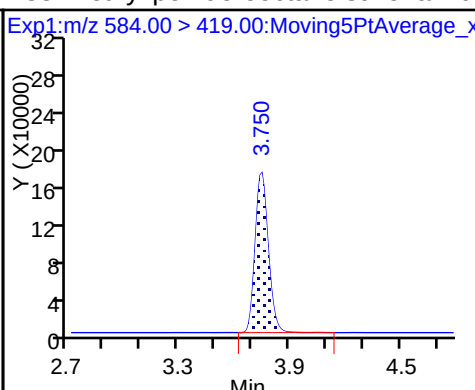
29 Perfluorodecane Sulfonic acid



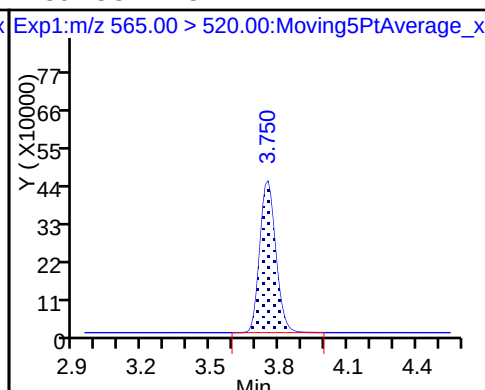
D 32 d5-NEtFOSAA



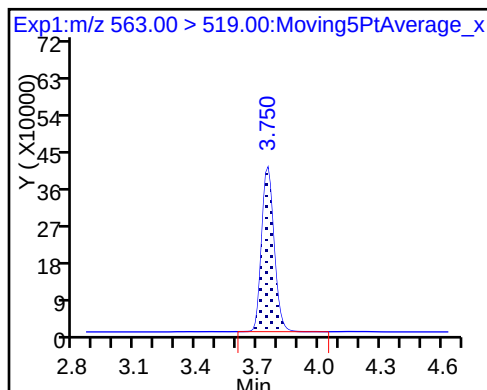
33 N-ethyl perfluorooctane sulfonamid



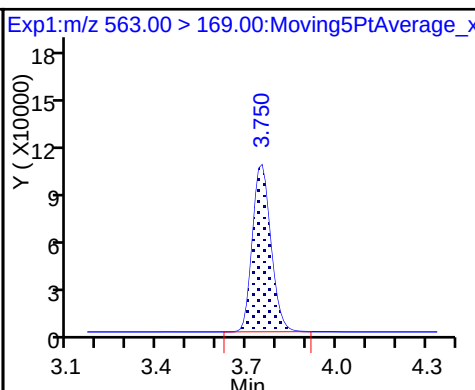
D 30 13C2 PFUnA



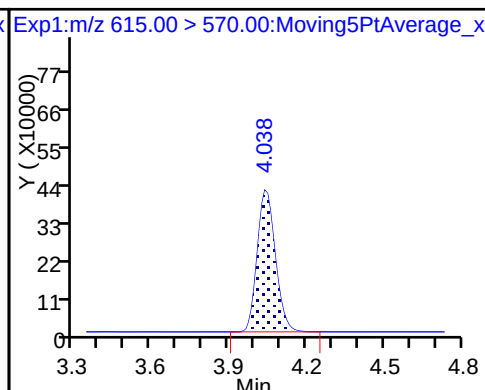
31 Perfluoroundecanoic acid



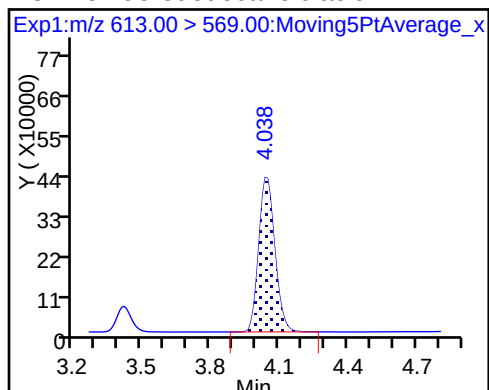
31 Perfluoroundecanoic acid



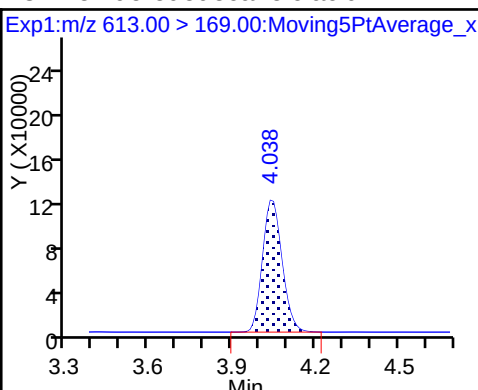
D 36 13C2 PFDaA



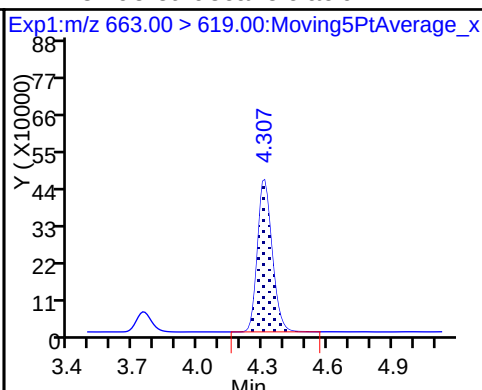
37 Perfluorododecanoic acid



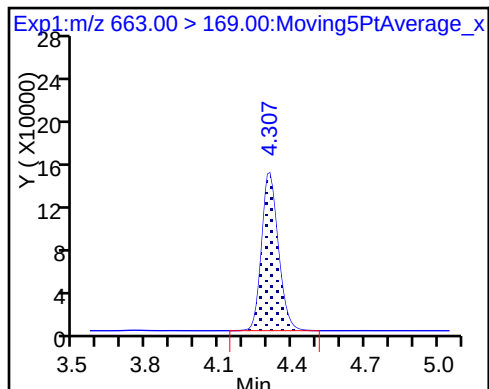
37 Perfluorododecanoic acid



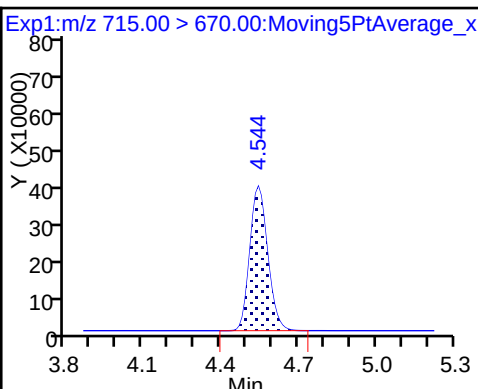
41 Perfluorotridecanoic acid



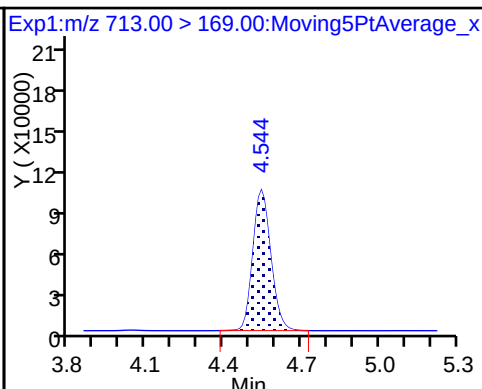
41 Perfluorotridecanoic acid



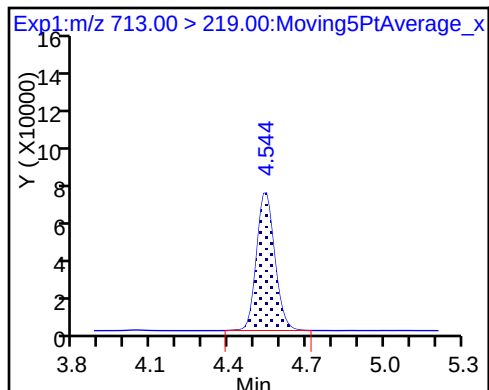
D 43 13C2-PFTeDA



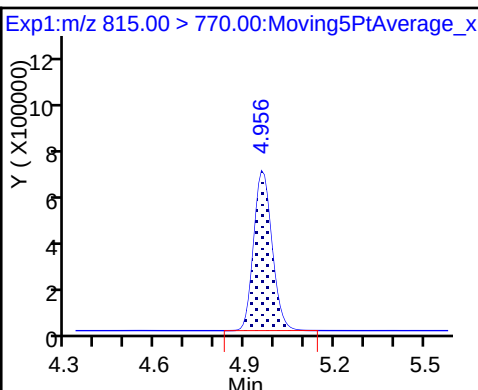
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_007.d
 Lims ID: IC L6 Full
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 16-Mar-2018 23:48:48 ALS Bottle#: 15 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 18-Mar-2018 12:40:36 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK059

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:28:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.440	0.001	1.000	10415661	5.14		103	6969	
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.440	0.001	0.537	5463195	2.64		105	103496	
D 3 13C5-PFPeA										
267.90 > 223.00	1.692	1.696	-0.004	0.631	3793612	2.60		104	182073	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.701	1.698	0.003	1.005	8739905	4.93		98.6	3539	
D 47 13C3-PFBS										
301.90 > 83.00	1.736	1.730	0.006	0.647	87984	2.44		105	391	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.733	0.003	1.000	13581651	4.64		105	5968	
298.90 > 99.00	1.736	1.733	0.003	1.000	5754978		2.36(1.25-3.74)	105	5892	
D 60 M2-4:2FTS										
329.00 > 81.00	1.946	1.942	0.004	0.726	606545	NC			7956	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.946	1.944	0.002	1.000	2712672	4.46		95.5	125275	
D 7 13C2 PFHxA										
315.00 > 270.00	1.977	1.979	-0.002	0.737	4208738	2.58		103	125674	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.977	1.982	-0.005	1.000	8603151	5.06		101	27161	
313.00 > 119.00	1.977	1.982	-0.005	1.000	784941		10.96(5.03-15.10)	101	15567	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.316	2.311	0.005	1.000	8715974	5.27		105	20309	
363.00 > 169.00	2.316	2.311	0.005	1.000	3434804		2.54(1.13-3.40)	105	52445	
D 9 13C4-PFHpA										
367.00 > 322.00	2.316	2.311	0.005	0.864	3989677	2.52		101	83904	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.329	2.326	0.003	1.000	10568253	4.26		93.5	1292	
399.00 > 99.00	2.329	2.326	0.003	1.000	3624727		2.92(1.50-4.49)	93.5	1385	
D 11 18O2 PFHxS										
403.00 > 84.00	2.329	2.326	0.003	0.869	5265275	2.49		105	74528	
D 12 M2-6:2FTS										
429.00 > 81.00	2.649	2.651	-0.002	0.988	1008963	2.49		105	25787	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.649	2.652	-0.003	1.000	3480117	4.92		104	101458	
* 62 13C2-PFOA										
415.00 > 370.00	2.681	2.678	0.003		4057033	2.50			85493	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.681	2.678	0.003	1.000	8824823	5.23		105	4529	
413.00 > 169.00	2.681	2.678	0.003	1.000	4743138		1.86(0.84-2.52)	105	14953	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.678	0.003	1.000	3782089	2.47		98.8	66618	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.689	2.684	0.005	1.000	10200411	4.99		105	90746	
449.00 > 99.00	2.689	2.684	0.005	1.000	2708022		3.77(1.94-5.82)	105	34891	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.051	3.050	0.001	1.000	8142540	4.84		104	22835	
499.00 > 99.00	3.051	3.050	0.001	1.000	1769376		4.60(2.31-6.93)	104	19465	
D 18 13C4 PFOS										
503.00 > 80.00	3.051	3.050	0.001	1.138	3717789	2.51		105	20437	
20 Perfluorononanoic acid										
463.00 > 419.00	3.051	3.052	-0.001	1.000	6868229	5.42		108	15321	
463.00 > 169.00	3.058	3.052	0.006	1.002	1674670		4.10(1.90-5.69)	108	45917	
D 19 13C5 PFNA										
468.00 > 423.00	3.051	3.052	-0.001	1.138	3108543	2.54		102	54931	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.390	3.388	0.002	1.000	11053457	5.17		103	95702	
D 21 13C8 FOSA										
506.00 > 78.00	3.390	3.388	0.002	1.264	5503896	2.57		103	50171	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.408	3.406	0.002	1.000	2485319	5.11		107	69206	
D 26 M2-8:2FTS										
529.00 > 81.00	3.408	3.406	0.002	1.271	926664	2.43		101	29544	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.417	3.416	0.001	1.000	5163613	5.30		106	23997	
513.00 > 169.00	3.417	3.416	0.001	1.000	953909		5.41(2.36-7.09)	106	30588	
D 23 13C2 PFDA										
515.00 > 470.00	3.417	3.416	0.001	1.274	2569062	2.51		100	38614	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.571	3.570	0.001	1.332	863871	2.56		102	31262	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.571	3.571	0.0	1.000	1816591	5.05		101	14472	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.728	3.729	-0.001	1.000	4865112	4.90		102	78838	
599.00 > 99.00	3.728	3.729	-0.001	1.000	1681464		2.89(1.39-4.16)	102	44020	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.738	3.740	-0.002	1.394	782136	2.42		96.9	1528	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.748	3.746	0.002	1.003	1652592	5.40		108	26349	
D 30 13C2 PFUnA										
565.00 > 520.00	3.748	3.747	0.001	1.398	2046915	2.56		102	71430	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.748	3.750	-0.002	1.000	3341411	4.87		97.4	10669	
563.00 > 169.00	3.748	3.750	-0.002	1.000	911410		3.67(2.12-6.36)	97.4	73504	
D 36 13C2 PFDaA										
615.00 > 570.00	4.046	4.041	0.005	1.509	2015472	2.65		106	11968	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.046	4.042	0.004	1.000	4174943	5.06		101	931	
613.00 > 169.00	4.046	4.042	0.004	1.000	1007116		4.15(2.13-6.40)	101	25827	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.306	4.304	0.002	1.000	4360483	5.26		105	1014	
663.00 > 169.00	4.306	4.304	0.002	1.000	1390861		3.14(1.25-3.76)	105	22943	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.543	4.545	-0.002	1.695	1882383	2.72		109	15198	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.543	4.545	-0.002	1.000	997084	4.80		96.0	13070	
713.00 > 219.00	4.543	4.545	-0.002	1.000	701265		1.42(0.71-2.13)	96.0	8580	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.955	4.956	-0.001	1.848	2751498	2.71		109	10851	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.963	4.960	0.003	1.002	5015728	NC			457	
813.00 > 169.00	4.955	4.960	-0.005	1.000	891008		5.63(2.86-8.58)		7241	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.322	5.320	0.002	1.000	5529461	NC			954	
913.00 > 169.00	5.315	5.320	-0.005	0.999	707340		7.82(3.83-11.48)		5678	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL6_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_007.d

Injection Date: 16-Mar-2018 23:48:48

Instrument ID: A8_N

Lims ID: IC L6 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

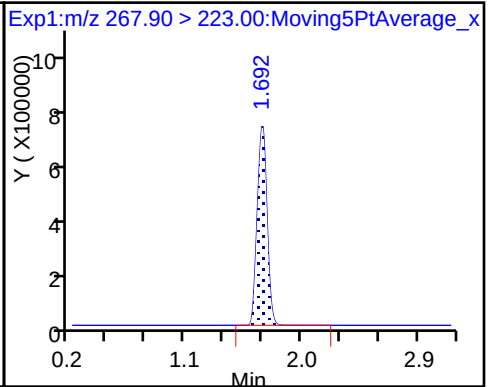
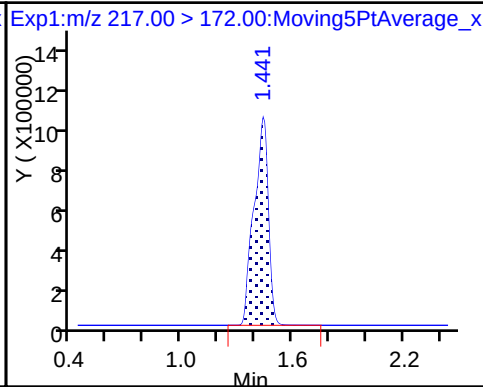
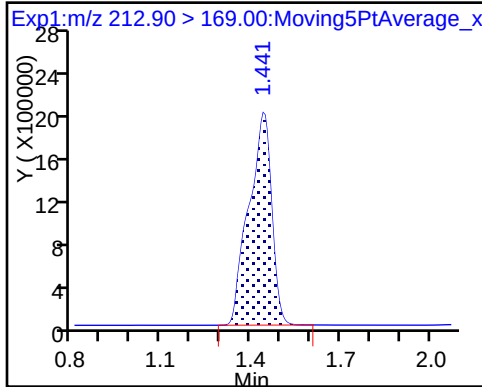
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

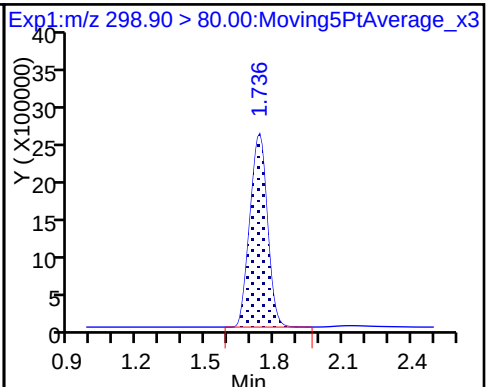
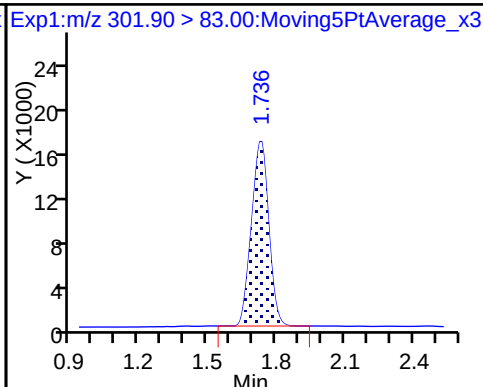
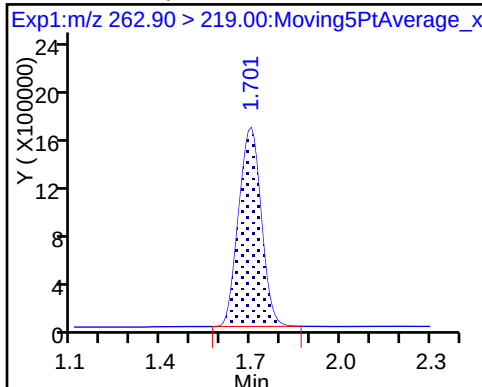
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

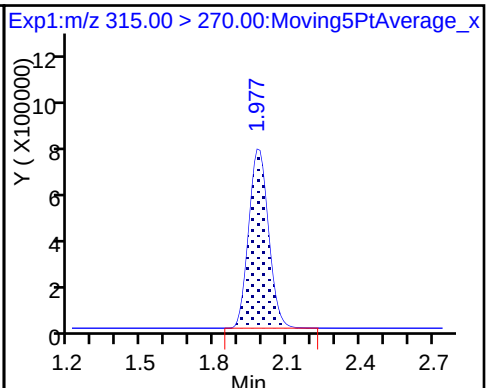
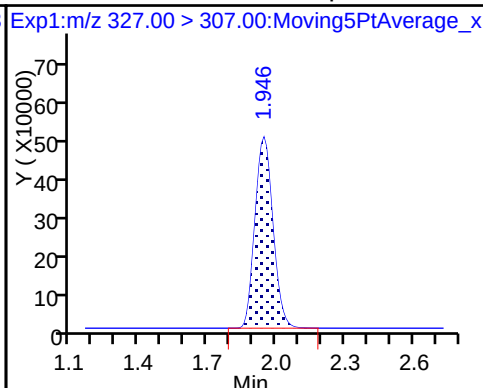
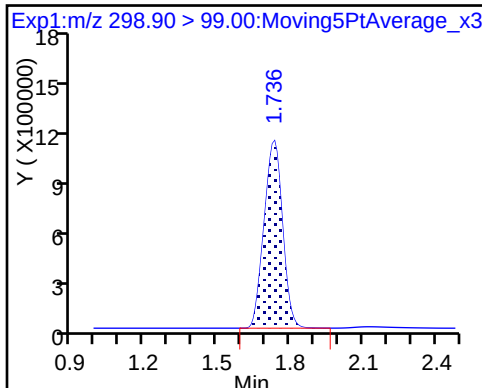
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

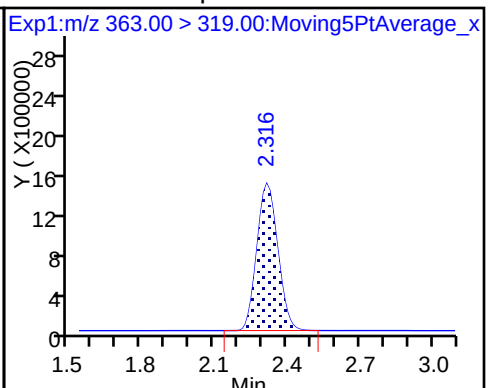
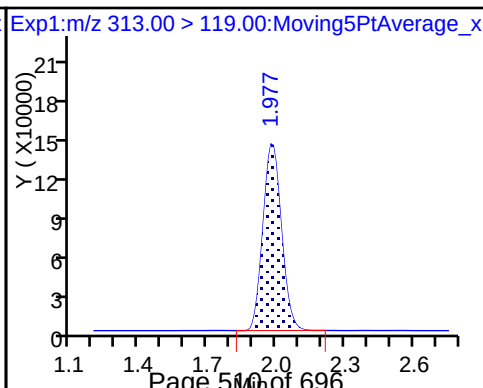
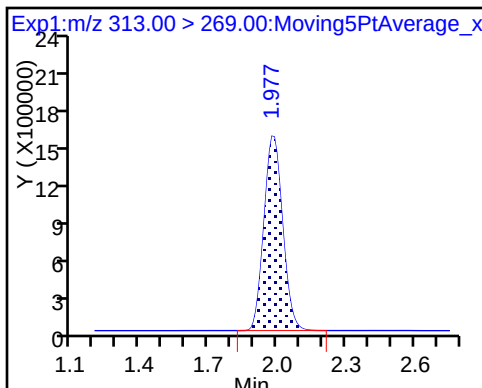
De 7 13C2 PFHxA

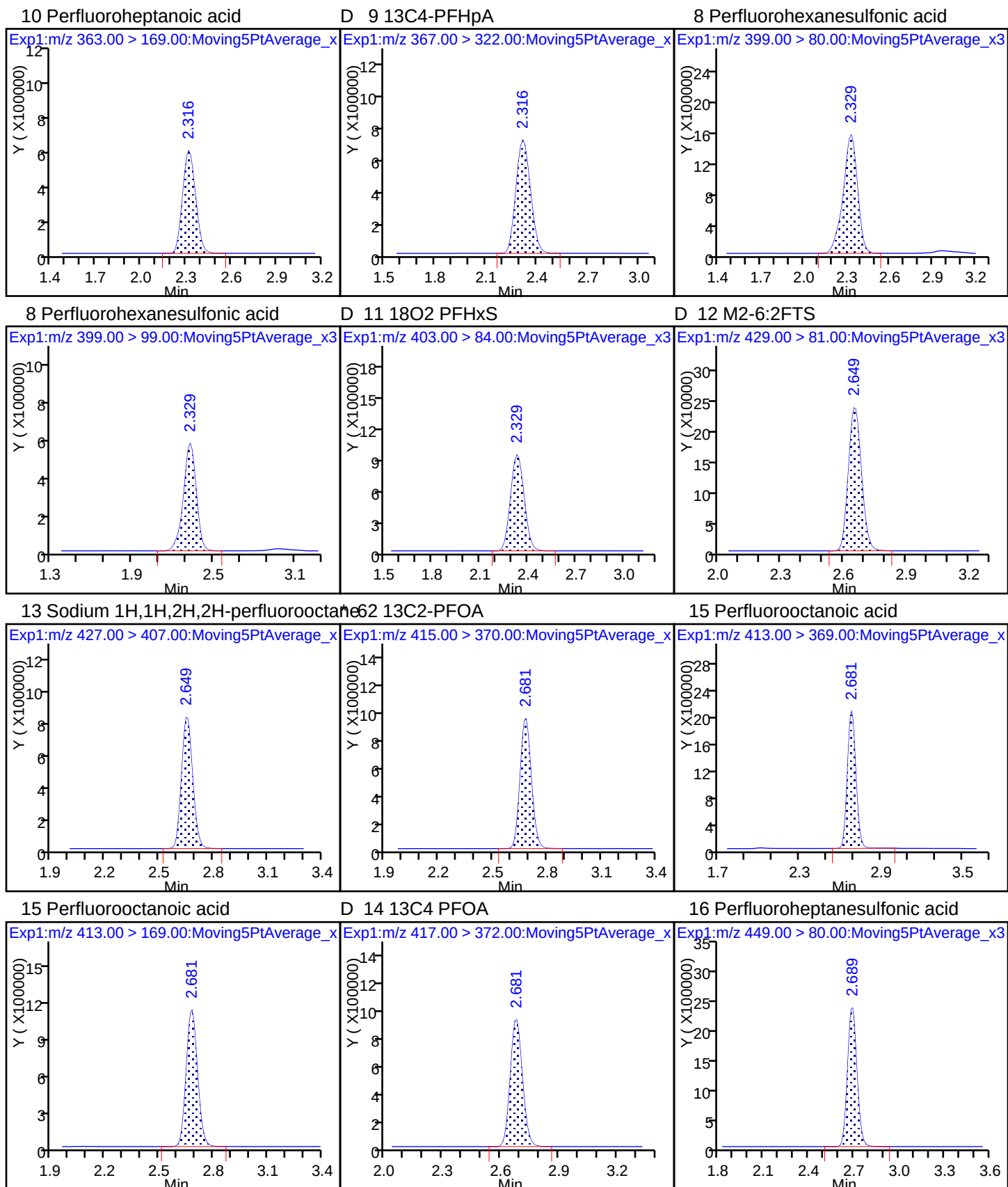


6 Perfluorohexanoic acid

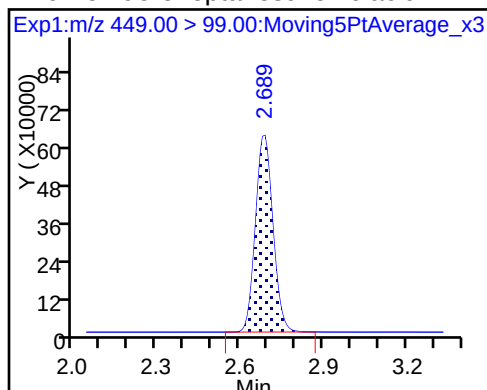
6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid

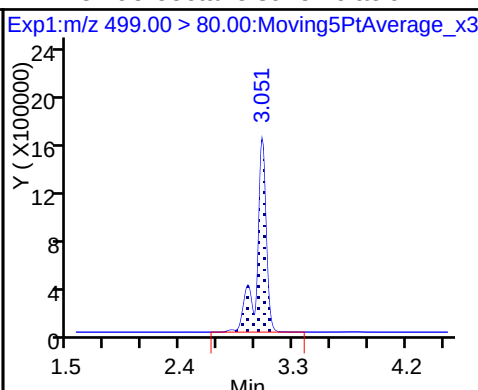




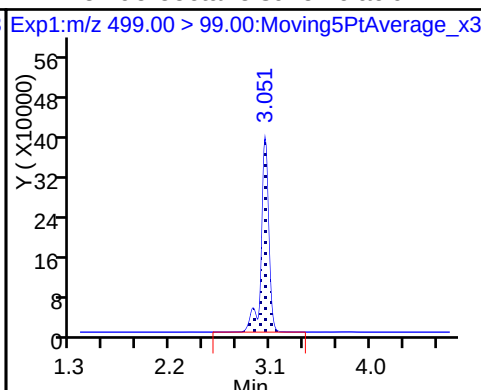
16 Perfluoroheptanesulfonic acid



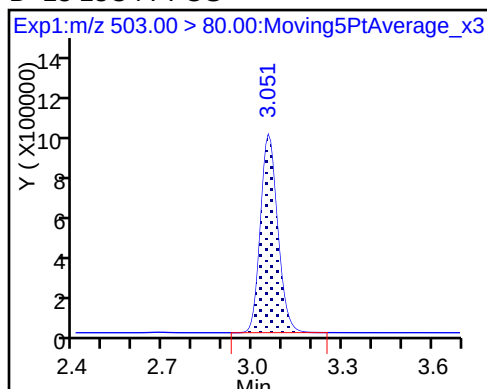
17 Perfluorooctane sulfonic acid



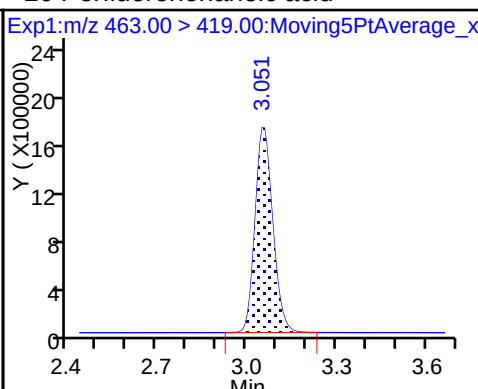
17 Perfluorooctane sulfonic acid



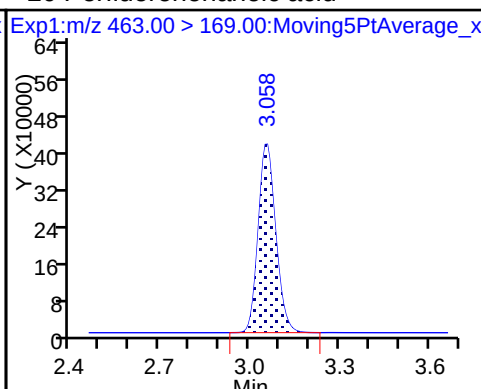
D 18 13C4 PFOS



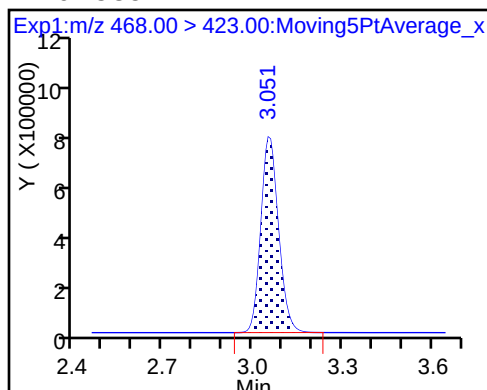
20 Perfluorononanoic acid



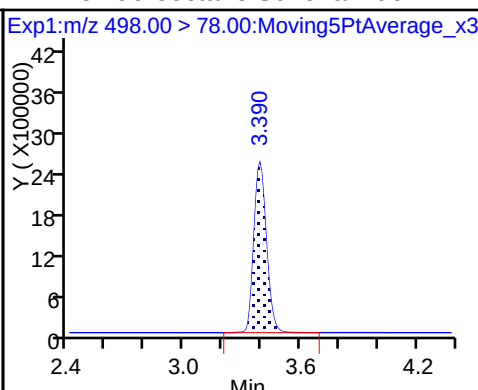
20 Perfluorononanoic acid



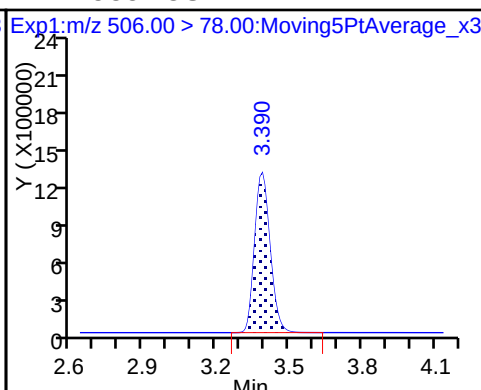
D 19 13C5 PFNA



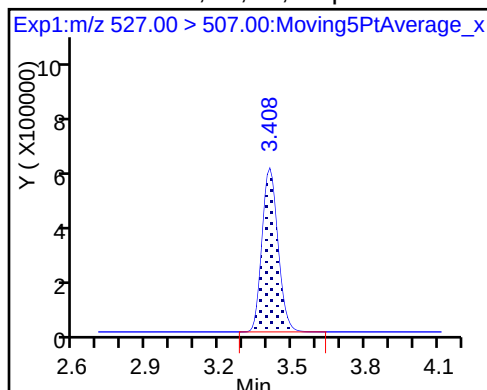
22 Perfluorooctane Sulfonamide



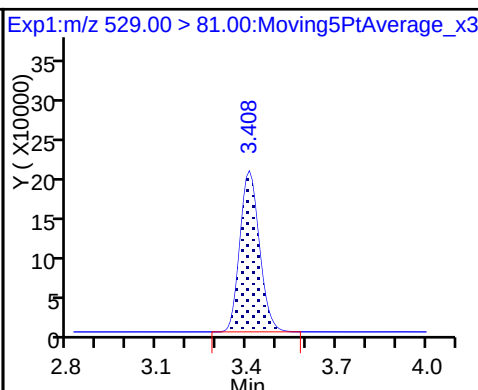
D 21 13C8 FOSA



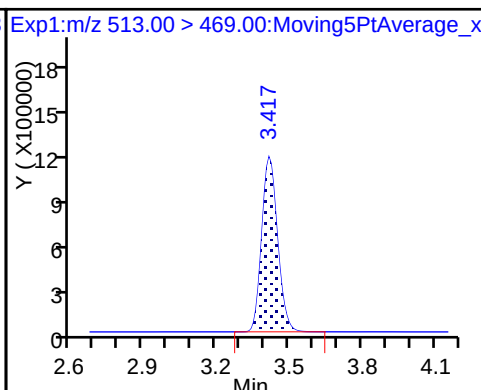
25 Sodium 1H,1H,2H,2H-perfluorodecanoate



De26 M2-8:2FTS



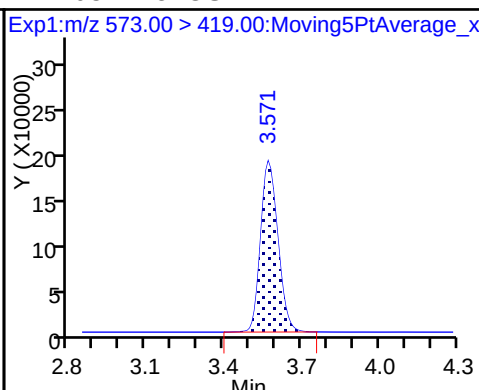
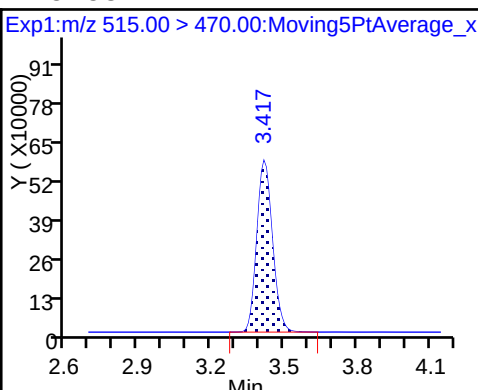
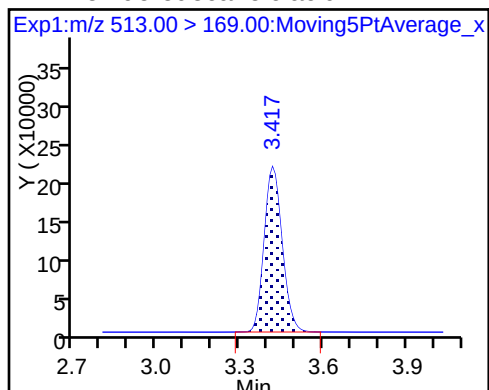
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

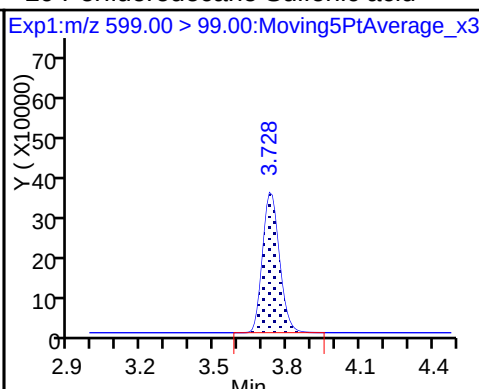
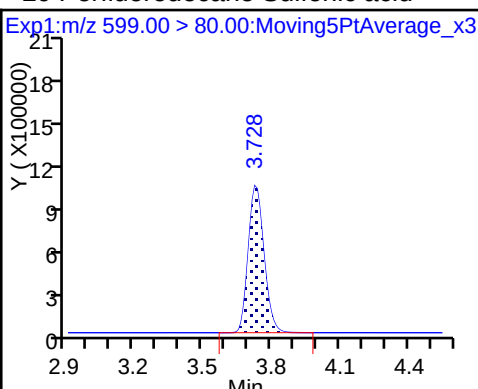
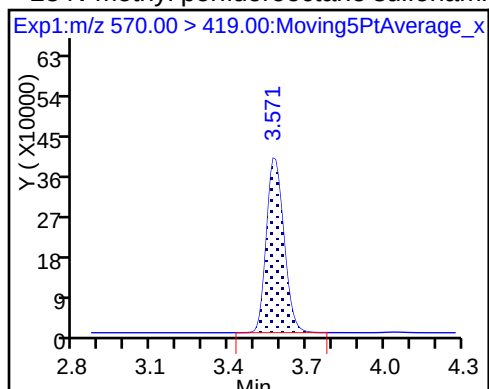
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

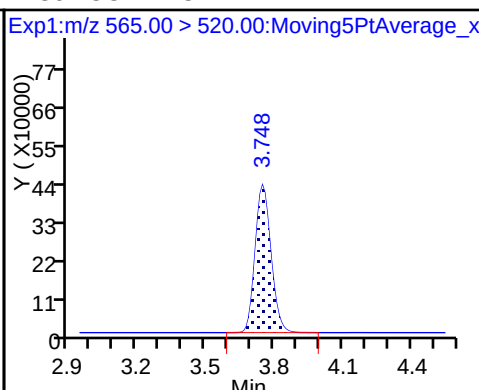
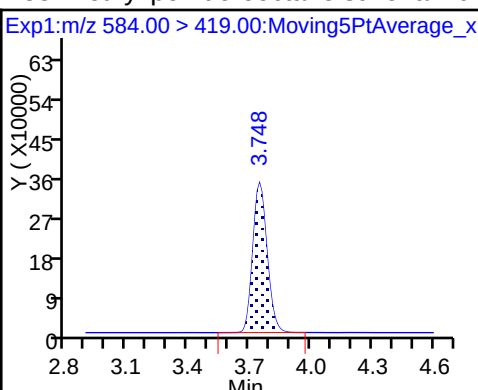
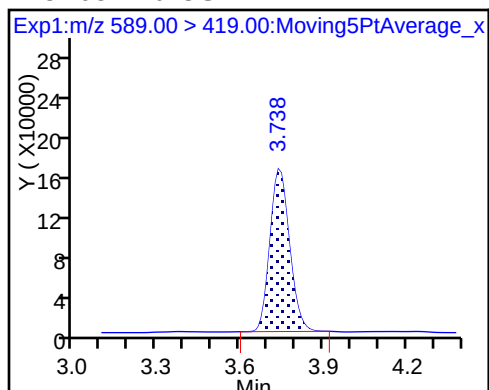
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

33 N-ethyl perfluorooctane sulfonamid

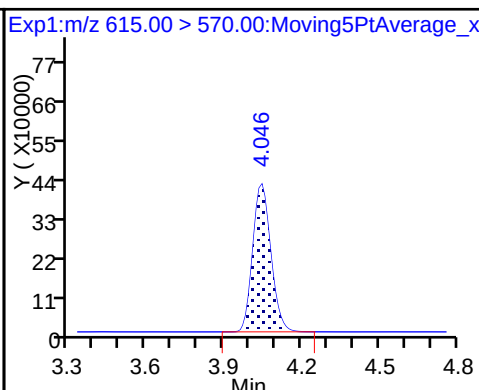
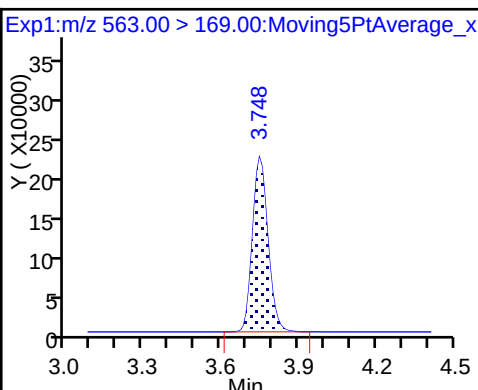
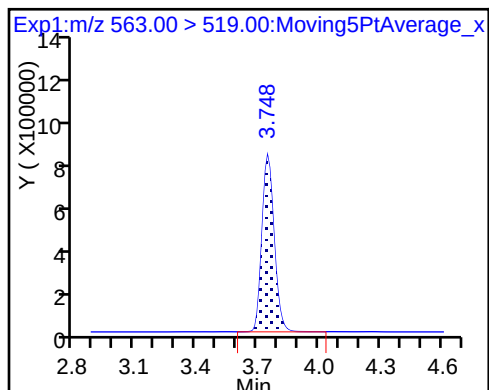
D 30 13C2 PFUnA



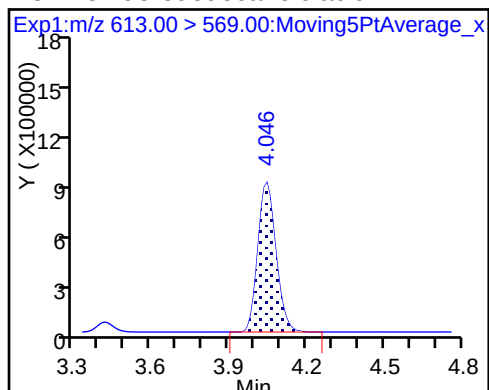
31 Perfluoroundecanoic acid

31 Perfluoroundecanoic acid

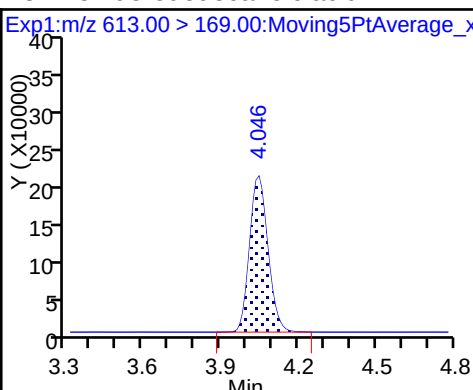
D 36 13C2 PFDaA



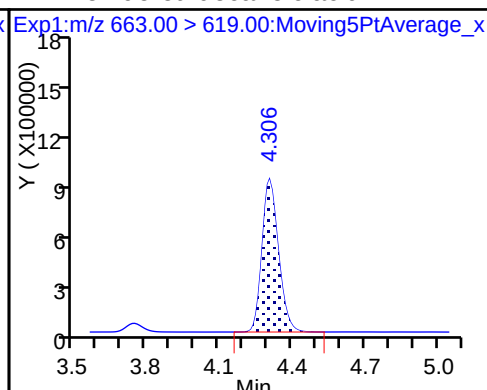
37 Perfluorododecanoic acid



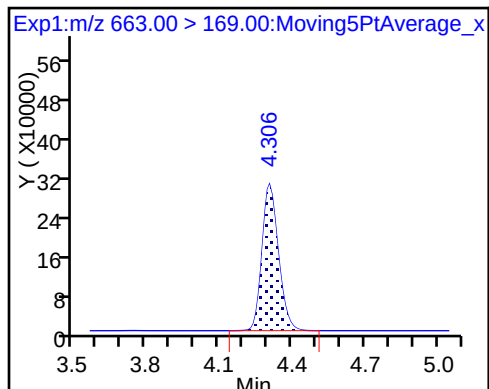
37 Perfluorododecanoic acid



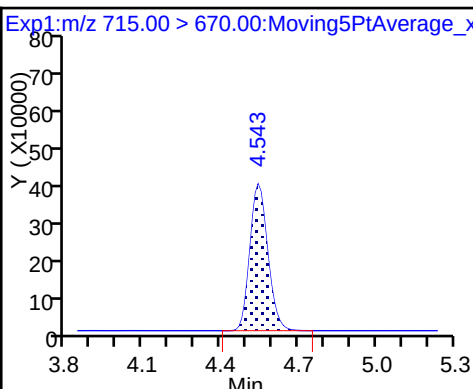
41 Perfluorotridecanoic acid



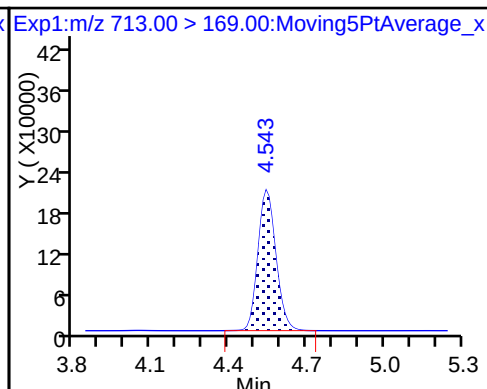
41 Perfluorotridecanoic acid



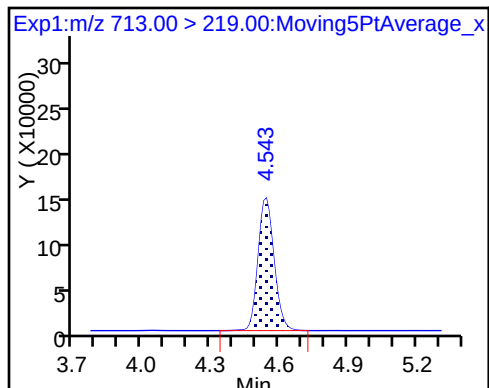
D 43 13C2-PFTeDA



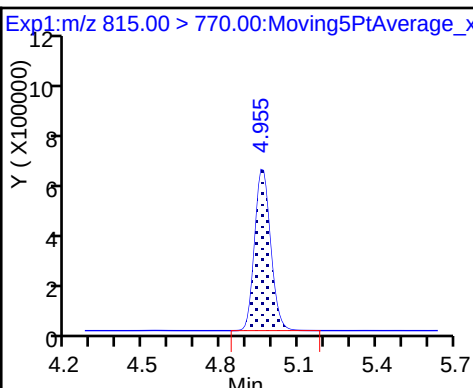
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_008.d
 Lims ID: IC L7 Full
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 16-Mar-2018 23:56:35 ALS Bottle#: 16 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L7-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 18-Mar-2018 12:40:39 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK059

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:28:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.440	0.001	0.537	5232633	2.69		108	82309	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.440	0.001	1.000	19640198	10.1		101	12323	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.634	3539835	2.58		103	134420	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.698	0.002	1.000	16422736	9.93		99.3	6981	
D 47 13C3-PFBS										
301.90 > 83.00	1.736	1.730	0.006	0.647	90294	2.66		115	493	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.733	0.003	1.000	24136015	8.03		90.9	10324	
298.90 > 99.00	1.736	1.733	0.003	1.000	10904597		2.21(1.25-3.74)	90.9	11290	
D 60 M2-4:2FTS										
329.00 > 81.00	1.946	1.942	0.004	0.726	556890	NC			5405	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.946	1.944	0.002	1.000	5338400	8.55		91.6	141725	
D 7 13C2 PFHxA										
315.00 > 270.00	1.976	1.979	-0.003	0.737	3855910	2.52		101	136520	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.987	1.982	0.005	1.005	15868989	10.2		102	57308	
313.00 > 119.00	1.987	1.982	0.005	1.005	1454246		10.91(5.03-15.10)	102	37142	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.864	3792427	2.55		102	79264	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.311	0.004	1.000	15371232	9.78		97.8	34467	
363.00 > 169.00	2.315	2.311	0.004	1.000	6374993		2.41(1.13-3.40)	97.8	76069	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.869	5044040	2.54		107	56616	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	20699070	8.70		95.6	2537	
399.00 > 99.00	2.328	2.326	0.002	1.000	7211194		2.87(1.50-4.49)	95.6	2748	
D 12 M2-6:2FTS										
429.00 > 81.00	2.657	2.651	0.006	0.991	915248	2.40		101	23462	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.657	2.652	0.005	1.000	6406487	9.99		105	124176	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.678	0.003	1.000	3630259	2.52		101	75171	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.681	2.678	0.003	1.000	16238419	10.0		100	9944	
413.00 > 169.00	2.681	2.678	0.003	1.000	8853138		1.83(0.84-2.52)	100	22165	
* 62 13C2-PFOA										
415.00 > 370.00	2.681	2.678	0.003		3812028	2.50			66649	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.689	2.684	0.005	1.000	18413921	9.14		96.0	110339	
449.00 > 99.00	2.689	2.684	0.005	1.000	5292149		3.48(1.94-5.82)	96.0	61394	
D 18 13C4 PFOS										
503.00 > 80.00	3.058	3.050	0.008	1.141	3664287	2.64		110	13294	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.058	3.050	0.008	1.000	15616435	9.41		101	43524	
499.00 > 99.00	3.058	3.050	0.008	1.000	3487558		4.48(2.31-6.93)	101	28558	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.052	0.006	1.141	2932926	2.55		102	55102	
20 Perfluorononanoic acid										
463.00 > 419.00	3.058	3.052	0.006	1.000	11976618	10.0		100	25729	
463.00 > 169.00	3.058	3.052	0.006	1.000	3098902		3.86(1.90-5.69)	100	63947	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.388	0.001	1.264	5287574	2.63		105	52245	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.388	0.001	1.000	19424864	9.45		94.5	152749	
D 26 M2-8:2FTS										
529.00 > 81.00	3.408	3.406	0.002	1.271	851096	2.38		99.2	18761	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.408	3.406	0.002	1.000	4059707	9.09		94.8	88539	
D 23 13C2 PFDA										
515.00 > 470.00	3.426	3.416	0.010	1.278	2368082	2.46		98.6	32884	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.426	3.416	0.010	1.000	9249996	10.3		103	52454	
513.00 > 169.00	3.426	3.416	0.010	1.000	1762214		5.25(2.36-7.09)	103	39146	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.579	3.570	0.009	1.335	881475	2.78		111	31541	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.579	3.571	0.008	1.000	3769629	10.3		103	31554	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.738	3.729	0.009	1.000	9484295	9.69		101	141067	
599.00 > 99.00	3.738	3.729	0.009	1.000	3276453		2.89(1.39-4.16)	101	62459	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.748	3.740	0.008	1.398	796299	2.62		105	1800	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.748	3.746	0.002	1.000	3048852	9.78		97.8	124025	
D 30 13C2 PFUnA										
565.00 > 520.00	3.748	3.747	0.001	1.398	1892487	2.51		101	55785	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.758	3.750	0.008	1.003	6182513	9.75		97.5	20684	
563.00 > 169.00	3.748	3.750	-0.002	1.000	1594060		3.88(2.12-6.36)	97.5	47801	
D 36 13C2 PFDaA										
615.00 > 570.00	4.047	4.041	0.006	1.509	1937420	2.72		109	11175	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.047	4.042	0.005	1.000	8183198	10.3		103	1805	
613.00 > 169.00	4.047	4.042	0.005	1.000	2137875		3.83(2.13-6.40)	103	36830	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.307	4.304	0.003	1.000	8318181	10.4		104	1942	
663.00 > 169.00	4.307	4.304	0.003	1.000	2521670		3.30(1.25-3.76)	104	26552	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.554	4.545	0.009	1.699	1825202	2.80		112	11851	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.554	4.545	0.009	1.000	1864512	9.26		92.6	22768	
713.00 > 219.00	4.543	4.545	-0.002	0.998	1299349		1.43(0.71-2.13)	92.6	12775	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.964	4.956	0.008	1.852	2496909	2.62		105	9297	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.964	4.960	0.004	1.000	9782635	NC			843	
813.00 > 169.00	4.964	4.960	0.004	1.000	1695189		5.77(2.86-8.58)		12082	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.322	5.320	0.002	1.000	9786600	NC			1689	
913.00 > 169.00	5.322	5.320	0.002	1.000	1244402		7.86(3.83-11.48)		7790	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL7_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_008.d

Injection Date: 16-Mar-2018 23:56:35

Instrument ID: A8_N

Lims ID: IC L7 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

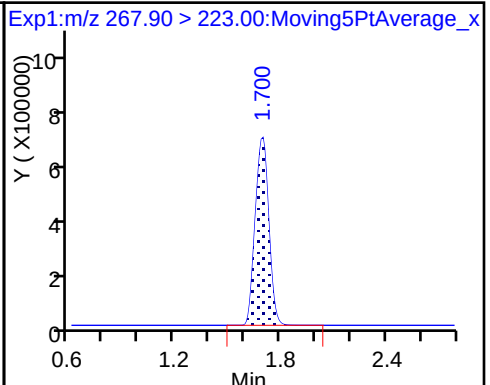
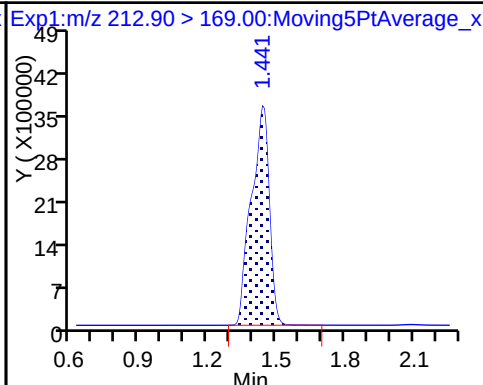
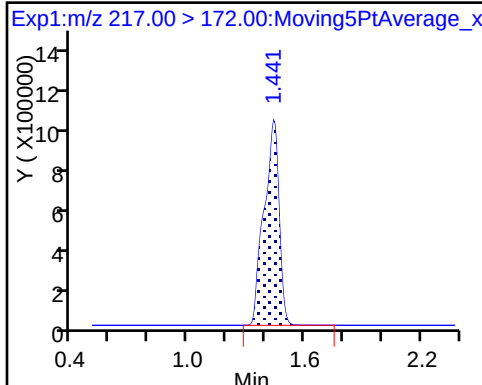
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

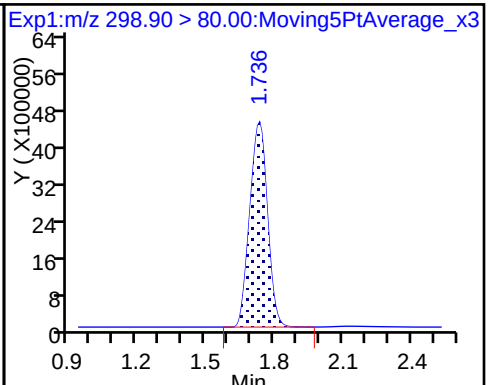
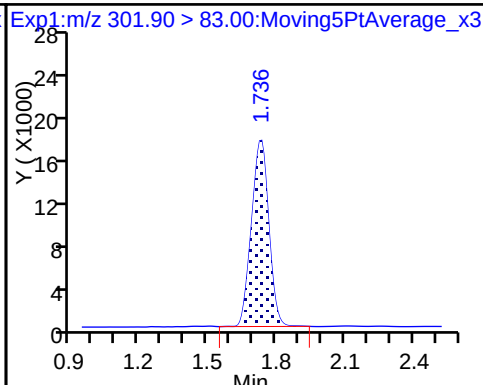
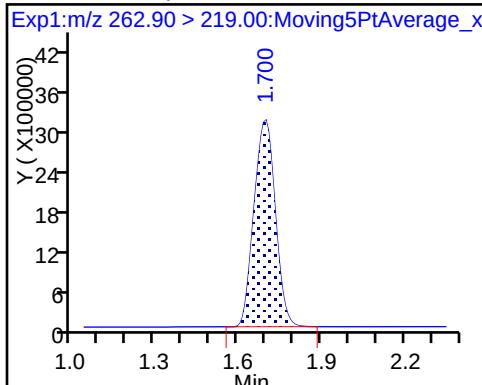
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

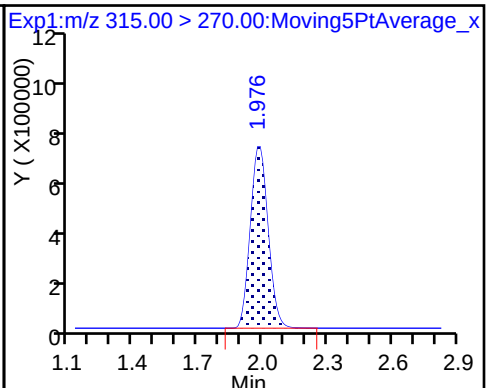
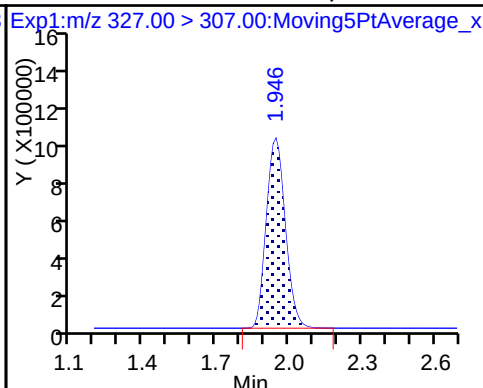
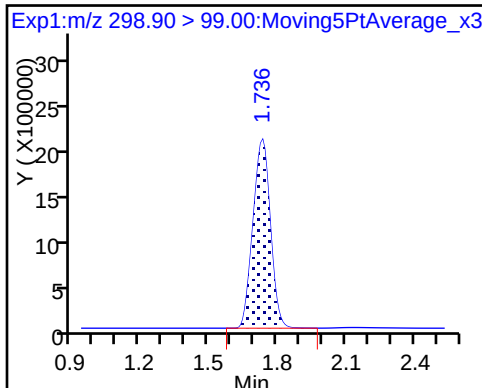
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

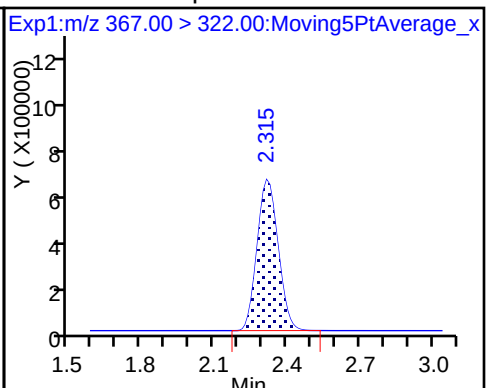
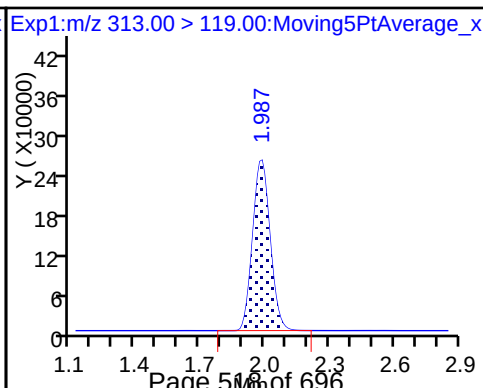
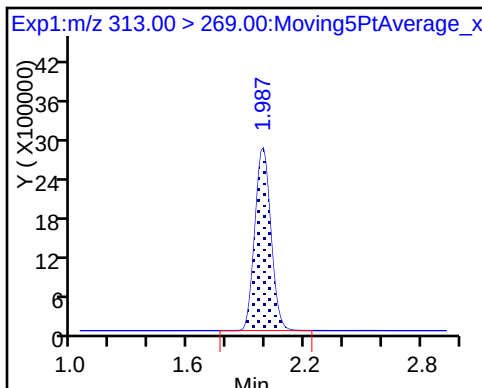
De 7 13C2 PFHxA



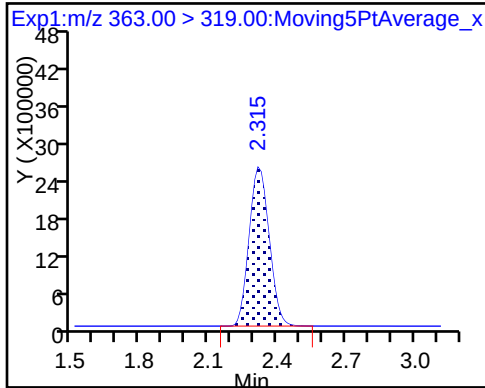
6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

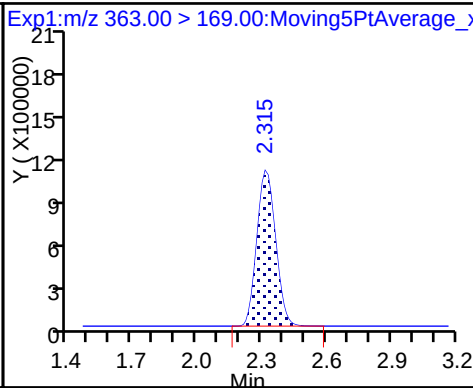
D 9 13C4-PFHpA



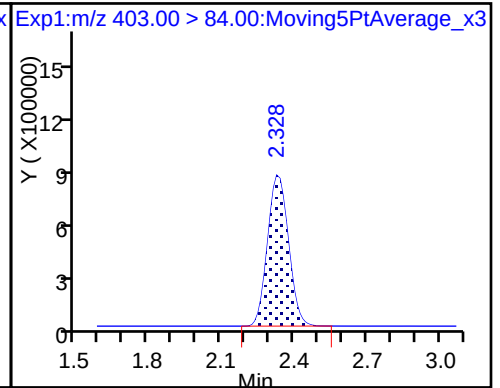
10 Perfluoroheptanoic acid



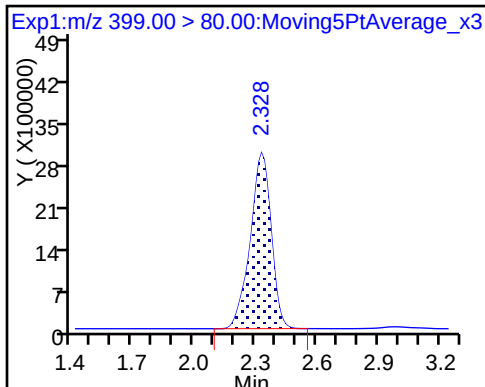
10 Perfluoroheptanoic acid



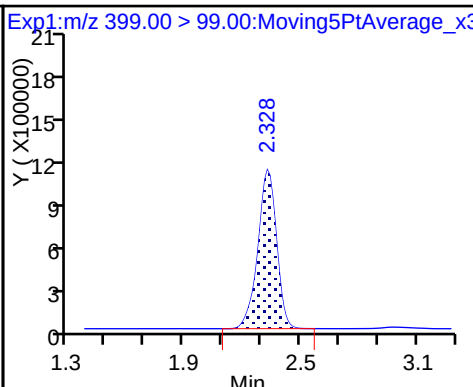
D 11 18O2 PFHxS



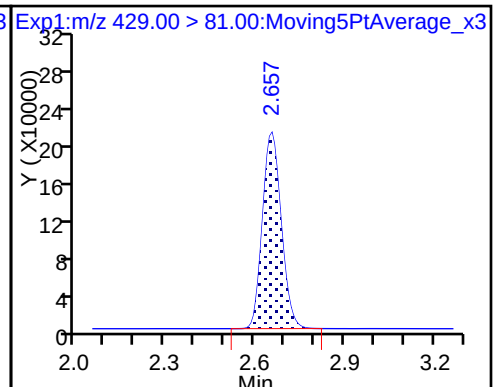
8 Perfluorohexanesulfonic acid



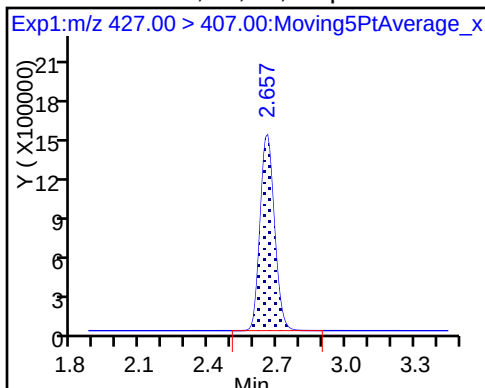
8 Perfluorohexanesulfonic acid



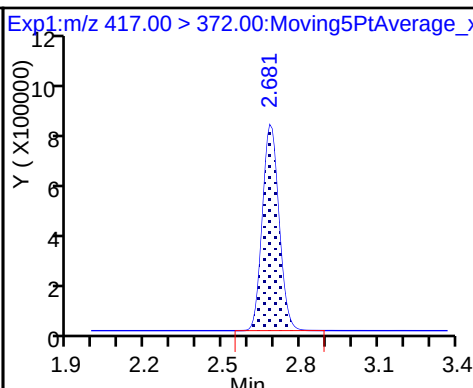
D 12 M2-6:2FTS



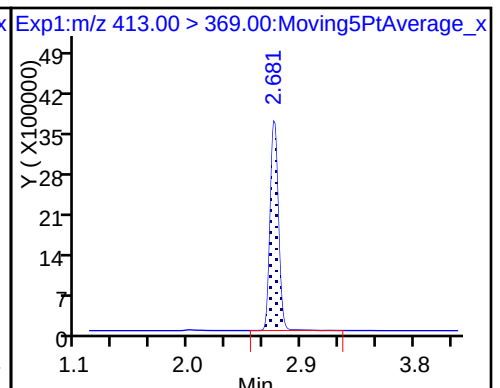
13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate



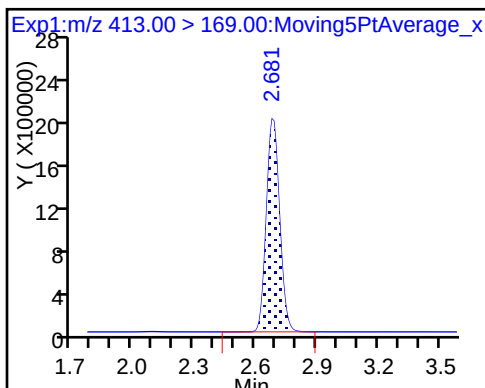
D 14 13C4 PFOA



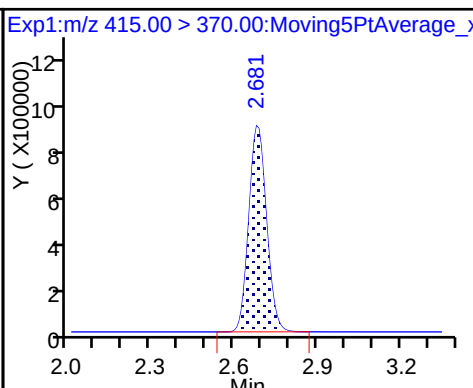
15 Perfluorooctanoic acid



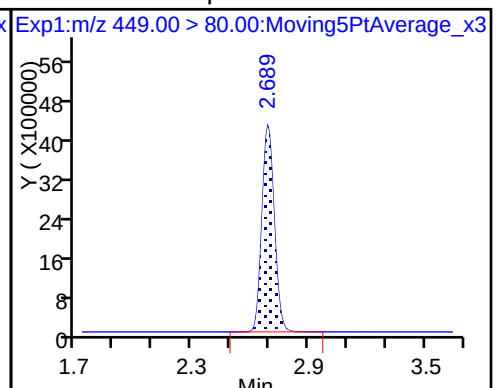
15 Perfluorooctanoic acid



* 62 13C2-PFOA



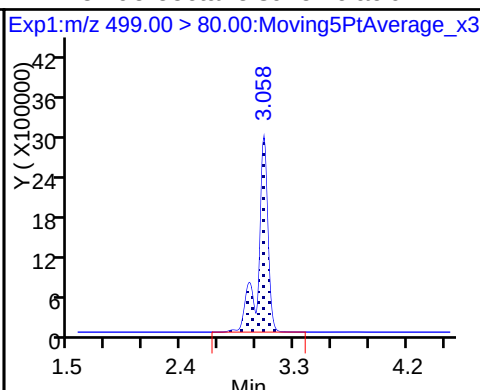
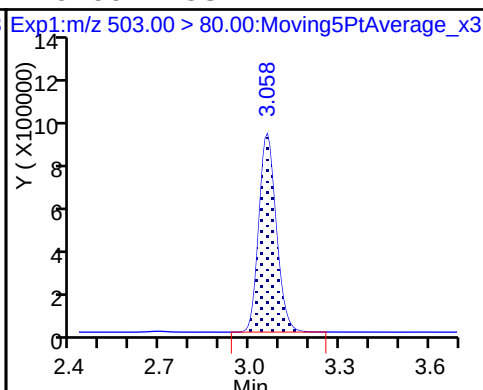
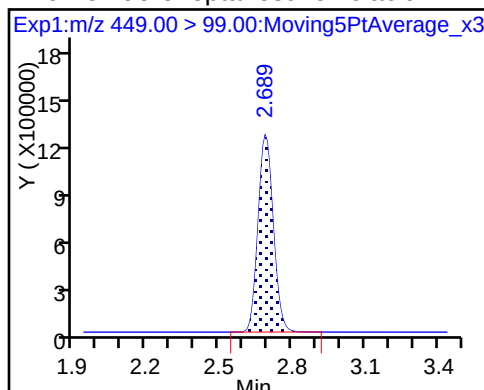
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

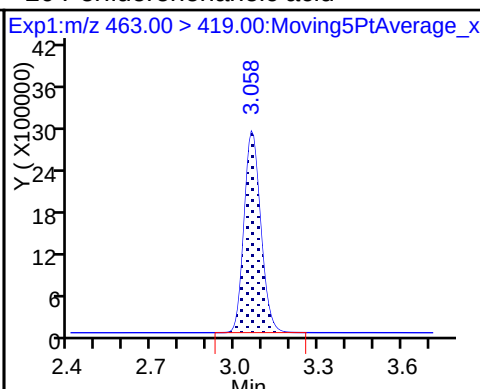
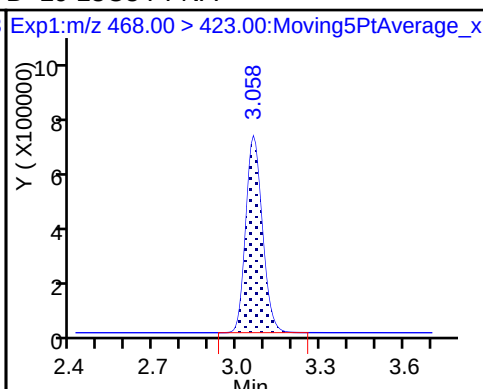
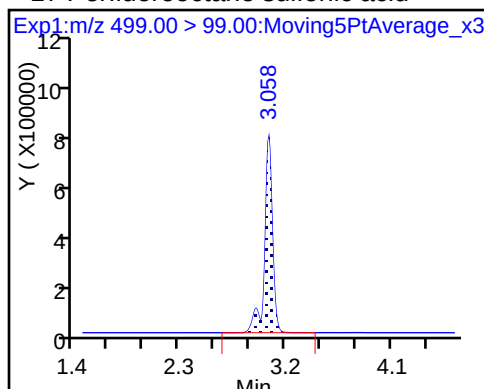
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

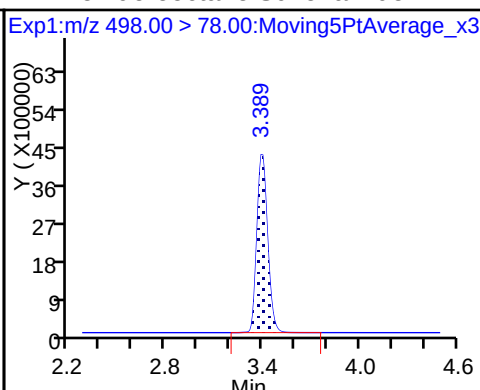
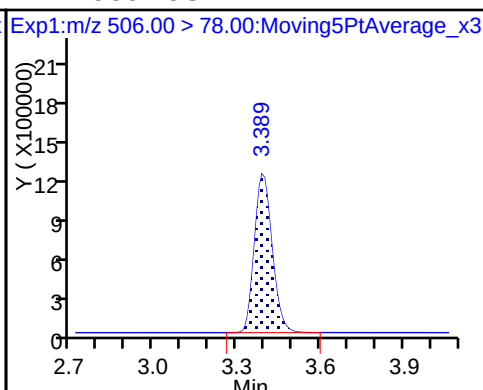
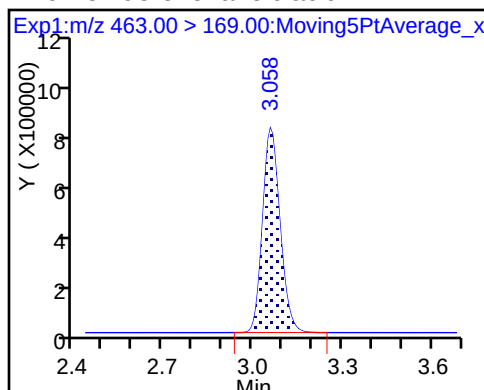
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

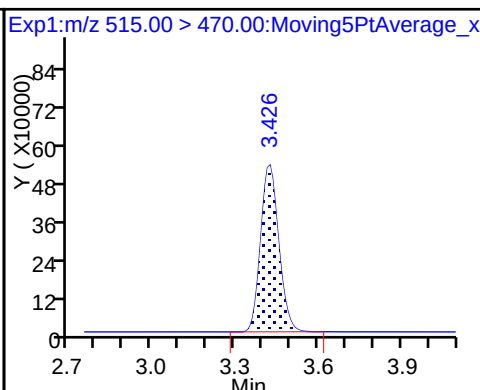
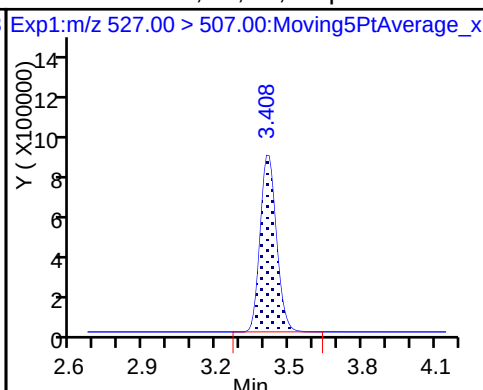
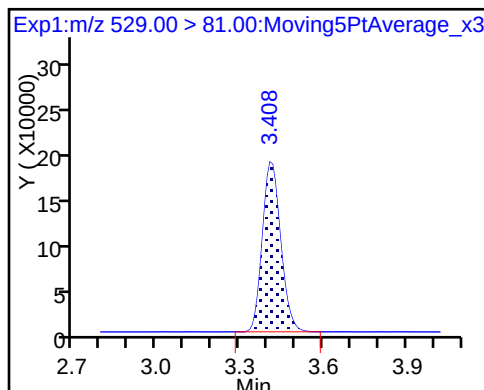
22 Perfluorooctane Sulfonamide



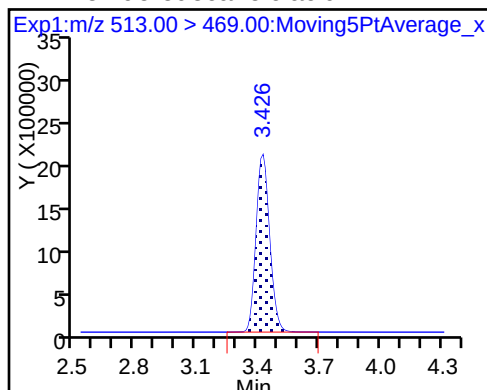
D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodeca

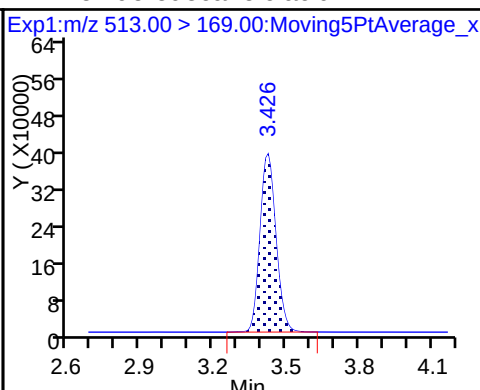
De23 13C2 PFDA



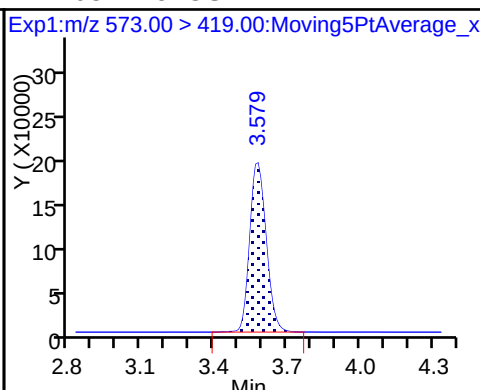
24 Perfluorodecanoic acid



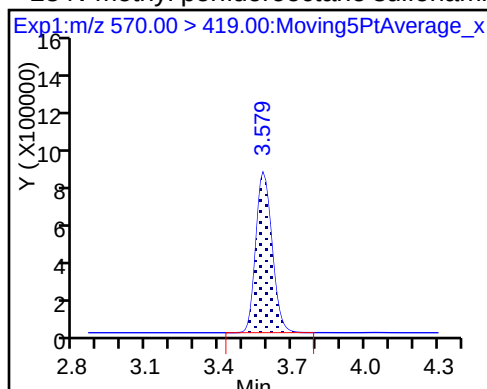
24 Perfluorodecanoic acid



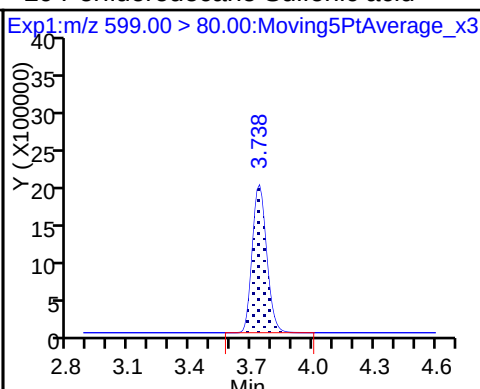
D 27 d3-NMeFOSAA



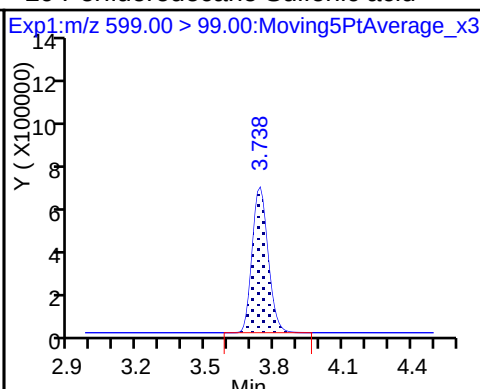
28 N-methyl perfluorooctane sulfonami



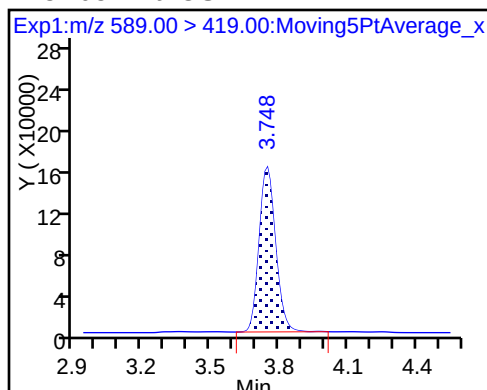
29 Perfluorodecane Sulfonic acid



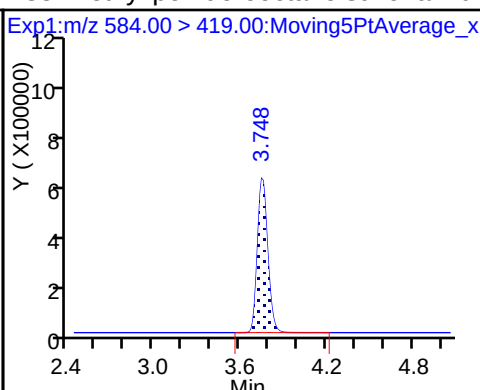
29 Perfluorodecane Sulfonic acid



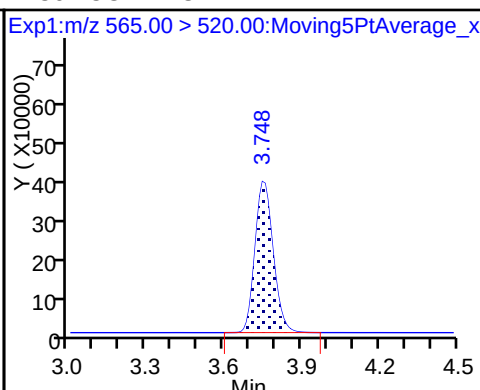
D 32 d5-NEtFOSAA



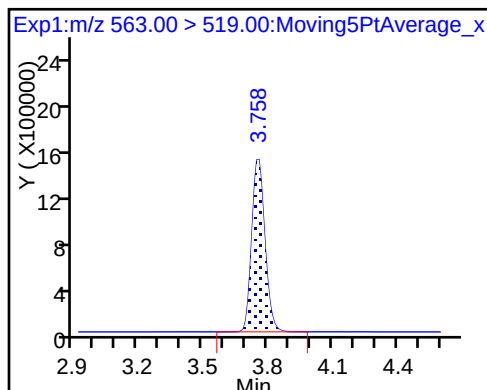
33 N-ethyl perfluorooctane sulfonamid



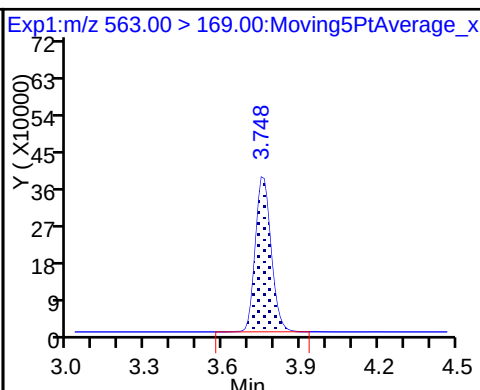
D 30 13C2 PFUnA



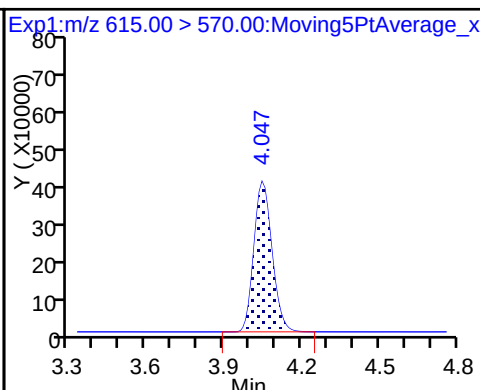
31 Perfluoroundecanoic acid



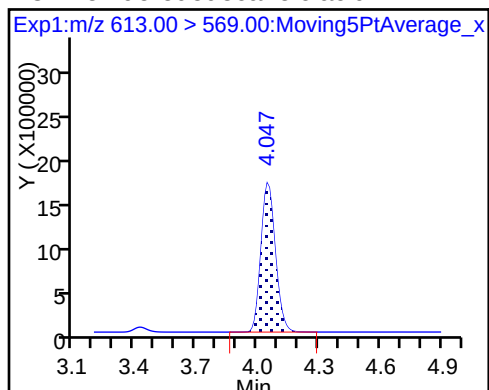
31 Perfluoroundecanoic acid



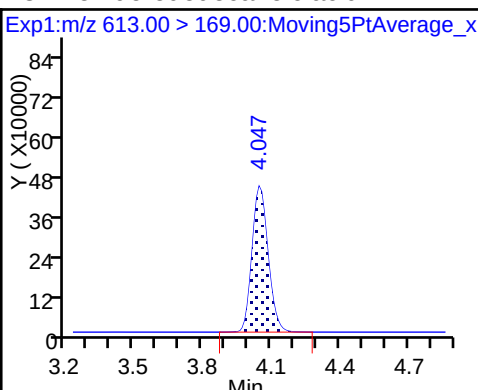
D 36 13C2 PFDaA



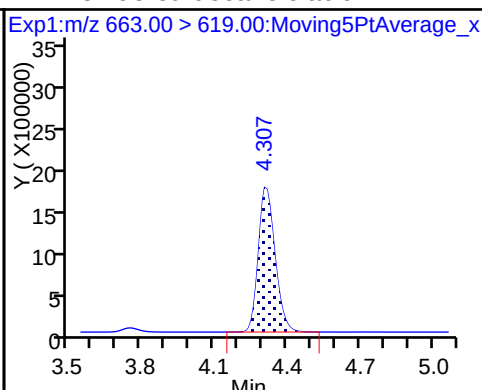
37 Perfluorododecanoic acid



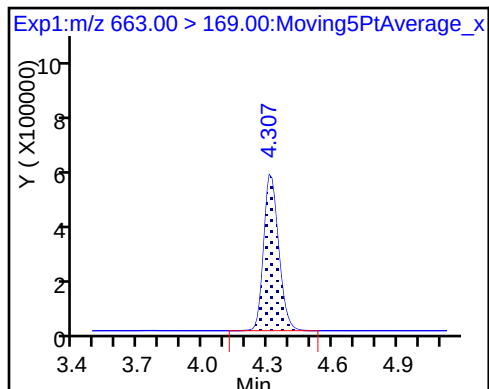
37 Perfluorododecanoic acid



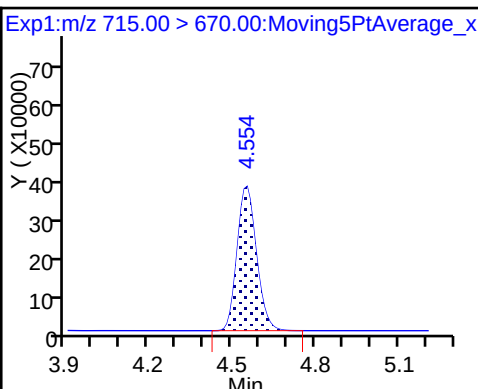
41 Perfluorotridecanoic acid



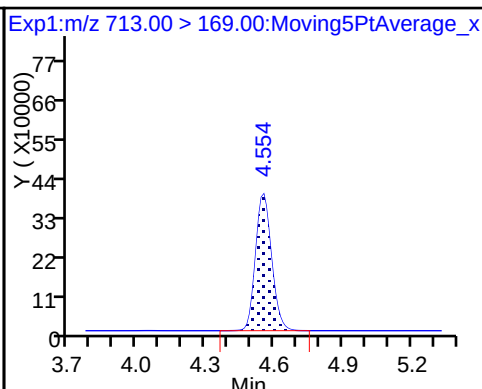
41 Perfluorotridecanoic acid



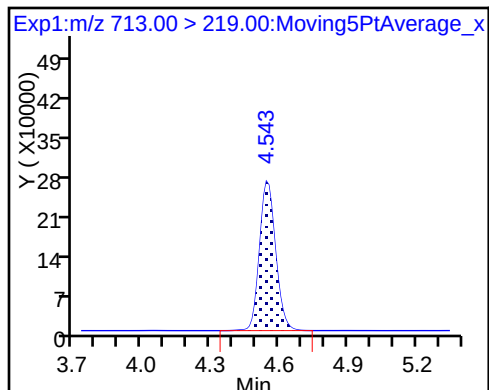
D 43 13C2-PFTeDA



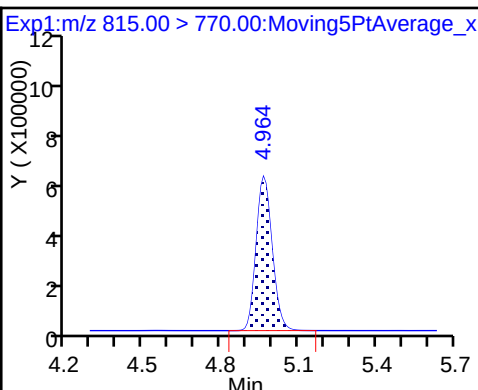
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: ICV 320-212932/10 Calibration Date: 03/14/2018 15:02

Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46

Lab File ID: 2018.03.14LLICAL_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9252	0.9661		2.61	2.50	4.4	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.171	1.153		2.46	2.50	-1.6	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.37	81.98		2.37	2.21	7.3	30.0
4:2 FTS	AveID	16.40	16.26		2.32	2.34	-0.9	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.9856		2.44	2.50	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.063	1.072		2.52	2.50	0.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.123	1.013		2.06	2.28	-9.7	30.0
6:2FTS	AveID	1.708	1.647		2.29	2.38	-3.5	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.163	1.145		2.46	2.50	-1.6	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.357	1.332		2.33	2.38	-1.8	30.0
Perfluorononanoic acid (PFNA)	AveID	1.003	1.070		2.66	2.50	6.6	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.050	1.072		2.36	2.31	2.1	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9787	1.036		2.65	2.50	5.9	30.0
8:2FTS	AveID	1.248	1.229		2.36	2.40	-1.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.007	1.001		2.49	2.50	-0.6	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.041	0.999		2.40	2.50	-4.0	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6291	0.6614		2.54	2.41	5.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9706	0.9622		2.48	2.50	-0.9	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.087	1.095		2.52	2.50	0.8	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.019	1.143		2.80	2.50	12.2	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9789	1.021		2.61	2.50	4.3	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2548	0.2671		2.62	2.50	4.8	30.0
Perfluorononanesulfonic acid	None				10.0	2.40	-100.0*	30.0
Perfluoropentanesulfonic acid	None				10.0	2.35	-100.0*	30.0
13C4 PFBA	Ave	1.425	1.381		2.42	2.50	-3.1	30.0
13C5 PFPeA	Ave	0.9553	0.9448		2.47	2.50	-1.1	30.0
13C3-PFBS	Ave	0.0249	0.0240		2.24	2.33	-3.6	30.0
13C2 PFHxA	Ave	1.041	1.036		2.49	2.50	-0.4	30.0
13C4-PFHpA	Ave	0.9847	1.000		2.54	2.50	1.5	30.0
18O2 PFHxS	Ave	1.457	1.489		2.42	2.37	2.2	30.0
M2-6:2FTS	Ave	0.2623	0.2524		2.28	2.38	-3.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: ICV 320-212932/10 Calibration Date: 03/14/2018 15:02
 Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46
 Lab File ID: 2018.03.14LLICAL_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9491	0.9220		2.43	2.50	-2.9	30.0
13C4 PFOS	Ave	1.001	1.018		2.43	2.39	1.7	30.0
13C5 PFNA	Ave	0.7389	0.7589		2.57	2.50	2.7	30.0
13C8 FOSA	Ave	1.459	1.459		2.50	2.50	0.0	30.0
M2-8:2FTS	Ave	0.2622	0.2568		2.35	2.40	-2.1	30.0
13C2 PFDA	Ave	0.5974	0.5684		2.38	2.50	-4.9	30.0
d3-NMeFOSAA	Ave	0.1948	0.2071		2.66	2.50	6.3	30.0
13C2 PFUnA	Ave	0.4427	0.4427		2.50	2.50	-0.0	30.0
d5-NEtFOSAA	Ave	0.2113	0.2108		2.49	2.50	-0.2	30.0
13C2 PFDoA	Ave	0.4498	0.3990		2.22	2.50	-11.3	30.0
13C2-PFTEdA	Ave	0.3976	0.4066		2.56	2.50	2.3	30.0
13C2-PFHxDA	Ave	0.7636	0.7942		2.60	2.50	4.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_010.d
 Lims ID: ICV Full
 Client ID:
 Sample Type: ICV
 Inject. Date: 14-Mar-2018 15:02:18 ALS Bottle#: 18 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist:
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 15-Mar-2018 08:30:20 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK055

First Level Reviewer: hannigana

Date: 14-Mar-2018 15:28:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.433	0.002	1.000	5452803	2.61			2919	
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.433	0.002	0.556	5643997	2.42		96.9	118901	
D 3 13C5-PFPeA										
267.90 > 223.00	1.674	1.673	0.001	0.649	3862272	2.47		98.9	124141	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.674	1.673	0.001	1.000	4451313	2.46			1301	
D 47 13C3-PFBS										
301.90 > 83.00	1.700	1.703	-0.003	0.659	91392	2.24		96.4	431	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.700	1.707	-0.007	1.000	7130060	2.37			12711	
298.90 > 99.00	1.700	1.707	-0.007	1.000	2911932		2.45(1.25-3.74)		10413	
D 60 M2-4:2FTS										
329.00 > 81.00	1.895	1.900	-0.005	0.735	658709	NC			9655	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.895	1.902	-0.007	1.000	1493892	2.32			71252	
D 7 13C2 PFHxA										
315.00 > 270.00	1.925	1.938	-0.013	0.746	4235334	2.49		99.6	132053	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.925	1.938	-0.013	1.000	4174269	2.44			13563	
313.00 > 119.00	1.925	1.938	-0.013	1.000	381668		10.94(5.03-15.10)		7029	
D 9 13C4-PFHpA										
367.00 > 322.00	2.226	2.249	-0.023	0.863	4086055	2.54		101	139824	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.238	2.249	-0.011	1.005	4379333	2.52			8548	
363.00 > 169.00	2.238	2.249	-0.011	1.005	1700907		2.57(1.13-3.40)		29158	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.238	2.262	-0.024	0.868	5758424	2.42		102	81719	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.238	2.262	-0.024	1.000	5625935	2.06			28370	
399.00 > 99.00	2.238	2.262	-0.024	1.000	1956319		2.88(1.50-4.49)		5542	
D 12 M2-6:2FTS										
429.00 > 81.00	2.555	2.577	-0.022	0.990	980207	2.28		96.2	19974	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.555	2.577	-0.022	1.000	1614886	2.29			25984	
D 14 13C4 PFOA										
417.00 > 372.00	2.579	2.602	-0.023	1.000	3769386	2.43		97.1	71092	
* 62 13C2-PFOA										
415.00 > 370.00	2.579	2.602	-0.023		4088076	2.50			71669	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.579	2.602	-0.023	1.000	4314598	2.46			2851	
413.00 > 169.00	2.579	2.602	-0.023	1.000	2294342		1.88(0.84-2.52)		7551	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.587	2.607	-0.020	1.000	5265449	2.33			54287	
449.00 > 99.00	2.587	2.607	-0.020	1.000	1395662		3.77(1.94-5.82)		21150	
D 18 13C4 PFOS										
503.00 > 80.00	2.942	2.966	-0.024	1.141	3977469	2.43		102	57725	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.942	2.969	-0.027	1.000	4127896	2.36			38268	
499.00 > 99.00	2.942	2.969	-0.027	1.000	929665		4.44(2.31-6.93)		11597	
D 19 13C5 PFNA										
468.00 > 423.00	2.942	2.972	-0.030	1.141	3102438	2.57		103	69107	
20 Perfluorononanoic acid										
463.00 > 419.00	2.942	2.973	-0.031	1.000	3318058	2.66			5216	
463.00 > 169.00	2.942	2.973	-0.031	1.000	784594		4.23(1.90-5.69)		34528	
D 21 13C8 FOSA										
506.00 > 78.00	3.282	3.305	-0.023	1.272	5964509	2.50		100	60470	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.282	3.307	-0.025	1.000	6179352	2.65			52179	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.297	3.320	-0.023	1.000	1238777	2.36			37682	
D 26 M2-8:2FTS										
529.00 > 81.00	3.297	3.320	-0.023	1.279	1005650	2.35		97.9	27226	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.305	3.331	-0.026	1.000	2326166	2.49			10206	
513.00 > 169.00	3.305	3.331	-0.026	1.000	426749		5.45(2.36-7.09)		17352	
D 23 13C2 PFDA										
515.00 > 470.00	3.305	3.332	-0.027	1.282	2323568	2.38		95.1	31662	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.462	3.482	-0.020	1.342	846656	2.66		106	26753	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.462	3.488	-0.026	1.000	845928	2.40			11148	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.613	3.636	-0.023	1.000	2655360	2.54			52200	
599.00 > 99.00	3.613	3.636	-0.023	1.000	905628		2.93(1.39-4.16)		19630	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.631	3.649	-0.018	1.408	861611	2.49		99.8	1543	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.631	3.655	-0.024	1.000	1981724	2.52			6311	
563.00 > 169.00	3.631	3.655	-0.024	1.000	394954		5.02(2.12-6.36)		19879	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.631	3.655	-0.024	1.000	829001	2.48			16016	
D 30 13C2 PFUnA										
565.00 > 520.00	3.631	3.655	-0.024	1.408	1809588	2.50		100	55561	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.915	3.942	-0.027	0.997	1864021	2.80			279	
613.00 > 169.00	3.925	3.942	-0.017	1.000	411940		4.52(2.13-6.40)		7108	
D 36 13C2 PFDaA										
615.00 > 570.00	3.925	3.942	-0.017	1.522	1631170	2.22		88.7	5698	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.182	4.196	-0.014	1.000	1665202	2.61			273	
663.00 > 169.00	4.182	4.196	-0.014	1.000	551608		3.02(1.25-3.76)		5831	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.416	4.430	-0.014	1.000	443972	2.62			5299	
713.00 > 219.00	4.405	4.430	-0.025	0.998	307196		1.45(0.71-2.13)		2597	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.416	4.430	-0.014	1.712	1662308	2.56		102	11952	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.811	4.824	-0.013	1.000	3135247	NC			210	
813.00 > 169.00	4.811	4.824	-0.013	1.000	520298		6.03(2.86-8.58)		5168	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.811	4.825	-0.014	1.865	3246587	2.60		104	9925	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.151	5.170	-0.019	1.000	2560539	NC			436	
913.00 > 169.00	5.151	5.170	-0.019	1.000	348422		7.35(3.83-11.48)		2967	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_FULL_00011

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_010.d

Injection Date: 14-Mar-2018 15:02:18

Instrument ID: A8_N

Lims ID: ICV Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 18

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

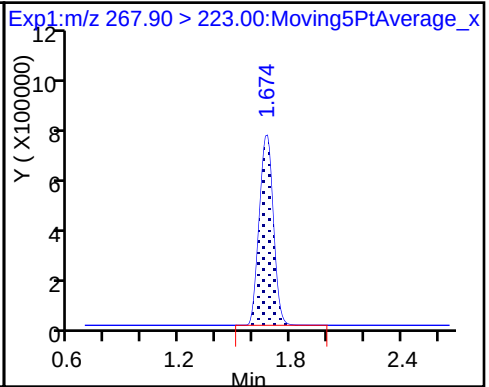
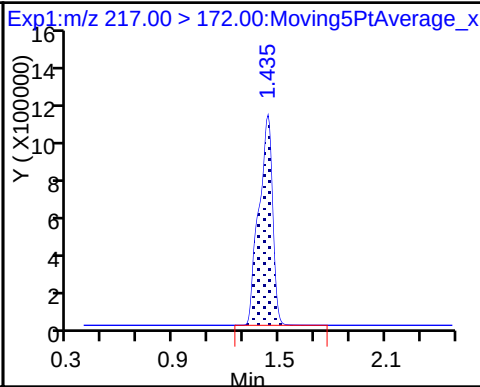
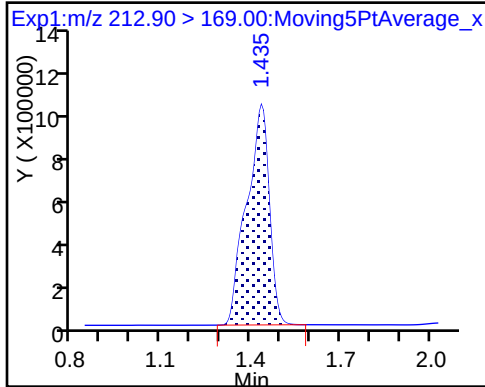
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

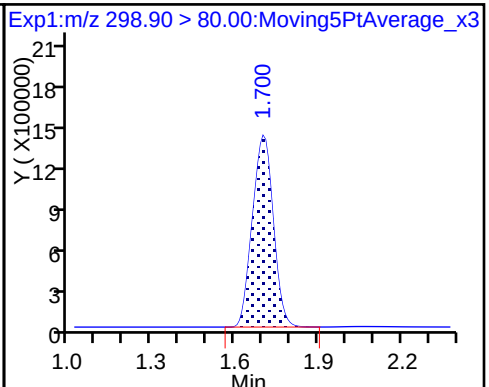
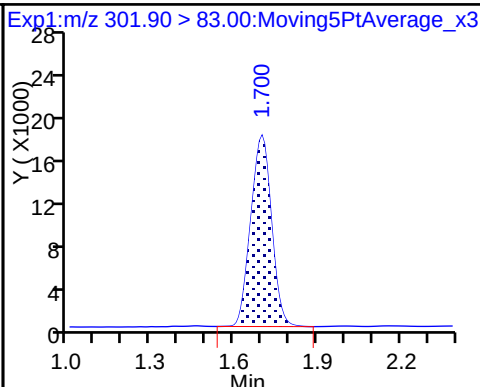
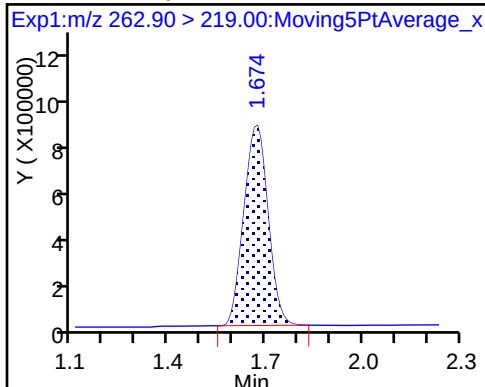
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

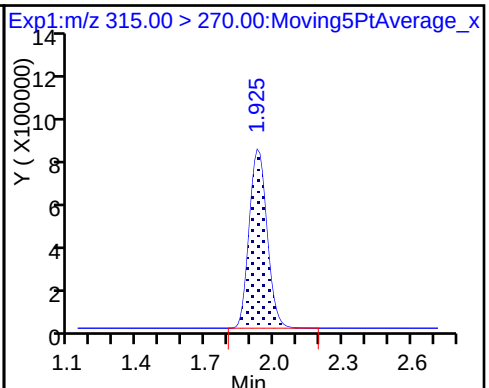
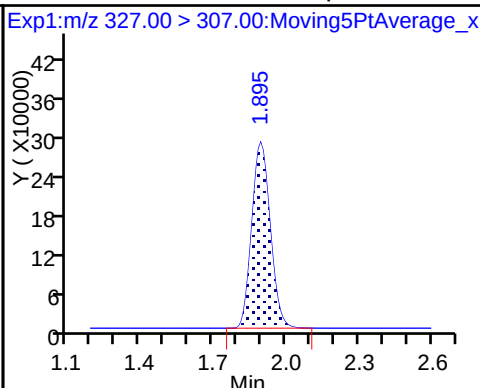
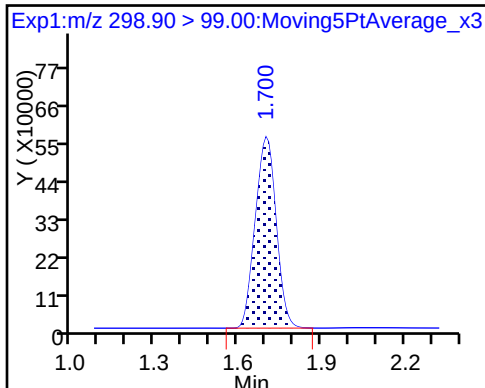
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexadecanoate

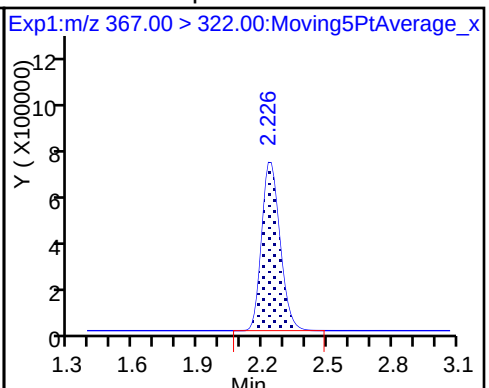
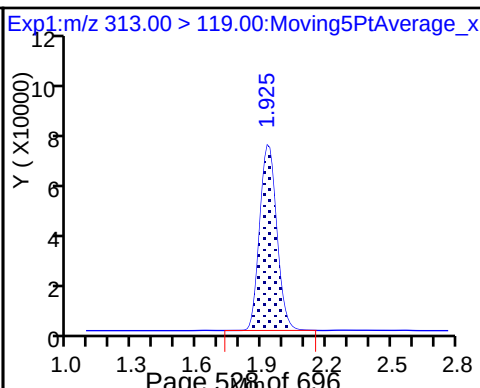
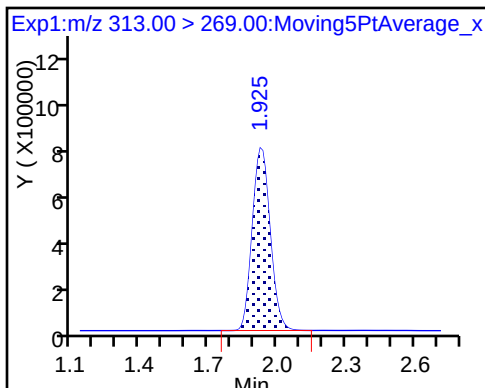
De 7 13C2 PFHxA



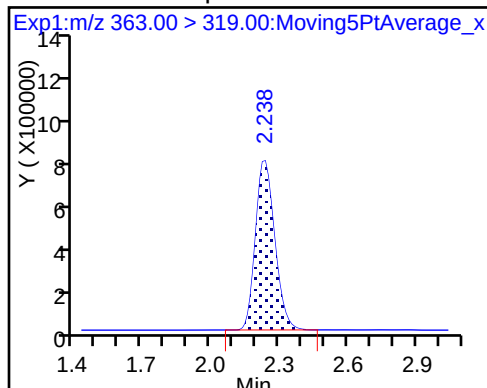
6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

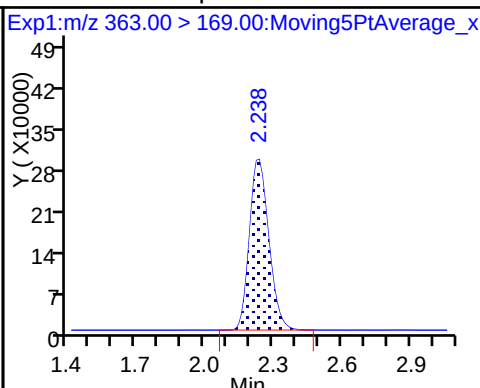
D 9 13C4-PFHpA



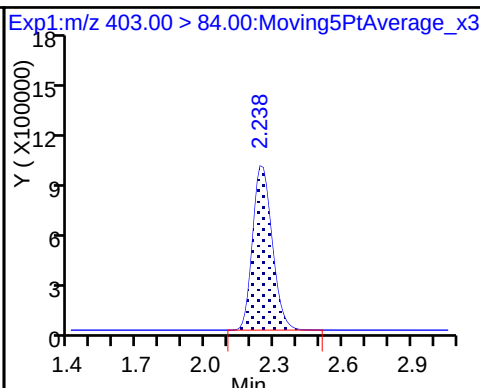
10 Perfluoroheptanoic acid



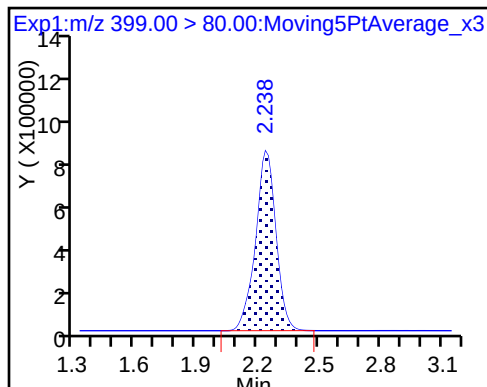
10 Perfluoroheptanoic acid



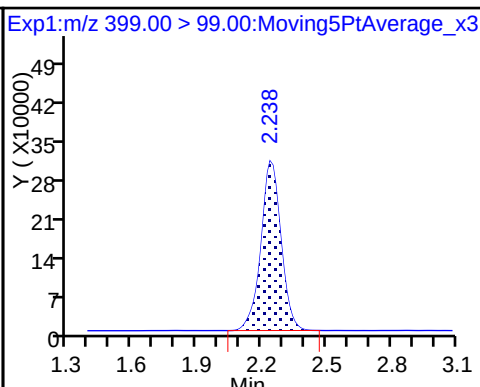
D 11 18O2 PFHxS



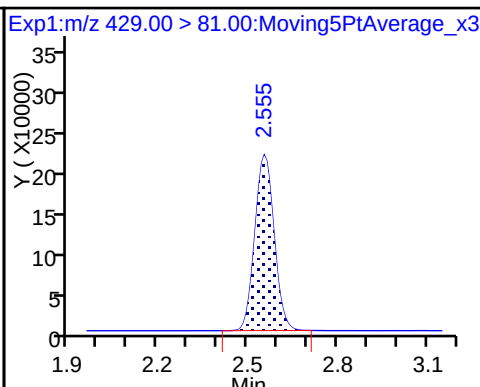
8 Perfluorohexanesulfonic acid



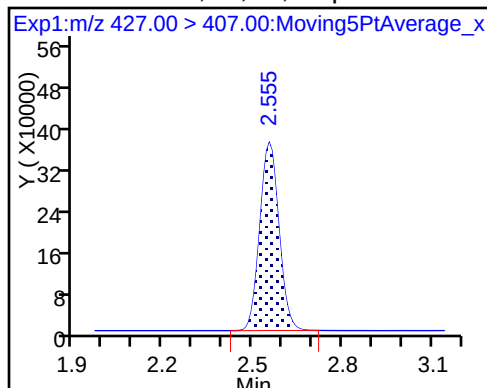
8 Perfluorohexanesulfonic acid



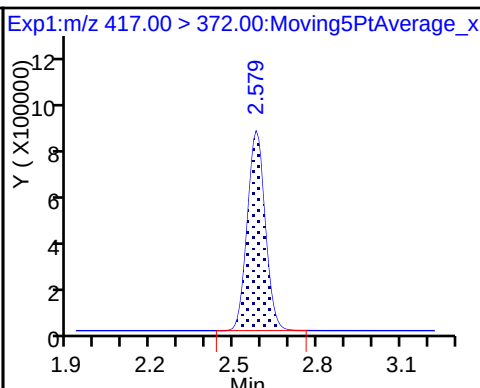
D 12 M2-6:2FTS



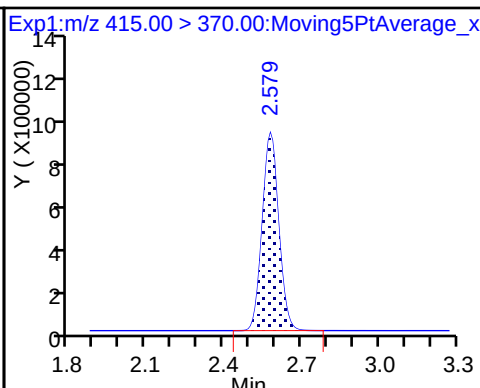
13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate



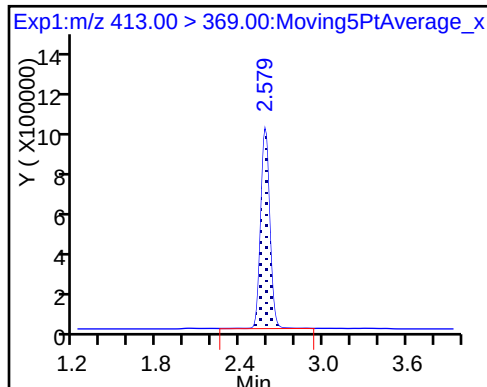
D 14 13C4 PFOA



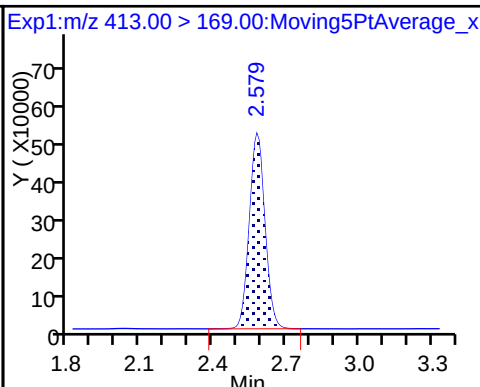
* 62 13C2-PFOA



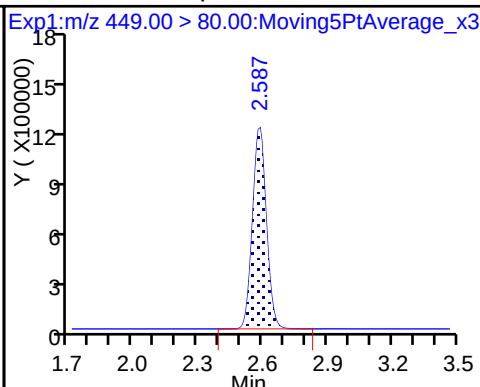
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid



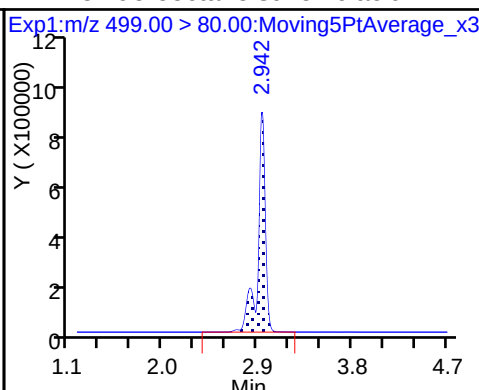
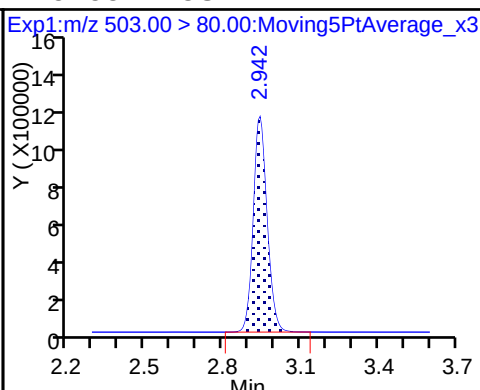
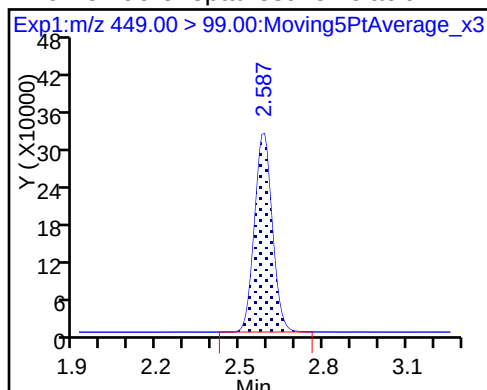
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

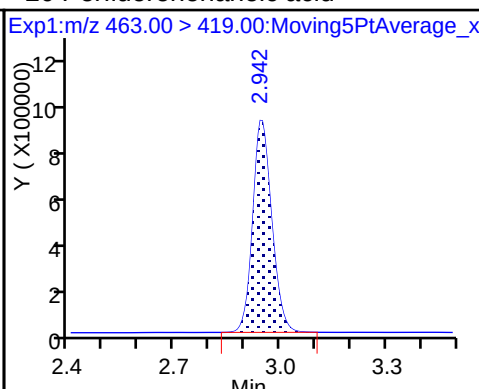
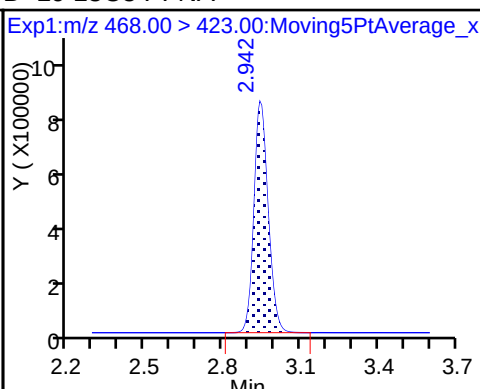
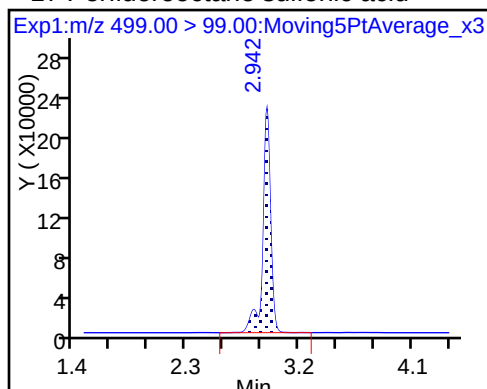
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

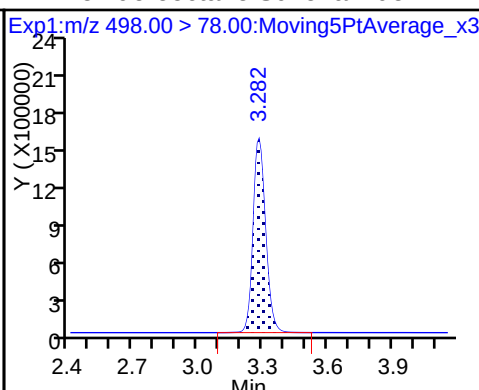
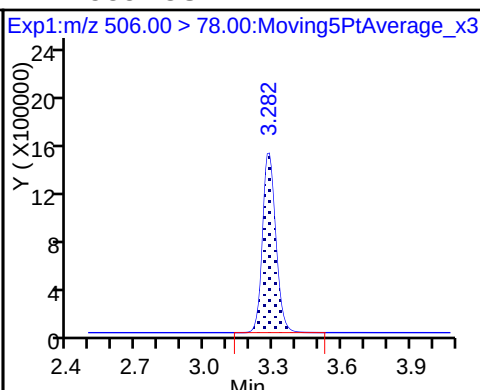
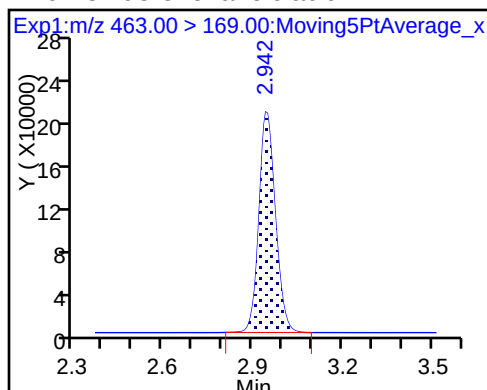
20 Perfluorononanoic acid



20 Perfluorononanoic acid

D 21 13C8 FOSA

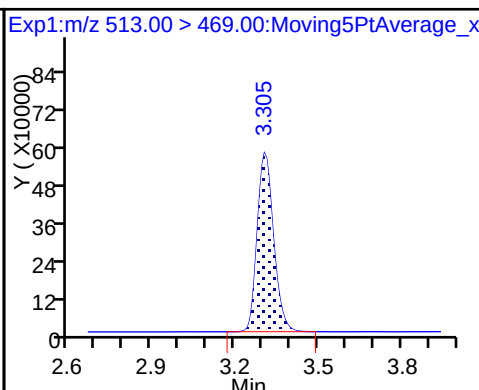
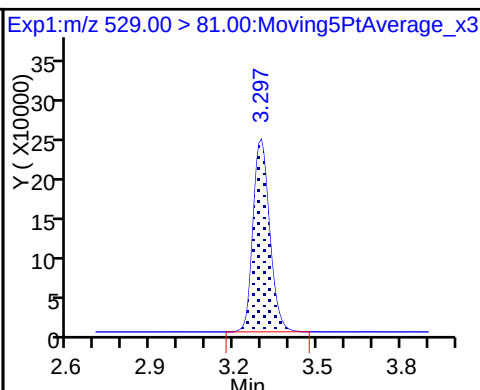
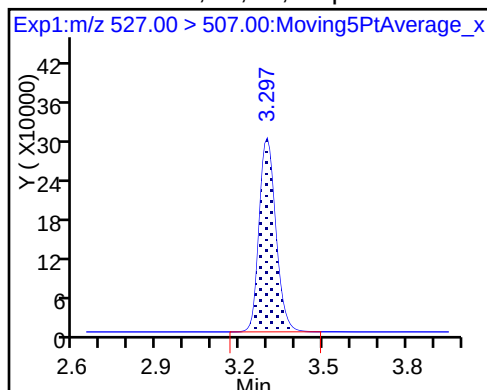
22 Perfluorooctane Sulfonamide



25 Sodium 1H,1H,2H,2H-perfluorodecanoate

De26 M2-8:2FTS

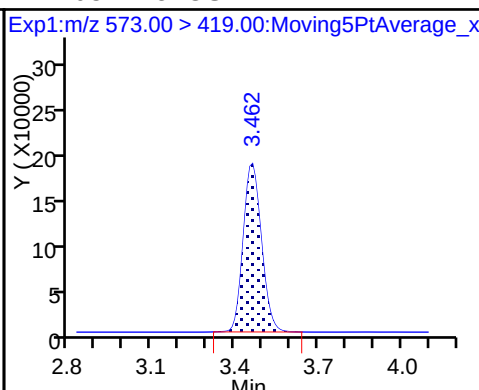
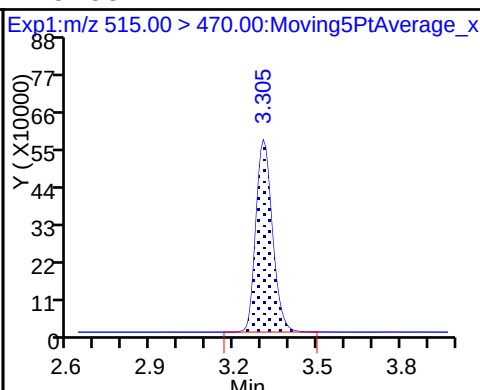
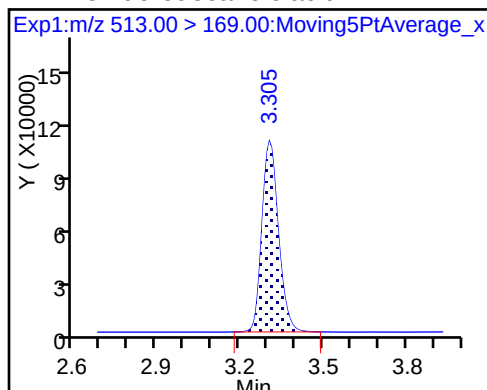
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

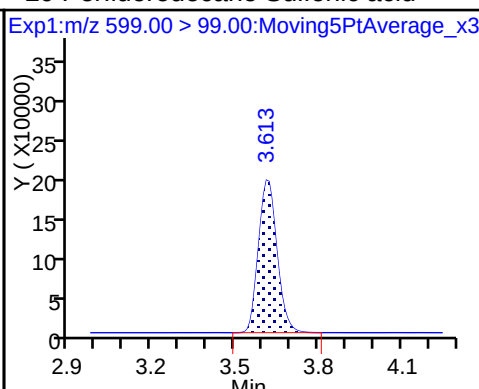
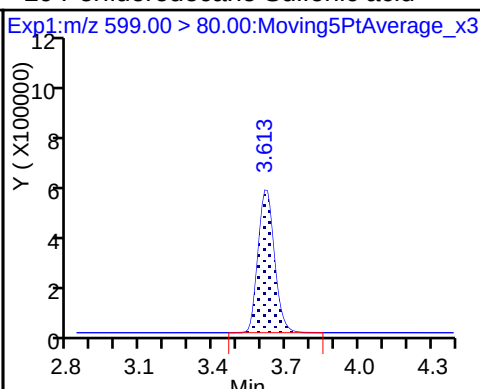
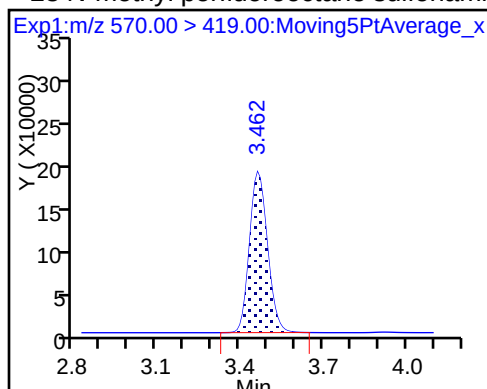
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonamid

29 Perfluorodecane Sulfonic acid

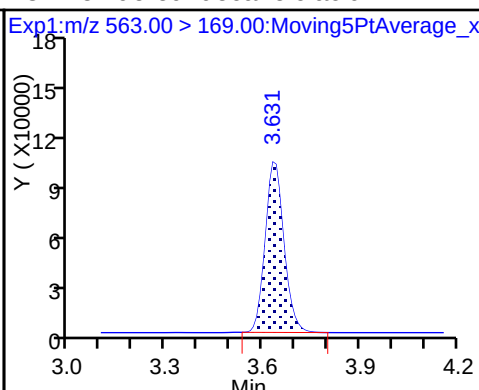
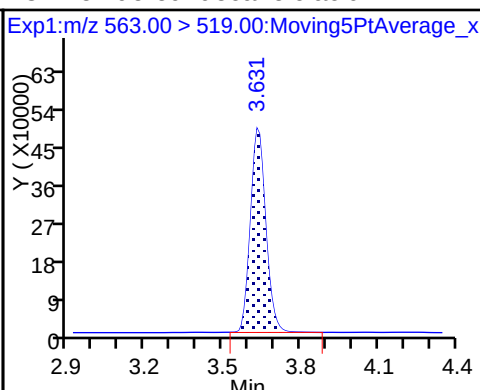
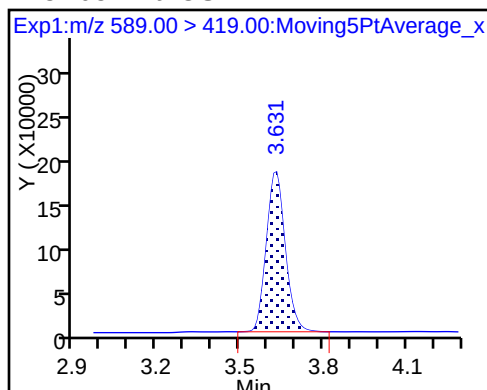
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

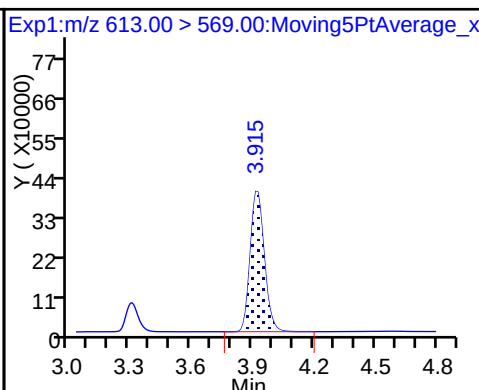
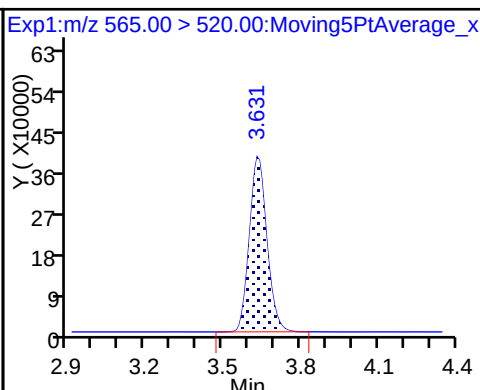
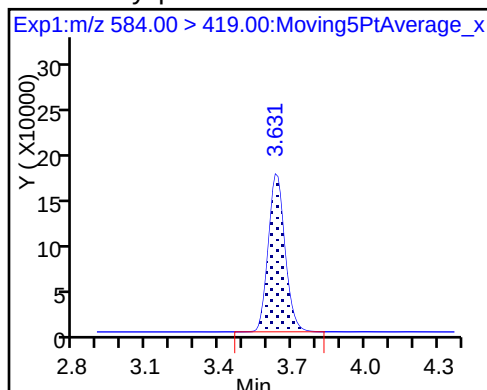
31 Perfluoroundecanoic acid

31 Perfluoroundecanoic acid



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

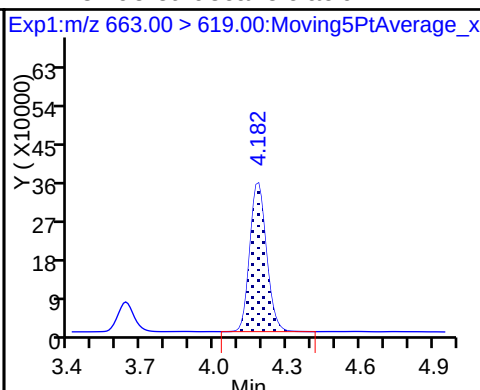
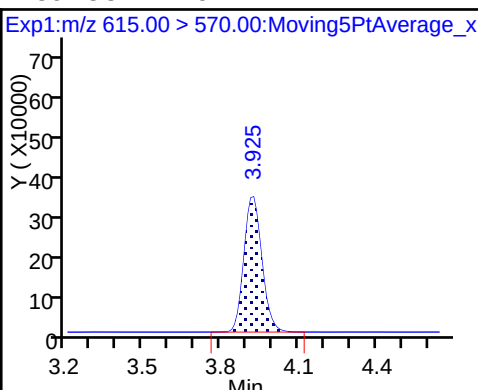
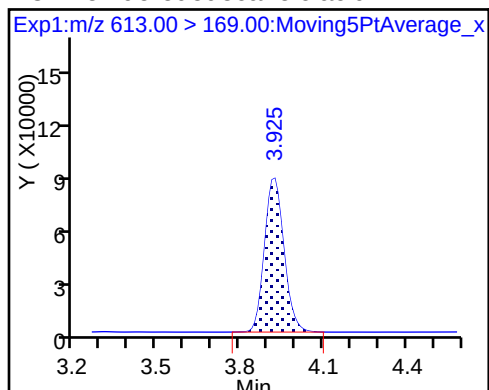
37 Perfluorododecanoic acid



37 Perfluorododecanoic acid

D 36 13C2 PFDoA

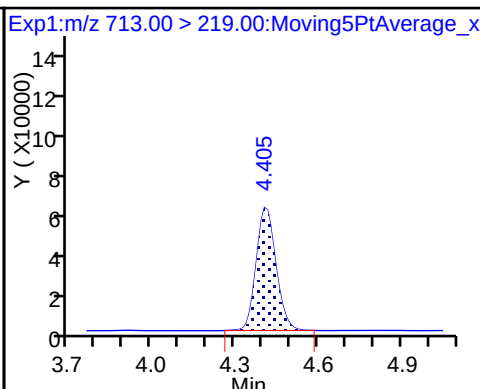
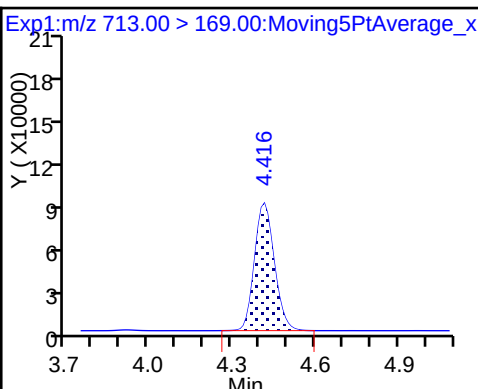
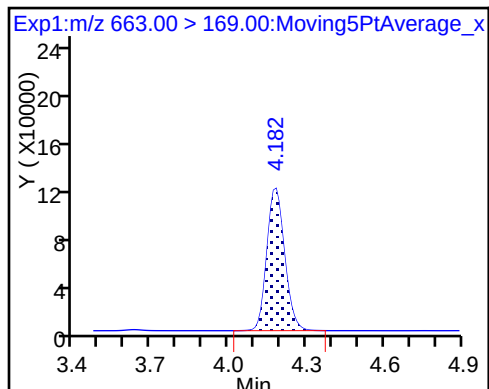
41 Perfluorotridecanoic acid



41 Perfluorotridecanoic acid

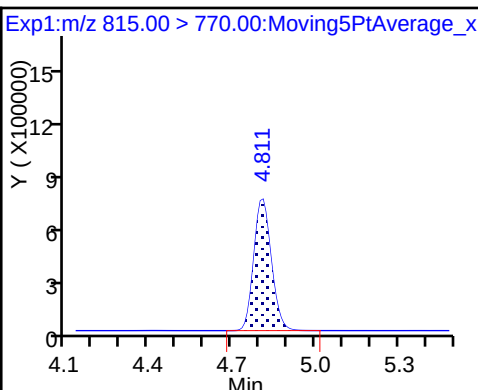
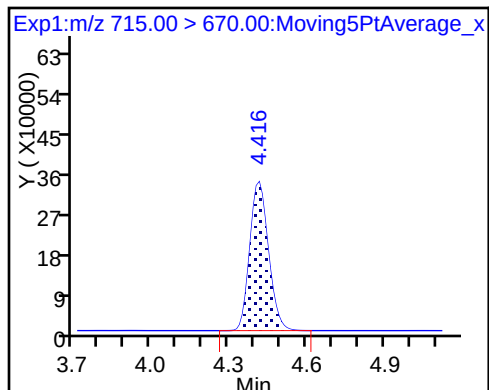
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCVL 320-213304/2 Calibration Date: 03/16/2018 00:40

Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46

Lab File ID: 2018.03.15LLAAX_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9252	0.9490		0.0513	0.0500	2.6	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.171	1.258		0.0537	0.0500	7.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.37	80.65		0.0467	0.0442	5.6	30.0
4:2 FTS	AveID	16.40	12.30		0.400	0.0467	-25.0	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	1.047		0.0519	0.0500	3.8	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.063	0.9352		0.0440	0.0500	-12.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.123	1.188		0.0481	0.0455	5.8	30.0
6:2FTS	AveID	1.708	1.687		0.400	0.0474	-1.2	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.357	1.331		0.0467	0.0476	-2.0	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.163	1.199		0.0516	0.0500	3.1	30.0
Perfluorononanoic acid (PFNA)	AveID	1.003	0.9122		0.0455	0.0500	-9.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.050	1.045		0.0462	0.0464	-0.4	30.0
8:2FTS	AveID	1.248	1.248		0.400	0.0479	-0.0	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9787	0.9511		0.0486	0.0500	-2.8	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.007	0.8715		0.0433	0.0500	-13.5	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.041	0.8688		0.400	0.0500	-16.6	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6291	0.5854		0.0449	0.0482	-6.9	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9706	1.017		0.0524	0.0500	4.8	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.087	1.346		0.0619	0.0500	23.9	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.019	1.227		0.0602	0.0500	20.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9789	0.9479		0.0484	0.0500	-3.2	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2548	0.2539		0.0498	0.0500	-0.3	30.0
13C4 PFBA	Ave	1.425	1.210		2.12	2.50	-15.0	30.0
13C5 PFPeA	Ave	0.9553	0.8004		2.09	2.50	-16.2	30.0
13C3-PFBS	Ave	0.0249	0.0218		2.03	2.33	-12.6	30.0
13C2 PFHxA	Ave	1.041	0.9431		2.27	2.50	-9.4	30.0
13C4-PFHpA	Ave	0.9847	0.9621		2.44	2.50	-2.3	30.0
1802 PFHxS	Ave	1.457	1.315		2.13	2.37	-9.8	30.0
M2-6:2FTS	Ave	0.2623	0.2344		2.12	2.38	-10.6	30.0
13C4 PFOA	Ave	0.9491	0.9291		2.45	2.50	-2.1	30.0
13C4 PFOS	Ave	1.001	0.9053		2.16	2.39	-9.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-213304/2 Calibration Date: 03/16/2018 00:40
 Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46
 Lab File ID: 2018.03.15LLAAX_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7389	0.7630		2.58	2.50	3.3	30.0
13C8 FOSA	Ave	1.459	1.313		2.25	2.50	-10.0	30.0
M2-8:2FTS	Ave	0.2622	0.2422		2.21	2.40	-7.6	30.0
13C2 PFDA	Ave	0.5974	0.6088		2.55	2.50	1.9	30.0
d3-NMeFOSAA	Ave	0.1948	0.2118		2.72	2.50	8.7	30.0
d5-NEtFOSAA	Ave	0.2113	0.2364		2.80	2.50	11.9	30.0
13C2 PFUnA	Ave	0.4427	0.4682		2.64	2.50	5.8	30.0
13C2 PFDoA	Ave	0.4498	0.4027		2.24	2.50	-10.5	30.0
13C2-PFTeDA	Ave	0.3976	0.4010		2.52	2.50	0.9	30.0
13C2-PFHxDA	Ave	0.7636	0.5701		1.87	2.50	-25.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 16-Mar-2018 00:40:30 ALS Bottle#: 21 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 11:48:03 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK040

First Level Reviewer: hannigana

Date: 16-Mar-2018 07:48:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.422	1.435	-0.013	1.000	105310	0.0513		103	56.1	
D 1 13C4 PFBA										
217.00 > 172.00	1.422	1.440	-0.018	0.547	5548593	2.12		85.0	102731	
D 3 13C5-PFPeA										
267.90 > 223.00	1.664	1.664	0.0	0.640	3669446	2.09		83.8	88277	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.664	1.674	-0.010	1.000	92290	0.0537		107	25.2	
D 47 13C3-PFBS										
301.90 > 83.00	1.691	1.691	0.0	0.650	92936	2.03		87.4	461	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.699	1.709	-0.010	1.005	142494	0.0467		106	257	
298.90 > 99.00	1.699	1.709	-0.010	1.005	61223		2.33(1.25-3.74)		244	
D 60 M2-4:2FTS										
329.00 > 81.00	1.904	1.876	0.028	0.732	537924	NC			7691	
D 7 13C2 PFHxA										
315.00 > 270.00	1.934	1.904	0.030	0.744	4323467	2.27		90.6	130861	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.894	1.905	-0.011	1.000	22961	0.0350		75.0	1380	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.934	1.936	-0.002	1.000	90511	0.0519		104	309	
313.00 > 119.00	1.934	1.936	-0.002	1.000	6962		13.00(5.03-15.10)		166	
D 9 13C4-PFHpA										
367.00 > 322.00	2.250	2.215	0.035	0.865	4410308	2.44		97.7	74407	
D 11 18O2 PFHxS										
403.00 > 84.00	2.263	2.226	0.037	0.870	5700886	2.13		90.2	79765	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.250	2.251	-0.001	1.000	82489	0.0440		88.0	131	
363.00 > 169.00	2.250	2.251	-0.001	1.000	38145		2.16(1.13-3.40)		723	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.263	2.264	-0.001	1.000	130292	0.0481		106	801	
399.00 > 99.00	2.263	2.264	-0.001	1.000	45685		2.85(1.50-4.49)		184	
D 12 M2-6:2FTS										
429.00 > 81.00	2.578	2.562	0.016	0.991	1020923	2.12		89.4	25999	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.578	2.579	-0.001	1.000	34372	0.0468		98.8	1129	
D 14 13C4 PFOA										
417.00 > 372.00	2.601	2.586	0.014	1.000	4259234	2.45		97.9	99091	
* 62 13C2-PFOA										
415.00 > 370.00	2.601	2.602	-0.002		4584280	2.50			89242	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.607	2.602	0.005	1.003	102174	0.0516		103	51.0	
413.00 > 169.00	2.601	2.602	-0.002	1.000	52305		1.95(0.84-2.52)		197	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.607	2.602	0.005	1.000	105143	0.0467		98.0	4095	
449.00 > 99.00	2.607	2.602	0.005	1.000	29220		3.60(1.94-5.82)		693	
D 19 13C5 PFNA										
468.00 > 423.00	2.960	2.960	0.0	1.138	3497783	2.58		103	62424	
D 18 13C4 PFOS										
503.00 > 80.00	2.960	2.960	0.0	1.138	3967317	2.16		90.5	47073	
20 Perfluorononanoic acid										
463.00 > 419.00	2.960	2.967	-0.007	1.000	63814	0.0455		90.9	84.5	
463.00 > 169.00	2.960	2.967	-0.007	1.000	14510		4.40(1.90-5.69)		576	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.960	2.967	-0.007	1.000	80521	0.0462		99.6	893	M
499.00 > 99.00	2.960	2.967	-0.007	1.000	18327		4.39(2.31-6.93)		214	M
D 21 13C8 FOSA										
506.00 > 78.00	3.303	3.297	0.006	1.270	6020395	2.25		90.0	64781	
D 26 M2-8:2FTS										
529.00 > 81.00	3.303	3.305	-0.002	1.270	1063690	2.21		92.4	32333	
D 23 13C2 PFDA										
515.00 > 470.00	3.311	3.312	-0.001	1.273	2791108	2.55		102	30949	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.303	3.321	-0.018	1.000	26548	0.0479		100.0	1296	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.303	3.321	-0.018	1.000	114517	0.0486		97.2	3492	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.311	3.329	-0.018	1.000	48647	0.0433		86.5	219	
513.00 > 169.00	3.311	3.329	-0.018	1.000	11822		4.11(2.36-7.09)		722	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.460	3.471	-0.011	1.331	970839	2.72		109	53252	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.469	3.491	-0.022	1.003	16869	0.0417		83.4	234	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.629	3.629	0.0	1.396	1083646	2.80		112	1659	
D 30 13C2 PFUnA										
565.00 > 520.00	3.638	3.638	0.0	1.399	2146552	2.64		106	52433	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.620	3.641	-0.021	1.000	46838	0.0449		93.1	1674	
599.00 > 99.00	3.620	3.641	-0.021	1.000	16183		2.89(1.39-4.16)		501	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.638	3.659	-0.021	1.000	57789	0.0619		124	182	M
563.00 > 169.00	3.638	3.659	-0.021	1.000	9844		5.87(2.12-6.36)		1217	M
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.638	3.659	-0.021	1.003	22051	0.0524		105	451	M
D 36 13C2 PFDaA										
615.00 > 570.00	3.932	3.932	0.0	1.512	1845863	2.24		89.5	9376	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.932	3.947	-0.015	1.000	45300	0.0602		120	5.8	
613.00 > 169.00	3.932	3.947	-0.015	1.000	8581		5.28(2.13-6.40)		177	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.189	4.193	-0.004	1.000	34993	0.0484		96.8	4.4	
663.00 > 169.00	4.189	4.193	-0.004	1.000	10627		3.29(1.25-3.76)		150	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.415	4.417	-0.002	1.000	9337	0.0498		99.7	146	
713.00 > 219.00	4.405	4.417	-0.012	0.998	7549		1.24(0.71-2.13)		77.4	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.415	4.437	-0.022	1.698	1838494	2.52		101	12459	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.810	4.811	-0.001	1.000	73486	NC			5.1	
813.00 > 169.00	4.810	4.811	-0.001	1.000	13239		5.55(2.86-8.58)		148	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.810	4.848	-0.038	1.850	2613305	1.87		74.7	8069	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.151	5.144	0.006	1.000	50880	NC			7.0	
913.00 > 169.00	5.151	5.144	0.006	1.000	5690		8.94(3.83-11.48)		71.8	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL2_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_004.d

Injection Date: 16-Mar-2018 00:40:30

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

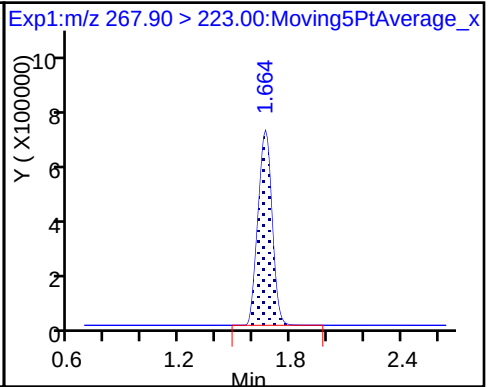
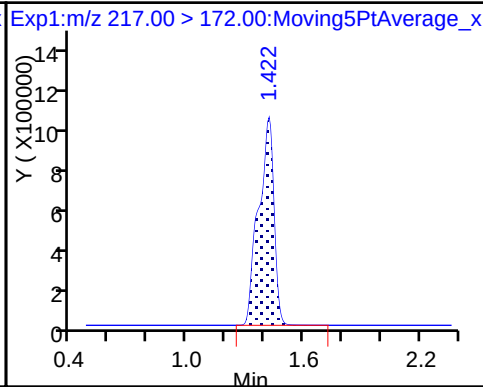
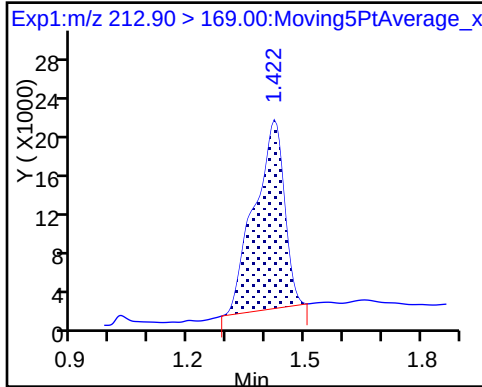
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

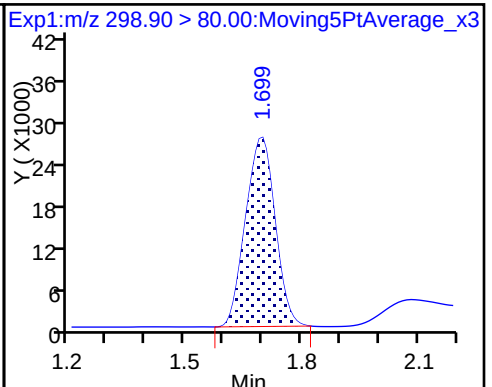
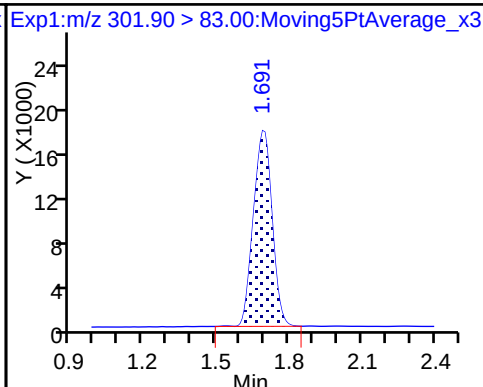
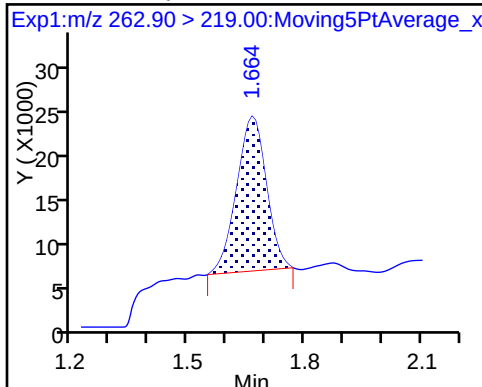
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

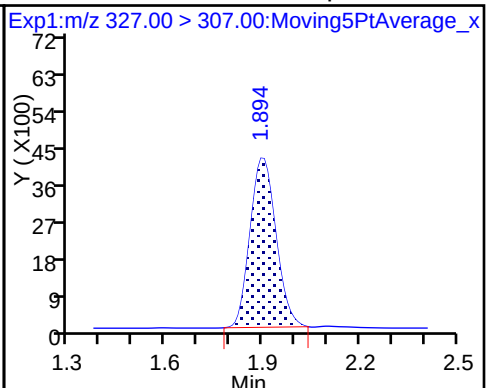
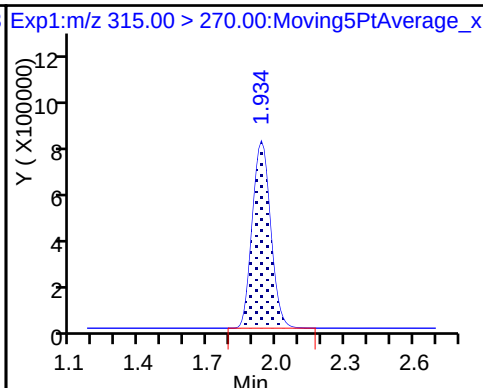
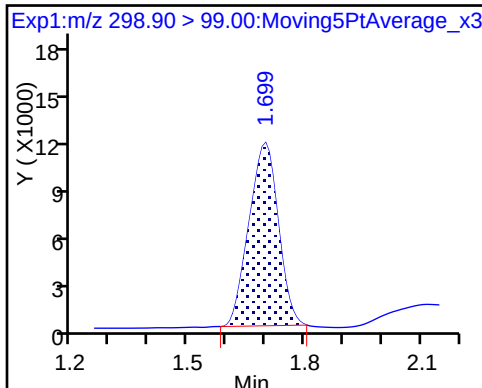
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

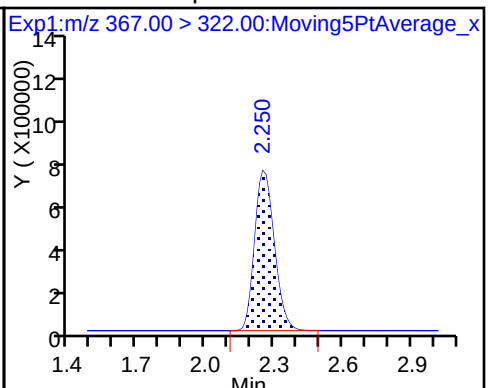
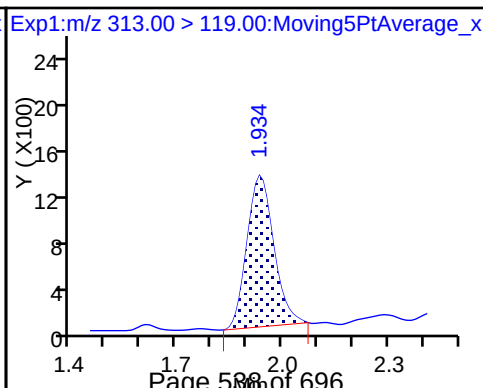
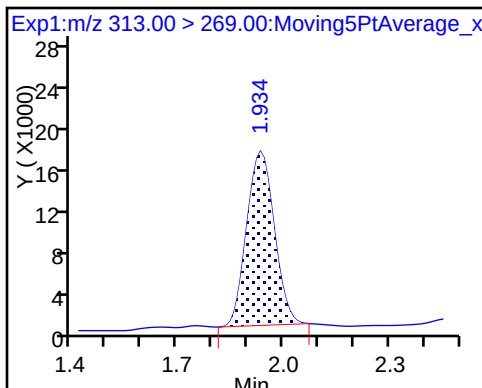
61 Sodium 1H,1H,2H,2H-perfluorohexane



6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

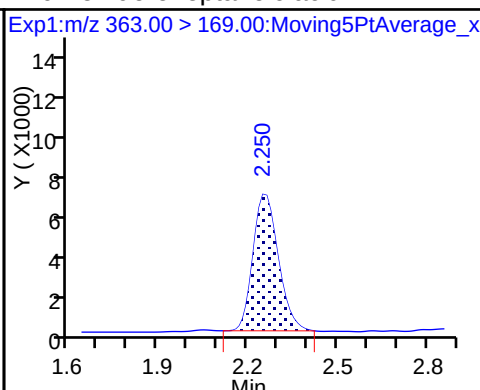
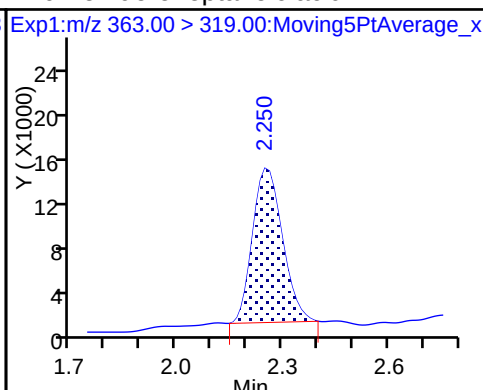
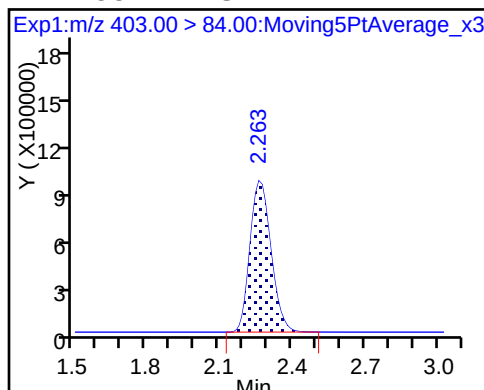
D 9 13C4-PFHpA



D 11 18O2 PFHxS

10 Perfluoroheptanoic acid

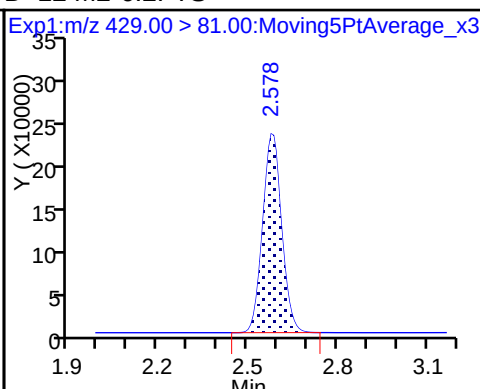
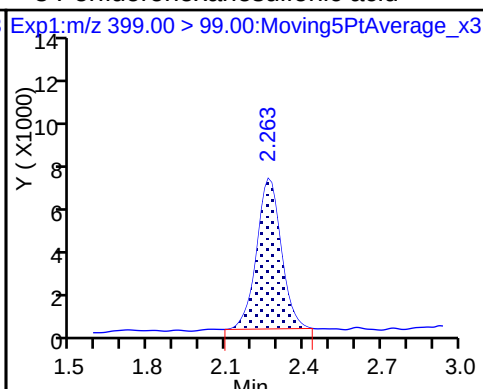
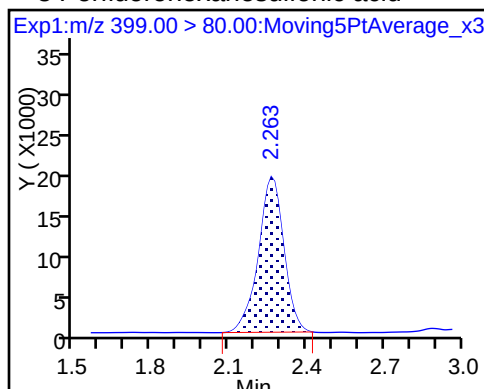
10 Perfluoroheptanoic acid



8 Perfluorohexanesulfonic acid

8 Perfluorohexanesulfonic acid

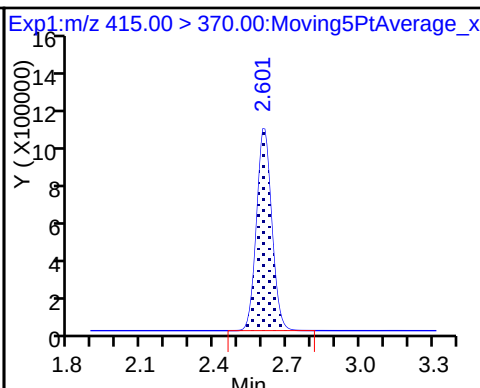
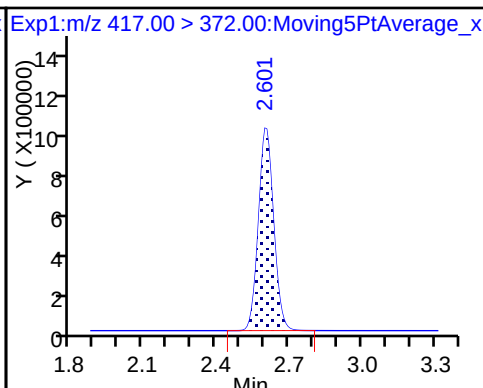
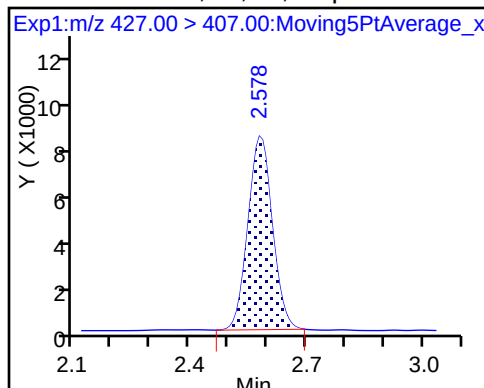
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

D 14 13C4 PFOA

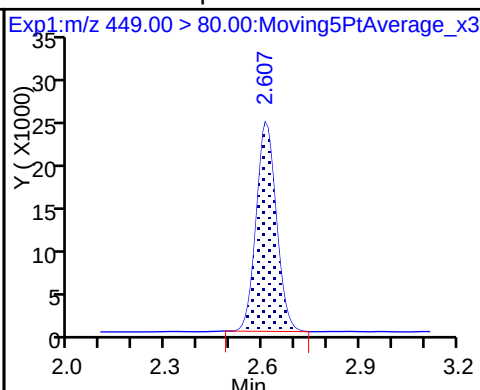
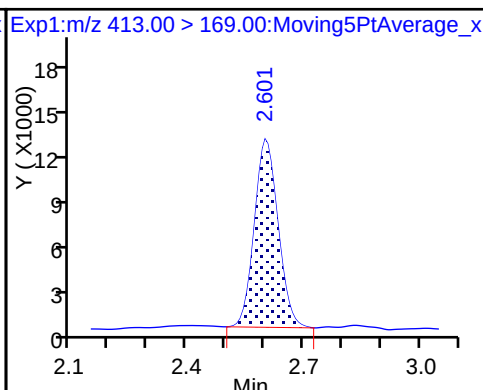
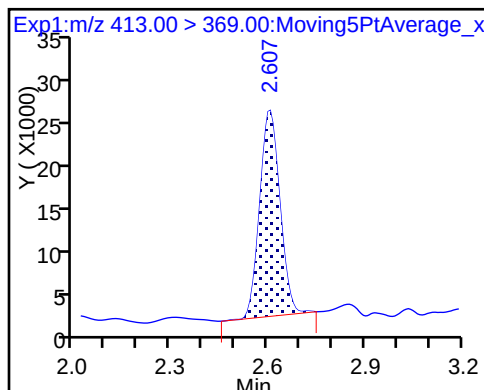
* 62 13C2-PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

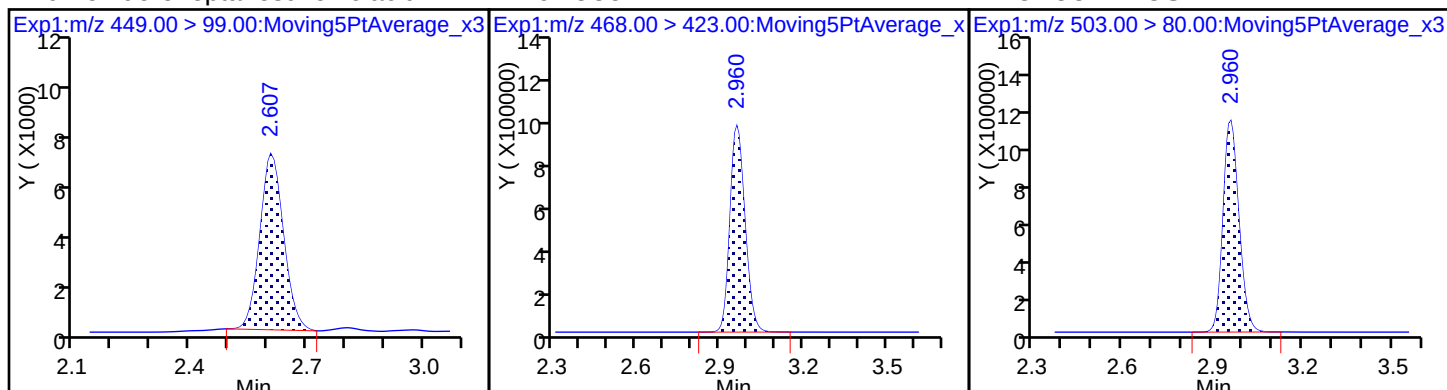
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 19 13C5 PFNA

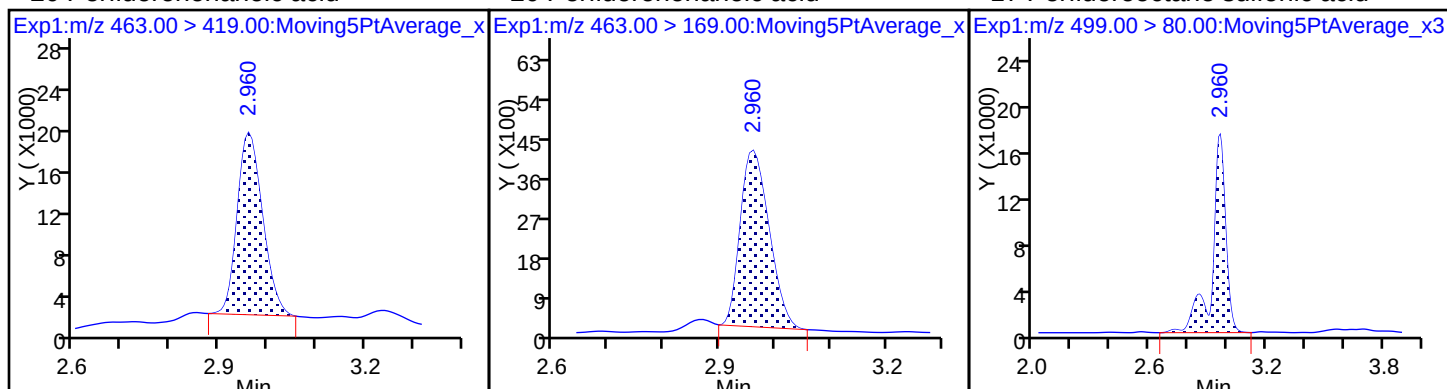
D 18 13C4 PFOS



20 Perfluorononanoic acid

20 Perfluorononanoic acid

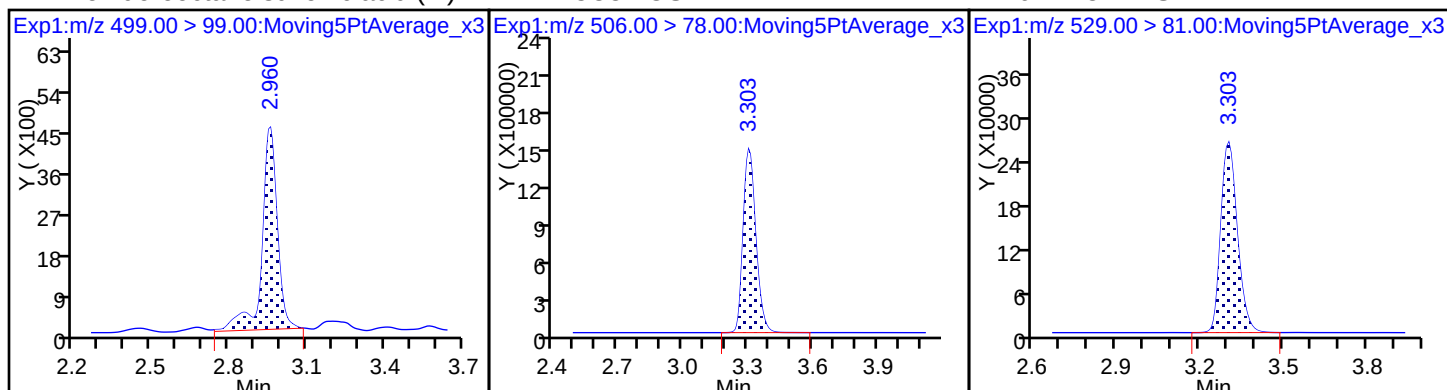
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid (M)

D 21 13C8 FOSA

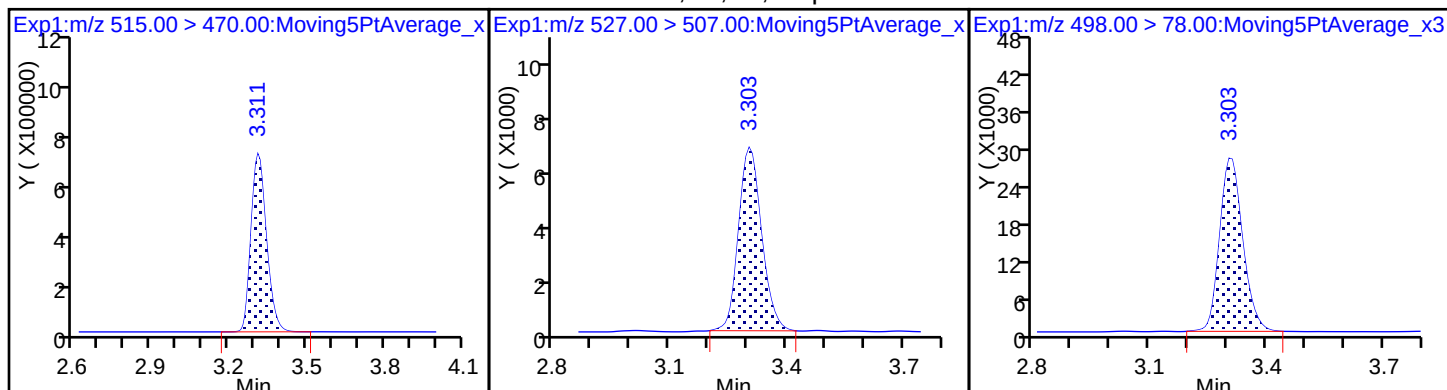
D 26 M2-8:2FTS

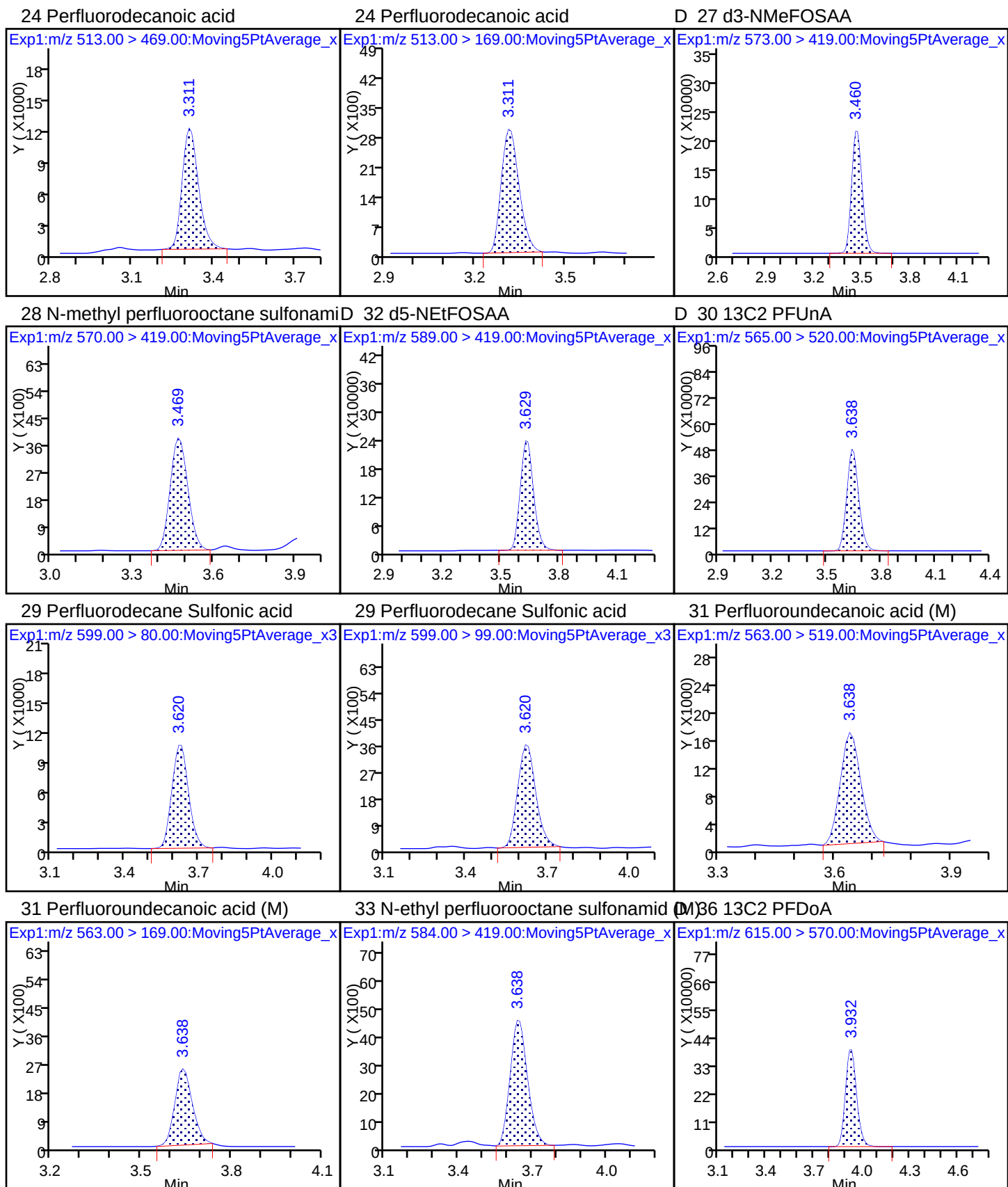


D 23 13C2 PFDA

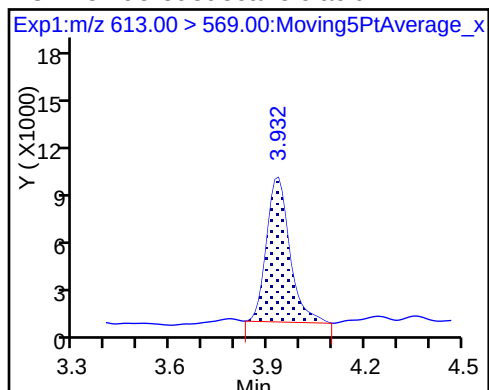
25 Sodium 1H,1H,2H,2H-perfluorodecan-2-yl

22 Perfluorooctane Sulfonamide

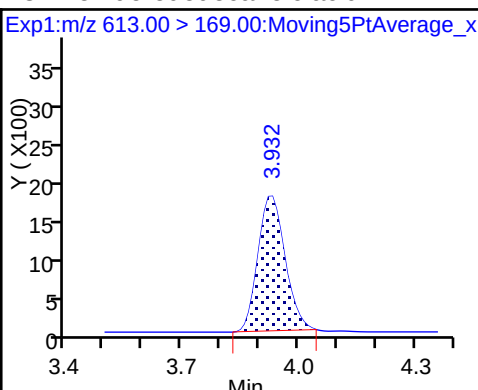




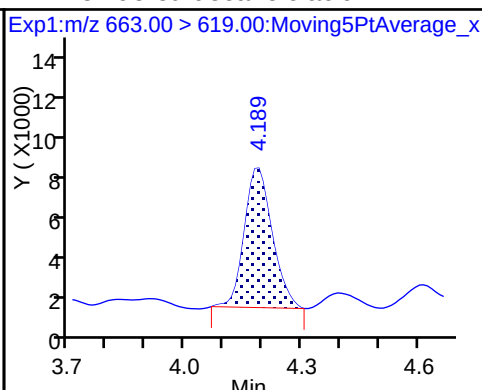
37 Perfluorododecanoic acid



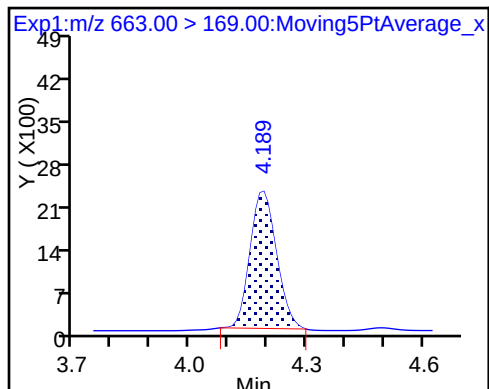
37 Perfluorododecanoic acid



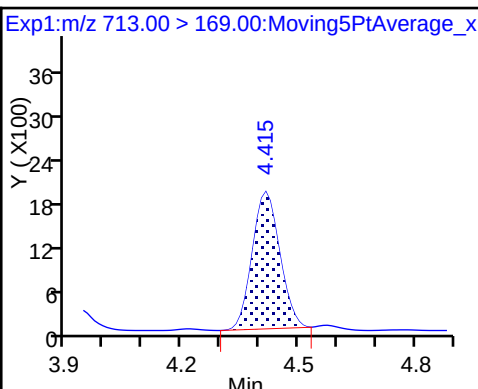
41 Perfluorotridecanoic acid



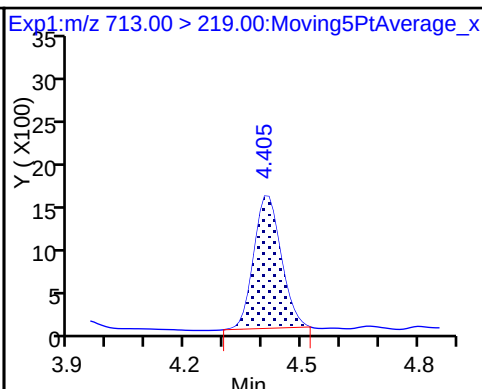
41 Perfluorotridecanoic acid



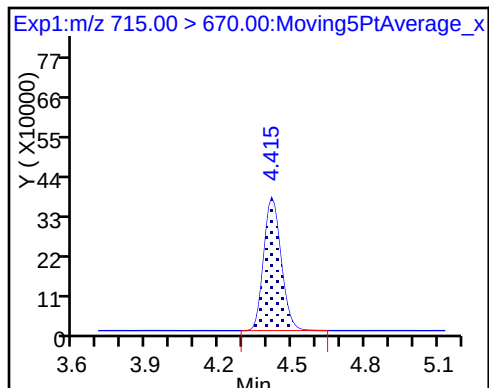
42 Perfluorotetradecanoic acid



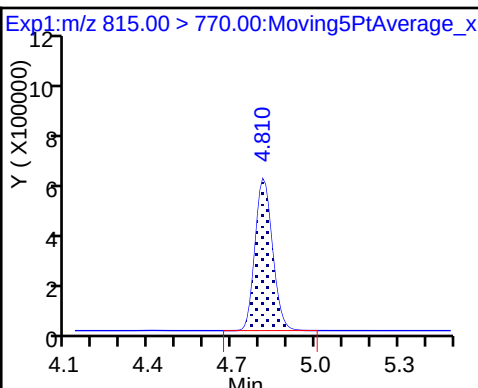
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_004.d

Injection Date: 16-Mar-2018 00:40:30

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

Column:

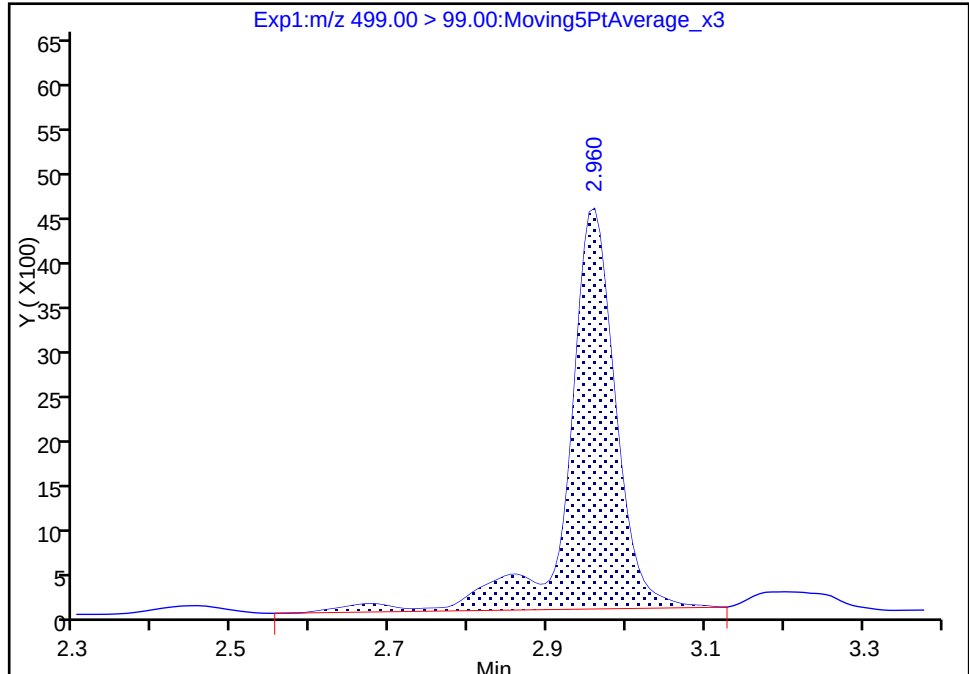
Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

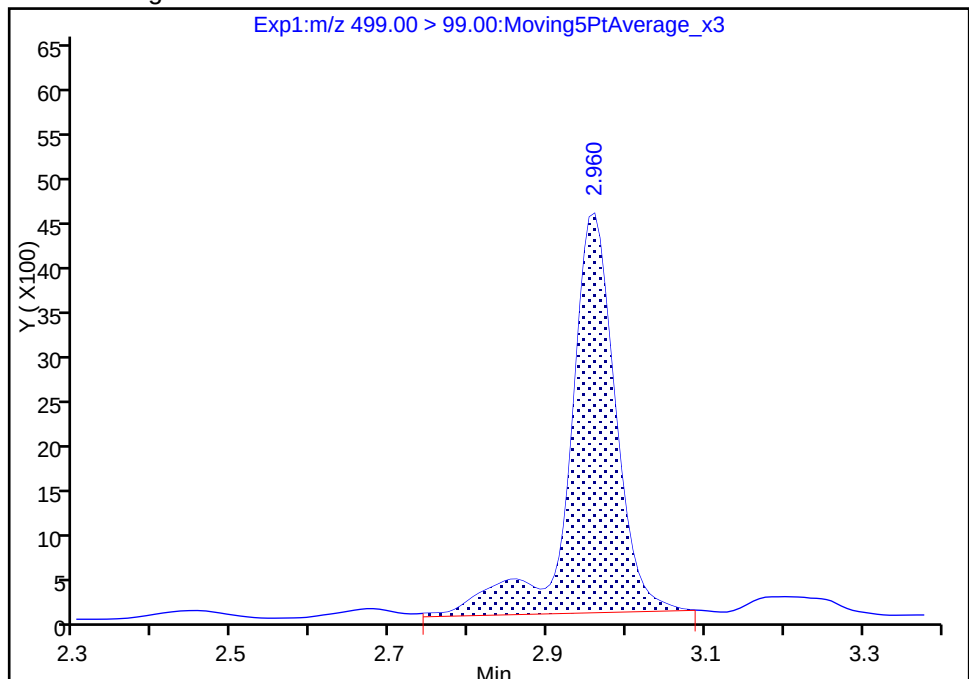
RT: 2.96
Area: 18987
Amount: 0.046204
Amount Units: ng/ml

Processing Integration Results



RT: 2.96
Area: 18327
Amount: 0.046204
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 19-Mar-2018 11:41:54

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_004.d

Injection Date: 16-Mar-2018 00:40:30

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 21 Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

Column:

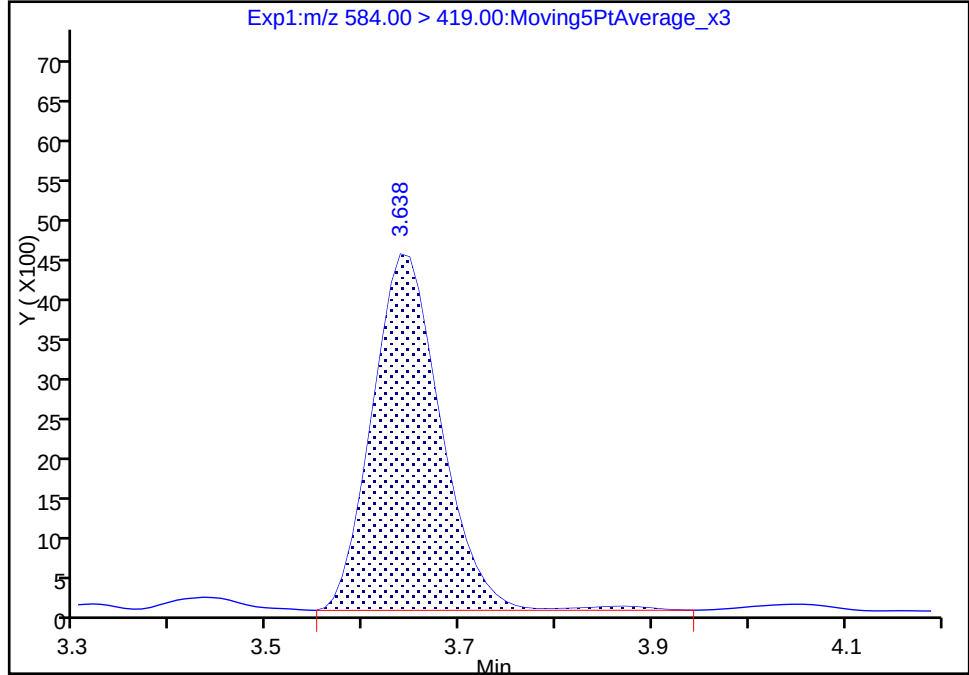
Detector EXP1

33 N-ethyl perfluorooctane sulfonamidoacetic ac, CAS: 2991-50-6

Signal: 1

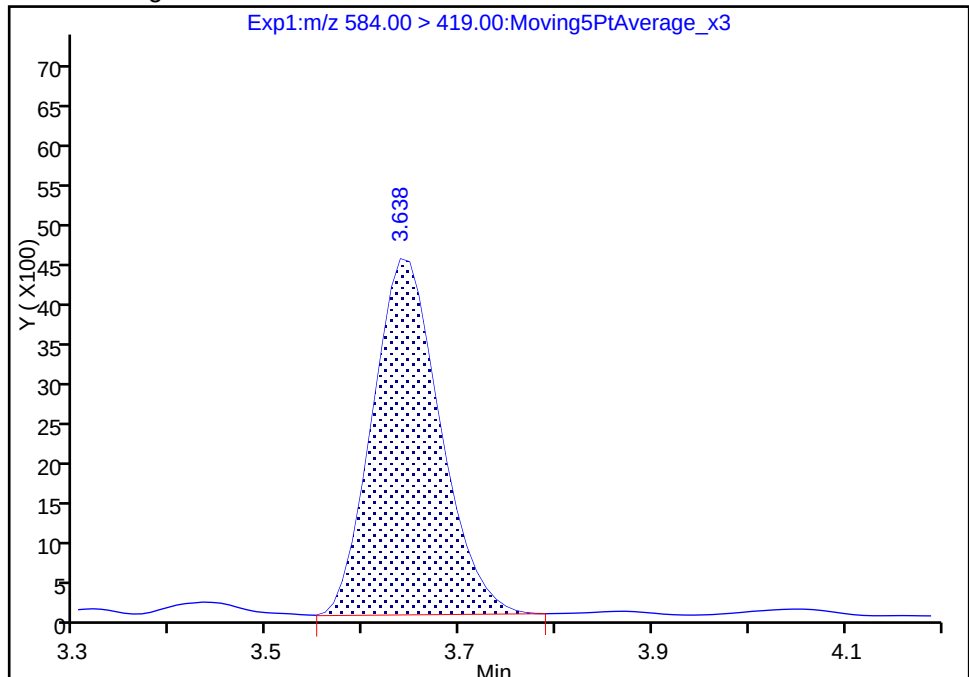
RT: 3.64
Area: 22399
Amount: 0.053239
Amount Units: ng/ml

Processing Integration Results



RT: 3.64
Area: 22051
Amount: 0.052412
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 19-Mar-2018 11:42:13

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

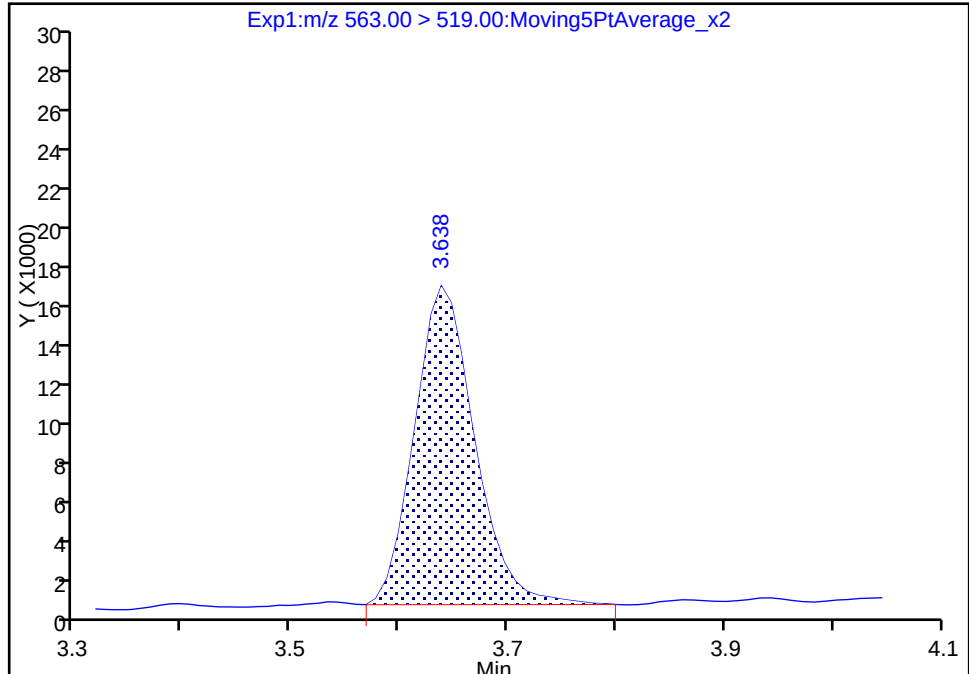
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_004.d
Injection Date: 16-Mar-2018 00:40:30 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

31 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 1

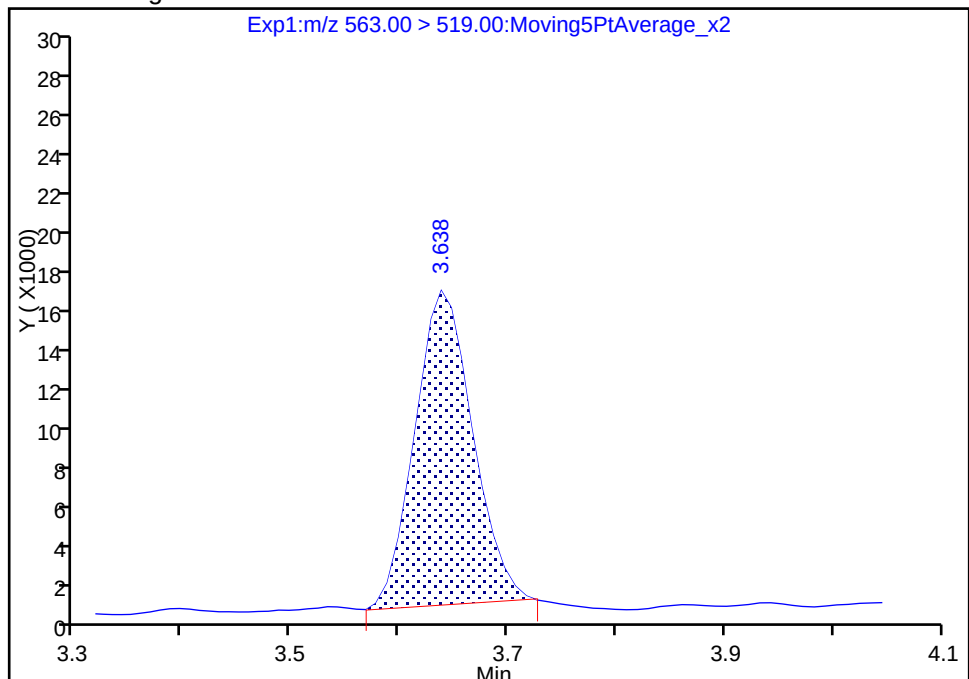
RT: 3.64
Area: 61000
Amount: 0.065374
Amount Units: ng/ml

Processing Integration Results



RT: 3.64
Area: 57789
Amount: 0.061933
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 19-Mar-2018 11:39:43

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

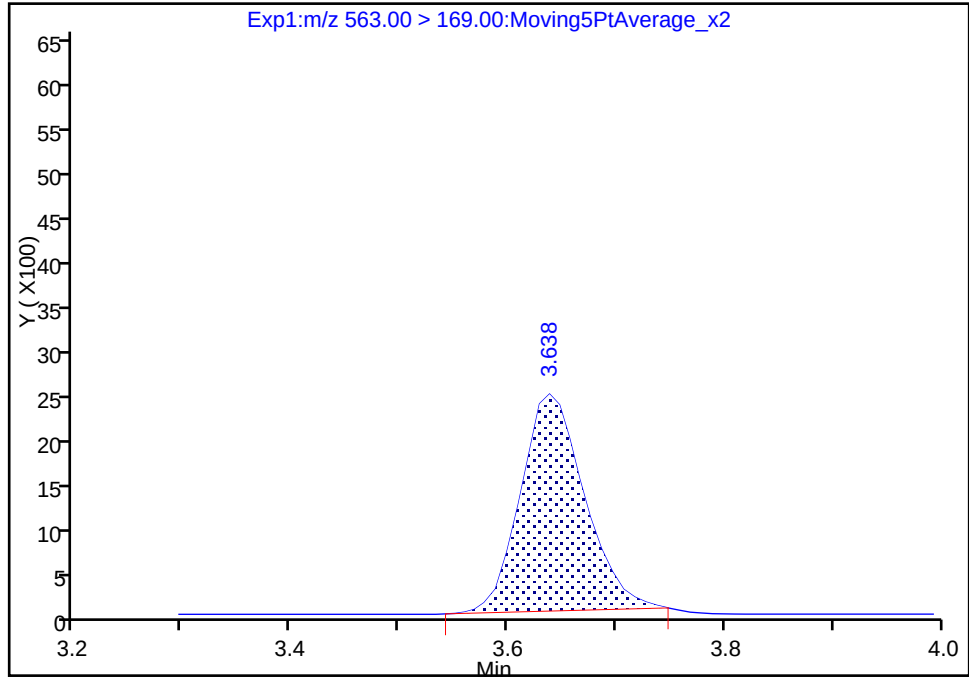
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_004.d
Injection Date: 16-Mar-2018 00:40:30 Instrument ID: A8_N
Lims ID: CCVL
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 21 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

31 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 2

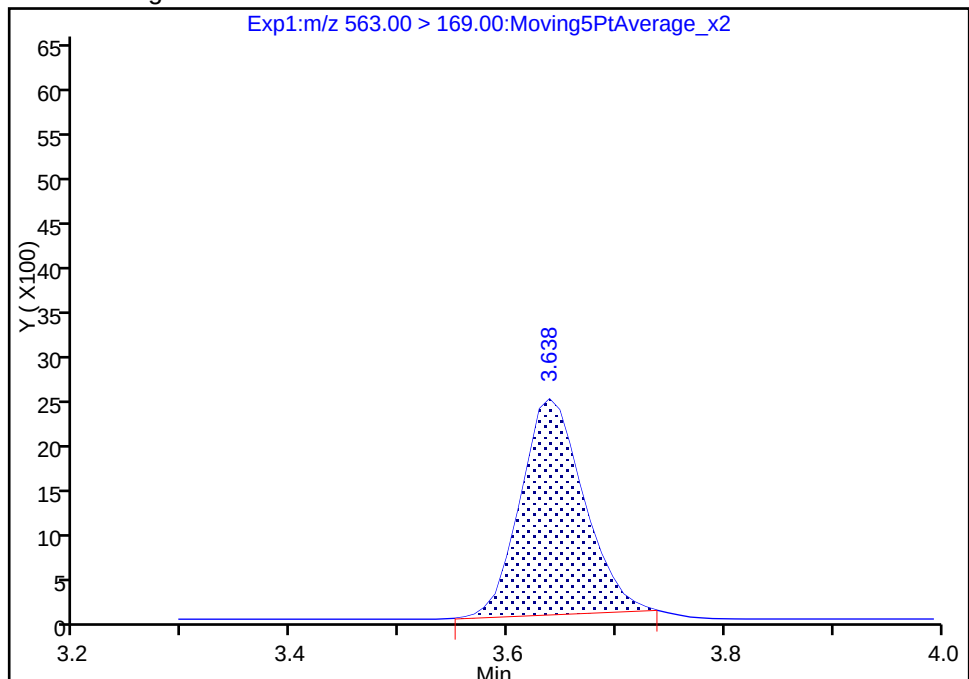
RT: 3.64
Area: 9991
Amount: 0.065374
Amount Units: ng/ml

Processing Integration Results



RT: 3.64
Area: 9844
Amount: 0.061933
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 19-Mar-2018 11:46:52

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCV 320-213304/3 Calibration Date: 03/16/2018 00:48

Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46

Lab File ID: 2018.03.15LLAAX_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9252	0.9400		2.54	2.50	1.6	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.171	1.155		2.47	2.50	-1.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.37	82.39		2.38	2.21	7.9	30.0
4:2 FTS	AveID	16.40	12.25		1.74	2.34	-25.3	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	1.014		2.51	2.50	0.5	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.063	1.058		2.49	2.50	-0.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.123	1.038		2.10	2.28	-7.5	30.0
6:2FTS	AveID	1.708	1.693		2.35	2.37	-0.9	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.357	1.472		2.58	2.38	8.4	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.163	1.166		2.51	2.50	0.2	30.0
Perfluorononanoic acid (PFNA)	AveID	1.003	1.005		2.50	2.50	0.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.050	1.091		2.41	2.32	3.9	30.0
8:2FTS	AveID	1.248	1.301		2.50	2.40	4.2	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9787	1.022		2.61	2.50	4.4	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.007	1.009		2.51	2.50	0.2	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.041	1.063		2.55	2.50	2.1	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6291	0.6941		2.66	2.41	10.3	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9706	0.9551		2.46	2.50	-1.6	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.087	1.162		2.67	2.50	7.0	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.019	1.092		2.68	2.50	7.2	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9789	0.9426		2.41	2.50	-3.7	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2548	0.2749		2.70	2.50	7.9	30.0
13C4 PFBA	Ave	1.425	1.292		2.27	2.50	-9.3	30.0
13C5 PFPeA	Ave	0.9553	0.8696		2.28	2.50	-9.0	30.0
13C3-PFBS	Ave	0.0249	0.0227		2.12	2.33	-8.9	30.0
13C2 PFHxA	Ave	1.041	0.9716		2.33	2.50	-6.6	30.0
13C4-PFHpA	Ave	0.9847	0.9590		2.43	2.50	-2.6	30.0
1802 PFHxS	Ave	1.457	1.392		2.26	2.37	-4.5	30.0
M2-6:2FTS	Ave	0.2623	0.2332		2.11	2.38	-11.1	30.0
13C4 PFOA	Ave	0.9491	0.9327		2.46	2.50	-1.7	30.0
13C4 PFOS	Ave	1.001	0.9090		2.17	2.39	-9.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCV 320-213304/3 Calibration Date: 03/16/2018 00:48
 Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46
 Lab File ID: 2018.03.15LLAAX_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7389	0.7536		2.55	2.50	2.0	30.0
M2-8:2FTS	Ave	0.2622	0.2554		2.33	2.40	-2.6	30.0
13C8 FOSA	Ave	1.459	1.366		2.34	2.50	-6.3	30.0
13C2 PFDA	Ave	0.5974	0.5945		2.49	2.50	-0.5	30.0
d3-NMeFOSAA	Ave	0.1948	0.2203		2.83	2.50	13.1	30.0
d5-NEtFOSAA	Ave	0.2113	0.2297		2.72	2.50	8.8	30.0
13C2 PFUnA	Ave	0.4427	0.4403		2.49	2.50	-0.5	30.0
13C2 PFDoA	Ave	0.4498	0.4267		2.37	2.50	-5.1	30.0
13C2-PFTeDA	Ave	0.3976	0.3769		2.37	2.50	-5.2	30.0
13C2-PFHxDA	Ave	0.7636	0.6424		2.10	2.50	-15.9	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_024.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 16-Mar-2018 00:48:20 ALS Bottle#: 14 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 09:53:21 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK040

First Level Reviewer: hannigana

Date: 16-Mar-2018 07:54:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.428	1.428	0.0	1.000	5284233	2.54		102	2731	
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.440	-0.012	0.546	5621309	2.27		90.7	115720	
D 3 13C5-PFPeA										
267.90 > 223.00	1.665	1.664	0.001	0.636	3782283	2.28		91.0	91457	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.665	1.665	0.0	1.000	4369709	2.47		98.6	1310	
D 47 13C3-PFBS										
301.90 > 83.00	1.700	1.691	0.009	0.650	91915	2.12		91.1	488	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.700	1.700	0.0	1.000	7198716	2.38		108	12558	
298.90 > 99.00	1.700	1.700	0.0	1.000	2959755		2.43(1.25-3.74)		11059	
D 60 M2-4:2FTS										
329.00 > 81.00	1.894	1.876	0.018	0.724	522292	NC			9102	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.894	1.894	0.0	1.000	1130611	1.74		74.7	52555	
D 7 13C2 PFHxA										
315.00 > 270.00	1.925	1.904	0.021	0.735	4225905	2.33		93.4	109382	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.935	1.935	0.0	1.005	4283025	2.51		100	15427	
313.00 > 119.00	1.935	1.935	0.0	1.005	383289		11.17(5.03-15.10)		8606	
D 9 13C4-PFHpA										
367.00 > 322.00	2.251	2.215	0.036	0.860	4171460	2.43		97.4	63629	
D 11 18O2 PFHxS										
403.00 > 84.00	2.264	2.226	0.038	0.865	5729273	2.26		95.5	73275	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.251	2.251	0.0	1.000	4414690	2.49		99.5	8839	
363.00 > 169.00	2.251	2.251	0.0	1.000	1692711		2.61(1.13-3.40)		31485	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.264	2.264	0.0	1.000	5722616	2.10		92.5	22659	
399.00 > 99.00	2.264	2.264	0.0	1.000	1905124		3.00(1.50-4.49)		6498	
D 12 M2-6:2FTS										
429.00 > 81.00	2.587	2.562	0.025	0.988	963579	2.11		88.9	24080	
D 14 13C4 PFOA										
417.00 > 372.00	2.617	2.586	0.031	1.000	4056884	2.46		98.3	70123	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.595	2.595	0.0	1.003	1628054	2.35		99.1	36526	
* 62 13C2-PFOA										
415.00 > 370.00	2.617	2.617	0.0		4349599	2.50			122842	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.617	2.617	0.0	1.000	4728635	2.51		100	3067	
413.00 > 169.00	2.617	2.617	0.0	1.000	2455167		1.93(0.84-2.52)		7402	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.617	2.617	0.0	1.000	5539242	2.58		108	60689	
449.00 > 99.00	2.617	2.617	0.0	1.000	1426749		3.88(1.94-5.82)		19027	
D 19 13C5 PFNA										
468.00 > 423.00	2.987	2.960	0.027	1.141	3277890	2.55		102	69883	
D 18 13C4 PFOS										
503.00 > 80.00	2.987	2.960	0.027	1.141	3779917	2.17		90.8	31965	
20 Perfluorononanoic acid										
463.00 > 419.00	2.987	2.987	0.0	1.000	3292824	2.50		100	5062	
463.00 > 169.00	2.987	2.987	0.0	1.000	792479		4.16(1.90-5.69)		22533	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.987	2.987	0.0	1.000	4002380	2.41		104	29834	
499.00 > 99.00	2.987	2.987	0.0	1.000	873141		4.58(2.31-6.93)		19827	
D 21 13C8 FOSA										
506.00 > 78.00	3.328	3.297	0.031	1.272	5942076	2.34		93.7	62278	
D 26 M2-8:2FTS										
529.00 > 81.00	3.320	3.305	0.015	1.269	1064008	2.33		97.4	36087	
D 23 13C2 PFDA										
515.00 > 470.00	3.336	3.312	0.024	1.275	2585692	2.49		99.5	38509	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.320	3.320	0.0	1.000	1384729	2.50		104	27663	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.328	3.328	0.0	1.000	6072108	2.61		104	61022	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.336	3.336	0.0	1.000	2609531	2.51		100	11680	
513.00 > 169.00	3.336	3.336	0.0	1.000	453345		5.76(2.36-7.09)		17848	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.481	3.471	0.010	1.330	958018	2.83		113	23921	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.481	3.481	0.0	1.000	1018537	2.55		102	12657	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.639	3.629	0.010	1.390	999292	2.72		109	1551	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.629	3.629	0.0	1.000	2645665	2.66		110	73521	
599.00 > 99.00	3.629	3.629	0.0	1.000	876582		3.02(1.39-4.16)		24258	
D 30 13C2 PFUnA										
565.00 > 520.00	3.648	3.638	0.010	1.394	1915253	2.49		99.5	51948	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.648	3.648	0.0	1.000	2226310	2.67		107	7370	
563.00 > 169.00	3.648	3.648	0.0	1.000	392790		5.67(2.12-6.36)		32551	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.648	3.648	0.0	1.003	954387	2.46		98.4	17177	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.923	3.923	0.0	1.000	2026865	2.68		107	303	
613.00 > 169.00	3.923	3.923	0.0	1.000	511854		3.96(2.13-6.40)		9028	
D 36 13C2 PFDaA										
615.00 > 570.00	3.923	3.932	-0.009	1.499	1856147	2.37		94.9	8283	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.170	4.170	0.0	1.000	1749566	2.41		96.3	253	
663.00 > 169.00	4.170	4.170	0.0	1.000	587625		2.98(1.25-3.76)		6360	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.405	4.405	0.0	1.000	450614	2.70		108	4993	
713.00 > 219.00	4.405	4.405	0.0	1.000	332261		1.36(0.71-2.13)		3541	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.405	4.437	-0.032	1.683	1639394	2.37		94.8	13642	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.802	4.802	0.0	1.000	2792973	NC			203	
813.00 > 169.00	4.802	4.802	0.0	1.000	434902		6.42(2.86-8.58)		3820	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.802	4.848	-0.046	1.835	2794290	2.10		84.1	9326	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.119	5.119	0.0	1.000	2711448	NC			337	
913.00 > 169.00	5.119	5.119	0.0	1.000	335639		8.08(3.83-11.48)		2843	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_024.d

Injection Date: 16-Mar-2018 00:48:20

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

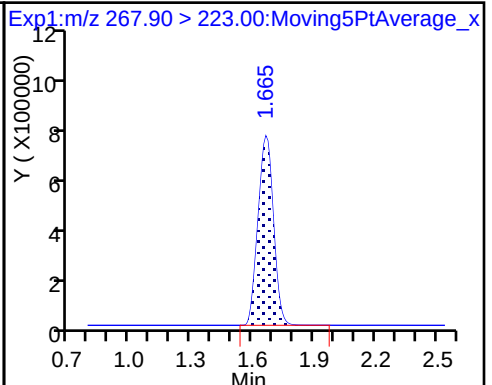
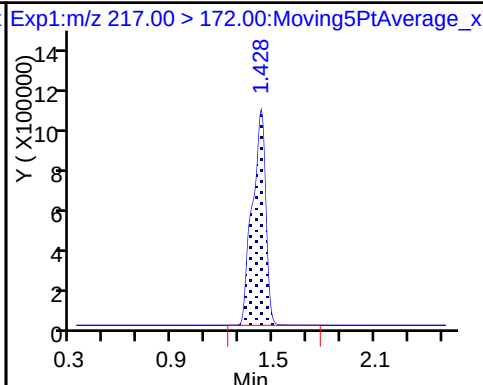
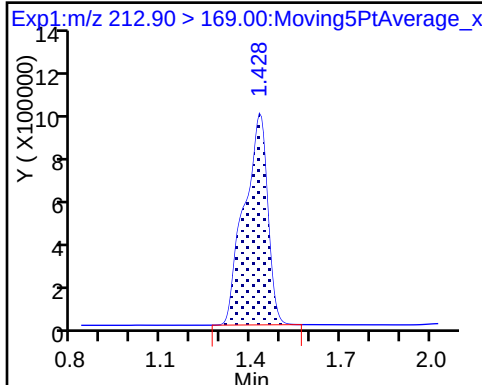
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

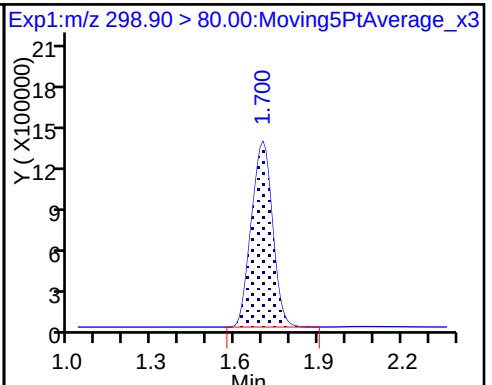
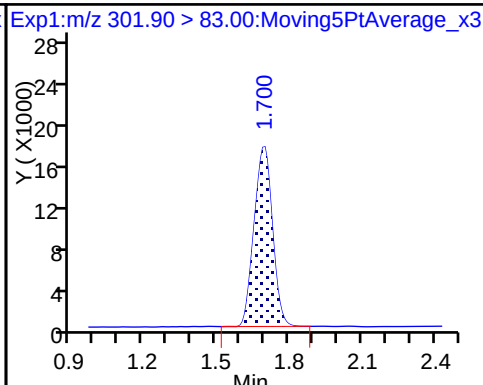
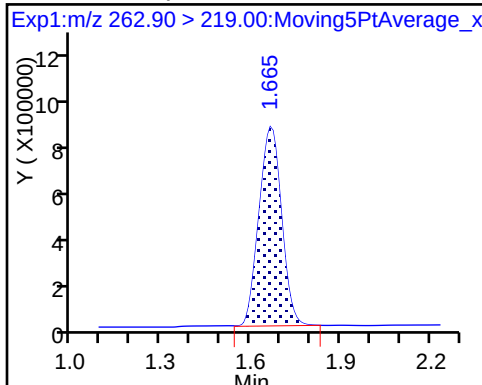
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

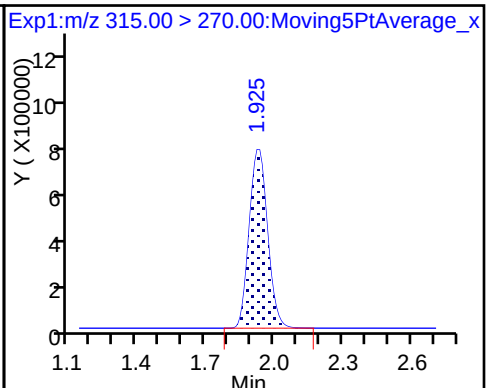
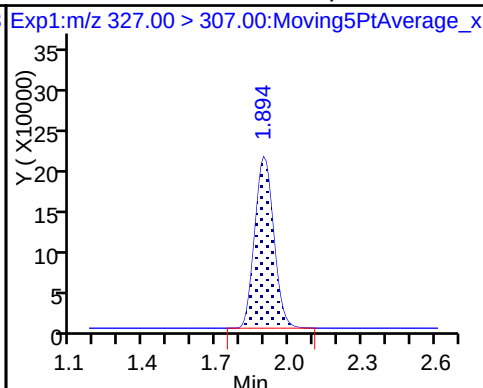
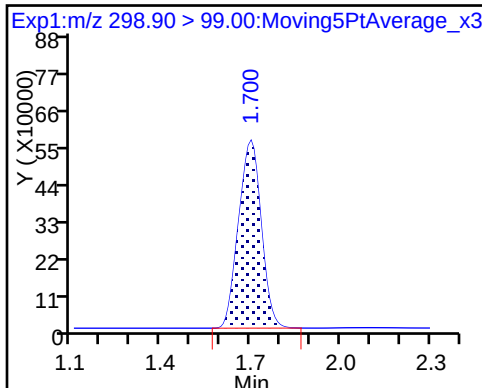
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

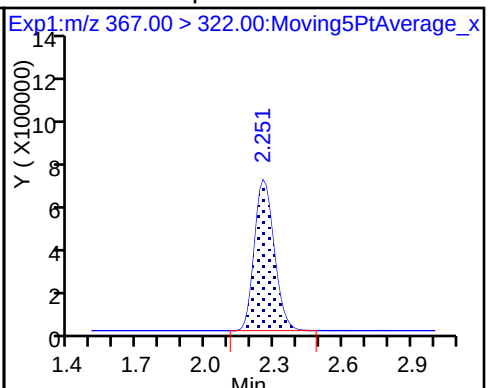
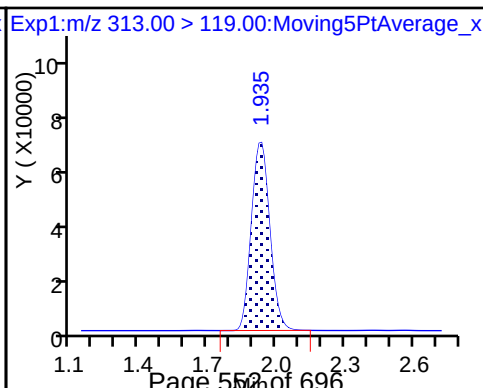
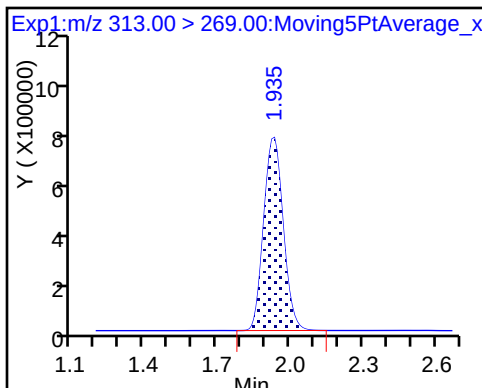
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

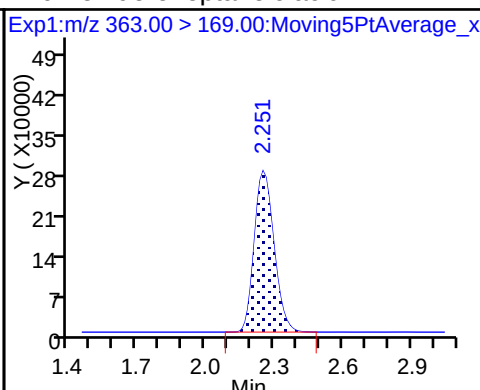
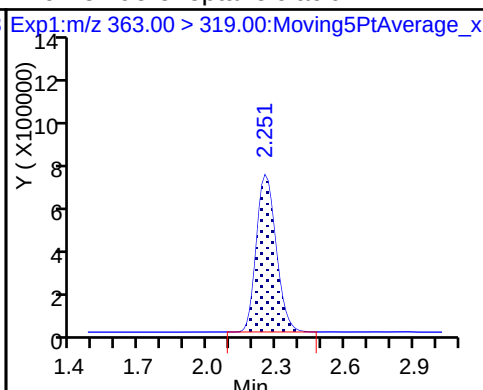
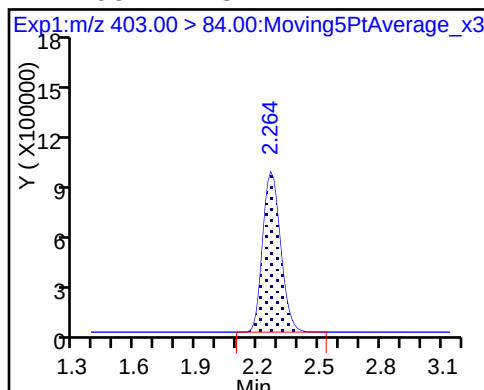
D 9 13C4-PFHpA



D 11 18O2 PFHxS

10 Perfluoroheptanoic acid

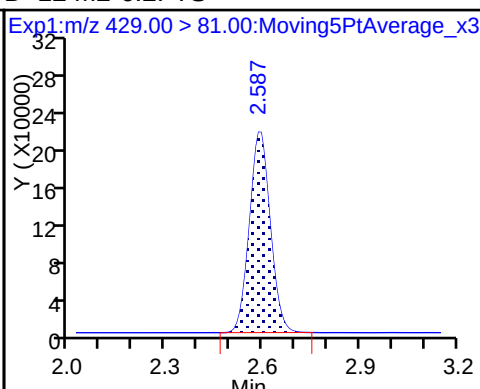
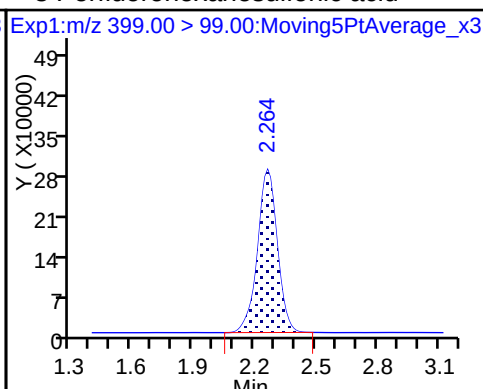
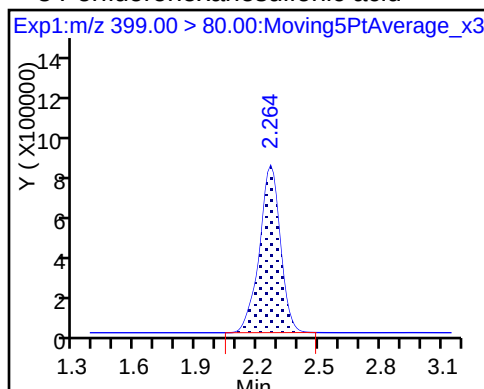
10 Perfluoroheptanoic acid



8 Perfluorohexanesulfonic acid

8 Perfluorohexanesulfonic acid

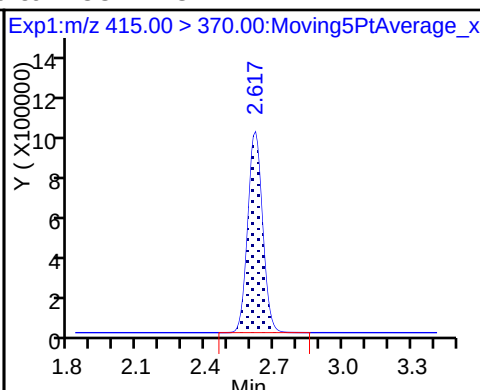
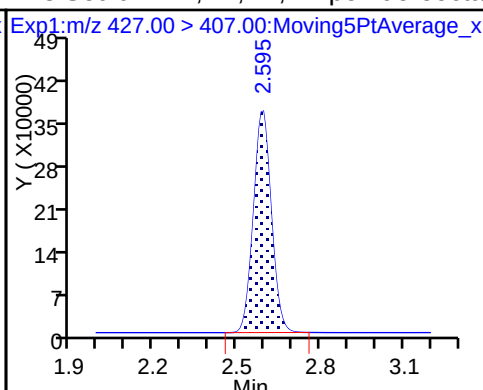
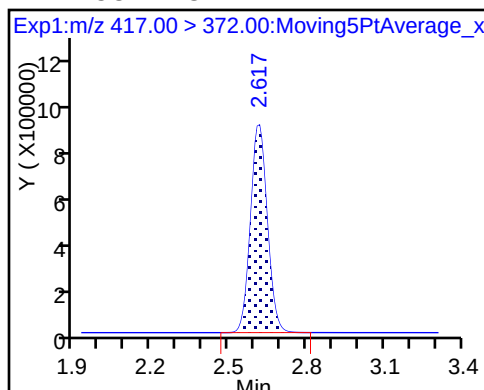
D 12 M2-6:2FTS



D 14 13C4 PFOA

13 Sodium 1H,1H,2H,2H-perfluorooctanoate

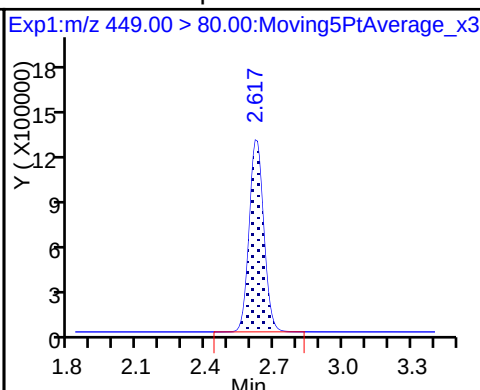
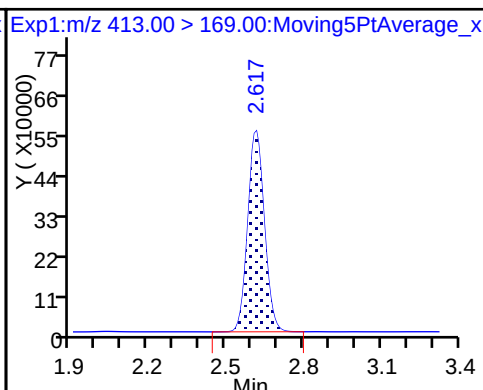
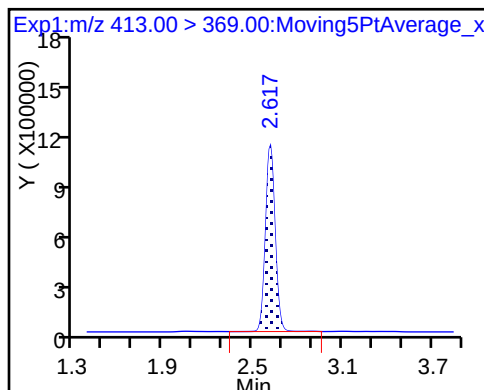
62 13C2-PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

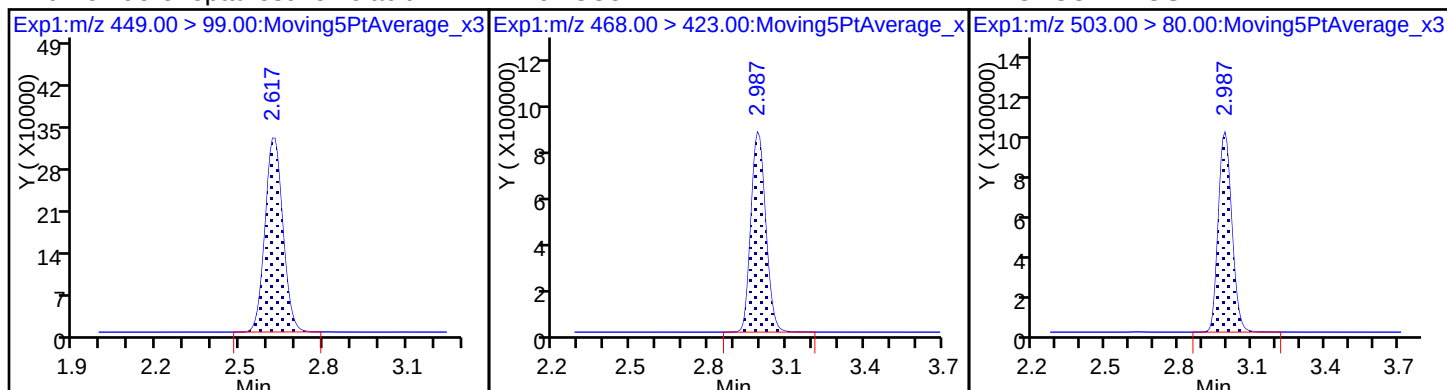
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 19 13C5 PFNA

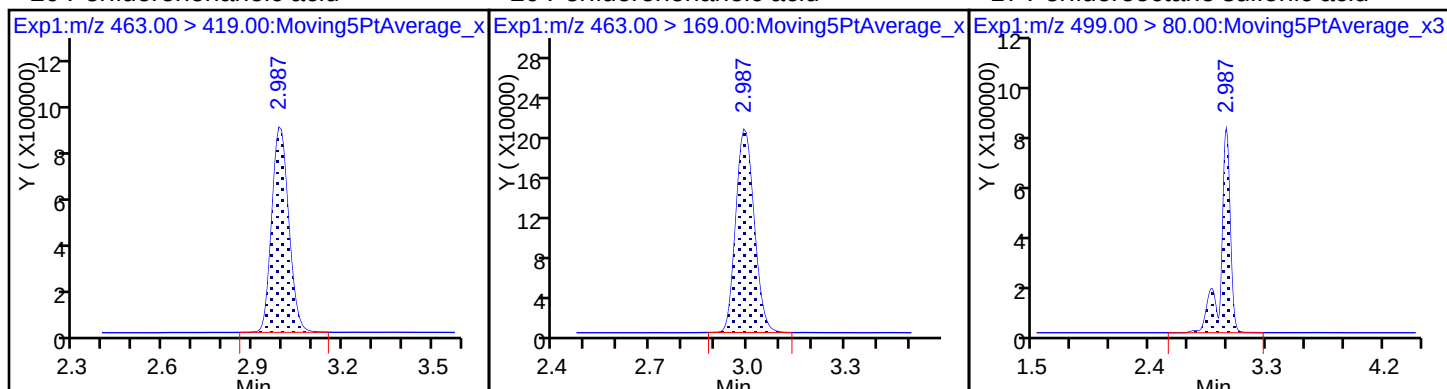
D 18 13C4 PFOS



20 Perfluorononanoic acid

20 Perfluorononanoic acid

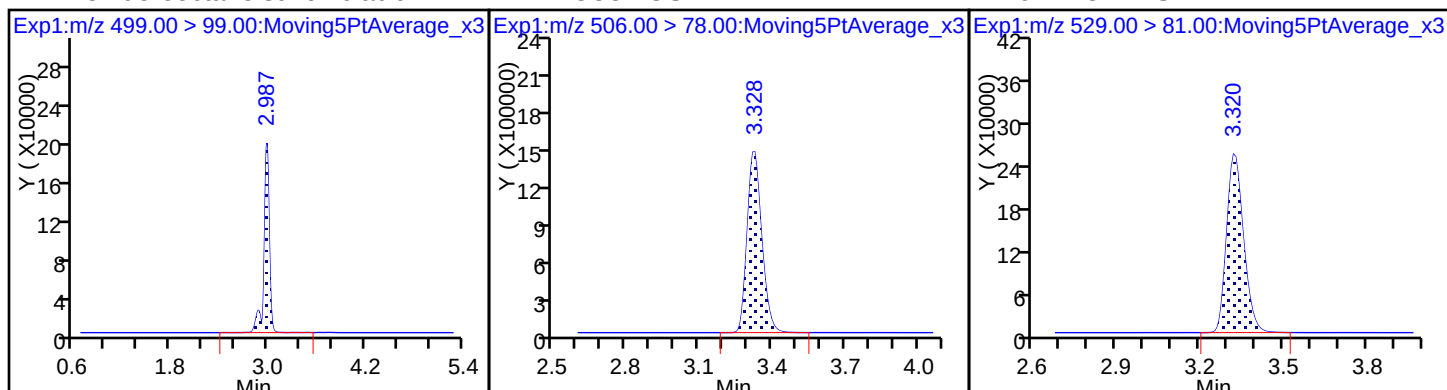
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 21 13C8 FOSA

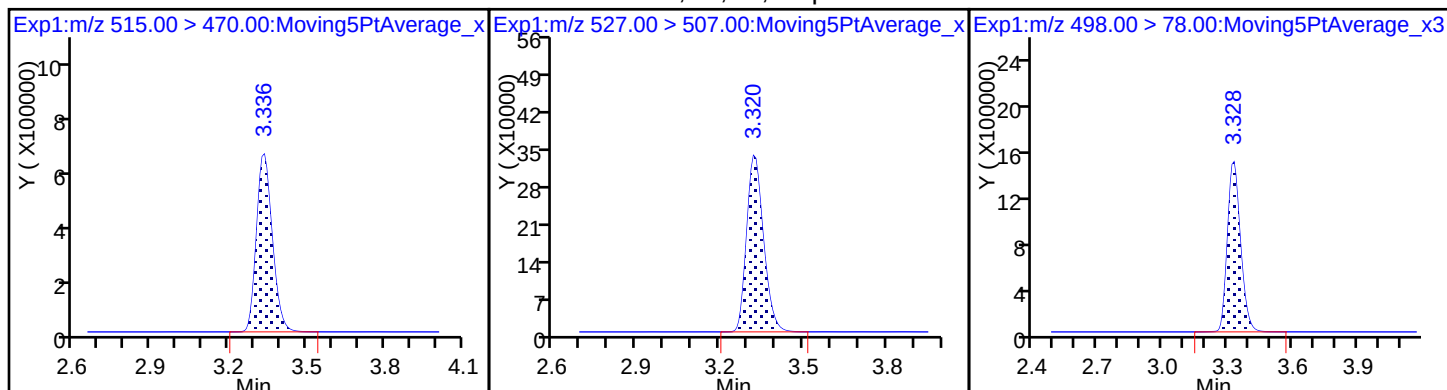
D 26 M2-8:2FTS

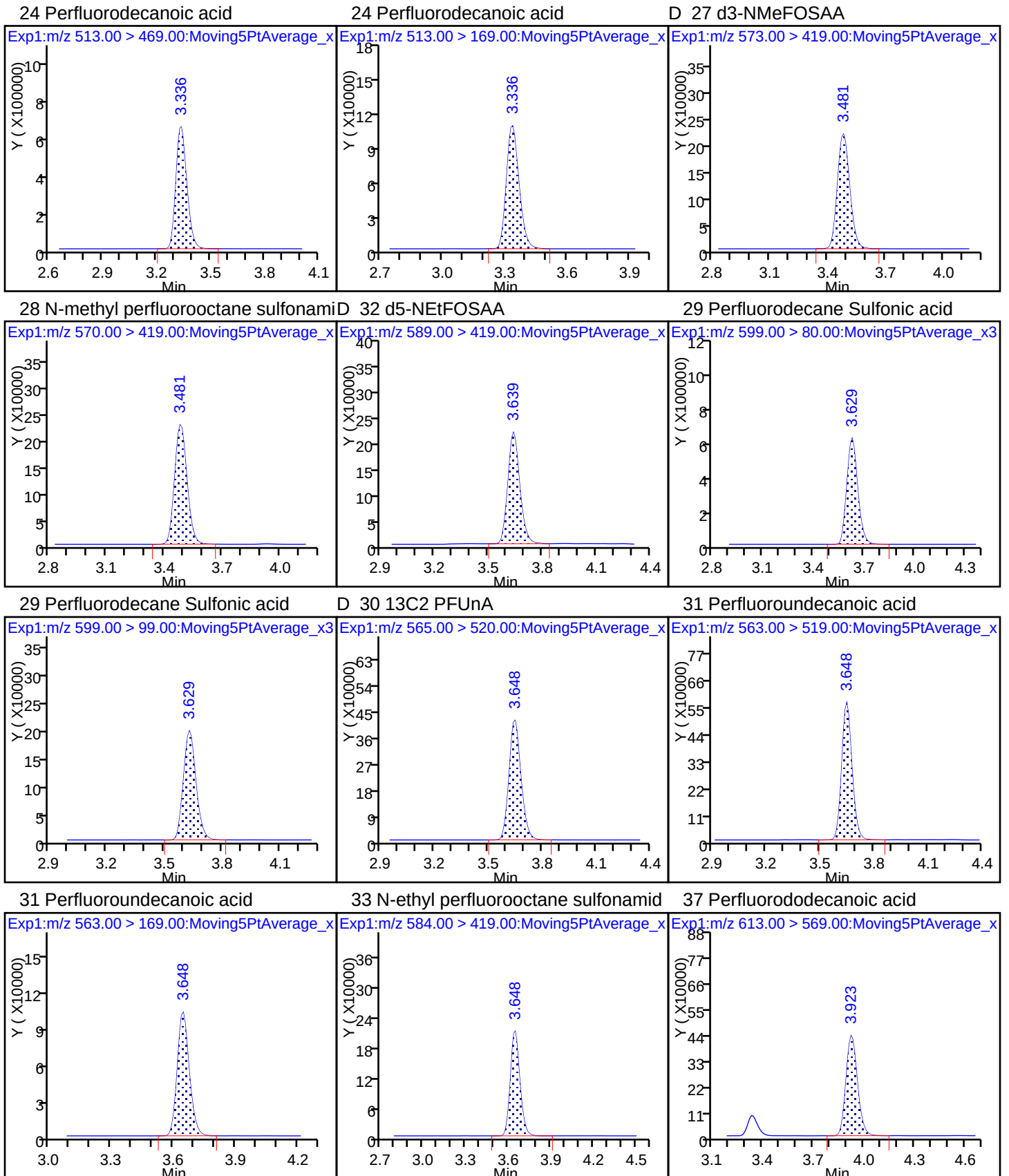


D 23 13C2 PFDA

25 Sodium 1H,1H,2H,2H-perfluorodecan

22 Perfluorooctane Sulfonamide

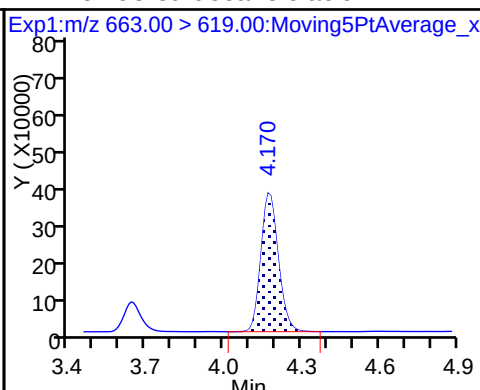
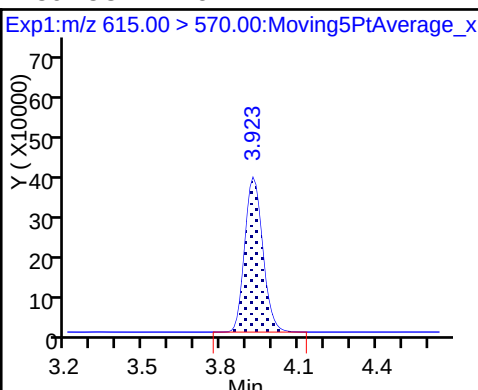
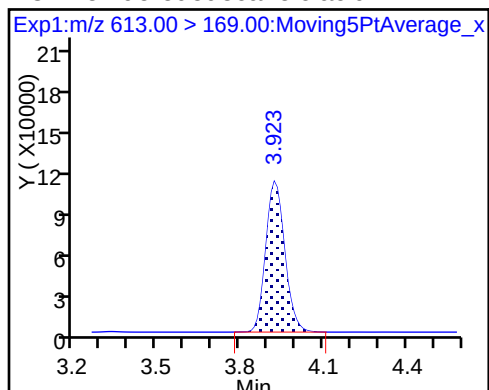




37 Perfluorododecanoic acid

D 36 13C2 PFDaA

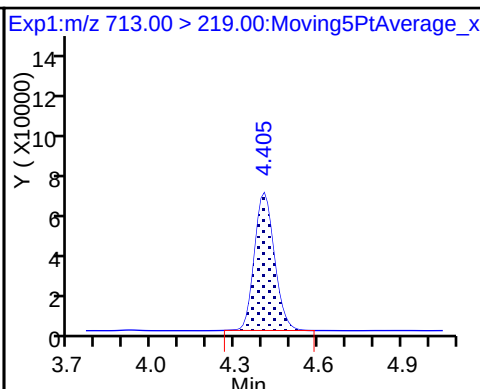
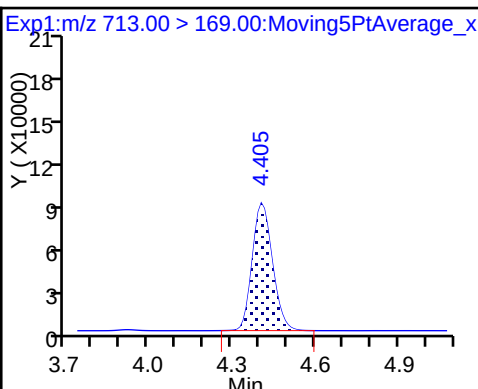
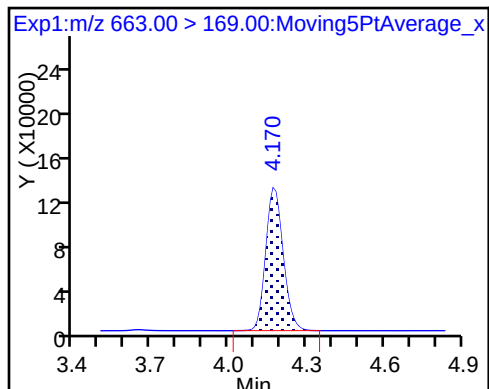
41 Perfluorotridecanoic acid



41 Perfluorotridecanoic acid

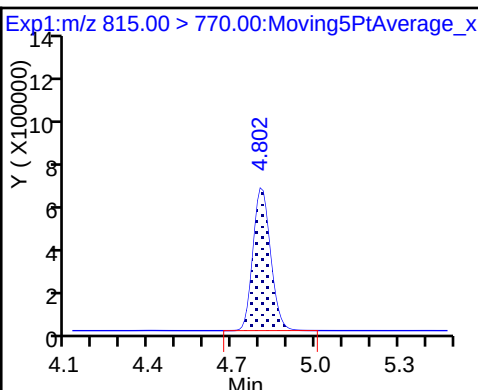
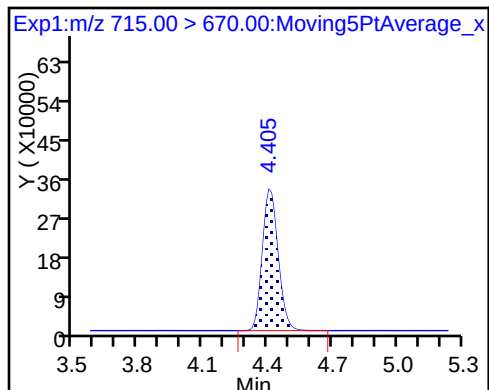
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCV 320-213304/14 Calibration Date: 03/16/2018 02:14

Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46

Lab File ID: 2018.03.15LLAAX_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9252	0.9004		0.973	1.00	-2.7	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.171	1.122		0.958	1.00	-4.2	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.37	78.88		0.913	0.884	3.3	30.0
4:2 FTS	AveID	16.40	11.58		0.659	0.934	-29.4	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.9472		0.939	1.00	-6.1	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.063	1.006		0.946	1.00	-5.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.123	0.9880		0.801	0.910	-12.0	30.0
6:2FTS	AveID	1.708	1.723		0.957	0.948	0.9	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.357	1.419		0.995	0.952	4.5	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.163	1.118		0.961	1.00	-3.9	30.0
Perfluorononanoic acid (PFNA)	AveID	1.003	0.9799		0.976	1.00	-2.4	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.050	1.074		0.949	0.928	2.3	30.0
8:2FTS	AveID	1.248	1.249		0.958	0.958	0.0	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9787	0.999		1.02	1.00	2.1	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.007	0.9899		0.983	1.00	-1.7	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.041	0.9906		0.951	1.00	-4.9	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6291	0.6883		1.05	0.964	9.4	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9706	0.8372		0.862	1.00	-13.8	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.087	0.9528		0.877	1.00	-12.3	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.019	1.067		1.05	1.00	4.8	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9789	1.055		1.08	1.00	7.7	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2548	0.2590		1.02	1.00	1.6	30.0
13C4 PFBA	Ave	1.425	1.263		2.22	2.50	-11.4	30.0
13C5 PFPeA	Ave	0.9553	0.8506		2.23	2.50	-11.0	30.0
13C3-PFBS	Ave	0.0249	0.0224		2.09	2.33	-10.1	30.0
13C2 PFHxA	Ave	1.041	0.9694		2.33	2.50	-6.8	30.0
13C4-PFHpA	Ave	0.9847	0.9567		2.43	2.50	-2.8	30.0
1802 PFHxS	Ave	1.457	1.364		2.21	2.37	-6.4	30.0
M2-6:2FTS	Ave	0.2623	0.2269		2.05	2.38	-13.5	30.0
13C4 PFOA	Ave	0.9491	0.9504		2.50	2.50	0.1	30.0
13C4 PFOS	Ave	1.001	0.8744		2.09	2.39	-12.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCV 320-213304/14 Calibration Date: 03/16/2018 02:14
 Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46
 Lab File ID: 2018.03.15LLAAX_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7389	0.7520		2.54	2.50	1.8	30.0
13C8 FOSA	Ave	1.459	1.355		2.32	2.50	-7.1	30.0
M2-8:2FTS	Ave	0.2622	0.2590		2.37	2.40	-1.2	30.0
13C2 PFDA	Ave	0.5974	0.6063		2.54	2.50	1.5	30.0
d3-NMeFOSAA	Ave	0.1948	0.2166		2.78	2.50	11.2	30.0
d5-NEtFOSAA	Ave	0.2113	0.2381		2.82	2.50	12.7	30.0
13C2 PFUnA	Ave	0.4427	0.4495		2.54	2.50	1.6	30.0
13C2 PFDoA	Ave	0.4498	0.4133		2.30	2.50	-8.1	30.0
13C2-PFTeDA	Ave	0.3976	0.3917		2.46	2.50	-1.5	30.0
13C2-PFHxDA	Ave	0.7636	0.5837		1.91	2.50	-23.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_035.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 16-Mar-2018 02:14:44 ALS Bottle#: 13 Worklist Smp#: 14
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 10:14:06 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK040

First Level Reviewer: hannigana

Date: 19-Mar-2018 10:11:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.432	1.432	0.0	1.000	2064331	0.9732		97.3	1074	
D 1 13C4 PFBA										
217.00 > 172.00	1.432	1.440	-0.008	0.548	5731919	2.22		88.6	106431	
D 3 13C5-PFPeA										
267.90 > 223.00	1.670	1.664	0.006	0.639	3861609	2.23		89.0	94463	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.670	1.670	0.0	1.000	1733723	0.9584		95.8	544	
D 47 13C3-PFBS										
301.90 > 83.00	1.696	1.691	0.005	0.649	94701	2.09		89.9	595	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.705	1.705	0.0	1.005	2840287	0.9130		103	5170	
298.90 > 99.00	1.696	1.705	-0.009	1.000	1154857		2.46(1.25-3.74)		4263	
D 60 M2-4:2FTS										
329.00 > 81.00	1.899	1.876	0.023	0.727	565057	NC			9108	
D 7 13C2 PFHxA										
315.00 > 270.00	1.930	1.904	0.026	0.739	4400693	2.33		93.2	116866	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.899	1.899	0.0	1.000	440520	0.6595		70.6	27773	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.930	1.930	0.0	1.000	1667313	0.9391		93.9	5557	
313.00 > 119.00	1.930	1.930	0.0	1.000	156054		10.68(5.03-15.10)		3180	
D 9 13C4-PFHpA										
367.00 > 322.00	2.245	2.215	0.030	0.860	4342985	2.43		97.2	104581	
D 11 18O2 PFHxS										
403.00 > 84.00	2.258	2.226	0.032	0.865	5856707	2.21		93.6	61313	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.245	2.245	0.0	1.000	1747134	0.9459		94.6	3293	
363.00 > 169.00	2.245	2.245	0.0	1.000	681761		2.56(1.13-3.40)		12762	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.258	2.258	0.0	1.000	2226499	0.8007		88.0	11414	
399.00 > 99.00	2.258	2.258	0.0	1.000	756161		2.94(1.50-4.49)		2654	
D 12 M2-6:2FTS										
429.00 > 81.00	2.582	2.562	0.020	0.988	978427	2.05		86.5	24455	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.589	2.589	0.0	1.003	673056	0.9567		101	19054	
D 14 13C4 PFOA										
417.00 > 372.00	2.612	2.586	0.026	1.000	4314305	2.50		100	75608	
* 62 13C2-PFOA										
415.00 > 370.00	2.612	2.612	0.0		4539638	2.50			73631	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.612	2.612	0.0	1.000	1928712	0.9611		96.1	1201	
413.00 > 169.00	2.612	2.612	0.0	1.000	1004073		1.92(0.84-2.52)		3271	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.612	2.612	0.0	1.000	2144746	1.00		105	28629	
449.00 > 99.00	2.612	2.612	0.0	1.000	571012		3.76(1.94-5.82)		10004	
D 19 13C5 PFNA										
468.00 > 423.00	2.989	2.960	0.029	1.144	3413759	2.54		102	62889	
D 18 13C4 PFOS										
503.00 > 80.00	2.989	2.960	0.029	1.144	3794866	2.09		87.4	49828	
20 Perfluorononanoic acid										
463.00 > 419.00	2.989	2.989	0.0	1.000	1338008	0.9765		97.6	2021	
463.00 > 169.00	2.989	2.989	0.0	1.000	331519		4.04(1.90-5.69)		10724	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.989	2.989	0.0	1.000	1582316	0.9492		102	12700	
499.00 > 99.00	2.989	2.989	0.0	1.000	347426		4.55(2.31-6.93)		5161	
D 21 13C8 FOSA										
506.00 > 78.00	3.338	3.297	0.041	1.278	6151627	2.32		92.9	47125	
D 26 M2-8:2FTS										
529.00 > 81.00	3.338	3.305	0.033	1.278	1126320	2.37		98.8	23947	
D 23 13C2 PFDA										
515.00 > 470.00	3.347	3.312	0.035	1.281	2752571	2.54		101	31878	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.338	3.338	0.0	1.000	562750	0.9585		100	14579	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.338	3.338	0.0	1.000	2459265	1.02		102	41617	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.347	3.347	0.0	1.000	1089887	0.9830		98.3	5203	
513.00 > 169.00	3.347	3.347	0.0	1.000	190830		5.71(2.36-7.09)		8873	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.502	3.471	0.031	1.341	983133	2.78		111	24489	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.510	3.510	0.0	1.003	389551	0.9513		95.1	4364	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.661	3.629	0.032	1.402	1080754	2.82		113	1749	
D 30 13C2 PFUnA										
565.00 > 520.00	3.671	3.638	0.033	1.405	2040742	2.54		102	63811	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.652	3.652	0.0	1.000	1053546	1.05		109	29296	
599.00 > 99.00	3.652	3.652	0.0	1.000	355456		2.96(1.39-4.16)		7193	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.671	3.671	0.0	1.000	777792	0.8768		87.7	2409	
563.00 > 169.00	3.671	3.671	0.0	1.000	165542		4.70(2.12-6.36)		14049	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.671	3.671	0.0	1.003	361902	0.8625		86.2	6013	
D 36 13C2 PFDoA										
615.00 > 570.00	3.938	3.932	0.006	1.508	1876347	2.30		91.9	8600	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.938	3.938	0.0	1.000	801129	1.05		105	115	
613.00 > 169.00	3.938	3.938	0.0	1.000	195497		4.10(2.13-6.40)		4108	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.195	4.195	0.0	1.000	791513	1.08		108	116	
663.00 > 169.00	4.195	4.195	0.0	1.000	248088		3.19(1.25-3.76)		2773	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.433	4.433	0.0	1.000	184236	1.02		102	2071	
713.00 > 219.00	4.433	4.433	0.0	1.000	132446		1.39(0.71-2.13)		1426	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.433	4.437	-0.004	1.697	1778362	2.46		98.5	13950	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.844	4.844	0.0	1.002	977234	NC			69.3	
813.00 > 169.00	4.844	4.844	0.0	1.002	162656		6.01(2.86-8.58)		1541	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.834	4.848	-0.014	1.851	2649817	1.91		76.4	8093	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.186	5.186	0.0	1.000	1017333	NC			148	
913.00 > 169.00	5.186	5.186	0.0	1.000	132512		7.68(3.83-11.48)		1424	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_035.d

Injection Date: 16-Mar-2018 02:14:44

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 14

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

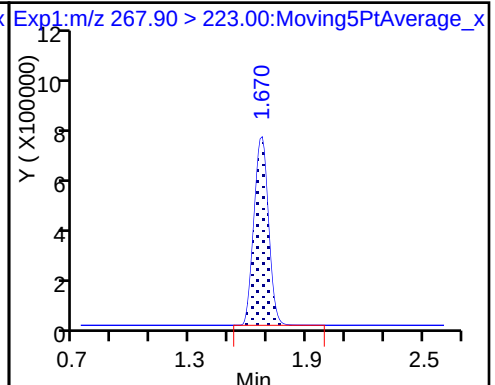
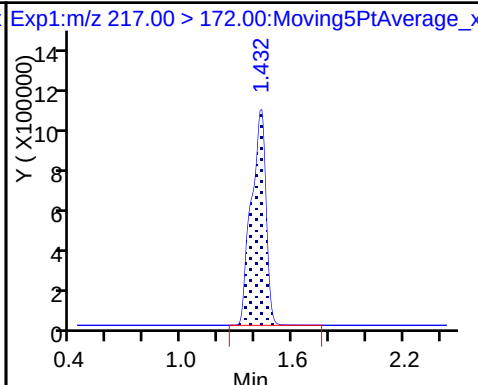
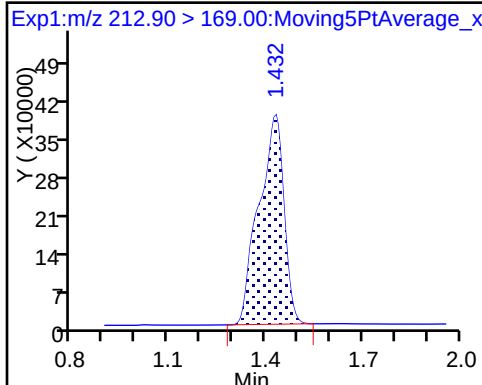
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

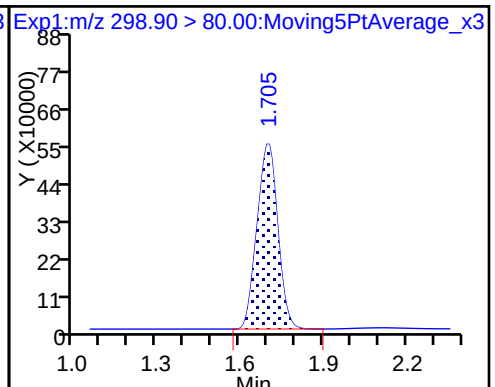
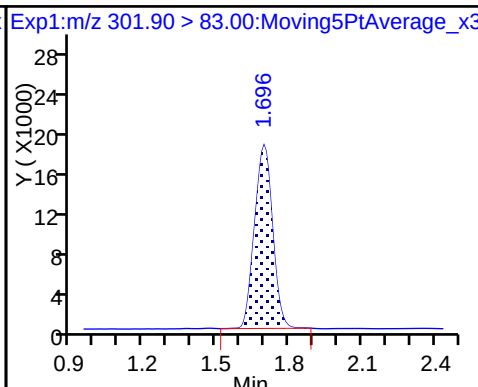
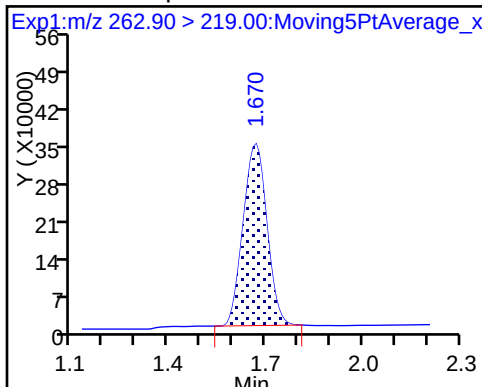
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

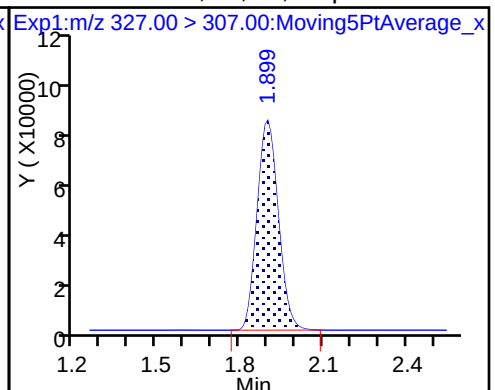
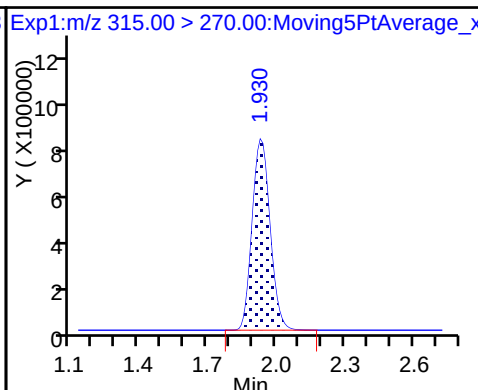
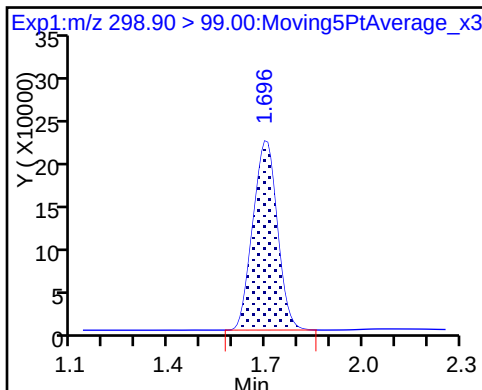
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

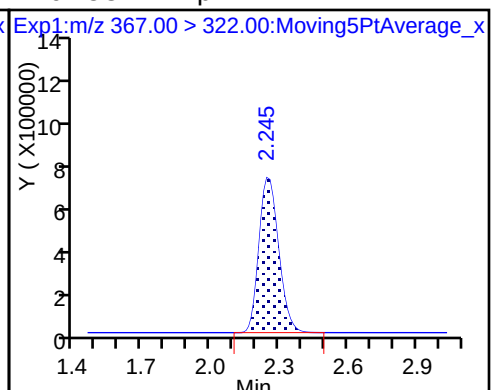
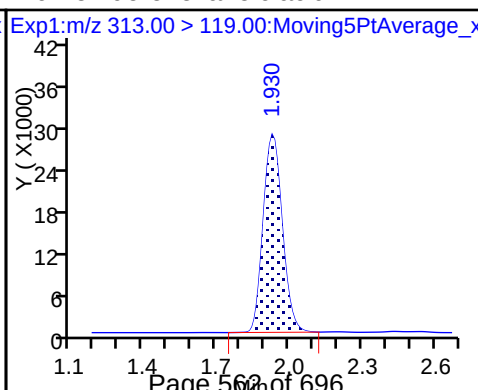
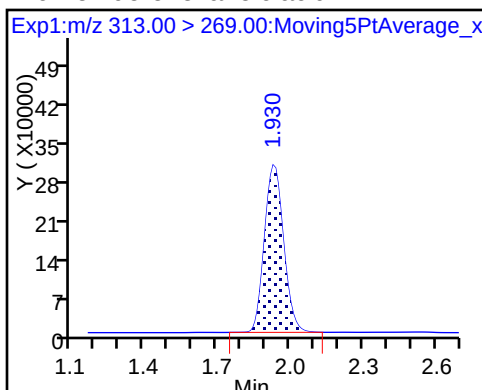
61 Sodium 1H,1H,2H,2H-perfluorohexane



6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

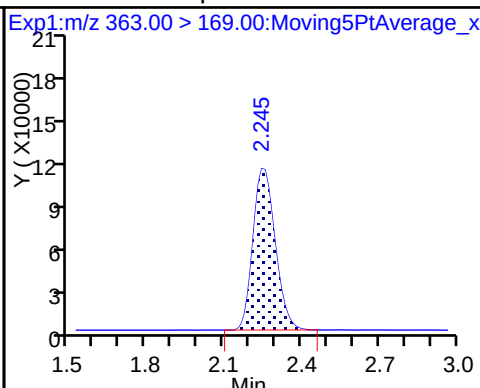
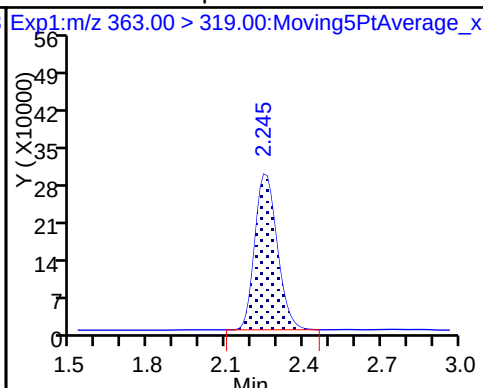
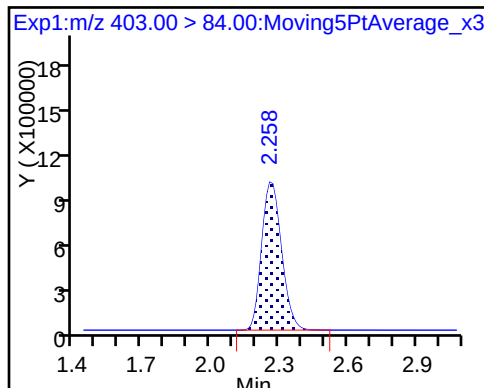
D 9 13C4-PFHpA



D 11 18O2 PFHxS

10 Perfluoroheptanoic acid

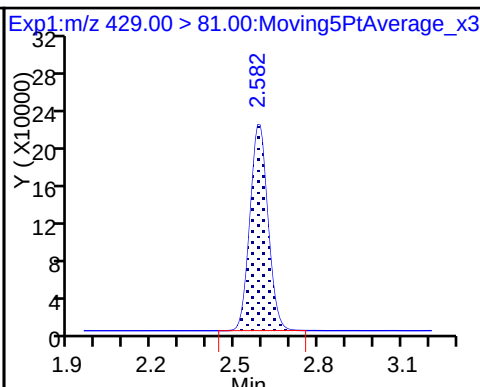
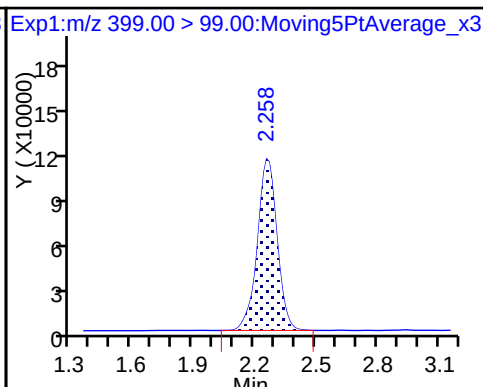
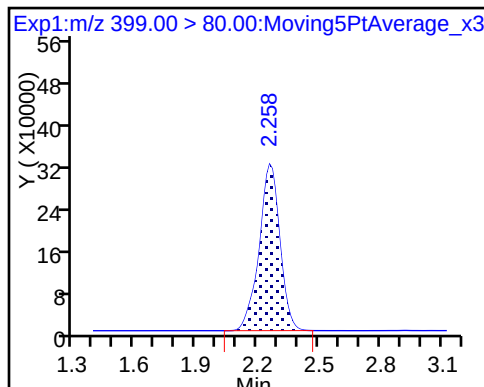
10 Perfluoroheptanoic acid



8 Perfluorohexanesulfonic acid

8 Perfluorohexanesulfonic acid

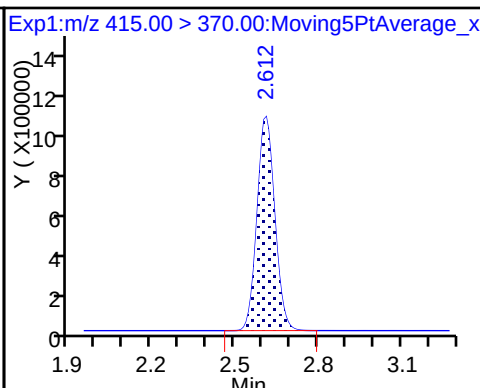
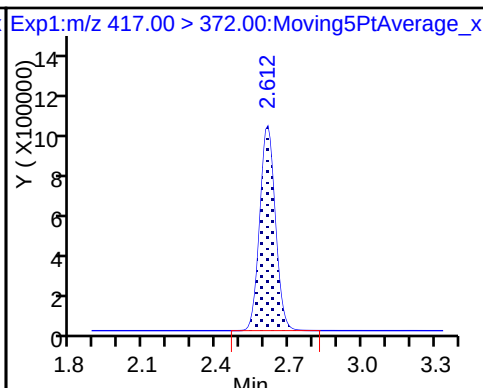
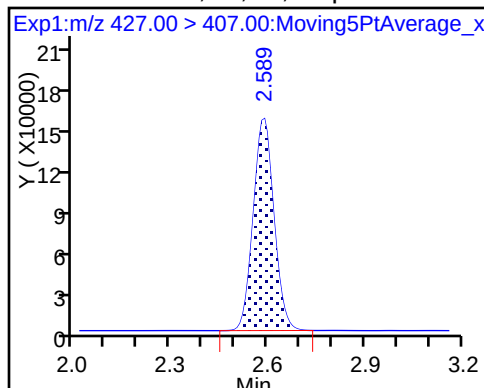
D 12 M2-6:2F7S



13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

De 14 13C4 PFOA

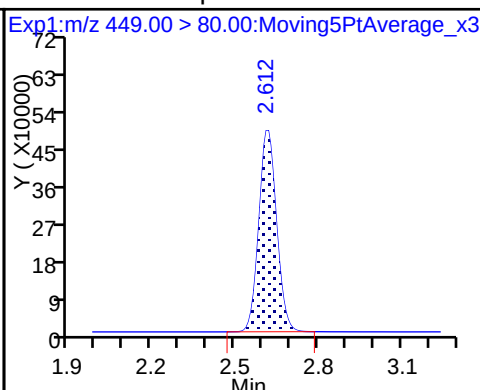
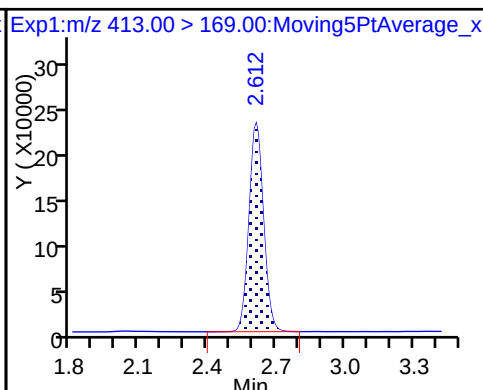
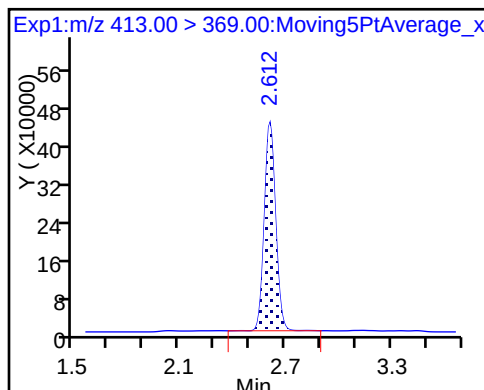
* 62 13C2-PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

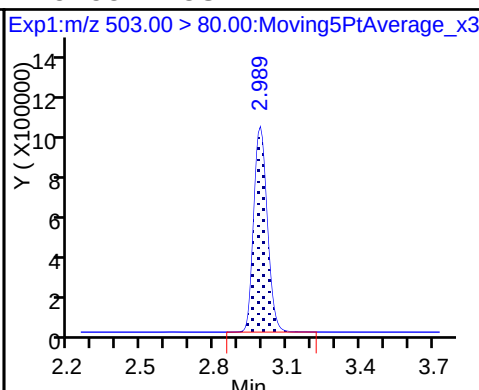
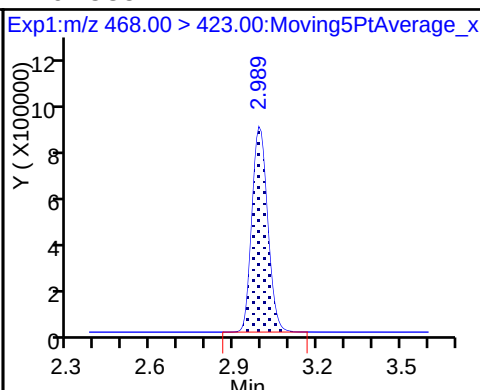
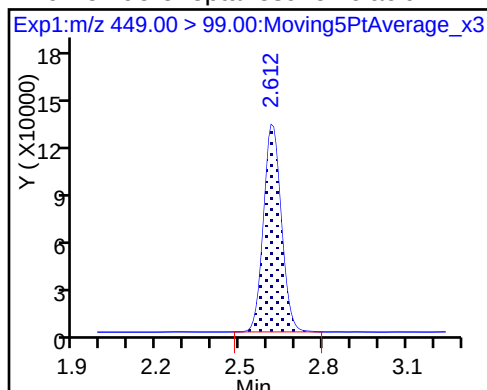
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 19 13C5 PFNA

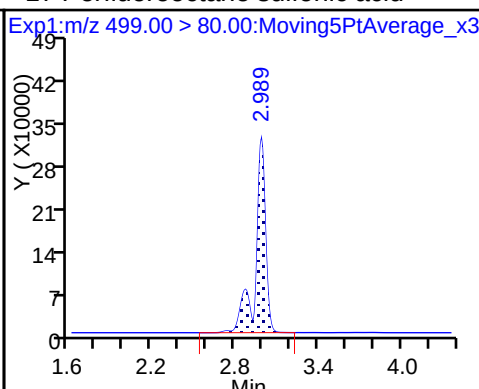
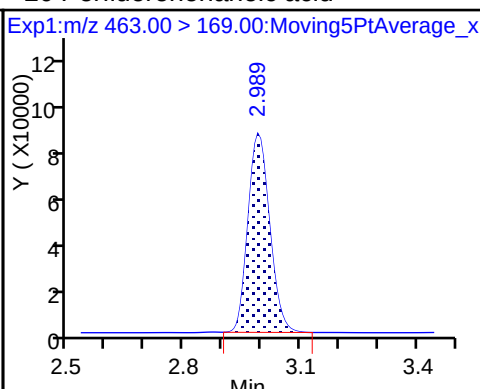
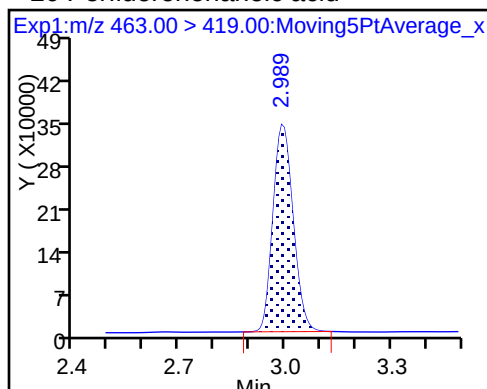
D 18 13C4 PFOS



20 Perfluorononanoic acid

20 Perfluorononanoic acid

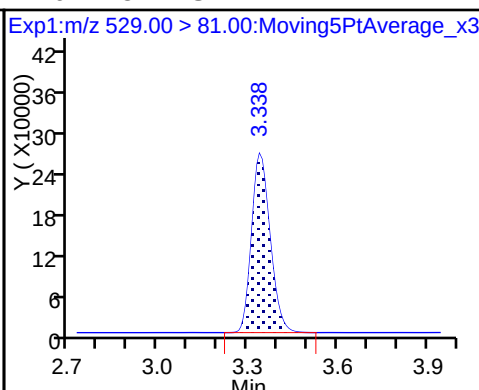
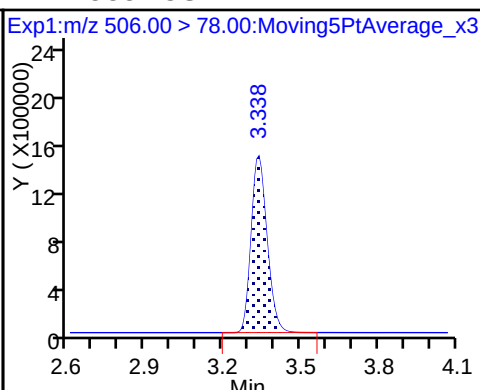
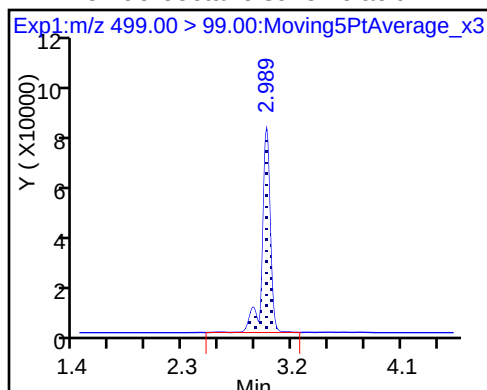
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 21 13C8 FOSA

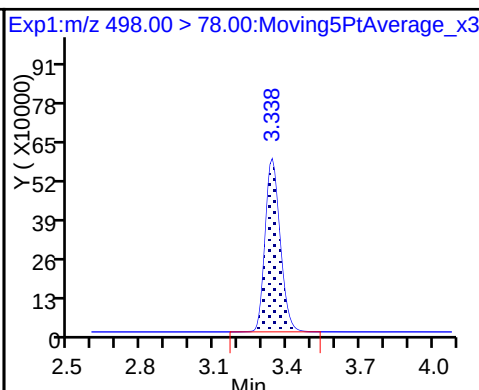
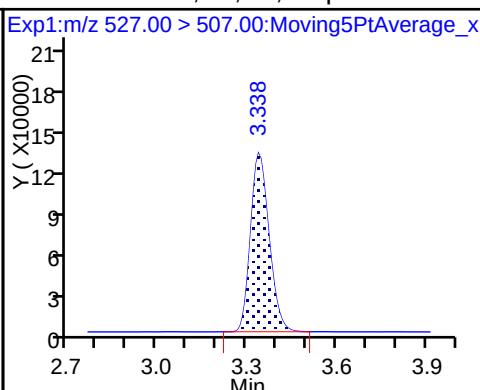
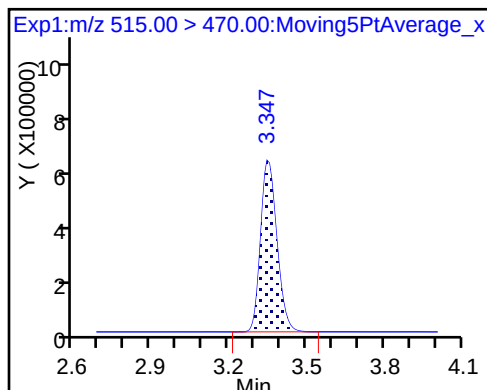
D 26 M2-8:2FTS

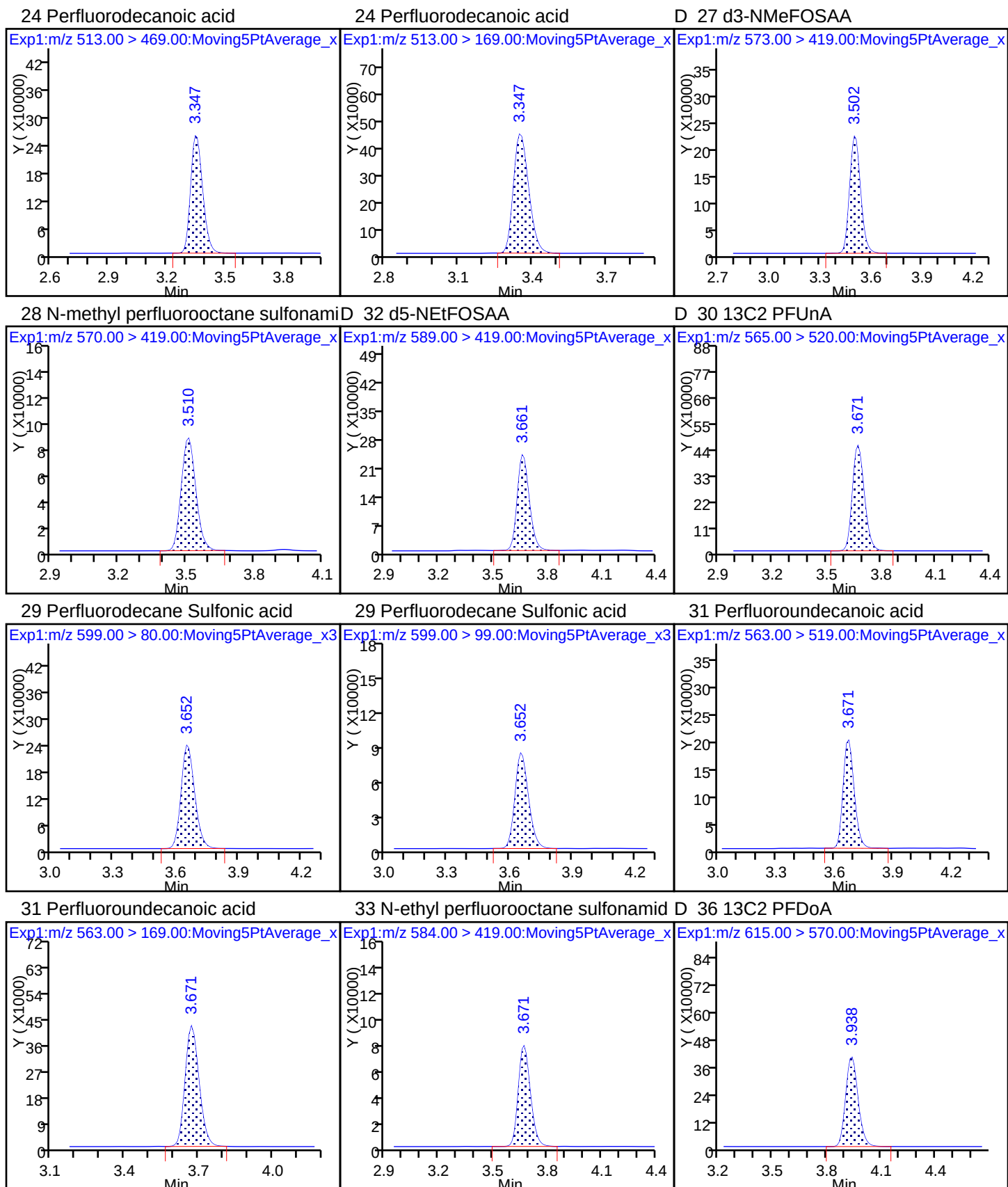


D 23 13C2 PFDA

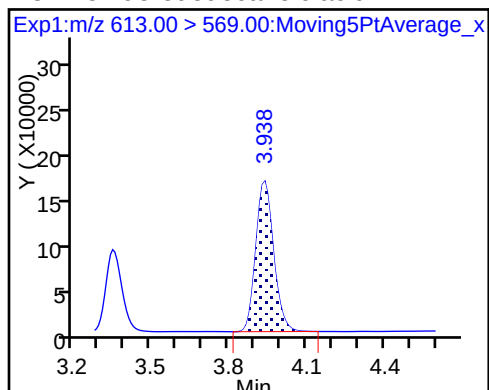
25 Sodium 1H,1H,2H,2H-perfluorodecan-2-yl

22 Perfluorooctane Sulfonamide

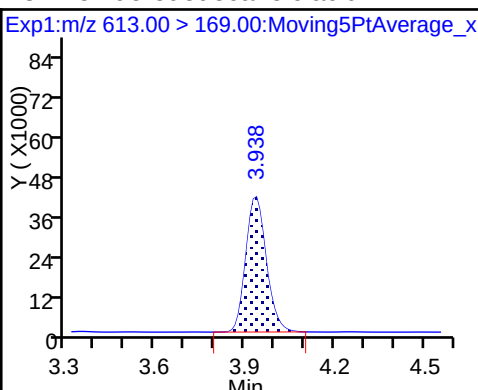




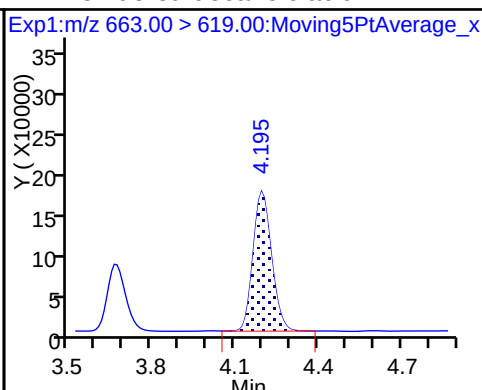
37 Perfluorododecanoic acid



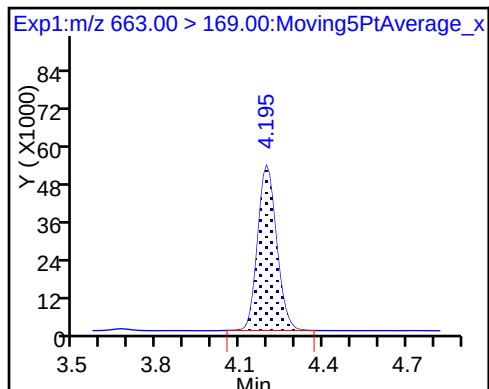
37 Perfluorododecanoic acid



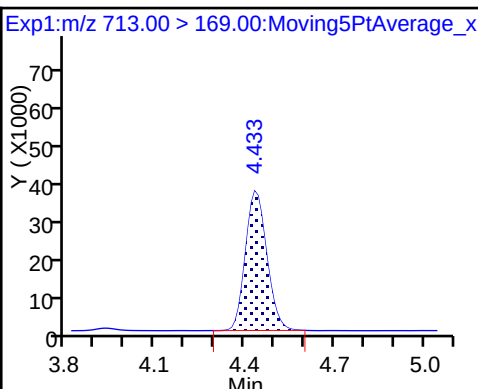
41 Perfluorotridecanoic acid



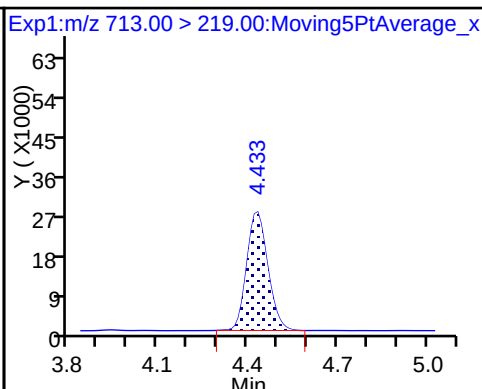
41 Perfluorotridecanoic acid



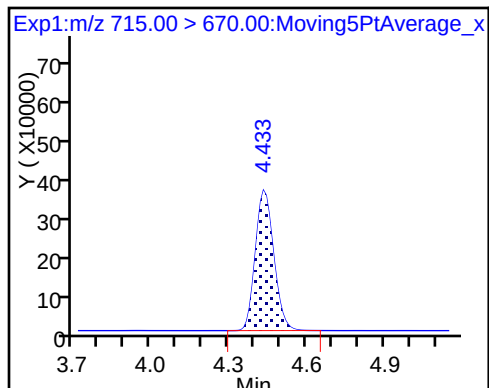
42 Perfluorotetradecanoic acid



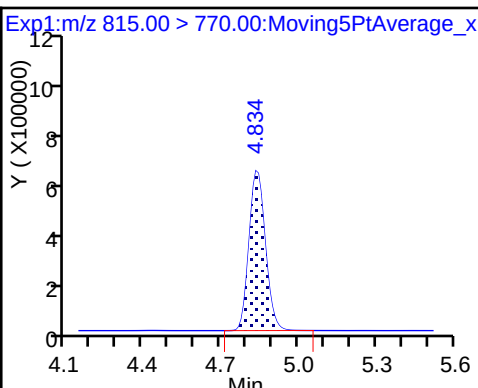
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: ICV 320-213555/10 Calibration Date: 03/17/2018 00:12

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.16ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9442		2.55	2.50	1.8	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.141		2.44	2.50	-2.3	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	80.09		2.29	2.21	3.5	30.0
4:2 FTS	AveID	16.07	16.34		2.38	2.34	1.7	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.9865		2.44	2.50	-2.2	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.084		2.61	2.50	4.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.081		2.21	2.28	-3.1	30.0
6:2FTS	AveID	1.665	1.612		2.30	2.38	-3.2	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.132		2.53	2.50	1.4	30.0
Perfluorooctanesulfonic Acid (PFHpS)	AveID	1.314	1.364		2.46	2.38	3.8	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	1.055		2.59	2.50	3.4	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.106		2.36	2.31	2.2	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9717	1.048		2.70	2.50	7.9	30.0
8:2FTS	AveID	1.257	1.264		2.41	2.40	0.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	1.023		2.69	2.50	7.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.082		2.60	2.50	3.9	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6837		2.58	2.41	7.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	1.001		2.56	2.50	2.2	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7586		2.26	2.50	-9.5	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.089		2.66	2.50	6.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	1.066		2.59	2.50	3.6	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2637		2.39	2.50	-4.4	30.0
Perfluorononanesulfonic acid	None				10.0	2.40	-100.0*	30.0
Perfluoropentanesulfonic acid	None				10.0	2.35	-100.0*	30.0
13C4 PFBA	Ave	1.277	1.322		2.59	2.50	3.5	30.0
13C5 PFPeA	Ave	0.9006	0.9221		2.56	2.50	2.4	30.0
13C3-PFBS	Ave	0.0222	0.0230		2.40	2.33	3.3	30.0
13C2 PFHxA	Ave	1.004	1.051		2.62	2.50	4.7	30.0
13C4-PFHpA	Ave	0.9767	0.9820		2.51	2.50	0.5	30.0
18O2 PFHxS	Ave	1.303	1.344		2.44	2.37	3.2	30.0
M2-6:2FTS	Ave	0.2501	0.2591		2.46	2.38	3.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: ICV 320-213555/10 Calibration Date: 03/17/2018 00:12
 Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56
 Lab File ID: 2018.03.16ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9431	0.9566		2.54	2.50	1.4	30.0
13C4 PFOS	Ave	0.9113	0.9222		2.42	2.39	1.2	30.0
13C5 PFNA	Ave	0.7545	0.7649		2.53	2.50	1.4	30.0
13C8 FOSA	Ave	1.319	1.362		2.58	2.50	3.2	30.0
M2-8:2FTS	Ave	0.2350	0.2426		2.47	2.40	3.3	30.0
13C2 PFDA	Ave	0.6303	0.6356		2.52	2.50	0.8	30.0
d3-NMeFOSAA	Ave	0.2081	0.2105		2.53	2.50	1.1	30.0
13C2 PFUnA	Ave	0.4935	0.4851		2.46	2.50	-1.7	30.0
d5-NEtFOSAA	Ave	0.1990	0.2082		2.62	2.50	4.6	30.0
13C2 PFDoA	Ave	0.4680	0.4577		2.45	2.50	-2.2	30.0
13C2-PFTeDA	Ave	0.4272	0.4340		2.54	2.50	1.6	30.0
13C2-PFHxDA	Ave	0.6248	0.6152		2.46	2.50	-1.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_011.d
 Lims ID: ICV Full
 Client ID:
 Sample Type: ICV
 Inject. Date: 17-Mar-2018 00:12:15 ALS Bottle#: 18 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist:
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 18-Mar-2018 12:48:58 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK059

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:44:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.434	1.440	-0.006	1.000	5401885	2.55			3628	
D 1 13C4 PFBA										
217.00 > 172.00	1.434	1.440	-0.006	0.537	5721403	2.59		104	100585	
D 3 13C5-PFPeA										
267.90 > 223.00	1.691	1.696	-0.005	0.633	3991424	2.56		102	129117	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.691	1.698	-0.007	1.000	4556129	2.44			1758	
D 47 13C3-PFBS										
301.90 > 83.00	1.726	1.730	-0.004	0.646	92394	2.40		103	522	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.726	1.733	-0.007	1.000	7041872	2.29			3158	
298.90 > 99.00	1.726	1.733	-0.007	1.000	2973557		2.37(1.25-3.74)		3032	
D 60 M2-4:2FTS										
329.00 > 81.00	1.935	1.942	-0.007	0.724	647518	NC			7120	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.935	1.944	-0.009	1.000	1517989	2.38			70600	
D 7 13C2 PFHxA										
315.00 > 270.00	1.976	1.979	-0.003	0.740	4550837	2.62		105	138888	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.976	1.982	-0.006	1.000	4489252	2.44			14788	
313.00 > 119.00	1.976	1.982	-0.006	1.000	404861		11.09(5.03-15.10)		9174	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.311	0.004	1.000	4606134	2.61			9749	
363.00 > 169.00	2.315	2.311	0.004	1.000	1700073		2.71(1.13-3.40)		31377	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.867	4250721	2.51		101	79088	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	5734629	2.21			691	
399.00 > 99.00	2.328	2.326	0.002	1.000	1813461		3.16(1.50-4.49)		679	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.871	5505090	2.44		103	71055	
D 12 M2-6:2FTS										
429.00 > 81.00	2.647	2.651	-0.004	0.991	1065489	2.46		104	27640	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.647	2.652	-0.005	1.000	1717537	2.30			57256	
* 62 13C2-PFOA										
415.00 > 370.00	2.671	2.678	-0.007		4328656	2.50			72093	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.671	2.678	-0.007	1.000	4685701	2.53			2031	
413.00 > 169.00	2.671	2.678	-0.007	1.000	2533012		1.85(0.84-2.52)		9849	
D 14 13C4 PFOA										
417.00 > 372.00	2.671	2.678	-0.007	1.000	4140983	2.54		101	80592	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.679	2.684	-0.005	1.000	5171675	2.46			58106	
449.00 > 99.00	2.679	2.684	-0.005	1.000	1381220		3.74(1.94-5.82)		27188	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.044	3.050	-0.006	1.000	4087568	2.36			13209	
499.00 > 99.00	3.044	3.050	-0.006	1.000	930895		4.39(2.31-6.93)		7381	
D 18 13C4 PFOS										
503.00 > 80.00	3.044	3.050	-0.006	1.140	3816155	2.42		101	27105	
20 Perfluorononanoic acid										
463.00 > 419.00	3.044	3.052	-0.008	1.000	3491934	2.59			8077	
463.00 > 169.00	3.044	3.052	-0.008	1.000	854685		4.09(1.90-5.69)		23856	
D 19 13C5 PFNA										
468.00 > 423.00	3.044	3.052	-0.008	1.140	3310919	2.53		101	82406	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.379	3.388	-0.009	1.000	6180644	2.70			60921	
D 21 13C8 FOSA										
506.00 > 78.00	3.379	3.388	-0.009	1.265	5896208	2.58		103	64390	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.397	3.406	-0.009	1.000	1274172	2.41			47471	
D 26 M2-8:2FTS										
529.00 > 81.00	3.397	3.406	-0.009	1.272	1006077	2.47		103	28136	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.415	3.416	-0.001	1.003	2813387	2.69			14655	
513.00 > 169.00	3.406	3.416	-0.010	1.000	488219		5.76(2.36-7.09)		21628	
D 23 13C2 PFDA										
515.00 > 470.00	3.406	3.416	-0.010	1.275	2751448	2.52		101	40710	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.560	3.570	-0.010	1.333	911160	2.53		101	24502	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.569	3.571	-0.002	1.002	986114	2.60			9760	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.727	3.729	-0.002	1.000	2633762	2.58			55447	
599.00 > 99.00	3.727	3.729	-0.002	1.000	848075		3.11(1.39-4.16)		17795	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.738	3.740	-0.002	1.399	901386	2.62		105	1738	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.738	3.746	-0.008	1.000	902302	2.56			18632	
D 30 13C2 PFUnA										
565.00 > 520.00	3.738	3.747	-0.009	1.399	2099983	2.46		98.3	54166	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.738	3.750	-0.012	1.000	1592969	2.26			4442	
563.00 > 169.00	3.748	3.750	-0.002	1.003	444020		3.59(2.12-6.36)		52364	
D 36 13C2 PFDoA										
615.00 > 570.00	4.035	4.041	-0.006	1.511	1981289	2.45		97.8	11104	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.035	4.042	-0.007	1.000	2158005	2.66			385	
613.00 > 169.00	4.035	4.042	-0.007	1.000	519175		4.16(2.13-6.40)		15351	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.298	4.304	-0.006	1.000	2112495	2.59			427	
663.00 > 169.00	4.298	4.304	-0.006	1.000	714785		2.96(1.25-3.76)		8933	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.543	4.545	-0.002	1.701	1878436	2.54		102	15695	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.543	4.545	-0.002	1.000	495306	2.39			6051	
713.00 > 219.00	4.533	4.545	-0.012	0.998	349581		1.42(0.71-2.13)		4317	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.955	4.956	-0.001	1.855	2662998	2.46		98.5	9883	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.955	4.960	-0.005	1.000	2429227	NC			209	
813.00 > 169.00	4.955	4.960	-0.005	1.000	445490		5.45(2.86-8.58)		4231	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.315	5.320	-0.005	1.000	2745943	NC			471	
913.00 > 169.00	5.315	5.320	-0.005	1.000	337941		8.13(3.83-11.48)		3421	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFCIC_FULL_00011

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_011.d

Injection Date: 17-Mar-2018 00:12:15

Instrument ID: A8_N

Lims ID: ICV Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 18

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

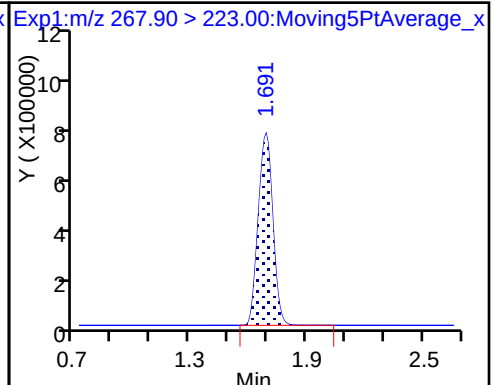
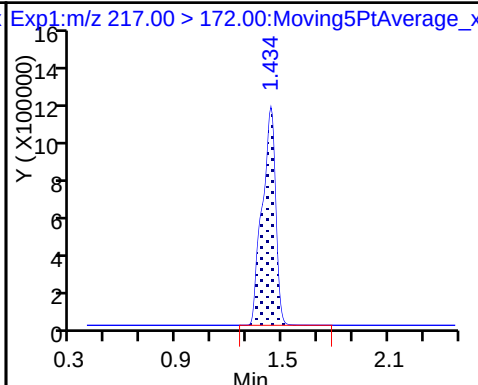
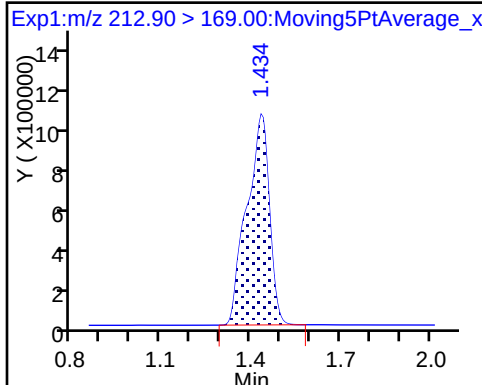
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

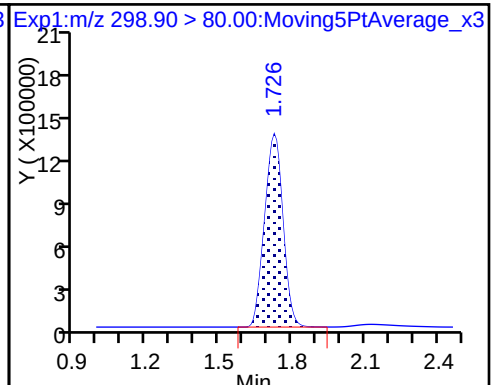
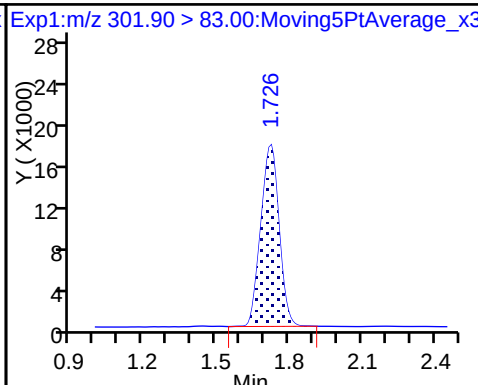
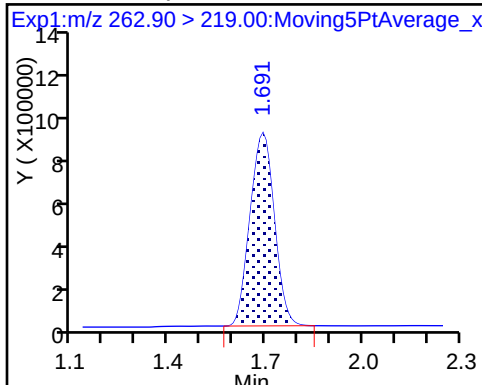
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

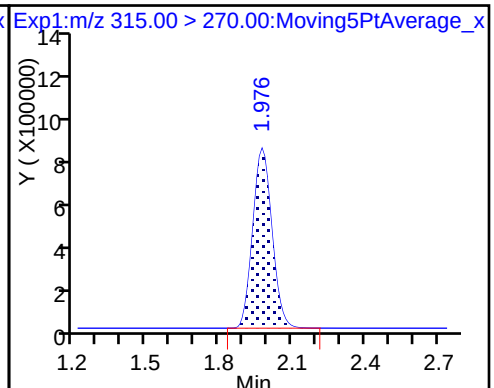
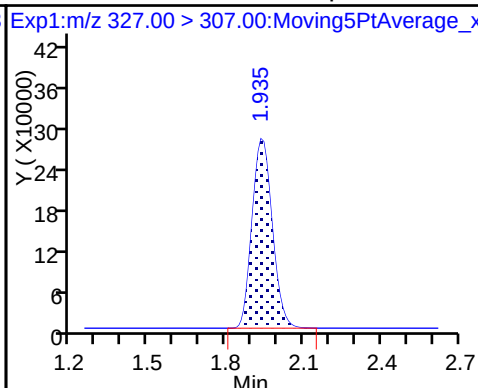
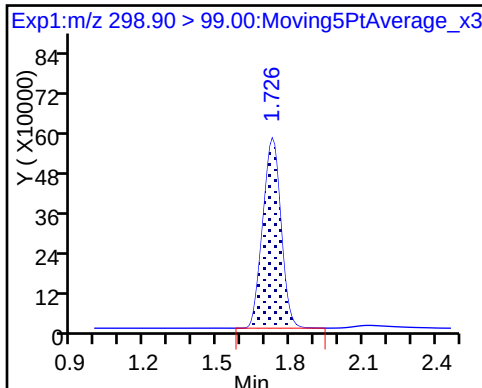
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

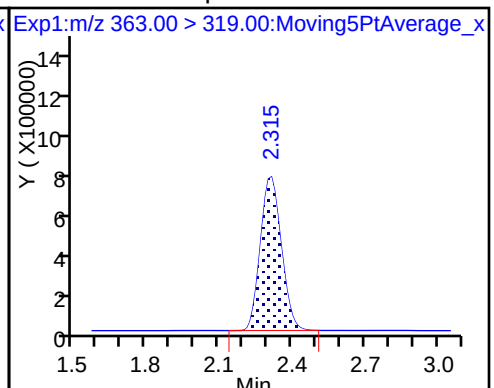
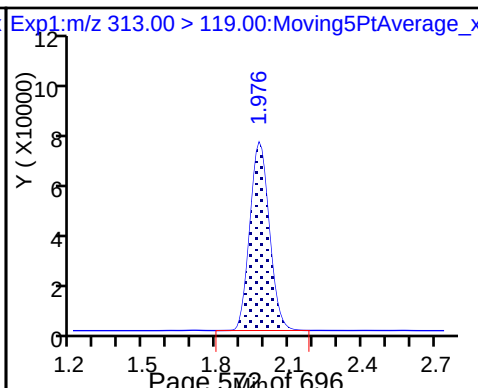
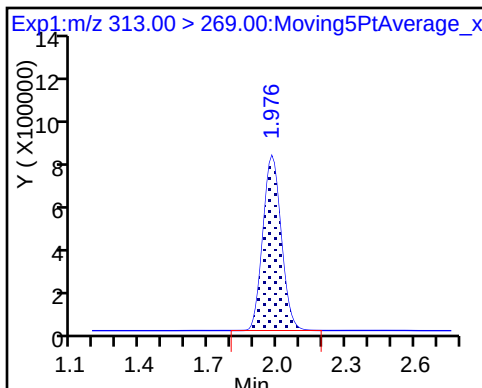
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

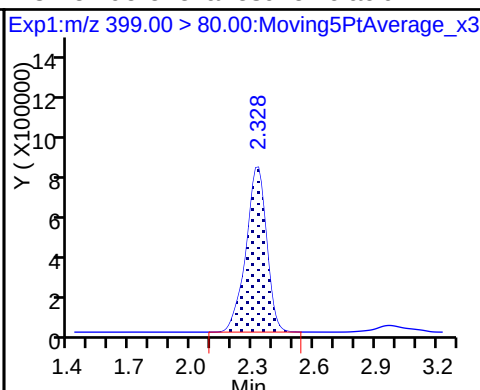
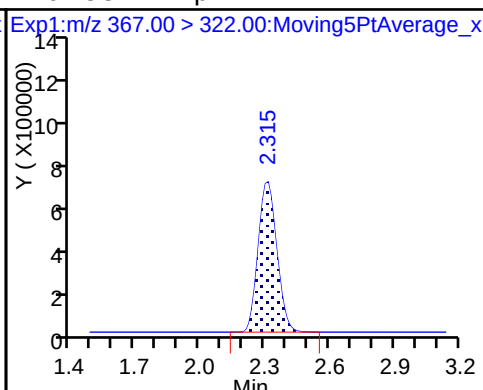
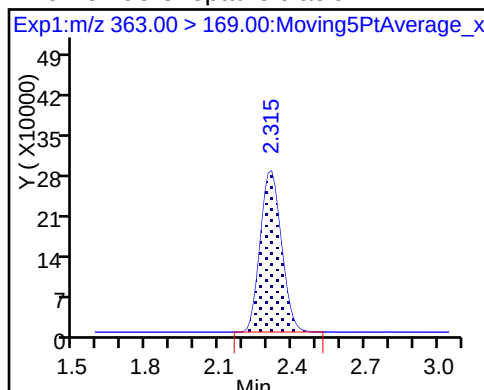
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

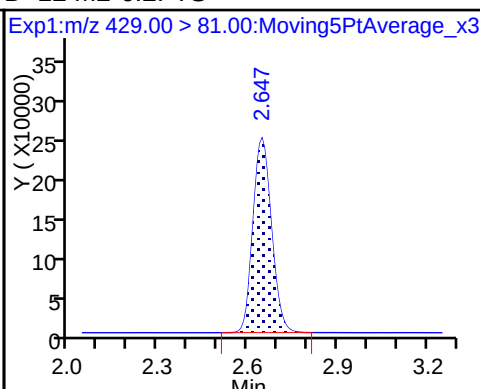
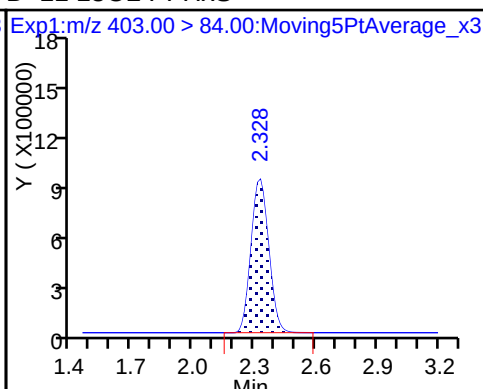
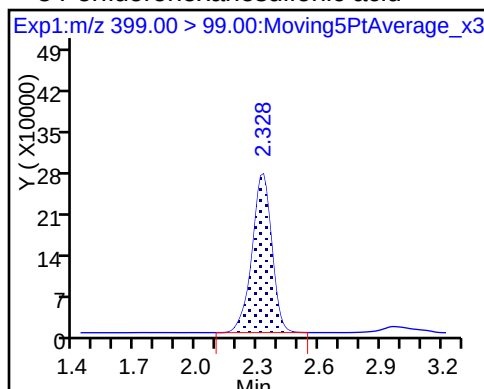
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

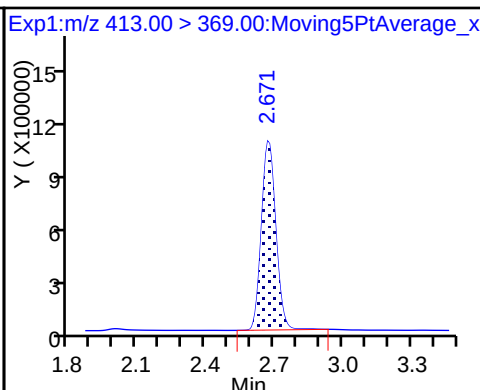
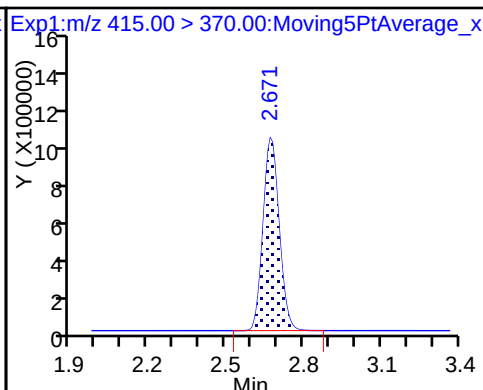
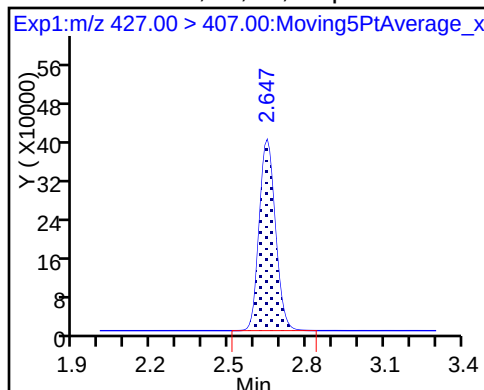
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 13C2-PFOA

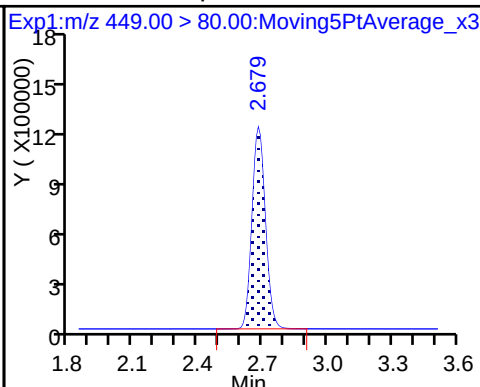
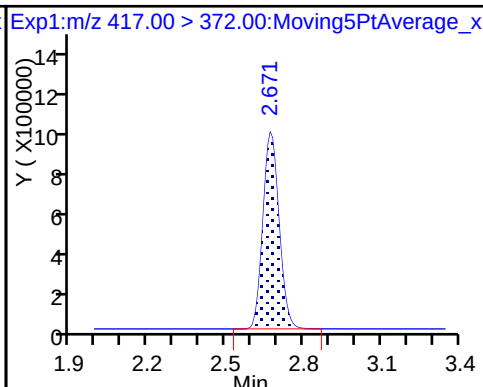
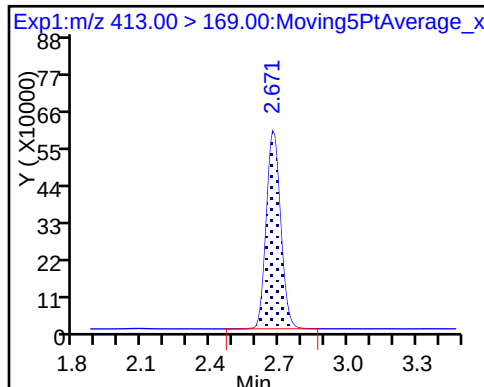
15 Perfluorooctanoic acid



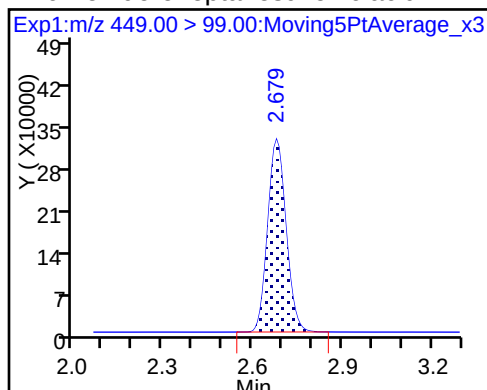
15 Perfluorooctanoic acid

D 14 13C4 PFOA

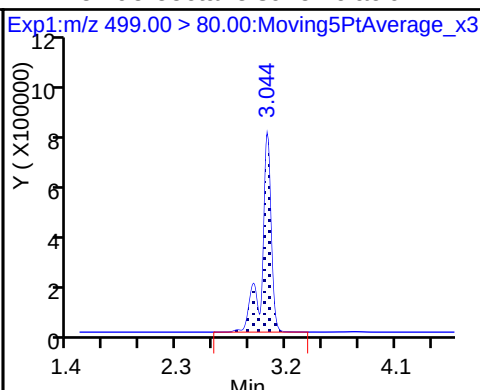
16 Perfluoroheptanesulfonic acid



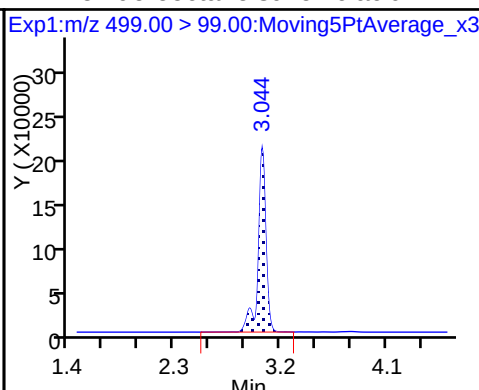
16 Perfluoroheptanesulfonic acid



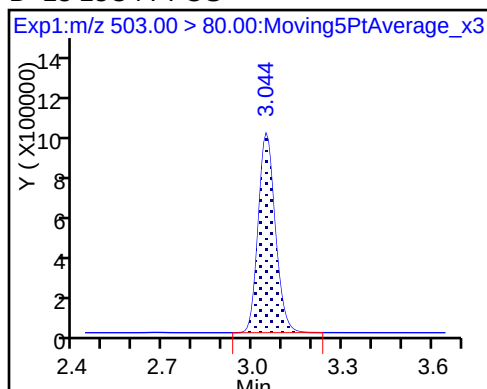
17 Perfluorooctane sulfonic acid



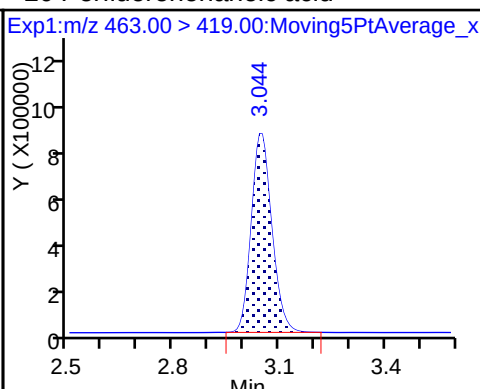
17 Perfluorooctane sulfonic acid



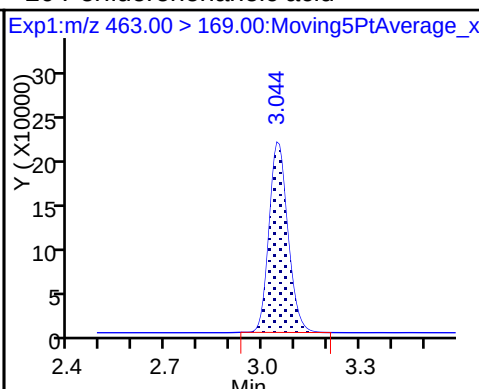
D 18 13C4 PFOS



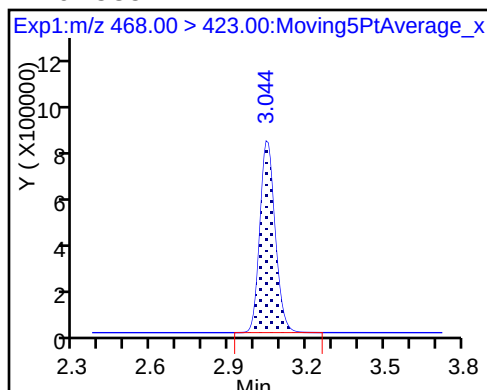
20 Perfluorononanoic acid



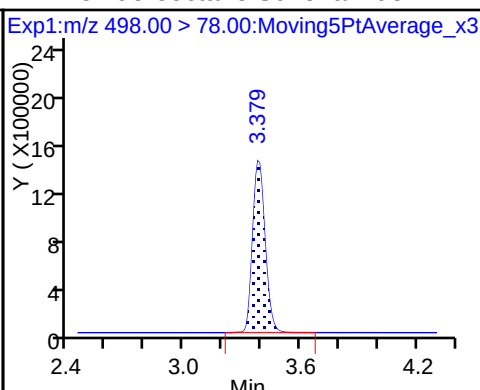
20 Perfluorononanoic acid



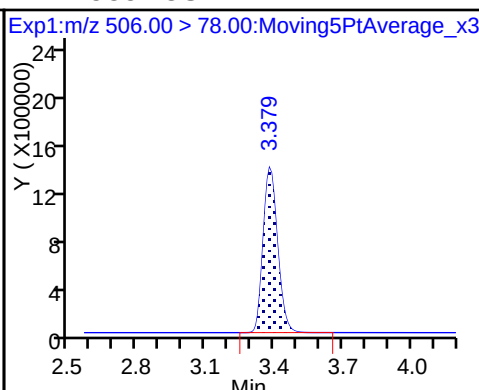
D 19 13C5 PFNA



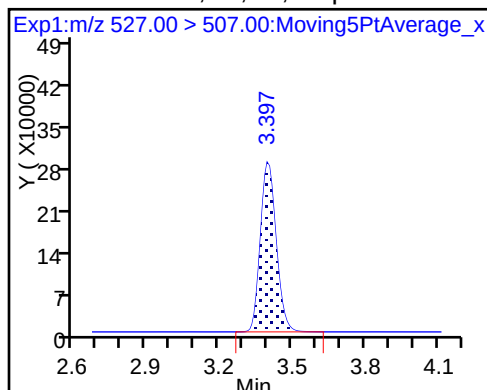
22 Perfluorooctane Sulfonamide



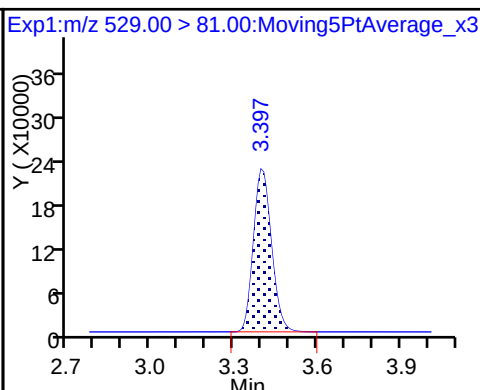
D 21 13C8 FOSA



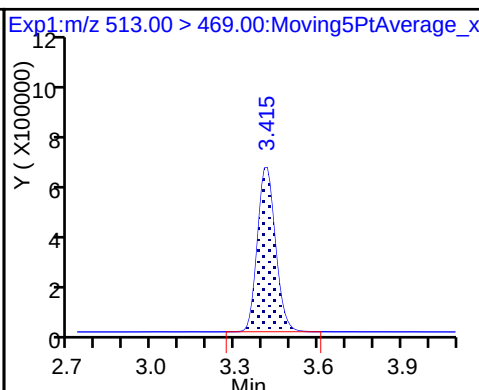
25 Sodium 1H,1H,2H,2H-perfluorodecanoate



De26 M2-8:2FTS



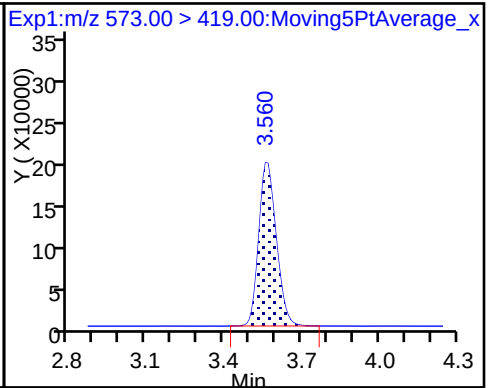
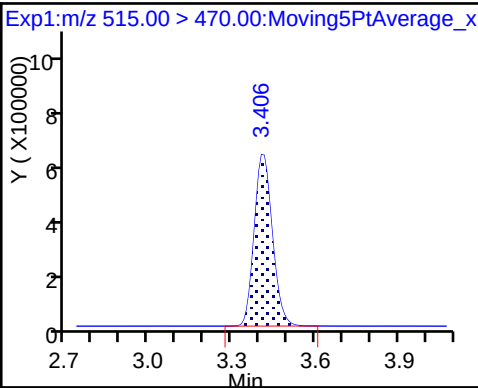
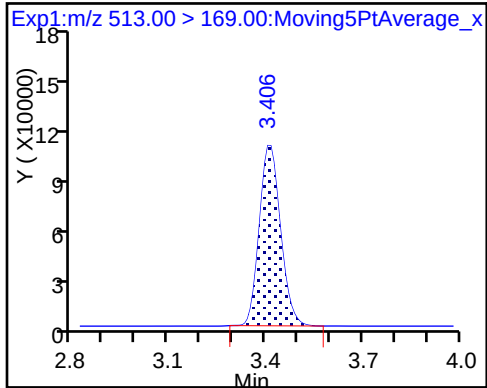
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

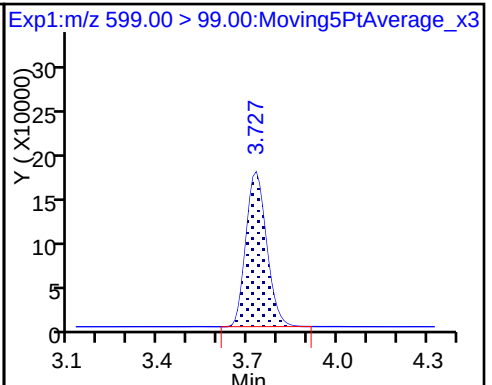
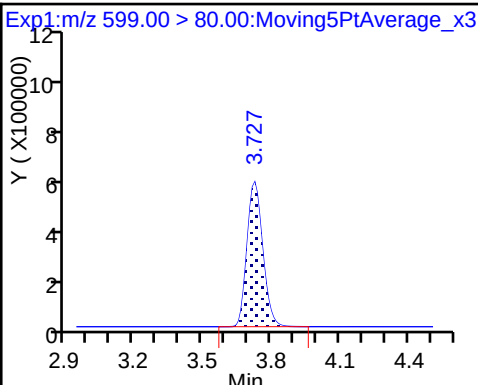
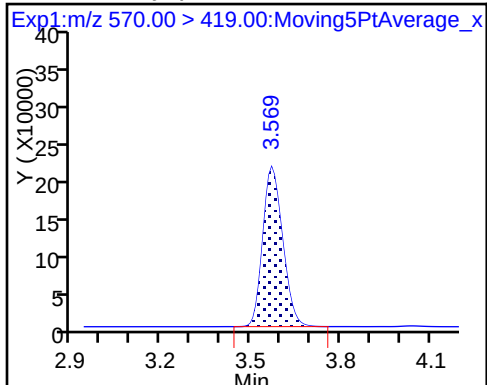
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

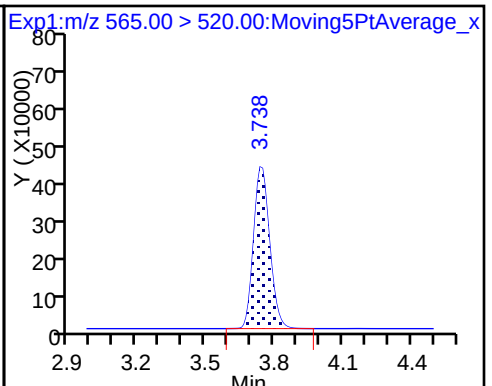
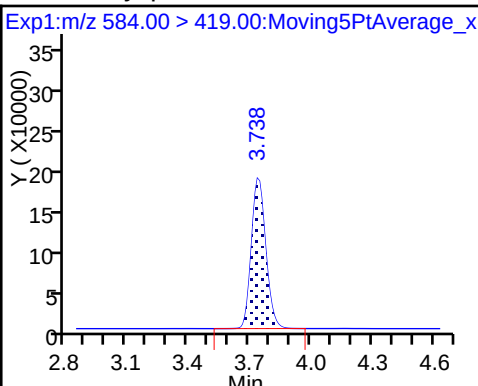
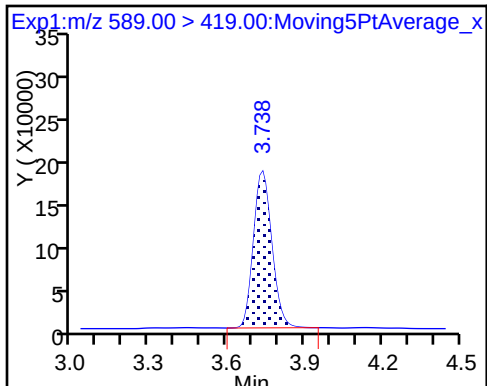
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

33 N-ethyl perfluorooctane sulfonamid

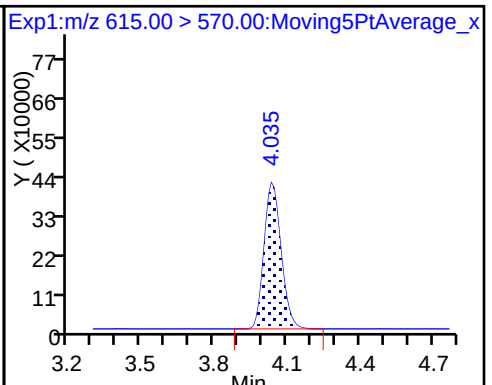
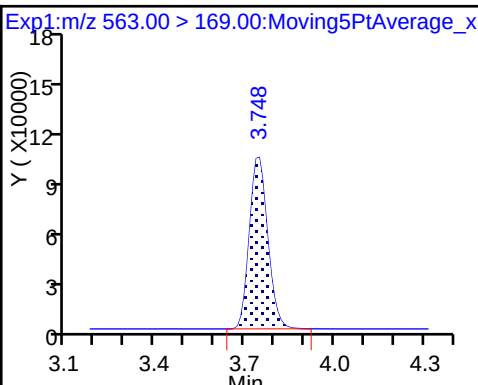
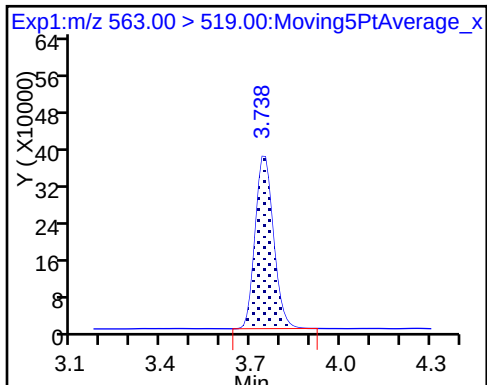
D 30 13C2 PFUnA



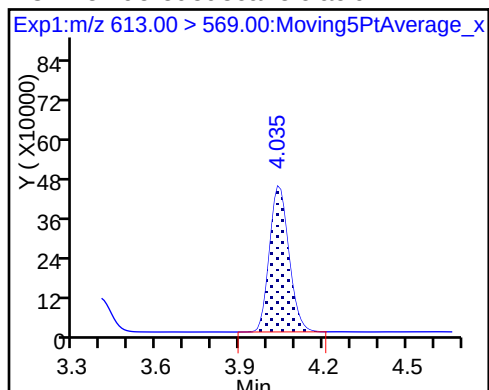
31 Perfluoroundecanoic acid

31 Perfluoroundecanoic acid

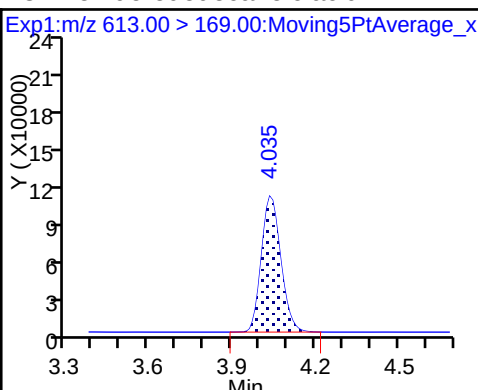
D 36 13C2 PFDaA



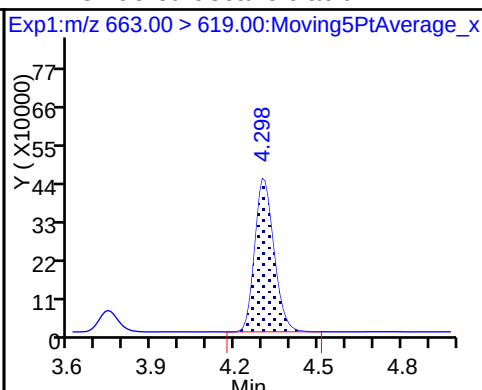
37 Perfluorododecanoic acid



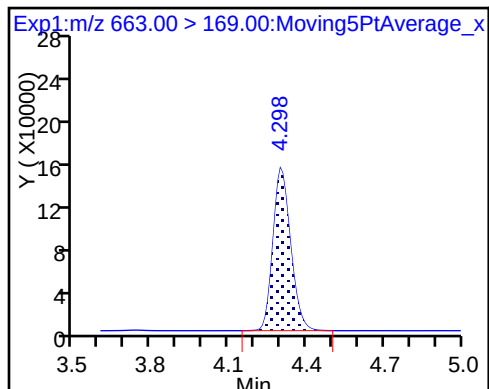
37 Perfluorododecanoic acid



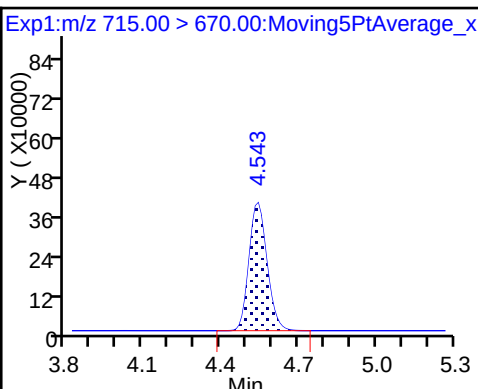
41 Perfluorotridecanoic acid



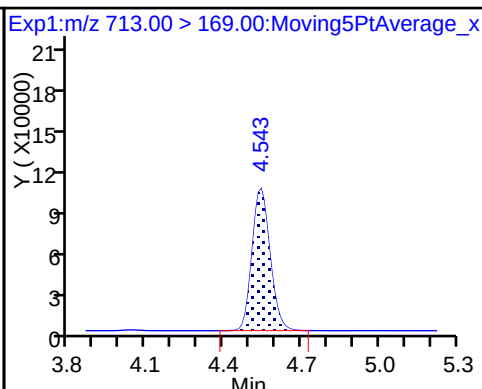
41 Perfluorotridecanoic acid



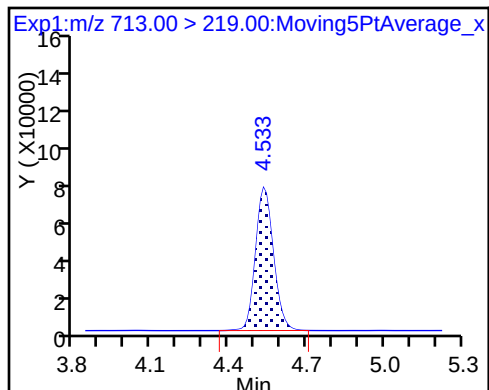
D 43 13C2-PFTeDA



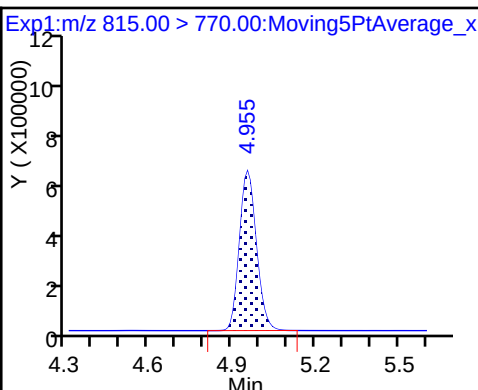
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCVL 320-213555/12 Calibration Date: 03/17/2018 00:27

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.16ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9109		0.0491	0.0500	-1.8	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.263		0.0541	0.0500	8.1	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	83.50		0.0477	0.0442	7.9	30.0
4:2 FTS	AveID	16.07	16.25		0.400	0.0467	1.1	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.999		0.0495	0.0500	-1.0	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.043		0.0503	0.0500	0.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.166		0.0476	0.0455	4.5	30.0
6:2FTS	AveID	1.665	1.726		0.400	0.0474	3.7	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.093		0.0490	0.0500	-2.1	30.0
Perfluorooctanesulfonic Acid (PFHpS)	AveID	1.314	1.386		0.0502	0.0476	5.5	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.089		0.0467	0.0464	0.6	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	0.998		0.0490	0.0500	-2.1	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9717	0.8981		0.0462	0.0500	-7.6	30.0
8:2FTS	AveID	1.257	1.138		0.400	0.0479	-9.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	0.9920		0.0523	0.0500	4.5	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.059		0.400	0.0500	1.6	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.7168		0.0541	0.0482	12.3	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	1.019		0.0520	0.0500	4.1	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.8521		0.0508	0.0500	1.7	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.049		0.0513	0.0500	2.6	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	1.145		0.0557	0.0500	11.3	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2459		0.0446	0.0500	-10.8	30.0
Perfluorononanesulfonic acid	None				10.0	0.0480	-100.0*	30.0
Perfluoropentanesulfonic acid	None				10.0	0.0469	-100.0*	30.0
13C4 PFBA	Ave	1.277	1.203		2.36	2.50	-5.7	30.0
13C5 PFPeA	Ave	0.9006	0.8712		2.42	2.50	-3.3	30.0
13C3-PFBS	Ave	0.0222	0.0204		2.13	2.33	-8.2	30.0
13C2 PFHxA	Ave	1.004	0.9863		2.46	2.50	-1.8	30.0
13C4-PFHpA	Ave	0.9767	0.9560		2.45	2.50	-2.1	30.0
18O2 PFHxS	Ave	1.303	1.218		2.21	2.37	-6.5	30.0
M2-6:2FTS	Ave	0.2501	0.2450		2.33	2.38	-2.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-213555/12 Calibration Date: 03/17/2018 00:27
 Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56
 Lab File ID: 2018.03.16ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9431	0.9293		2.46	2.50	-1.5	30.0
13C4 PFOS	Ave	0.9113	0.8434		2.21	2.39	-7.5	30.0
13C5 PFNA	Ave	0.7545	0.7424		2.46	2.50	-1.6	30.0
13C8 FOSA	Ave	1.319	1.326		2.51	2.50	0.5	30.0
M2-8:2FTS	Ave	0.2350	0.2377		2.42	2.40	1.1	30.0
13C2 PFDA	Ave	0.6303	0.6287		2.49	2.50	-0.3	30.0
d3-NMeFOSAA	Ave	0.2081	0.1934		2.32	2.50	-7.1	30.0
d5-NEtFOSAA	Ave	0.1990	0.2113		2.66	2.50	6.2	30.0
13C2 PFUnA	Ave	0.4935	0.4670		2.37	2.50	-5.4	30.0
13C2 PFDoA	Ave	0.4680	0.4503		2.41	2.50	-3.8	30.0
13C2-PFTeDA	Ave	0.4272	0.4073		2.38	2.50	-4.6	30.0
13C2-PFHxDA	Ave	0.6248	0.5766		2.31	2.50	-7.7	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_013.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 17-Mar-2018 00:27:55 ALS Bottle#: 21 Worklist Smp#: 12
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 18-Mar-2018 12:49:03 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK059

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:48:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.440	1.440	0.0	1.000	100775	0.0491		98.2	73.9	
D 1 13C4 PFBA										
217.00 > 172.00	1.440	1.440	0.0	0.537	5531403	2.36		94.3	118656	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.634	4004449	2.42		96.7	129047	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.698	0.002	1.000	101160	0.0541		108	35.4	
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.730	-0.003	0.644	87180	2.13		91.8	511	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.733	0.003	1.005	138382	0.0477		108	61.4	
298.90 > 99.00	1.736	1.733	0.003	1.005	55075		2.51(1.25-3.74)		57.9	
D 60 M2-4:2FTS										
329.00 > 81.00	1.945	1.942	0.003	0.725	697789	NC			7647	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.945	1.944	0.001	1.000	28463	0.0472		101	1732	
D 7 13C2 PFHxA										
315.00 > 270.00	1.976	1.979	-0.003	0.737	4533216	2.46		98.2	135686	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.986	1.982	0.004	1.005	90578	0.0495		99.0	279	
313.00 > 119.00	1.986	1.982	0.004	1.005	7864		11.52(5.03-15.10)		161	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.318	2.311	0.007	1.000	91624	0.0503		101	192	
363.00 > 169.00	2.318	2.311	0.007	1.000	33853		2.71(1.13-3.40)		581	
D 9 13C4-PFHpA										
367.00 > 322.00	2.318	2.311	0.007	0.864	4394034	2.45		97.9	92318	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.331	2.326	0.005	1.000	118757	0.0476		105	16.0	
399.00 > 99.00	2.331	2.326	0.005	1.000	39926		2.97(1.50-4.49)		15.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.331	2.326	0.005	0.869	5295242	2.21		93.5	63958	
D 12 M2-6:2FTS										
429.00 > 81.00	2.658	2.651	0.007	0.991	1069856	2.33		98.0	18910	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.658	2.652	0.006	1.000	36847	0.0491		104	2107	
* 62 13C2-PFOA										
415.00 > 370.00	2.682	2.678	0.004		4596356	2.50			89139	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.682	2.678	0.004	1.000	93390	0.0490		97.9	28.7	
413.00 > 169.00	2.682	2.678	0.004	1.000	51154		1.83(0.84-2.52)		218	
D 14 13C4 PFOA										
417.00 > 372.00	2.682	2.678	0.004	1.000	4271497	2.46		98.5	90048	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.690	2.684	0.006	1.000	102307	0.0502		105	2950	
449.00 > 99.00	2.690	2.684	0.006	1.000	27267		3.75(1.94-5.82)		580	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.053	3.050	0.002	1.000	78332	0.0467		101	308	
499.00 > 99.00	3.060	3.050	0.010	1.002	18733		4.18(2.31-6.93)		198	
D 18 13C4 PFOS										
503.00 > 80.00	3.053	3.050	0.002	1.138	3705865	2.21		92.5	49289	
20 Perfluorononanoic acid										
463.00 > 419.00	3.060	3.052	0.008	1.002	68129	0.0490		97.9	164	
463.00 > 169.00	3.060	3.052	0.008	1.002	14503		4.70(1.90-5.69)		349	
D 19 13C5 PFNA										
468.00 > 423.00	3.053	3.052	0.0	1.138	3412465	2.46		98.4	65766	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.391	3.388	0.003	1.000	109442	0.0462		92.4	2486	
D 21 13C8 FOSA										
506.00 > 78.00	3.391	3.388	0.003	1.264	6093286	2.51		100	58188	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.409	3.406	0.003	1.000	23810	0.0433		90.5	772	
D 26 M2-8:2FTS										
529.00 > 81.00	3.409	3.406	0.003	1.271	1046449	2.42		101	23449	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.419	3.416	0.003	1.000	57335	0.0523		105	304	
513.00 > 169.00	3.419	3.416	0.003	1.000	10256		5.59(2.36-7.09)		395	
D 23 13C2 PFDA										
515.00 > 470.00	3.419	3.416	0.003	1.275	2889908	2.49		99.7	59499	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.572	3.570	0.002	1.332	889040	2.32		92.9	27294	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.572	3.571	0.001	1.000	18824	0.0508		102	209	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.732	3.729	0.003	1.000	53570	0.0541		112	1891	
599.00 > 99.00	3.732	3.729	0.003	1.000	14405		3.72(1.39-4.16)		526	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.742	3.740	0.002	1.395	971348	2.66		106	1908	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.752	3.746	0.006	1.003	19798	0.0520		104	559	
D 30 13C2 PFUnA										
565.00 > 520.00	3.752	3.747	0.005	1.399	2146312	2.37		94.6	74102	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.752	3.750	0.002	1.000	36577	0.0508		102	102	
563.00 > 169.00	3.752	3.750	0.002	1.000	10012		3.65(2.12-6.36)		815	
D 36 13C2 PFDaA										
615.00 > 570.00	4.040	4.041	-0.001	1.506	2069739	2.41		96.2	13445	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.040	4.042	-0.002	1.000	43439	0.0513		103	8.4	
613.00 > 169.00	4.040	4.042	-0.002	1.000	11749		3.70(2.13-6.40)		486	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.312	4.304	0.008	1.000	47398	0.0557		111	9.8	R
663.00 > 169.00	4.301	4.304	-0.003	0.997	11575		4.09(1.25-3.76)		148	R
D 43 13C2-PFTeDA										
715.00 > 670.00	4.549	4.545	0.004	1.696	1872074	2.38		95.4	14498	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.538	4.545	-0.007	0.998	9206	0.0446		89.2	151	
713.00 > 219.00	4.538	4.545	-0.007	0.998	6769		1.36(0.71-2.13)		84.8	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.960	4.956	0.004	1.849	2650178	2.31		92.3	9656	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.960	4.960	0.0	1.000	72532	NC			6.8	
813.00 > 169.00	4.960	4.960	0.0	1.000	12401		5.85(2.86-8.58)		133	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.319	5.320	-0.001	1.000	54097	NC			9.7	
913.00 > 169.00	5.319	5.320	-0.001	1.000	7148		7.57(3.83-11.48)		102	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Reagents:

LCPFC_LL2_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_013.d

Injection Date: 17-Mar-2018 00:27:55

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

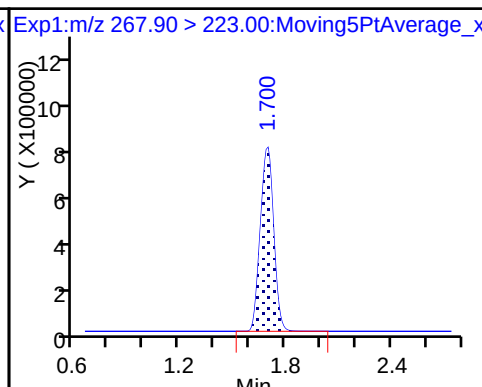
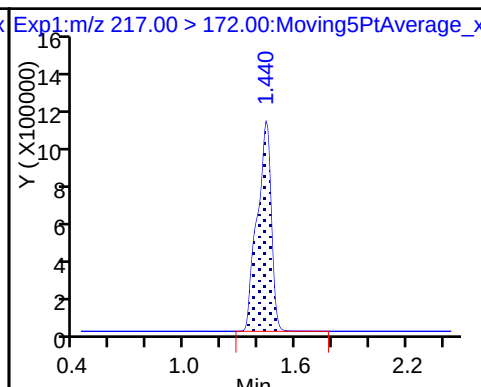
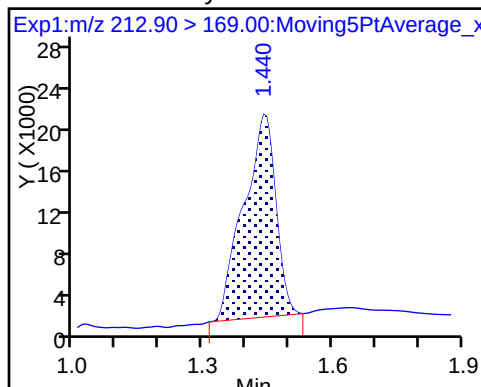
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

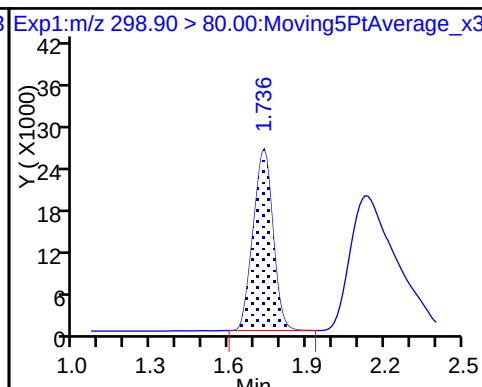
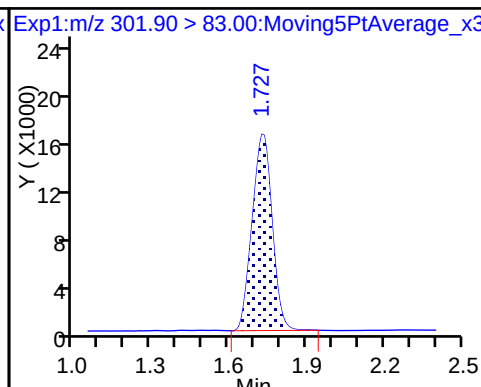
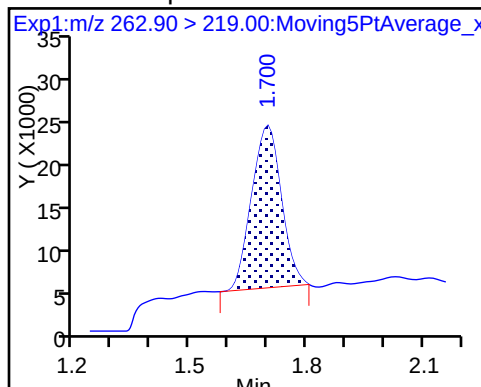
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

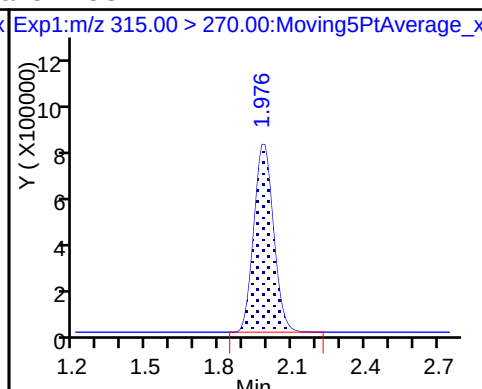
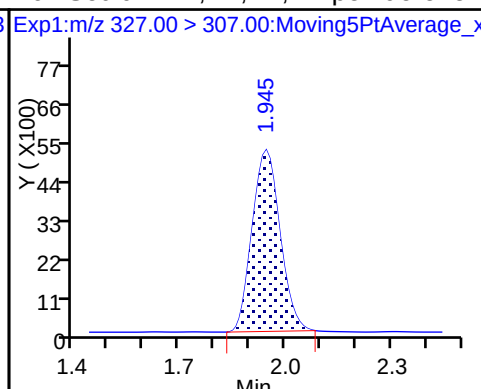
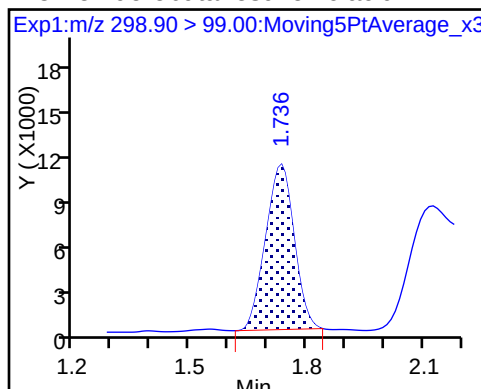
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

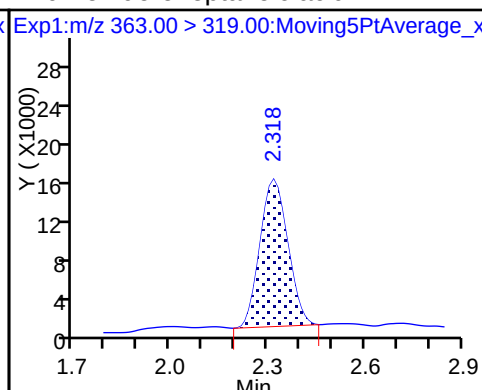
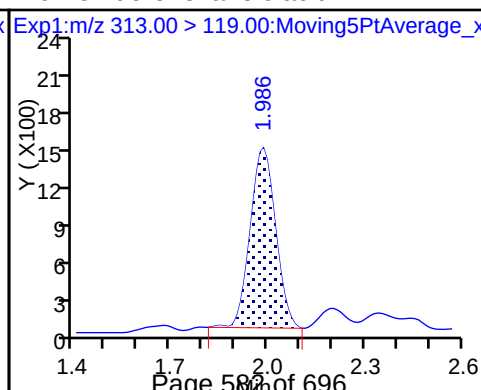
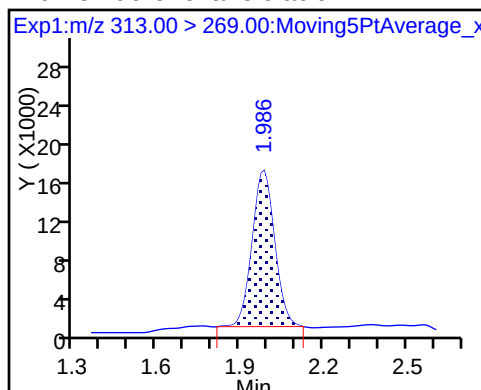
De 7 13C2 PFHxA

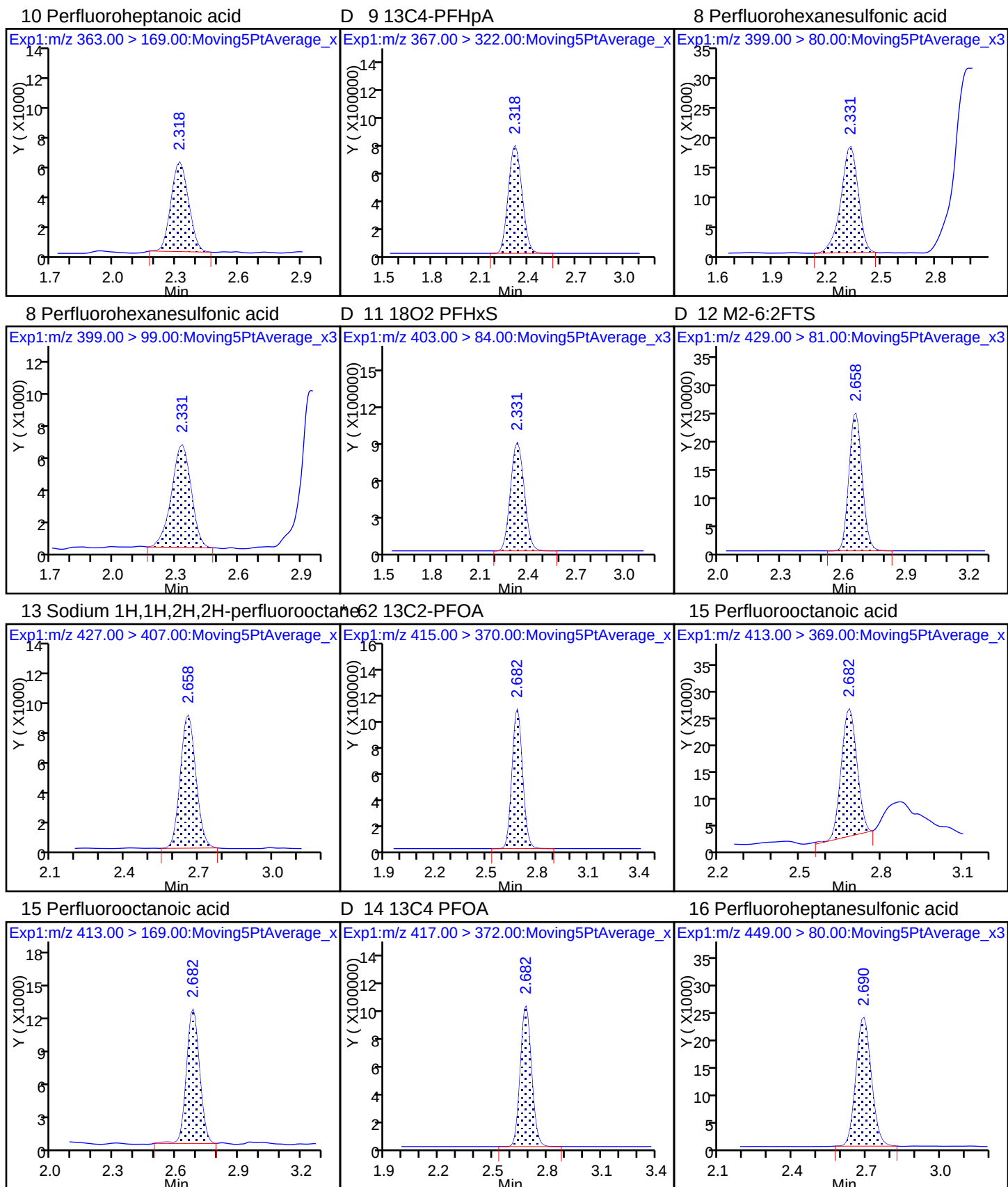


6 Perfluorohexanoic acid

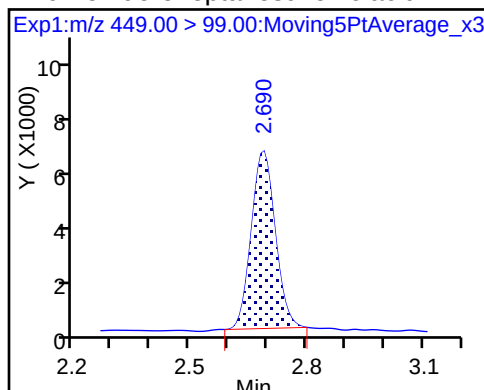
6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid

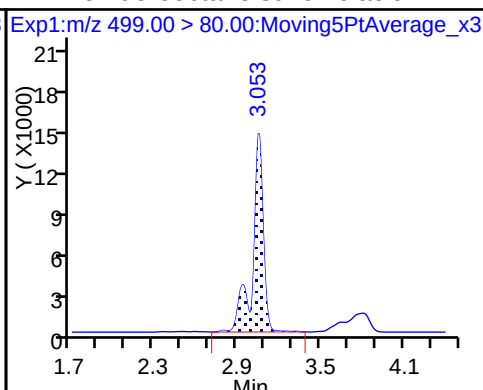




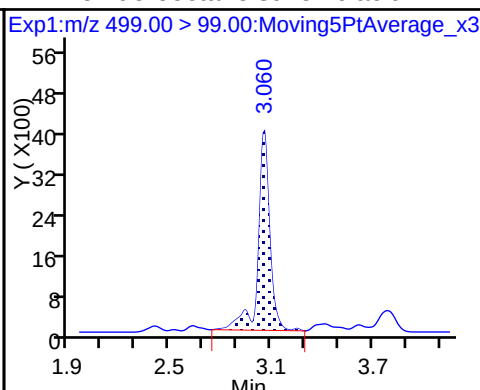
16 Perfluoroheptanesulfonic acid



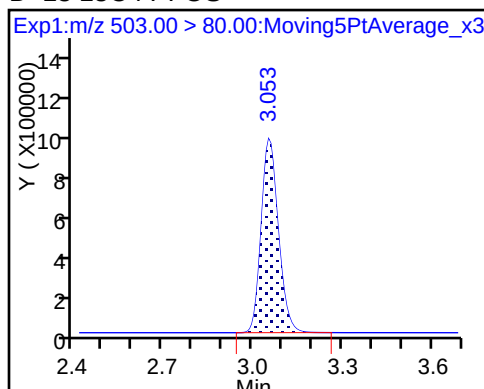
17 Perfluorooctane sulfonic acid



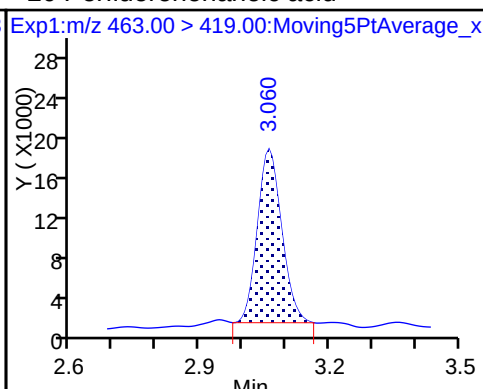
17 Perfluorooctane sulfonic acid



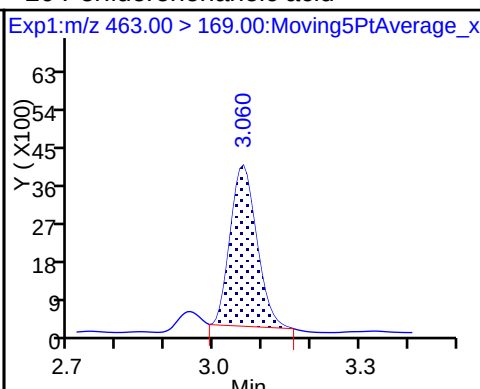
D 18 13C4 PFOS



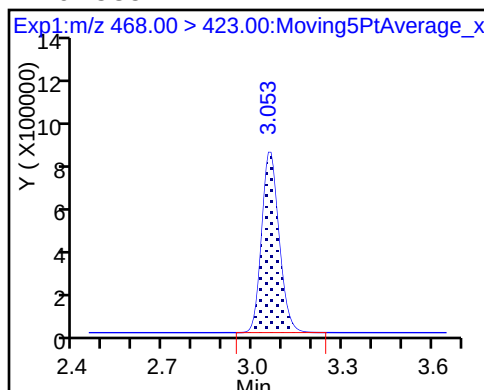
20 Perfluorononanoic acid



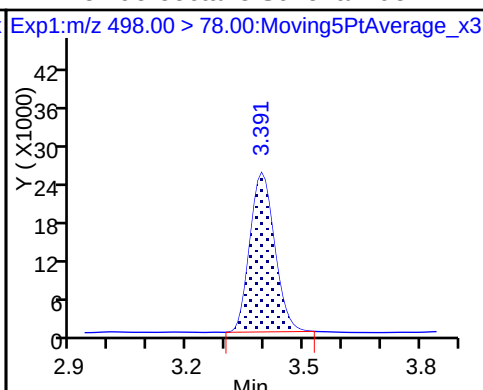
20 Perfluorononanoic acid



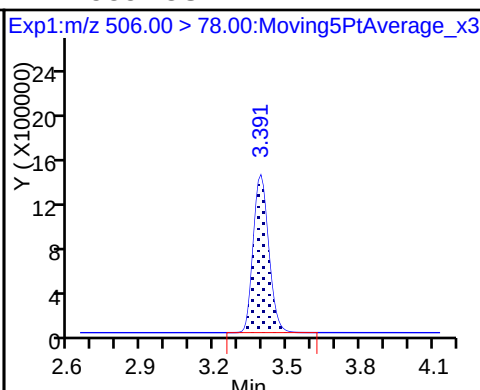
D 19 13C5 PFNA



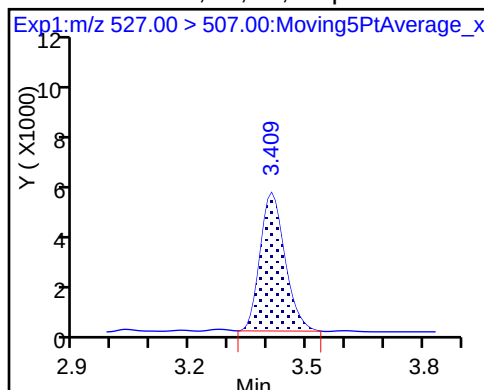
22 Perfluorooctane Sulfonamide



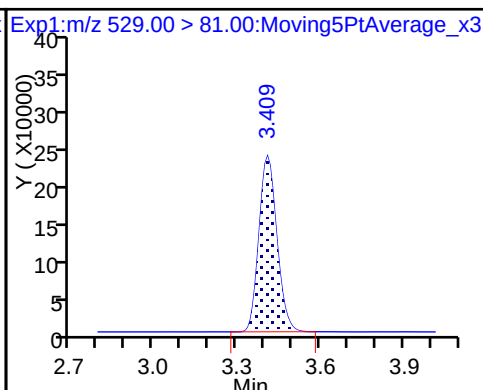
D 21 13C8 FOSA



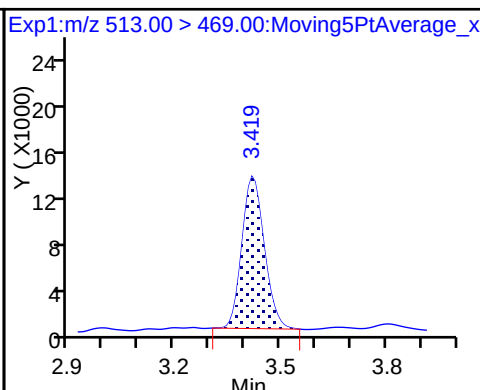
25 Sodium 1H,1H,2H,2H-perfluorodecanoate



De26 M2-8:2FTS



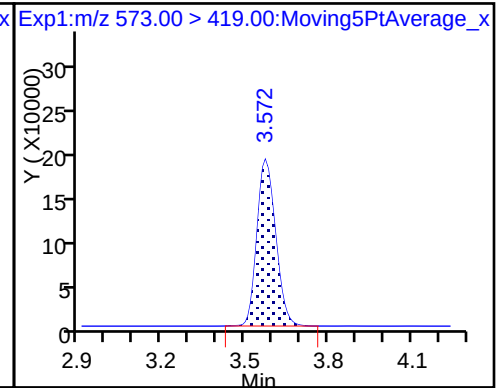
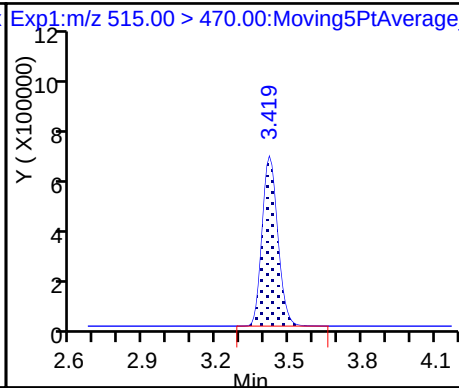
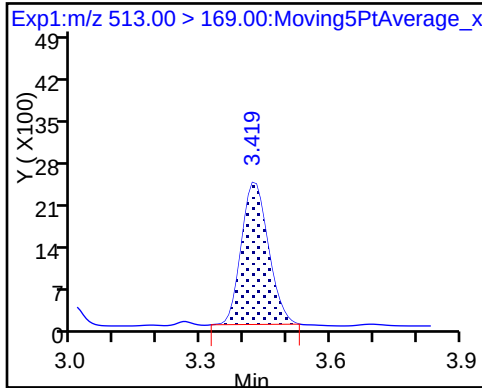
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

D 23 13C2 PFDA

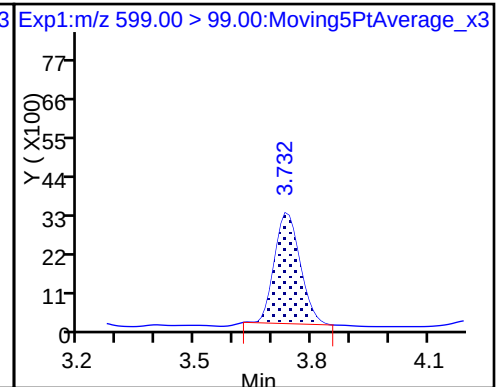
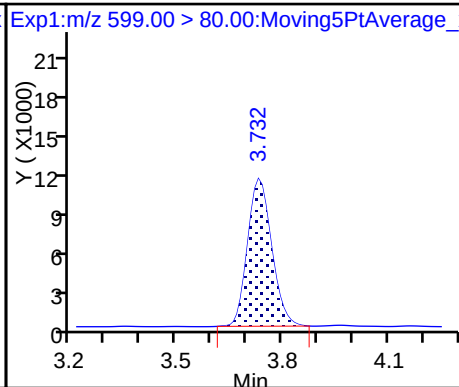
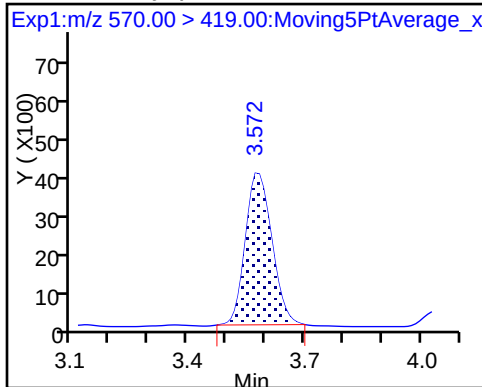
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

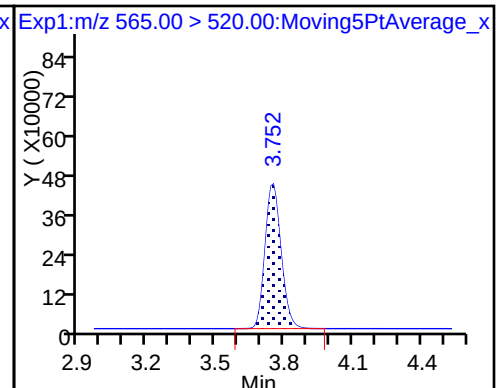
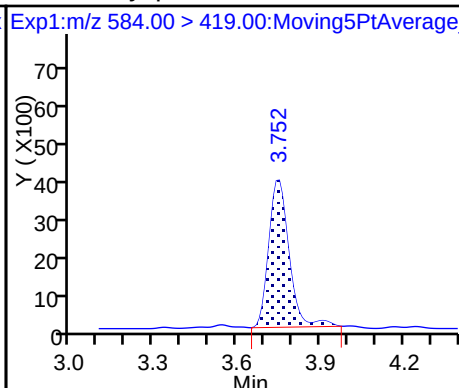
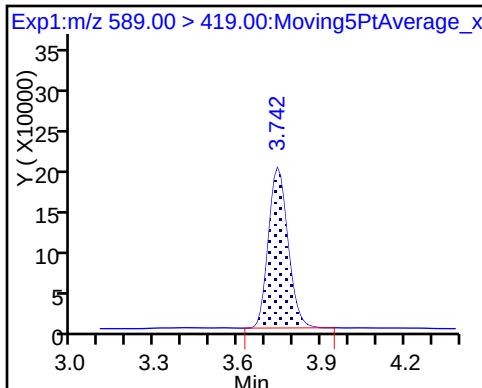
29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

33 N-ethyl perfluorooctane sulfonamid

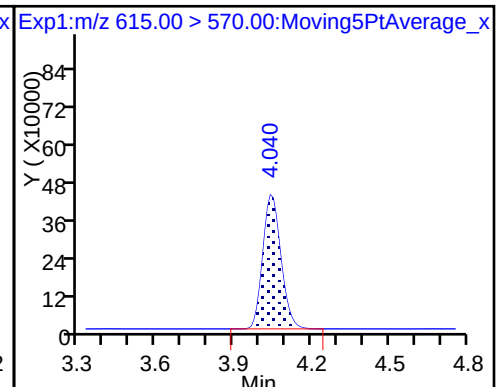
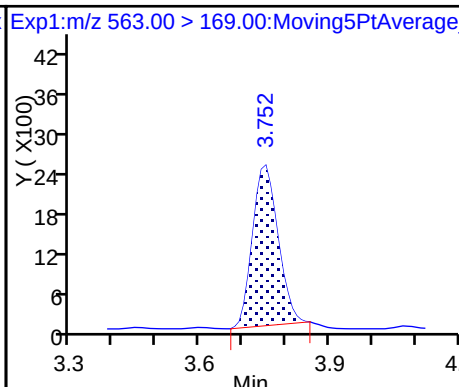
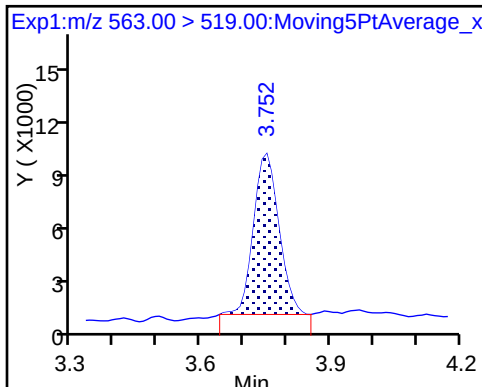
D 30 13C2 PFUnA



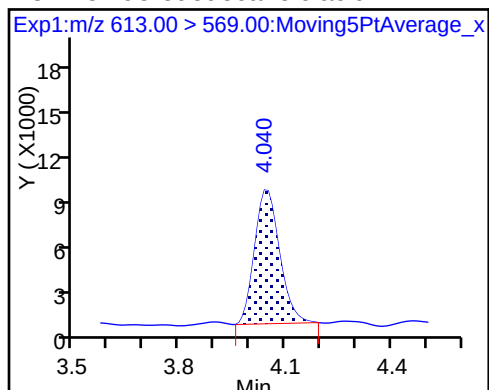
31 Perfluoroundecanoic acid

31 Perfluoroundecanoic acid

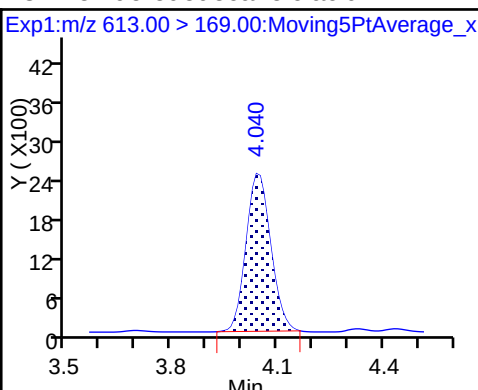
D 36 13C2 PFDoA



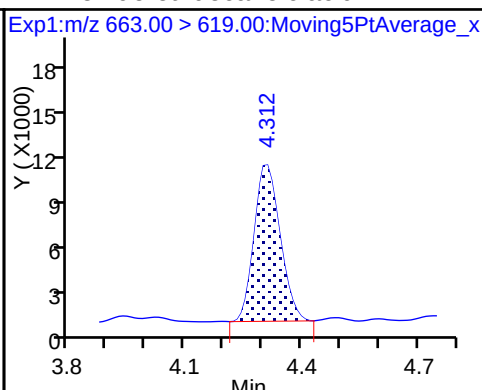
37 Perfluorododecanoic acid



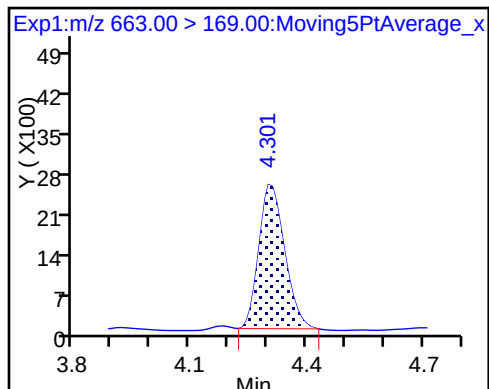
37 Perfluorododecanoic acid



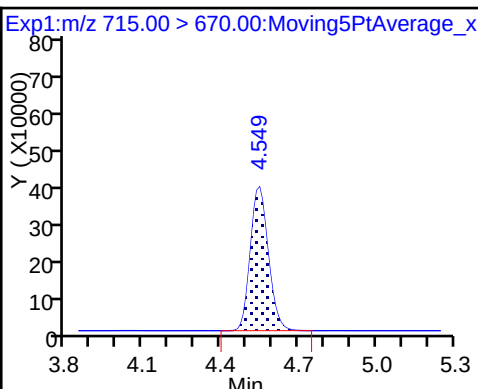
41 Perfluorotridecanoic acid



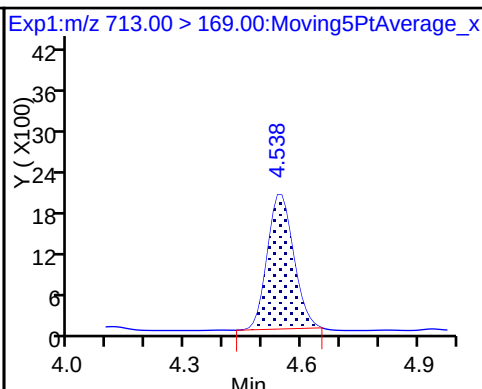
41 Perfluorotridecanoic acid



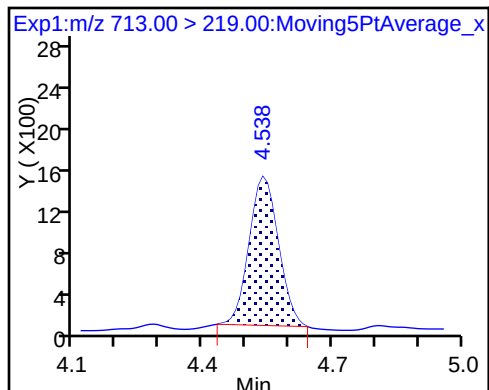
D 43 13C2-PFTeDA



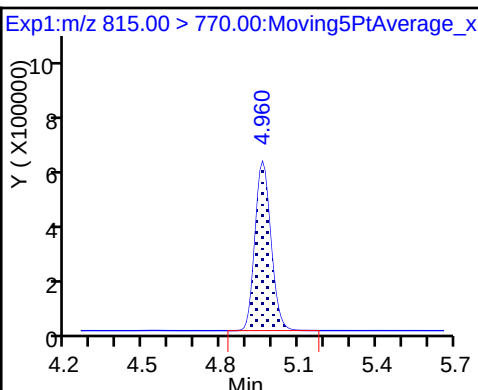
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCV 320-213558/1 Calibration Date: 03/17/2018 00:35

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.16LLBX_033.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9000		0.970	1.00	-3.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.096		0.938	1.00	-6.2	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	78.06		0.892	0.884	0.9	30.0
4:2 FTS	AveID	16.07	15.31		0.890	0.934	-4.8	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.996		0.987	1.00	-1.3	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.035		0.999	1.00	-0.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.079		0.880	0.910	-3.3	30.0
6:2FTS	AveID	1.665	1.685		0.959	0.948	1.2	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.073		0.961	1.00	-3.9	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.314	1.251		0.906	0.952	-4.8	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	0.9774		0.959	1.00	-4.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.037		0.889	0.928	-4.2	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9717	0.9791		1.01	1.00	0.8	30.0
8:2FTS	AveID	1.257	1.185		0.903	0.958	-5.7	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	1.006		1.06	1.00	6.0	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	0.9489		0.911	1.00	-8.9	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6288		0.949	0.964	-1.5	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.9543		0.975	1.00	-2.5	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7336		0.875	1.00	-12.5	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.008		0.985	1.00	-1.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	0.9499		0.923	1.00	-7.7	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2545		0.923	1.00	-7.7	30.0
13C4 PFBA	Ave	1.277	1.267		2.48	2.50	-0.7	30.0
13C5 PFPeA	Ave	0.9006	0.8866		2.46	2.50	-1.6	30.0
13C3-PFBS	Ave	0.0222	0.0218		2.28	2.33	-1.9	30.0
13C2 PFHxA	Ave	1.004	0.9747		2.43	2.50	-2.9	30.0
13C4-PFHpA	Ave	0.9767	0.9503		2.43	2.50	-2.7	30.0
1802 PFHxS	Ave	1.303	1.238		2.25	2.37	-5.0	30.0
M2-6:2FTS	Ave	0.2501	0.2436		2.31	2.38	-2.6	30.0
13C4 PFOA	Ave	0.9431	0.9609		2.55	2.50	1.9	30.0
13C4 PFOS	Ave	0.9113	0.9058		2.38	2.39	-0.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCV 320-213558/1 Calibration Date: 03/17/2018 00:35
 Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56
 Lab File ID: 2018.03.16LLBX_033.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7671		2.54	2.50	1.7	30.0
13C8 FOSA	Ave	1.319	1.347		2.55	2.50	2.1	30.0
M2-8:2FTS	Ave	0.2350	0.2487		2.54	2.40	5.9	30.0
13C2 PFDA	Ave	0.6303	0.6119		2.43	2.50	-2.9	30.0
d3-NMeFOSAA	Ave	0.2081	0.2037		2.45	2.50	-2.1	30.0
d5-NEtFOSAA	Ave	0.1990	0.2020		2.54	2.50	1.5	30.0
13C2 PFUnA	Ave	0.4935	0.4938		2.50	2.50	0.0	30.0
13C2 PFDoA	Ave	0.4680	0.4693		2.51	2.50	0.3	30.0
13C2-PFTeDA	Ave	0.4272	0.4193		2.45	2.50	-1.8	30.0
13C2-PFHxDA	Ave	0.6248	0.5862		2.35	2.50	-6.2	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\2018.03.16LLBX_033.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 17-Mar-2018 00:35:43 ALS Bottle#: 13 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 10:41:28 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK040

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:57:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.440	0.001	0.537	5726341	2.48		99.3	110630	
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.441	0.0	1.000	2061547	0.9704		97.0	1482	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.634	4006906	2.46		98.4	129804	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.700	1.700	0.0	1.000	1756739	0.9383		93.8	666	
D 47 13C3-PFBS										
301.90 > 83.00	1.736	1.730	0.006	0.647	91670	2.28		98.1	586	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.736	1.736	0.0	1.000	2720563	0.8917		101	1233	
298.90 > 99.00	1.736	1.736	0.0	1.000	1105192		2.46(1.25-3.74)		1181	
D 60 M2-4:2FTS										
329.00 > 81.00	1.946	1.942	0.004	0.726	663414	NC			8217	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.946	1.946	0.0	1.000	563752	0.8895		95.2	34503	
D 7 13C2 PFHxA										
315.00 > 270.00	1.987	1.979	0.008	0.741	4405077	2.43		97.1	132335	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.987	1.987	0.0	1.000	1755621	0.9874		98.7	6354	
313.00 > 119.00	1.987	1.987	0.0	1.000	166718		10.53(5.03-15.10)		4352	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.864	4295002	2.43		97.3	90075	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.315	0.0	1.000	1778134	1.00		99.9	4365	
363.00 > 169.00	2.315	2.315	0.0	1.000	700844		2.54(1.13-3.40)		13190	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.869	5291536	2.25		95.0	59433	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.328	0.0	1.000	2196691	0.8802		96.7	291	
399.00 > 99.00	2.328	2.328	0.0	1.000	703878		3.12(1.50-4.49)		273	
D 12 M2-6:2FTS										
429.00 > 81.00	2.657	2.651	0.006	0.991	1045863	2.31		97.4	22233	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.657	2.657	0.0	1.000	703308	0.9594		101	41247	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.678	0.003	1.000	4342782	2.55		102	126921	
* 62 13C2-PFOA										
415.00 > 370.00	2.681	2.681	0.0		4519451	2.50			70243	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.681	2.681	0.0	1.000	1864468	0.9614		96.1	726	
413.00 > 169.00	2.681	2.681	0.0	1.000	989657		1.88(0.84-2.52)		4505	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.689	2.689	0.0	1.000	1950181	0.9063		95.2	35134	
449.00 > 99.00	2.689	2.689	0.0	1.000	528675		3.69(1.94-5.82)		12423	
D 18 13C4 PFOS										
503.00 > 80.00	3.058	3.050	0.008	1.141	3913471	2.38		99.4	45021	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.052	0.006	1.141	3466791	2.54		102	66882	
20 Perfluorononanoic acid										
463.00 > 419.00	3.058	3.058	0.0	1.000	1355397	0.9587		95.9	3211	
463.00 > 169.00	3.058	3.058	0.0	1.000	339797		3.99(1.90-5.69)		12124	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.058	3.058	0.0	1.000	1576220	0.8892		95.8	5323	
499.00 > 99.00	3.051	3.058	-0.007	0.998	350521		4.50(2.31-6.93)		3631	
D 21 13C8 FOSA										
506.00 > 78.00	3.389	3.388	0.001	1.264	6087833	2.55		102	65013	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.389	3.389	0.0	1.000	2384200	1.01		101	38269	
D 26 M2-8:2FTS										
529.00 > 81.00	3.408	3.406	0.002	1.271	1076837	2.54		106	29604	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.408	3.408	0.0	1.000	510464	0.9030		94.3	14168	
D 23 13C2 PFDA										
515.00 > 470.00	3.417	3.416	0.001	1.274	2765394	2.43		97.1	30544	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.417	3.417	0.0	1.000	1112390	1.06		106	6166	
513.00 > 169.00	3.417	3.417	0.0	1.000	186198		5.97(2.36-7.09)		8285	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.572	3.570	0.002	1.333	920601	2.45		97.9	49541	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.583	3.583	0.0	1.003	349430	0.9111		91.1	4093	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.731	3.731	0.0	1.000	992473	0.9493		98.5	25990	
599.00 > 99.00	3.731	3.731	0.0	1.000	336098		2.95(1.39-4.16)		7802	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.741	3.740	0.001	1.396	913052	2.54		102	1915	
D 30 13C2 PFUnA										
565.00 > 520.00	3.752	3.747	0.005	1.399	2231772	2.50		100	66546	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.752	3.752	0.0	1.003	348533	0.9747		97.5	10253	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.752	3.752	0.0	1.000	654871	0.8753		87.5	2687	
563.00 > 169.00	3.752	3.752	0.0	1.000	178330		3.67(2.12-6.36)		21548	
D 36 13C2 PFDoA										
615.00 > 570.00	4.050	4.041	0.009	1.511	2120750	2.51		100	9569	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.050	4.050	0.0	1.000	855106	0.9854		98.5	170	
613.00 > 169.00	4.050	4.050	0.0	1.000	219578		3.89(2.13-6.40)		5116	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.309	4.309	0.0	1.000	805811	0.9234		92.3	170	
663.00 > 169.00	4.309	4.309	0.0	1.000	267082		3.02(1.25-3.76)		4073	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.545	4.545	0.0	1.696	1894976	2.45		98.2	16459	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.545	4.545	0.0	1.000	192884	0.9227		92.3	2667	
713.00 > 219.00	4.545	4.545	0.0	1.000	133721		1.44(0.71-2.13)		2155	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.965	4.956	0.009	1.852	2649475	2.35		93.8	10397	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.965	4.965	0.0	1.000	1036373	NC			93.3	
813.00 > 169.00	4.965	4.965	0.0	1.000	180931		5.73(2.86-8.58)		2270	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.323	5.323	0.0	1.000	1021861	NC			193	
913.00 > 169.00	5.323	5.323	0.0	1.000	132036		7.74(3.83-11.48)		1591	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\2018.03.16LLBX_033.d

Injection Date: 17-Mar-2018 00:35:43

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

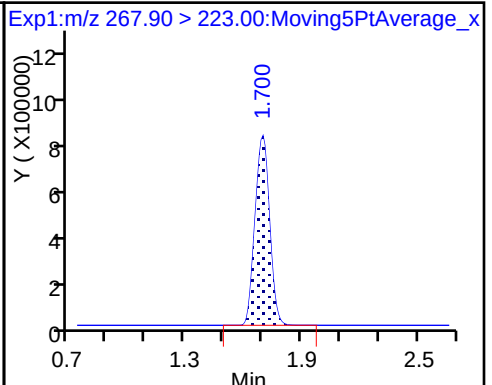
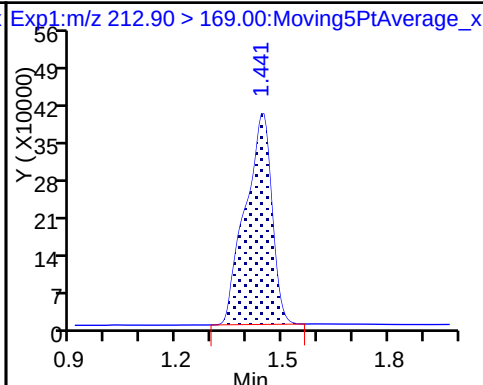
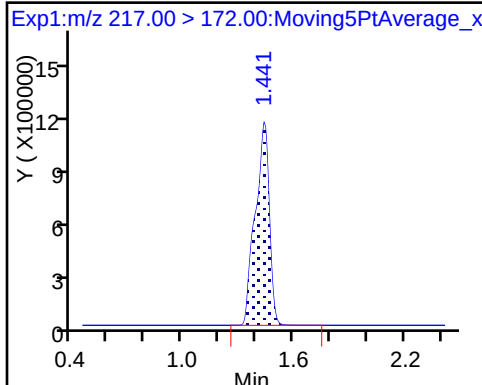
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

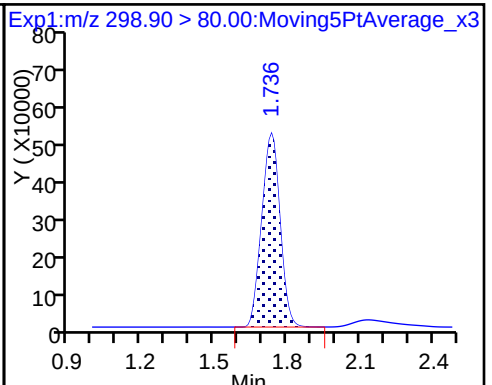
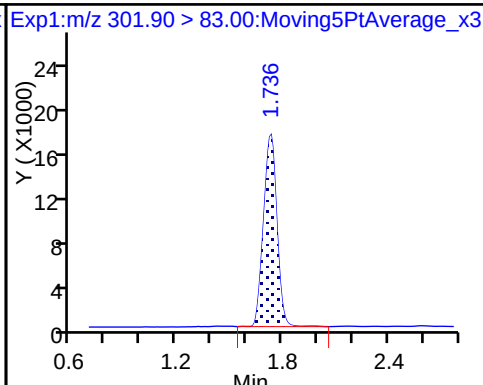
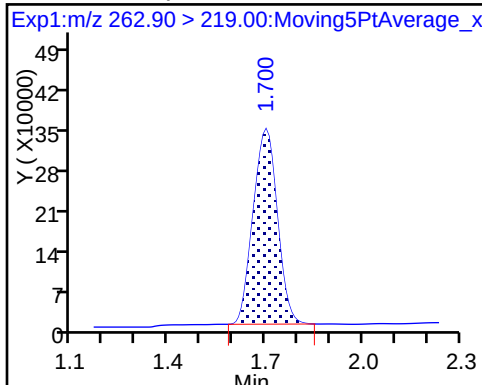
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

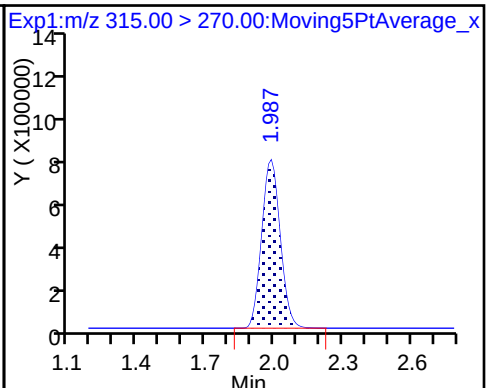
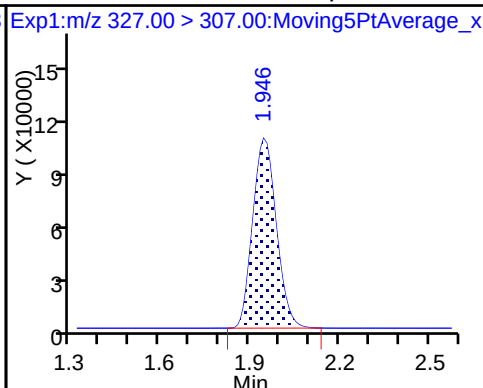
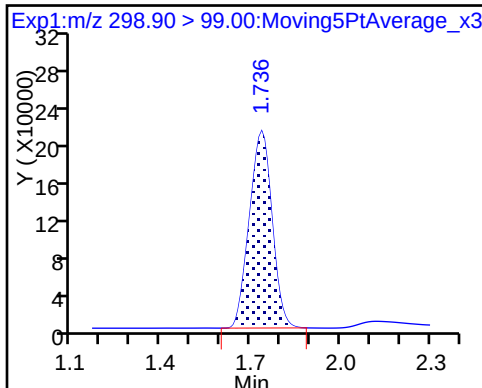
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

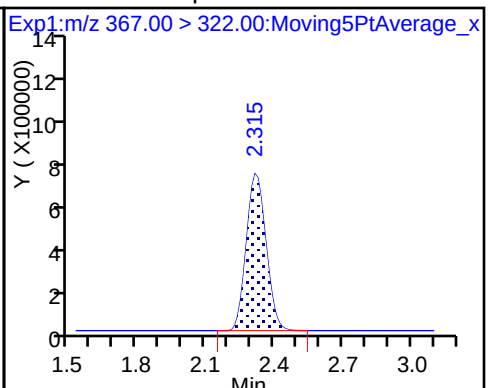
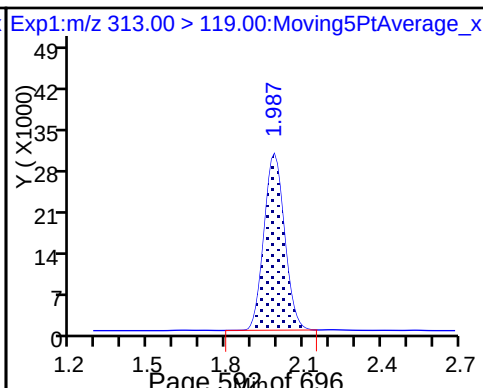
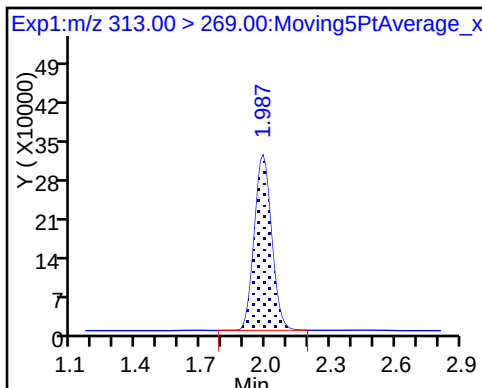
De 7 13C2 PFHxA



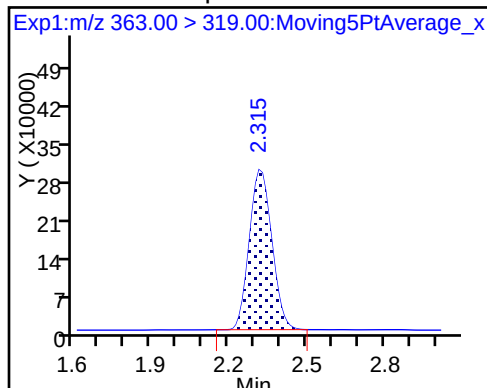
6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

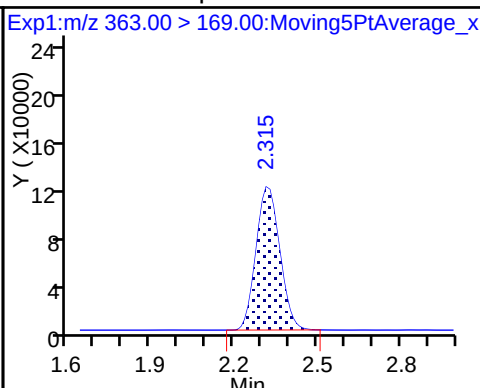
D 9 13C4-PFHpA



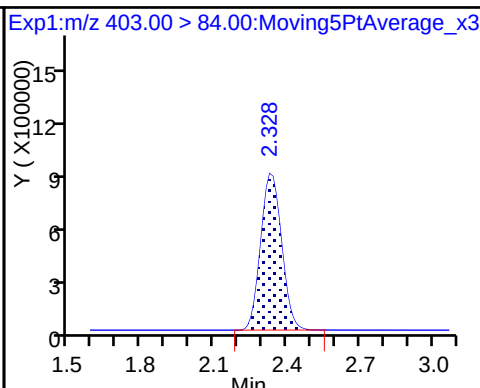
10 Perfluoroheptanoic acid



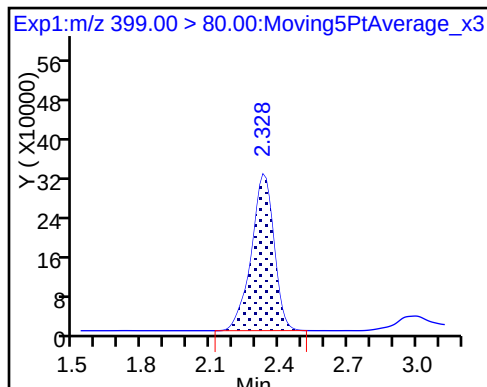
10 Perfluoroheptanoic acid



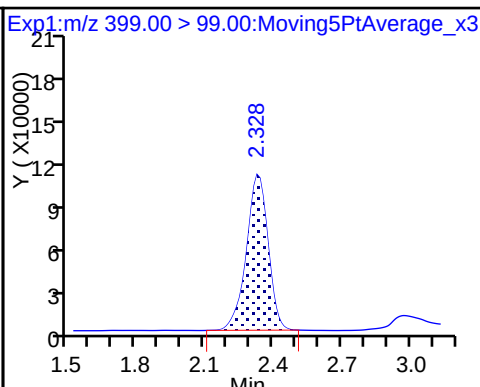
D 11 18O2 PFHxS



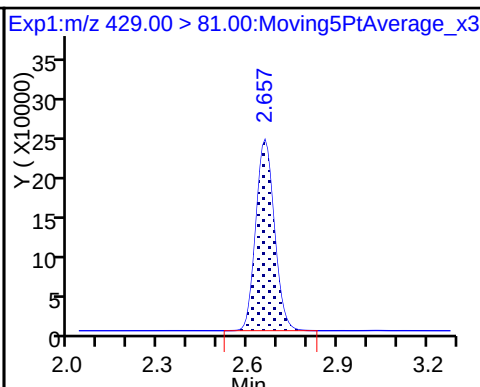
8 Perfluorohexanesulfonic acid



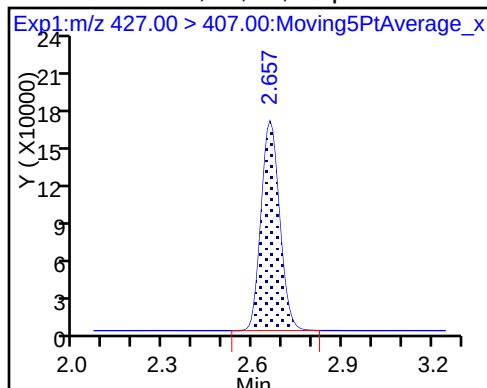
8 Perfluorohexanesulfonic acid



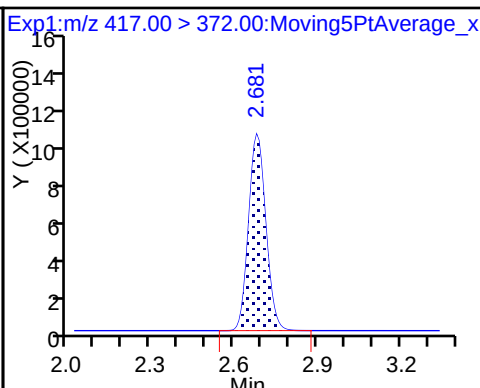
D 12 M2-6:2FTS



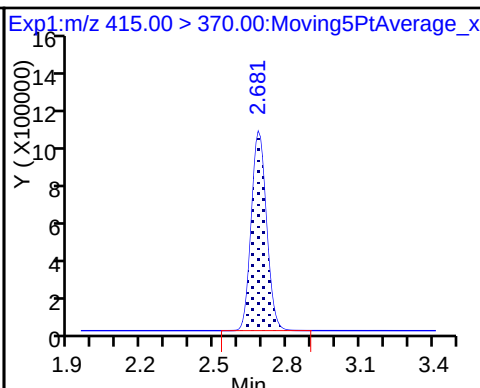
13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate



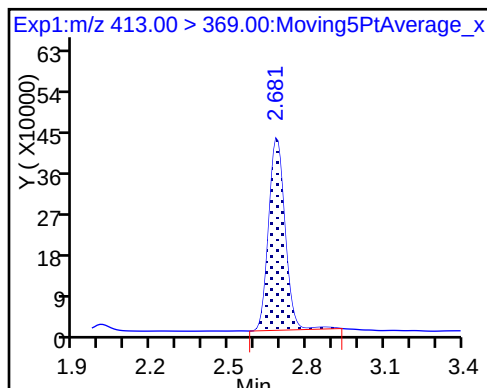
D 14 13C4 PFOA



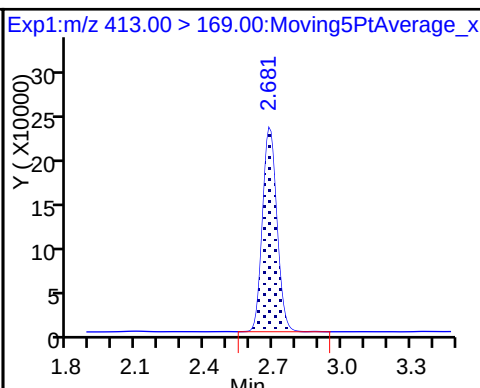
* 62 13C2-PFOA



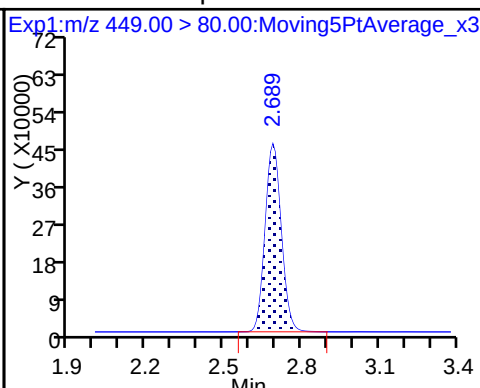
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid



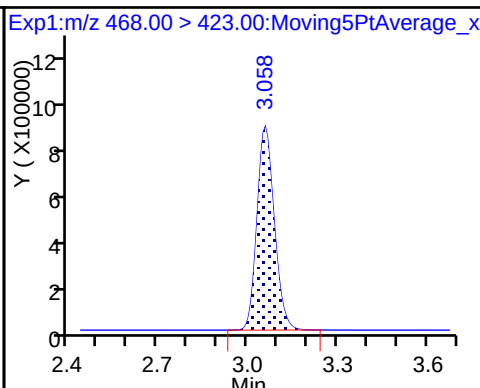
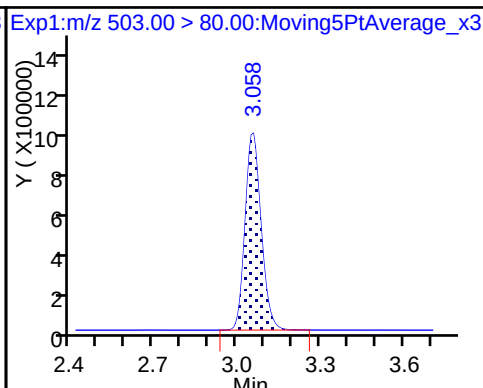
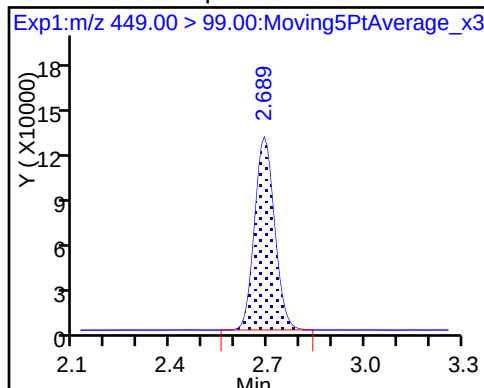
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

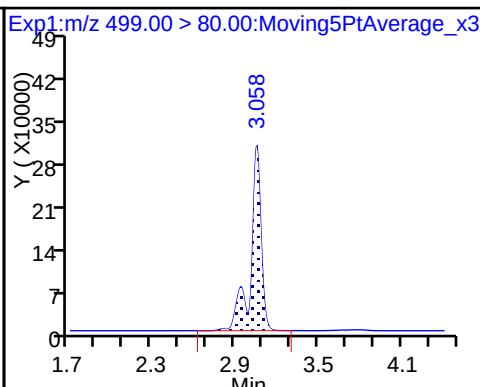
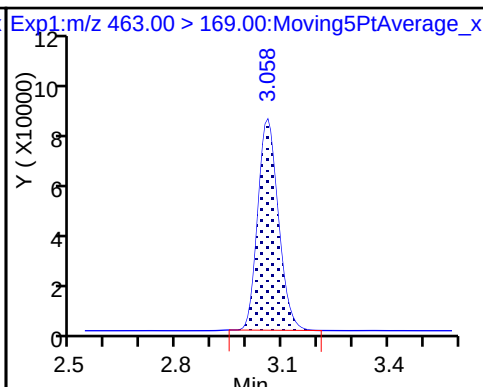
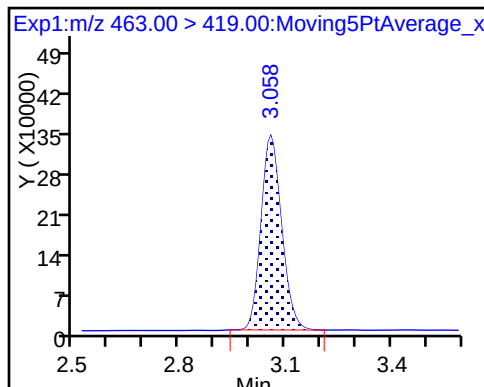
D 19 13C5 PFNA



20 Perfluorononanoic acid

20 Perfluorononanoic acid

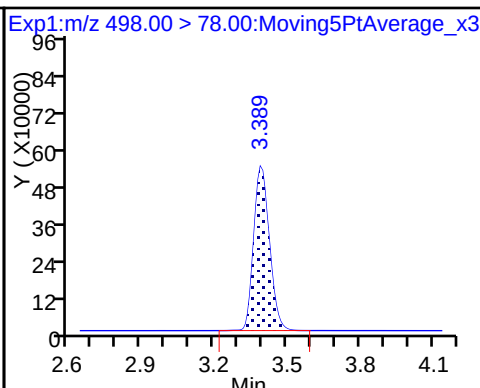
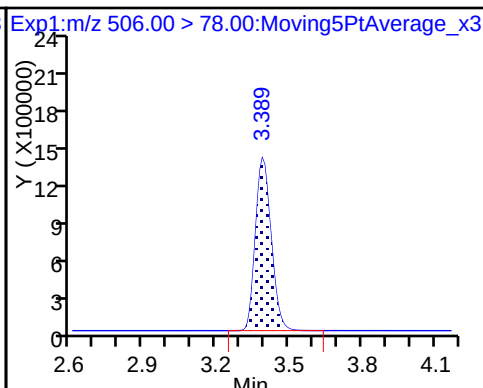
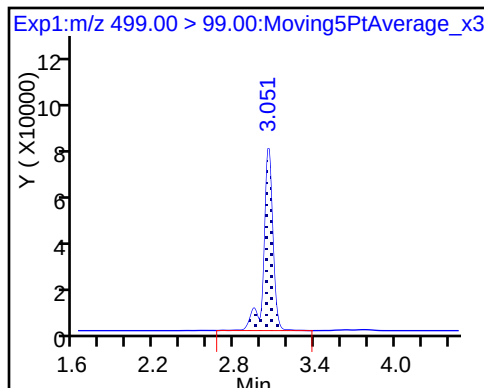
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 21 13C8 FOSA

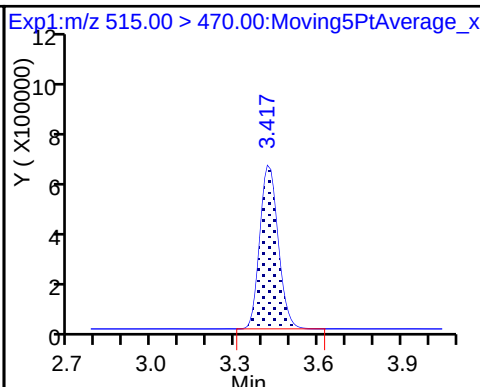
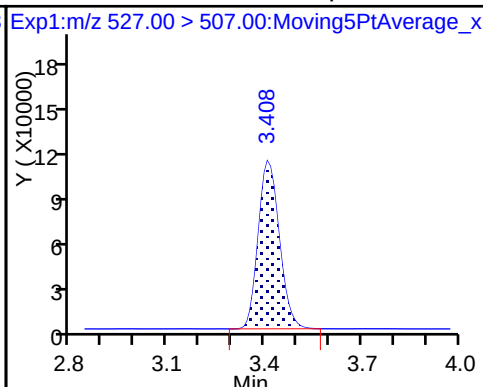
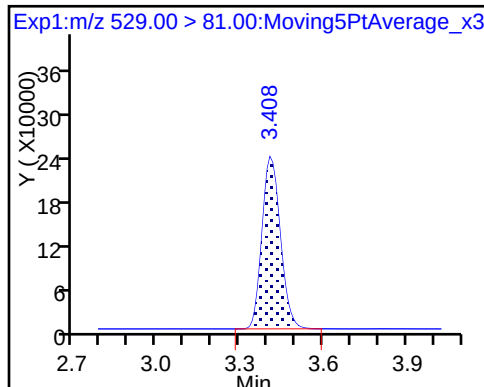
22 Perfluorooctane Sulfonamide



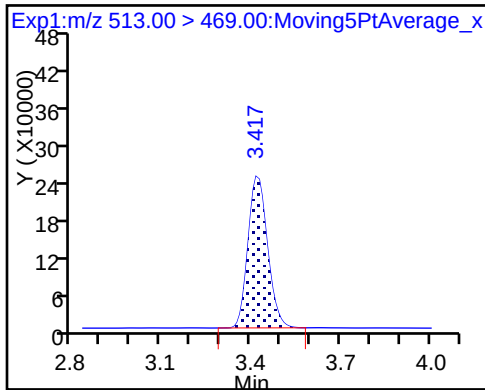
D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodeca

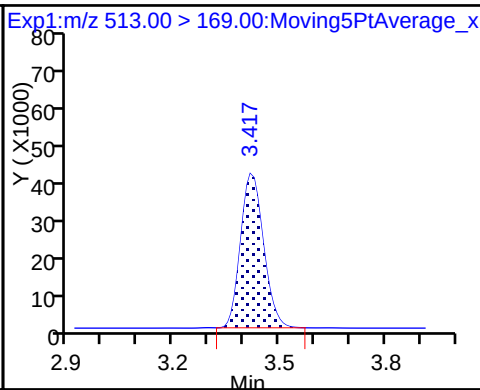
De23 13C2 PFDA



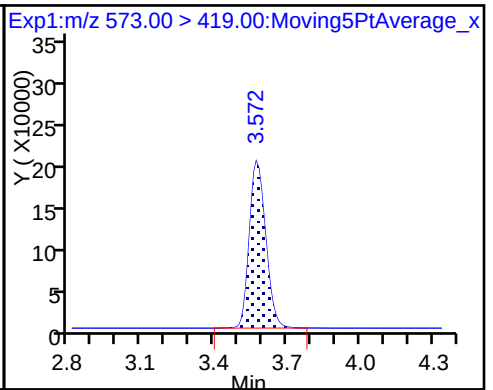
24 Perfluorodecanoic acid



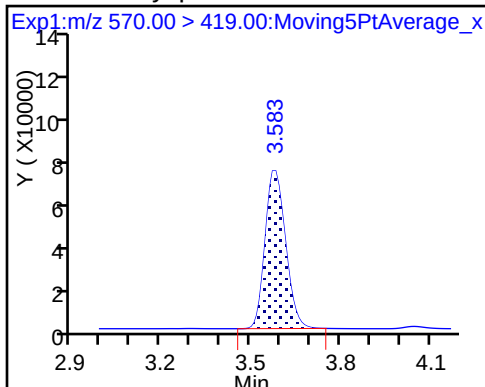
24 Perfluorodecanoic acid



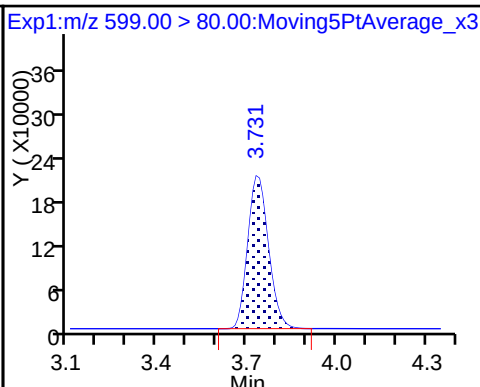
D 27 d3-NMeFOSAA



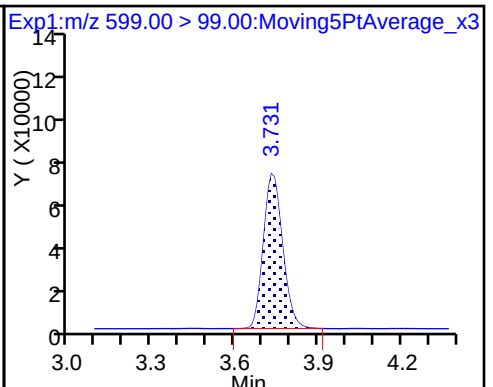
28 N-methyl perfluorooctane sulfonami



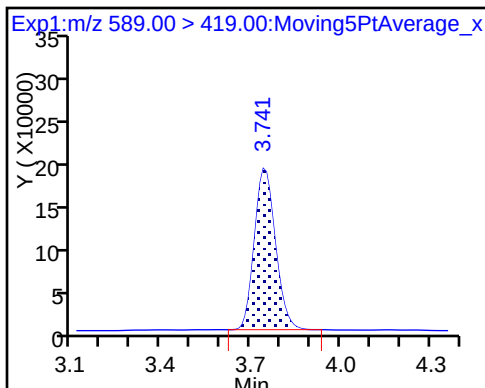
29 Perfluorodecane Sulfonic acid



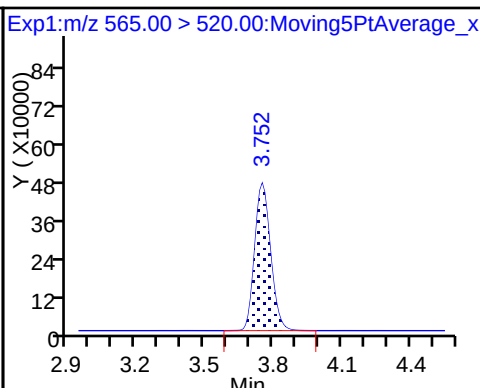
29 Perfluorodecane Sulfonic acid



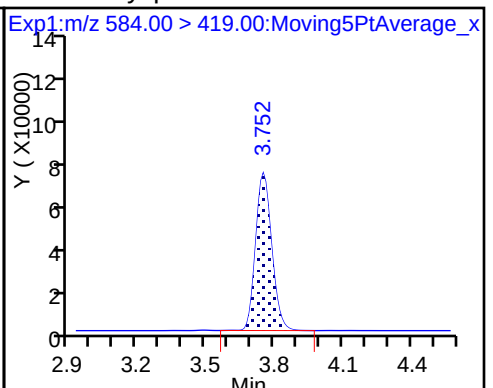
D 32 d5-NEtFOSAA



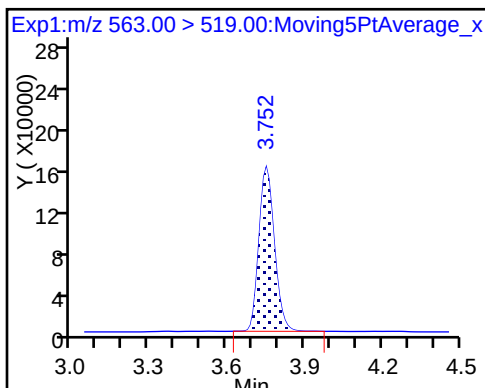
D 30 13C2 PFUnA



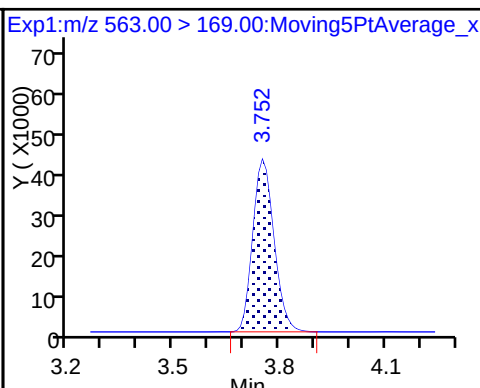
33 N-ethyl perfluorooctane sulfonamid



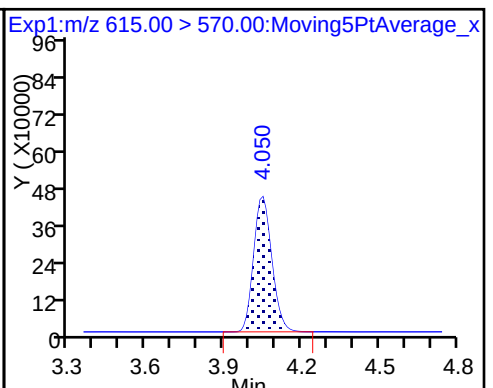
31 Perfluoroundecanoic acid



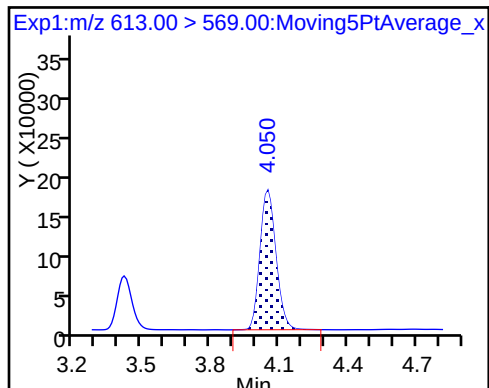
31 Perfluoroundecanoic acid



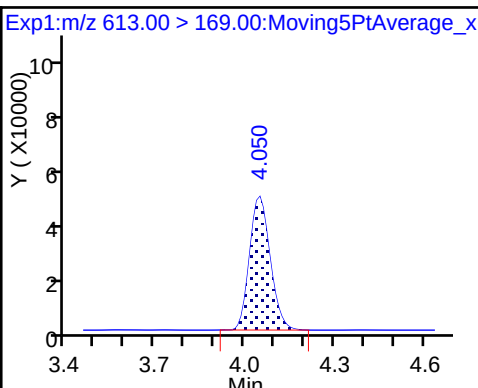
D 36 13C2 PFDaA



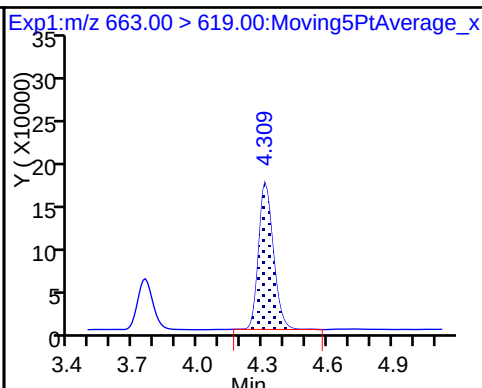
37 Perfluorododecanoic acid



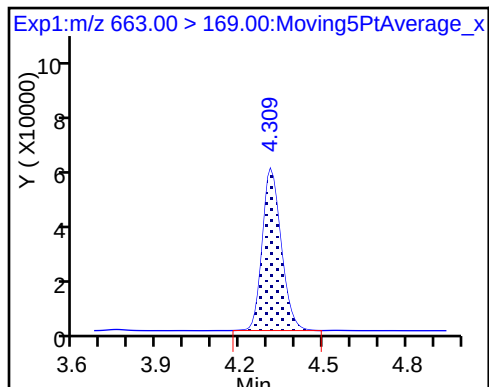
37 Perfluorododecanoic acid



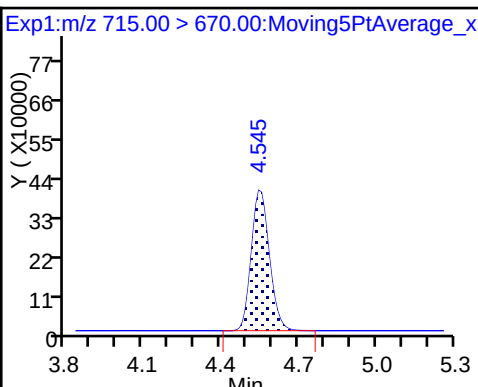
41 Perfluorotridecanoic acid



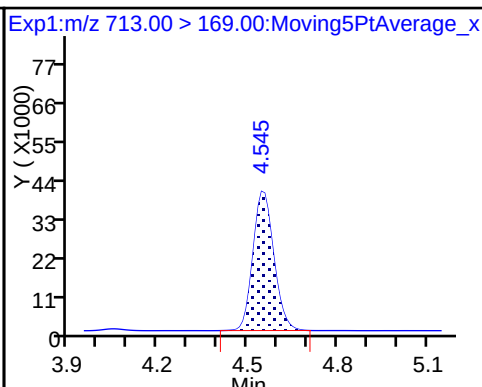
41 Perfluorotridecanoic acid



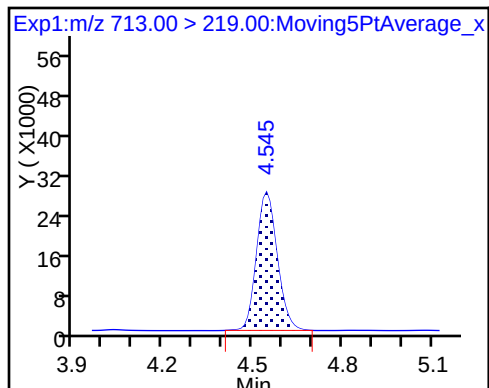
D 43 13C2-PFTeDA



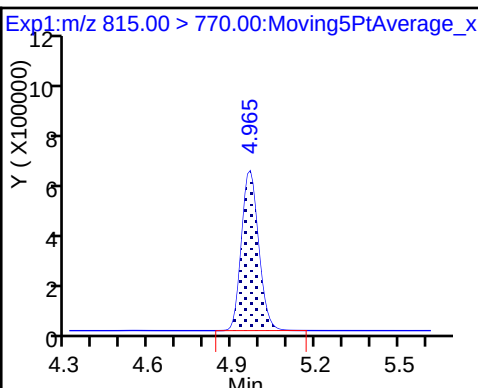
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCV 320-213558/8 Calibration Date: 03/17/2018 01:30

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.16LLBX_040.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9459		2.55	2.50	2.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.204		2.58	2.50	3.1	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	80.14		2.29	2.21	3.6	30.0
4:2 FTS	AveID	16.07	15.02		2.18	2.34	-6.5	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	1.004		2.49	2.50	-0.5	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.050		2.53	2.50	1.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.122		2.29	2.28	0.6	30.0
6:2FTS	AveID	1.665	1.644		2.34	2.37	-1.3	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.128		2.53	2.50	1.1	30.0
Perfluorooctanesulfonic Acid (PFHpS)	AveID	1.314	1.385		2.51	2.38	5.4	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.157		2.48	2.32	6.9	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	1.063		2.61	2.50	4.3	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9717	1.024		2.63	2.50	5.4	30.0
8:2FTS	AveID	1.257	1.249		2.38	2.40	-0.6	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	0.9663		2.55	2.50	1.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.048		2.52	2.50	0.7	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6724		2.54	2.41	5.3	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.9742		2.49	2.50	-0.5	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7960		2.37	2.50	-5.0	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.028		2.51	2.50	0.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	1.057		2.57	2.50	2.7	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2891		2.62	2.50	4.8	30.0
13C4 PFBA	Ave	1.277	1.291		2.53	2.50	1.1	30.0
13C5 PFPeA	Ave	0.9006	0.8979		2.49	2.50	-0.3	30.0
13C3-PFBS	Ave	0.0222	0.0230		2.40	2.33	3.4	30.0
13C2 PFHxA	Ave	1.004	1.018		2.53	2.50	1.4	30.0
13C4-PFHpA	Ave	0.9767	0.9907		2.54	2.50	1.4	30.0
1802 PFHxS	Ave	1.303	1.264		2.29	2.37	-3.0	30.0
M2-6:2FTS	Ave	0.2501	0.2486		2.36	2.38	-0.6	30.0
13C4 PFOA	Ave	0.9431	0.9523		2.52	2.50	1.0	30.0
13C4 PFOS	Ave	0.9113	0.9155		2.40	2.39	0.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCV 320-213558/8 Calibration Date: 03/17/2018 01:30
 Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56
 Lab File ID: 2018.03.16LLBX_040.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7666		2.54	2.50	1.6	30.0
13C8 FOSA	Ave	1.319	1.340		2.54	2.50	1.5	30.0
M2-8:2FTS	Ave	0.2350	0.2368		2.41	2.40	0.8	30.0
13C2 PFDA	Ave	0.6303	0.6356		2.52	2.50	0.8	30.0
d3-NMeFOSAA	Ave	0.2081	0.2086		2.51	2.50	0.2	30.0
13C2 PFUnA	Ave	0.4935	0.5028		2.55	2.50	1.9	30.0
d5-NEtFOSAA	Ave	0.1990	0.2007		2.52	2.50	0.8	30.0
13C2 PFDoA	Ave	0.4680	0.4791		2.56	2.50	2.4	30.0
13C2-PFTeDA	Ave	0.4272	0.4050		2.37	2.50	-5.2	30.0
13C2-PFHxDA	Ave	0.6248	0.6547		2.62	2.50	4.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\2018.03.16LLBX_040.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 17-Mar-2018 01:30:26 ALS Bottle#: 14 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 10:41:24 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK040

First Level Reviewer: hannigana

Date: 19-Mar-2018 10:41:24

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.440	-0.005	0.537	6053815	2.53		101	100026	
2 Perfluorobutyric acid										
212.90 > 169.00	1.435	1.441	-0.006	1.000	5726252	2.55		102	3760	
D 3 13C5-PFPeA										
267.90 > 223.00	1.692	1.696	-0.004	0.633	4211854	2.49		99.7	109600	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.692	1.700	-0.008	1.000	5070937	2.58		103	1967	
D 47 13C3-PFBS										
301.90 > 83.00	1.727	1.730	-0.003	0.646	100272	2.40		103	711	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.727	1.736	-0.009	1.000	7638799	2.29		104	3218	
298.90 > 99.00	1.727	1.736	-0.009	1.000	3144901		2.43(1.25-3.74)		2987	
D 60 M2-4:2FTS										
329.00 > 81.00	1.935	1.942	-0.007	0.724	718112	NC			7964	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.935	1.946	-0.011	1.000	1512860	2.18		93.5	54022	
D 7 13C2 PFHxA										
315.00 > 270.00	1.976	1.979	-0.003	0.739	4776004	2.53		101	138764	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.976	1.987	-0.011	1.000	4797297	2.49		99.5	14711	
313.00 > 119.00	1.976	1.987	-0.011	1.000	443265		10.82(5.03-15.10)		12955	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.866	4647093	2.54		101	75588	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.315	2.315	0.0	1.000	4879390	2.53		101	9746	
363.00 > 169.00	2.315	2.315	0.0	1.000	1890857		2.58(1.13-3.40)		28162	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.871	5610597	2.29		97.0	70219	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.315	2.328	-0.013	0.994	6055021	2.29		101	716	
399.00 > 99.00	2.315	2.328	-0.013	0.994	1976456		3.06(1.50-4.49)		714	
D 12 M2-6:2FTS										
429.00 > 81.00	2.649	2.651	-0.002	0.991	1107642	2.36		99.4	27815	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.649	2.657	-0.008	1.000	1816719	2.34		98.7	57531	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.678	-0.005	1.000	4466654	2.52		101	84126	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.681	-0.008		4690619	2.50			70885	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.681	-0.008	1.000	5038880	2.53		101	2240	
413.00 > 169.00	2.673	2.681	-0.008	1.000	2727659		1.85(0.84-2.52)		9763	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.681	2.689	-0.008	1.000	5663869	2.51		105	67846	
449.00 > 99.00	2.681	2.689	-0.008	1.000	1503475		3.77(1.94-5.82)		26134	
D 18 13C4 PFOS										
503.00 > 80.00	3.045	3.050	-0.005	1.139	4105321	2.40		100	30087	
D 19 13C5 PFNA										
468.00 > 423.00	3.052	3.052	0.0	1.142	3595749	2.54		102	68163	
20 Perfluorononanoic acid										
463.00 > 419.00	3.052	3.058	-0.006	1.000	3823303	2.61		104	9969	
463.00 > 169.00	3.052	3.058	-0.006	1.000	896206		4.27(1.90-5.69)		21999	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.045	3.058	-0.013	1.000	4611783	2.48		107	14485	
499.00 > 99.00	3.045	3.058	-0.013	1.000	1000398		4.61(2.31-6.93)		10250	
D 21 13C8 FOSA										
506.00 > 78.00	3.381	3.388	-0.007	1.265	6284860	2.54		102	56586	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.381	3.389	-0.008	1.000	6434903	2.63		105	62119	
D 26 M2-8:2FTS										
529.00 > 81.00	3.399	3.406	-0.007	1.272	1063928	2.41		101	19410	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.399	3.408	-0.009	1.000	1328968	2.38		99.4	41648	
D 23 13C2 PFDA										
515.00 > 470.00	3.417	3.416	0.001	1.278	2981321	2.52		101	43901	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.417	3.417	0.0	1.000	2880897	2.55		102	13466	
513.00 > 169.00	3.417	3.417	0.0	1.000	516972		5.57(2.36-7.09)		16223	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.571	3.570	0.001	1.336	978399	2.51		100	23342	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.571	3.583	-0.012	1.000	1025827	2.52		101	10061	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.730	3.731	-0.001	1.000	2783390	2.54		105	97681	
599.00 > 99.00	3.730	3.731	-0.001	1.000	902689		3.08(1.39-4.16)		21081	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.740	3.740	0.0	1.399	941187	2.52		101	1809	
D 30 13C2 PFUnA										
565.00 > 520.00	3.740	3.747	-0.007	1.399	2358360	2.55		102	81505	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.740	3.752	-0.012	1.000	916881	2.49		99.5	20984	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.750	3.752	-0.002	1.003	1877276	2.37		95.0	6971	
563.00 > 169.00	3.750	3.752	-0.002	1.003	502963		3.73(2.12-6.36)		30148	
D 36 13C2 PFDaA										
615.00 > 570.00	4.038	4.041	-0.003	1.511	2247398	2.56		102	10877	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.038	4.050	-0.012	1.000	2310659	2.51		101	425	
613.00 > 169.00	4.038	4.050	-0.012	1.000	589575		3.92(2.13-6.40)		10156	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.307	4.309	-0.002	1.000	2375112	2.57		103	515	
663.00 > 169.00	4.307	4.309	-0.002	1.000	740257		3.21(1.25-3.76)		9212	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.545	4.545	0.0	1.701	1899595	2.37		94.8	15034	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.545	4.545	0.0	1.000	549105	2.62		105	7644	
713.00 > 219.00	4.535	4.545	-0.010	0.998	386661		1.42(0.71-2.13)		4182	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.956	4.956	0.0	1.854	3070738	2.62		105	11295	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.956	4.965	-0.009	1.000	2837863	NC			245	
813.00 > 169.00	4.956	4.965	-0.009	1.000	484941		5.85(2.86-8.58)		5251	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.316	5.323	-0.007	1.000	3045524	NC			558	
913.00 > 169.00	5.316	5.323	-0.007	1.000	384099		7.93(3.83-11.48)		3526	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b\2018.03.16LLBX_040.d

Injection Date: 17-Mar-2018 01:30:26

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

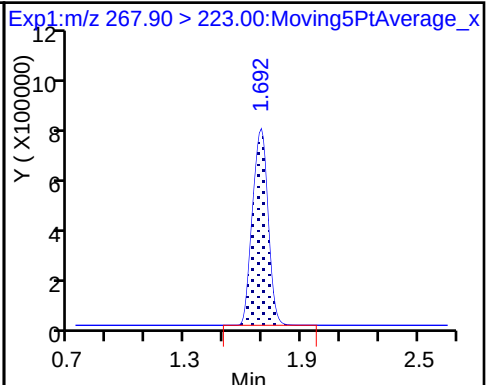
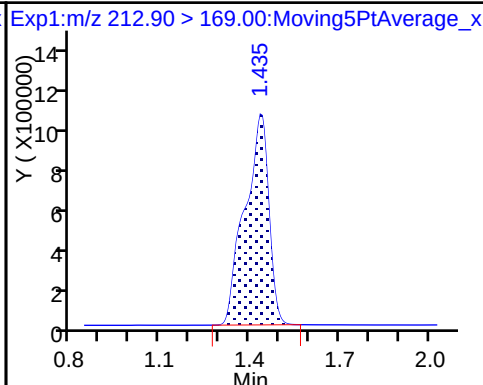
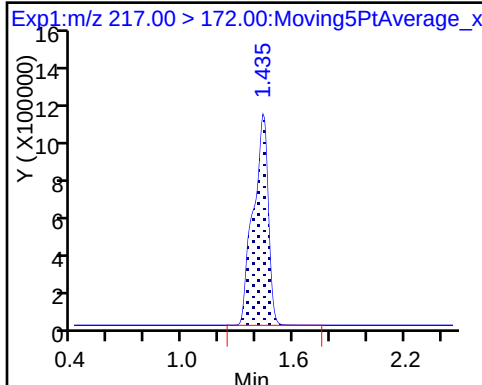
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

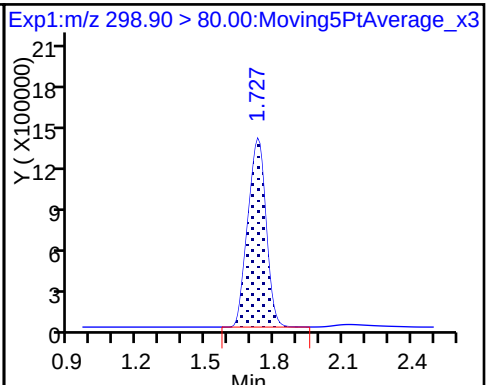
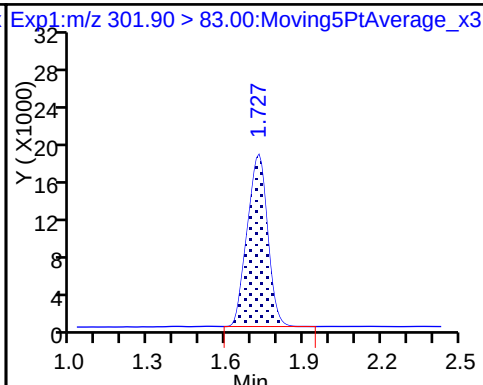
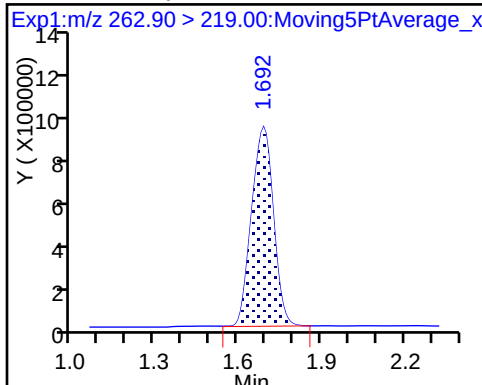
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

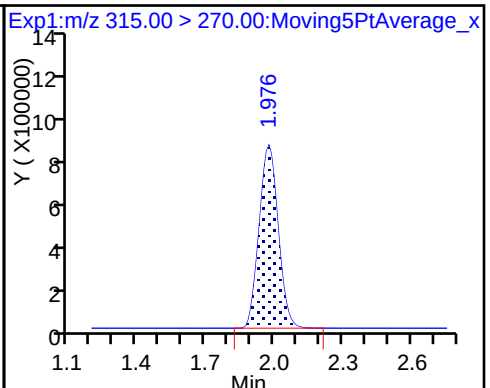
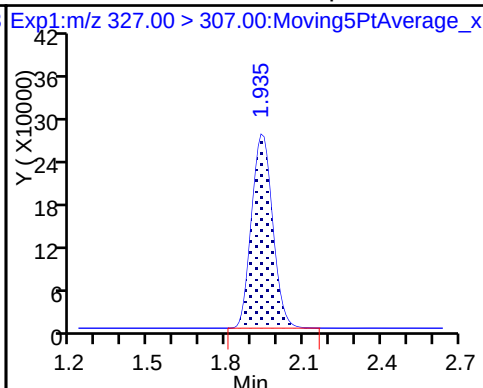
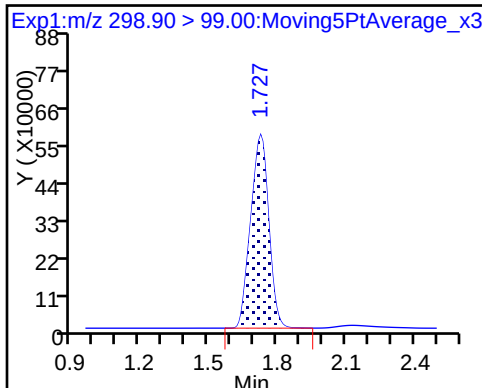
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

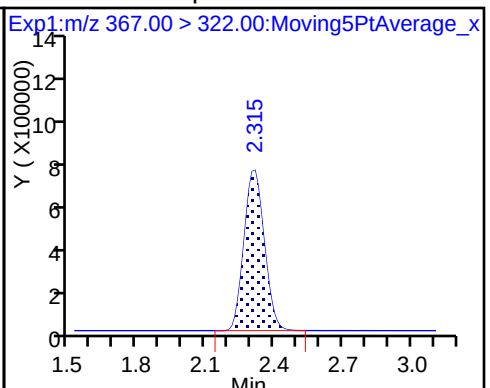
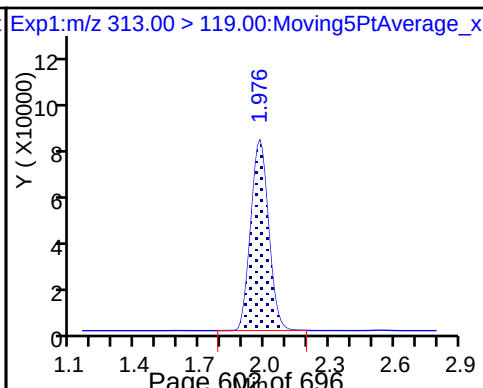
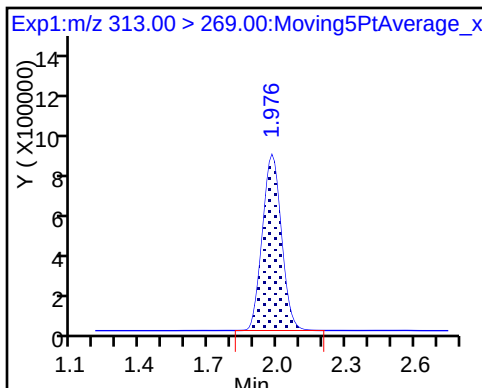
De 7 13C2 PFHxA



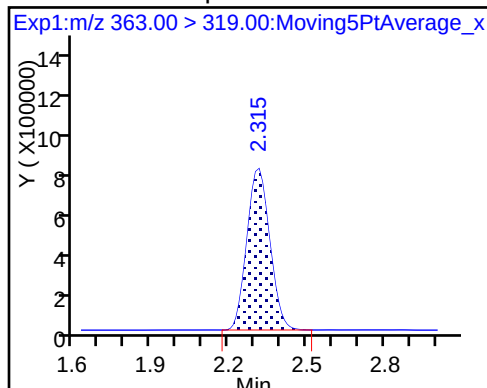
6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

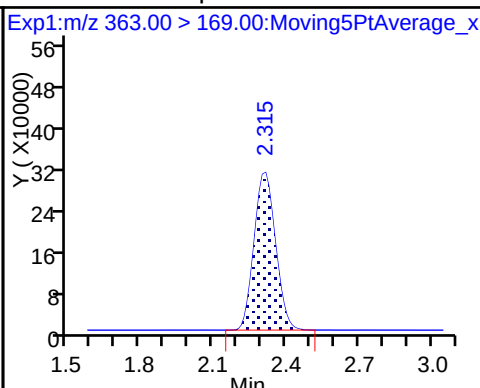
D 9 13C4-PFHpA



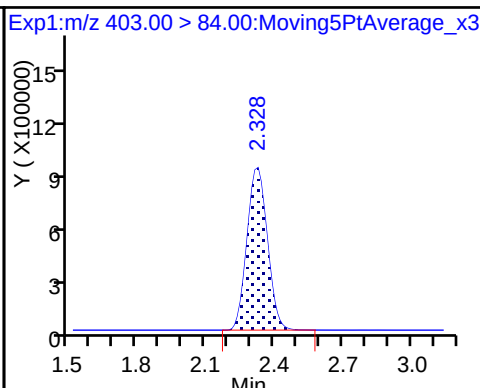
10 Perfluoroheptanoic acid



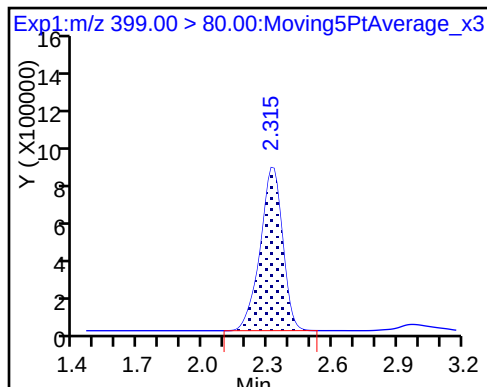
10 Perfluoroheptanoic acid



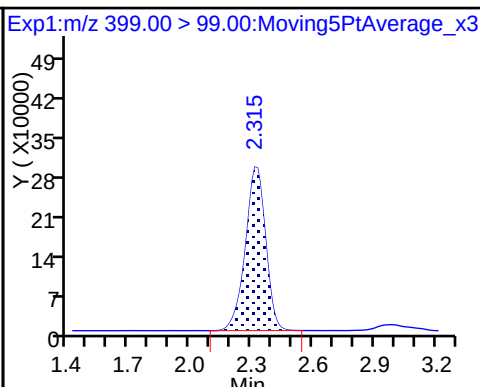
D 11 18O2 PFHxS



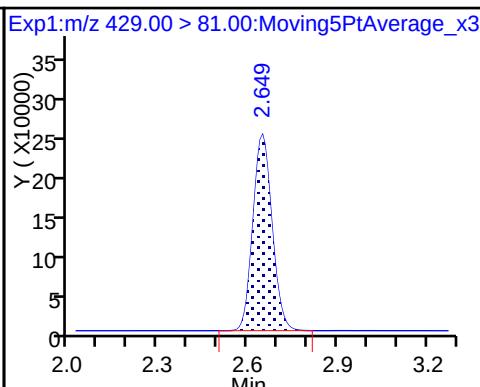
8 Perfluorohexanesulfonic acid



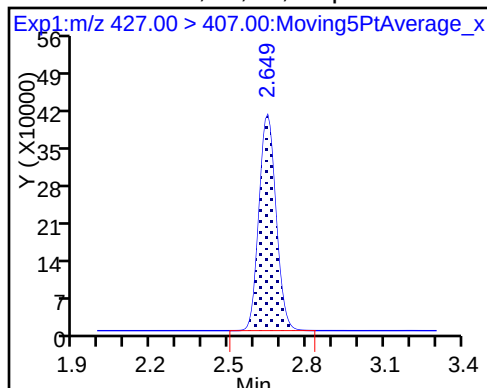
8 Perfluorohexanesulfonic acid



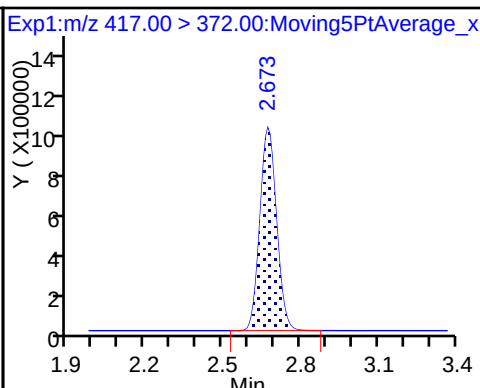
D 12 M2-6:2FTS



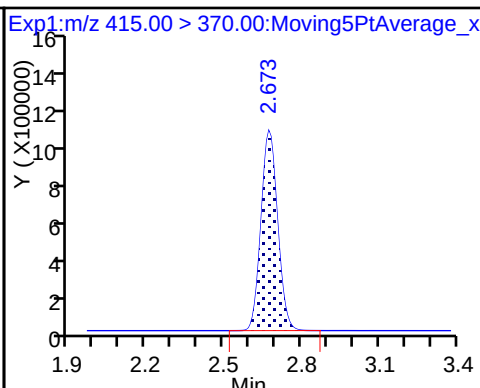
13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate



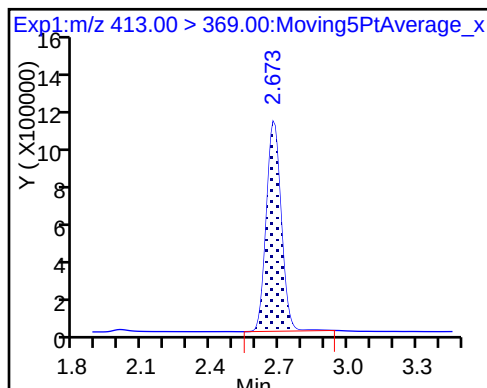
D 14 13C4 PFOA



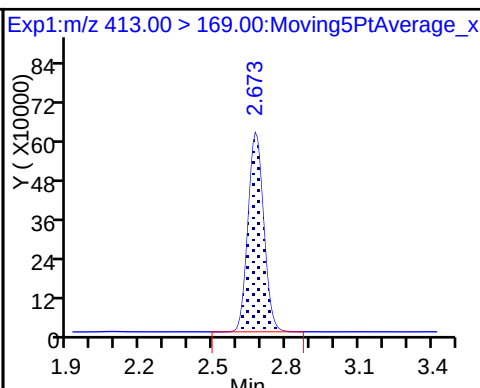
* 62 13C2-PFOA



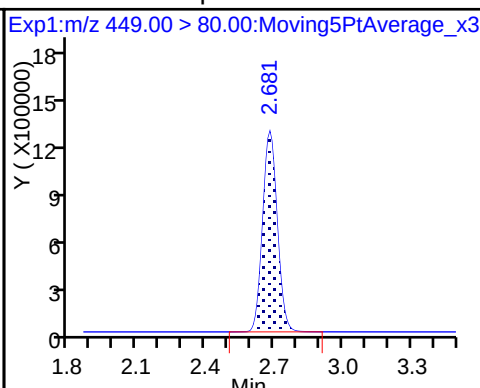
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid



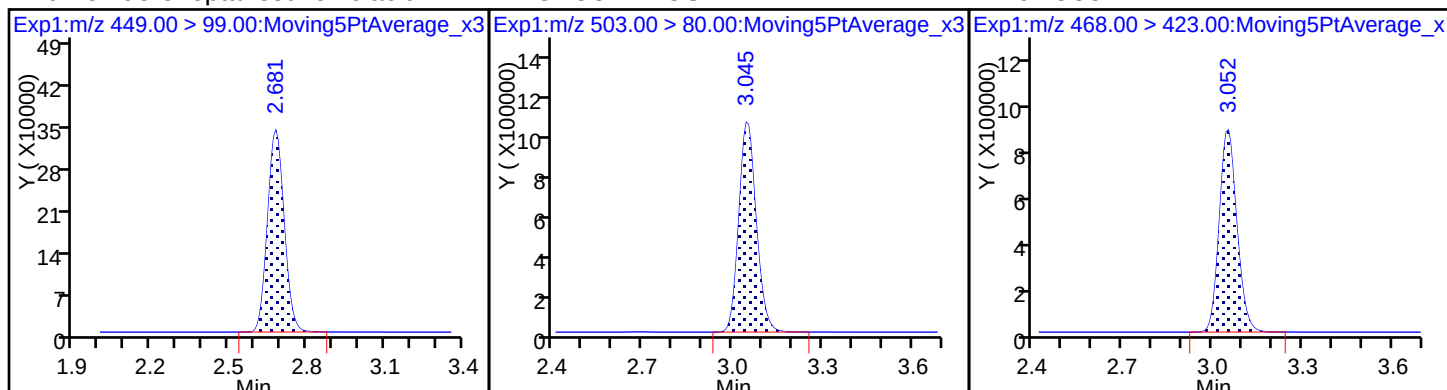
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

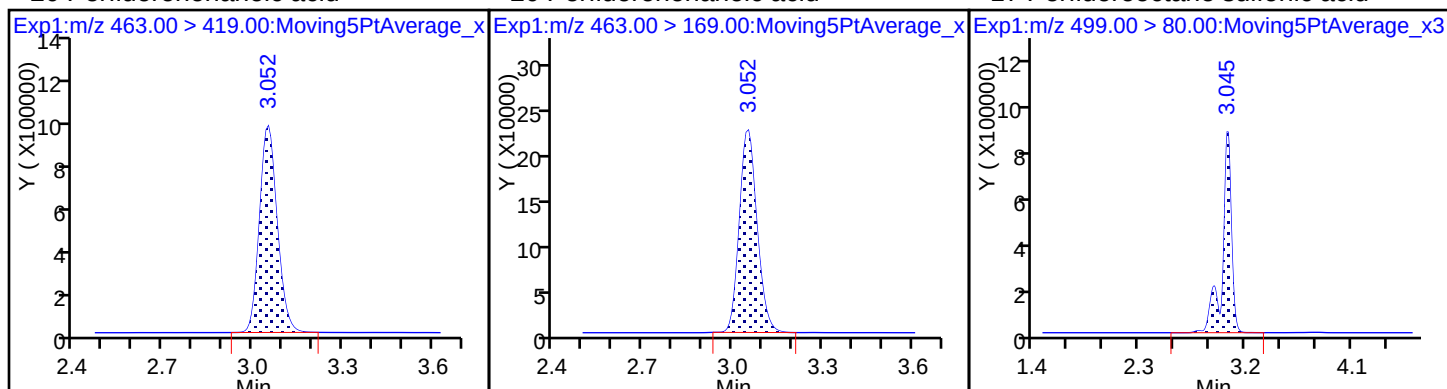
D 19 13C5 PFNA



20 Perfluorononanoic acid

20 Perfluorononanoic acid

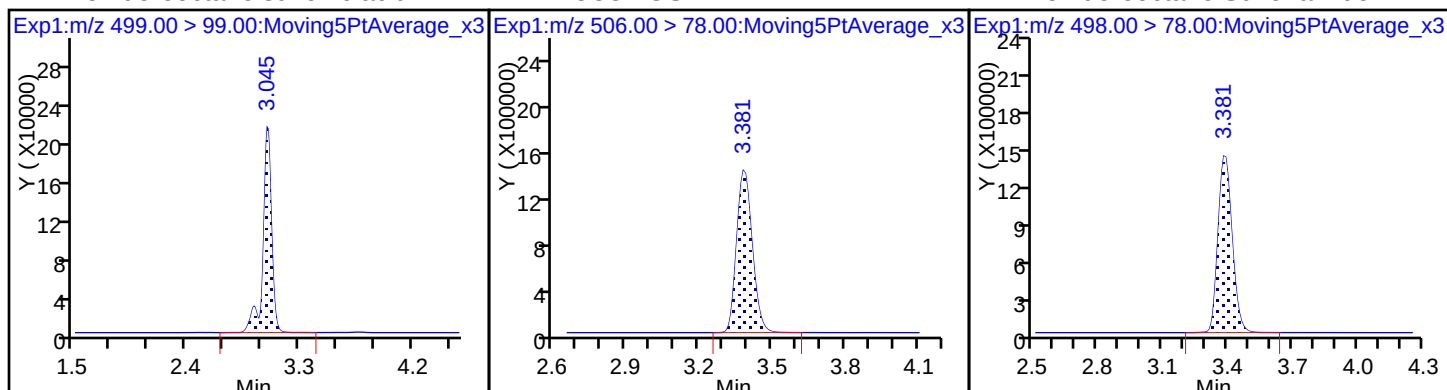
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 21 13C8 FOSA

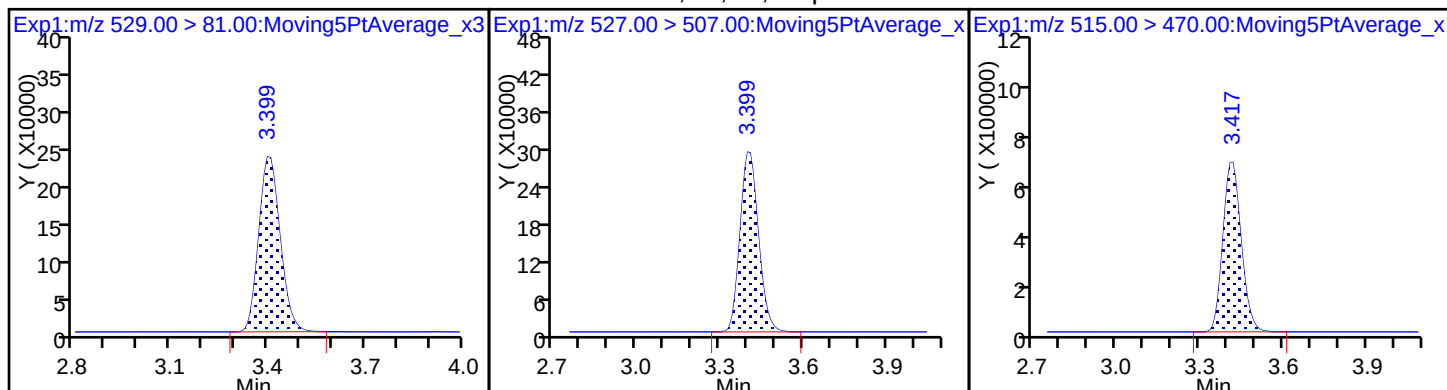
22 Perfluorooctane Sulfonamide



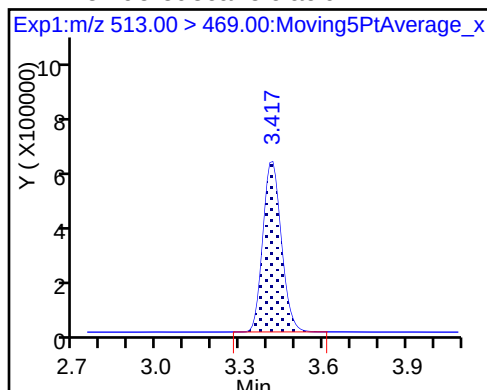
D 26 M2-8:2FTS

25 Sodium 1H,1H,2H,2H-perfluorodeca

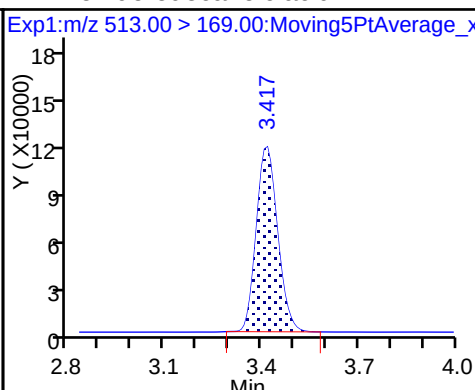
De23 13C2 PFDA



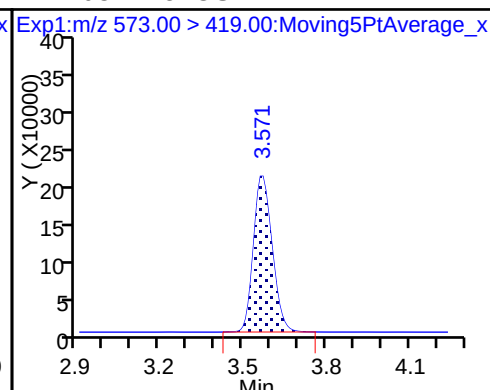
24 Perfluorodecanoic acid



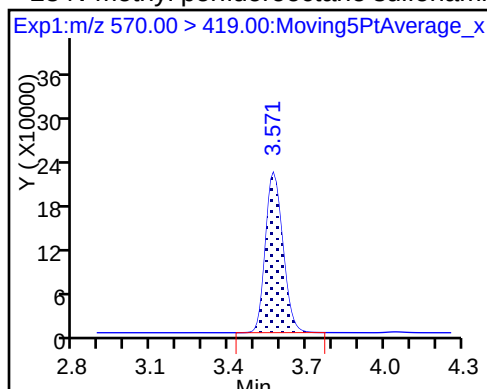
24 Perfluorodecanoic acid



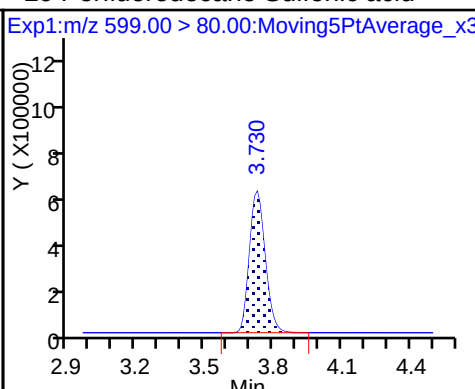
D 27 d3-NMeFOSAA



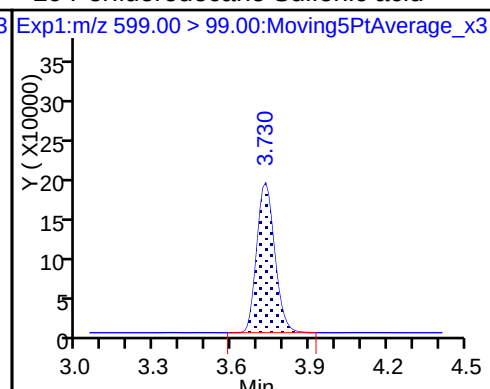
28 N-methyl perfluorooctane sulfonami



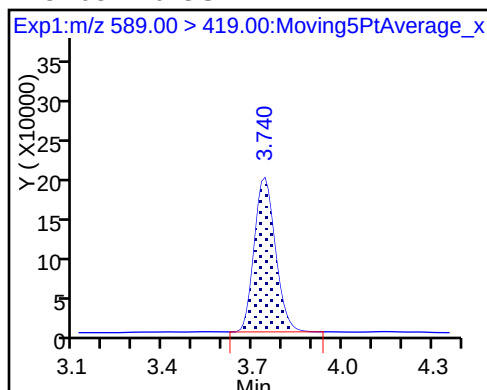
29 Perfluorodecane Sulfonic acid



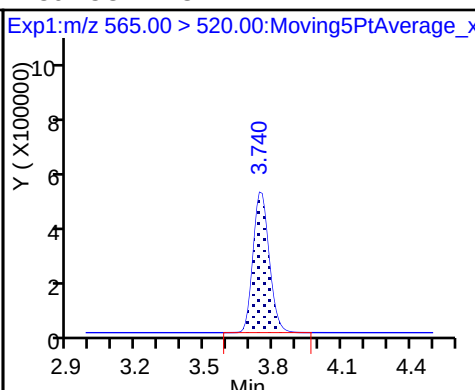
29 Perfluorodecane Sulfonic acid



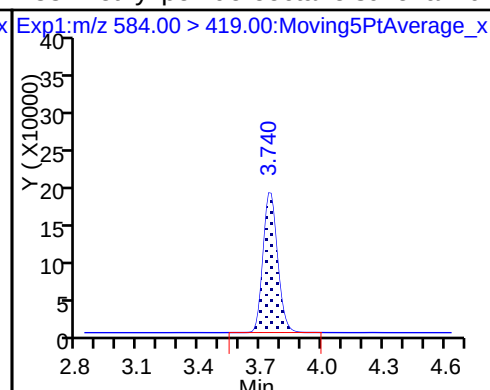
D 32 d5-NEtFOSAA



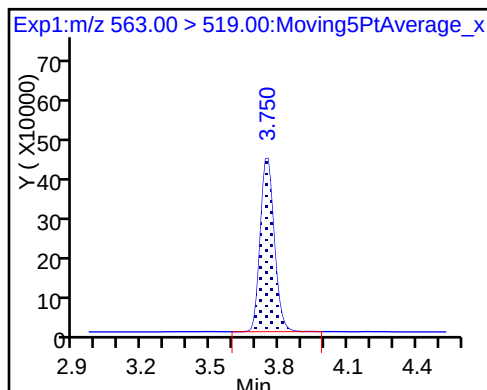
D 30 13C2 PFUnA



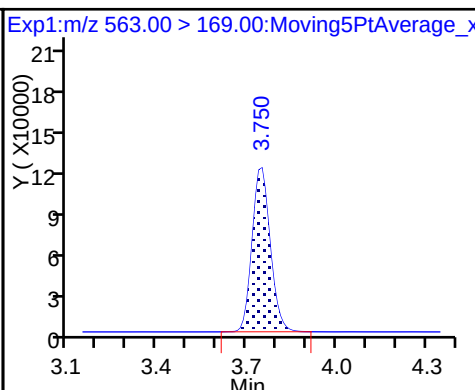
33 N-ethyl perfluorooctane sulfonamid



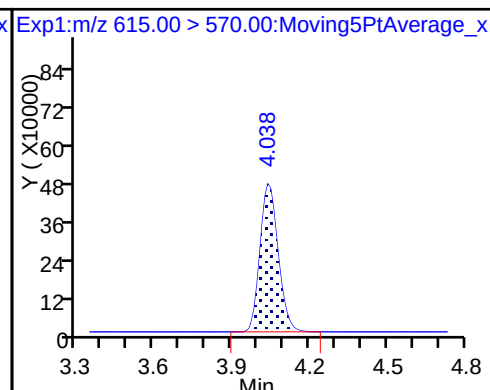
31 Perfluoroundecanoic acid



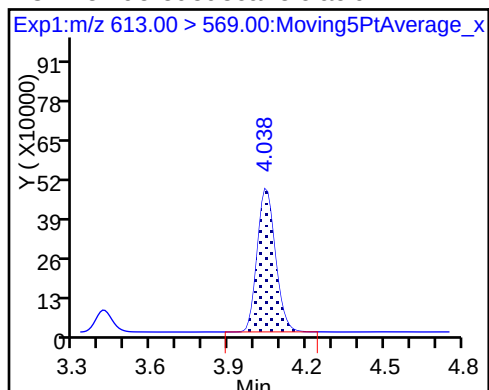
31 Perfluoroundecanoic acid



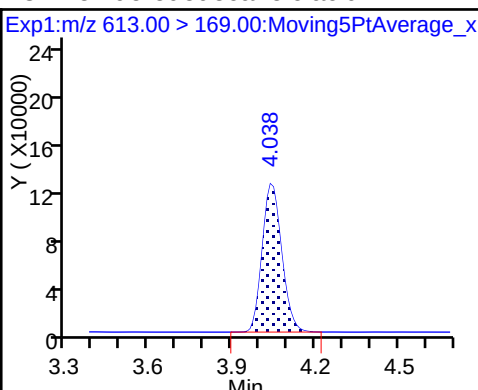
D 36 13C2 PFDaA



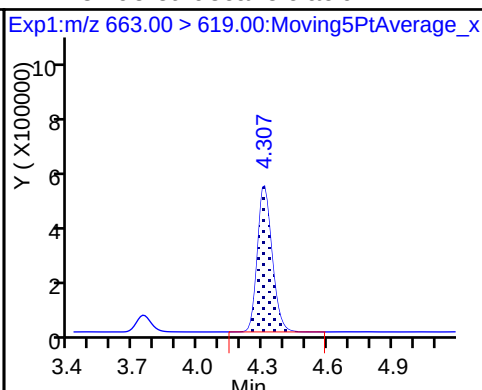
37 Perfluorododecanoic acid



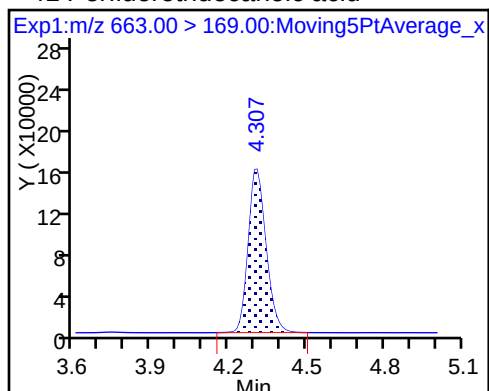
37 Perfluorododecanoic acid



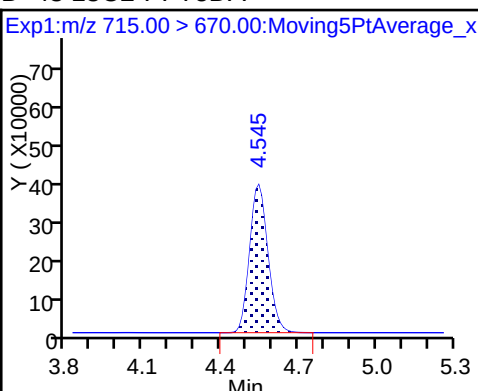
41 Perfluorotridecanoic acid



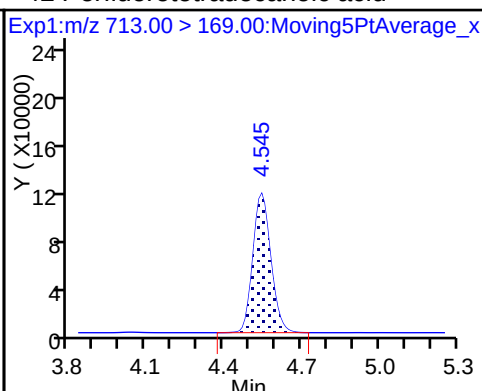
41 Perfluorotridecanoic acid



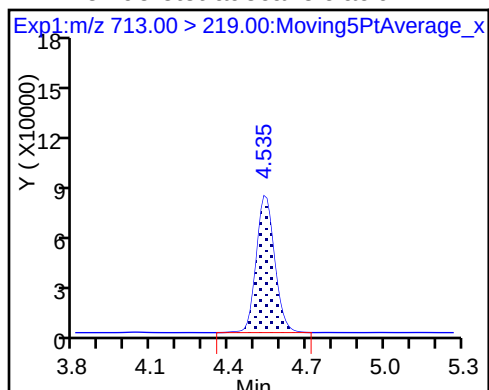
D 43 13C2-PFTeDA



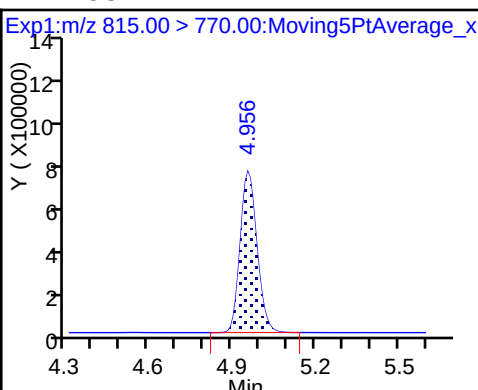
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-212840/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_025.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>250.0 (mL)</u>	Date Analyzed: <u>03/16/2018 00:56</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	1.5	U	2.0	1.5	0.59
2706-90-3	Perfluoropentanoic acid (PFPeA)	1.0	U M	2.0	1.0	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	1.0	U	2.0	1.0	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	0.585	J	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.0	1.0	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U	2.0	1.5	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	3.0	0.76
376-06-7	Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	3.0	0.83
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	1.0	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.0	U	2.0	1.0	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.56
754-91-6	Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-212840/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_025.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>250.0 (mL)</u>	Date Analyzed: <u>03/16/2018 00:56</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	76		50-150
STL00992	13C4 PFBA	82		50-150
STL01893	13C5 PFPeA	79		50-150
STL00993	13C2 PFHxA	82		50-150
STL01892	13C4-PFHpA	87		50-150
STL00990	13C4 PFOA	90		50-150
STL00995	13C5 PFNA	94		50-150
STL00996	13C2 PFDA	95		50-150
STL00997	13C2 PFUnA	95		50-150
STL00998	13C2 PFDoA	80		50-150
STL00994	18O2 PFHxS	79		50-150
STL02116	13C2-PFTeDA	94		50-150
STL00991	13C4 PFOS	82		50-150
STL02337	13C3-PFBS	78		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_025.d
 Lims ID: MB 320-212840/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 16-Mar-2018 00:56:11 ALS Bottle#: 13 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-212840/1-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 10:13:47 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK040

First Level Reviewer: hannigana

Date: 16-Mar-2018 07:55:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.440	1.435	0.005	1.004	12532	0.005563			6.9	
D 1 13C4 PFBA										
217.00 > 172.00	1.434	1.440	-0.006	0.556	6087355	2.06		82.5	113338	
D 3 13C5-PFPeA										
267.90 > 223.00	1.674	1.664	0.010	0.649	3912161	1.98		79.0	86734	
D 47 13C3-PFBS										
301.90 > 83.00	1.700	1.691	0.009	0.659	93534	1.81		77.8	407	
D 7 13C2 PFHxA										
315.00 > 270.00	1.935	1.904	0.031	0.750	4448544	2.06		82.5	122798	
D 9 13C4-PFHpA										
367.00 > 322.00	2.251	2.215	0.036	0.873	4463065	2.19		87.5	98641	
D 11 18O2 PFHxS										
403.00 > 84.00	2.264	2.226	0.038	0.878	5657763	1.87		79.2	109531	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.264	2.264	0.0	1.000	20199	0.007520			157	R
399.00 > 99.00	2.251	2.264	-0.013	0.994	4202		4.81(1.50-4.49)		17.4	R
D 12 M2-6:2FTS										
429.00 > 81.00	2.563	2.562	0.001	0.994	1110911	2.04		86.0	37088	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.563	2.579	-0.016	1.000	3472	0.004347			89.7	
D 14 13C4 PFOA										
417.00 > 372.00	2.579	2.586	-0.007	1.000	4419534	2.25		89.8	116531	
* 62 13C2-PFOA										
415.00 > 370.00	2.579	2.602	-0.023		5182368	2.50			176045	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.587	2.602	-0.015	1.003	30047	0.0146			15.1	
413.00 > 169.00	2.587	2.602	-0.015	1.003	19948		1.51(0.84-2.52)		72.0	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	2.937	2.960	-0.023	1.139	3598359	2.35		94.0	71597	
D 18 13C4 PFOS										
503.00 > 80.00	2.937	2.960	-0.023	1.139	4075797	1.96		82.2	72618	
D 21 13C8 FOSA										
506.00 > 78.00	3.281	3.297	-0.016	1.272	5711514	1.89		75.6	61479	
D 26 M2-8:2FTS										
529.00 > 81.00	3.281	3.305	-0.024	1.272	1282514	2.36		98.5	27586	
D 23 13C2 PFDA										
515.00 > 470.00	3.289	3.312	-0.023	1.275	2941556	2.38		95.0	41766	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.281	3.321	-0.040	1.000	6013	0.002689			179	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.444	3.471	-0.027	1.335	940318	2.33		93.1	42496	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.611	3.629	-0.018	1.400	944494	2.16		86.3	1622	
D 30 13C2 PFUnA										
565.00 > 520.00	3.611	3.638	-0.027	1.400	2181659	2.38		95.1	68053	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.611	3.659	-0.048	1.000	6436	0.006787			16.1	
563.00 > 169.00	3.600	3.659	-0.059	0.997	1639		3.93(2.12-6.36)		230	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.611	3.659	-0.048	1.000	2732	0.007450			50.0	
D 36 13C2 PFDaA										
615.00 > 570.00	3.902	3.932	-0.030	1.513	1860451	2.00		79.8	8227	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.394	4.437	-0.043	1.704	1929441	2.34		93.6	14567	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.792	4.811	-0.019	1.000	23747	NC			1.5	
813.00 > 169.00	4.792	4.811	-0.019	1.000	3743		6.34(2.86-8.58)		45.1	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.792	4.848	-0.056	1.858	2030680	1.28		51.3	6608	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_025.d

Injection Date: 16-Mar-2018 00:56:11

Instrument ID: A8_N

Lims ID: MB 320-212840/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

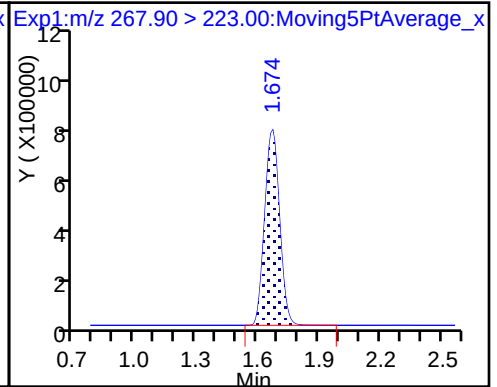
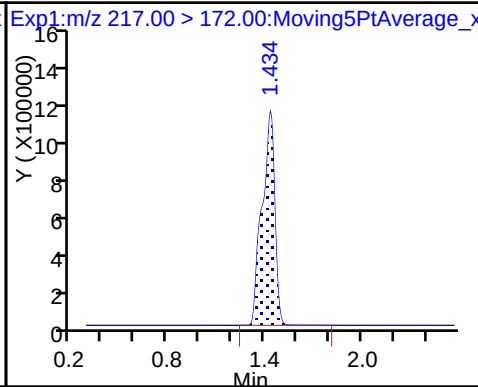
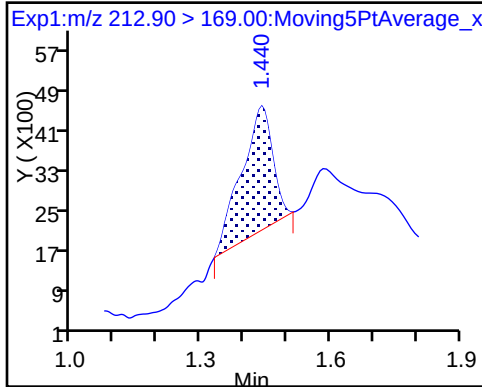
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

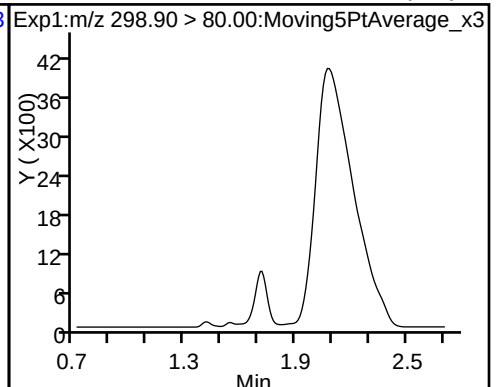
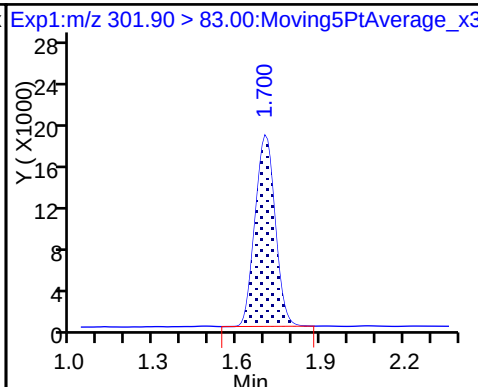
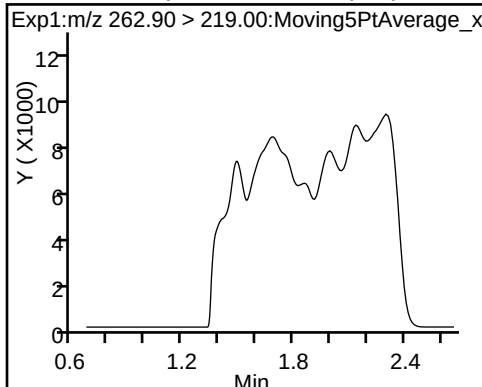
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (ND)

D 47 13C3-PFBS

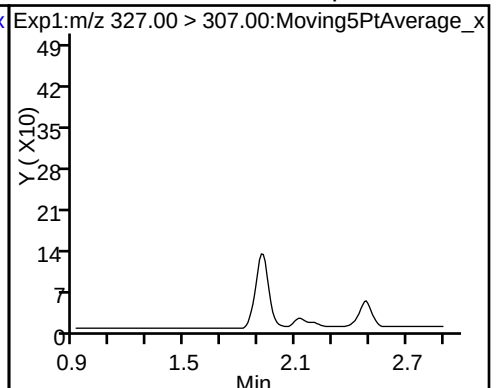
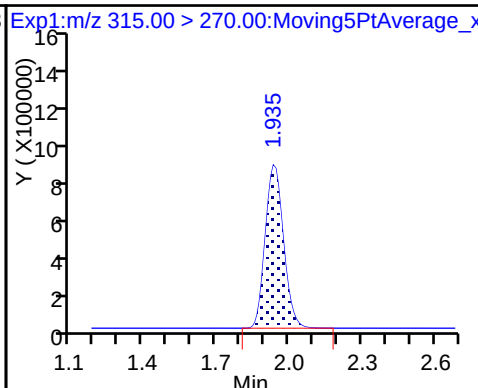
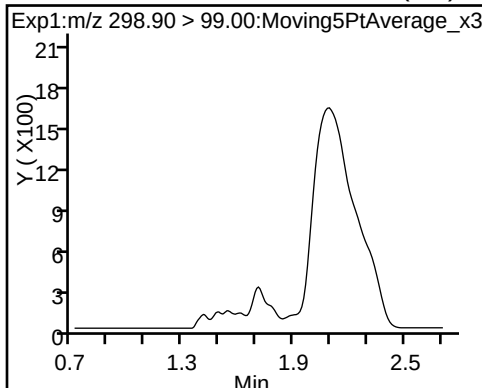
5 Perfluorobutanesulfonic acid (ND)



5 Perfluorobutanesulfonic acid (ND)

D 7 13C2 PFHxA

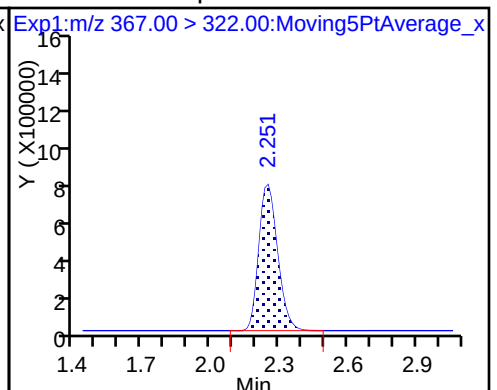
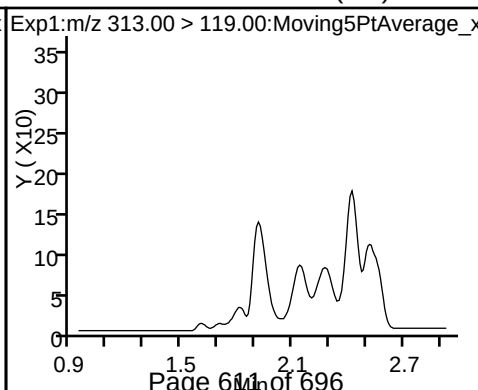
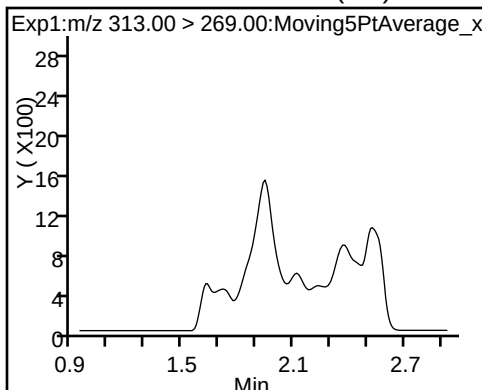
61 Sodium 1H,1H,2H,2H-perfluorohexane (ND)



6 Perfluorohexanoic acid (ND)

6 Perfluorohexanoic acid (ND)

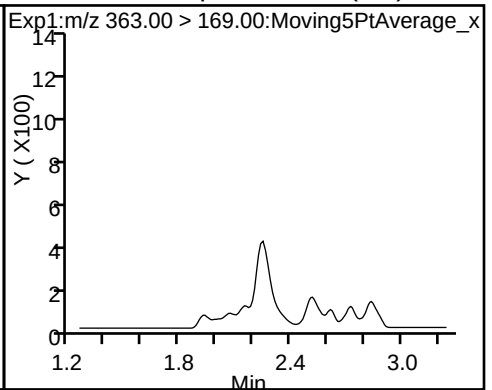
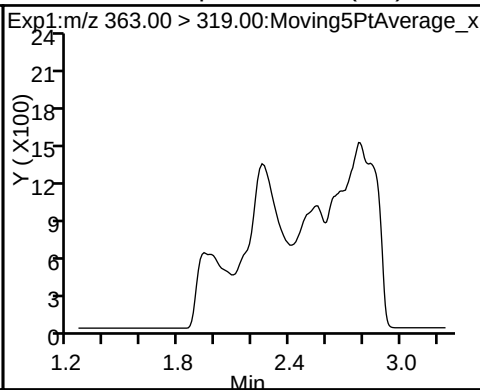
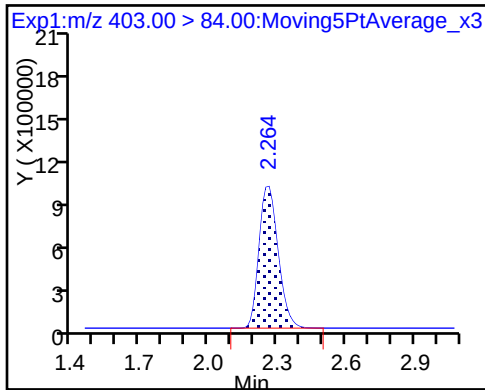
D 9 13C4-PFHpA



D 11 18O2 PFHxS

10 Perfluoroheptanoic acid (ND)

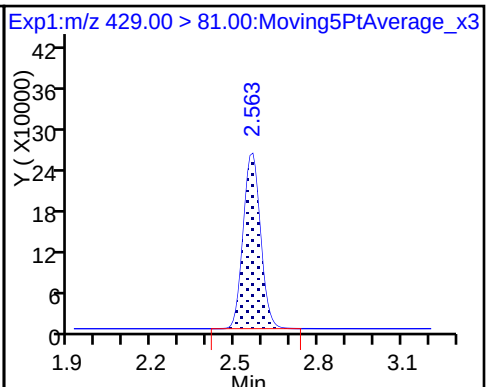
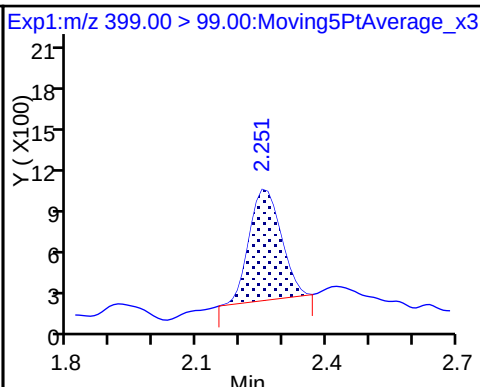
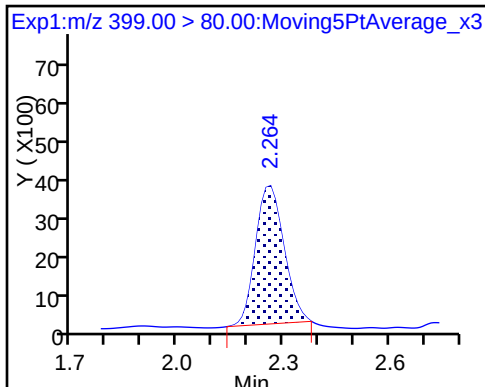
10 Perfluoroheptanoic acid (ND)



8 Perfluorohexanesulfonic acid

8 Perfluorohexanesulfonic acid

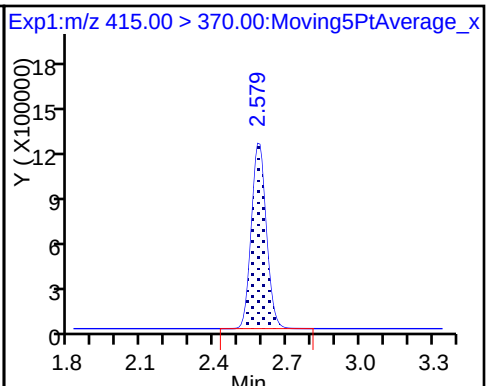
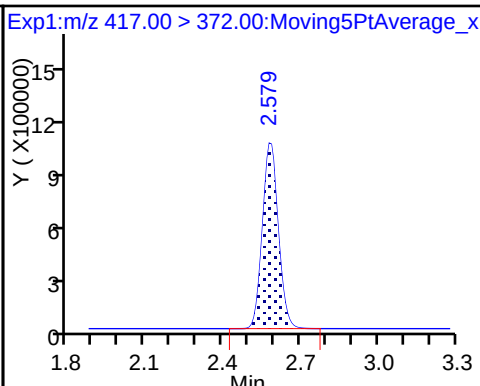
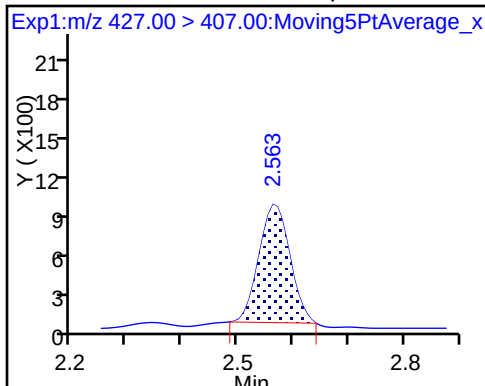
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

D 14 13C4 PFOA

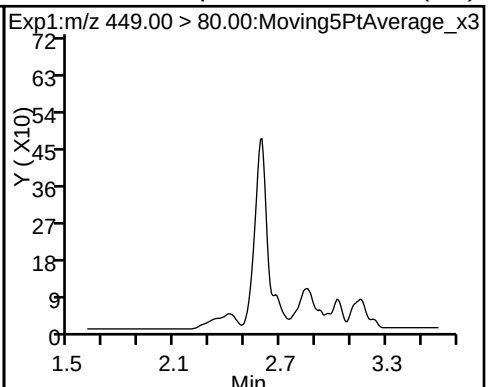
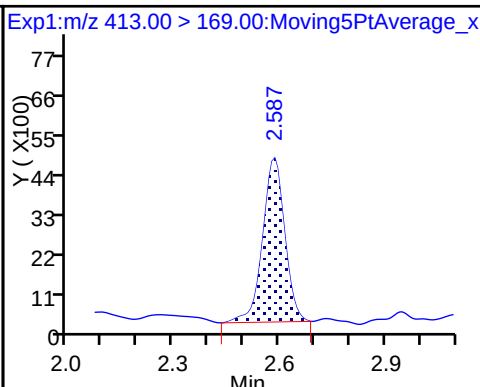
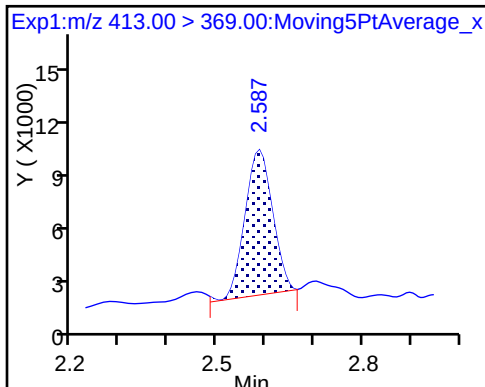
* 62 13C2-PFOA



15 Perfluorooctanoic acid

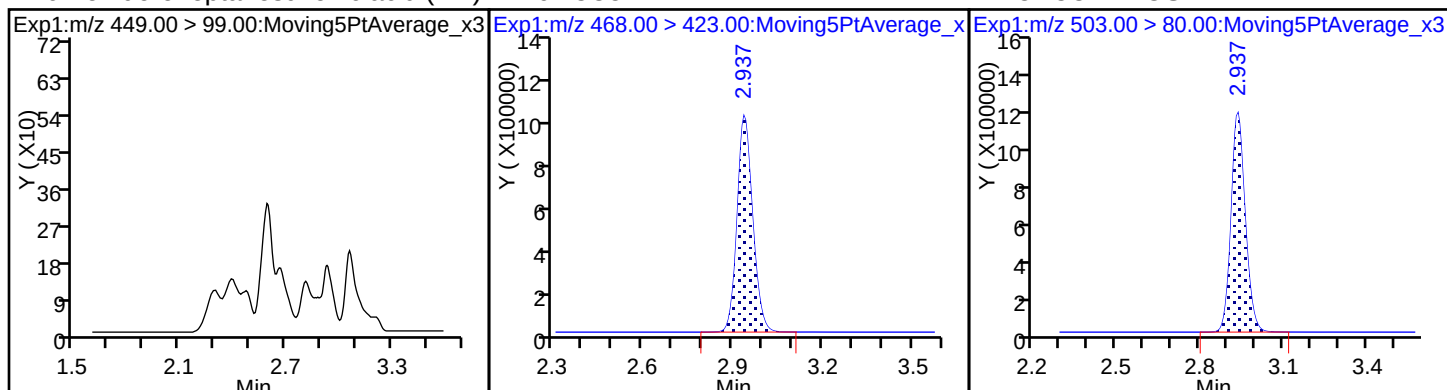
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic acid (ND)



16 Perfluoroheptanesulfonic acid (ND) D 19 13C5 PFNA

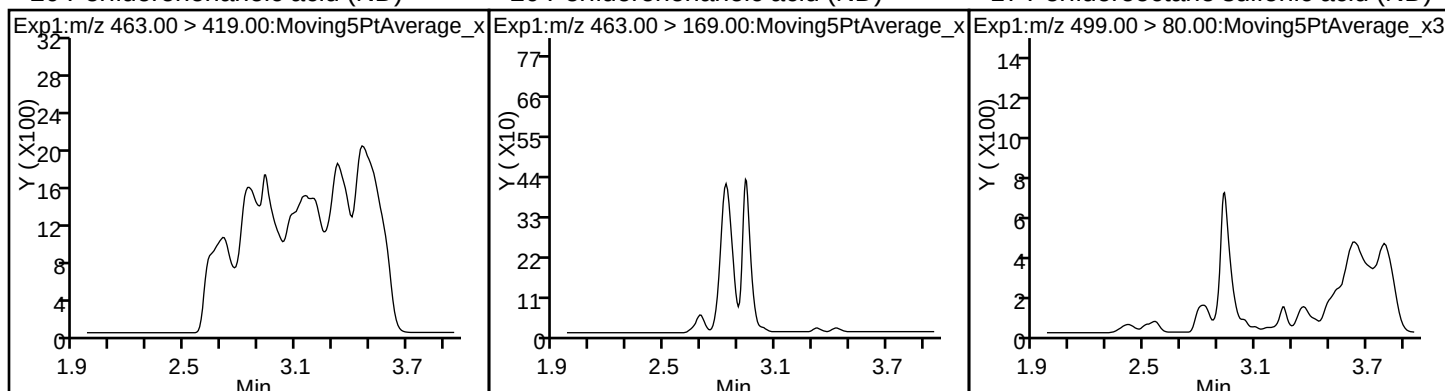
D 18 13C4 PFOS



20 Perfluorononanoic acid (ND)

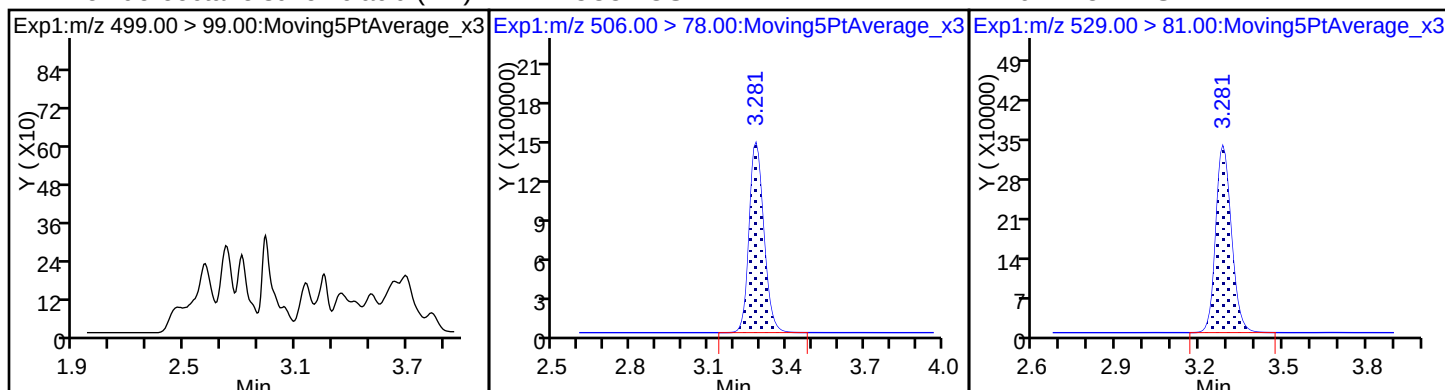
20 Perfluorononanoic acid (ND)

17 Perfluorooctane sulfonic acid (ND)



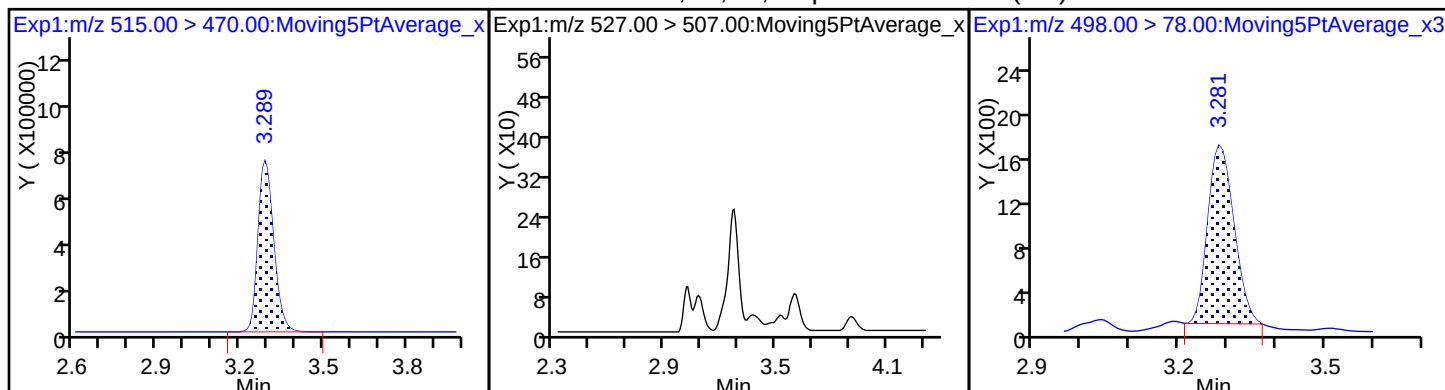
17 Perfluorooctane sulfonic acid (ND) D 21 13C8 FOSA

D 26 M2-8:2FTS

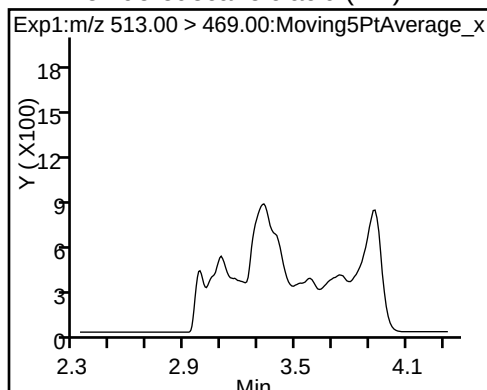


D 23 13C2 PFDA

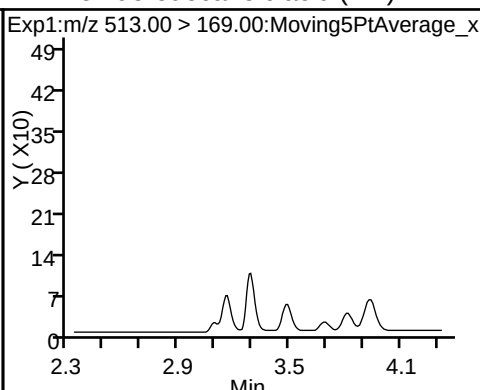
25 Sodium 1H,1H,2H,2H-perfluorodecan-2-ylperfluorooctane Sulfonamide



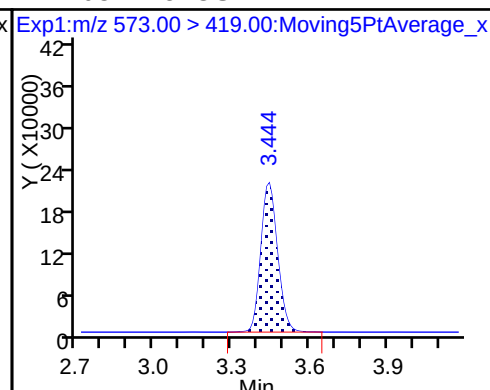
24 Perfluorodecanoic acid (ND)



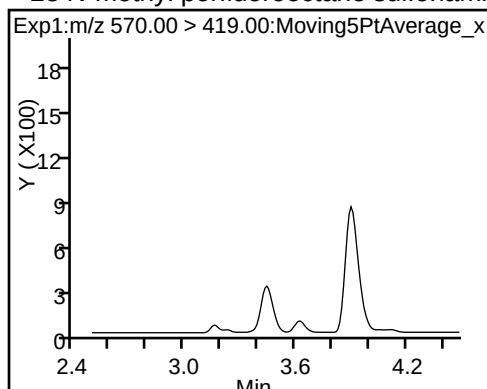
24 Perfluorodecanoic acid (ND)



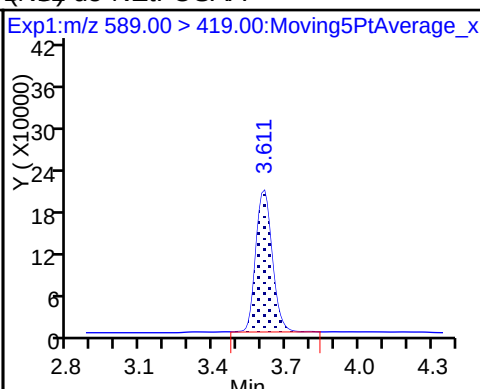
D 27 d3-NMeFOSAA



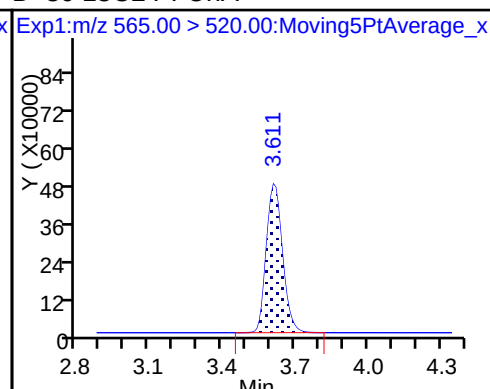
28 N-methyl perfluorooctane sulfonamide (ND)



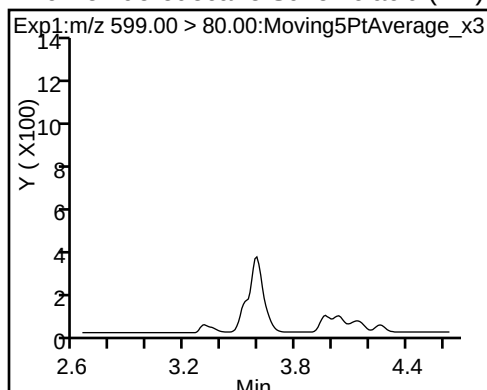
D 29 d5-NEtFOSAA



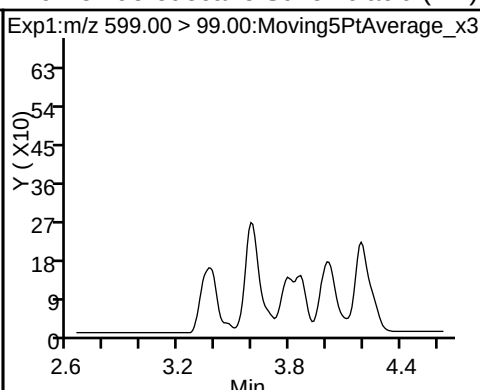
D 30 13C2 PFUnA



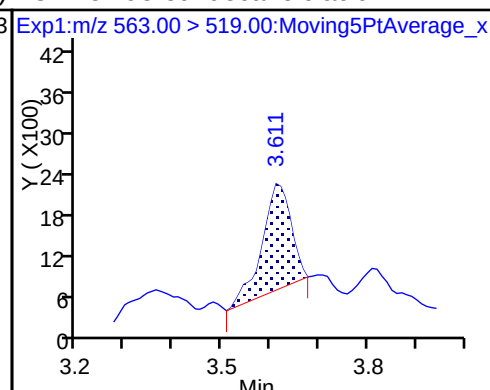
29 Perfluorodecane Sulfonic acid (ND)



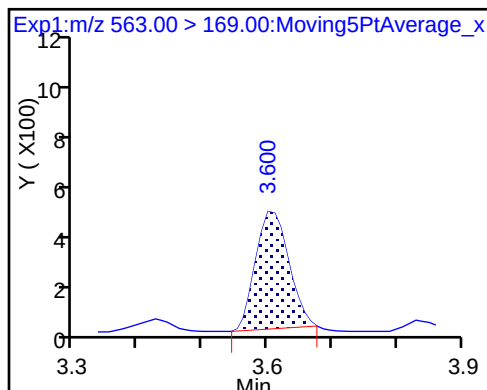
29 Perfluorodecane Sulfonic acid (ND)



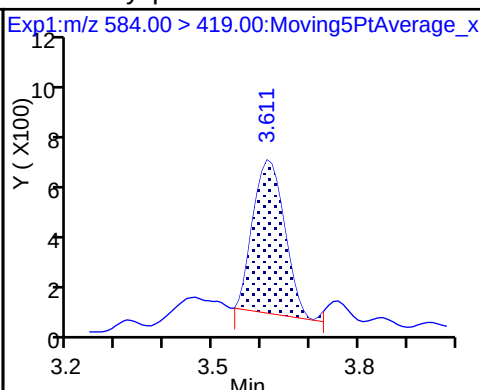
31 Perfluoroundecanoic acid



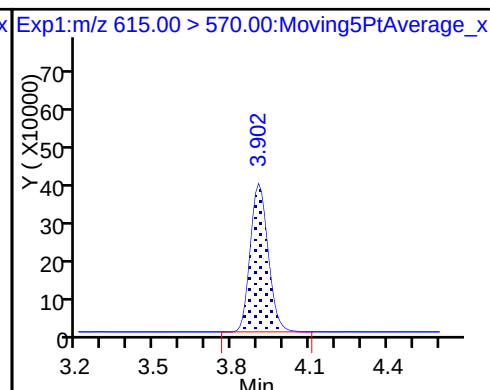
31 Perfluoroundecanoic acid



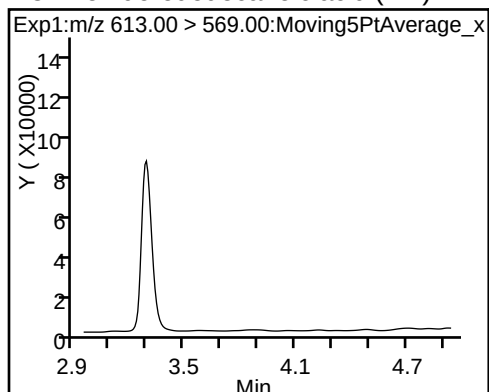
33 N-ethyl perfluorooctane sulfonamid



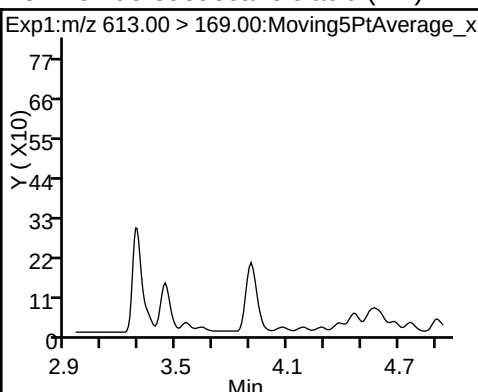
D 36 13C2 PFDaA



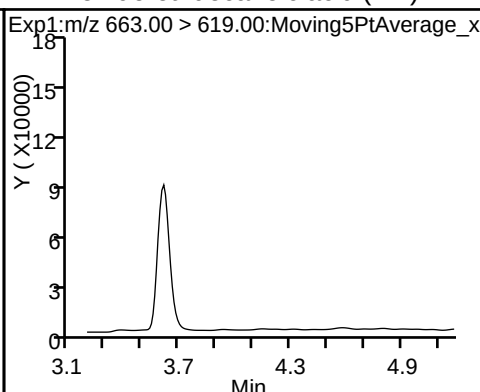
37 Perfluorododecanoic acid (ND)



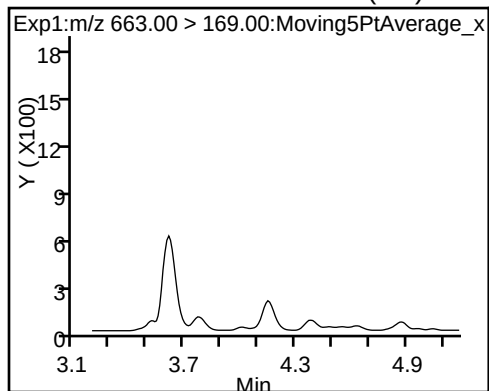
37 Perfluorododecanoic acid (ND)



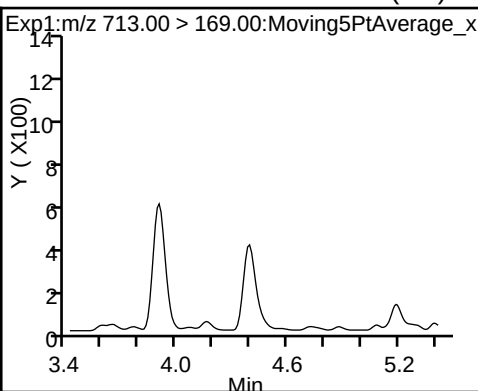
41 Perfluorotridecanoic acid (ND)



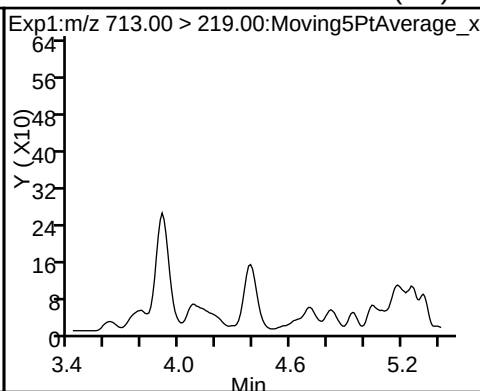
41 Perfluorotridecanoic acid (ND)



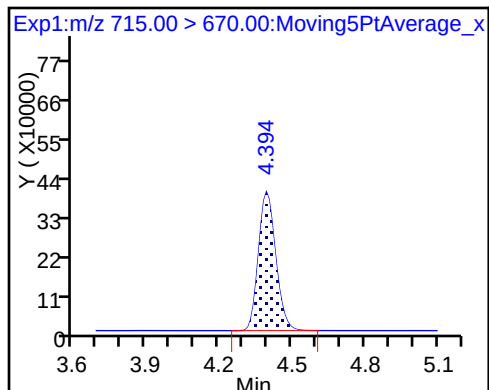
42 Perfluorotetradecanoic acid (ND)



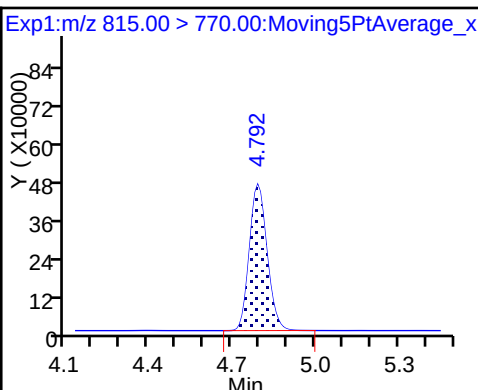
42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-213304/1
 Matrix: Water Lab File ID: 2018.03.15LLAAX_003.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 03/16/2018 00:32
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 213304 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U M	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00643	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-213304/1
 Matrix: Water Lab File ID: 2018.03.15LLAAX_003.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 03/16/2018 00:32
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 213304 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	97		50-150
STL00992	13C4 PFBA	86		50-150
STL01893	13C5 PFPeA	88		50-150
STL00993	13C2 PFHxA	93		50-150
STL01892	13C4-PFHpA	96		50-150
STL00990	13C4 PFOA	100		50-150
STL00995	13C5 PFNA	104		50-150
STL00996	13C2 PFDA	104		50-150
STL00997	13C2 PFUnA	107		50-150
STL00998	13C2 PFDoA	97		50-150
STL00994	18O2 PFHxS	93		50-150
STL02116	13C2-PFTeDA	101		50-150
STL00991	13C4 PFOS	91		50-150
STL02337	13C3-PFBS	92		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_003.d
 Lims ID: CCB
 Client ID:
 Sample Type: CCB
 Inject. Date: 16-Mar-2018 00:32:39 ALS Bottle#: 19 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCB
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 09:53:00 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK040

First Level Reviewer: hannigana

Date: 16-Mar-2018 07:46:09

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.440	-0.012	0.547	5478500	2.16		86.3	101399	
D 3 13C5-PFPeA										
267.90 > 223.00	1.665	1.664	0.001	0.638	3743546	2.20		87.9	91440	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.656	1.665	-0.009	0.995	5876	0.003351			2.0	M
D 47 13C3-PFBS										
301.90 > 83.00	1.691	1.691	0.0	0.648	94675	2.13		91.6	517	
D 60 M2-4:2FTS										
329.00 > 81.00	1.886	1.876	0.010	0.723	563391	NC			10771	
D 7 13C2 PFHxA										
315.00 > 270.00	1.925	1.904	0.021	0.738	4299505	2.32		92.7	112403	
D 9 13C4-PFHpA										
367.00 > 322.00	2.251	2.215	0.036	0.863	4227618	2.41		96.3	88616	
D 11 18O2 PFHxS										
403.00 > 84.00	2.264	2.226	0.038	0.868	5741107	2.21		93.4	63894	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.264	2.264	0.0	1.000	17538	0.006434			126	
399.00 > 99.00	2.264	2.264	0.0	1.000	5516		3.18(1.50-4.49)		22.8	
D 12 M2-6:2FTS										
429.00 > 81.00	2.587	2.562	0.025	0.991	1022510	2.19		92.1	29459	
D 14 13C4 PFOA										
417.00 > 372.00	2.609	2.586	0.023	1.000	4235605	2.50		100	81869	
* 62 13C2-PFOA										
415.00 > 370.00	2.609	2.617	-0.008		4456978	2.50			85574	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.625	2.617	0.008	1.006	9131	0.004634			3.7	
413.00 > 169.00	2.609	2.617	-0.008	1.000	2469		3.70(0.84-2.52)		11.5	M

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	2.954	2.960	-0.006	1.132	3438293	2.61		104	94766	
D 18 13C4 PFOS										
503.00 > 80.00	2.954	2.960	-0.006	1.132	3880788	2.18		91.0	54497	
D 21 13C8 FOSA										
506.00 > 78.00	3.274	3.297	-0.023	1.255	6301469	2.42		96.9	78441	
D 26 M2-8:2FTS										
529.00 > 81.00	3.274	3.305	-0.031	1.255	1148618	2.46		103	33051	
D 23 13C2 PFDA										
515.00 > 470.00	3.281	3.312	-0.031	1.258	2773582	2.60		104	41960	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.426	3.471	-0.045	1.313	992657	2.86		114	27699	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.590	3.629	-0.039	1.376	996693	2.65		106	1493	
D 30 13C2 PFUnA										
565.00 > 520.00	3.600	3.638	-0.038	1.380	2110318	2.67		107	57450	
D 36 13C2 PFDaA										
615.00 > 570.00	3.892	3.932	-0.040	1.492	1940748	2.42		96.8	9461	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.394	4.437	-0.043	1.684	1787698	2.52		101	11030	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.801	4.802	-0.001	1.000	21893	NC			1.6	
813.00 > 169.00	4.801	4.802	-0.001	1.000	3265		6.71(2.86-8.58)		40.1	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.801	4.848	-0.047	1.840	2558575	1.88		75.2	8553	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL0_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_003.d

Injection Date: 16-Mar-2018 00:32:39

Instrument ID: A8_N

Lims ID: CCB

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 19

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

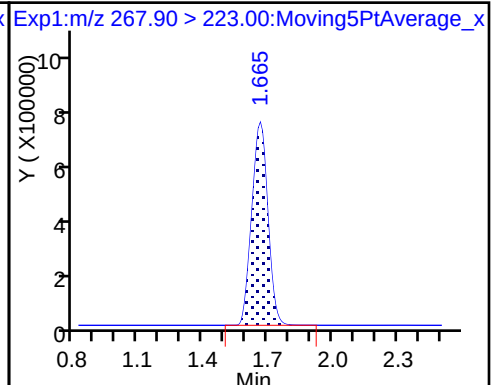
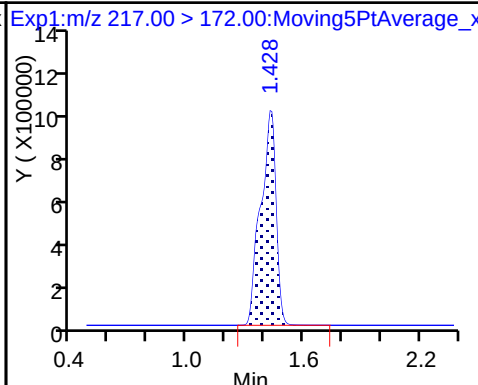
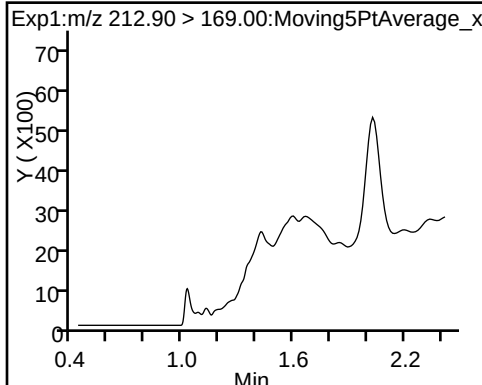
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid (ND)

D 1 13C4 PFBA

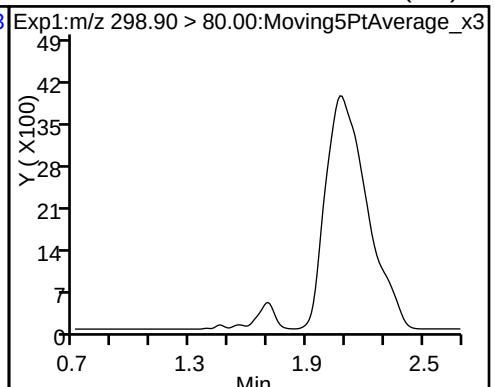
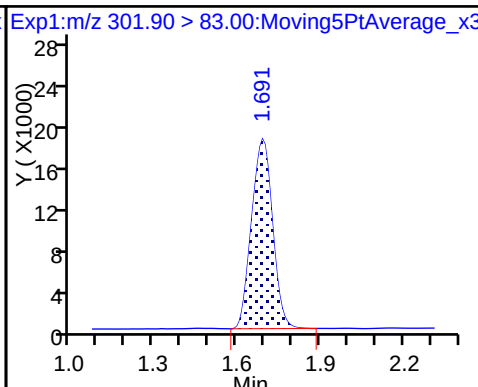
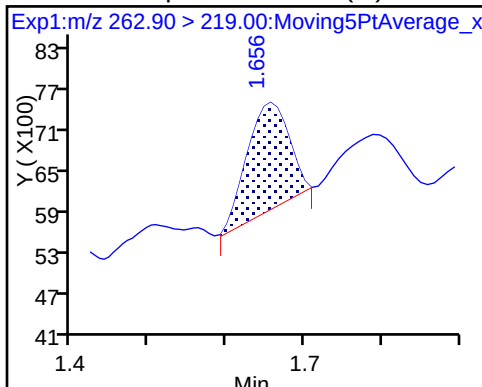
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (M)

D 47 13C3-PFBS

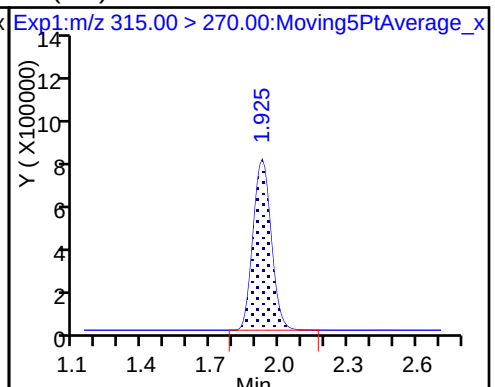
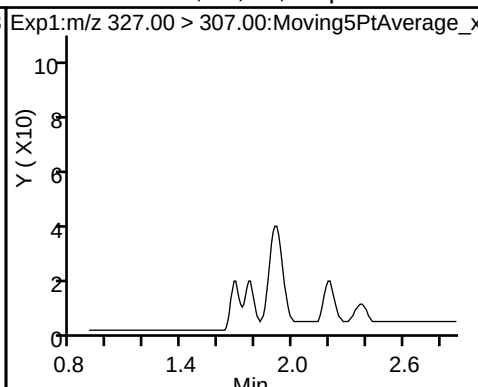
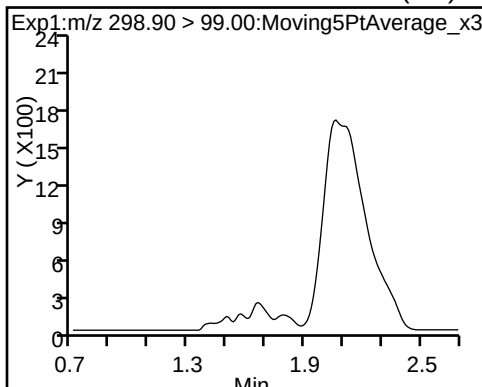
5 Perfluorobutanesulfonic acid (ND)



5 Perfluorobutanesulfonic acid (ND)

61 Sodium 1H,1H,2H,2H-perfluorohexanoate (ND)

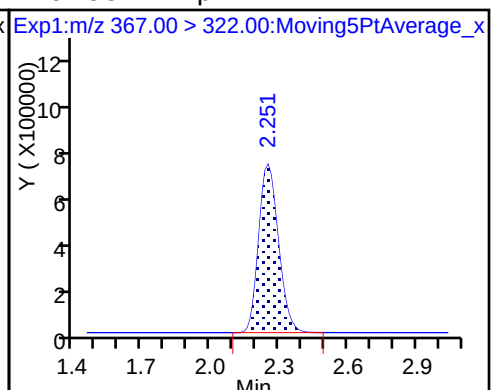
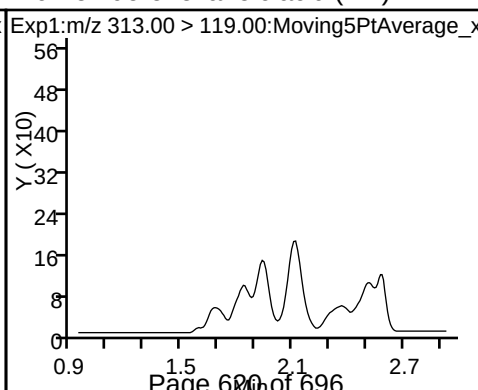
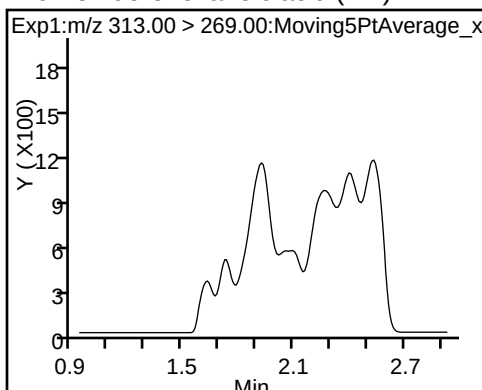
D 13C2 PFHxA



6 Perfluorohexanoic acid (ND)

6 Perfluorohexanoic acid (ND)

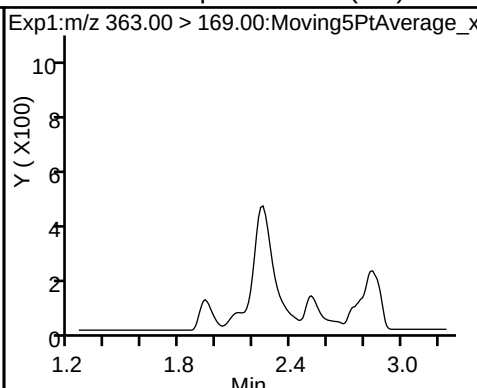
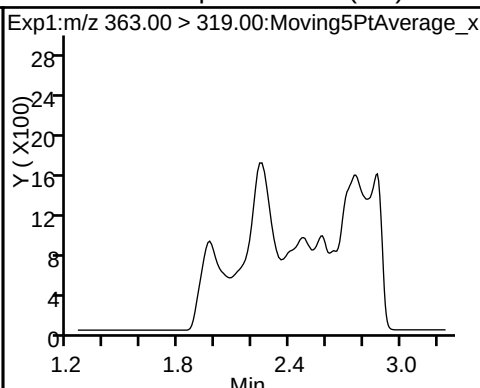
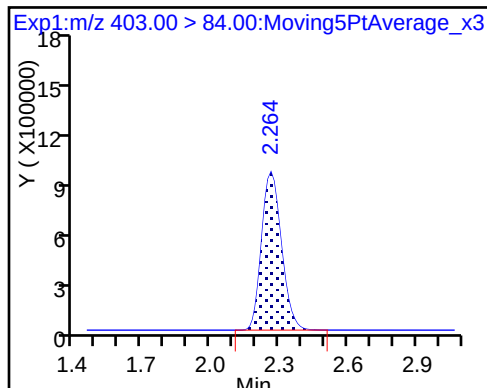
D 9 13C4-PFHpA



D 11 18O2 PFHxS

10 Perfluoroheptanoic acid (ND)

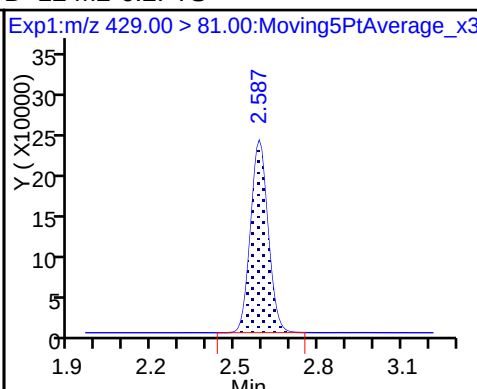
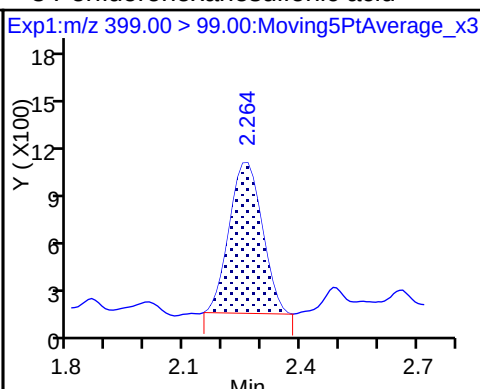
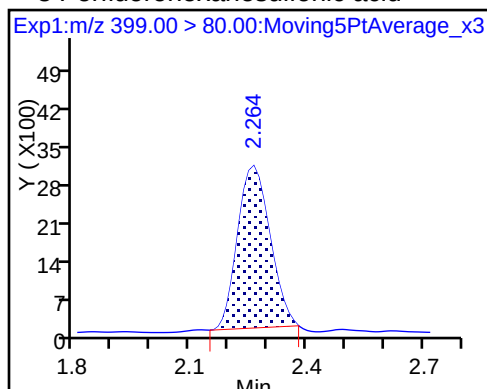
10 Perfluoroheptanoic acid (ND)



8 Perfluorohexanesulfonic acid

8 Perfluorohexanesulfonic acid

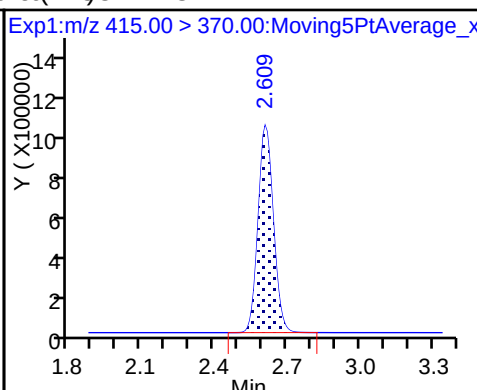
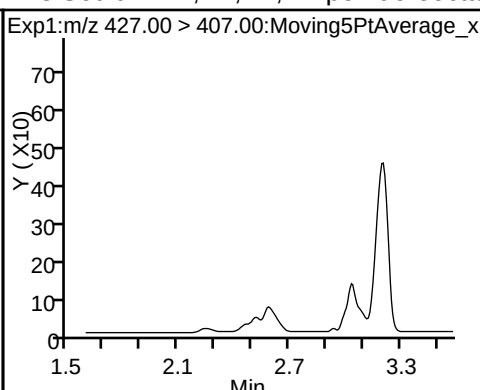
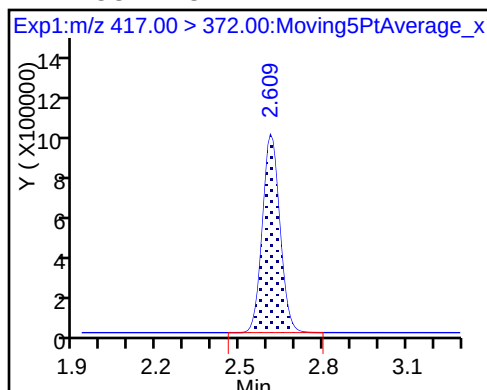
D 12 M2-6:2FTS



D 14 13C4 PFOA

13 Sodium 1H,1H,2H,2H-perfluorooctanoate (ND)

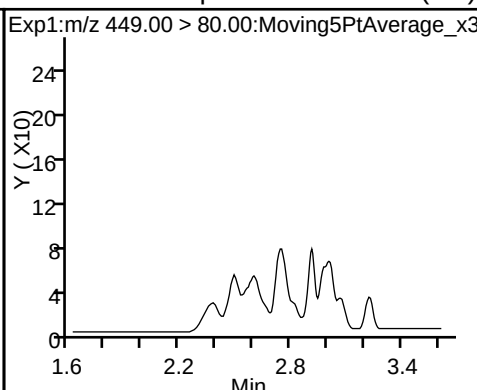
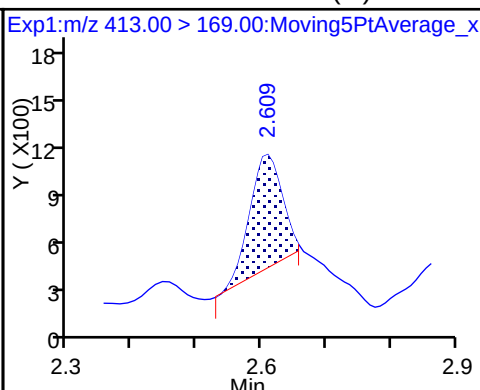
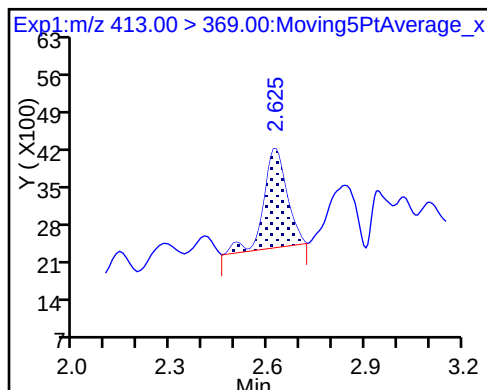
6ND3 C2-PFOA



15 Perfluorooctanoic acid

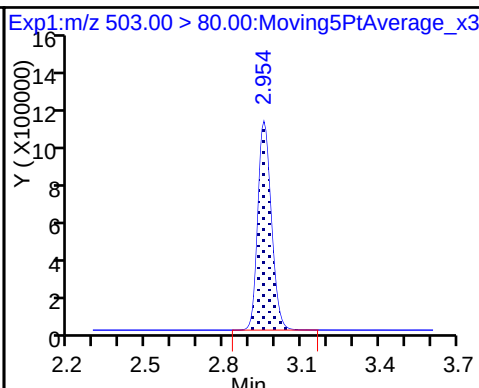
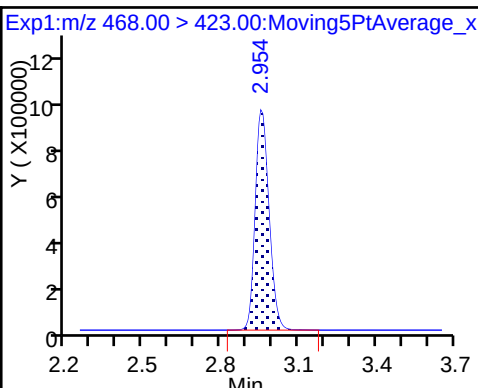
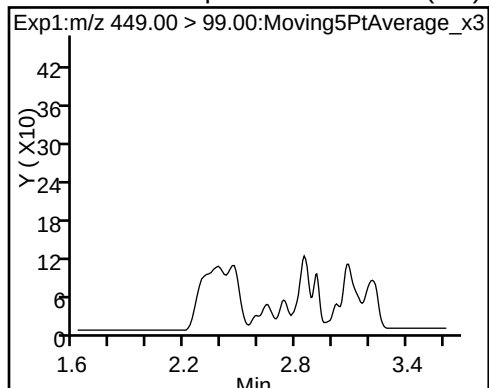
15 Perfluorooctanoic acid (M)

16 Perfluoroheptanesulfonic acid (ND)



16 Perfluoroheptanesulfonic acid (ND) D 19 13C5 PFNA

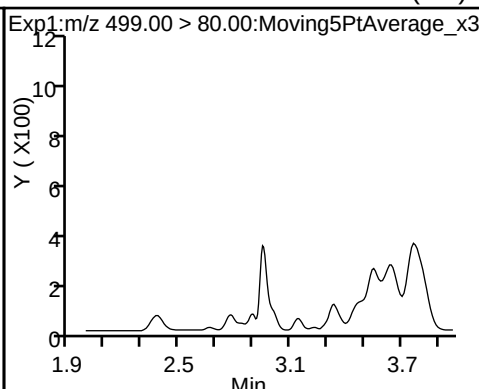
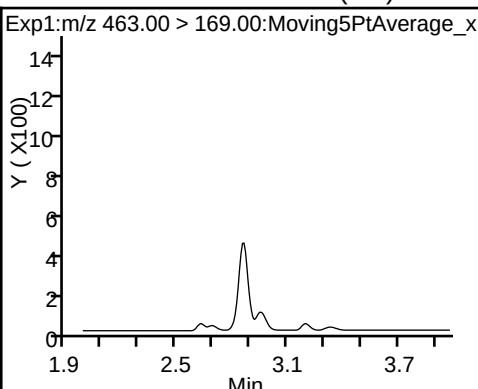
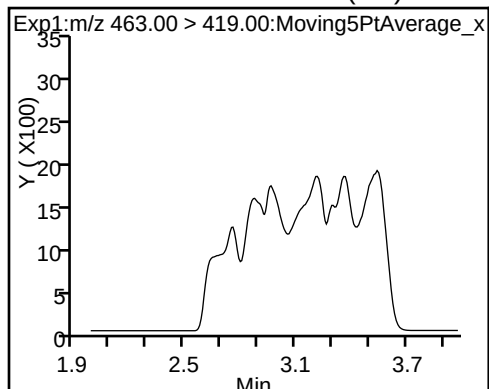
D 18 13C4 PFOS



20 Perfluorononanoic acid (ND)

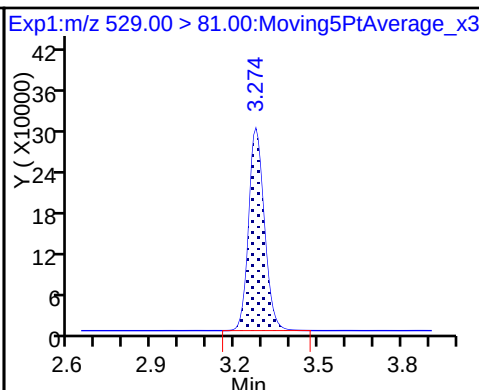
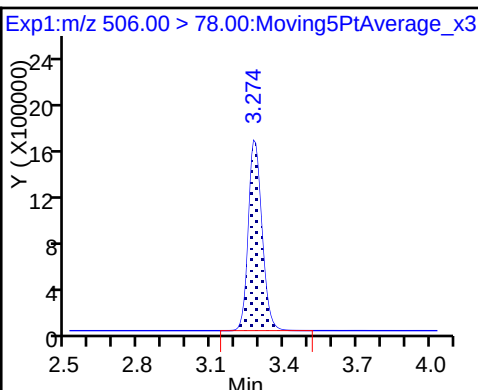
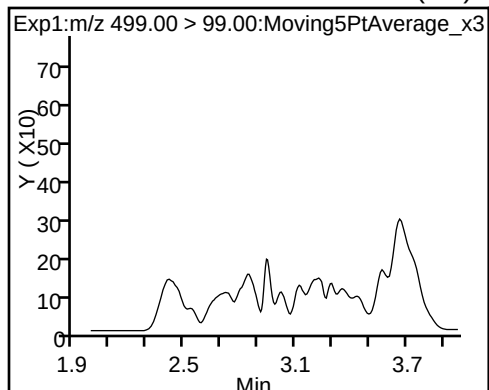
20 Perfluorononanoic acid (ND)

17 Perfluorooctane sulfonic acid (ND)



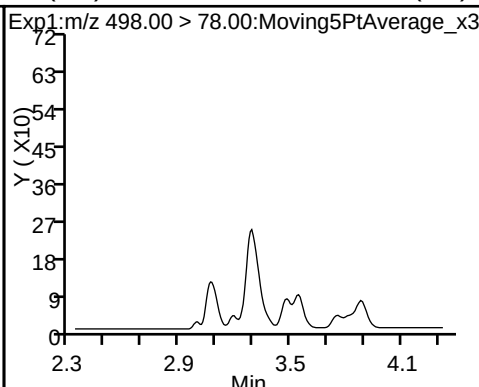
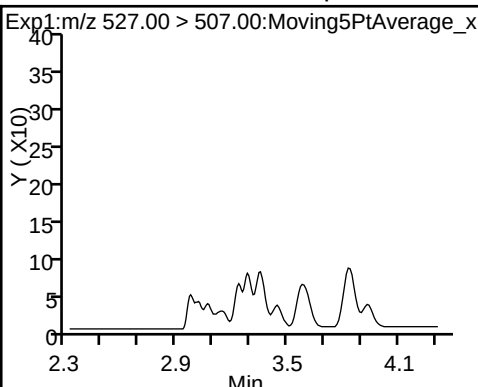
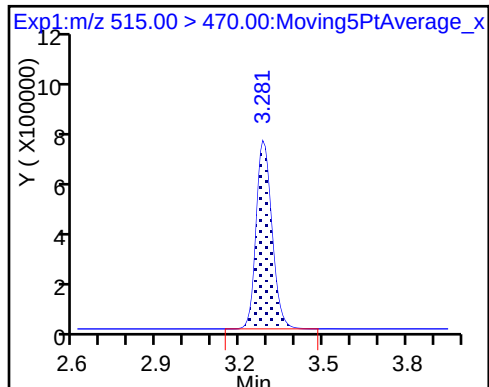
17 Perfluorooctane sulfonic acid (ND) D 21 13C8 FOSA

D 26 M2-8:2FTS

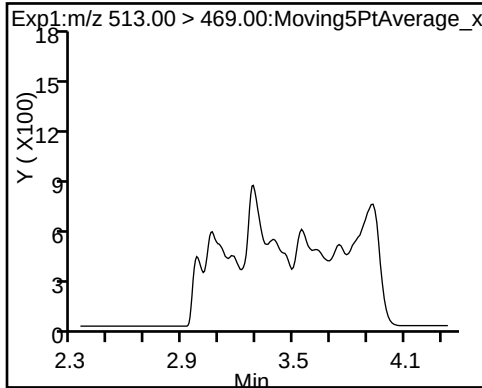


D 23 13C2 PFDA

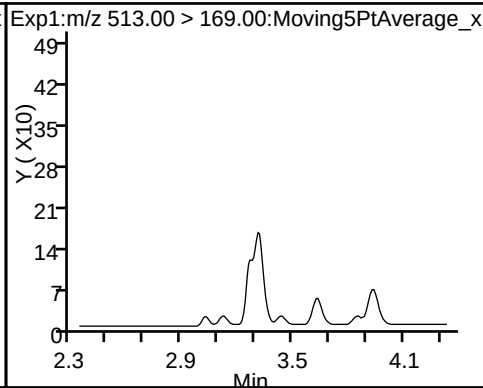
25 Sodium 1H,1H,2H,2H-perfluorodecan-2-ylperfluorooctane Sulfonamide (ND)



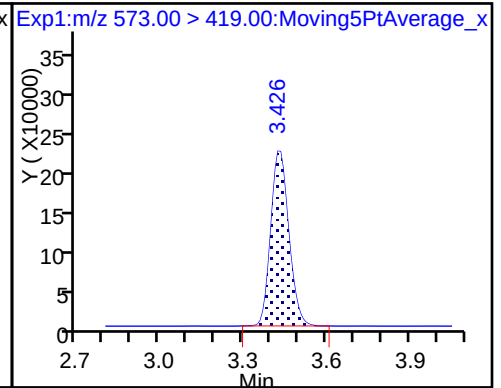
24 Perfluorodecanoic acid (ND)



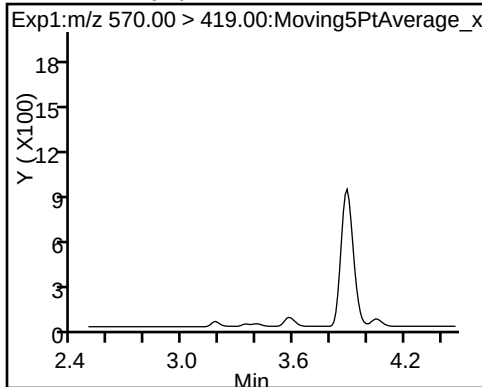
24 Perfluorodecanoic acid (ND)



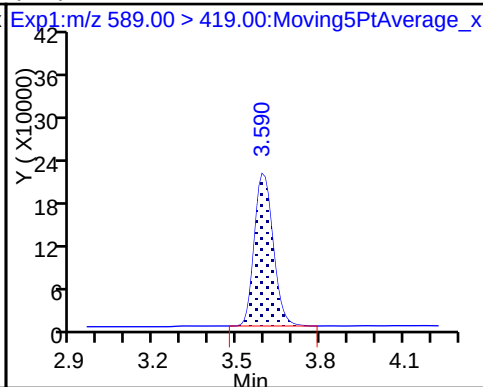
D 27 d3-NMeFOSAA



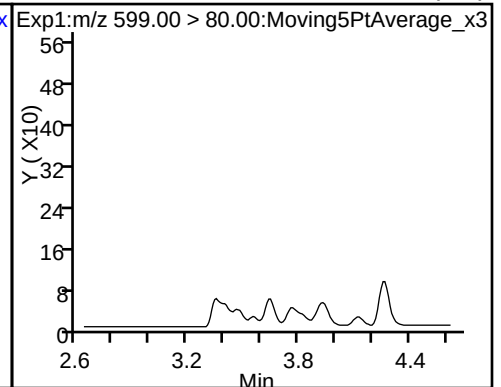
28 N-methyl perfluorooctane sulfonamide (ND)



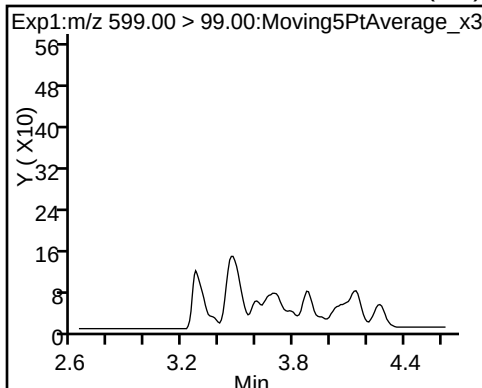
D 28 d5-NEtFOSAA



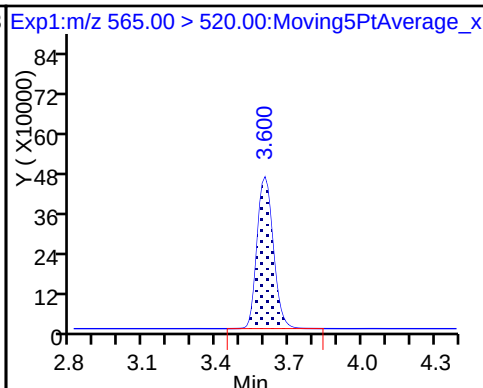
29 Perfluorodecane Sulfonic acid (ND)



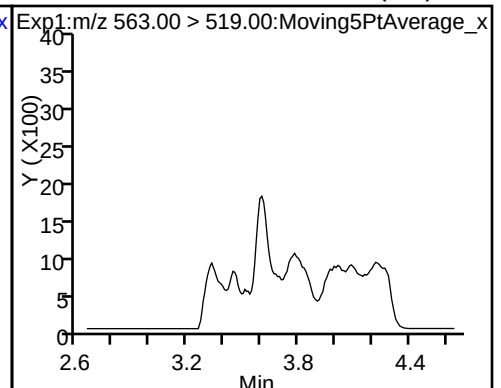
29 Perfluorodecane Sulfonic acid (ND) D 30 13C2 PFUnA



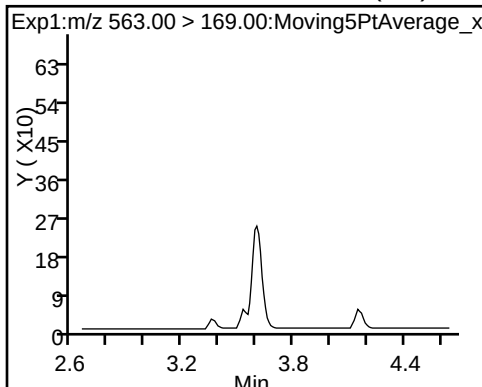
31 Perfluoroundecanoic acid (ND)



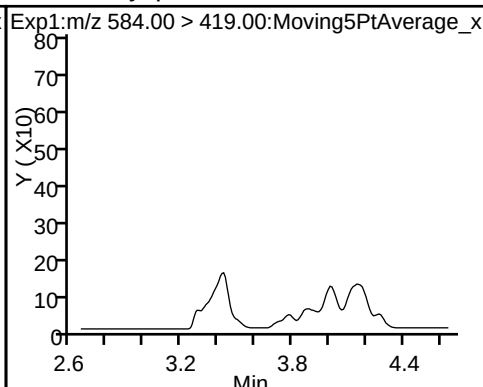
31 Perfluoroundecanoic acid (ND)



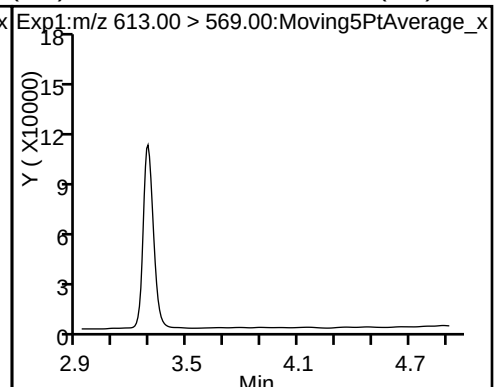
31 Perfluoroundecanoic acid (ND)



33 N-ethyl perfluorooctane sulfonamide (ND)



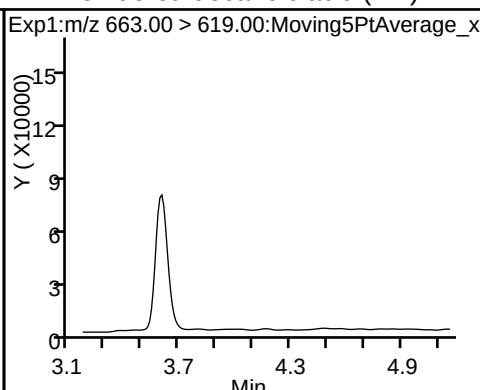
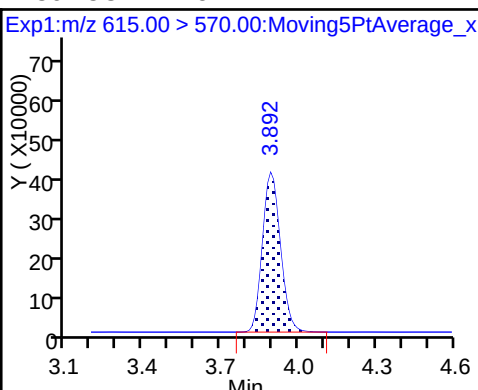
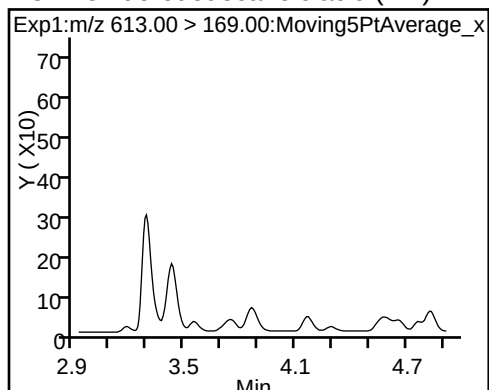
D 31 Perfluorododecanoic acid (ND)



37 Perfluorododecanoic acid (ND)

D 36 13C2 PFDaA

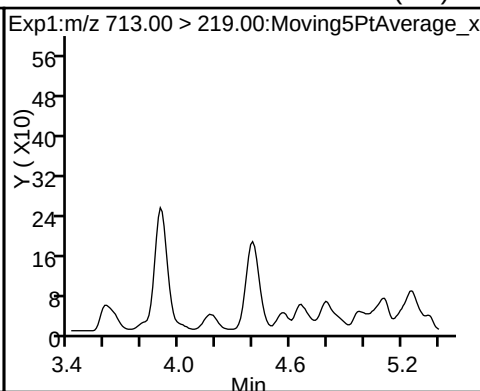
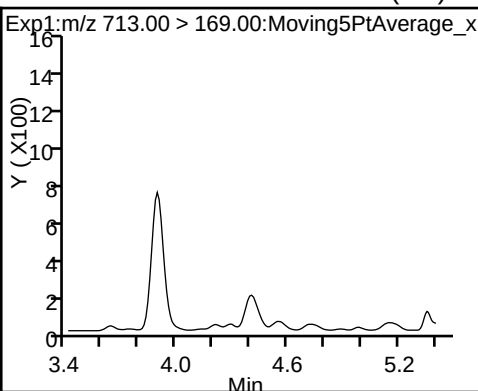
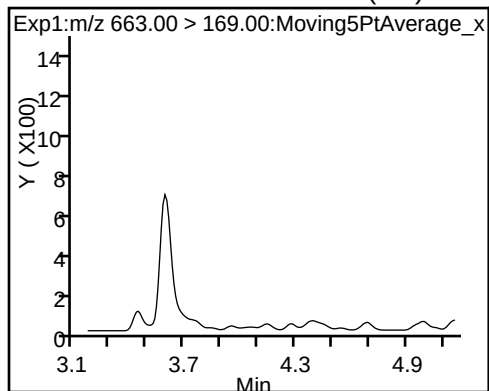
41 Perfluorotridecanoic acid (ND)



41 Perfluorotridecanoic acid (ND)

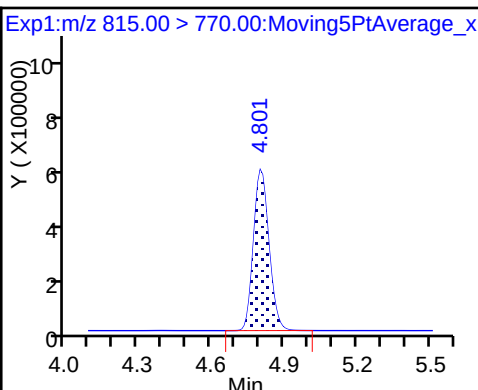
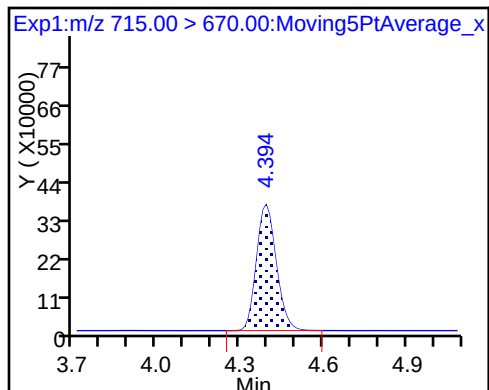
42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_003.d

Injection Date: 16-Mar-2018 00:32:39

Instrument ID: A8_N

Lims ID: CCB

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 19 Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

Column:

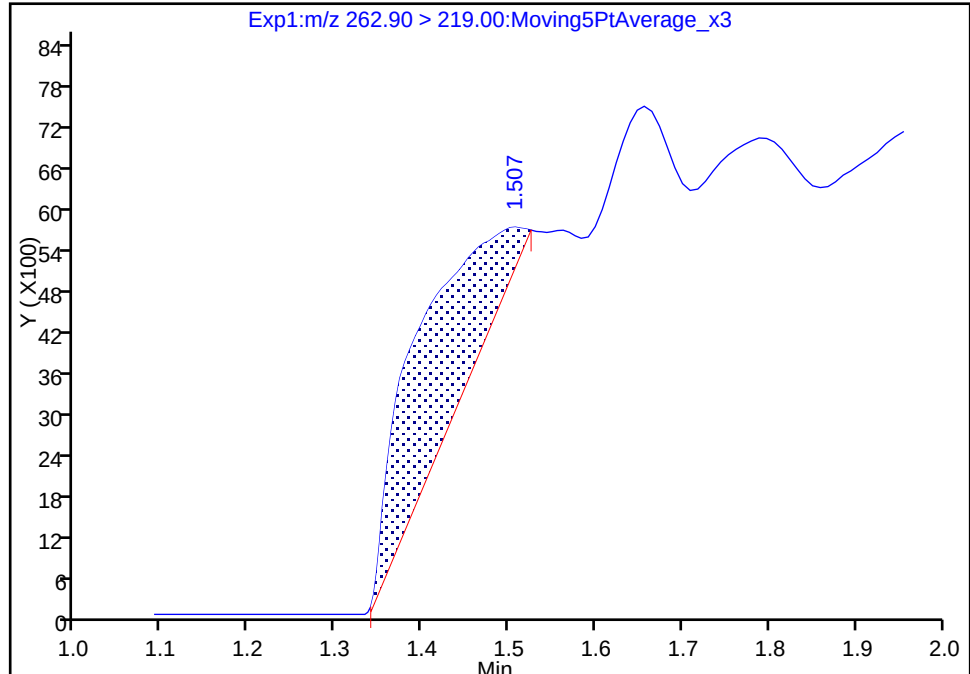
Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

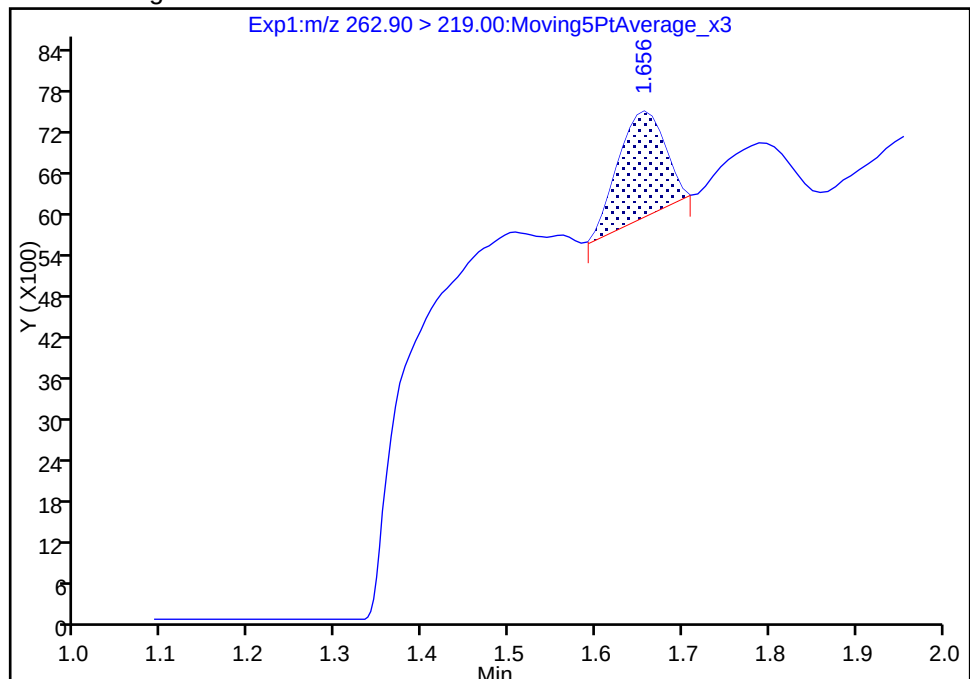
RT: 1.51
Area: 17701
Amount: 0.010093
Amount Units: ng/ml

Processing Integration Results



RT: 1.66
Area: 5876
Amount: 0.003351
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 16-Mar-2018 07:45:22

Audit Action: Manually Integrated

Audit Reason: Wrong peak

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_003.d

Injection Date: 16-Mar-2018 00:32:39

Instrument ID: A8_N

Lims ID: CCB

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 19 Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

Column:

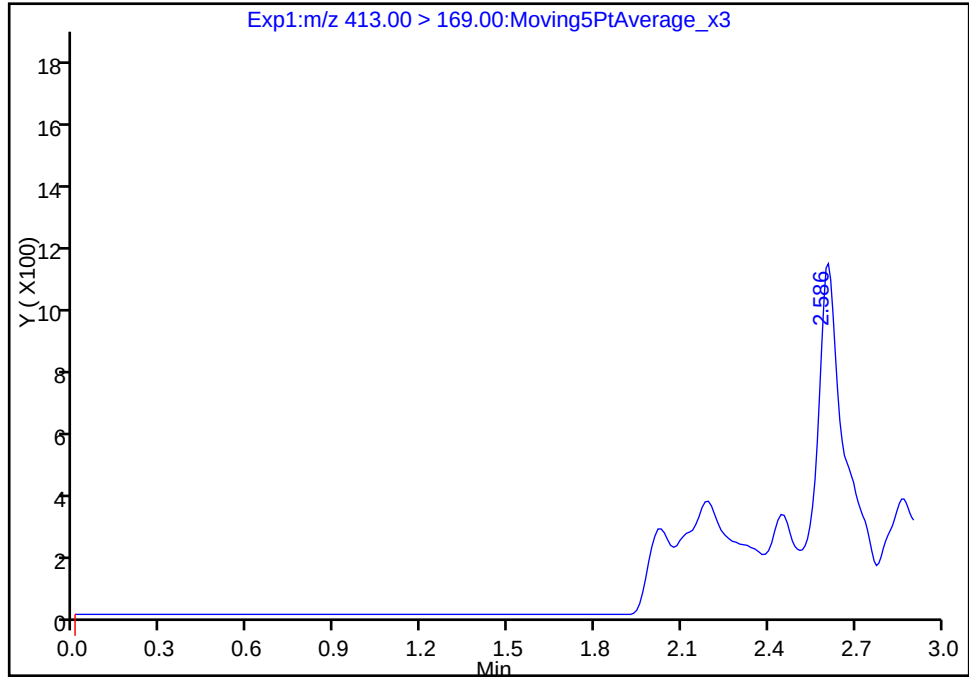
Detector: EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

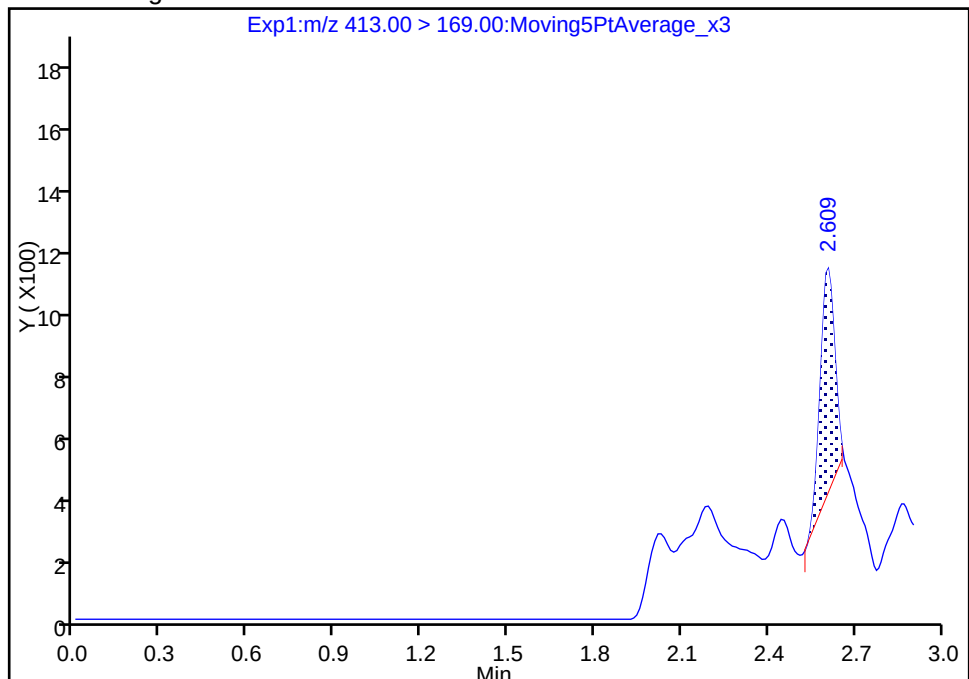
RT: 2.59
Area: 0
Amount: 0.004634
Amount Units: ng/ml

Processing Integration Results



RT: 2.61
Area: 2469
Amount: 0.004634
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 16-Mar-2018 07:45:44

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>CCB 320-213555/11</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.16ICAL_012.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: _____
Extraction Method: _____	Date Extracted: _____
Sample wt/vol: <u>1(mL)</u>	Date Analyzed: <u>03/17/2018 00:20</u>
Con. Extract Vol.: _____	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213555</u>	Units: <u>ng/mL</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U M	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00712	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-213555/11
 Matrix: Water Lab File ID: 2018.03.16ICAL_012.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 03/17/2018 00:20
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 213555 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	98		50-150
STL00992	13C4 PFBA	95		50-150
STL01893	13C5 PFPeA	97		50-150
STL00993	13C2 PFHxA	95		50-150
STL01892	13C4-PFHpA	97		50-150
STL00990	13C4 PFOA	99		50-150
STL00995	13C5 PFNA	100		50-150
STL00996	13C2 PFDA	99		50-150
STL00997	13C2 PFUnA	95		50-150
STL00998	13C2 PFDoA	97		50-150
STL00994	18O2 PFHxS	99		50-150
STL02116	13C2-PFTeDA	97		50-150
STL00991	13C4 PFOS	96		50-150
STL02337	13C3-PFBS	96		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_012.d
 Lims ID: CCB
 Client ID:
 Sample Type: CCB
 Inject. Date: 17-Mar-2018 00:20:05 ALS Bottle#: 20 Worklist Smp#: 11
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: RB
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 18-Mar-2018 12:48:58 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK059

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:45:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.440	1.440	0.0	1.004	714	0.000353			1.0	
D 1 13C4 PFBA										
217.00 > 172.00	1.434	1.440	-0.006	0.537	5445347	2.39		95.5	103543	
D 3 13C5-PFPeA										
267.90 > 223.00	1.691	1.696	-0.005	0.633	3894475	2.42		96.8	149468	
D 47 13C3-PFBS										
301.90 > 83.00	1.718	1.730	-0.012	0.643	88915	2.24		96.3	483	
D 60 M2-4:2FTS										
329.00 > 81.00	1.935	1.942	-0.007	0.724	629673	NC			7294	
D 7 13C2 PFHxA										
315.00 > 270.00	1.976	1.979	-0.003	0.740	4279902	2.38		95.4	128110	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.867	4235326	2.43		97.1	77744	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	18248	0.007116			2.8	
399.00 > 99.00	2.328	2.326	0.002	1.000	7513		2.43(1.50-4.49)		3.1	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.871	5436999	2.33		98.7	60542	
D 12 M2-6:2FTS										
429.00 > 81.00	2.647	2.651	-0.004	0.991	1084443	2.43		102	22982	
* 62 13C2-PFOA										
415.00 > 370.00	2.671	2.678	-0.007		4468132	2.50			79741	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.679	2.678	0.001	1.003	8018	0.004318			3.0	M
413.00 > 169.00	2.671	2.678	-0.007	1.000	5891		1.36(0.84-2.52)		22.9	M
D 14 13C4 PFOA										
417.00 > 372.00	2.671	2.678	-0.007	1.000	4158145	2.47		98.7	107458	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 18 13C4 PFOS										
503.00 > 80.00	3.044	3.050	-0.006	1.140	3748265	2.30		96.3	52957	
D 19 13C5 PFNA										
468.00 > 423.00	3.051	3.052	-0.001	1.142	3386474	2.51		100	65081	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.380	3.388	-0.008	1.000	4637	0.002058			80.6	
D 21 13C8 FOSA										
506.00 > 78.00	3.380	3.388	-0.008	1.265	5795618	2.46		98.3	52843	
D 26 M2-8:2FTS										
529.00 > 81.00	3.398	3.406	-0.008	1.272	1009468	2.40		100	32347	
D 23 13C2 PFDA										
515.00 > 470.00	3.407	3.416	-0.009	1.276	2778870	2.47		98.7	47350	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.561	3.570	-0.009	1.333	883285	2.37		95.0	38625	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.738	3.740	-0.002	1.399	944332	2.66		106	2003	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.727	3.746	-0.019	0.997	2682	0.007252			84.0	
D 30 13C2 PFUnA										
565.00 > 520.00	3.738	3.747	-0.009	1.399	2096818	2.38		95.1	61907	
D 36 13C2 PFDoA										
615.00 > 570.00	4.035	4.041	-0.006	1.511	2027844	2.42		97.0	10765	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.543	4.545	-0.002	1.701	1853642	2.43		97.1	13195	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.955	4.956	-0.001	1.855	2722027	2.44		97.5	9697	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.955	4.960	-0.005	1.000	25097	NC			2.3	
813.00 > 169.00	4.955	4.960	-0.005	1.000	4997		5.02(2.86-8.58)		61.1	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL0_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_012.d

Injection Date: 17-Mar-2018 00:20:05

Instrument ID: A8_N

Lims ID: CCB

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 11

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

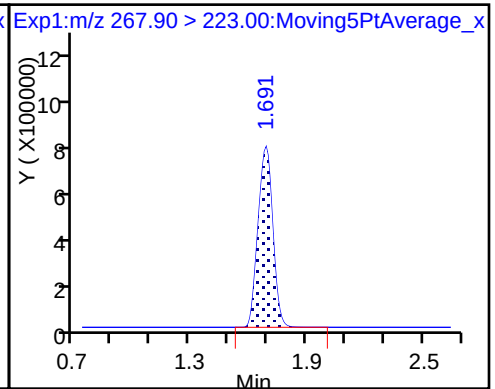
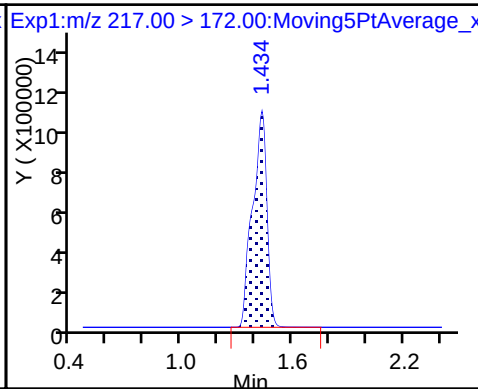
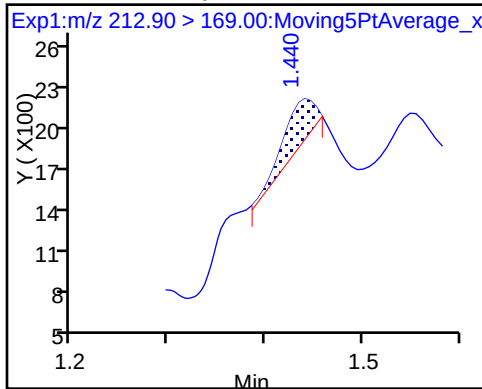
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

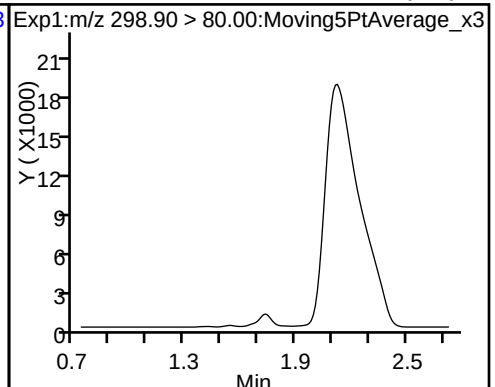
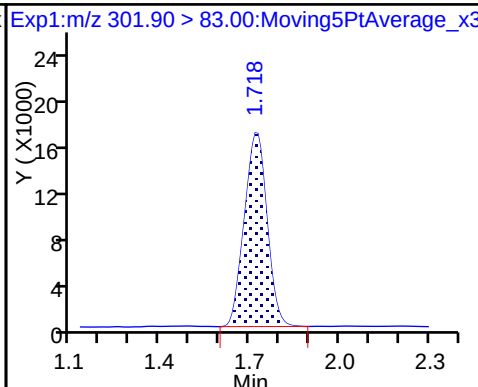
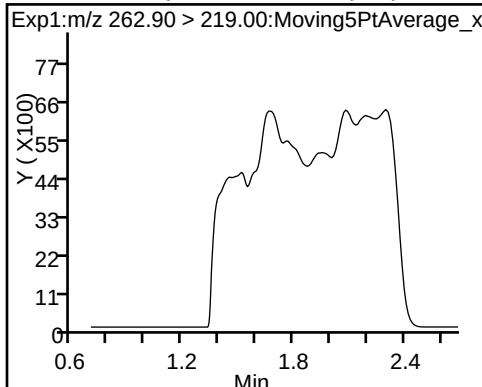
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (ND)

D 47 13C3-PFBS

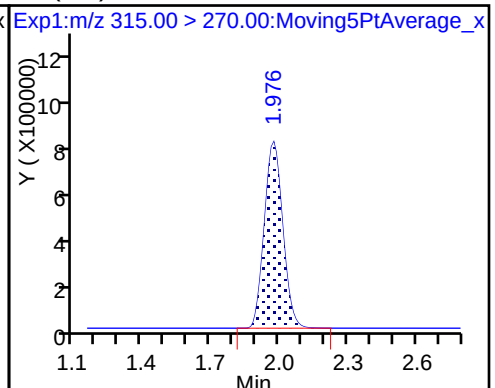
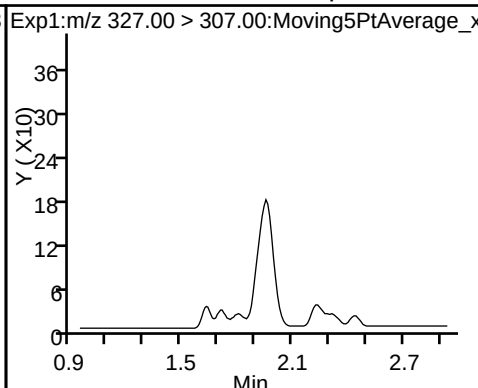
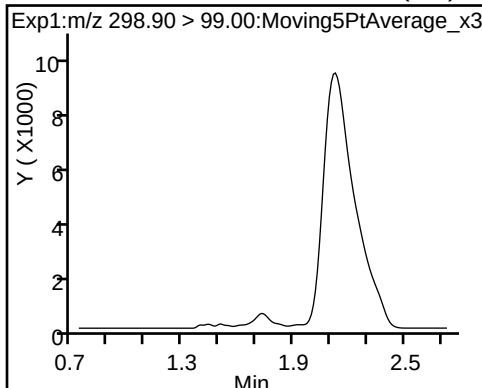
5 Perfluorobutanesulfonic acid (ND)



5 Perfluorobutanesulfonic acid (ND)

61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid (ND)

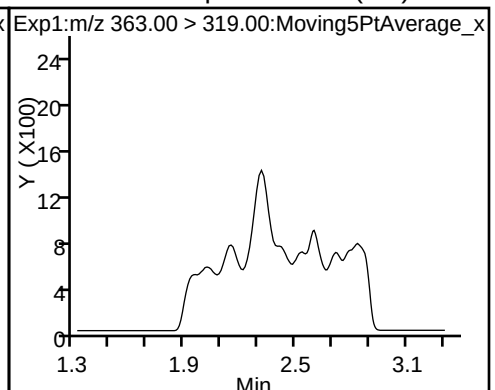
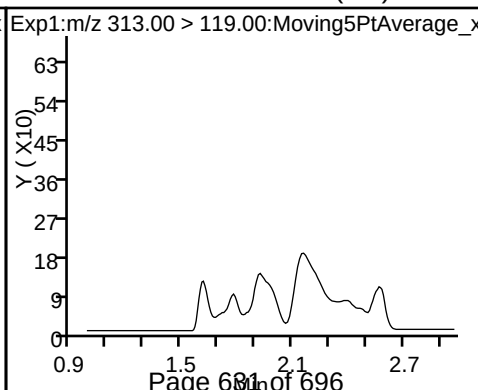
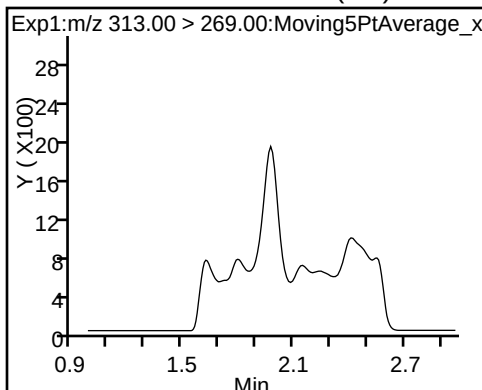
D 13C2 PFHxA



6 Perfluorohexanoic acid (ND)

6 Perfluorohexanoic acid (ND)

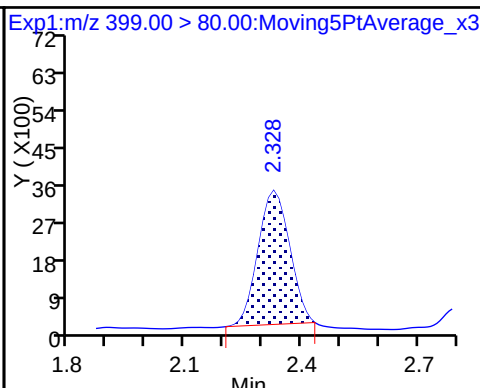
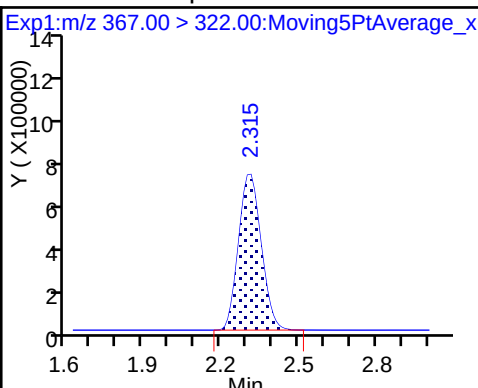
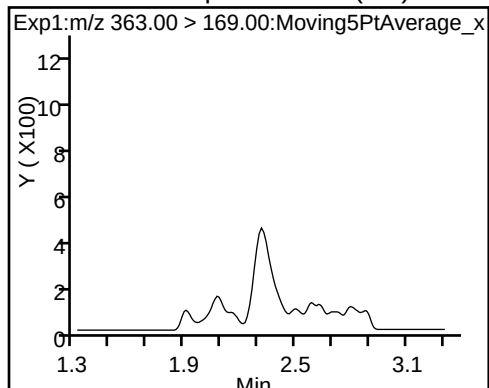
10 Perfluoroheptanoic acid (ND)



10 Perfluoroheptanoic acid (ND)

D 9 13C4-PFHpA

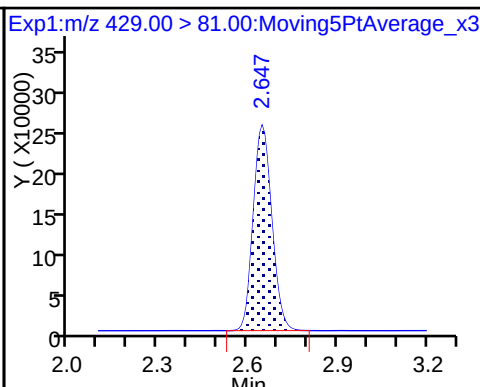
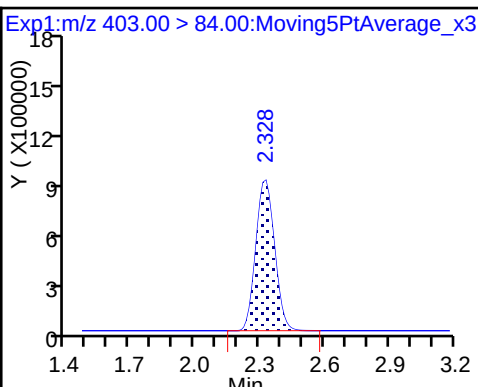
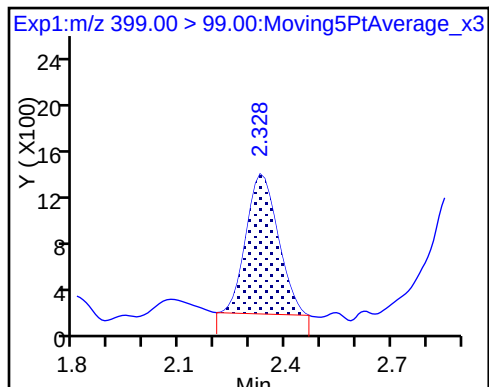
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

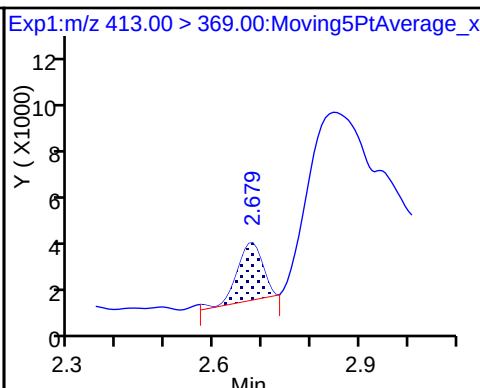
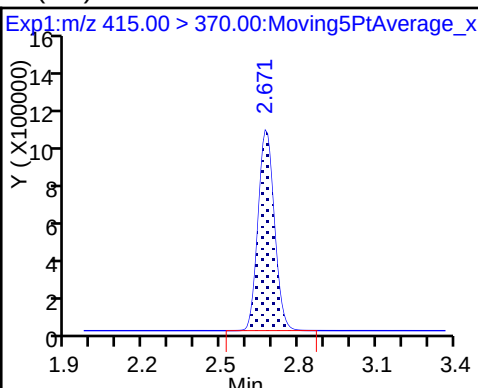
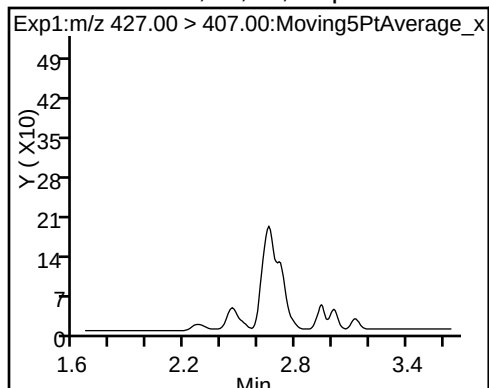
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctanoate (ND)

D 13 C2-PFOA

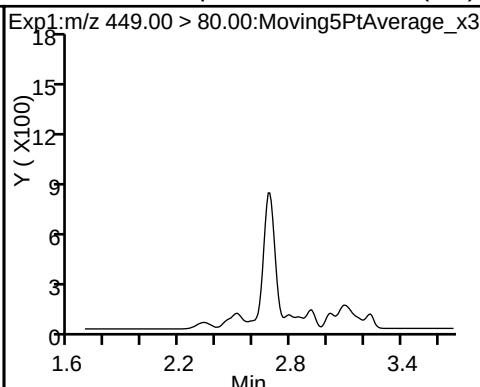
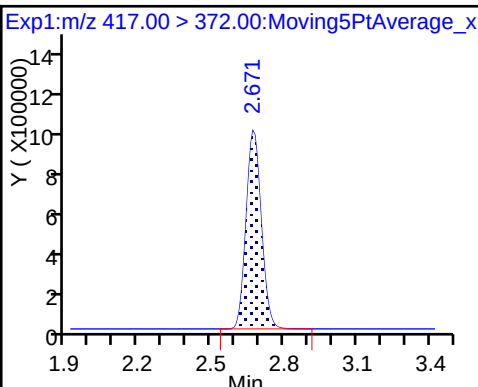
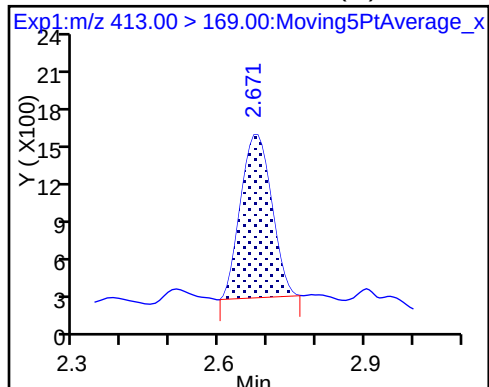
15 Perfluorooctanoic acid



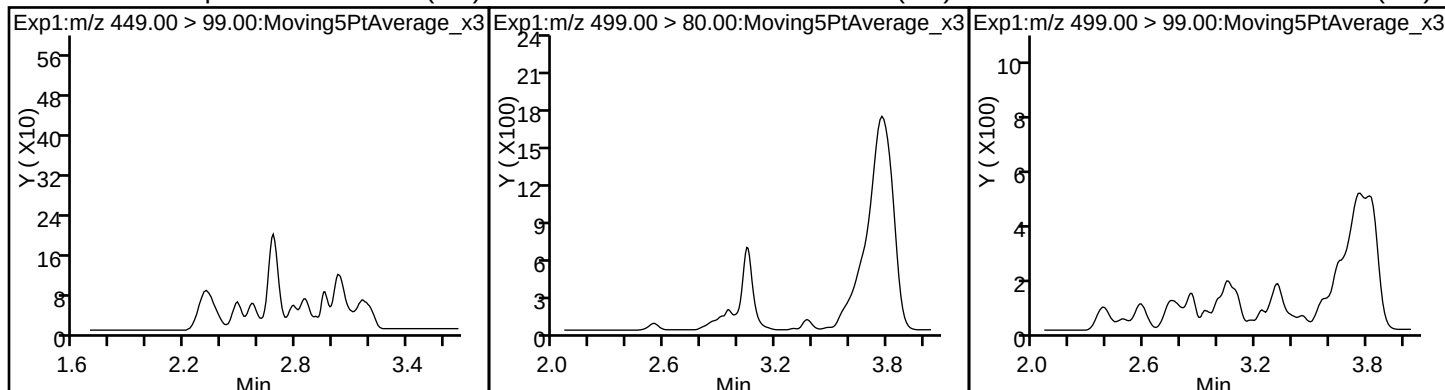
15 Perfluorooctanoic acid (M)

D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid (ND)



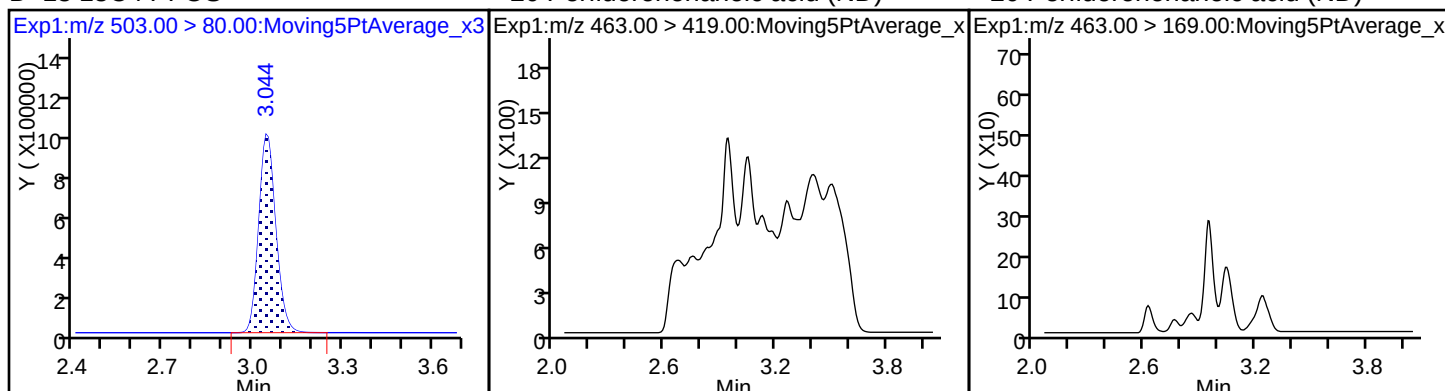
16 Perfluoroheptanesulfonic acid (ND) 17 Perfluorooctane sulfonic acid (ND) 17 Perfluorooctane sulfonic acid (ND)



D 18 13C4 PFOS

20 Perfluorononanoic acid (ND)

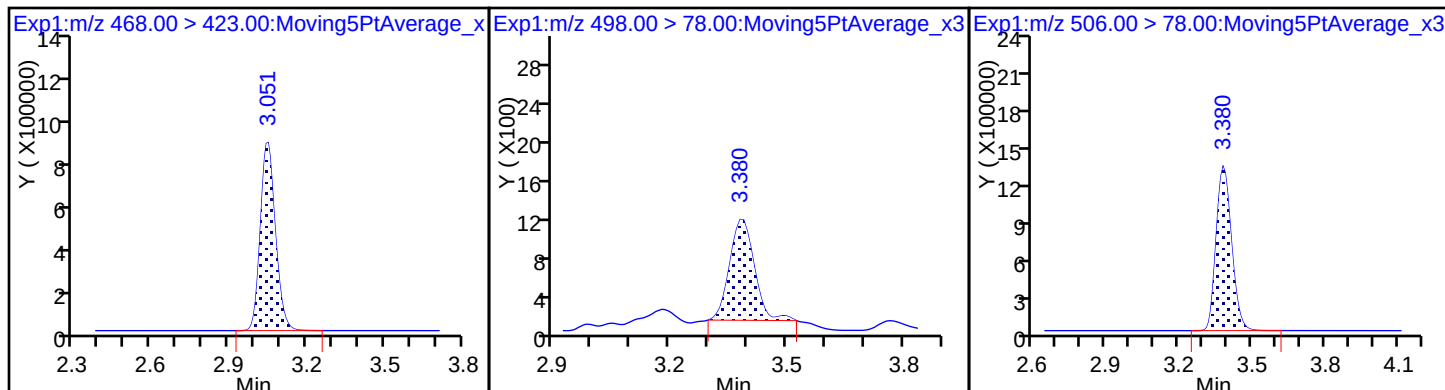
20 Perfluorononanoic acid (ND)



D 19 13C5 PFNA

22 Perfluorooctane Sulfonamide

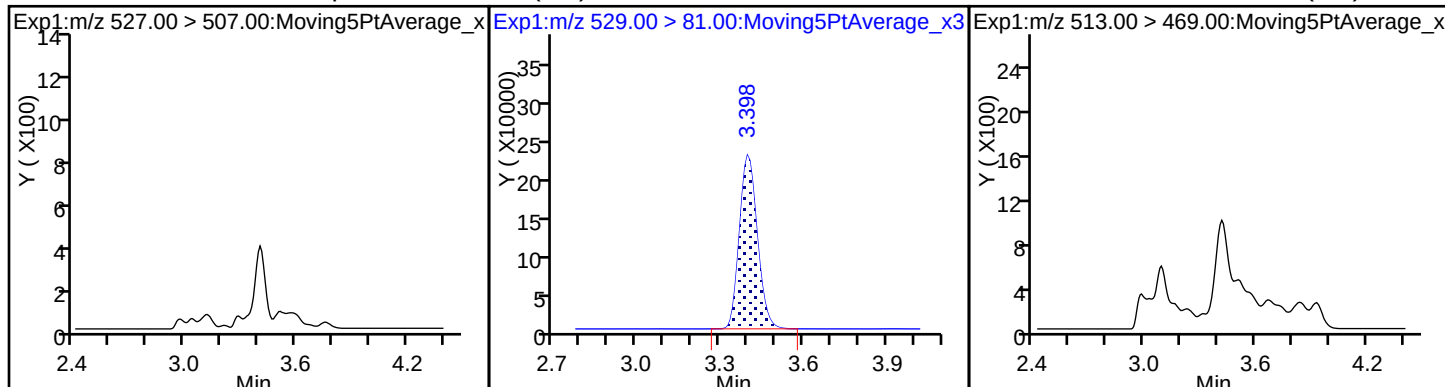
D 21 13C8 FOSA



25 Sodium 1H,1H,2H,2H-perfluorodecanoate (ND)

De26 DM2-8:2FTS

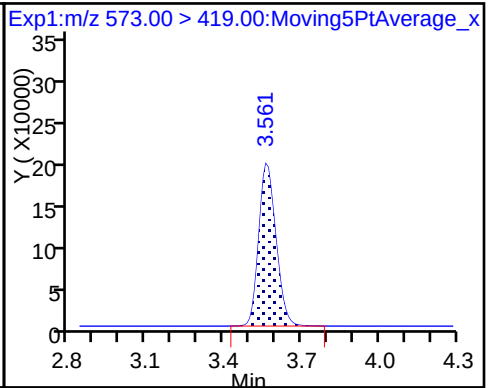
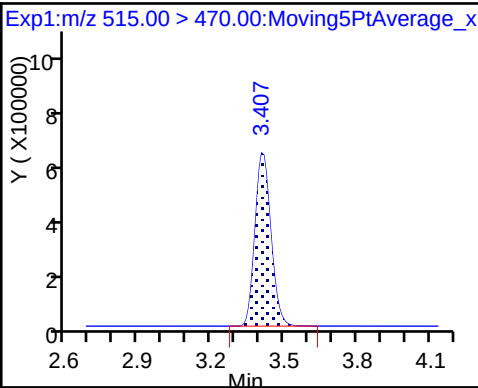
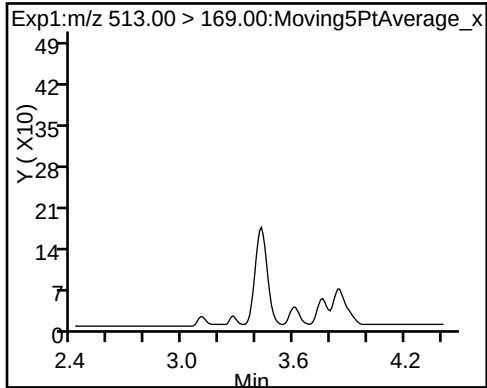
24 Perfluorodecanoic acid (ND)



24 Perfluorodecanoic acid (ND)

D 23 13C2 PFDA

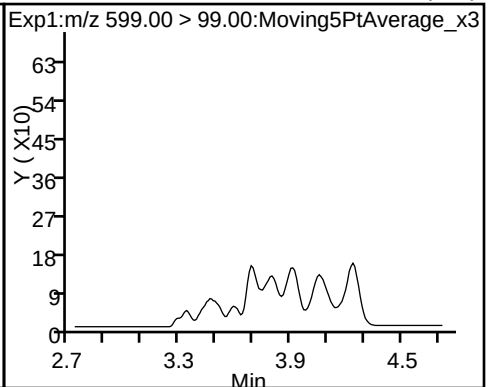
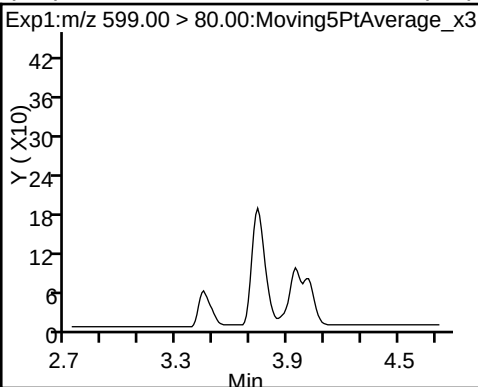
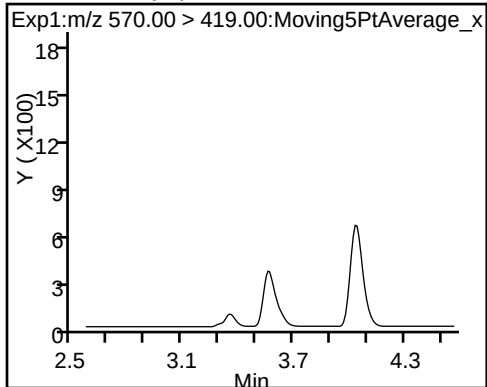
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

(ND) 29 Perfluorodecane Sulfonic acid (ND)

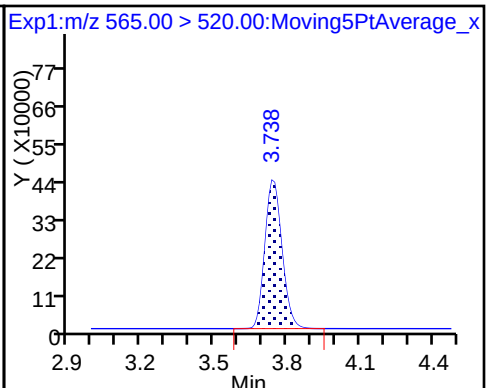
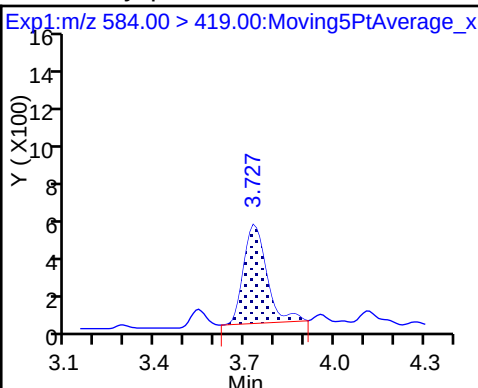
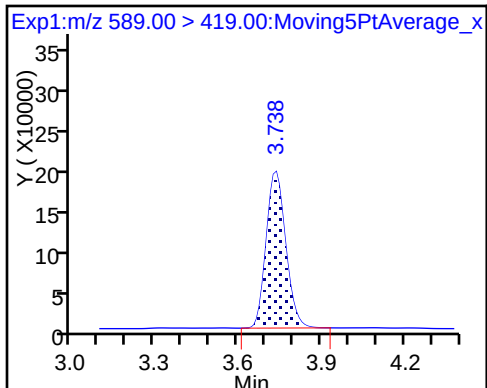
D 32 d5-NEtFOSAA



D 32 d5-NEtFOSAA

33 N-ethyl perfluorooctane sulfonamid

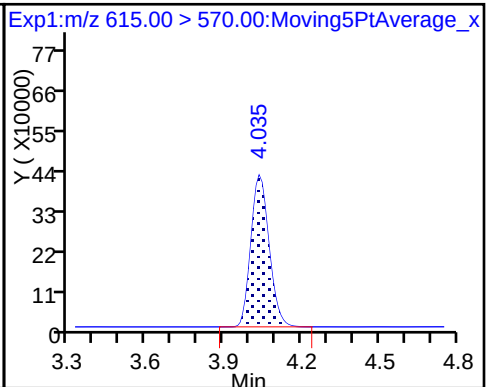
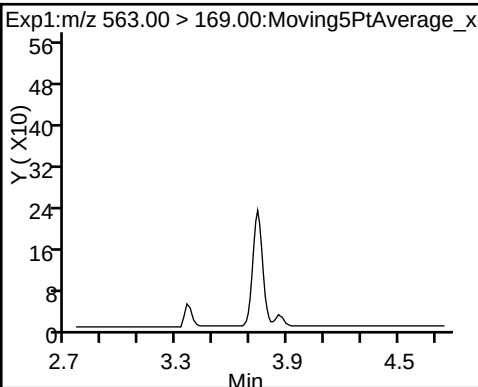
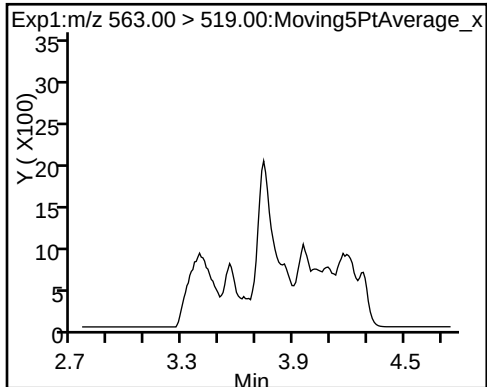
D 30 13C2 PFUnA



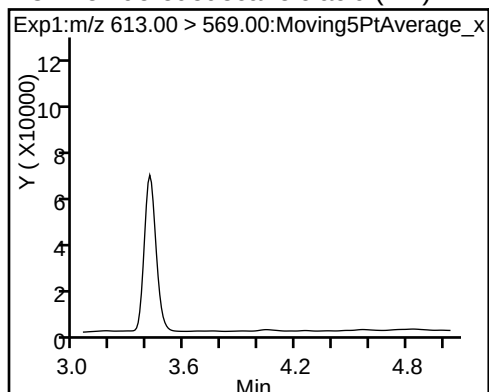
31 Perfluoroundecanoic acid (ND)

31 Perfluoroundecanoic acid (ND)

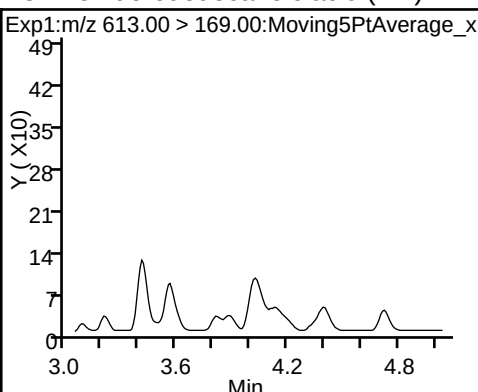
D 36 13C2 PFDaA



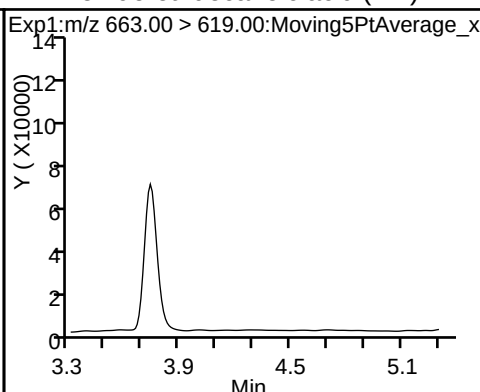
37 Perfluorododecanoic acid (ND)



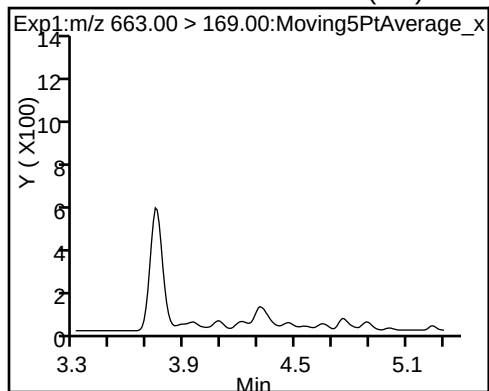
37 Perfluorododecanoic acid (ND)



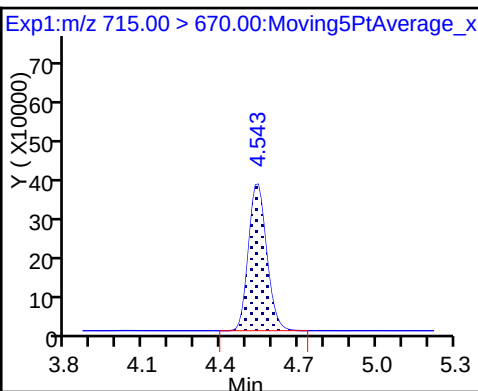
41 Perfluorotridecanoic acid (ND)



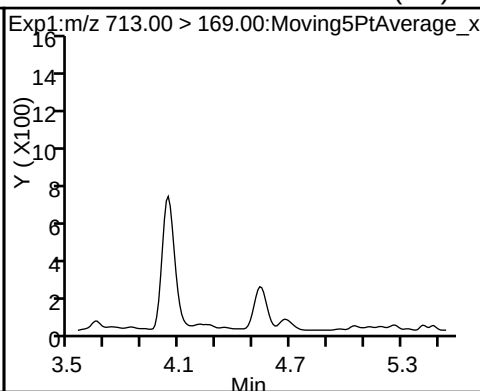
41 Perfluorotridecanoic acid (ND)



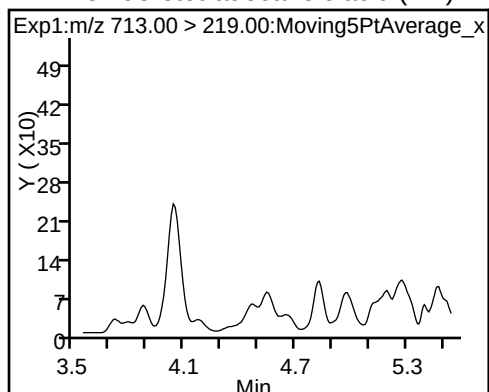
D 43 13C2-PFTeDA



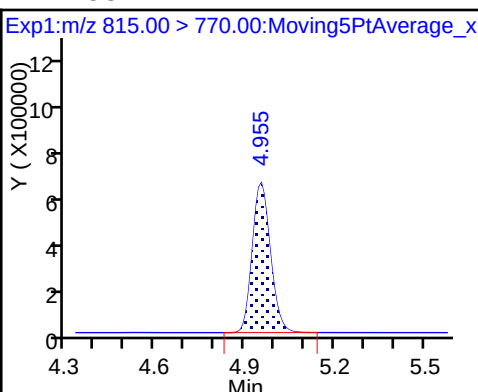
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 44 13C2-PFHxDA



TestAmerica Sacramento

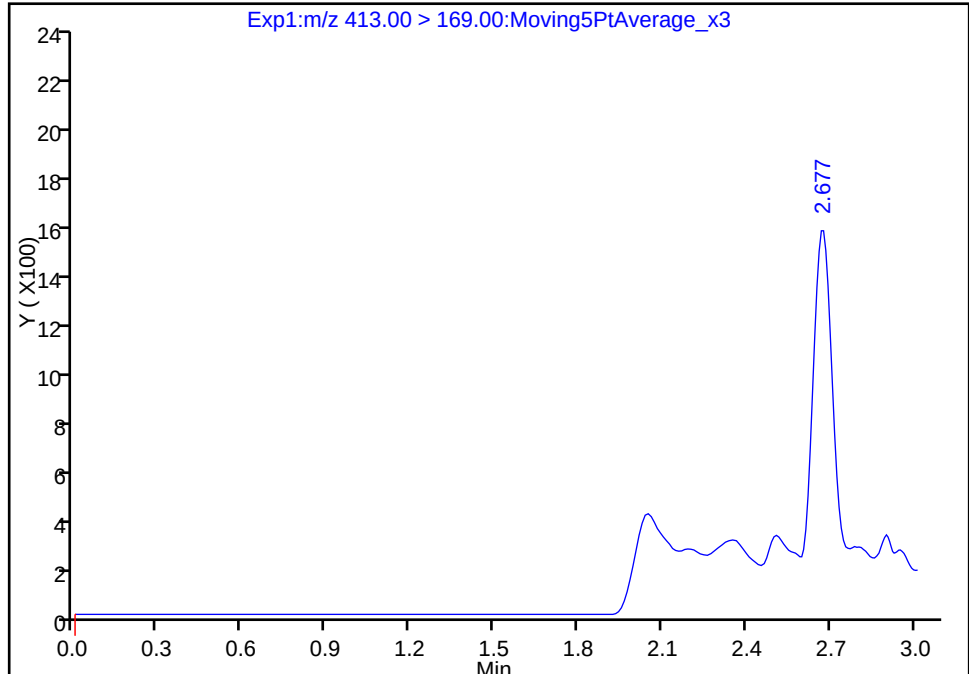
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_012.d
Injection Date: 17-Mar-2018 00:20:05 Instrument ID: A8_N
Lims ID: CCB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

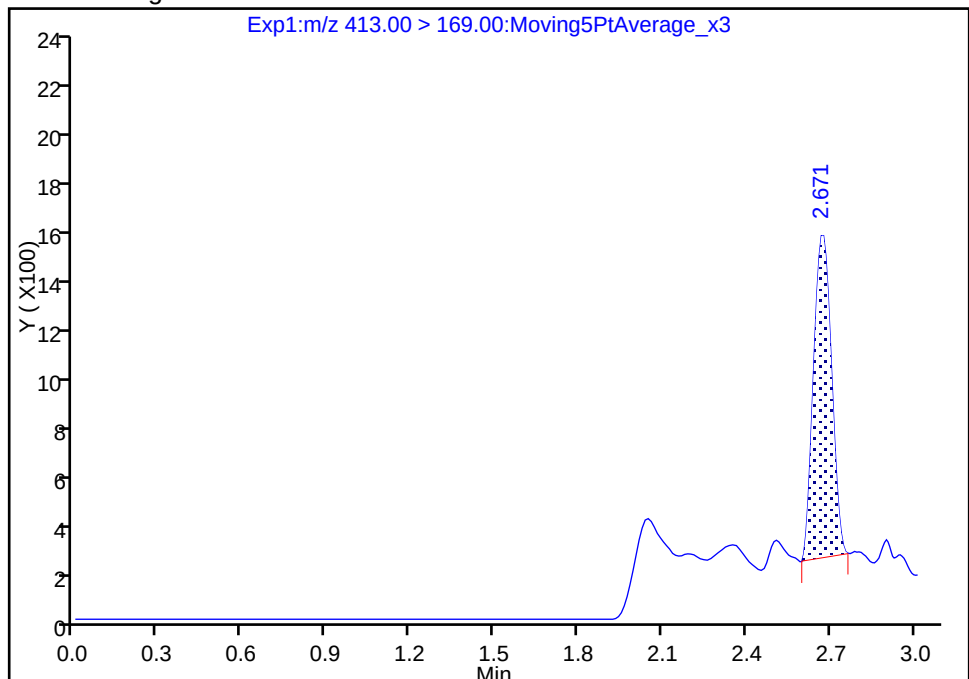
RT: 2.68
Area: 0
Amount: 0.004318
Amount Units: ng/ml

Processing Integration Results



RT: 2.67
Area: 5891
Amount: 0.004318
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 18-Mar-2018 12:45:33

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Client Sample ID: _____ Lab Sample ID: ICB 320-212932/9

Matrix: Water Lab File ID: 2018.03.14LLICAL_009.d

Analysis Method: EPA 537 (Mod) Date Collected: _____

Extraction Method: _____ Date Extracted: _____

Sample wt/vol: 1(mL) Date Analyzed: 03/14/2018 14:54

Con. Extract Vol.: _____ Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: _____ GPC Cleanup: (Y/N) N

Analysis Batch No.: 212932 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U M	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U M	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00728	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-212932/9
 Matrix: Water Lab File ID: 2018.03.14LLICAL_009.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 03/14/2018 14:54
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212932 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	99		50-150
STL00992	13C4 PFBA	97		50-150
STL01893	13C5 PFPeA	100		50-150
STL00993	13C2 PFHxA	99		50-150
STL01892	13C4-PFHpA	100		50-150
STL00990	13C4 PFOA	99		50-150
STL00995	13C5 PFNA	107		50-150
STL00996	13C2 PFDA	98		50-150
STL00997	13C2 PFUnA	98		50-150
STL00998	13C2 PFDoA	94		50-150
STL00994	18O2 PFHxS	96		50-150
STL02116	13C2-PFTeDA	97		50-150
STL00991	13C4 PFOS	100		50-150
STL02337	13C3-PFBS	99		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_009.d
 Lims ID: ICB
 Client ID:
 Sample Type: ICB
 Inject. Date: 14-Mar-2018 14:54:27 ALS Bottle#: 20 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICB
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 15-Mar-2018 08:30:05 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK055

First Level Reviewer: hannigana

Date: 14-Mar-2018 15:12:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.433	0.008	1.004	7078	0.003325			5.0	
D 1 13C4 PFBA										
217.00 > 172.00	1.435	1.433	0.002	0.553	5751502	2.43		97.3	111419	
D 3 13C5-PFPeA										
267.90 > 223.00	1.674	1.673	0.001	0.645	3952197	2.49		99.7	128641	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.674	1.673	0.001	1.000	7965	0.004302			2.0	M
D 47 13C3-PFBS										
301.90 > 83.00	1.701	1.703	-0.002	0.655	95437	2.30		99.1	461	
D 60 M2-4:2FTS										
329.00 > 81.00	1.905	1.900	0.005	0.734	674544	NC			10674	
D 7 13C2 PFHxA										
315.00 > 270.00	1.936	1.938	-0.002	0.746	4286620	2.48		99.2	99409	
D 9 13C4-PFHpA										
367.00 > 322.00	2.251	2.249	0.002	0.867	4082572	2.50		99.9	69690	
10 Perfluoroheptanoic acid										M
363.00 > 319.00	2.251	2.249	0.002	1.000	5796	0.003338			9.3	M
363.00 > 169.00	2.251	2.249	0.002	1.000	2478		2.34(1.13-3.40)		66.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.264	2.262	0.002	0.872	5487821	2.27		95.9	65963	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.264	2.262	0.002	1.000	18956	0.007276			157	
399.00 > 99.00	2.264	2.262	0.002	1.000	7231		2.62(1.50-4.49)		23.2	
D 12 M2-6:2FTS										
429.00 > 81.00	2.571	2.577	-0.006	0.991	1060358	2.43		103	26955	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.571	2.577	-0.006	1.000	2511	0.003293			106	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.595	2.602	-0.007	1.000	3913694	2.48		99.3	64916	
* 62 13C2-PFOA										
415.00 > 370.00	2.595	2.602	-0.007		4150772	2.50			80176	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.602	2.602	0.0	1.003	11197	0.006150			5.0	M
413.00 > 169.00	2.595	2.602	-0.007	1.000	7027		1.59(0.84-2.52)		34.2	M
D 18 13C4 PFOS										
503.00 > 80.00	2.954	2.966	-0.012	1.138	3952657	2.38		99.5	56909	
D 19 13C5 PFNA										
468.00 > 423.00	2.954	2.972	-0.018	1.138	3288653	2.68		107	73366	
D 21 13C8 FOSA										
506.00 > 78.00	3.282	3.305	-0.023	1.265	6001181	2.48		99.1	46484	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.290	3.307	-0.017	1.002	10256	0.004366			136	
D 26 M2-8:2FTS										
529.00 > 81.00	3.297	3.320	-0.023	1.271	1078390	2.48		103	32969	
D 23 13C2 PFDA										
515.00 > 470.00	3.313	3.332	-0.019	1.277	2438953	2.46		98.4	39625	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.462	3.482	-0.020	1.334	822746	2.54		102	26202	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.462	3.488	-0.026	1.000	5228	0.0153			62.2	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.622	3.649	-0.027	1.396	848551	2.42		96.8	1536	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.631	3.655	-0.024	1.003	5135	0.0156			153	
D 30 13C2 PFUnA										
565.00 > 520.00	3.631	3.655	-0.024	1.399	1803024	2.45		98.1	49416	
D 36 13C2 PFDaA										
615.00 > 570.00	3.915	3.942	-0.027	1.509	1747551	2.34		93.6	6085	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.427	4.430	-0.003	1.706	1600232	2.42		97.0	11256	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.830	4.824	0.006	1.000	31007	NC			2.3	
813.00 > 169.00	4.830	4.824	0.006	1.000	5348		5.80(2.86-8.58)		70.0	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.830	4.825	0.005	1.861	3308813	2.61		104	11150	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL0_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_009.d

Injection Date: 14-Mar-2018 14:54:27

Instrument ID: A8_N

Lims ID: ICB

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

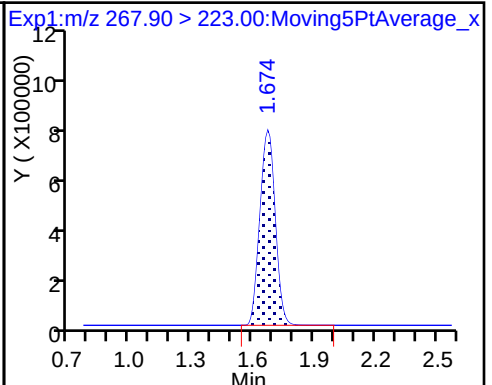
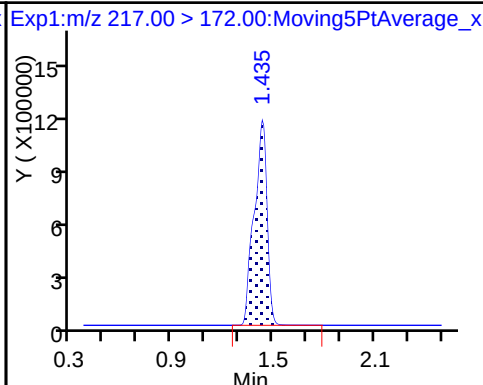
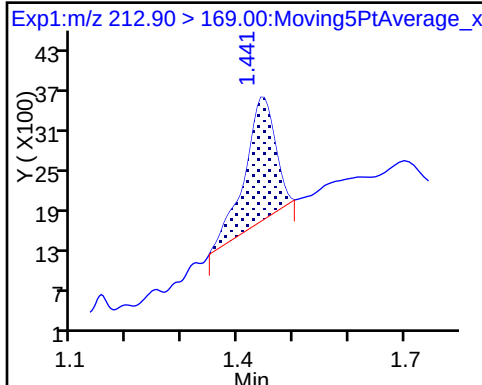
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

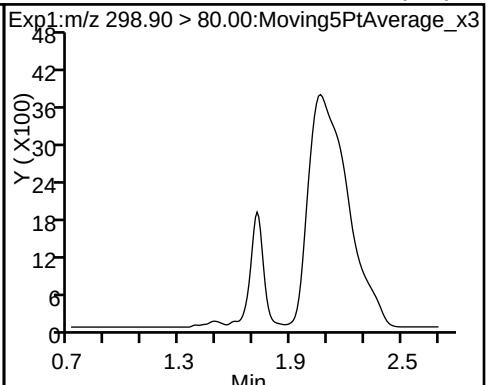
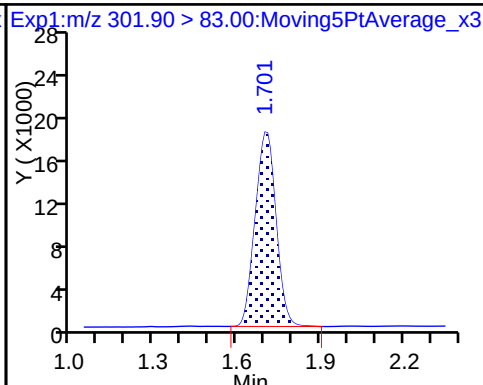
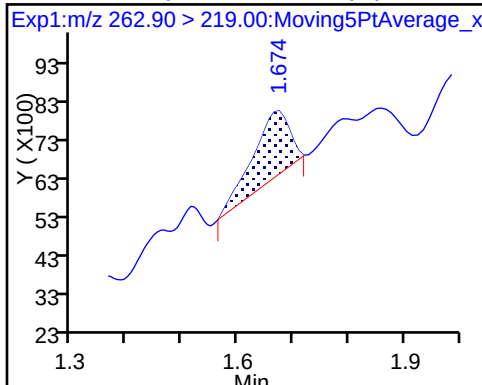
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (M)

D 47 13C3-PFBS

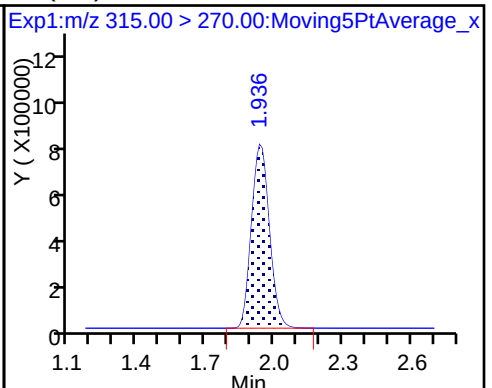
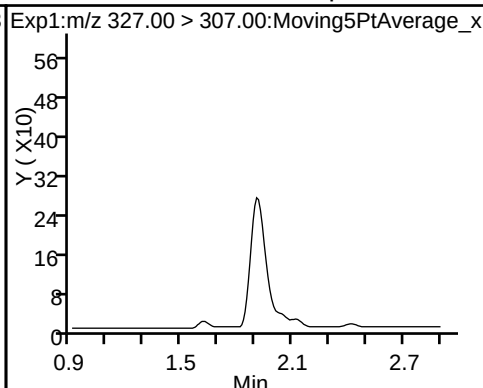
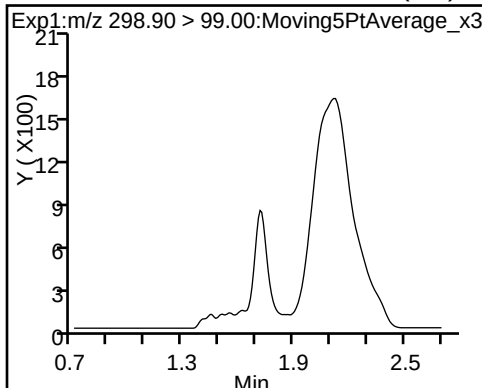
5 Perfluorobutanesulfonic acid (ND)



5 Perfluorobutanesulfonic acid (ND)

61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid (ND)

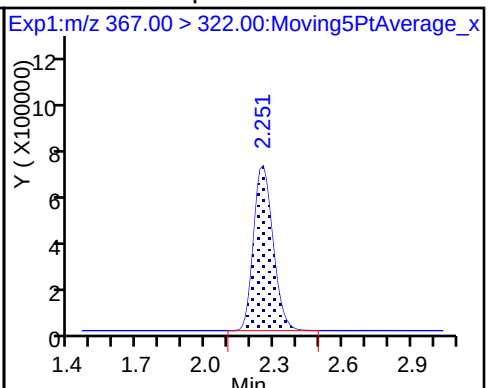
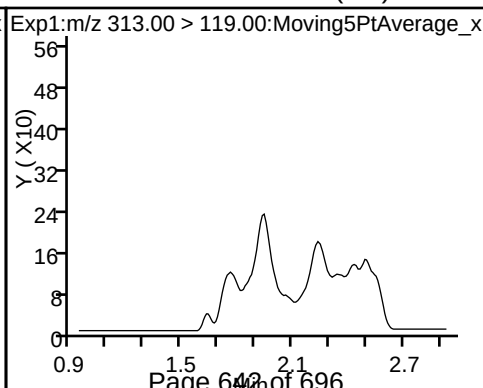
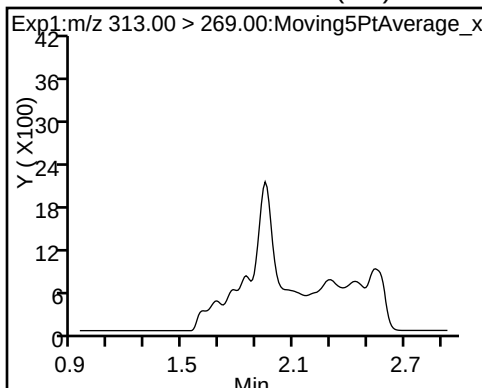
D 13C2 PFHxA

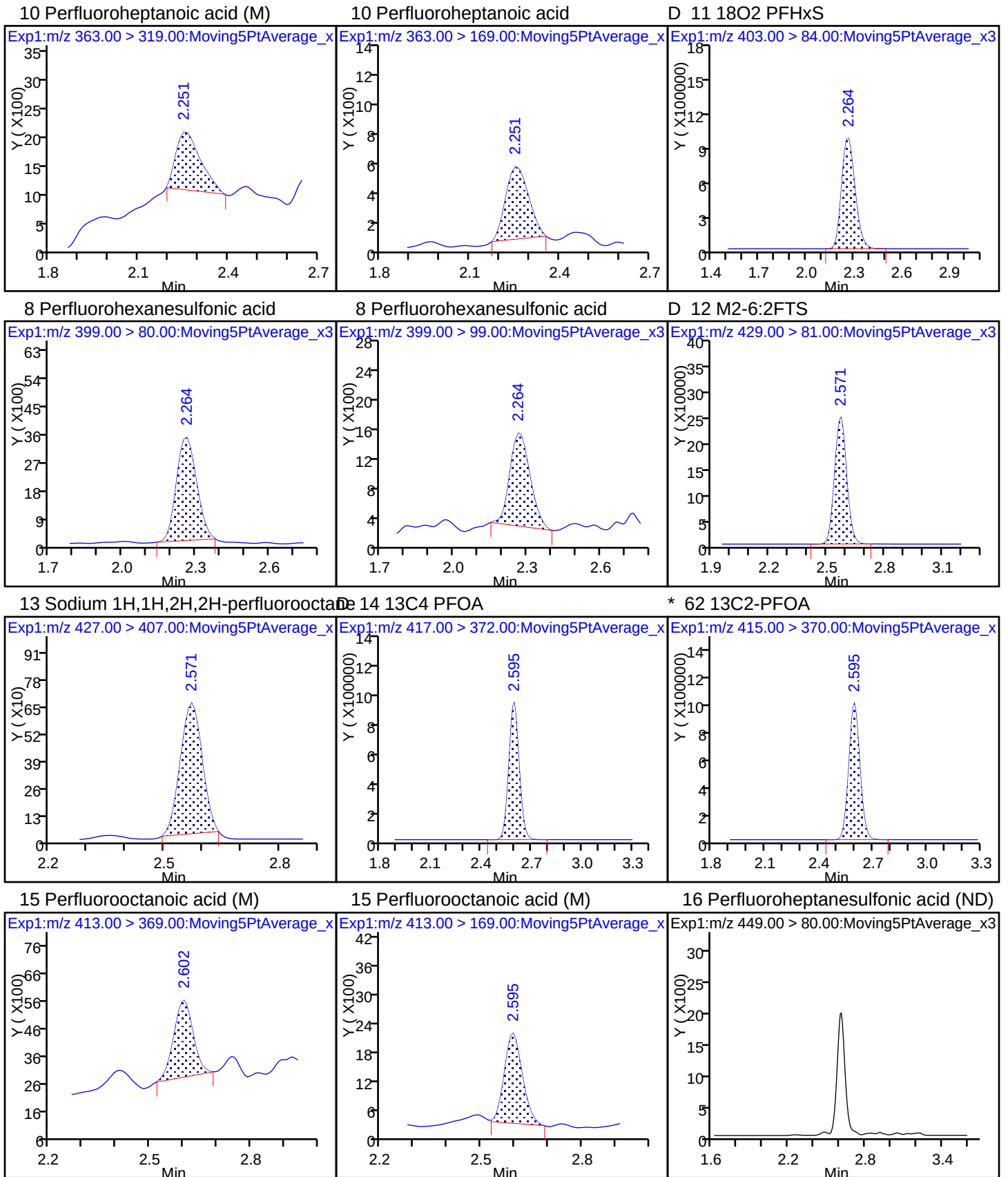


6 Perfluorohexanoic acid (ND)

6 Perfluorohexanoic acid (ND)

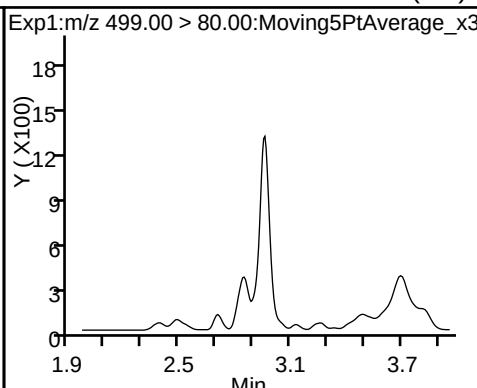
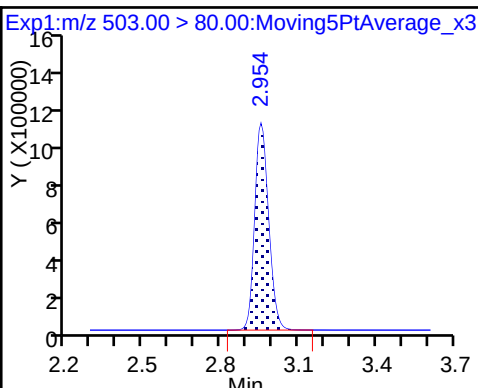
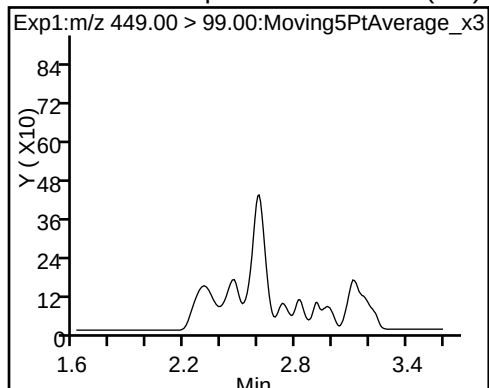
D 9 13C4-PFHpA





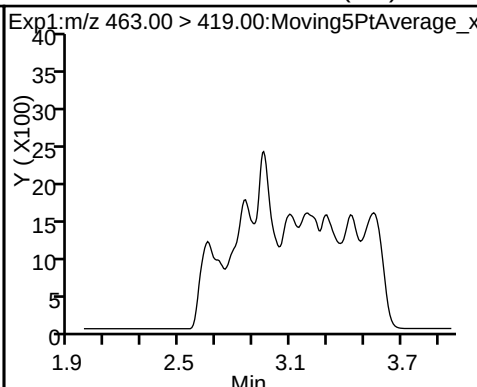
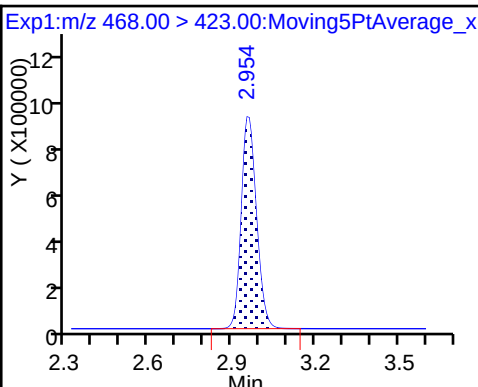
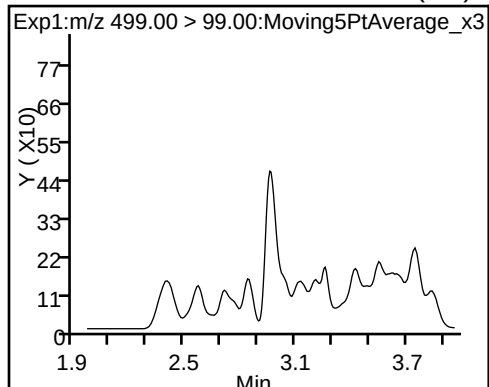
16 Perfluoroheptanesulfonic acid (ND) D 18 13C4 PFOS

17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND) D 19 13C5 PFNA

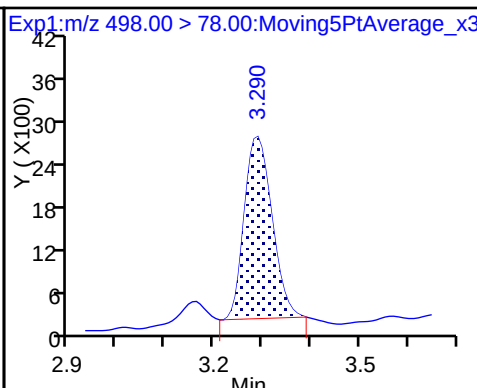
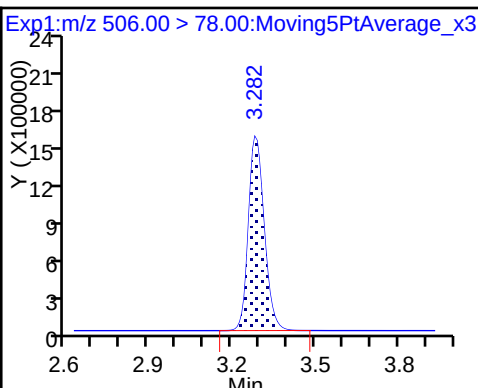
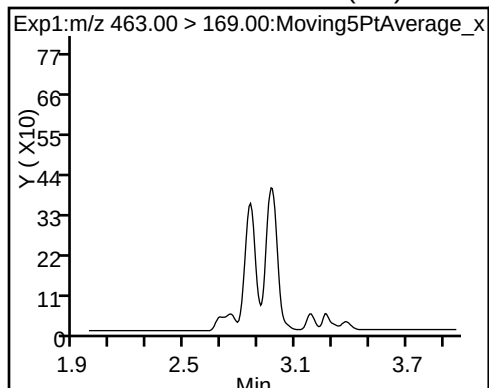
20 Perfluorononanoic acid (ND)



20 Perfluorononanoic acid (ND)

D 21 13C8 FOSA

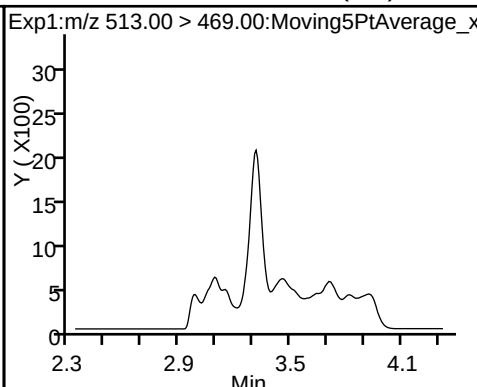
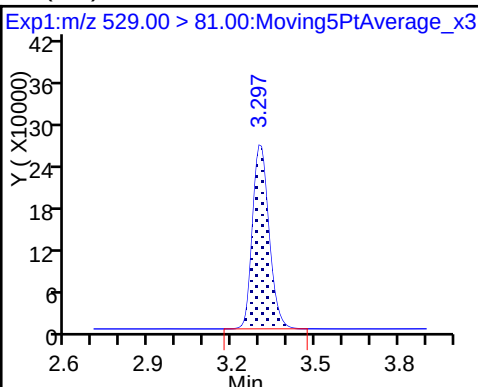
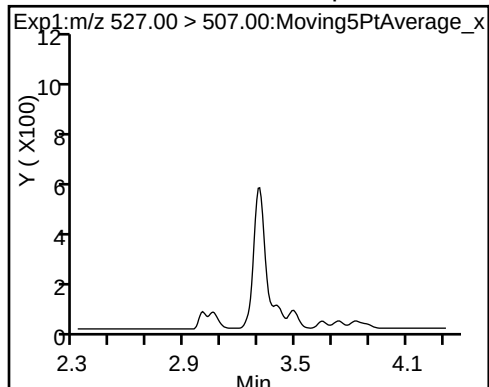
22 Perfluorooctane Sulfonamide



25 Sodium 1H,1H,2H,2H-perfluorodecanoate (ND)

D 26 13C12-8:2FTS

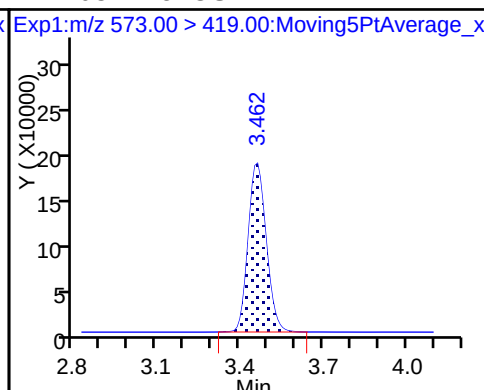
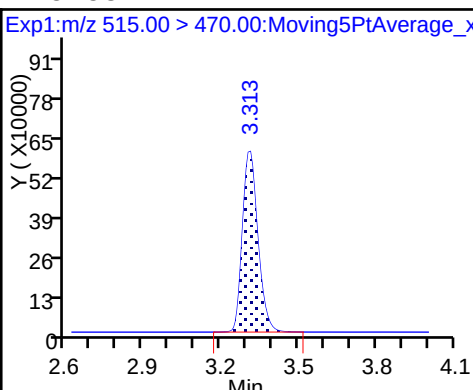
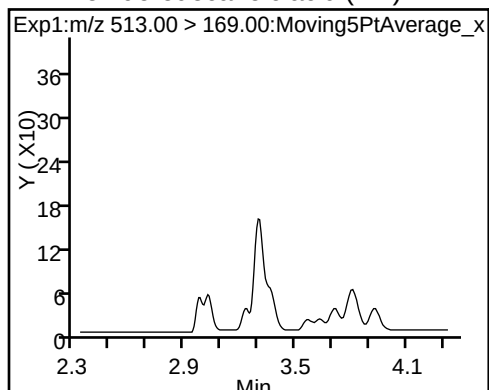
24 Perfluorodecanoic acid (ND)



24 Perfluorodecanoic acid (ND)

D 23 13C2 PFDA

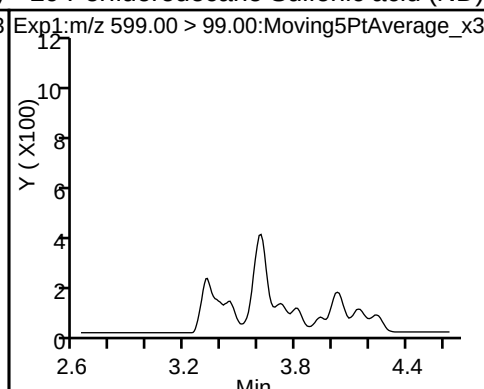
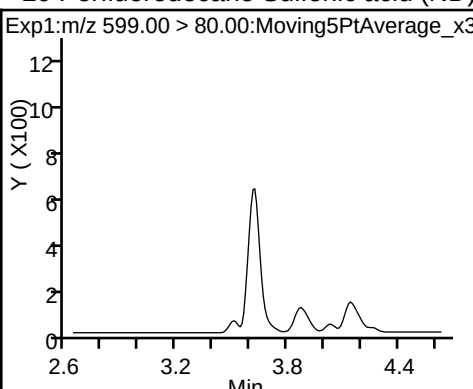
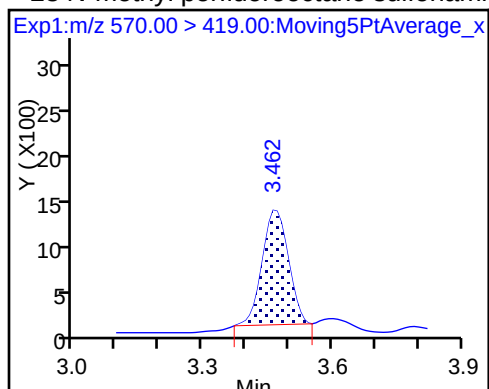
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonamid

29 Perfluorodecane Sulfonic acid (ND)

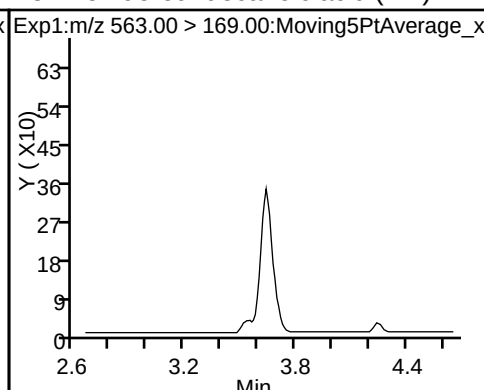
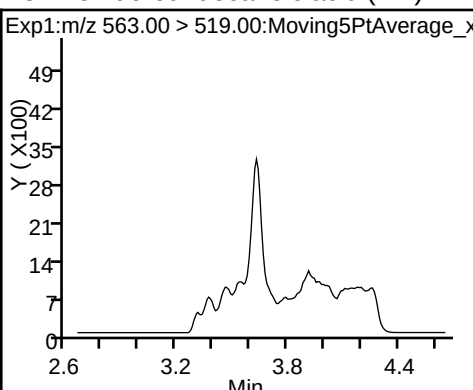
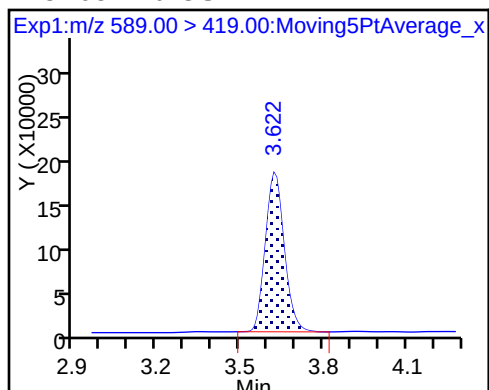
29 Perfluorodecane Sulfonic acid (ND)



D 32 d5-NEtFOSAA

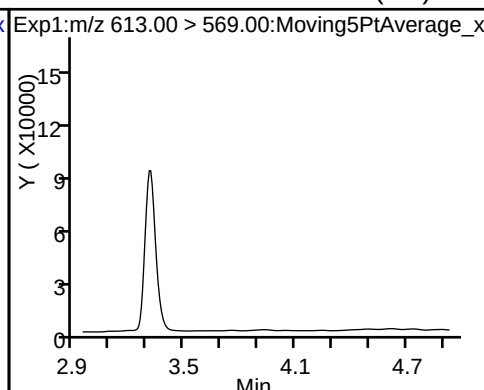
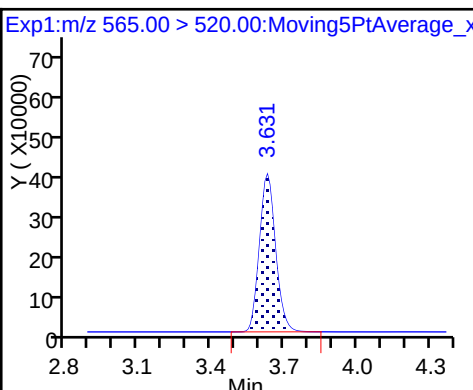
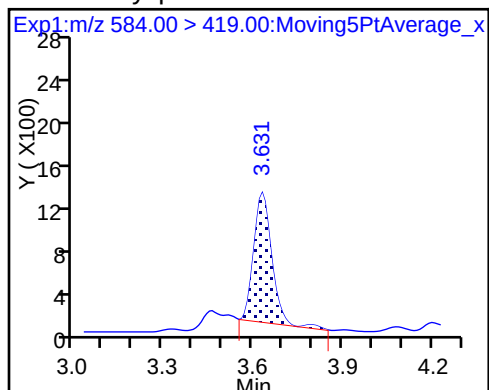
31 Perfluoroundecanoic acid (ND)

31 Perfluoroundecanoic acid (ND)



33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA

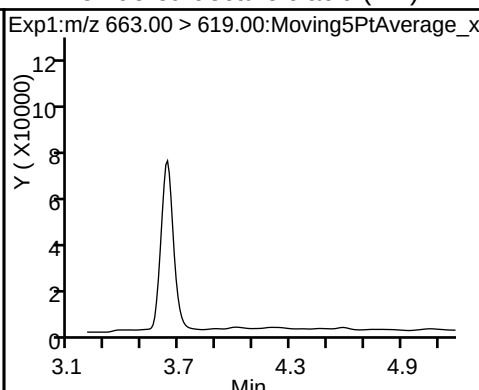
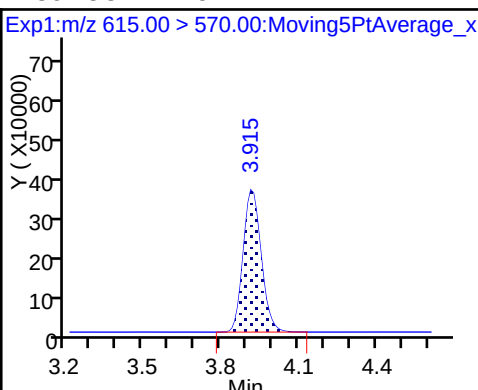
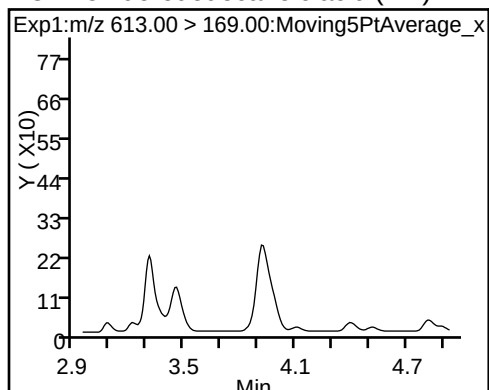
37 Perfluorododecanoic acid (ND)



37 Perfluorododecanoic acid (ND)

D 36 13C2 PFDoA

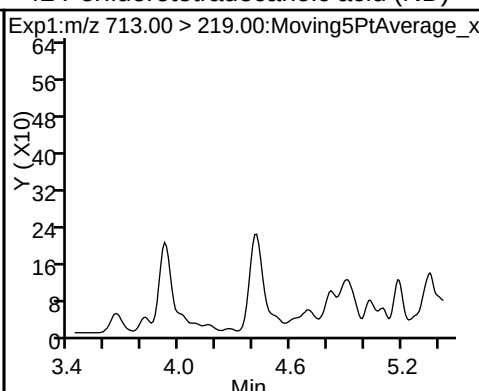
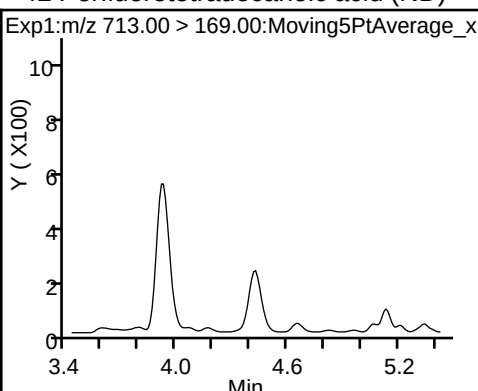
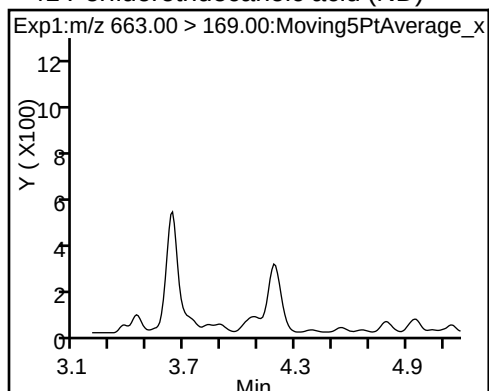
41 Perfluorotridecanoic acid (ND)



41 Perfluorotridecanoic acid (ND)

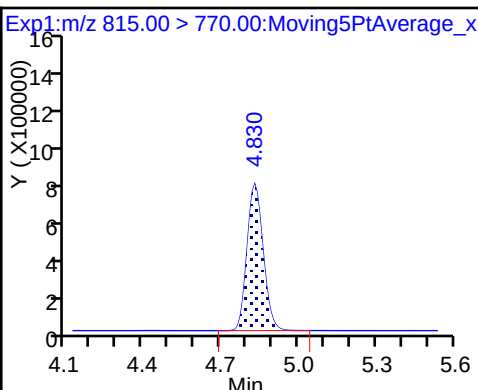
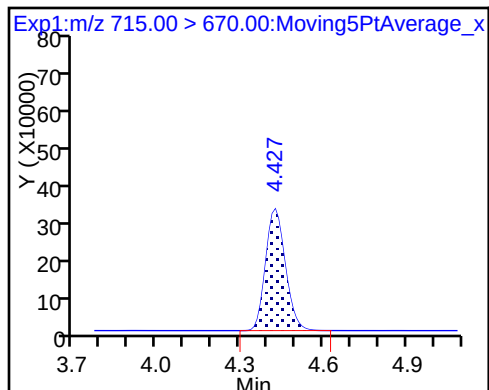
42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



TestAmerica Sacramento

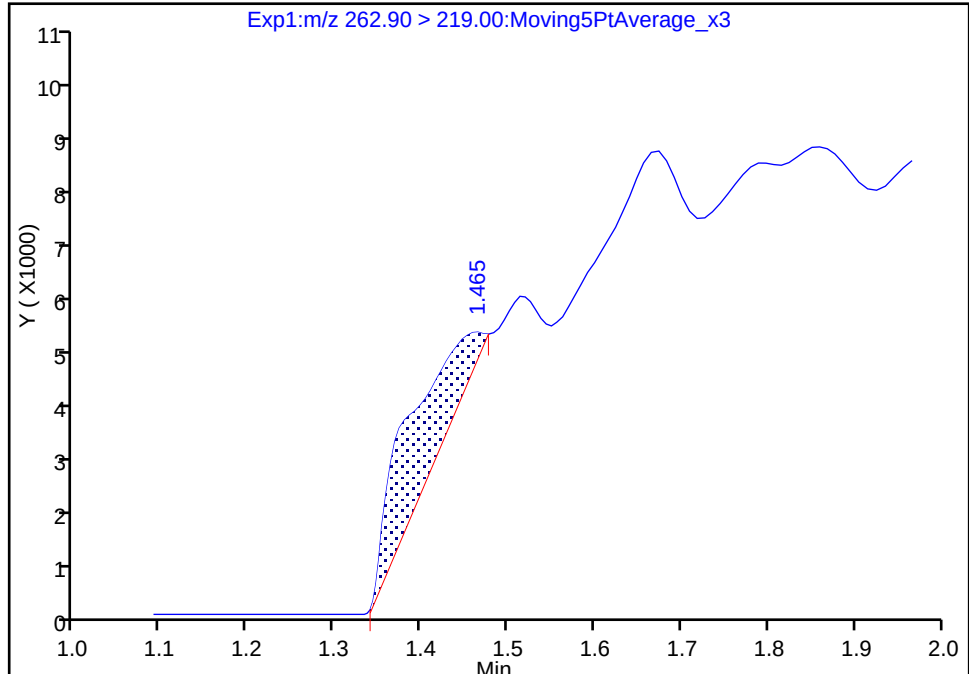
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Injection Date: 14-Mar-2018 14:54:27 Instrument ID: A8_N
Lims ID: ICB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

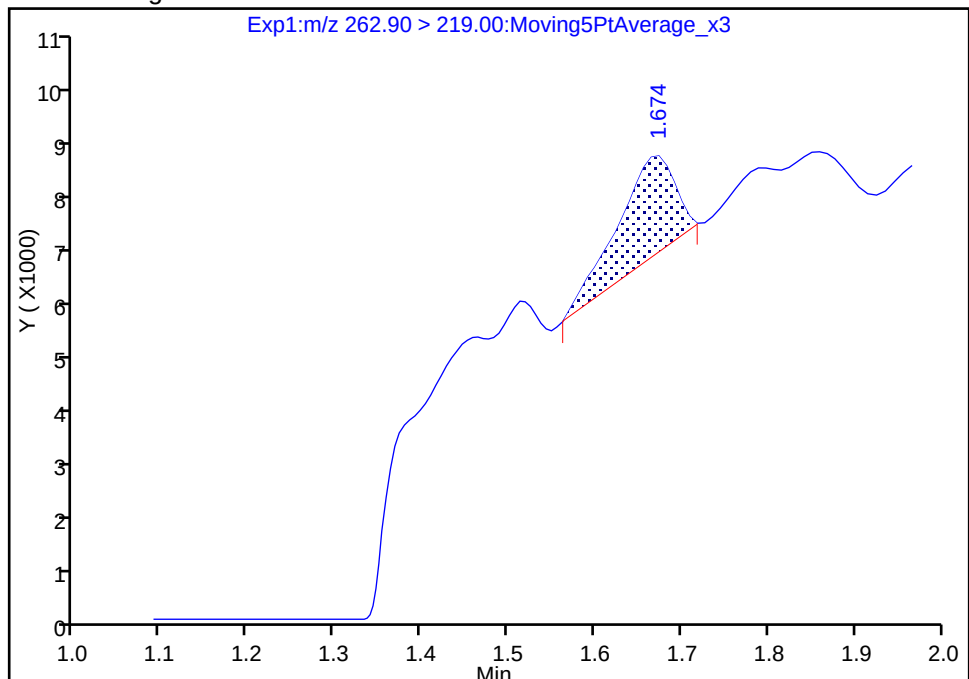
RT: 1.47
Area: 9564
Amount: 0.005166
Amount Units: ng/ml

Processing Integration Results



RT: 1.67
Area: 7965
Amount: 0.004302
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 14-Mar-2018 15:10:29

Audit Action: Manually Integrated

Audit Reason: Wrong peak

TestAmerica Sacramento

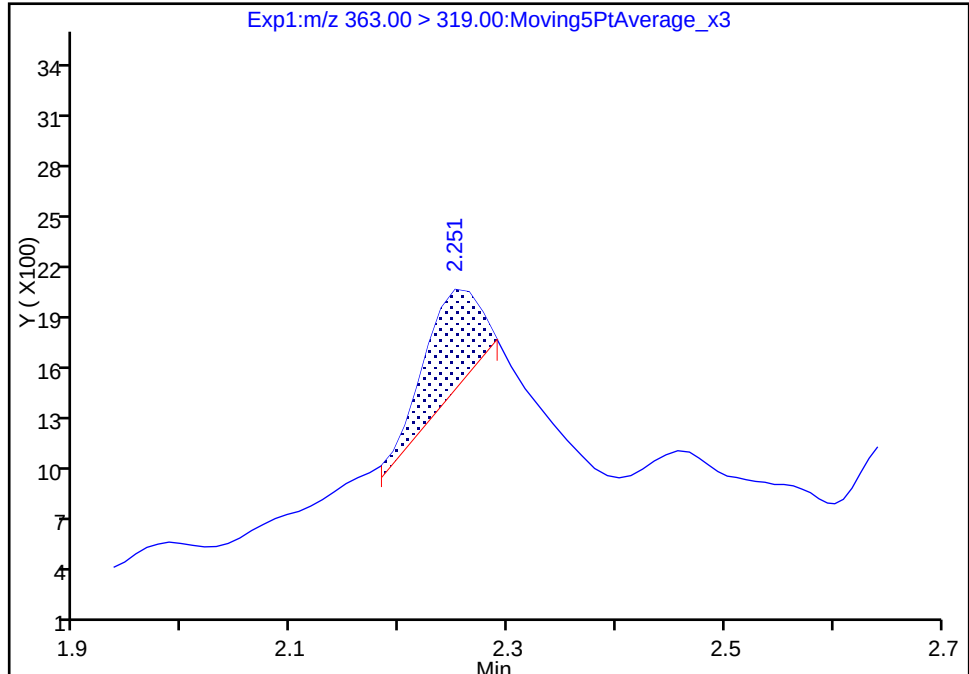
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Injection Date: 14-Mar-2018 14:54:27 Instrument ID: A8_N
Lims ID: ICB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

10 Perfluoroheptanoic acid, CAS: 375-85-9

Signal: 1

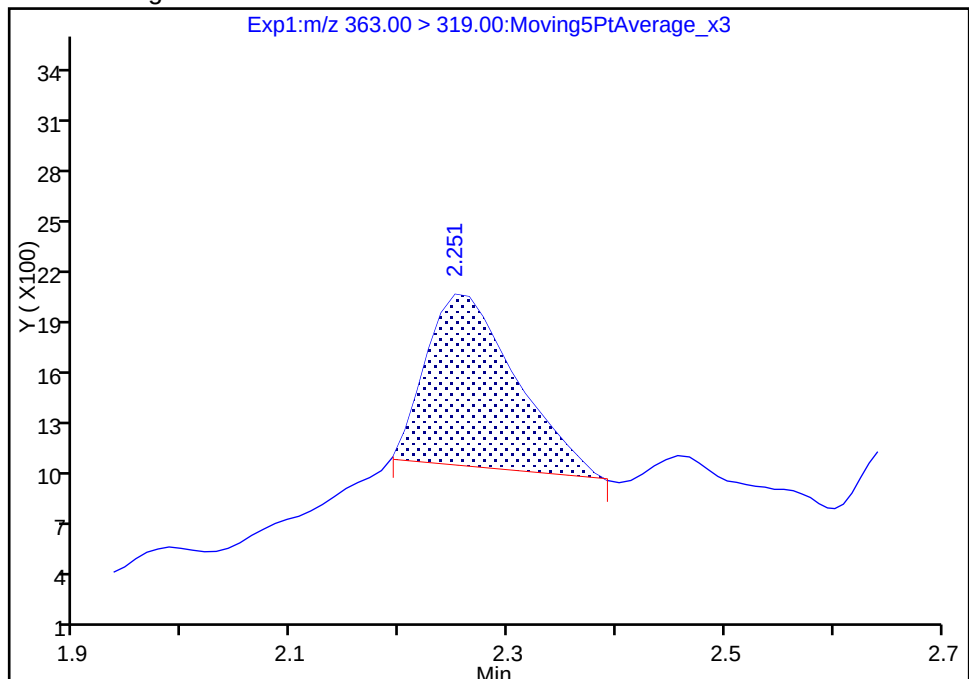
RT: 2.25
Area: 2097
Amount: 0.001208
Amount Units: ng/ml

Processing Integration Results



RT: 2.25
Area: 5796
Amount: 0.003338
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 14-Mar-2018 15:10:54

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

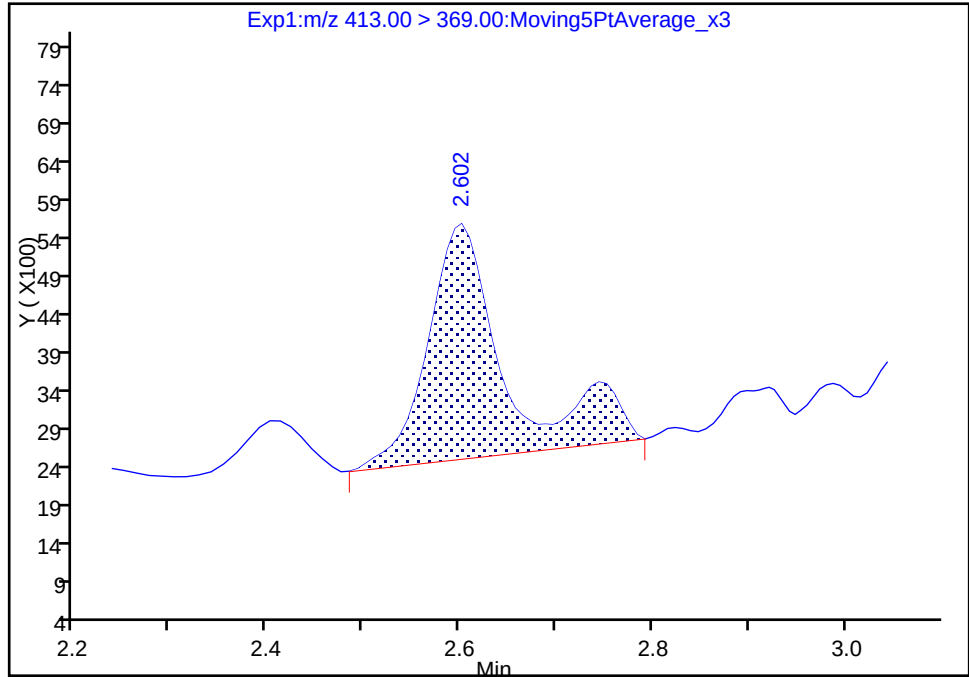
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Injection Date: 14-Mar-2018 14:54:27 Instrument ID: A8_N
Lims ID: ICB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

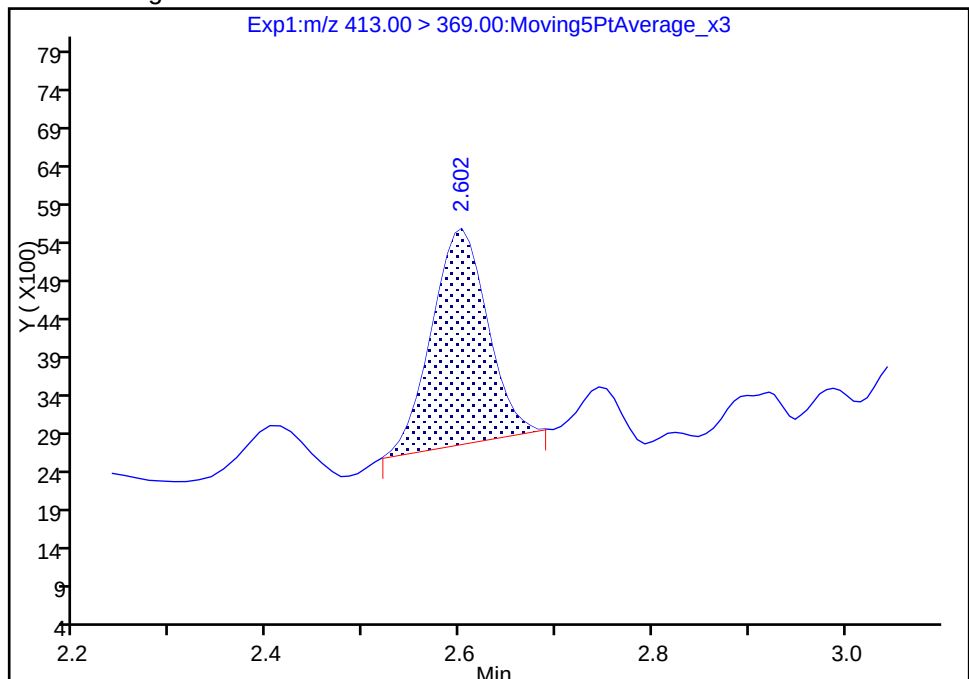
RT: 2.60
Area: 16869
Amount: 0.009266
Amount Units: ng/ml

Processing Integration Results



RT: 2.60
Area: 11197
Amount: 0.006150
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 14-Mar-2018 15:11:05

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

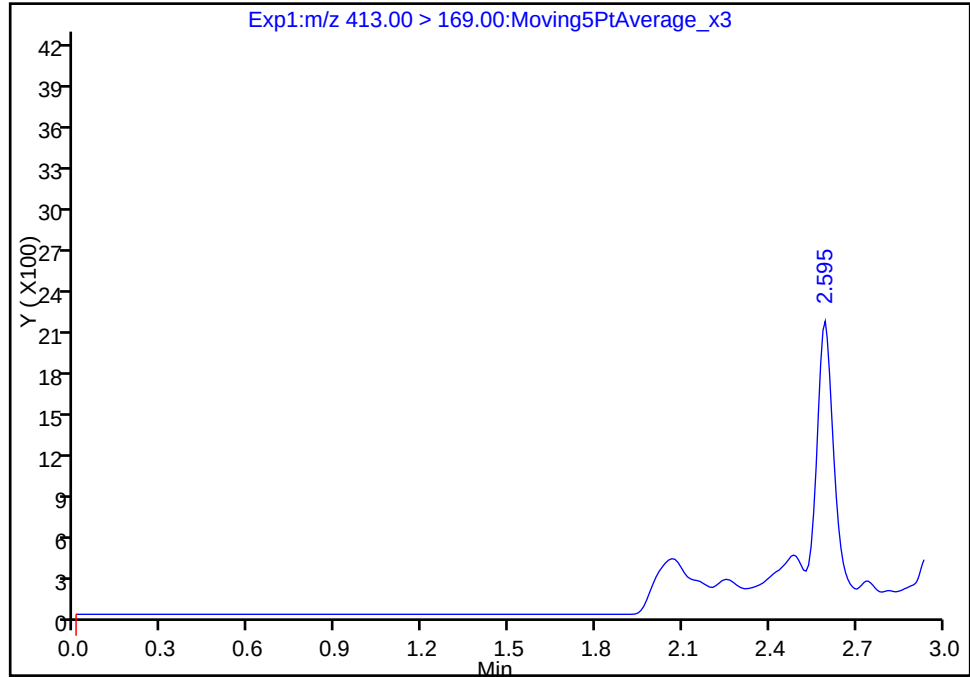
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Injection Date: 14-Mar-2018 14:54:27 Instrument ID: A8_N
Lims ID: ICB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

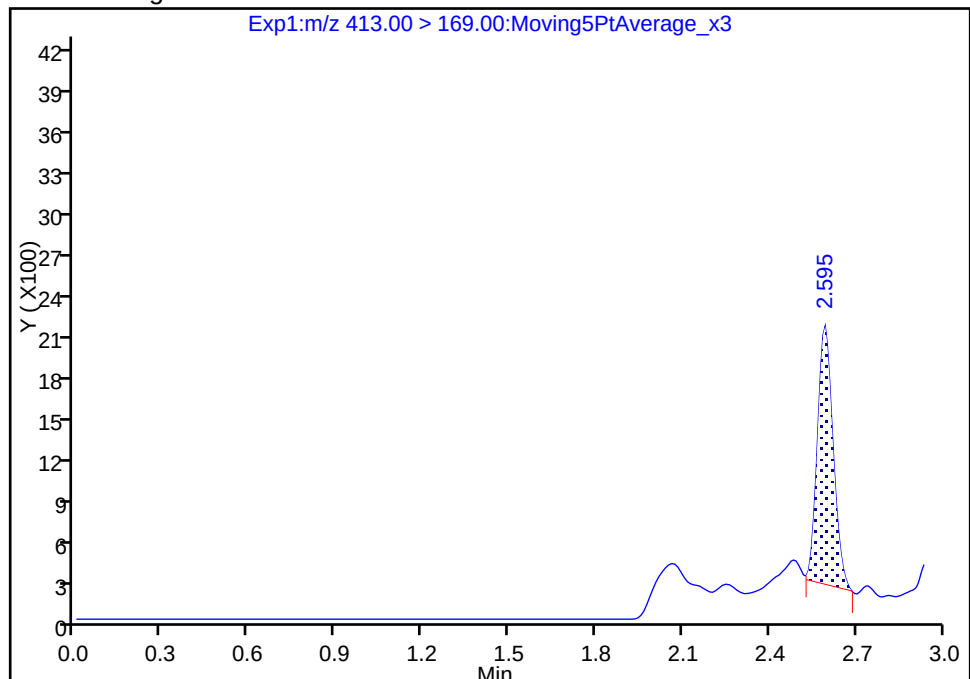
RT: 2.59
Area: 0
Amount: 0.009266
Amount Units: ng/ml

Processing Integration Results



RT: 2.60
Area: 7027
Amount: 0.006150
Amount Units: ng/ml

Manual Integration Results



Reviewer: hannigana, 14-Mar-2018 15:11:13

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-213555/9
 Matrix: Water Lab File ID: 2018.03.16ICAL_010.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 03/17/2018 00:04
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 213555 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U M	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00935	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00488	J	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-213555/9
 Matrix: Water Lab File ID: 2018.03.16ICAL_010.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 03/17/2018 00:04
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 213555 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	101		50-150
STL00992	13C4 PFBA	95		50-150
STL01893	13C5 PFPeA	96		50-150
STL00993	13C2 PFHxA	96		50-150
STL01892	13C4-PFHpA	98		50-150
STL00990	13C4 PFOA	101		50-150
STL00995	13C5 PFNA	100		50-150
STL00996	13C2 PFDA	103		50-150
STL00997	13C2 PFUnA	95		50-150
STL00998	13C2 PFDoA	98		50-150
STL00994	18O2 PFHxS	98		50-150
STL02116	13C2-PFTeDA	100		50-150
STL00991	13C4 PFOS	98		50-150
STL02337	13C3-PFBS	95		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_010.d
 Lims ID: ICB
 Client ID:
 Sample Type: ICB
 Inject. Date: 17-Mar-2018 00:04:26 ALS Bottle#: 20 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICB
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 18-Mar-2018 12:48:48 Calib Date: 16-Mar-2018 23:56:35
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16ICAL_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK059

First Level Reviewer: phomsophat

Date: 18-Mar-2018 12:40:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.446	1.440	0.006	1.004	9326	0.004691			9.8	
D 1 13C4 PFBA										
217.00 > 172.00	1.440	1.440	0.0	0.537	5358630	2.38		95.2	93501	
D 3 13C5-PFPeA										
267.90 > 223.00	1.700	1.696	0.004	0.634	3806196	2.40		95.8	147220	
D 47 13C3-PFBS										
301.90 > 83.00	1.735	1.730	0.005	0.647	86927	2.22		95.4	485	
D 60 M2-4:2FTS										
329.00 > 81.00	1.945	1.942	0.003	0.726	678201	NC			6975	
D 7 13C2 PFHxA										
315.00 > 270.00	1.986	1.979	0.007	0.741	4250104	2.40		95.9	107854	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.311	0.017	1.006	10936	0.006267			25.3	
363.00 > 169.00	2.315	2.311	0.004	1.000	4191		2.61(1.13-3.40)		83.8	
D 9 13C4-PFHpA										
367.00 > 322.00	2.315	2.311	0.004	0.864	4208935	2.44		97.7	87896	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.326	0.002	1.000	23540	0.009353			3.6	
399.00 > 99.00	2.341	2.326	0.015	1.006	6860		3.43(1.50-4.49)		3.0	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.326	0.002	0.869	5336775	2.32		98.2	52678	
D 12 M2-6:2FTS										
429.00 > 81.00	2.657	2.651	0.006	0.991	1057774	2.40		101	27588	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.657	2.652	0.005	1.000	3447	0.004649			216	
* 62 13C2-PFOA										
415.00 > 370.00	2.680	2.678	0.002		4410810	2.50			79106	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.680	2.678	0.002	1.000	12378	0.006616			4.1	
413.00 > 169.00	2.680	2.678	0.002	1.000	9094		1.36(0.84-2.52)		38.2	M
D 14 13C4 PFOA										
417.00 > 372.00	2.680	2.678	0.002	1.000	4189432	2.52		101	97054	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.688	2.684	0.004	1.000	10132	0.004876			258	
449.00 > 99.00	2.696	2.684	0.012	1.003	2331		4.35(1.94-5.82)		81.1	
D 18 13C4 PFOS										
503.00 > 80.00	3.058	3.050	0.008	1.141	3779181	2.35		98.3	50099	
D 19 13C5 PFNA										
468.00 > 423.00	3.058	3.052	0.006	1.141	3335145	2.51		100	59592	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.397	3.388	0.009	1.003	12721	0.005544			138	
D 21 13C8 FOSA										
506.00 > 78.00	3.388	3.388	0.0	1.264	5903535	2.54		101	66646	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.406	3.406	0.0	0.997	2715	0.005150			109	
D 26 M2-8:2FTS										
529.00 > 81.00	3.415	3.406	0.009	1.274	1004269	2.42		101	28014	
D 23 13C2 PFDA										
515.00 > 470.00	3.424	3.416	0.008	1.277	2864933	2.58		103	46070	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.578	3.570	0.008	1.335	909460	2.48		99.1	32662	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.578	3.571	0.007	1.000	5228	0.0138			65.8	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.748	3.740	0.008	1.398	912547	2.60		104	1838	
33 N-ethyl perfluorooctane sulfonamid										M
584.00 > 419.00	3.758	3.746	0.012	1.003	4563	0.0128			72.8	M
D 30 13C2 PFUnA										
565.00 > 520.00	3.748	3.747	0.001	1.398	2059521	2.37		94.6	53119	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.758	3.750	0.008	1.003	6769	0.009805			21.6	
563.00 > 169.00	3.748	3.750	-0.002	1.000	2036		3.32(2.12-6.36)		273	
D 36 13C2 PFDaA										
615.00 > 570.00	4.046	4.041	0.005	1.509	2030457	2.46		98.4	12061	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.318	4.304	0.014	1.000	6590	0.007887			1.2	
663.00 > 169.00	4.318	4.304	0.014	1.000	2088		3.16(1.25-3.76)		39.1	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.554	4.545	0.009	1.699	1887839	2.50		100	15105	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.964	4.956	0.008	1.852	2604449	2.36		94.5	10010	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.964	4.960	0.004	1.000	29897	NC			2.7	
813.00 > 169.00	4.964	4.960	0.004	1.000	5706		5.24(2.86-8.58)		67.7	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

[Reagents:](#)

LCPFC_LL0_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_010.d

Injection Date: 17-Mar-2018 00:04:26

Instrument ID: A8_N

Lims ID: ICB

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

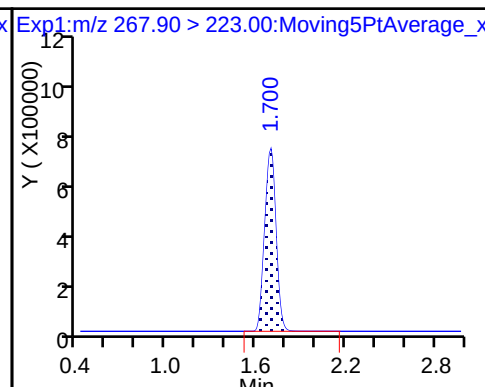
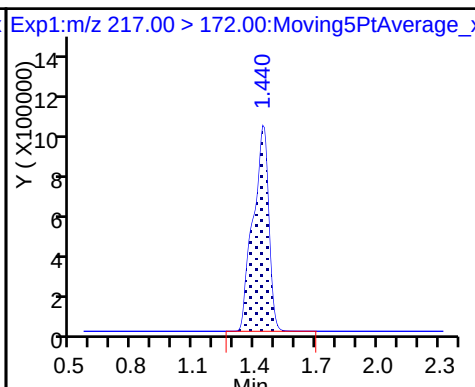
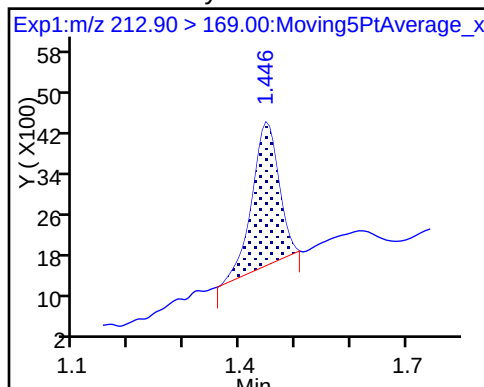
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

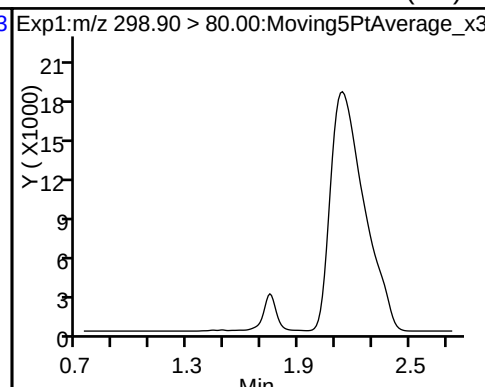
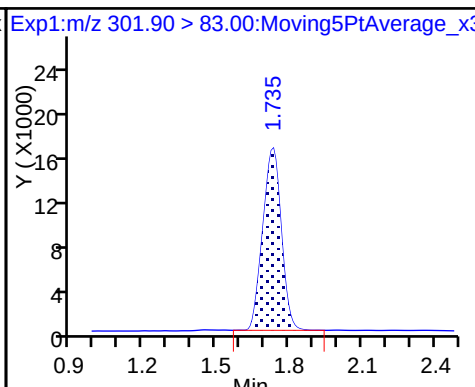
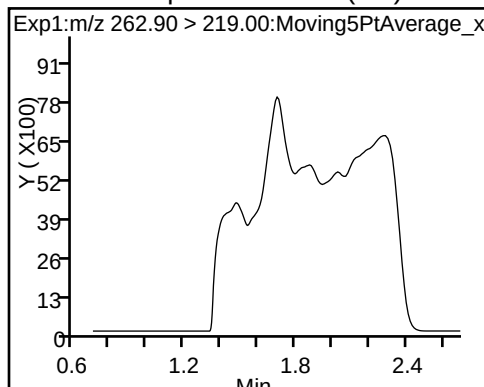
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (ND)

D 47 13C3-PFBS

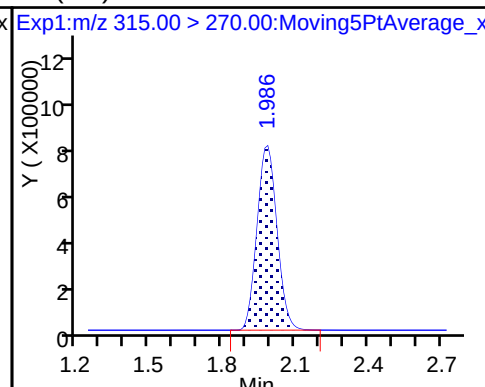
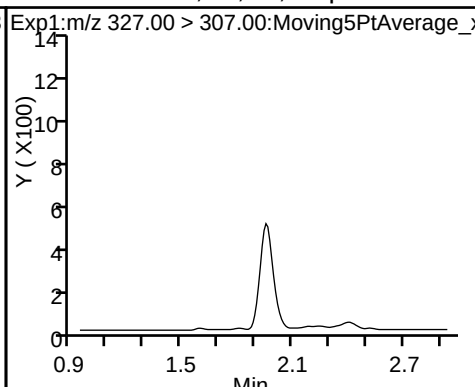
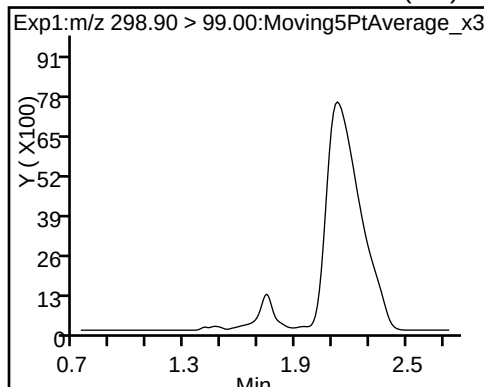
5 Perfluorobutanesulfonic acid (ND)



5 Perfluorobutanesulfonic acid (ND)

61 Sodium 1H,1H,2H,2H-perfluorohexanoate (ND)

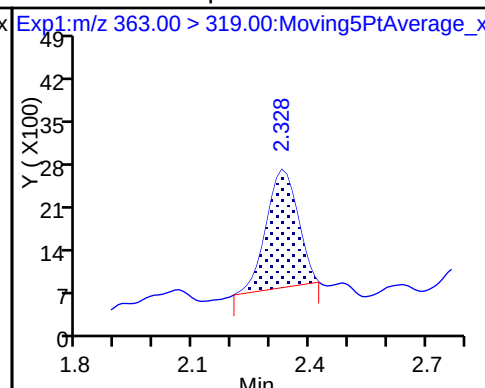
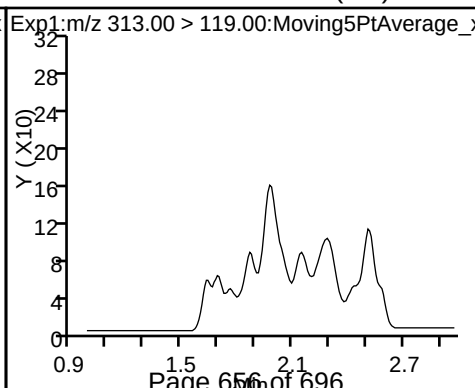
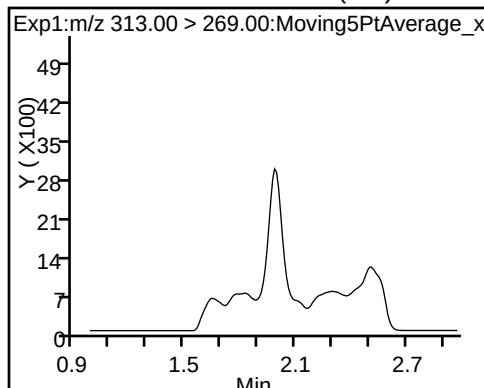
D 13C2 PFHxA



6 Perfluorohexanoic acid (ND)

6 Perfluorohexanoic acid (ND)

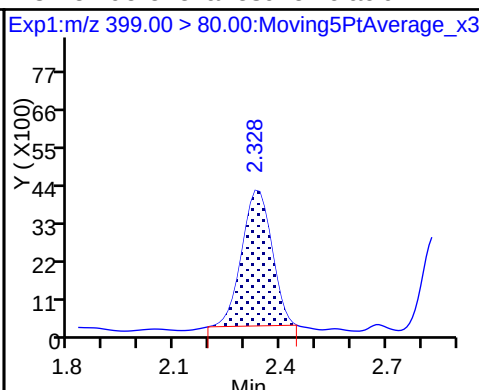
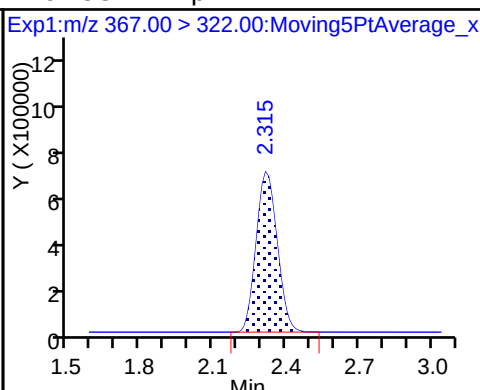
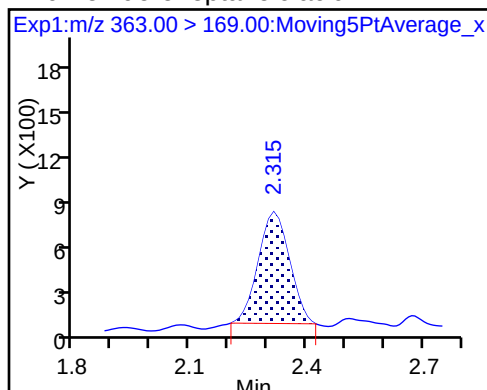
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

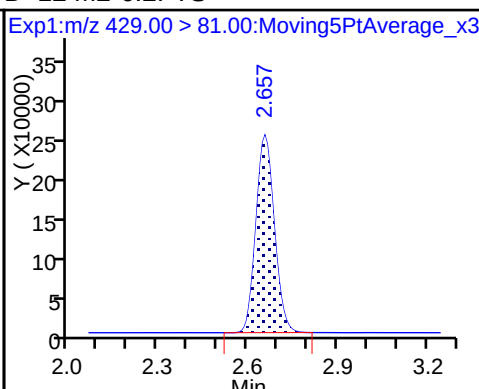
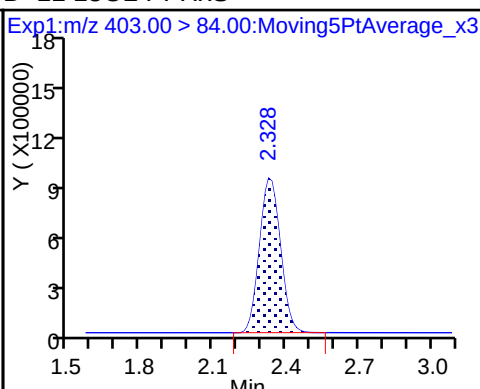
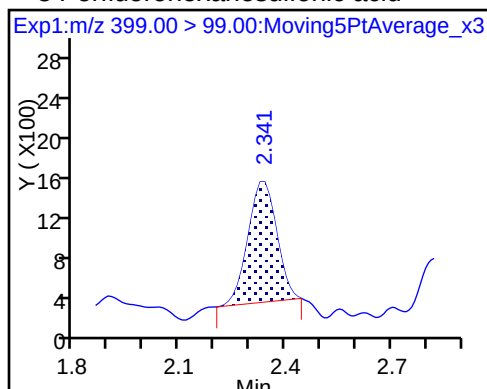
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

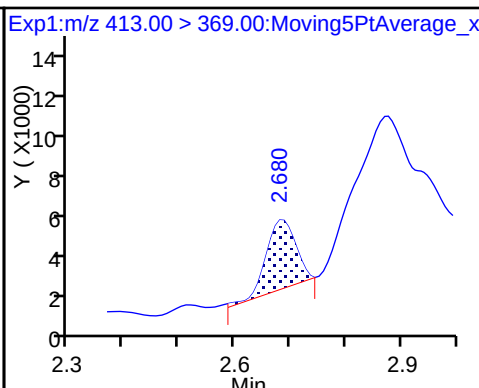
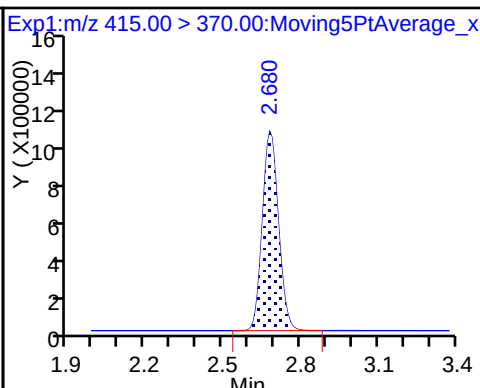
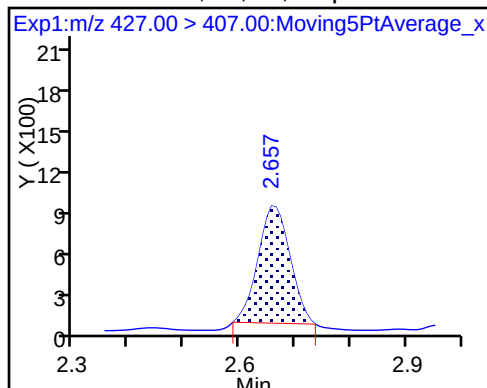
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctanoate

62 13C2-PFOA

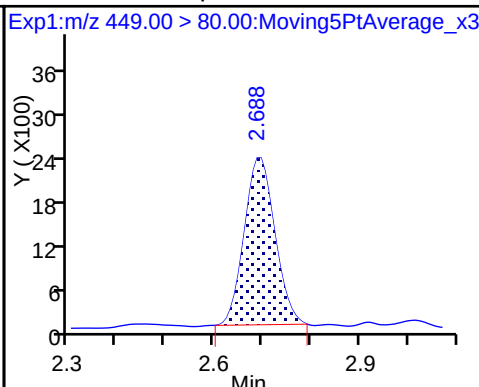
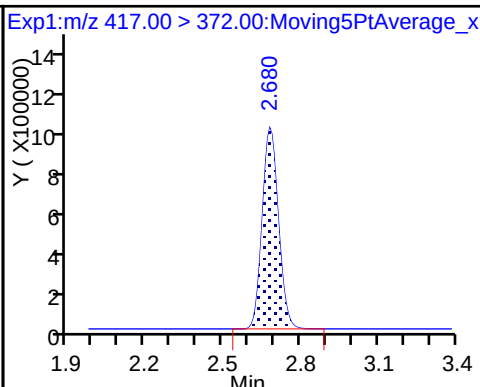
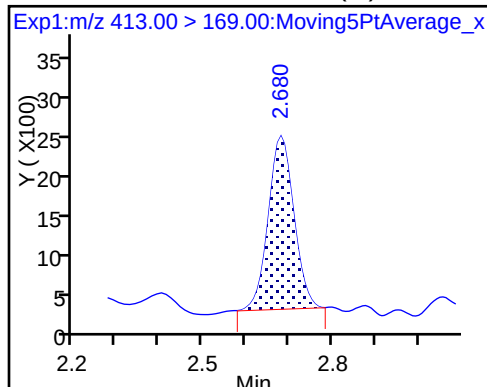
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid (M)

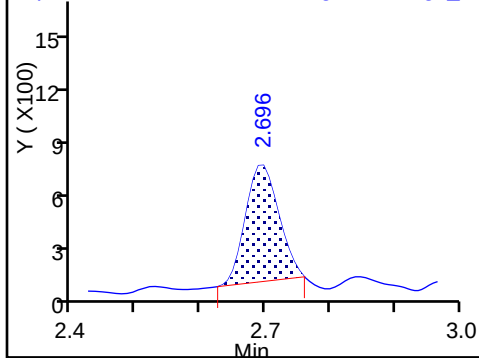
D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid



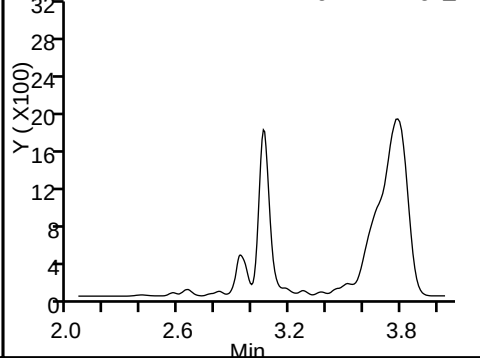
16 Perfluoroheptanesulfonic acid

Exp1:m/z 449.00 > 99.00:Moving5PtAverage_x3



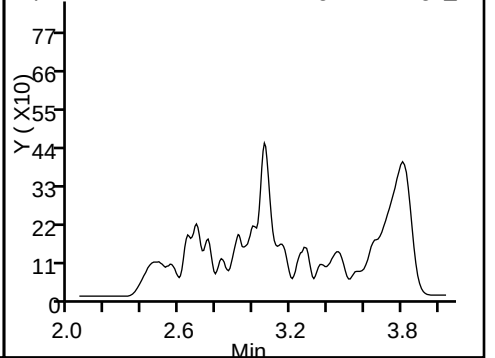
17 Perfluorooctane sulfonic acid (ND)

Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3



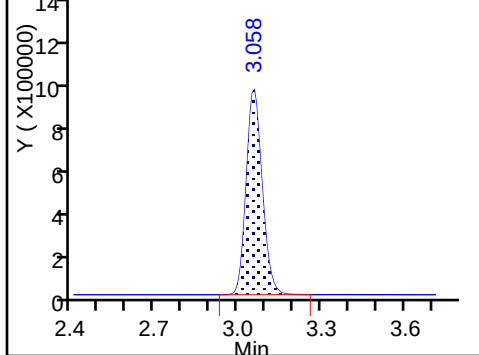
17 Perfluorooctane sulfonic acid (ND)

Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3



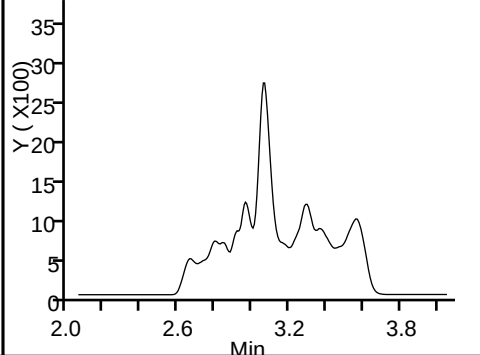
D 18 13C4 PFOS

Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



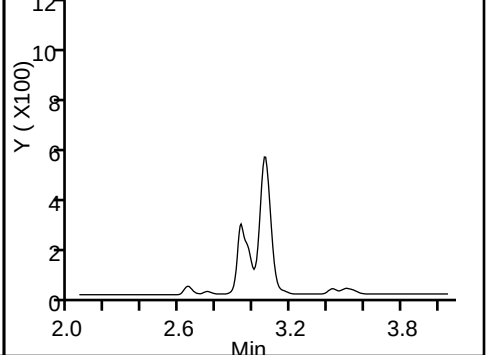
20 Perfluorononanoic acid (ND)

Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x3



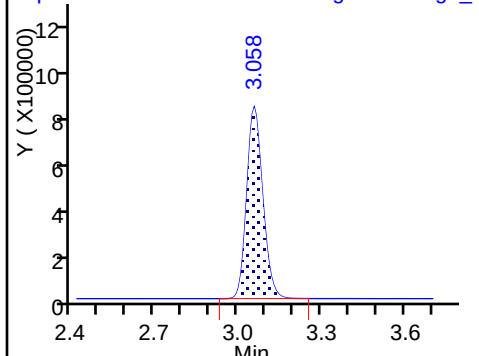
20 Perfluorononanoic acid (ND)

Exp1:m/z 463.00 > 169.00:Moving5PtAverage_x3



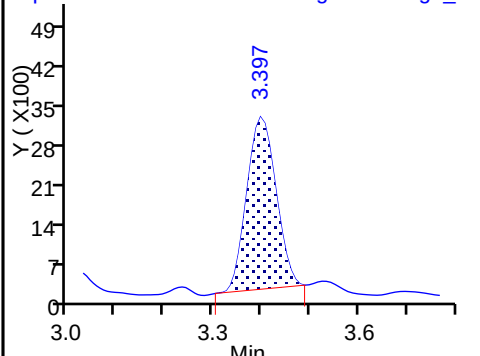
D 19 13C5 PFNA

Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x3



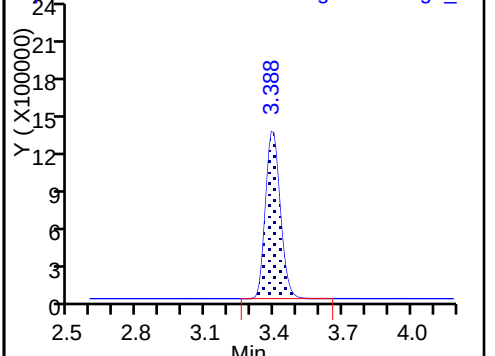
22 Perfluorooctane Sulfonamide

Exp1:m/z 498.00 > 78.00:Moving5PtAverage_x3



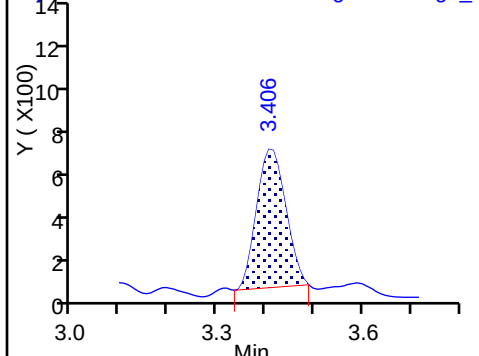
D 21 13C8 FOSA

Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3



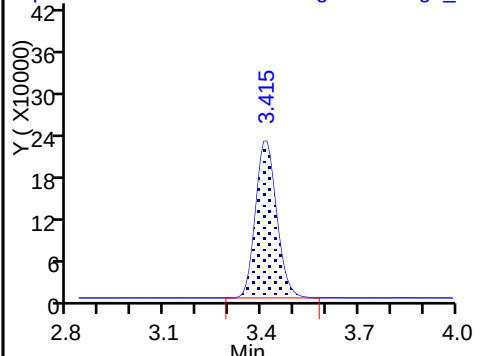
25 Sodium 1H,1H,2H,2H-perfluorodecanoate

Exp1:m/z 527.00 > 507.00:Moving5PtAverage_x3



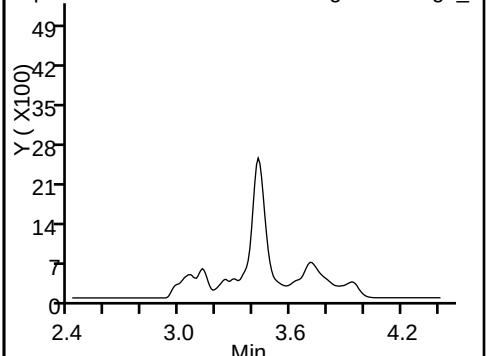
De26 M2-8:2FTS

Exp1:m/z 529.00 > 81.00:Moving5PtAverage_x3



24 Perfluorodecanoic acid (ND)

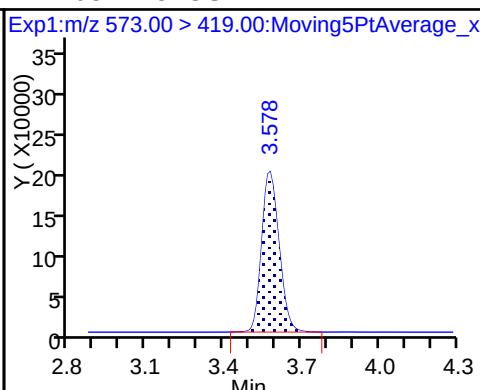
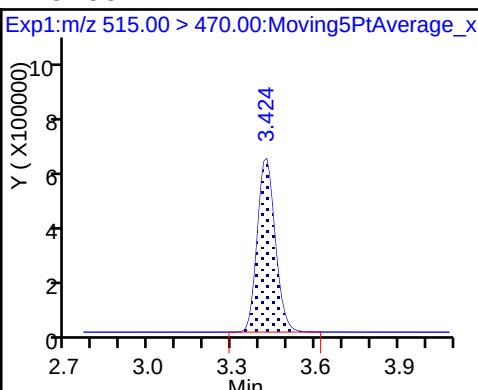
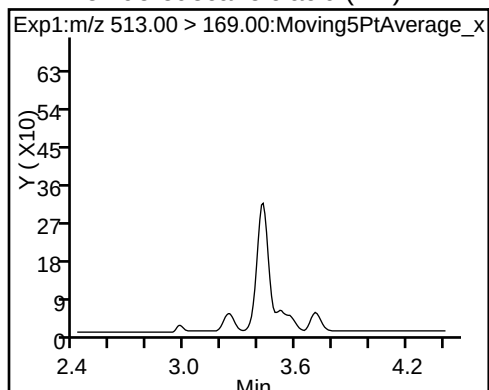
Exp1:m/z 513.00 > 469.00:Moving5PtAverage_x3



24 Perfluorodecanoic acid (ND)

D 23 13C2 PFDA

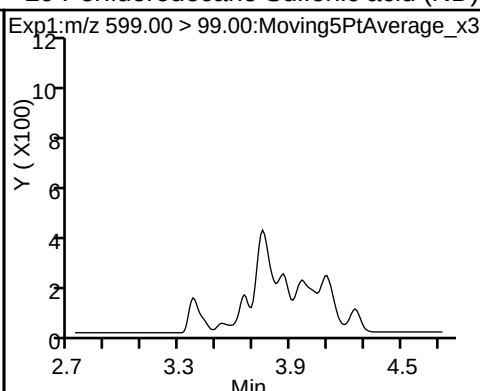
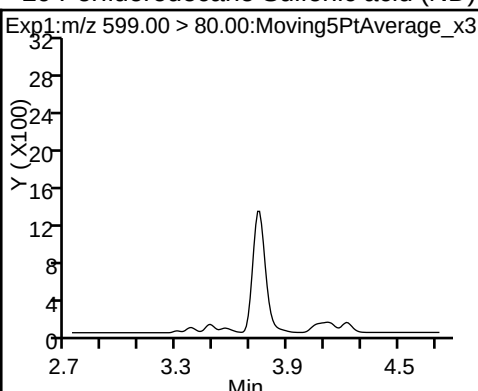
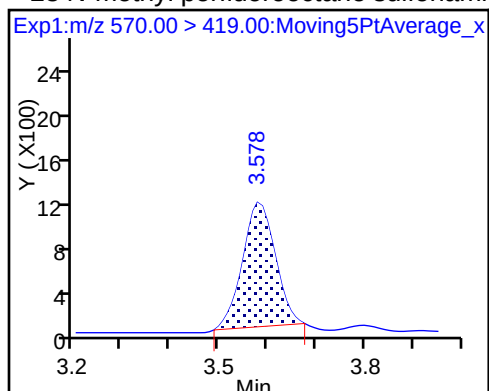
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid (ND)

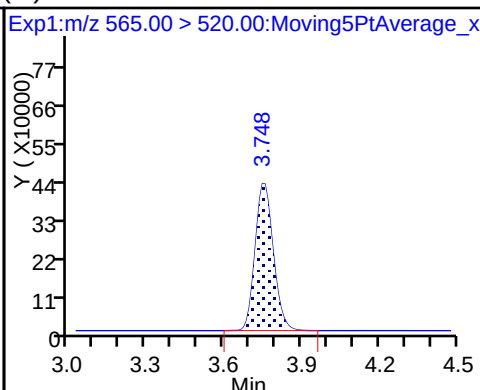
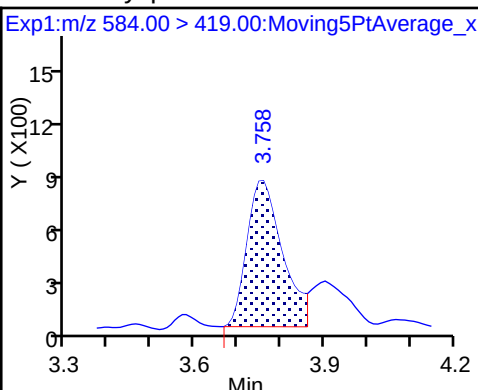
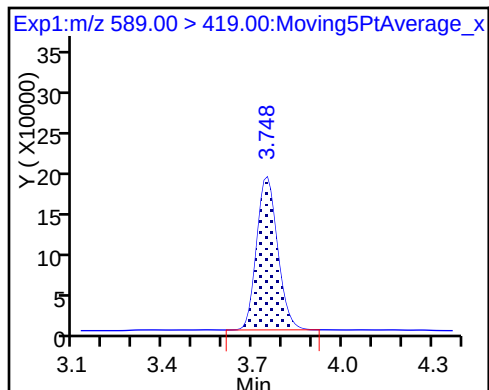
29 Perfluorodecane Sulfonic acid (ND)



D 32 d5-NEtFOSAA

33 N-ethyl perfluorooctane sulfonamid

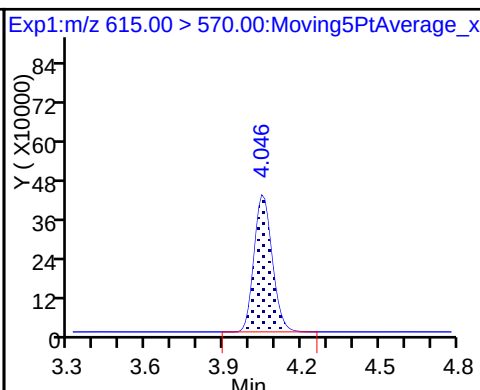
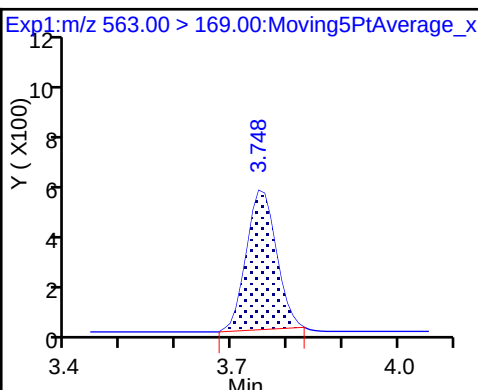
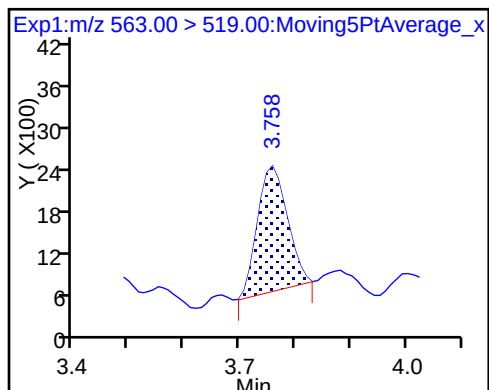
D 30 13C2 PFUnA



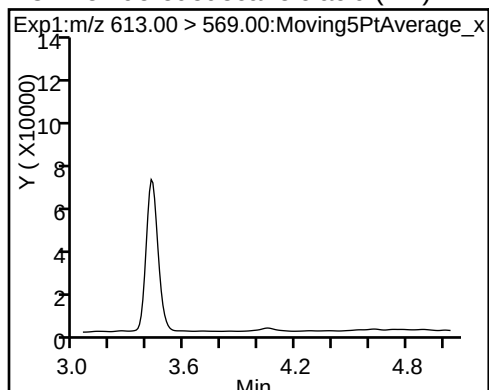
31 Perfluoroundecanoic acid

31 Perfluoroundecanoic acid

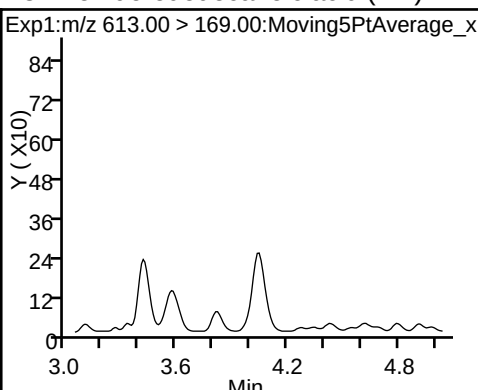
D 36 13C2 PFDaA



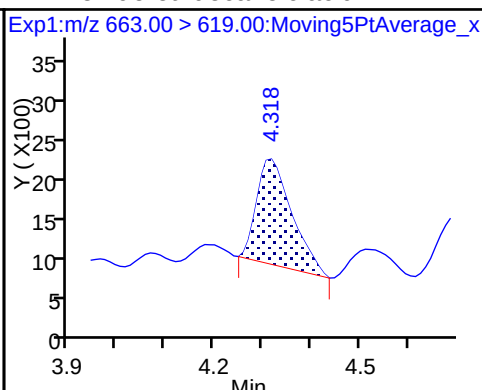
37 Perfluorododecanoic acid (ND)



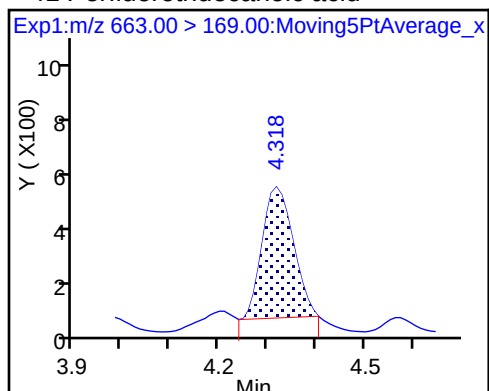
37 Perfluorododecanoic acid (ND)



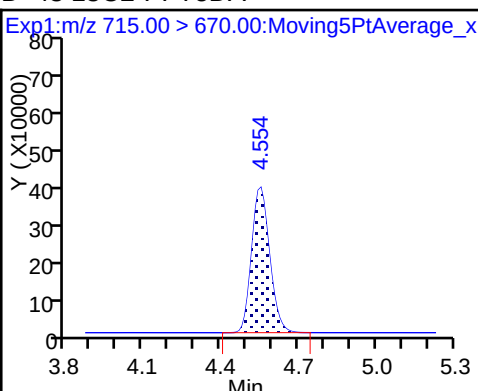
41 Perfluorotridecanoic acid



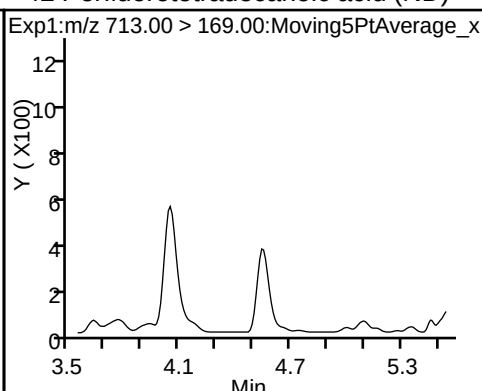
41 Perfluorotridecanoic acid



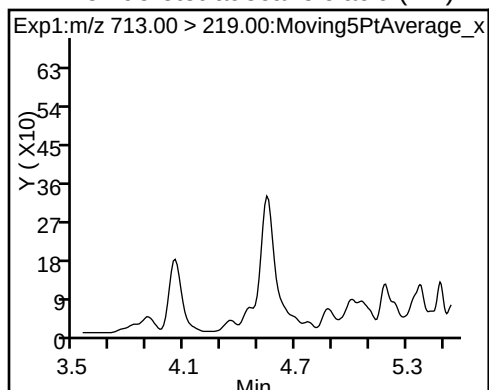
D 43 13C2-PFTeDA



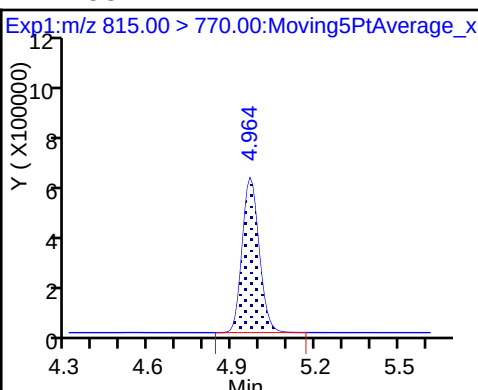
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 44 13C2-PFHxDA



TestAmerica Sacramento

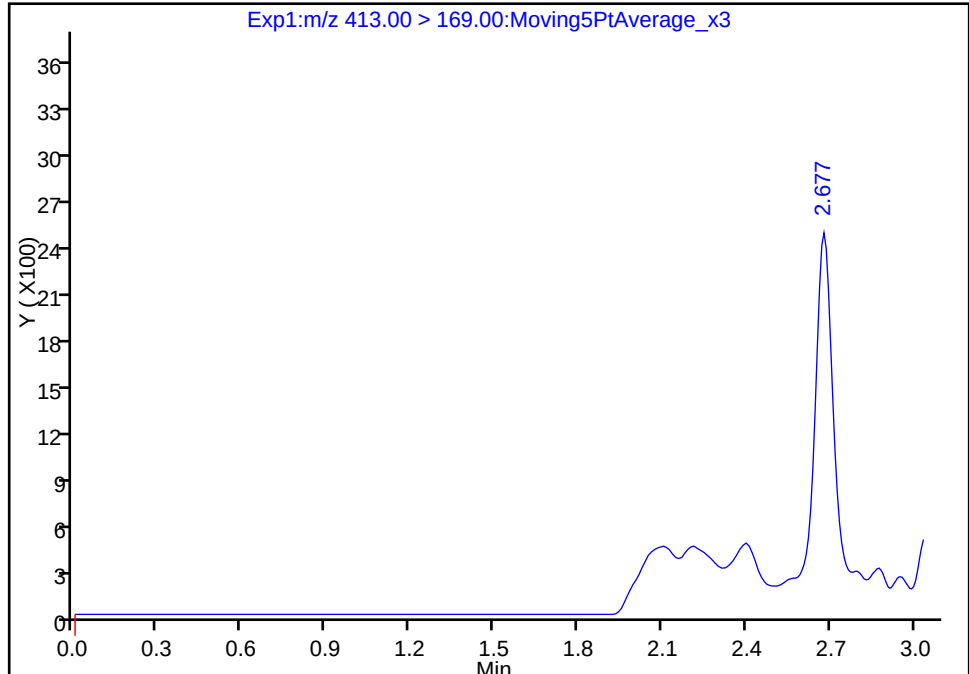
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b\2018.03.16\ICAL_010.d
Injection Date: 17-Mar-2018 00:04:26 Instrument ID: A8_N
Lims ID: ICB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

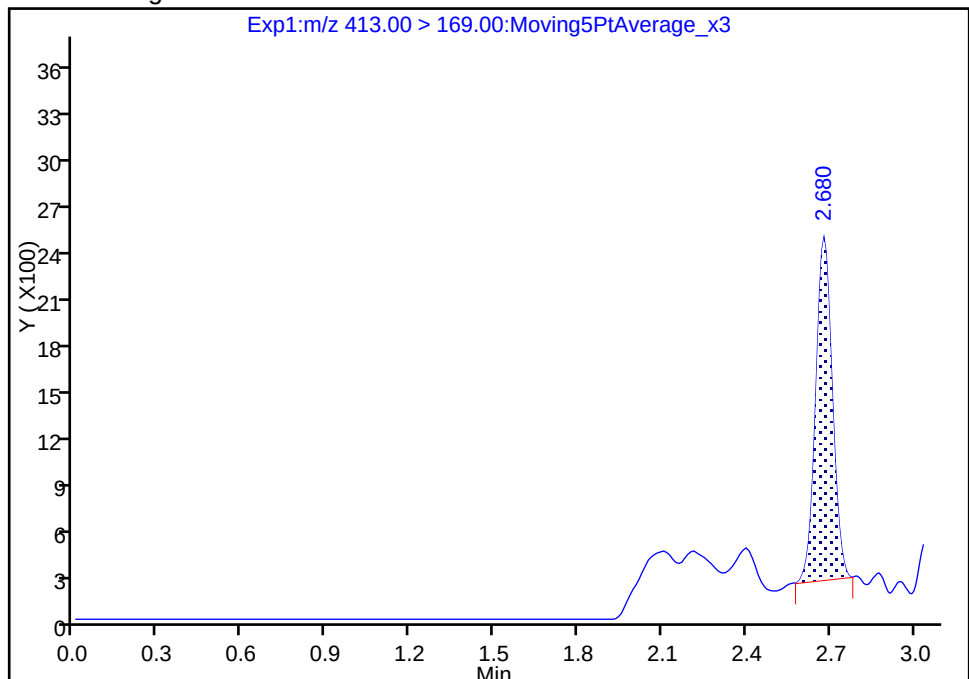
RT: 2.68
Area: 0
Amount: 0.006616
Amount Units: ng/ml

Processing Integration Results



RT: 2.68
Area: 9094
Amount: 0.006616
Amount Units: ng/ml

Manual Integration Results



Reviewer: phomsophat, 18-Mar-2018 12:42:38

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCS 320-212840/2-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_026.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>250.0 (mL)</u>	Date Analyzed: <u>03/16/2018 01:04</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	43.5		2.0	1.5	0.59
2706-90-3	Perfluoropentanoic acid (PFPeA)	41.1		2.0	1.0	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	42.7		2.0	1.0	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	42.0		2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	40.7		2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	42.3		2.0	1.5	0.52
335-76-2	Perfluorodecanoic acid (PFDA)	39.7		2.0	1.0	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	41.2		2.0	1.5	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	47.0	Q	2.0	1.5	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	44.6		4.0	3.0	0.76
376-06-7	Perfluorotetradecanoic acid (PFTeA)	42.5		4.0	3.0	0.83
375-73-5	Perfluorobutanesulfonic acid (PFBS)	40.1		2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	34.3		2.0	1.0	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	40.2		2.0	1.0	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	38.0		4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	40.7		2.0	1.5	0.56
754-91-6	Perfluorooctane Sulfonamide (FOSA)	42.8		4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCS 320-212840/2-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_026.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>250.0 (mL)</u>	Date Analyzed: <u>03/16/2018 01:04</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	76		50-150
STL00992	13C4 PFBA	84		50-150
STL01893	13C5 PFPeA	80		50-150
STL00993	13C2 PFHxA	80		50-150
STL01892	13C4-PFHpA	89		50-150
STL00990	13C4 PFOA	92		50-150
STL00995	13C5 PFNA	91		50-150
STL00996	13C2 PFDA	99		50-150
STL00997	13C2 PFUnA	90		50-150
STL00998	13C2 PFDoA	80		50-150
STL00994	18O2 PFHxS	82		50-150
STL02116	13C2-PFTeDA	88		50-150
STL00991	13C4 PFOS	81		50-150
STL02337	13C3-PFBS	77		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_026.d
 Lims ID: LCS 320-212840/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 16-Mar-2018 01:04:02 ALS Bottle#: 14 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-212840/2-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Mar-2018 10:13:47 Calib Date: 14-Mar-2018 14:46:40
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180314-55308.b\2018.03.14LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK040

First Level Reviewer: hannigana Date: 19-Mar-2018 09:55:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.428	1.435	-0.007	1.000	2427549	1.09		109	1406	
D 1 13C4 PFBA										
217.00 > 172.00	1.428	1.440	-0.012	0.550	6035484	2.09		83.6	102011	
D 3 13C5-PFPeA										
267.90 > 223.00	1.674	1.664	0.010	0.645	3895972	2.01		80.4	97712	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.674	1.674	0.0	1.000	1875886	1.03		103	605	
D 47 13C3-PFBS										
301.90 > 83.00	1.700	1.691	0.009	0.655	90391	1.79		76.8	520	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.700	1.709	-0.009	1.000	2973873	1.00		113	5426	
298.90 > 99.00	1.700	1.709	-0.009	1.000	1222240		2.43(1.25-3.74)		4559	
D 7 13C2 PFHxA										
315.00 > 270.00	1.935	1.904	0.031	0.746	4197956	1.99		79.6	135016	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.905	1.905	0.0	1.000	555563	0.8714		93.3	36805	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.935	1.936	-0.001	1.000	1809250	1.07		107	6287	
313.00 > 119.00	1.935	1.936	-0.001	1.000	165078		10.96(5.03-15.10)		3520	
D 9 13C4-PFHpA										
367.00 > 322.00	2.251	2.215	0.036	0.867	4453323	2.23		89.2	131722	
D 11 18O2 PFHxS										
403.00 > 84.00	2.264	2.226	0.038	0.872	5748187	1.94		82.2	126274	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.251	2.251	0.0	1.000	1987310	1.05		105	3958	
363.00 > 169.00	2.251	2.251	0.0	1.000	803027		2.47(1.13-3.40)		12980	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.264	2.264	0.0	1.000	2342024	0.8582		94.3	14263	
399.00 > 99.00	2.264	2.264	0.0	1.000	776058		3.02(1.50-4.49)		2483	
D 12 M2-6:2FTS										
429.00 > 81.00	2.571	2.562	0.009	0.991	1122556	2.11		88.8	29409	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.571	2.579	-0.008	1.000	775643	0.9610		101	26315	
D 14 13C4 PFOA										
417.00 > 372.00	2.595	2.586	0.009	1.000	4427993	2.30		92.0	106666	
* 62 13C2-PFOA										
415.00 > 370.00	2.595	2.602	-0.007		5070276	2.50			93215	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.595	2.602	-0.007	1.000	2096347	1.02		102	1258	
413.00 > 169.00	2.595	2.602	-0.007	1.000	1102719		1.90(0.84-2.52)		4408	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.595	2.602	-0.007	1.000	2246630	1.01		106	54383	
449.00 > 99.00	2.595	2.602	-0.007	1.000	593113		3.79(1.94-5.82)		11970	
D 19 13C5 PFNA										
468.00 > 423.00	2.960	2.960	0.0	1.141	3406200	2.27		90.9	70043	
D 18 13C4 PFOS										
503.00 > 80.00	2.960	2.960	0.0	1.141	3931759	1.94		81.0	59973	
20 Perfluorononanoic acid										
463.00 > 419.00	2.960	2.967	-0.007	1.000	1444309	1.06		106	2269	
463.00 > 169.00	2.960	2.967	-0.007	1.000	359783		4.01(1.90-5.69)		15785	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	2.960	2.967	-0.007	1.000	1640983	0.9501		102	16201	
499.00 > 99.00	2.960	2.967	-0.007	1.000	368088		4.46(2.31-6.93)		6714	
D 21 13C8 FOSA										
506.00 > 78.00	3.321	3.297	0.024	1.280	5654306	1.91		76.5	63043	
D 26 M2-8:2FTS										
529.00 > 81.00	3.328	3.305	0.023	1.283	1250962	2.35		98.2	33455	
D 23 13C2 PFDA										
515.00 > 470.00	3.336	3.312	0.024	1.286	3013446	2.49		99.5	48381	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.328	3.321	0.007	1.000	654113	1.00		105	22707	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.321	3.321	0.0	1.000	2370084	1.07		107	38422	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.336	3.329	0.007	1.000	1204972	0.99		99.3	4981	
513.00 > 169.00	3.336	3.329	0.007	1.000	214971		5.61(2.36-7.09)		3066	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.490	3.471	0.019	1.345	968991	2.45		98.1	27053	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.490	3.491	-0.001	1.000	404866	1.00		100	6401	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.650	3.629	0.021	1.407	969654	2.26		90.5	1421	
D 30 13C2 PFUnA										
565.00 > 520.00	3.659	3.638	0.021	1.410	2019703	2.25		90.0	73886	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.640	3.641	-0.001	1.000	1051949	1.02		105	26047	
599.00 > 99.00	3.640	3.641	-0.001	1.000	360164		2.92(1.39-4.16)		7224	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.659	3.659	0.0	1.000	903676	1.03		103	2764	
563.00 > 169.00	3.659	3.659	0.0	1.000	166529		5.43(2.12-6.36)		10599	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.659	3.659	0.0	1.003	375065	1.00		99.6	13398	
35 MeFOSA										
512.00 > 169.00	3.822	3.875	-0.053		320073	NC			3760	
D 36 13C2 PFDaA										
615.00 > 570.00	3.935	3.932	0.003	1.517	1818867	1.99		79.8	10381	
37 Perfluorododecanoic acid										
613.00 > 569.00	3.935	3.947	-0.012	1.000	870491	1.17		117	129	
613.00 > 169.00	3.935	3.947	-0.012	1.000	224005		3.89(2.13-6.40)		3979	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	3.996	4.066	-0.070		209056	NC			2773	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.182	4.193	-0.011	1.000	794653	1.12		112	122	
663.00 > 169.00	4.182	4.193	-0.011	1.000	249259		3.19(1.25-3.76)		2829	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.416	4.417	-0.001	1.000	192167	1.06		106	2771	
713.00 > 219.00	4.405	4.417	-0.012	0.998	141430		1.36(0.71-2.13)		1429	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.416	4.437	-0.021	1.702	1776111	2.20		88.1	12335	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.802	4.811	-0.009	1.000	926914	NC			66.3	
813.00 > 169.00	4.802	4.811	-0.009	1.000	156949		5.91(2.86-8.58)		1500	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.802	4.848	-0.046	1.851	2187974	1.41		56.5	6828	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.143	5.144	-0.001	1.000	760579	NC			118	
913.00 > 169.00	5.143	5.144	-0.001	1.000	97498		7.80(3.83-11.48)		958	

QC Flag Legend

Processing Flags

NC - Not Calibrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b\2018.03.15LLAAX_026.d

Injection Date: 16-Mar-2018 01:04:02

Instrument ID: A8_N

Lims ID: LCS 320-212840/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

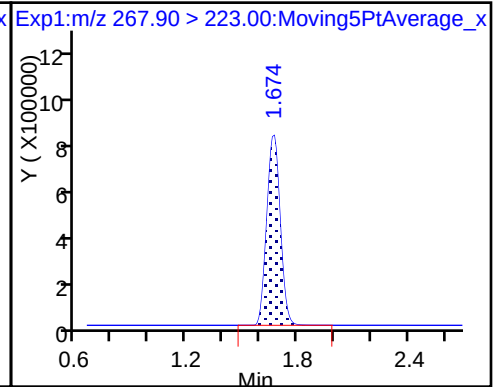
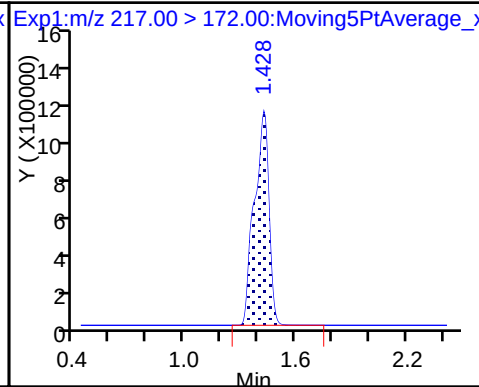
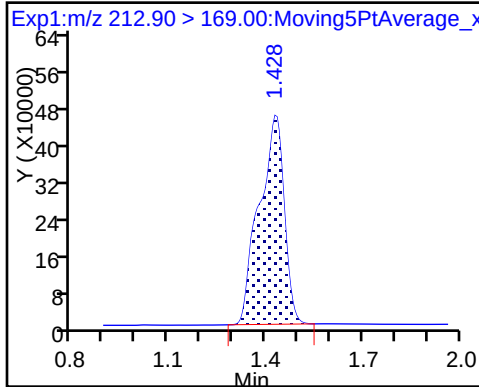
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

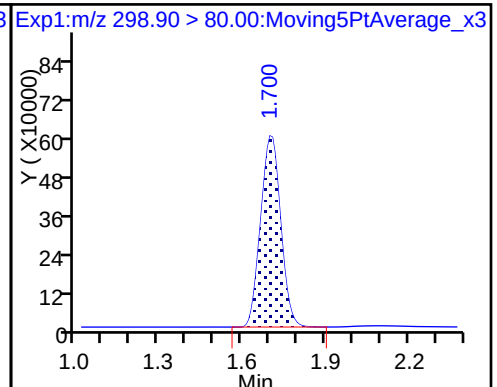
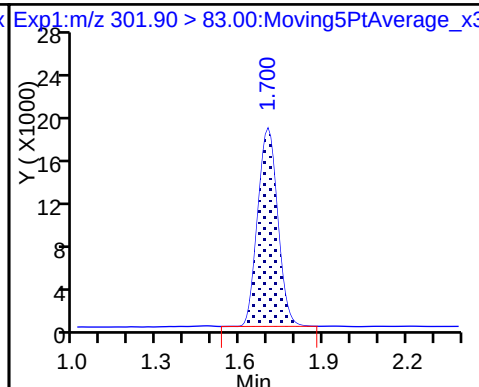
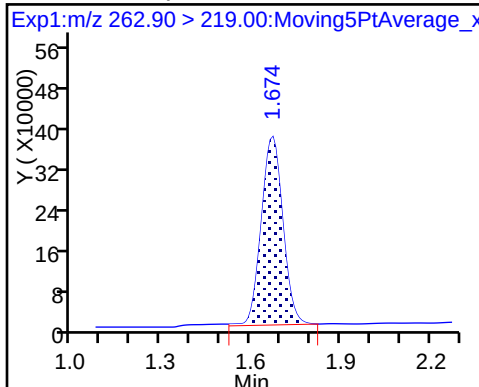
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

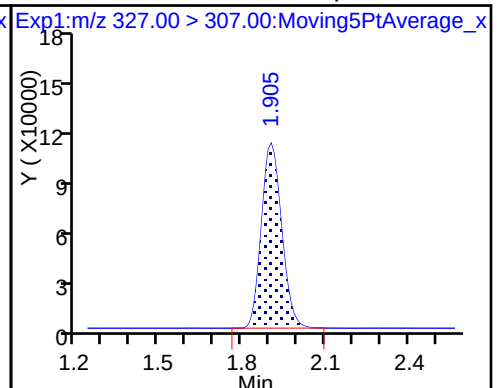
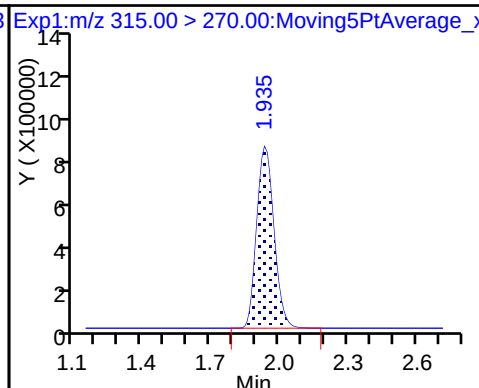
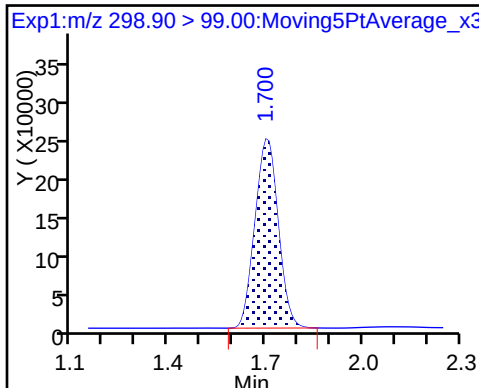
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

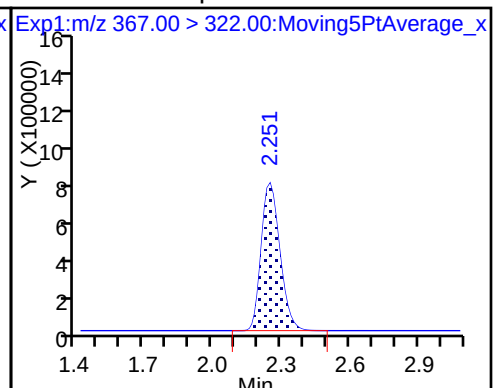
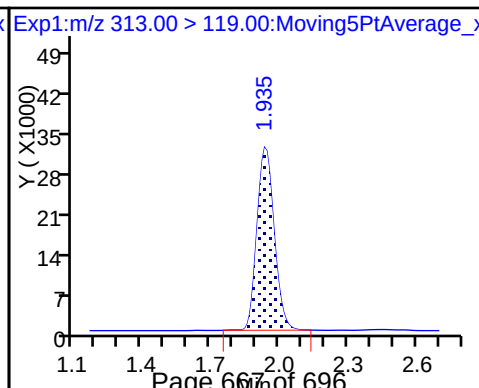
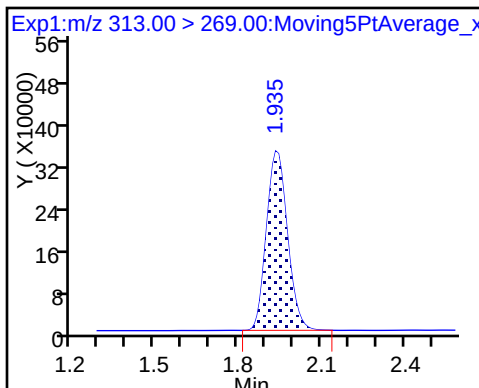
61 Sodium 1H,1H,2H,2H-perfluorohexane



6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

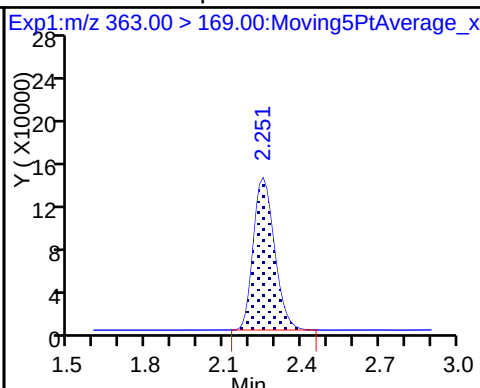
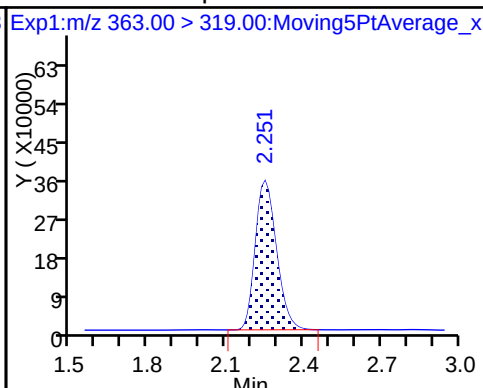
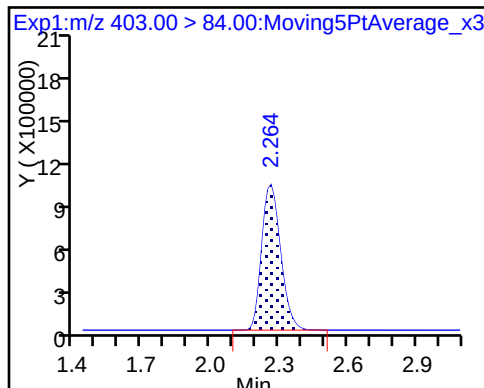
D 9 13C4-PFHpA



D 11 18O2 PFHxS

10 Perfluoroheptanoic acid

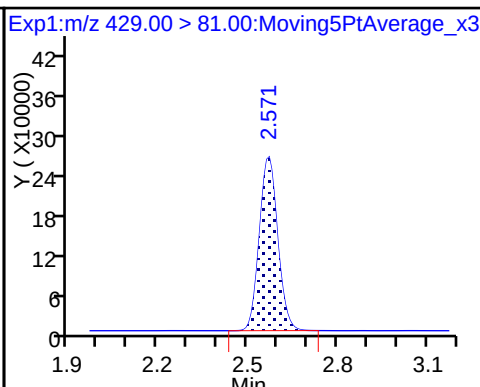
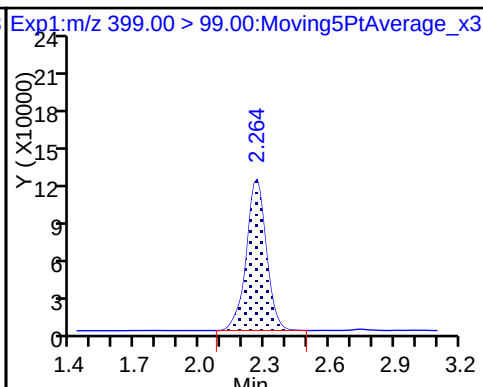
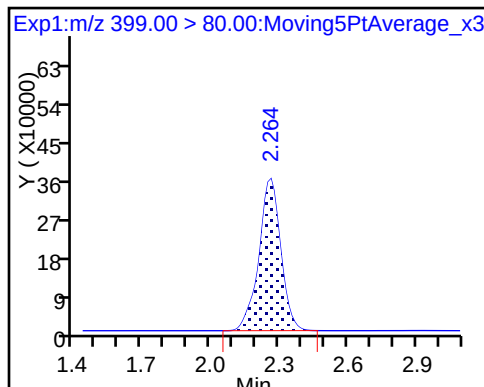
10 Perfluoroheptanoic acid



8 Perfluorohexanesulfonic acid

8 Perfluorohexanesulfonic acid

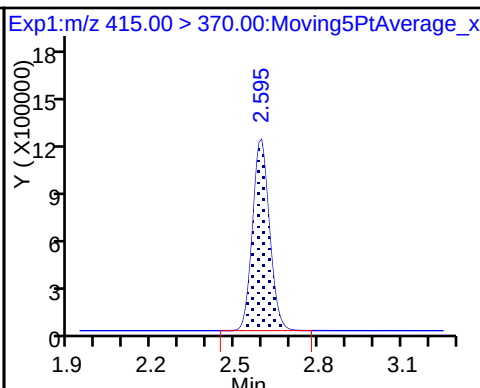
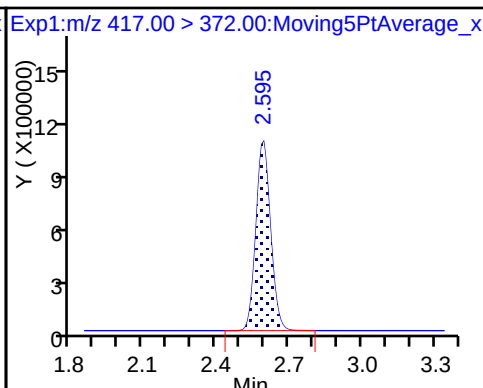
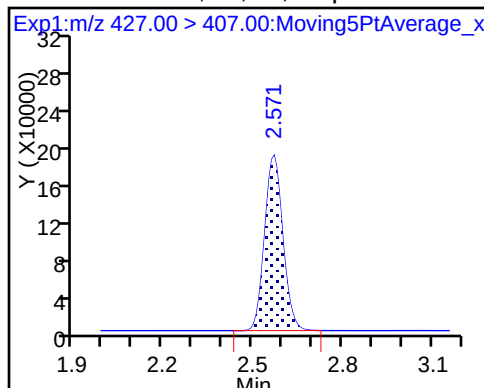
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctadecanoate

De 14 13C4 PFOA

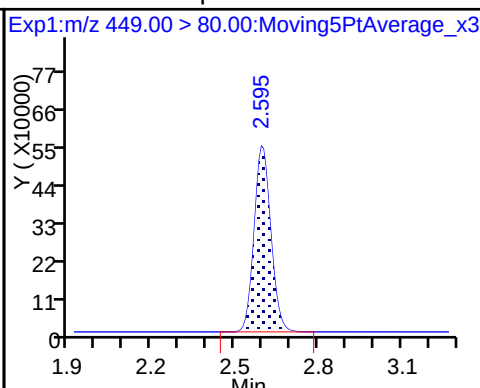
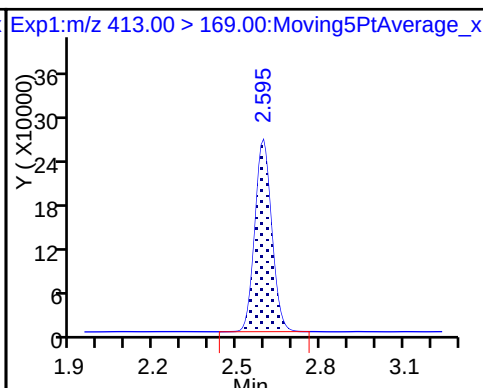
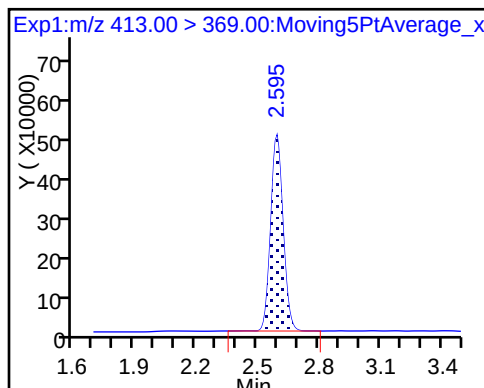
* 62 13C2-PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

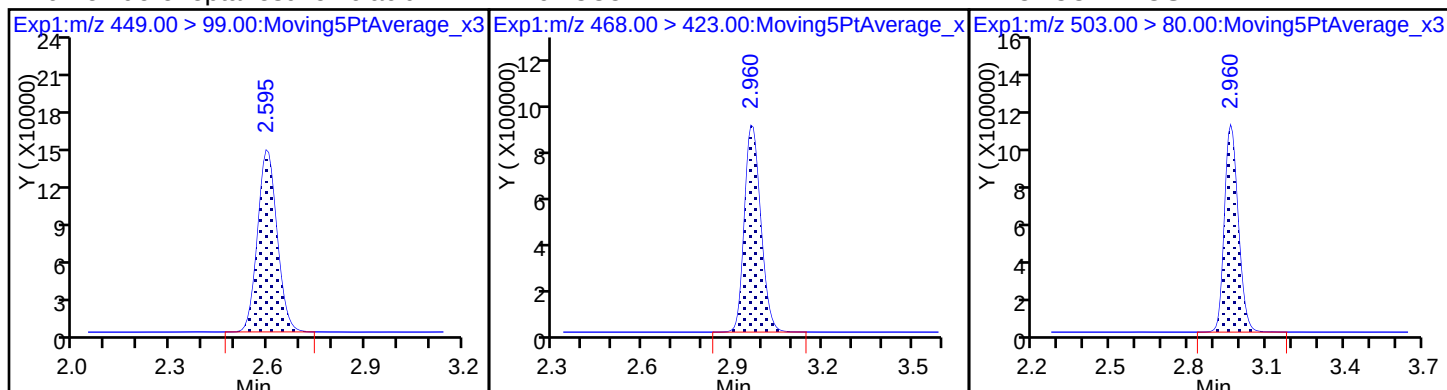
16 Perfluoroheptanesulfonic acid



16 Perfluoroheptanesulfonic acid

D 19 13C5 PFNA

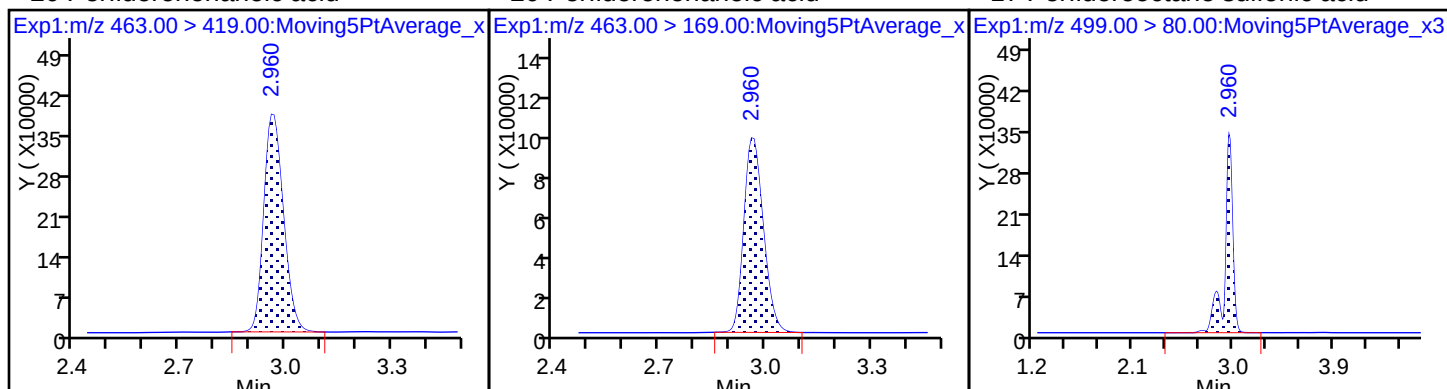
D 18 13C4 PFOS



20 Perfluorononanoic acid

20 Perfluorononanoic acid

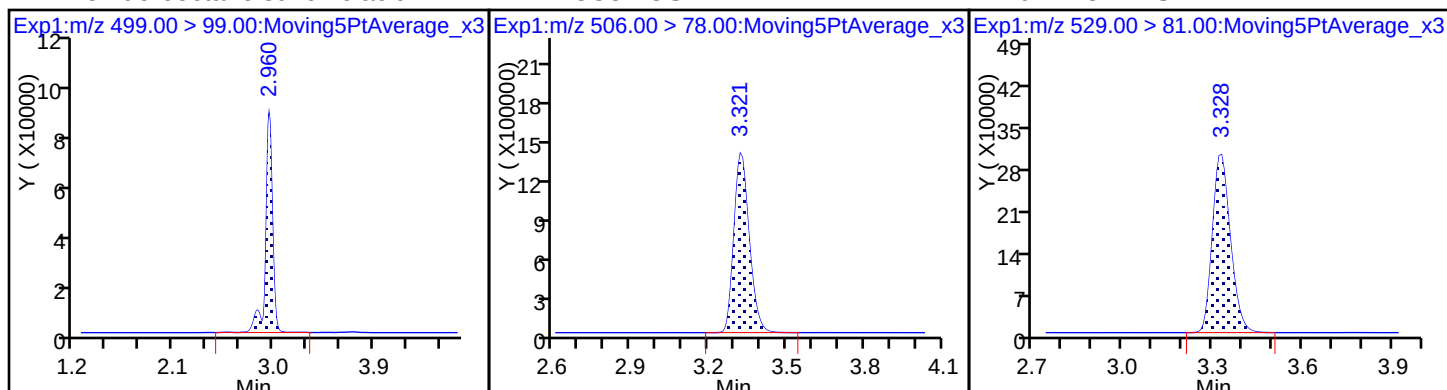
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

D 21 13C8 FOSA

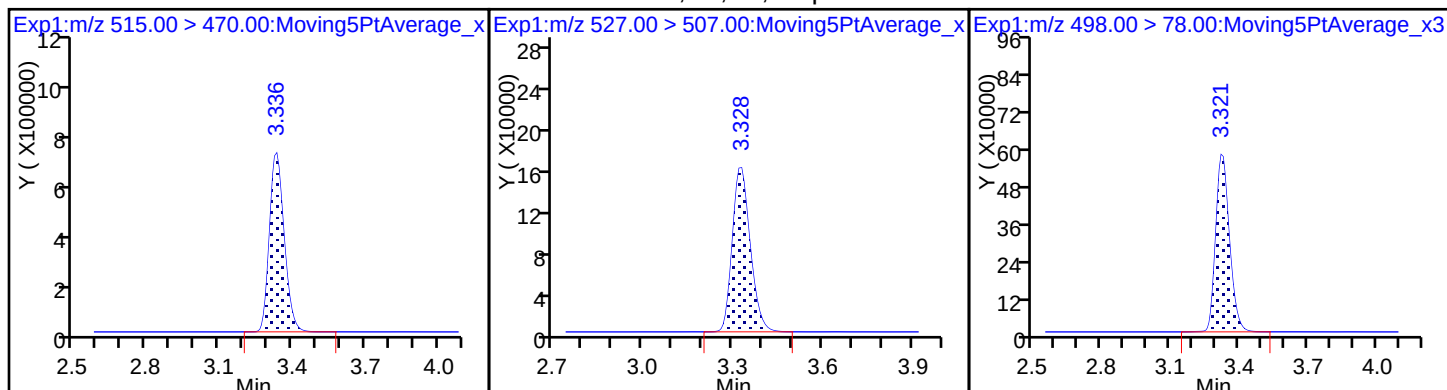
D 26 M2-8:2FTS



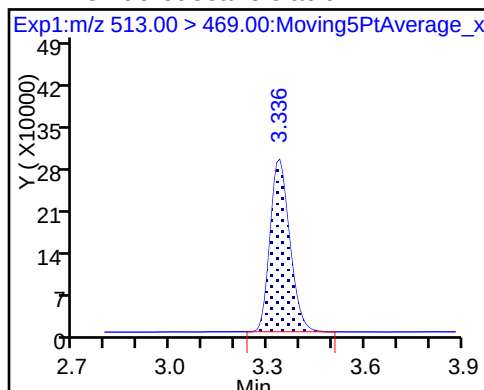
D 23 13C2 PFDA

25 Sodium 1H,1H,2H,2H-perfluorodecan-2-yl

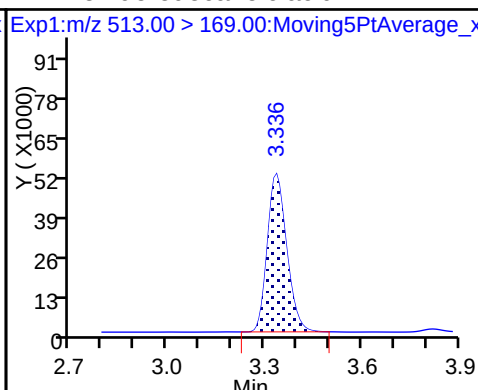
22 Perfluorooctane Sulfonamide



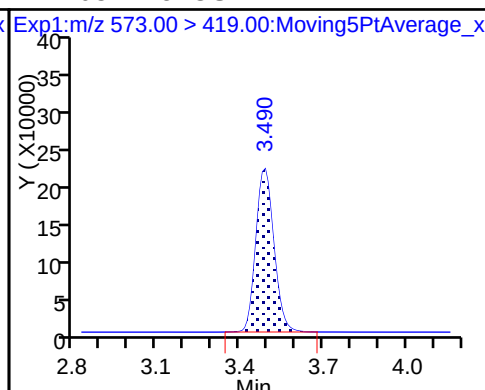
24 Perfluorodecanoic acid



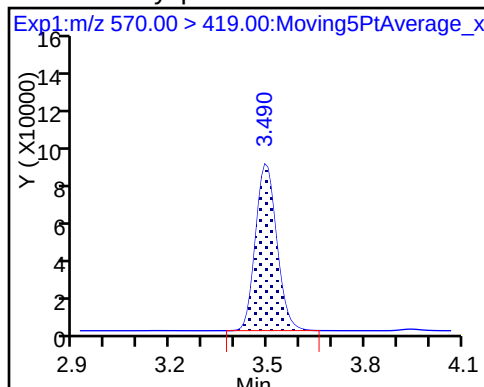
24 Perfluorodecanoic acid



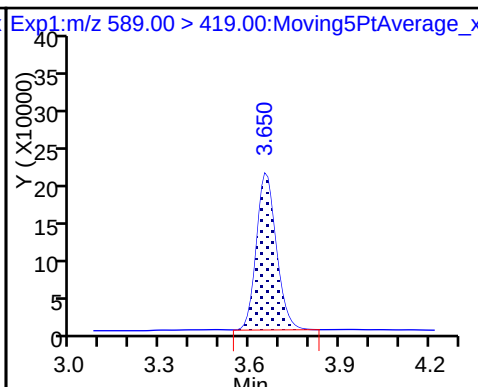
D 27 d3-NMeFOSAA



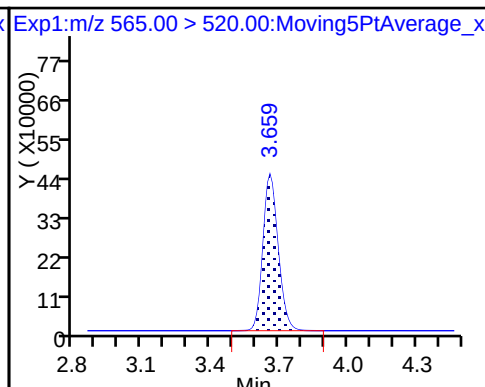
28 N-methyl perfluorooctane sulfonamid



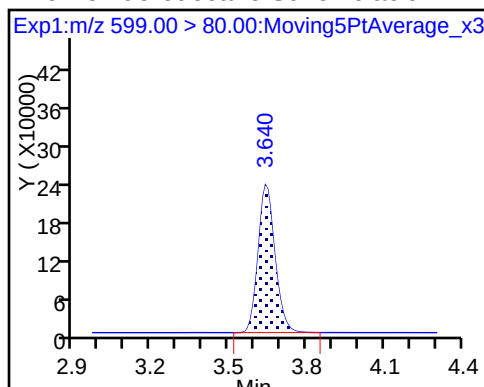
32 d5-NEtFOSAA



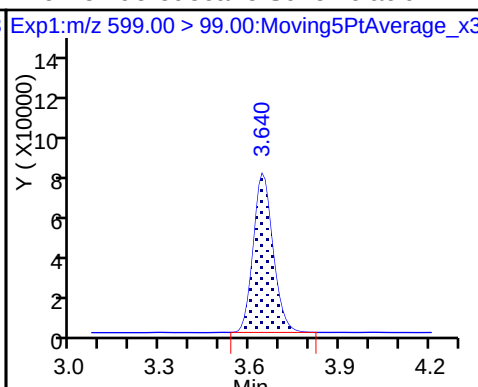
D 30 13C2 PFUnA



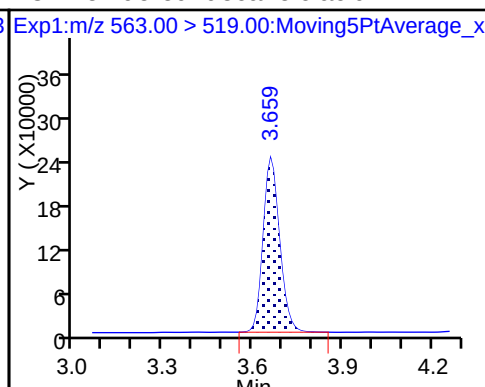
29 Perfluorodecane Sulfonic acid



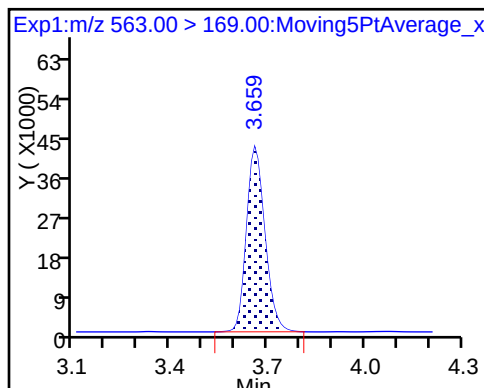
29 Perfluorodecane Sulfonic acid



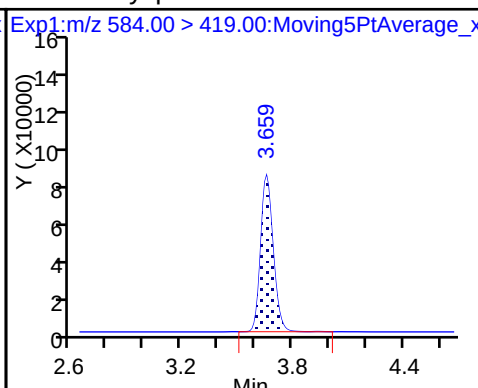
31 Perfluoroundecanoic acid



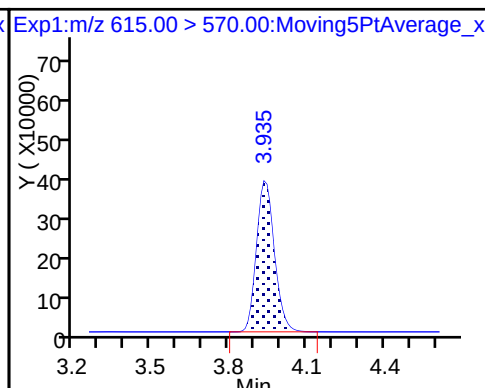
31 Perfluoroundecanoic acid



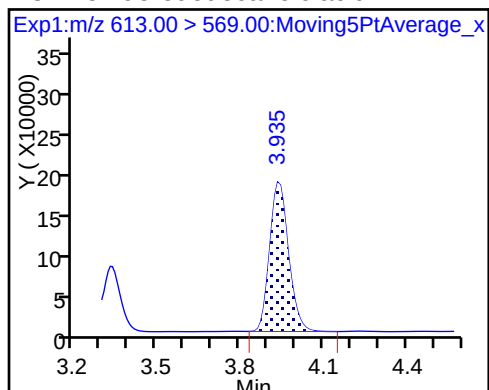
33 N-ethyl perfluorooctane sulfonamid



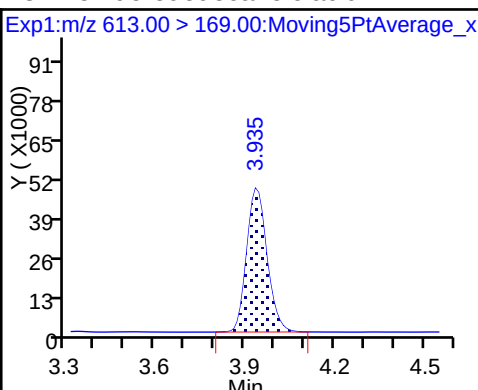
D 36 13C2 PFDaA



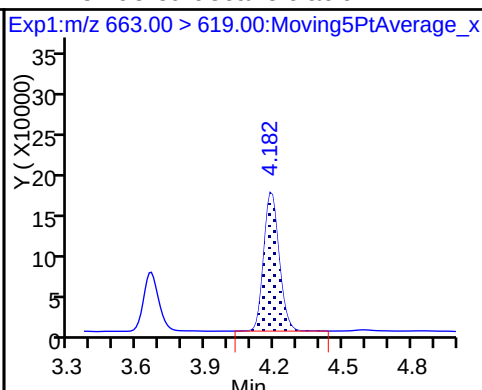
37 Perfluorododecanoic acid



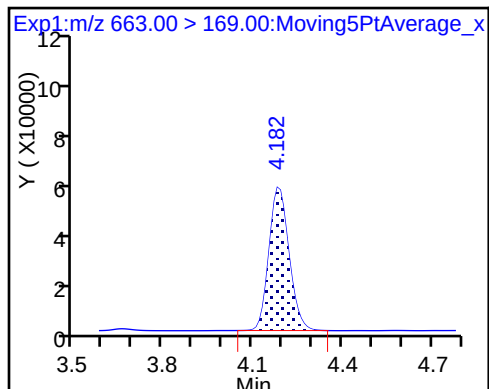
37 Perfluorododecanoic acid



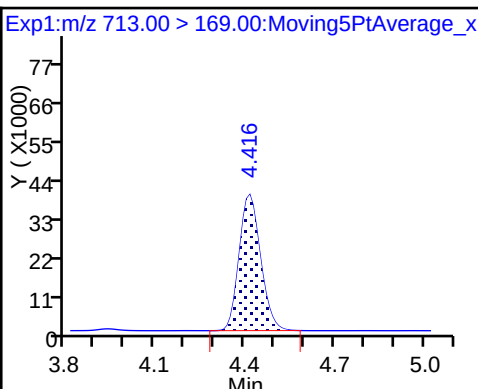
41 Perfluorotridecanoic acid



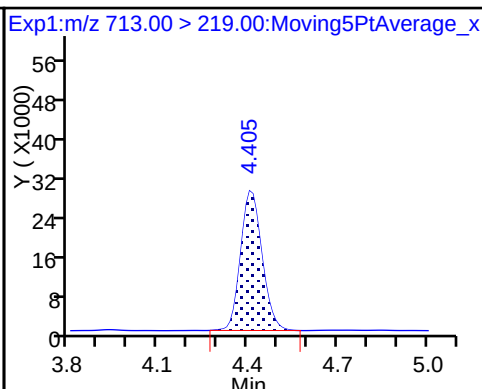
41 Perfluorotridecanoic acid



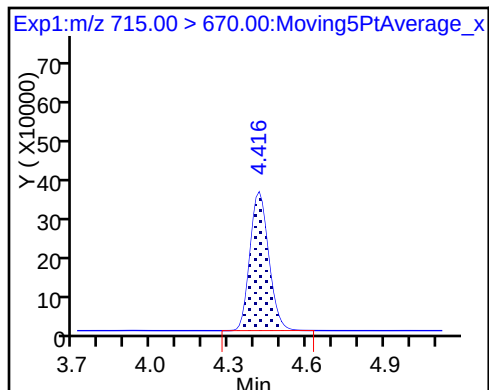
42 Perfluorotetradecanoic acid



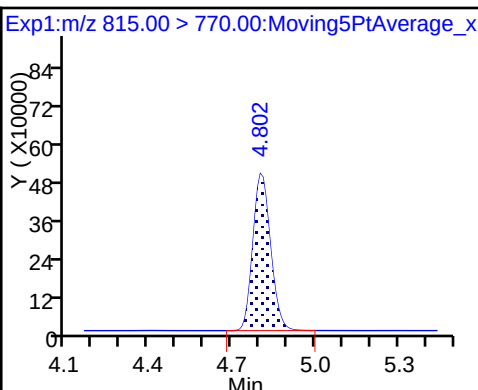
42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



D 44 13C2-PFHxDA



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_NStart Date: 03/14/2018 13:59Analysis Batch Number: 212932End Date: 03/14/2018 15:18

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-212932/2		03/14/2018 13:59	1	2018.03.14LLICA L 002.d	GeminiC18 3x100 3(mm)
IC 320-212932/3		03/14/2018 14:07	1	2018.03.14LLICA L 003.d	GeminiC18 3x100 3(mm)
IC 320-212932/4		03/14/2018 14:15	1	2018.03.14LLICA L 004.d	GeminiC18 3x100 3(mm)
IC 320-212932/5 ICIS		03/14/2018 14:23	1	2018.03.14LLICA L 005.d	GeminiC18 3x100 3(mm)
IC 320-212932/6		03/14/2018 14:31	1	2018.03.14LLICA L 006.d	GeminiC18 3x100 3(mm)
IC 320-212932/7		03/14/2018 14:38	1	2018.03.14LLICA L 007.d	GeminiC18 3x100 3(mm)
IC 320-212932/8		03/14/2018 14:46	1	2018.03.14LLICA L 008.d	GeminiC18 3x100 3(mm)
ICB 320-212932/9		03/14/2018 14:54	1	2018.03.14LLICA L 009.d	GeminiC18 3x100 3(mm)
ICV 320-212932/10		03/14/2018 15:02	1	2018.03.14LLICA L 010.d	GeminiC18 3x100 3(mm)
CCB 320-212932/11		03/14/2018 15:10	1		GeminiC18 3x100 3(mm)
CCVL 320-212932/12		03/14/2018 15:18	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_NStart Date: 03/16/2018 00:32Analysis Batch Number: 213304End Date: 03/16/2018 02:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-213304/1		03/16/2018 00:32	1	2018.03.15LLAAX 003.d	GeminiC18 3x100 3(mm)
CCVL 320-213304/2		03/16/2018 00:40	1	2018.03.15LLAAX 004.d	GeminiC18 3x100 3(mm)
CCV 320-213304/3 CCVIS		03/16/2018 00:48	1	2018.03.15LLAAX 024.d	GeminiC18 3x100 3(mm)
MB 320-212840/1-A		03/16/2018 00:56	1	2018.03.15LLAAX 025.d	GeminiC18 3x100 3(mm)
LCS 320-212840/2-A		03/16/2018 01:04	1	2018.03.15LLAAX 026.d	GeminiC18 3x100 3(mm)
320-36665-1		03/16/2018 01:11	1	2018.03.15LLAAX 027.d	GeminiC18 3x100 3(mm)
320-36665-2		03/16/2018 01:19	1	2018.03.15LLAAX 028.d	GeminiC18 3x100 3(mm)
320-36665-3		03/16/2018 01:27	1	2018.03.15LLAAX 029.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 01:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 01:43	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 01:51	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 01:59	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 02:06	1		GeminiC18 3x100 3(mm)
CCV 320-213304/14		03/16/2018 02:14	1	2018.03.15LLAAX 035.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 02:22	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 02:30	1		GeminiC18 3x100 3(mm)
CCV 320-213304/17		03/16/2018 02:38	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_NStart Date: 03/16/2018 23:01Analysis Batch Number: 213555End Date: 03/17/2018 00:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		03/16/2018 23:01	1		GeminiC18 3x100 3(mm)
IC 320-213555/2		03/16/2018 23:09	1	2018.03.16ICAL_002.d	GeminiC18 3x100 3(mm)
IC 320-213555/3		03/16/2018 23:17	1	2018.03.16ICAL_003.d	GeminiC18 3x100 3(mm)
IC 320-213555/4		03/16/2018 23:25	1	2018.03.16ICAL_004.d	GeminiC18 3x100 3(mm)
IC 320-213555/5 ICIS		03/16/2018 23:33	1	2018.03.16ICAL_005.d	GeminiC18 3x100 3(mm)
IC 320-213555/6		03/16/2018 23:41	1	2018.03.16ICAL_006.d	GeminiC18 3x100 3(mm)
IC 320-213555/7		03/16/2018 23:48	1	2018.03.16ICAL_007.d	GeminiC18 3x100 3(mm)
IC 320-213555/8		03/16/2018 23:56	1	2018.03.16ICAL_008.d	GeminiC18 3x100 3(mm)
ICB 320-213555/9		03/17/2018 00:04	1	2018.03.16ICAL_010.d	GeminiC18 3x100 3(mm)
ICV 320-213555/10		03/17/2018 00:12	1	2018.03.16ICAL_011.d	GeminiC18 3x100 3(mm)
CCB 320-213555/11		03/17/2018 00:20	1	2018.03.16ICAL_012.d	GeminiC18 3x100 3(mm)
CCVL 320-213555/12		03/17/2018 00:27	1	2018.03.16ICAL_013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/17/2018 00:35Analysis Batch Number: 213558 End Date: 03/17/2018 01:30

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-213558/1		03/17/2018 00:35	1	2018.03.16LLBX_ 033.d	GeminiC18 3x100 3(mm)
320-36665-4		03/17/2018 00:43	1	2018.03.16LLBX_ 034.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/17/2018 00:51	1		GeminiC18 3x100 3(mm)
320-36665-1 DL		03/17/2018 00:59	10	2018.03.16LLBX_ 036.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/17/2018 01:06	10		GeminiC18 3x100 3(mm)
ZZZZZ		03/17/2018 01:14	10		GeminiC18 3x100 3(mm)
ZZZZZ		03/17/2018 01:22	10		GeminiC18 3x100 3(mm)
CCV 320-213558/8		03/17/2018 01:30	1	2018.03.16LLBX_ 040.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Batch Number: 212840 Batch Start Date: 03/14/18 10:07 Batch Analyst: Kolstad, Kate MBatch Method: 3535 Batch End Date: 03/14/18 16:32

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00043	LCPFC-IS 00024
MB 320-212840/1		3535, EPA 537 (Mod)				250.0 mL	10.0 mL	500 uL	500 uL
LCS 320-212840/2		3535, EPA 537 (Mod)				250.0 mL	10.0 mL	500 uL	500 uL
320-36665-A-1	TP-PFC-027-TPI	3535, EPA 537 (Mod)	T	280.68 g	28.13 g	252.6 mL	10.0 mL	500 uL	500 uL
320-36665-A-2	TP-PFC-027-MID CARBON	3535, EPA 537 (Mod)	T	279.27 g	28.14 g	251.1 mL	10.0 mL	500 uL	500 uL
320-36665-A-3	TP-PFC-027-TPE	3535, EPA 537 (Mod)	T	283.33 g	27.57 g	255.8 mL	10.0 mL	500 uL	500 uL
320-36665-A-4	TP-PFC-027-TPE-D	3535, EPA 537 (Mod)	T	279.37 g	27.65 g	251.7 mL	10.0 mL	500 uL	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00118					
MB 320-212840/1		3535, EPA 537 (Mod)							
LCS 320-212840/2		3535, EPA 537 (Mod)		500 uL					
320-36665-A-1	TP-PFC-027-TPI	3535, EPA 537 (Mod)	T						
320-36665-A-2	TP-PFC-027-MID CARBON	3535, EPA 537 (Mod)	T						
320-36665-A-3	TP-PFC-027-TPE	3535, EPA 537 (Mod)	T						
320-36665-A-4	TP-PFC-027-TPE-D	3535, EPA 537 (Mod)	T						

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.

EPA 537 (Mod)

Page 1 of 2

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Batch Number: 212840 Batch Start Date: 03/14/18 10:07 Batch Analyst: Kolstad, Kate MBatch Method: 3535 Batch End Date: 03/14/18 16:32

Batch Notes	
Analyst ID - Aliquot Step	KMK
Balance ID	QA-078
Batch Comment	Sample labels match: KMK. Envi-Carb: 96014.
Analyst ID - Final Volume Step	KMK
H2O ID	3-8-18
Hexane ID	1174408
Internal Standard ID#	1140898
Manifold ID	15
Methanol ID	1167500
Sodium Hydroxide ID	1178465
Pipette ID	N32761F
Analyst ID - Reagent Drop	KMK
Analyst ID - IS Reagent Drop	KMK
Analyst ID - IS Reagent Drop Witness	NSH
Analyst ID - SU Reagent Drop	KMK
Analyst ID - SU Reagent Drop Witness	TWL
Solvent Lot #	1181200
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003237137A

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.

HPLC/LCMS Data Review Checklist

Job Number(s): 320-36665, 320-37017 Work List ID(s): 55403, 55470, 55502
 Extraction Batch: 212840 Analysis Batch(es): 213304, 213558, 213658
 Delivery Rank: 4 Due Date: 3/20/2018

A Calibration/Instrument Run QC	1 st Level	2 nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# <u>212932, 213555</u>	☒	☒	
2. ICAL, CCV Frequency & Criteria met.	☒	☒	
• RF _{average} criteria appropriate for the method.	☒	☒	
• Linear Regression criteria appropriate if required ($r > 0.995$).	☒	☒	
• Quadratic fit criteria appropriate if required ($r^2 > 0.990$).			☒
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	☒	☒	
• All curve points show calculated concentrations.	☒	☒	
3. Peaks correctly ID'd by data system.	☒	☒	
5. Tune check frequency & criteria met and Tune check report attached.	☒	☒	
B QA/QC			
1. Are all QC samples properly linked in TALS?	☒	☒	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	☒	☒	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	☒	☒	
4. Are MS/MSD recoveries and RPD within control limits?	☒	☒	
5. Holding Times were met for prep and analytical.	☒	☒	
6. IS/Surrogate recoveries meet criteria or properly noted.	☒	☒	
C Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	☒	☒	
2. If required, are compounds within RT windows?	☒	☒	
3. If required, are positive hits confirmed and >40% RPD flagged?	☒	☒	☒
4. Manual Integrations reviewed and appropriate.	☒	☒	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	☒	☒	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	☒	☒	
D Documentation <u>LCMS: 119402, 119403, 119405, 119406, 119412, 119414, 119417, 119418, 119424</u>			
1. Are all non-conformances documented/attached? NCM# <u>119394, 119407</u>	☒	☒	
2. Do results make sense (e.g. dilutions, etc.)?	☒	☒	
3. Have all flags been reviewed for appropriateness?	☒	☒	
4. For level 3 and 4 reports, have forms and raw data been reviewed?	☒	☒	
5. Was QC Checker run for this job?	☒	☒	

*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1st Level (Analyst): ABH Date: 3/19/2018
 2nd Level Reviewer: neway Date: 3/19/2018

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 15MAR2018NCAAA_PFC Worklist Number: 55403
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 213302	LC PFC ICAL Raw Batch: 213303	LC PFC_QSM5-1 ICAL Raw Batch: 213304
# 1 CCB	# 1 CCB	# 1 CCB	# 1 CCB
# 2 CCVL	# 2 CCVL	# 2 CCVL	# 2 CCVL
# 3 CCV L5	# 3 CCV L5	# 3 CCV L5	# 3 CCV L5
# 4 MB 320-212840/1-A			# 4 MB 320-212840/1-A
# 5 LCS 320-212840/2-A			# 5 LCS 320-212840/2-A
# 6 320-36665-A-1-A			# 6 320-36665-A-1-A
# 7 320-36665-A-2-A			# 7 320-36665-A-2-A
# 8 320-36665-A-3-A			# 8 320-36665-A-3-A
# 9 320-36665-A-4-A			# 9 320-36665-A-4-A
#10 320-37017-A-2-A			#10 320-37017-A-2-A
#11 320-37017-A-3-A			#11 320-37017-A-3-A
#12 320-37017-A-3-B MS			#12 320-37017-A-3-B MS
#13 320-37017-A-3-C MSD			#13 320-37017-A-3-C MSD
#14 CCV L4	#14 CCV L4	#14 CCV L4	#14 CCV L4
#15 320-37017-A-6-A			#15 320-37017-A-6-A
#16 320-37017-A-9-A			#16 320-37017-A-9-A
#17 CCV L5	#17 CCV L5	#17 CCV L5	#17 CCV L5

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16MAR2018NC_2A_PFC Worklist Number: 55470
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b
QC Batch: Disabled Limit Group Batch: Enabled

* same day
as 10A

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 213556	LC PFC ICAL Raw Batch: 213557	LC PFC_QSM5-1 ICAL Raw Batch: 213558
# 1 CCV L4 # 2 320-36665-A-4-A # 3 320-37017-A-9-A # 4 320-36665-A-1-A # 5 320-37017-A-3-A # 6 320-37017-A-3-B MS # 7 320-37017-A-3-C MSD # 8 CCV L5	# 1 CCV L4 # 8 CCV L5	# 1 CCV L4 # 8 CCV L5	# 1 CCV L4 # 2 320-36665-A-4-A # 3 320-37017-A-9-A # 4 320-36665-A-1-A # 5 320-37017-A-3-A # 6 320-37017-A-3-B MS # 7 320-37017-A-3-C MSD # 8 CCV L5

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 19MAR2018NCA_PFC Worklist Number: 55502
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 213656	LC PFC ICAL Raw Batch: 213657	LC PFC_QSM5-1 ICAL Raw Batch: 213658
# 1 CCB	# 1 CCB	# 1 CCB	# 1 CCB
# 2 CCVL	# 2 CCVL	# 2 CCVL	# 2 CCVL
# 3 CCV L4	# 3 CCV L4	# 3 CCV L4	# 3 CCV L4
# 4 320-37017-A-9-A			# 4 320-37017-A-9-A
# 5 CCV L5	# 5 CCV L5	# 5 CCV L5	# 5 CCV L5

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 15MAR2018NCAAA_PFC

Worklist Num: 55403

Instrument: A8_N

Method: A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b

Analysis Type: SemiVOA

Creator: Royce, Amani A

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCB	320-0055403-001	CCB	16-Mar-2018 00:32:39	2018.03.15LLAAX_003.d	19	1.0		SV
CCVL	320-0055403-002	CCVL	16-Mar-2018 00:40:30	2018.03.15LLAAX_004.d	21	1.0		SV
CCV L5	320-0055403-003	CCVIS	16-Mar-2018 00:48:20	2018.03.15LLAAX_024.d	14	1.0		SV
MB 320-212840/1-A	320-0055403-004	MB	16-Mar-2018 00:56:11	2018.03.15LLAAX_025.d	13	1.0		SV
LCS 320-212840/2-A	320-0055403-005	LCS	16-Mar-2018 01:04:02	2018.03.15LLAAX_026.d	14	1.0		SV
320-36665-A-1-A	320-0055403-006	Client	16-Mar-2018 01:11:54	2018.03.15LLAAX_027.d	15	1.0	TP-PFC-027-TPI	SV
320-36665-A-2-A	320-0055403-007	Client	16-Mar-2018 01:19:46	2018.03.15LLAAX_028.d	16	1.0	TP-PFC-027-MID CARBON	SV
320-36665-A-3-A	320-0055403-008	Client	16-Mar-2018 01:27:38	2018.03.15LLAAX_029.d	17	1.0	TP-PFC-027-TPE	SV
320-36665-A-4-A	320-0055403-009	Client	16-Mar-2018 01:35:30	2018.03.15LLAAX_030.d	18	1.0	TP-PFC-027-TPE-D	SV
320-37017-A-2-A	320-0055403-010	Client	16-Mar-2018 01:43:21	2018.03.15LLAAX_031.d	19	1.0	18EIE378GW01	SV
320-37017-A-3-A	320-0055403-011	Client	16-Mar-2018 01:51:15	2018.03.15LLAAX_032.d	20	1.0	18EIE378SW01	SV
320-37017-A-3-B MS	320-0055403-012	MS	16-Mar-2018 01:59:07	2018.03.15LLAAX_033.d	21	1.0	18EIE378SW01	SV
320-37017-A-3-C MSD	320-0055403-013	MSD	16-Mar-2018 02:06:56	2018.03.15LLAAX_034.d	22	1.0	18EIE378SW01	SV
CCV L4	320-0055403-014	CCV	16-Mar-2018 02:14:44	2018.03.15LLAAX_035.d	13	1.0		SV
320-37017-A-6-A	320-0055403-015	Client	16-Mar-2018 02:22:33	2018.03.15LLAAX_036.d	23	1.0	18EIE378SW02	SV
320-37017-A-9-A	320-0055403-016	Client	16-Mar-2018 02:30:25	2018.03.15LLAAX_037.d	24	1.0	18EIE378SW21	SV
CCV L5	320-0055403-017	CCV	16-Mar-2018 02:38:17	2018.03.15LLAAX_038.d	14	1.0		SV

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 16MAR2018NC_ICAL_PFC

Worklist Num: 55469

Instrument: A8_N

Method: A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b

Analysis Type: SemiVOA

Creator: Phomsopha, Thep

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Cal Lvl	Inj Date/Time	File Name	Vial	Dil Factor	Fract
RB	320-0055469-001	RB	0	16-Mar-2018 23:01:46	2018.03.16ICAL_001.d	19	1.0	sv
IC L1 Full	320-0055469-002	IC	1	16-Mar-2018 23:09:38	2018.03.16ICAL_002.d	10	1.0	sv
IC L2 Full	320-0055469-003	IC	2	16-Mar-2018 23:17:30	2018.03.16ICAL_003.d	11	1.0	sv
IC L3 Full	320-0055469-004	IC	3	16-Mar-2018 23:25:20	2018.03.16ICAL_004.d	12	1.0	sv
IC L4 Full	320-0055469-005	ICIS	4	16-Mar-2018 23:33:12	2018.03.16ICAL_005.d	13	1.0	sv
IC L5 Full	320-0055469-006	IC	5	16-Mar-2018 23:41:00	2018.03.16ICAL_006.d	14	1.0	sv
IC L6 Full	320-0055469-007	IC	6	16-Mar-2018 23:48:48	2018.03.16ICAL_007.d	15	1.0	sv
IC L7 Full	320-0055469-008	IC	7	16-Mar-2018 23:56:35	2018.03.16ICAL_008.d	16	1.0	sv
ICB	320-0055469-009	ICB	0	17-Mar-2018 00:04:26	2018.03.16ICAL_010.d	20	1.0	sv
ICV Full	320-0055469-010	ICV	0	17-Mar-2018 00:12:15	2018.03.16ICAL_011.d	18	1.0	sv
CCB	320-0055469-011	CCB	0	17-Mar-2018 00:20:05	2018.03.16ICAL_012.d	20	1.0	sv
CCVL	320-0055469-012	CCVL	0	17-Mar-2018 00:27:55	2018.03.16ICAL_013.d	21	1.0	sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 16MAR2018NC_2A_PFC

Worklist Num: 55470

Instrument: A8_N

Method: A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b

Analysis Type: SemiVOA

Creator: Phomsopha, Thep

Inj Volume: 2.00

Inj Vol Units: ul

* same day
as 10AL

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L4	320-0055470-001	CCV	17-Mar-2018 00:35:43	2018.03.16LLBX_033.d	13	1.0		sv
320-36665-A-4-A	320-0055470-002	Client	17-Mar-2018 00:43:30	2018.03.16LLBX_034.d	1	1.0	TP-PFC-027-TPE-D	sv
320-37017-A-9-A	320-0055470-003	Client	17-Mar-2018 00:51:19	2018.03.16LLBX_035.d	2	1.0	18EIE378SW21	sv
320-36665-A-1-A	320-0055470-004	Client	17-Mar-2018 00:59:09	2018.03.16LLBX_036.d	3	10.0	TP-PFC-027-TPI	sv
320-37017-A-3-A	320-0055470-005	Client	17-Mar-2018 01:06:57	2018.03.16LLBX_037.d	4	10.0	18EIE378SW01	sv
320-37017-A-3-B MS	320-0055470-006	MS	17-Mar-2018 01:14:46	2018.03.16LLBX_038.d	5	10.0	18EIE378SW01	sv
320-37017-A-3-C MSD	320-0055470-007	MSD	17-Mar-2018 01:22:36	2018.03.16LLBX_039.d	6	10.0	18EIE378SW01	sv
CCV L5	320-0055470-008	CCV	17-Mar-2018 01:30:26	2018.03.16LLBX_040.d	14	1.0		sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 19MAR2018NCA_PFC

Worklist Num: 55502

Instrument: A8_N

Method: A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b

Analysis Type: SemiVOA

Creator: Hannigan, Alyssa B

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCB	320-0055502-001	CCB	19-Mar-2018 10:10:32	2018.03.19LLA_003.d	20	1.0		sv
CCVL	320-0055502-002	CCVL	19-Mar-2018 10:18:23	2018.03.19LLA_004.d	21	1.0		sv
CCV L4	320-0055502-003	CCVIS	19-Mar-2018 10:26:10	2018.03.19LLA_005.d	13	1.0		sv
320-37017-A-9-A	320-0055502-004	Client	19-Mar-2018 10:33:59	2018.03.19LLA_024.d	13	10.0	18EIE378SW21	sv
CCV L5	320-0055502-005	CCV	19-Mar-2018 10:41:48	2018.03.19LLA_025.d	14	1.0		sv

RUSH!

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Kolstad, Kate M

Batch Number: 320-212840 ✓

Method Code: 320-3535_PFC-320

Batch Open: 3/14/2018 10:07:00AM

Batch End: 3/14/2018 4:32:00PM

A8 3/15/18

A8 3/16/18

A8 3/17/18

Solid-Phase Extraction (SPE)

3/15/18
ack due:
3/23 3/20

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs		Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
					Rcvd	Adj1 Adj2					
1	MB-320-212840/1 N/A	N/A		250.0 mL	NA		N/A	N/A	N/A		
				10.0 mL							
2	LCS-320-212840/2 N/A	N/A		250.0 mL	NA		N/A	N/A	N/A		
				10.0 mL							
3	320-36665-A-1 (PFC_IDA_DOD5.1)	N/A (320-36665-1)	280.68 g	252.6 mL	NA		3/18/18	16_Days	4	10X	
			28.13 g	10.0 mL							
4	320-36665-A-2 (PFC_IDA_DOD5.1)	N/A (320-36665-1)	279.27 g	251.1 mL	NA		3/18/18	16_Days	4		
			28.14 g	10.0 mL							
5	320-36665-A-3 (PFC_IDA_DOD5.1)	N/A (320-36665-1)	283.33 g	255.8 mL	NA		3/18/18	16_Days	4		
			27.57 g	10.0 mL							
6	320-36665-A-4 (PFC_IDA_DOD5.1)	N/A (320-36665-1)	279.37 g	251.7 mL	NA		3/18/18	16_Days	4	21	
			27.65 g	10.0 mL							
7	320-37017-A-2 (PFC_IDA_DOD5.1)	N/A (320-37017-1)	277.75 g	249.7 mL	NA		3/19/18	4_Day_RUSH	4		
			28.04 g	10.0 mL							
8	320-37017-A-3 (PFC_IDA_DOD5.1)	N/A (320-37017-1)	267.54 g	240 mL	NA		3/19/18	4_Day_RUSH	4	10X	
			27.50 g	10.0 mL							
9	320-37017-A-3-MS (PFC_IDA_DOD5.1)	N/A (320-37017-1)	268.06 g	240.8 mL	NA		3/19/18	4_Day_RUSH	4	10X	
			27.22 g	10.0 mL							
10	320-37017-A-3-MSD (PFC_IDA_DOD5.1)	N/A (320-37017-1)	262.23 g	234.5 mL	NA		3/19/18	4_Day_RUSH	4	10X	
			27.78 g	10.0 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212840

Analyst: Kolstad, Kate M

Batch Open: 3/14/2018 10:07:00AM

Method Code: 320-3535_PFC-320

Batch End: 3/14/2018 4:32:00PM

11

11	320-37017-A-6 (PFC_IDA_DOD5.1)	N/A (320-37017-1)	272.05 g	243.8 mL	NA		3/19/18	4_Day_RUSH	4	light yellow	
			28.26 g	10.0 mL							
12	320-37017-A-9 (PFC_IDA_DOD5.1)	N/A (320-37017-1)	266.71 g	239.4 mL	NA		3/19/18	4_Day_RUSH	4	R1 10X	
			27.32 g	10.0 mL							

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212840

Analyst: Kolstad, Kate M

Batch Open: 3/14/2018 10:07:00AM

Method Code: 320-3535_PFC-320

Batch End: 3/14/2018 4:32:00PM

Batch Notes

Manifold ID 15
Methanol ID 1167500
Hexane ID 1174408
Sodium Hydroxide ID 1178465
First Start time NA
First End time NA
SPE Cartridge Type WAX 500mg
Solid Phase Extraction Disk ID 003237137A
Balance ID QA-078
H2O ID 3-8-18
Pipette ID N32761F
Solvent Name 0.3% NH4OH/MeOH
Solvent Lot # 1181200
Analyst ID - Reagent Drop KMK
Analyst ID - SU Reagent Drop KMK
Analyst ID - SU Reagent Drop TWL
Witness
Acid Name NA
Acid ID NA
Reagent ID NA
Reagent Lot Number NA
Analyst ID - IS Reagent Drop KMK

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212840

Analyst: Kolstad, Kate M

Batch Open: 3/14/2018 10:07:00AM

Method Code: 320-3535_PFC-320

Batch End: 3/14/2018 4:32:00PM

Analyst ID - IS Reagent Drop	NSH
Witness	
Internal Standard ID#	1140898
Analyst ID - Concentration	NA
Analyst ID - Aliquot Step	KMK
Analyst ID - Final Volume Step	KMK
SOP Number	WS-LC-0025
Batch Comment	Sample labels match: KMK. Envi-Carb: 96014.

Comments

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212840

Analyst: Kolstad, Kate M

Batch Open: 3/14/2018 10:07:00AM

Method Code: 320-3535_PFC-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-212840/1	LCMPFC_ALL_SU_00043	500 uL	10.0 mL	KMK 3-14-18	JR 3-14-18
LCS 320-212840/2	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
LCS 320-212840/2	LCPFCSP_00118	500 uL	10.0 mL		
320-36665-A-1	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-36665-A-2	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-36665-A-3	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-36665-A-4	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-2	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-3	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-3 MS	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-3 MS	LCPFCSP_00118	500 uL	10.0 mL		
320-37017-A-3 MSD	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-3 MSD	LCPFCSP_00118	500 uL	10.0 mL		
320-37017-A-6	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-9	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212840

Analyst: Kolstad, Kate M

Batch Open: 3/14/2018 10:07:00AM

Method Code: 320-3535_PFC-320

Batch End:

Other Reagents:		
Reagent	Amount/Units	Lot#:

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Sacramento Preparation Data Review Checklist

Preparation Batch Number(s) 212840 Test 3535 - PFC
 Earliest Holding Time 3-14-18

Batch Information	1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly	/	/
All necessary batch information complete and entered into TALS correctly	/	/
BD, FV, and AL initials are transcribed into the batch comment	/	/
Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	/	✓
Holding time violation NCM filed	NA	NA
MS/MSD or MS/DU NCM filed	NA	NA
NCM for any anomalies filed	/	✓
All NCMs include method code, matrix, and prep batch	/	/
Method/sample/login/QAS checked and correct	/	/
Batch contains no more than 20 live samples	/	/
Worksheet Tab	1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved	/	✓
Weights in anticipated range and not targeted	/	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	/	✓
The pH is transcribed properly in TALS	/	✓
All additional information is transcribed into TALS and is correct and raw data is attached	/	✓
Comments/Observations are transcribed correctly in TALS	/	/
Reagents Tab	1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and checked into TALS	/	✓
All spike amounts correct and added to necessary samples and QC	/	/
Internal Standard is added to the reagents	/	/
All units are correctly transcribed into TALS	/	✓

1st Level Reviewer: KMK

Date: 3-14-18

2nd Level Reviewer: VPM

Date: 3/14/18

Comments: _____

Shipping and Receiving Documents

☐ DW ☐ NPDES ☐ RCRA ☐ Other:Page 695 of 696

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-36665-1

Login Number: 36665

List Source: TestAmerica Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","340","ng/L","D","11","DL","","","TRG","","","40","LOQ","NO","-99","","252.6","10.0","30",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","2058-94-8","Perfluoroundecanoic acid (PFUnA)","15","ng/L","U","7.1","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","15",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","2706-90-3","Perfluoropentanoic acid (PFPeA)","180","ng/L","D","4.3","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","9.9",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","307-24-4","Perfluorohexanoic acid (PFHxA)","340","ng/L","D","4.7","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","9.9",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","307-55-1","Perfluorododecanoic acid (PFDoA)","15","ng/L","U Q","5.1","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","15",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","1800","ng/L","D M","5.3","DL","","","TRG","","","20","LOQ","YES","-99","","252.6","10.0","15",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","335-76-2","Perfluorodecanoic acid (PFDA)","9.9","ng/L","U","4.8","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","9.9",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","335-77-3","Perfluorodecanesulfonic acid (PFDS)","15","ng/L","U","5.5","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","15",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","380","ng/L","D","3.8","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","9.9",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","375-22-4","Perfluorobutanoic acid (PFBA)","72","ng/L","D","5.8","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","15",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","45","ng/L","D","4.6","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","9.9",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","70","ng/L","D","6.0","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","15",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid (PFHpS)","8.9","ng/L","J D","3.7","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","9.9",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","15","ng/L","U","5.1","DL","","","TRG","","","20","LOQ","NO","-99","","252.6","10.0","15",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","376-06-7","Perfluorotetradecanoic acid (PFTeA)","30","ng/L","U","8.2","DL","","","TRG","","","40","LOQ","NO","-99","","252.6","10.0","30",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","72629-94-8","Perfluorotridecanoic Acid (PFTriA)","30","ng/L","U","7.5","DL","","","TRG","","","40","LOQ","NO","-99","","252.6","10.0","30",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","754-91-6","Perfluorooctane Sulfonamide (FOSA)","30","ng/L","U","13","DL","","","TRG","","","40","LOQ","NO","-99","","252.6","10.0","30",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL00990","13C4 PFOA","88","ng/L","","","-99","DL","","","TRG","89","","","-99","LOQ","YES","99.0","","252.6","10.0","990",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL00991","13C4 PFOS","76","ng/L","","","-99","DL","","","TRG","80","","","-99","LOQ","YES","94.6","","252.6","10.0","990",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL00992","13C4 PFBA","85","ng/L","","","-99","DL","","","TRG","85","","","-99","LOQ","YES","99.0","","252.6","10.0","990",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL00993","13C2 PFHxA","87","ng/L","","","-99","DL","","","TRG","88","","","-99","LOQ","YES","99.0","","252.6","10.0","990",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL00994","18O2 PFHxS","79","ng/L","","","-99","DL","","","TRG","84","","","-99","LOQ","YES","93.6","","252.6","10.0","990",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL00995","13C5 PFNA","90","ng/L","","","-99","DL","","","TRG","91","","","-99","LOQ","YES","99.0","","252.6","10.0","990",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL00996","13C2 PFDA","91","ng/L","","","-99","DL","","","TRG","92","","","-99","LOQ","YES","99.0","","252.6","10.0","990",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL00997","13C2 PFUnA","86","ng/L","","","-99","DL","","","TRG","87","","","-99","LOQ","YES","99.0","","252.6","10.0","990",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL00998","13C2 PFDoA","75","ng/L","","","-99","DL","","","TRG","76","","","-99","LOQ","YES","99.0","","252.6","10.0","990",""

"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL01056","13C8

FOSA","79","ng/L","",-99","DL","","TRG","80","",-99","LOQ","YES","99.0","","252.6","10.0","990",""
"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL01892","13C4-
PFHpA","91","ng/L","",-99","DL","","TRG","92","",-99","LOQ","YES","99.0","","252.6","10.0","990",""
"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL01893","13C5
PFPeA","86","ng/L","",-99","DL","","TRG","87","",-99","LOQ","YES","99.0","","252.6","10.0","990",""
"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL02116","13C2-
PFTeDA","79","ng/L","",-99","DL","","TRG","80","",-99","LOQ","YES","99.0","","252.6","10.0","990",""
"TP-PFC-027-TPI","EPA 537 (Mod)","DL","320-36665-1","TALSAC","STL02337","13C3-
PFBS","83","ng/L","",-99","DL","","TRG","90","",-99","LOQ","YES","92.0","","252.6","10.0","990",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","330","ng/L","M","1.1","DL","","TRG","","","4.0","LOQ","YES","-99","","252.6","10.0","3.0",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","2058-94-8","Perfluoroundecanoic acid
(PFUnA)","1.5","ng/L","U","0.71","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","1.5",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","2706-90-3","Perfluoropentanoic acid
(PFPeA)","180","ng/L","","0.43","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","0.99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","307-24-4","Perfluorohexanoic acid
(PFHxA)","350","ng/L","","0.47","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","0.99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","307-55-1","Perfluorododecanoic acid
(PFDoA)","1.5","ng/L","U Q","0.51","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","1.5",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","1300","ng/L","E M","0.53","DL","","TRG","","","2.0","LOQ","NO","-99","","252.6","10.0","1.5",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","335-76-2","Perfluorodecanoic acid
(PFDA)","0.73","ng/L","J","0.48","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","0.99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","335-77-3","Perfluorodecanesulfonic acid
(PFDS)","1.5","ng/L","U","0.55","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","1.5",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","350","ng/L","","0.38","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","0.99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","375-22-4","Perfluorobutanoic acid
(PFBA)","71","ng/L","","0.58","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","1.5",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","48","ng/L","","0.46","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","0.99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","69","ng/L","","0.60","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","1.5",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid
(PFHpS)","7.6","ng/L","","0.37","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","0.99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","2.3","ng/L","","0.51","DL","","TRG","","","2.0","LOQ","YES","-99","","252.6","10.0","1.5",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","376-06-7","Perfluorotetradecanoic acid
(PFTeA)","3.0","ng/L","U","0.82","DL","","TRG","","","4.0","LOQ","YES","-99","","252.6","10.0","3.0",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","72629-94-8","Perfluorotridecanoic Acid
(PFTriA)","3.0","ng/L","U","0.75","DL","","TRG","","","4.0","LOQ","YES","-99","","252.6","10.0","3.0",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","754-91-6","Perfluorooctane Sulfonamide
(FOSA)","3.0","ng/L","U","1.3","DL","","TRG","","","4.0","LOQ","YES","-99","","252.6","10.0","3.0",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL00990","13C4
PFOA","85","ng/L","",-99","DL","","TRG","86","",-99","LOQ","YES","99.0","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL00991","13C4
PFOS","93","ng/L","",-99","DL","","TRG","98","",-99","LOQ","YES","94.6","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL00992","13C4
PFBA","96","ng/L","",-99","DL","","TRG","97","",-99","LOQ","YES","99.0","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL00993","13C2
PFHxA","89","ng/L","",-99","DL","","TRG","90","",-99","LOQ","YES","99.0","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL00994","18O2
PFHxS","87","ng/L","",-99","DL","","TRG","93","",-99","LOQ","YES","93.6","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL00995","13C5

PFNA","110","ng/L","",-99","DL","","TRG","111","",-99","LOQ","YES","99.0","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL00996","13C2
PFDA","110","ng/L","",-99","DL","","TRG","115","",-99","LOQ","YES","99.0","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL00997","13C2
PFUnA","110","ng/L","",-99","DL","","TRG","108","",-99","LOQ","YES","99.0","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL00998","13C2
PFDaA","100","ng/L","",-99","DL","","TRG","102","",-99","LOQ","YES","99.0","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL01056","13C8
FOSA","95","ng/L","",-99","DL","","TRG","96","",-99","LOQ","YES","99.0","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL01892","13C4-
PFHpA","100","ng/L","",-99","DL","","TRG","101","",-99","LOQ","YES","99.0","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL01893","13C5
PFPeA","100","ng/L","",-99","DL","","TRG","103","",-99","LOQ","YES","99.0","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL02116","13C2-
PFTeDA","110","ng/L","",-99","DL","","TRG","113","",-99","LOQ","YES","99.0","","252.6","10.0","99",""
"TP-PFC-027-TPI","EPA 537 (Mod)","RES","320-36665-1","TALSAC","STL02337","13C3-
PFBS","89","ng/L","",-99","DL","","TRG","97","",-99","LOQ","YES","92.0","","252.6","10.0","99",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","1763-23-
1","Perfluorooctanesulfonic acid
(PFOS)","3.0","ng/L","U","1.1","DL","","TRG","","","4.0","LOQ","YES","-99","","251.1","10.0","3.0",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","2058-94-
8","Perfluoroundecanoic acid
(PFUnA)","1.5","ng/L","U","0.72","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.5",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","2706-90-3","Perfluoropentanoic
acid (PFPeA)","190","ng/L","","0.43","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.0",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","307-24-4","Perfluorohexanoic
acid (PFHxA)","110","ng/L","","0.47","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.0",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","307-55-1","Perfluorododecanoic
acid (PFDaA)","1.5","ng/L","U Q","0.52","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.5",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","335-67-1","Perfluorooctanoic
acid (PFOA)","21","ng/L","M","0.54","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.5",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","335-76-2","Perfluorodecanoic
acid (PFDA)","1.0","ng/L","U","0.48","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.0",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","335-77-
3","Perfluorodecanesulfonic acid
(PFDS)","1.5","ng/L","U","0.56","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.5",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","355-46-
4","Perfluorohexanesulfonic acid
(PFHxS)","1.5","ng/L","J","0.38","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.0",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","375-22-4","Perfluorobutanoic
acid (PFBA)","120","ng/L","","0.59","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.5",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","375-73-
5","Perfluorobutanesulfonic acid
(PFBS)","3.2","ng/L","","0.46","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.0",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","375-85-9","Perfluoroheptanoic
acid (PFHpA)","3.8","ng/L","","0.61","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.5",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","375-92-
8","Perfluoroheptanesulfonic Acid
(PFHpS)","1.0","ng/L","U","0.37","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.0",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","375-95-1","Perfluorononanoic
acid (PFNA)","1.5","ng/L","U","0.52","DL","","TRG","","","2.0","LOQ","YES","-99","","251.1","10.0","1.5",""
"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","376-06-
7","Perfluorotetradecanoic acid
(PFTeA)","3.0","ng/L","U","0.83","DL","","TRG","","","4.0","LOQ","YES","-99","","251.1","10.0","3.0",""

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","72629-94-8","Perfluorotridecanoic Acid (PFTriA)","3.0","ng/L","U","0.76","DL","","","TRG","","","4.0","LOQ","YES","-99","","251.1","10.0","3.0","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","754-91-6","Perfluorooctane Sulfonamide (FOSA)","3.0","ng/L","U","1.3","DL","","","TRG","","","4.0","LOQ","YES","-99","","251.1","10.0","3.0","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL00990","13C4 PFOA","90","ng/L","","-99","DL","","","TRG","90","","-99","LOQ","YES","99.6","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL00991","13C4 PFOS","79","ng/L","","-99","DL","","","TRG","83","","-99","LOQ","YES","95.2","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL00992","13C4 PFBA","85","ng/L","","-99","DL","","","TRG","86","","-99","LOQ","YES","99.6","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL00993","13C2 PFHxA","82","ng/L","","-99","DL","","","TRG","83","","-99","LOQ","YES","99.6","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL00994","18O2 PFHxS","77","ng/L","","-99","DL","","","TRG","81","","-99","LOQ","YES","94.2","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL00995","13C5 PFNA","94","ng/L","","-99","DL","","","TRG","94","","-99","LOQ","YES","99.6","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL00996","13C2 PFDA","96","ng/L","","-99","DL","","","TRG","97","","-99","LOQ","YES","99.6","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL00997","13C2 PFUnA","95","ng/L","","-99","DL","","","TRG","96","","-99","LOQ","YES","99.6","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL00998","13C2 PFDaA","81","ng/L","","-99","DL","","","TRG","81","","-99","LOQ","YES","99.6","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL01056","13C8 FOA","78","ng/L","","-99","DL","","","TRG","78","","-99","LOQ","YES","99.6","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL01892","13C4-PFHpA","93","ng/L","","-99","DL","","","TRG","93","","-99","LOQ","YES","99.6","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL01893","13C5 PFPeA","82","ng/L","","-99","DL","","","TRG","82","","-99","LOQ","YES","99.6","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL02116","13C2-PFTeDA","92","ng/L","","-99","DL","","","TRG","93","","-99","LOQ","YES","99.6","","251.1","10.0","100","","

"TP-PFC-027-MID CARBON","EPA 537 (Mod)","RES","320-36665-2","TALSAC","STL02337","13C3-PFBS","73","ng/L","","-99","DL","","","TRG","78","","-99","LOQ","YES","92.6","","251.1","10.0","100","","

"TP-PFC-027-TPE","EPA 537 (Mod)","RES","320-36665-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","2.9","ng/L","U","1.1","DL","","","TRG","","","3.9","LOQ","YES","-99","","255.8","10.0","2.9","","

"TP-PFC-027-TPE","EPA 537 (Mod)","RES","320-36665-3","TALSAC","2058-94-8","Perfluoroundecanoic acid (PFUnA)","1.5","ng/L","U","0.70","DL","","","TRG","","","2.0","LOQ","YES","-99","","255.8","10.0","1.5","","

"TP-PFC-027-TPE","EPA 537 (Mod)","RES","320-36665-3","TALSAC","2706-90-3","Perfluoropentanoic acid (PFPeA)","140","ng/L","","0.42","DL","","","TRG","","","2.0","LOQ","YES","-99","","255.8","10.0","0.98","","

"TP-PFC-027-TPE","EPA 537 (Mod)","RES","320-36665-3","TALSAC","307-24-4","Perfluorohexanoic acid (PFHxA)","43","ng/L","","0.46","DL","","","TRG","","","2.0","LOQ","YES","-99","","255.8","10.0","0.98","","

"TP-PFC-027-TPE","EPA 537 (Mod)","RES","320-36665-3","TALSAC","307-55-1","Perfluorododecanoic acid (PFDaA)","1.5","ng/L","U Q","0.51","DL","","","TRG","","","2.0","LOQ","YES","-99","","255.8","10.0","1.5","","

"TP-PFC-027-TPE","EPA 537 (Mod)","RES","320-36665-3","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","1.9","ng/L","J M","0.53","DL","","","TRG","","","2.0","LOQ","YES","-99","","255.8","10.0","1.5","","

"TP-PFC-027-TPE","EPA 537 (Mod)","RES","320-36665-3","TALSAC","335-76-2","Perfluorodecanoic acid (PFDA)","0.98","ng/L","U","0.47","DL","","","TRG","","","2.0","LOQ","YES","-99","","255.8","10.0","0.98","","

"TP-PFC-027-TPE","EPA 537 (Mod)","RES","320-36665-3","TALSAC","335-77-3","Perfluorodecanesulfonic acid (PFDS)","1.5","ng/L","U","0.55","DL","","","TRG","","","2.0","LOQ","YES","-99","","255.8","10.0","1.5","","

"TP-PFC-027-TPE","EPA 537 (Mod)","RES","320-36665-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","0.38","ng/L","J","0.37","DL","","","TRG","","","2.0","LOQ","YES","-99","","255.8","10.0","0.98","","

"TP-PFC-027-TPE","EPA 537 (Mod)","RES","320-36665-3","TALSAC","375-22-4","Perfluorobutanoic acid (PFBA)","130","ng/L","","0.58","DL","","","TRG","","","2.0","LOQ","YES","-99","","255.8","10.0","1.5","","

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "0.74", "ng/L", "J", "0.45", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "255.8", "10.0", "0.98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "0.76", "ng/L", "J M", "0.60", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "255.8", "10.0", "1.5", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid (PFHpS)", "0.98", "ng/L", "U", "0.36", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "255.8", "10.0", "0.98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "1.5", "ng/L", "U", "0.51", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "255.8", "10.0", "1.5", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid (PFTeA)", "2.9", "ng/L", "U", "0.81", "DL", "", "TRG", "", "", "3.9", "LOQ", "YES", "-99", "", "255.8", "10.0", "2.9", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid (PFTriA)", "2.9", "ng/L", "U", "0.74", "DL", "", "TRG", "", "", "3.9", "LOQ", "YES", "-99", "", "255.8", "10.0", "2.9", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "2.9", "ng/L", "U", "1.3", "DL", "", "TRG", "", "", "3.9", "LOQ", "YES", "-99", "", "255.8", "10.0", "2.9", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL00990", "13C4 PFOA", "89", "ng/L", "", "-99", "DL", "", "TRG", "91", "", "-99", "LOQ", "YES", "97.7", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL00991", "13C4 PFOS", "71", "ng/L", "", "-99", "DL", "", "TRG", "76", "", "-99", "LOQ", "YES", "93.4", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL00992", "13C4 PFBA", "78", "ng/L", "", "-99", "DL", "", "TRG", "80", "", "-99", "LOQ", "YES", "97.7", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL00993", "13C2 PFHxA", "76", "ng/L", "", "-99", "DL", "", "TRG", "78", "", "-99", "LOQ", "YES", "97.7", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL00994", "18O2 PFHxS", "73", "ng/L", "", "-99", "DL", "", "TRG", "79", "", "-99", "LOQ", "YES", "92.5", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL00995", "13C5 PFNA", "87", "ng/L", "", "-99", "DL", "", "TRG", "89", "", "-99", "LOQ", "YES", "97.7", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL00996", "13C2 PFDA", "87", "ng/L", "", "-99", "DL", "", "TRG", "89", "", "-99", "LOQ", "YES", "97.7", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL00997", "13C2 PFUnA", "90", "ng/L", "", "-99", "DL", "", "TRG", "92", "", "-99", "LOQ", "YES", "97.7", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL00998", "13C2 PFDoA", "80", "ng/L", "", "-99", "DL", "", "TRG", "81", "", "-99", "LOQ", "YES", "97.7", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL01056", "13C8 FOSA", "74", "ng/L", "", "-99", "DL", "", "TRG", "76", "", "-99", "LOQ", "YES", "97.7", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL01892", "13C4-PFHpA", "85", "ng/L", "", "-99", "DL", "", "TRG", "87", "", "-99", "LOQ", "YES", "97.7", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL01893", "13C5 PFPeA", "75", "ng/L", "", "-99", "DL", "", "TRG", "77", "", "-99", "LOQ", "YES", "97.7", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL02116", "13C2-PFTeDA", "89", "ng/L", "", "-99", "DL", "", "TRG", "91", "", "-99", "LOQ", "YES", "97.7", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE", "EPA 537 (Mod)", "RES", "320-36665-3", "TALSAC", "STL02337", "13C3-PFBS", "67", "ng/L", "", "-99", "DL", "", "TRG", "74", "", "-99", "LOQ", "YES", "90.9", "", "255.8", "10.0", "98", ""

"TP-PFC-027-TPE-D", "EPA 537 (Mod)", "RES", "320-36665-4", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "3.0", "ng/L", "U", "1.1", "DL", "", "TRG", "", "", "4.0", "LOQ", "YES", "-99", "", "251.7", "10.0", "3.0", ""

"TP-PFC-027-TPE-D", "EPA 537 (Mod)", "RES", "320-36665-4", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid (PFUnA)", "1.5", "ng/L", "U", "0.72", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "251.7", "10.0", "1.5", ""

"TP-PFC-027-TPE-D", "EPA 537 (Mod)", "RES", "320-36665-4", "TALSAC", "2706-90-3", "Perfluoropentanoic acid (PFPeA)", "140", "ng/L", "", "0.43", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "251.7", "10.0", "0.99", ""

"TP-PFC-027-TPE-D", "EPA 537 (Mod)", "RES", "320-36665-4", "TALSAC", "307-24-4", "Perfluorohexanoic acid (PFHxA)", "44", "ng/L", "", "0.47", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "251.7", "10.0", "0.99", ""

"TP-PFC-027-TPE-D", "EPA 537 (Mod)", "RES", "320-36665-4", "TALSAC", "307-55-1", "Perfluorododecanoic acid (PFDoA)", "1.5", "ng/L", "U Q", "0.52", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "251.7", "10.0", "1.5", ""

"TP-PFC-027-TPE-D", "EPA 537 (Mod)", "RES", "320-36665-4", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "1.7", "ng/L", "J", "0.54", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "251.7", "10.0", "1.5", ""

"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","335-76-2","Perfluorodecanoic acid (PFDA)","0.99","ng/L","U","0.48","DL","","TRG","","","2.0","LOQ","YES",-99","","251.7","10.0","0.99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","335-77-3","Perfluorodecanesulfonic acid (PFDS)","1.5","ng/L","U","0.56","DL","","TRG","","","2.0","LOQ","YES",-99","","251.7","10.0","1.5","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","0.99","ng/L","U","0.38","DL","","TRG","","","2.0","LOQ","YES",-99","","251.7","10.0","0.99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","375-22-4","Perfluorobutanoic acid (PFBA)","130","ng/L","","","0.59","DL","","TRG","","","2.0","LOQ","YES",-99","","251.7","10.0","1.5","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","0.72","ng/L","J","0.46","DL","","TRG","","","2.0","LOQ","YES",-99","","251.7","10.0","0.99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","0.76","ng/L","J","0.61","DL","","TRG","","","2.0","LOQ","YES",-99","","251.7","10.0","1.5","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid (PFHpS)","0.99","ng/L","U","0.37","DL","","TRG","","","2.0","LOQ","YES",-99","","251.7","10.0","0.99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","1.5","ng/L","U","0.52","DL","","TRG","","","2.0","LOQ","YES",-99","","251.7","10.0","1.5","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","376-06-7","Perfluorotetradecanoic acid (PFTeA)","3.0","ng/L","U","0.82","DL","","TRG","","","4.0","LOQ","YES",-99","","251.7","10.0","3.0","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","72629-94-8","Perfluorotridecanoic Acid (PFTriA)","3.0","ng/L","U","0.75","DL","","TRG","","","4.0","LOQ","YES",-99","","251.7","10.0","3.0","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","754-91-6","Perfluorooctane Sulfonamide (FOSA)","3.0","ng/L","U","1.3","DL","","TRG","","","4.0","LOQ","YES",-99","","251.7","10.0","3.0","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL00990","13C4 PFOA","88","ng/L","","",-99,"DL","","TRG","88","","",-99,"LOQ","YES","99.3","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL00991","13C4 PFOS","83","ng/L","","",-99,"DL","","TRG","88","","",-99,"LOQ","YES","95.0","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL00992","13C4 PFBA","89","ng/L","","",-99,"DL","","TRG","89","","",-99,"LOQ","YES","99.3","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL00993","13C2 PFHxA","85","ng/L","","",-99,"DL","","TRG","86","","",-99,"LOQ","YES","99.3","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL00994","18O2 PFHxS","81","ng/L","","",-99,"DL","","TRG","87","","",-99,"LOQ","YES","94.0","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL00995","13C5 PFNA","88","ng/L","","",-99,"DL","","TRG","89","","",-99,"LOQ","YES","99.3","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL00996","13C2 PFDA","84","ng/L","","",-99,"DL","","TRG","85","","",-99,"LOQ","YES","99.3","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL00997","13C2 PFUnA","82","ng/L","","",-99,"DL","","TRG","83","","",-99,"LOQ","YES","99.3","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL00998","13C2 PFDaA","80","ng/L","","",-99,"DL","","TRG","81","","",-99,"LOQ","YES","99.3","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL01056","13C8 FOSA","81","ng/L","","",-99,"DL","","TRG","82","","",-99,"LOQ","YES","99.3","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL01892","13C4-PFHpA","85","ng/L","","",-99,"DL","","TRG","86","","",-99,"LOQ","YES","99.3","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL01893","13C5 PFPeA","86","ng/L","","",-99,"DL","","TRG","86","","",-99,"LOQ","YES","99.3","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL02116","13C2-PFTeDA","89","ng/L","","",-99,"DL","","TRG","90","","",-99,"LOQ","YES","99.3","","251.7","10.0","99","","
"TP-PFC-027-TPE-D","EPA 537 (Mod)","RES","320-36665-4","TALSAC","STL02337","13C3-PFBS","79","ng/L","","",-99,"DL","","TRG","85","","",-99,"LOQ","YES","92.4","","251.7","10.0","99","","
"LCS 320-212840/2-A","EPA 537 (Mod)","RES","LCS 320-212840/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","38.0","ng/L","","","1.1","DL","","SPK","102","","","4.0","LOQ","YES","37.1","","250.0","10.0","3.0","","
"LCS 320-212840/2-A","EPA 537 (Mod)","RES","LCS 320-212840/2-A","TALSAC","2058-94-

8", "Perfluoroundecanoic acid (PFUnA)", "41.2", "ng/L", "", "0.72", "DL", "", "SPK", "103", "", "2.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "1.5", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "2706-90-3", "Perfluoropentanoic acid (PFPeA)", "41.1", "ng/L", "", "0.43", "DL", "", "SPK", "103", "", "2.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "1.0", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "307-24-4", "Perfluorohexanoic acid (PFHxA)", "42.7", "ng/L", "", "0.47", "DL", "", "SPK", "107", "", "2.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "1.0", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "307-55-1", "Perfluorododecanoic acid (PFDoA)", "47.0", "ng/L", "Q", "0.52", "DL", "", "SPK", "117", "", "2.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "1.5", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "40.7", "ng/L", "", "0.54", "DL", "", "SPK", "102", "", "2.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "1.5", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "335-76-2", "Perfluorodecanoic acid (PFDA)", "39.7", "ng/L", "", "0.48", "DL", "", "SPK", "99", "", "2.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "1.0", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid (PFDS)", "40.7", "ng/L", "", "0.56", "DL", "", "SPK", "105", "", "2.0", "LOQ", "YES", "38.6", "", "250.0", "10.0", "1.5", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "34.3", "ng/L", "", "0.38", "DL", "", "SPK", "94", "", "2.0", "LOQ", "YES", "36.4", "", "250.0", "10.0", "1.0", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "375-22-4", "Perfluorobutanoic acid (PFBA)", "43.5", "ng/L", "", "0.59", "DL", "", "SPK", "109", "", "2.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "1.5", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "40.1", "ng/L", "", "0.46", "DL", "", "SPK", "113", "", "2.0", "LOQ", "YES", "35.4", "", "250.0", "10.0", "1.0", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "42.0", "ng/L", "", "0.61", "DL", "", "SPK", "105", "", "2.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "1.5", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid (PFHpS)", "40.2", "ng/L", "", "0.37", "DL", "", "SPK", "106", "", "2.0", "LOQ", "YES", "38.1", "", "250.0", "10.0", "1.0", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "42.3", "ng/L", "", "0.52", "DL", "", "SPK", "106", "", "2.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "1.5", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid (PFTeA)", "42.5", "ng/L", "", "0.83", "DL", "", "SPK", "106", "", "4.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "3.0", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid (PFTriA)", "44.6", "ng/L", "", "0.76", "DL", "", "SPK", "112", "", "4.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "3.0", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "42.8", "ng/L", "", "1.3", "DL", "", "SPK", "107", "", "4.0", "LOQ", "YES", "40.0", "", "250.0", "10.0", "3.0", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL00990", "13C4 PFOA", "92.0", "ng/L", "", "-99", "DL", "", "SPK", "92", "", "-99", "LOQ", "YES", "100", "", "250.0", "10.0", "100", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL00991", "13C4 PFOS", "77.5", "ng/L", "", "-99", "DL", "", "SPK", "81", "", "-99", "LOQ", "YES", "95.6", "", "250.0", "10.0", "100", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL00992", "13C4 PFBA", "83.6", "ng/L", "", "-99", "DL", "", "SPK", "84", "", "-99", "LOQ", "YES", "100", "", "250.0", "10.0", "100", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL00993", "13C2 PFHxA", "79.6", "ng/L", "", "-99", "DL", "", "SPK", "80", "", "-99", "LOQ", "YES", "100", "", "250.0", "10.0", "100", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL00994", "18O2 PFHxS", "77.8", "ng/L", "", "-99", "DL", "", "SPK", "82", "", "-99", "LOQ", "YES", "94.6", "", "250.0", "10.0", "100", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL00995", "13C5 PFNA", "90.9", "ng/L", "", "-99", "DL", "", "SPK", "91", "", "-99", "LOQ", "YES", "100", "", "250.0", "10.0", "100", ""
 "LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL00996", "13C2 PFDA", "99.5", "ng/L", "", "-99", "DL", "", "SPK", "99", "", "-99", "LOQ", "YES", "100", "", "250.0", "10.0", "100", ""

"LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL00997", "13C2
PFUnA", "90.0", "ng/L", "", "-99", "DL", "", "SPK", "90", "", "-99", "LOQ", "YES", "100", "", "250.0", "10.0", "100", ""

"LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL00998", "13C2
PFDaA", "79.8", "ng/L", "", "-99", "DL", "", "SPK", "80", "", "-99", "LOQ", "YES", "100", "", "250.0", "10.0", "100", ""

"LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL01056", "13C8
FOA", "76.5", "ng/L", "", "-99", "DL", "", "SPK", "76", "", "-99", "LOQ", "YES", "100", "", "250.0", "10.0", "100", ""

"LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL01892", "13C4-
PFHpA", "89.2", "ng/L", "", "-99", "DL", "", "SPK", "89", "", "-99", "LOQ", "YES", "100", "", "250.0", "10.0", "100", ""

"LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL01893", "13C5
PFPeA", "80.4", "ng/L", "", "-99", "DL", "", "SPK", "80", "", "-99", "LOQ", "YES", "100", "", "250.0", "10.0", "100", ""

"LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL02116", "13C2-
PFTeDA", "88.1", "ng/L", "", "-99", "DL", "", "SPK", "88", "", "-99", "LOQ", "YES", "100", "", "250.0", "10.0", "100", ""

"LCS 320-212840/2-A", "EPA 537 (Mod)", "RES", "LCS 320-212840/2-A", "TALSAC", "STL02337", "13C3-
PFBS", "71.5", "ng/L", "", "-99", "DL", "", "SPK", "77", "", "-99", "LOQ", "YES", "93.0", "", "250.0", "10.0", "100", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "1763-23-
1", "Perfluorooctanesulfonic acid
(PFOS)", "3.0", "ng/L", "U", "1.1", "DL", "", "TRG", "", "", "4.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "3.0", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "2058-94-
8", "Perfluoroundecanoic acid
(PFUnA)", "1.5", "ng/L", "U", "0.72", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.5", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "2706-90-3", "Perfluoropentanoic
acid (PFPeA)", "1.0", "ng/L", "U M", "0.43", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.0", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "307-24-4", "Perfluorohexanoic
acid (PFHxA)", "1.0", "ng/L", "U", "0.47", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.0", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "307-55-1", "Perfluorododecanoic
acid (PFDaA)", "1.5", "ng/L", "U", "0.52", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.5", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "335-67-1", "Perfluorooctanoic
acid (PFOA)", "0.585", "ng/L", "J", "0.54", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.5", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "335-76-2", "Perfluorodecanoic
acid (PFDA)", "1.0", "ng/L", "U", "0.48", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.0", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "335-77-
3", "Perfluorodecanesulfonic acid
(PFDS)", "1.5", "ng/L", "U", "0.56", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.5", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "355-46-
4", "Perfluorohexanesulfonic acid
(PFHxS)", "1.0", "ng/L", "U", "0.38", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.0", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "375-22-4", "Perfluorobutanoic
acid (PFBA)", "1.5", "ng/L", "U", "0.59", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.5", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "375-73-
5", "Perfluorobutanesulfonic acid
(PFBS)", "1.0", "ng/L", "U", "0.46", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.0", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "375-85-9", "Perfluoroheptanoic
acid (PFHpA)", "1.5", "ng/L", "U", "0.61", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.5", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "375-92-
8", "Perfluoroheptanesulfonic Acid
(PFHpS)", "1.0", "ng/L", "U", "0.37", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.0", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "375-95-1", "Perfluorononanoic
acid (PFNA)", "1.5", "ng/L", "U", "0.52", "DL", "", "TRG", "", "", "2.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "1.5", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "376-06-
7", "Perfluorotetradecanoic acid
(PFTeA)", "3.0", "ng/L", "U", "0.83", "DL", "", "TRG", "", "", "4.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "3.0", ""

"MB 320-212840/1-A", "EPA 537 (Mod)", "RES", "MB 320-212840/1-A", "TALSAC", "72629-94-
8", "Perfluorotridecanoic Acid
(PFTriA)", "3.0", "ng/L", "U", "0.76", "DL", "", "TRG", "", "", "4.0", "LOQ", "YES", "-99", "", "250.0", "10.0", "3.0", ""

"MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","754-91-6","Perfluorooctane Sulfonamide (FOSA)","3.0","ng/L","U","1.3","DL","","","TRG","","","4.0","LOQ","YES","-99","","","250.0","10.0","3.0","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL00990","13C4 PFOA","89.8","ng/L","","","-99","DL","","","TRG","90","","","-99","LOQ","YES","100","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL00991","13C4 PFOS","78.6","ng/L","","","-99","DL","","","TRG","82","","","-99","LOQ","YES","95.6","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL00992","13C4 PFBA","82.5","ng/L","","","-99","DL","","","TRG","82","","","-99","LOQ","YES","100","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL00993","13C2 PFHxA","82.5","ng/L","","","-99","DL","","","TRG","82","","","-99","LOQ","YES","100","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL00994","18O2 PFHxS","74.9","ng/L","","","-99","DL","","","TRG","79","","","-99","LOQ","YES","94.6","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL00995","13C5 PFNA","94.0","ng/L","","","-99","DL","","","TRG","94","","","-99","LOQ","YES","100","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL00996","13C2 PFDA","95.0","ng/L","","","-99","DL","","","TRG","95","","","-99","LOQ","YES","100","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL00997","13C2 PFUnA","95.1","ng/L","","","-99","DL","","","TRG","95","","","-99","LOQ","YES","100","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL00998","13C2 PFDoA","79.8","ng/L","","","-99","DL","","","TRG","80","","","-99","LOQ","YES","100","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL01056","13C8 FOA","75.6","ng/L","","","-99","DL","","","TRG","76","","","-99","LOQ","YES","100","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL01892","13C4-PFHpA","87.5","ng/L","","","-99","DL","","","TRG","87","","","-99","LOQ","YES","100","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL01893","13C5 PFPeA","79.0","ng/L","","","-99","DL","","","TRG","79","","","-99","LOQ","YES","100","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL02116","13C2-PFTeDA","93.6","ng/L","","","-99","DL","","","TRG","94","","","-99","LOQ","YES","100","","","250.0","10.0","100","" "MB 320-212840/1-A","EPA 537 (Mod)","RES","MB 320-212840/1-A","TALSAC","STL02337","13C3-PFBS","72.4","ng/L","","","-99","DL","","","TRG","78","","","-99","LOQ","YES","93.0","","","250.0","10.0","100","" "Unknown","Unknown","TP-PFC-026-TPI","02/01/2018 09:45","AQ","320-35682-1","NM","","","5.90","537 (modified)","3535","RES","02/06/2018 08:50","02/07/2018 14:59","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-207074","320-207074","NA","320-207472","320-35682-1","02/02/2018 09:05","02/05/2018 10:10","" "Unknown","Unknown","TP-PFC-026-TPI","02/01/2018 09:45","AQ","320-35682-1","NM","","","5.90","537 (modified)","3535","DL","02/06/2018 08:50","02/08/2018 23:12","TALSAC","COA","WET","NA","10","NA","NA","","","100","320-207074","320-207074","NA","320-207696","320-35682-1","02/02/2018 09:05","02/05/2018 10:10","" "Unknown","Unknown","TP-PFC-026-MID-CARBON","02/01/2018 09:50","AQ","320-35682-2","NM","","","5.90","537 (modified)","3535","RES","02/06/2018 08:50","02/07/2018 15:07","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-207074","320-207074","NA","320-207472","320-35682-1","02/02/2018 09:05","02/05/2018 10:10","" "Unknown","Unknown","TP-PFC-026-TPE","02/01/2018 09:55","AQ","320-35682-3","NM","","","5.90","537 (modified)","3535","RES","02/06/2018 08:50","02/07/2018 15:15","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-207074","320-207074","NA","320-207472","320-35682-1","02/02/2018 09:05","02/05/2018 10:10","" "Unknown","Unknown","TP-PFC-026-TPE","02/01/2018 09:55","AQ","320-35682-3","NM","","","5.90","537 (modified)","3535","RE","02/14/2018 19:07","02/16/2018 16:35","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-208463","320-208463","NA","320-208866","320-35682-1","02/02/2018 09:05","02/05/2018 10:10","" "Unknown","Unknown","TP-PFC-026-TPE-D","02/01/2018 00:00","AQ","320-35682-4","FD","","","5.90","537 (modified)","3535","RES","02/06/2018 08:50","02/07/2018 15:23","TALSAC","COA","WET","NA","1","NA","NA","","","100","320-207074","320-207074","NA","320-

207472","320-35682-1","02/02/2018 09:05","02/05/2018 10:10",""
"Unknown","Unknown","TP-PFC-026-TPE-D","02/01/2018 00:00","AQ","320-35682-4","FD","","5.90","537
(modified)","3535","RE","02/14/2018 19:07","02/16/2018
16:43","TALSAC","COA","WET","NA","1","NA","NA","","100","320-208463","320-208463","NA","320-
208866","320-35682-1","02/02/2018 09:05","02/05/2018 10:10",""
"Unknown","Unknown","LCS 320-207074/2-A","","AQ","LCS 320-207074/2-A","LCS","","-99","537
(modified)","3535","RES","02/06/2018 08:50","02/07/2018
13:25","TALSAC","COA","WET","NA","1","NA","NA","","100","320-207074","320-207074","NA","320-
207472","320-35682-1","02/06/2018 08:50","02/05/2018 10:10",""
"Unknown","Unknown","LCS 320-208463/2-A","","AQ","LCS 320-208463/2-A","LCS","","-99","537
(modified)","3535","RES","02/14/2018 19:07","02/16/2018
16:20","TALSAC","COA","WET","NA","1","NA","NA","","100","320-208463","320-208463","NA","320-
208866","320-35682-1","02/14/2018 19:07","02/05/2018 10:10",""
"Unknown","Unknown","LCSD 320-207074/3-A","","AQ","LCSD 320-207074/3-A","LCSD","","-99","537
(modified)","3535","RES","02/06/2018 08:50","02/07/2018
13:33","TALSAC","COA","WET","NA","1","NA","NA","","100","320-207074","320-207074","NA","320-
207472","320-35682-1","02/06/2018 08:50","02/05/2018 10:10",""
"Unknown","Unknown","LCSD 320-208463/3-A","","AQ","LCSD 320-208463/3-A","LCSD","","-99","537
(modified)","3535","RES","02/14/2018 19:07","02/16/2018
16:28","TALSAC","COA","WET","NA","1","NA","NA","","100","320-208463","320-208463","NA","320-
208866","320-35682-1","02/14/2018 19:07","02/05/2018 10:10",""
"Unknown","Unknown","MB 320-207074/1-A","","AQ","MB 320-207074/1-A","MB","","-99","537
(modified)","3535","RES","02/06/2018 08:50","02/07/2018
13:17","TALSAC","COA","WET","NA","1","NA","NA","","100","320-207074","320-207074","NA","320-
207472","320-35682-1","02/06/2018 08:50","02/05/2018 10:10",""
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(modified)","3535","RES","02/14/2018 19:07","02/16/2018
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208866","320-35682-1","02/14/2018 19:07","02/05/2018 10:10",""



TETRA TECH

INTERNAL CORRESPONDENCE

TO: J. ORIENT **DATE:** JUNE 25, 2018

FROM: J.SAMCHUCK **COPIES:** DV FILE

SUBJECT: ORGANIC DATA VALIDATION – POLYFLUOROALKYL SUBSTANCES (PFAS)
FORMER NAVAL AIR STATION (NAS) BRUNSWICK, BRUNSWICK, ME
CTO WE21 PFC ASSESSMENT
SAMPLE DELIVERY GROUP (SDG) 320-36665-1

SAMPLES: 4/Aqueous/PFAS

TP-PFC-027-MID-CARBON TP-PFC-027-TPE TP-PFC-027-TPE-D
TP-PFC-027-TPI

Overview

The sample set for former NAS Brunswick, SDG 320-36665-1 consisted of four (4) aqueous environmental samples. All four (4) aqueous samples were analyzed for Polyfluoroalkyl Substances (PFAS). One field duplicate pair was included in these Sample Delivery Group (SDG): TP-PFC-025-TPE/TP-PFC-025-TPE-D.

The samples were collected by Tetra Tech, Inc. on March 1, 2018 and analyzed by Test America, Inc. The analyses were conducted using EPA Method 537 (Modified) analytical and reporting protocols. The data was evaluated based on the following parameters:

- * • Data completeness
- * • Hold times/Sample Preservation
- * • Mass Calibration
- * • LC/MS/MS System Tuning and Performance
- * • Mass Spectral Acquisition Rate
- * • Instrument Sensitivity Check
- * • Ion Transition Check
- * • Initial/Continuing Calibrations
- Laboratory Method Blank Results
- * • Extraction Internal Standard (Surrogate) Recoveries
- * • Injection Internal Standard Recoveries
- * • Laboratory Control Sample Recoveries
- * • Field Duplicate Precision
- * • Compound Identification
- * • Compound Quantitation
- * • Detection Limits

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B, and Appendix C contains the documentation to support the findings as discussed in this data validation report. An EPA Region 1 tier II validation was performed on the data in this SDG. The text of this report has been formulated to address only those areas affecting data quality.

NOTES

Field Reagent Blanks (FRBs) were not provided with the environmental samples.

The following compounds were detected in the laboratory method/instrument/field reagent blanks at a concentration less than one-third (one/half for instrument blanks) the limit of quantitation (LOQ):

<u>Analyte</u>	<u>Maximum Concentration (ng/L)</u>	<u>Action Level LOQ (> or <)</u>
Pentadecafluorooctanoic acid ⁽¹⁾	0.585	< LOQ
Perfluorohexane sulfonic acid ⁽²⁾	6.43	< LOQ
Perfluorohexane sulfonic acid ⁽³⁾	9.35	< LOQ
Perfluoroheptane sulfonic acid ⁽³⁾	4.88	< LOQ

¹ Result detected in preparation blank affecting all samples.

² Result detected in calibration blank affecting all samples analyzed on 3/16/18.

³ Result detected in calibration/instrument blank affecting all samples analyzed on 3/17/18.

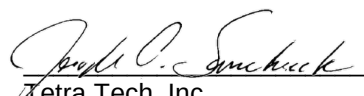
Detected results reported below the LOQ but above the Detection Limit (DL) were qualified as estimated, (J).
Non-detected results are reported to the Limit of Detection (LOD).

EXECUTIVE SUMMARY

Laboratory Performance: Minor blank contamination was noted in method and instrument blanks.

Other Factors Affecting Data Quality: Detected results below the LOQ were estimated.

The data for these analyses were reviewed with reference to the EPA New England Environmental Data Review Supplement for Regional Data Review Elements Superfund Guidance/Procedures (April 2013), National Functional Guidelines for Organic Data Validation (January 2017), and the Department of Defense (DoD) document entitled, "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013). The text of this report has been formulated to address only those areas affecting data quality.


Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:

Appendix A - Qualified Analytical Results
Appendix B - Results as reported by the Laboratory
Appendix C - Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted detection limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
NJ	The analyte has been “tentatively identified” or “presumptively” as present and the associated numerical value is the estimated concentration in the sample.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.

Qualifier Codes:

A	=	Lab Blank Contamination
B	=	Field Blank Contamination
C	=	Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01	=	GC/MS Tuning Noncompliance
D	=	MS/MSD Recovery Noncompliance
E	=	LCS/LCSD Recovery Noncompliance
F	=	Lab Duplicate Imprecision
G	=	Field Duplicate Imprecision
H	=	Holding Time Exceedance
I	=	ICP Serial Dilution Noncompliance
J	=	ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K	=	ICP Interference - includes ICS % R Noncompliance
L	=	Instrument Calibration Range Exceedance
M	=	Sample Preservation Noncompliance
N	=	Internal Standard Noncompliance
N01	=	Internal Standard Recovery Noncompliance Dioxins
N02	=	Recovery Standard Noncompliance Dioxins
N03	=	Clean-up Standard Noncompliance Dioxins
O	=	Poor Instrument Performance (i.e., base-time drifting)
P	=	Uncertainty near detection limit ($< 2 \times \text{IDL}$ for inorganics and $< \text{CRQL}$ for organics) Other problems (can encompass a number of issues; i.e. chromatography, interferences, etc.)
Q	=	
R	=	Surrogates Recovery Noncompliance
S	=	Pesticide/PCB Resolution
T	=	% Breakdown Noncompliance for DDT and Endrin
U	=	RPD between columns/detectors $> 40\%$ for positive results determined via GC/HPLC
V	=	Non-linear calibrations; correlation coefficient $r < 0.995$
W	=	EMPC result
X	=	Signal to noise response drop
Y	=	Percent solids $< 30\%$
Z	=	Uncertainty at 2 standard deviations is greater than sample activity
Z1	=	Tentatively Identified Compound considered presumptively present
Z2	=	Tentatively Identified Compound column bleed
Z3	=	Tentatively Identified Compound aldol condensate

APPENDIX A

QUALIFIED LABORATORY RESULTS

PROJ_NO: 08005-WE21 SDG: 320-36665-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	TP-PFC-027-MID CARBON			TP-PFC-027-TPE			TP-PFC-027-TPE-D			TP-PFC-027-TPI		
	LAB_ID	320-36665-2			320-36665-3			320-36665-4			320-36665-1		
	SAMP_DATE	3/1/2018			3/1/2018			3/1/2018			3/1/2018		
	QC_TYPE	NM			NM			FD			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF							TP-PFC-027-TPE					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADEC AFLUOROOCTANOIC ACID (PFOA)		21			1.9	U	A	1.7	U	A			
PERFLUOROBUTANESULFONIC ACID (PFBS)		3.2			0.74	J	P	0.72	J	P	48		
PERFLUOROBUTANOIC ACID (PFBA)		120			130			130			71		
PERFLUORODECANESULFONIC ACID (PFDS)		1.5	U		1.5	U		1.5	U		1.5	U	
PERFLUORODECANOIC ACID (PFDA)		1	U		0.98	U		0.99	U		0.73	J	P
PERFLUORODODECANOIC ACID (PFDOA)		1.5	U		1.5	U		1.5	U	Q	1.5	U	
PERFLUOROHEPTANESULFONIC ACID		1	U		0.98	U		0.99	U		7.6		
PERFLUOROHEPTANOIC ACID (PFHPA)		3.8			0.76	J	P	0.76	J	P	69		
PERFLUOROHEXANESULFONIC ACID (PFHXS)		1.5	U	A	0.38	U	A	0.99	U		350		
PERFLUOROHEXANOIC ACID (PFHXA)		110			43			44			350		
PERFLUORONONANOIC ACID (PFNA)		1.5	U		1.5	U		1.5	U		2.3		
PERFLUOROOCTANE SULFONAMIDE (FOSA)		3	U		2.9	U		3	U		3	U	
PERFLUOROOCTANESULFONIC ACID (PFOS)		3	U		2.9	U		3	U		330		
PERFLUOROPENTANOIC ACID (PFPEA)		190			140			140			180		
PERFLUOROTETRADECANOIC ACID (PFTEA)		3	U		2.9	U		3	U		3	U	
PERFLUOROTRIDECANOIC ACID (PFTRIA)		3	U		2.9	U		3	U		3	U	
PERFLUOROUNDECANOIC ACID (PFUNA)		1.5	U		1.5	U		1.5	U		1.5	U	

PROJ_NO: 08005-WE21 SDG: 320-36665-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	TP-PFC-027-TPI-DL		
	LAB_ID	320-36665-1		
	SAMP_DATE	3/1/2018		
	QC_TYPE	NM		
	UNITS	NG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID (PFOA)		1800		
PERFLUOROBUTANESULFONIC ACID (PFBS)				
PERFLUOROBUTANOIC ACID (PFBA)				
PERFLUORODECANESULFONIC ACID (PFDS)				
PERFLUORODECANOIC ACID (PFDA)				
PERFLUORODODECANOIC ACID (PFDOA)				
PERFLUOROHEPTANESULFONIC ACID				
PERFLUOROHEPTANOIC ACID (PFHPA)				
PERFLUOROHEXANESULFONIC ACID (PFHXS)				
PERFLUOROHEXANOIC ACID (PFHXA)				
PERFLUORONONANOIC ACID (PFNA)				
PERFLUOROOCTANE SULFONAMIDE (FOSA)				
PERFLUOROOCTANESULFONIC ACID (PFOS)				
PERFLUOROPENTANOIC ACID (PFPEA)				
PERFLUOROTETRADECANOIC ACID (PFTEA)				
PERFLUOROTRIDECANOIC ACID (PFTRIA)				
PERFLUOROUNDECANOIC ACID (PFUNA)				

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPI</u>	Lab Sample ID: <u>320-36665-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_027.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 08:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>252.6(mL)</u>	Date Analyzed: <u>03/16/2018 01:11</u>
Con. Extract Vol.: <u>10.0(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	71		2.0	1.5	0.58
2706-90-3	Perfluoropentanoic acid (PFPeA)	180		2.0	0.99	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	350		2.0	0.99	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	69		2.0	1.5	0.60
335-67-1	Perfluorooctanoic acid (PFOA)	1300	E M	2.0	1.5	0.53
375-95-1	Perfluorononanoic acid (PFNA)	2.3		2.0	1.5	0.51
335-76-2	Perfluorodecanoic acid (PFDA)	0.73	J	2.0	0.99	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.71
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	1.5	0.51
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	3.0	0.75
376-06-7	Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	3.0	0.82
375-73-5	Perfluorobutanesulfonic acid (PFBS)	48		2.0	0.99	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	350		2.0	0.99	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	7.6		2.0	0.99	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	330	M	4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.55
754-91-6	Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPI</u>	Lab Sample ID: <u>320-36665-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_027.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 08:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>252.6(mL)</u>	Date Analyzed: <u>03/16/2018 01:11</u>
Con. Extract Vol.: <u>10.0(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	96		50-150
STL00992	13C4 PFBA	97		50-150
STL01893	13C5 PFPeA	103		50-150
STL00993	13C2 PFHxA	90		50-150
STL01892	13C4-PFHpA	101		50-150
STL00990	13C4 PFOA	86		50-150
STL00995	13C5 PFNA	111		50-150
STL00996	13C2 PFDA	115		50-150
STL00997	13C2 PFUnA	108		50-150
STL00998	13C2 PFDoA	102		50-150
STL00994	18O2 PFHxS	93		50-150
STL02116	13C2-PFTeDA	113		50-150
STL00991	13C4 PFOS	98		50-150
STL02337	13C3-PFBS	97		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPI DL</u>	Lab Sample ID: <u>320-36665-1 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.16LLBX_036.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 08:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>252.6 (mL)</u>	Date Analyzed: <u>03/17/2018 00:59</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>10</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213558</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	72	D	20	15	5.8
2706-90-3	Perfluoropentanoic acid (PFPeA)	180	D	20	9.9	4.3
307-24-4	Perfluorohexanoic acid (PFHxA)	340	D	20	9.9	4.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	70	D	20	15	6.0
335-67-1	Perfluorooctanoic acid (PFOA)	1800	D M	20	15	5.3
375-95-1	Perfluorononanoic acid (PFNA)	15	U	20	15	5.1
335-76-2	Perfluorodecanoic acid (PFDA)	9.9	U	20	9.9	4.8
2058-94-8	Perfluoroundecanoic acid (PFUnA)	15	U	20	15	7.1
307-55-1	Perfluorododecanoic acid (PFDoA)	15	U Q	20	15	5.1
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	30	U	40	30	7.5
376-06-7	Perfluorotetradecanoic acid (PFTeA)	30	U	40	30	8.2
375-73-5	Perfluorobutanesulfonic acid (PFBS)	45	D	20	9.9	4.6
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	380	D	20	9.9	3.8
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	8.9	J D	20	9.9	3.7
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	340	D	40	30	11
335-77-3	Perfluorodecanesulfonic acid (PFDS)	15	U	20	15	5.5
754-91-6	Perfluorooctane Sulfonamide (FOSA)	30	U	40	30	13

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPI DL</u>	Lab Sample ID: <u>320-36665-1 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.16LLBX_036.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 08:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>252.6(mL)</u>	Date Analyzed: <u>03/17/2018 00:59</u>
Con. Extract Vol.: <u>10.0(mL)</u>	Dilution Factor: <u>10</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213558</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	80		50-150
STL00992	13C4 PFBA	85		50-150
STL01893	13C5 PFPeA	87		50-150
STL00993	13C2 PFHxA	88		50-150
STL01892	13C4-PFHpA	92		50-150
STL00990	13C4 PFOA	89		50-150
STL00995	13C5 PFNA	91		50-150
STL00996	13C2 PFDA	92		50-150
STL00997	13C2 PFUnA	87		50-150
STL00998	13C2 PFDoA	76		50-150
STL00994	18O2 PFHxS	84		50-150
STL02116	13C2-PFTeDA	80		50-150
STL00991	13C4 PFOS	80		50-150
STL02337	13C3-PFBS	90		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPE</u>	Lab Sample ID: <u>320-36665-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_029.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 09:05</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>255.8 (mL)</u>	Date Analyzed: <u>03/16/2018 01:27</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	130		2.0	1.5	0.58
2706-90-3	Perfluoropentanoic acid (PFPeA)	140		2.0	0.98	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	43		2.0	0.98	0.46
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.76	J M	2.0	1.5	0.60
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	J M	2.0	1.5	0.53
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.51
335-76-2	Perfluorodecanoic acid (PFDA)	0.98	U	2.0	0.98	0.47
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.70
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	1.5	0.51
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.9	U	3.9	2.9	0.74
376-06-7	Perfluorotetradecanoic acid (PFTeA)	2.9	U	3.9	2.9	0.81
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.74	J	2.0	0.98	0.45
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.38	J	2.0	0.98	0.37
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.98	U	2.0	0.98	0.36
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	2.9	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.55
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.9	U	3.9	2.9	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPE</u>	Lab Sample ID: <u>320-36665-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_029.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 09:05</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>255.8 (mL)</u>	Date Analyzed: <u>03/16/2018 01:27</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	76		50-150
STL00992	13C4 PFBA	80		50-150
STL01893	13C5 PFPeA	77		50-150
STL00993	13C2 PFHxA	78		50-150
STL01892	13C4-PFHpA	87		50-150
STL00990	13C4 PFOA	91		50-150
STL00995	13C5 PFNA	89		50-150
STL00996	13C2 PFDA	89		50-150
STL00997	13C2 PFUnA	92		50-150
STL00998	13C2 PFDoA	81		50-150
STL00994	18O2 PFHxS	79		50-150
STL02116	13C2-PFTeDA	91		50-150
STL00991	13C4 PFOS	76		50-150
STL02337	13C3-PFBS	74		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-MID CARBON</u>	Lab Sample ID: <u>320-36665-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_028.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 09:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>251.1 (mL)</u>	Date Analyzed: <u>03/16/2018 01:19</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	120		2.0	1.5	0.59
2706-90-3	Perfluoropentanoic acid (PFPeA)	190		2.0	1.0	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	110		2.0	1.0	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	3.8		2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	21	M	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.0	1.0	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	1.5	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	3.0	0.76
376-06-7	Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	3.0	0.83
375-73-5	Perfluorobutanesulfonic acid (PFBS)	3.2		2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.5	J	2.0	1.0	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.0	U	2.0	1.0	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.56
754-91-6	Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-MID CARBON</u>	Lab Sample ID: <u>320-36665-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_028.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 09:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>251.1 (mL)</u>	Date Analyzed: <u>03/16/2018 01:19</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	78		50-150
STL00992	13C4 PFBA	86		50-150
STL01893	13C5 PFPeA	82		50-150
STL00993	13C2 PFHxA	83		50-150
STL01892	13C4-PFHpA	93		50-150
STL00990	13C4 PFOA	90		50-150
STL00995	13C5 PFNA	94		50-150
STL00996	13C2 PFDA	97		50-150
STL00997	13C2 PFUnA	96		50-150
STL00998	13C2 PFDoA	81		50-150
STL00994	18O2 PFHxS	81		50-150
STL02116	13C2-PFTeDA	93		50-150
STL00991	13C4 PFOS	83		50-150
STL02337	13C3-PFBS	78		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPE-D</u>	Lab Sample ID: <u>320-36665-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.16LLBX_034.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>251.7 (mL)</u>	Date Analyzed: <u>03/17/2018 00:43</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213558</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	130		2.0	1.5	0.59
2706-90-3	Perfluoropentanoic acid (PFPeA)	140		2.0	0.99	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	44		2.0	0.99	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.76	J	2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	1.7	J	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
335-76-2	Perfluorodecanoic acid (PFDA)	0.99	U	2.0	0.99	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U Q	2.0	1.5	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	3.0	0.75
376-06-7	Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	3.0	0.82
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.72	J	2.0	0.99	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.99	U	2.0	0.99	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.99	U	2.0	0.99	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.56
754-91-6	Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-027-TPE-D</u>	Lab Sample ID: <u>320-36665-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.16LLBX_034.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: <u>03/01/2018 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>251.7(mL)</u>	Date Analyzed: <u>03/17/2018 00:43</u>
Con. Extract Vol.: <u>10.0(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213558</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	82		50-150
STL00992	13C4 PFBA	89		50-150
STL01893	13C5 PFPeA	86		50-150
STL00993	13C2 PFHxA	86		50-150
STL01892	13C4-PFHpA	86		50-150
STL00990	13C4 PFOA	88		50-150
STL00995	13C5 PFNA	89		50-150
STL00996	13C2 PFDA	85		50-150
STL00997	13C2 PFUnA	83		50-150
STL00998	13C2 PFDoA	81		50-150
STL00994	18O2 PFHxS	87		50-150
STL02116	13C2-PFTeDA	90		50-150
STL00991	13C4 PFOS	88		50-150
STL02337	13C3-PFBS	85		50-150

APPENDIX C

SUPPORT DOCUMENTATION

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FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFBS #	PFHxA #	PFHpA #	PFHxS #	PFOA #	PFNA #
TP-PFC-027-TPI	320-36665-1	97	103	97	90	101	93	86	111
TP-PFC-027-TPI DL	320-36665-1 DL	85	87	90	88	92	84	89	91
TP-PFC-027-MID CARBON	320-36665-2	86	82	78	83	93	81	90	94
TP-PFC-027-TPE	320-36665-3	80	77	74	78	87	79	91	89
TP-PFC-027-TPE-D	320-36665-4	89	86	85	86	86	87	88	89
	MB 320-212840/1-A	82	79	78	82	87	79	90	94
	LCS 320-212840/2-A	84	80	77	80	89	82	92	91

	<u>QC LIMITS</u>
PFBA = 13C4 PFBA	50-150
PFPeA = 13C5 PFPeA	50-150
PFBS = 13C3-PFBS	50-150
PFHxA = 13C2 PFHxA	50-150
PFHpA = 13C4-PFHpA	50-150
PFHxS = 18O2 PFHxS	50-150
PFOA = 13C4 PFOA	50-150
PFNA = 13C5 PFNA	50-150

Column to be used to flag recovery values

FORM II EPA 537 (Mod)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFOS #	PFOSA #	PFDA #	PFUnA #	PFDoA #	PFTDA #
TP-PFC-027-TPI	320-36665-1	98	96	115	108	102	113
TP-PFC-027-TPI DL	320-36665-1 DL	80	80	92	87	76	80
TP-PFC-027-MID CARBON	320-36665-2	83	78	97	96	81	93
TP-PFC-027-TPE	320-36665-3	76	76	89	92	81	91
TP-PFC-027-TPE-D	320-36665-4	88	82	85	83	81	90
	MB 320-212840/1-A	82	76	95	95	80	94
	LCS 320-212840/2-A	81	76	99	90	80	88

	<u>QC LIMITS</u>
PFOS = 13C4 PFOS	50-150
PFOSA = 13C8 FOSA	50-150
PFDA = 13C2 PFDA	50-150
PFUnA = 13C2 PFUnA	50-150
PFDoA = 13C2 PFDoA	50-150
PFTDA = 13C2-PFTeDA	50-150

Column to be used to flag recovery values

FORM II EPA 537 (Mod)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2018.03.15LLAAX_026.d
 Lab ID: LCS 320-212840/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	40.0	43.5	109	83-118	
Perfluoropentanoic acid (PFPeA)	40.0	41.1	103	83-108	
Perfluorohexanoic acid (PFHxA)	40.0	42.7	107	83-109	
Perfluoroheptanoic acid (PFHpA)	40.0	42.0	105	80-113	
Perfluorooctanoic acid (PFOA)	40.0	40.7	102	80-107	
Perfluorononanoic acid (PFNA)	40.0	42.3	106	83-113	
Perfluorodecanoic acid (PFDA)	40.0	39.7	99	85-113	
Perfluoroundecanoic acid (PFUnA)	40.0	41.2	103	76-105	
Perfluorododecanoic acid (PFDoA)	40.0	47.0	117	87-116	Q
Perfluorotridecanoic Acid (PFTriA)	40.0	44.6	112	75-129	
Perfluorotetradecanoic acid (PFTeA)	40.0	42.5	106	82-115	
Perfluorobutanesulfonic acid (PFBS)	35.4	40.1	113	87-120	
Perfluorohexanesulfonic acid (PFHxS)	36.4	34.3	94	81-106	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	40.2	106	80-117	
Perfluorooctanesulfonic acid (PFOS)	37.1	38.0	102	82-112	
Perfluorodecanesulfonic acid (PFDS)	38.6	40.7	105	81-114	
Perfluorooctane Sulfonamide (FOSA)	40.0	42.8	107	85-114	
13C8 FOSA	100	76.5	76	50-150	
13C4 PFBA	100	83.6	84	50-150	
13C5 PFPeA	100	80.4	80	50-150	
13C2 PFHxA	100	79.6	80	50-150	
13C4-PFHpA	100	89.2	89	50-150	
13C4 PFOA	100	92.0	92	50-150	
13C5 PFNA	100	90.9	91	50-150	
13C2 PFDA	100	99.5	99	50-150	
13C2 PFUnA	100	90.0	90	50-150	
13C2 PFDoA	100	79.8	80	50-150	
18O2 PFHxS	94.6	77.8	82	50-150	
13C2-PFTeDA	100	88.1	88	50-150	
13C4 PFOS	95.6	77.5	81	50-150	
13C3-PFBS	93.0	71.5	77	50-150	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab File ID: 2018.03.15LLAAX_025.d Lab Sample ID: MB 320-212840/1-A
 Matrix: Water Date Extracted: 03/14/2018 10:07
 Instrument ID: A8_N Date Analyzed: 03/16/2018 00:56
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-212840/2-A	2018.03.15L LAAX 026.d	03/16/2018 01:04
TP-PFC-027-TPI	320-36665-1	2018.03.15L LAAX 027.d	03/16/2018 01:11
TP-PFC-027-MID CARBON	320-36665-2	2018.03.15L LAAX 028.d	03/16/2018 01:19
TP-PFC-027-TPE	320-36665-3	2018.03.15L LAAX 029.d	03/16/2018 01:27
TP-PFC-027-TPE-D	320-36665-4	2018.03.16L LBX 034.d	03/17/2018 00:43
TP-PFC-027-TPI DL	320-36665-1 DL	2018.03.16L LBX 036.d	03/17/2018 00:59

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Sample No.: IC 320-212932/5 Date Analyzed: 03/14/2018 14:23
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.14LLICAL_00 Heated Purge: (Y/N) N
 Calibration ID: 38157

	13PFOA					
	AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT	4298154	2.59				
UPPER LIMIT	6447231	2.79				
LOWER LIMIT	2149077	2.39				
LAB SAMPLE ID	CLIENT SAMPLE ID					
ICB 320-212932/9		4150772	2.60			
ICV 320-212932/10		4088076	2.58			
CCV 320-213304/3 CCVIS		4349599	2.62			

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Sample No.: CCV 320-213304/3 Date Analyzed: 03/16/2018 00:48
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.15LLAAX_024 Heated Purge: (Y/N) N
 Calibration ID: 38157

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4349599	2.62				
UPPER LIMIT		6524399	2.82				
LOWER LIMIT		2174800	2.42				
LAB SAMPLE ID	CLIENT SAMPLE ID						
MB 320-212840/1-A		5182368	2.58				
LCS 320-212840/2-A		5070276	2.60				
320-36665-1	TP-PFC-027-TPI	4196322	2.58				
320-36665-2	TP-PFC-027-MID CARBON	4983928	2.58				
320-36665-3	TP-PFC-027-TPE	5414086	2.60				
CCV 320-213304/14		4539638	2.61				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Sample No.: IC 320-213555/5 Date Analyzed: 03/16/2018 23:33
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.03.16ICAL_005. Heated Purge: (Y/N) N
 Calibration ID: 38194

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		4548538	2.68				
UPPER LIMIT		6822807	2.88				
LOWER LIMIT		2274269	2.48				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 320-213555/9		4410810	2.68				
ICV 320-213555/10		4328656	2.67				
CCB 320-213555/11		4468132	2.67				
CCVL 320-213555/12		4596356	2.68				
CCV 320-213558/1		4519451	2.68				
320-36665-4	TP-PFC-027-TPE-D	5259260	2.68				
320-36665-1 DL	TP-PFC-027-TPI DL	532884	2.68				
CCV 320-213558/8		4690619	2.67				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_NStart Date: 03/14/2018 13:59Analysis Batch Number: 212932End Date: 03/14/2018 15:18

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-212932/2		03/14/2018 13:59	1	2018.03.14LLICA L 002.d	GeminiC18 3x100 3(mm)
IC 320-212932/3		03/14/2018 14:07	1	2018.03.14LLICA L 003.d	GeminiC18 3x100 3(mm)
IC 320-212932/4		03/14/2018 14:15	1	2018.03.14LLICA L 004.d	GeminiC18 3x100 3(mm)
IC 320-212932/5 ICIS		03/14/2018 14:23	1	2018.03.14LLICA L 005.d	GeminiC18 3x100 3(mm)
IC 320-212932/6		03/14/2018 14:31	1	2018.03.14LLICA L 006.d	GeminiC18 3x100 3(mm)
IC 320-212932/7		03/14/2018 14:38	1	2018.03.14LLICA L 007.d	GeminiC18 3x100 3(mm)
IC 320-212932/8		03/14/2018 14:46	1	2018.03.14LLICA L 008.d	GeminiC18 3x100 3(mm)
ICB 320-212932/9		03/14/2018 14:54	1	2018.03.14LLICA L 009.d	GeminiC18 3x100 3(mm)
ICV 320-212932/10		03/14/2018 15:02	1	2018.03.14LLICA L 010.d	GeminiC18 3x100 3(mm)
CCB 320-212932/11		03/14/2018 15:10	1		GeminiC18 3x100 3(mm)
CCVL 320-212932/12		03/14/2018 15:18	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_NStart Date: 03/16/2018 00:32Analysis Batch Number: 213304End Date: 03/16/2018 02:38

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-213304/1		03/16/2018 00:32	1	2018.03.15LLAAX 003.d	GeminiC18 3x100 3(mm)
CCVL 320-213304/2		03/16/2018 00:40	1	2018.03.15LLAAX 004.d	GeminiC18 3x100 3(mm)
CCV 320-213304/3 CCVIS		03/16/2018 00:48	1	2018.03.15LLAAX 024.d	GeminiC18 3x100 3(mm)
MB 320-212840/1-A		03/16/2018 00:56	1	2018.03.15LLAAX 025.d	GeminiC18 3x100 3(mm)
LCS 320-212840/2-A		03/16/2018 01:04	1	2018.03.15LLAAX 026.d	GeminiC18 3x100 3(mm)
320-36665-1		03/16/2018 01:11	1	2018.03.15LLAAX 027.d	GeminiC18 3x100 3(mm)
320-36665-2		03/16/2018 01:19	1	2018.03.15LLAAX 028.d	GeminiC18 3x100 3(mm)
320-36665-3		03/16/2018 01:27	1	2018.03.15LLAAX 029.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 01:35	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 01:43	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 01:51	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 01:59	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 02:06	1		GeminiC18 3x100 3(mm)
CCV 320-213304/14		03/16/2018 02:14	1	2018.03.15LLAAX 035.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 02:22	1		GeminiC18 3x100 3(mm)
ZZZZZ		03/16/2018 02:30	1		GeminiC18 3x100 3(mm)
CCV 320-213304/17		03/16/2018 02:38	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_NStart Date: 03/16/2018 23:01Analysis Batch Number: 213555End Date: 03/17/2018 00:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		03/16/2018 23:01	1		GeminiC18 3x100 3(mm)
IC 320-213555/2		03/16/2018 23:09	1	2018.03.16ICAL_002.d	GeminiC18 3x100 3(mm)
IC 320-213555/3		03/16/2018 23:17	1	2018.03.16ICAL_003.d	GeminiC18 3x100 3(mm)
IC 320-213555/4		03/16/2018 23:25	1	2018.03.16ICAL_004.d	GeminiC18 3x100 3(mm)
IC 320-213555/5 ICIS		03/16/2018 23:33	1	2018.03.16ICAL_005.d	GeminiC18 3x100 3(mm)
IC 320-213555/6		03/16/2018 23:41	1	2018.03.16ICAL_006.d	GeminiC18 3x100 3(mm)
IC 320-213555/7		03/16/2018 23:48	1	2018.03.16ICAL_007.d	GeminiC18 3x100 3(mm)
IC 320-213555/8		03/16/2018 23:56	1	2018.03.16ICAL_008.d	GeminiC18 3x100 3(mm)
ICB 320-213555/9		03/17/2018 00:04	1	2018.03.16ICAL_010.d	GeminiC18 3x100 3(mm)
ICV 320-213555/10		03/17/2018 00:12	1	2018.03.16ICAL_011.d	GeminiC18 3x100 3(mm)
CCB 320-213555/11		03/17/2018 00:20	1	2018.03.16ICAL_012.d	GeminiC18 3x100 3(mm)
CCVL 320-213555/12		03/17/2018 00:27	1	2018.03.16ICAL_013.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Instrument ID: A8_N Start Date: 03/17/2018 00:35Analysis Batch Number: 213558 End Date: 03/17/2018 01:30

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-213558/1		03/17/2018 00:35	1	2018.03.16LLBX_ 033.d	GeminiC18 3x100 3(mm)
320-36665-4		03/17/2018 00:43	1	2018.03.16LLBX_ 034.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/17/2018 00:51	1		GeminiC18 3x100 3(mm)
320-36665-1 DL		03/17/2018 00:59	10	2018.03.16LLBX_ 036.d	GeminiC18 3x100 3(mm)
ZZZZZ		03/17/2018 01:06	10		GeminiC18 3x100 3(mm)
ZZZZZ		03/17/2018 01:14	10		GeminiC18 3x100 3(mm)
ZZZZZ		03/17/2018 01:22	10		GeminiC18 3x100 3(mm)
CCV 320-213558/8		03/17/2018 01:30	1	2018.03.16LLBX_ 040.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Batch Number: 212840 Batch Start Date: 03/14/18 10:07 Batch Analyst: Kolstad, Kate MBatch Method: 3535 Batch End Date: 03/14/18 16:32

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC ALL_SU 00043	LCPFC-IS 00024
MB 320-212840/1		3535, EPA 537 (Mod)				250.0 mL	10.0 mL	500 uL	500 uL
LCS 320-212840/2		3535, EPA 537 (Mod)				250.0 mL	10.0 mL	500 uL	500 uL
320-36665-A-1	TP-PFC-027-TPI	3535, EPA 537 (Mod)	T	280.68 g	28.13 g	252.6 mL	10.0 mL	500 uL	500 uL
320-36665-A-2	TP-PFC-027-MID CARBON	3535, EPA 537 (Mod)	T	279.27 g	28.14 g	251.1 mL	10.0 mL	500 uL	500 uL
320-36665-A-3	TP-PFC-027-TPE	3535, EPA 537 (Mod)	T	283.33 g	27.57 g	255.8 mL	10.0 mL	500 uL	500 uL
320-36665-A-4	TP-PFC-027-TPE-D	3535, EPA 537 (Mod)	T	279.37 g	27.65 g	251.7 mL	10.0 mL	500 uL	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00118					
MB 320-212840/1		3535, EPA 537 (Mod)							
LCS 320-212840/2		3535, EPA 537 (Mod)		500 uL					
320-36665-A-1	TP-PFC-027-TPI	3535, EPA 537 (Mod)	T						
320-36665-A-2	TP-PFC-027-MID CARBON	3535, EPA 537 (Mod)	T						
320-36665-A-3	TP-PFC-027-TPE	3535, EPA 537 (Mod)	T						
320-36665-A-4	TP-PFC-027-TPE-D	3535, EPA 537 (Mod)	T						

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.

EPA 537 (Mod)

Page 1 of 2

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Batch Number: 212840 Batch Start Date: 03/14/18 10:07 Batch Analyst: Kolstad, Kate MBatch Method: 3535 Batch End Date: 03/14/18 16:32

Batch Notes	
Analyst ID - Aliquot Step	KMK
Balance ID	QA-078
Batch Comment	Sample labels match: KMK. Envi-Carb: 96014.
Analyst ID - Final Volume Step	KMK
H2O ID	3-8-18
Hexane ID	1174408
Internal Standard ID#	1140898
Manifold ID	15
Methanol ID	1167500
Sodium Hydroxide ID	1178465
Pipette ID	N32761F
Analyst ID - Reagent Drop	KMK
Analyst ID - IS Reagent Drop	KMK
Analyst ID - IS Reagent Drop Witness	NSH
Analyst ID - SU Reagent Drop	KMK
Analyst ID - SU Reagent Drop Witness	TWL
Solvent Lot #	1181200
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003237137A

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.

HPLC/LCMS Data Review Checklist

Job Number(s): 320-36665, 320-37017 Work List ID(s): 55403, 55470, 55502
 Extraction Batch: 212840 Analysis Batch(es): 213304, 213558, 213658
 Delivery Rank: 4 Due Date: 3/20/2018

A. Calibration/Instrument Run QC	1 st Level	2 nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# <u>212932, 213555</u>	☒	☒	
2. ICAL, CCV Frequency & Criteria met.	☒	☒	
• RF _{average} criteria appropriate for the method.	☒	☒	
• Linear Regression criteria appropriate if required ($r > 0.995$).	☒	☒	
• Quadratic fit criteria appropriate if required ($r^2 > 0.990$).			☒
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	☒	☒	
• All curve points show calculated concentrations.	☒	☒	
3. Peaks correctly ID'd by data system.	☒	☒	
5. Tune check frequency & criteria met and Tune check report attached.	☒	☒	
B. QA/QC			
1. Are all QC samples properly linked in TALS?	☒	☒	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	☒	☒	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	☒	☒	
4. Are MS/MSD recoveries and RPD within control limits?	☒	☒	
5. Holding Times were met for prep and analytical.	☒	☒	
6. IS/Surrogate recoveries meet criteria or properly noted.	☒	☒	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	☒	☒	
2. If required, are compounds within RT windows?	☒	☒	
3. If required, are positive hits confirmed and >40% RPD flagged?	☒	☒	☒
4. Manual Integrations reviewed and appropriate.	☒	☒	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	☒	☒	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	☒	☒	
D. Documentation <u>LCMS: 119402, 119403, 119405, 119406, 119412, 119414, 119417, 119418, 119424</u>			
1. Are all non-conformances documented/attached? NCM# <u>119394, 119407</u>	☒	☒	
2. Do results make sense (e.g. dilutions, etc.)?	☒	☒	
3. Have all flags been reviewed for appropriateness?	☒	☒	
4. For level 3 and 4 reports, have forms and raw data been reviewed?	☒	☒	
5. Was QC Checker run for this job?	☒	☒	

*Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.

1st Level (Analyst): ABH Date: 3/19/2018
 2nd Level Reviewer: neway Date: 3/19/2018

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 15MAR2018NCAAA_PFC Worklist Number: 55403
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 213302	LC PFC ICAL Raw Batch: 213303	LC PFC_QSM5-1 ICAL Raw Batch: 213304
# 1 CCB	# 1 CCB	# 1 CCB	# 1 CCB
# 2 CCVL	# 2 CCVL	# 2 CCVL	# 2 CCVL
# 3 CCV L5	# 3 CCV L5	# 3 CCV L5	# 3 CCV L5
# 4 MB 320-212840/1-A			# 4 MB 320-212840/1-A
# 5 LCS 320-212840/2-A			# 5 LCS 320-212840/2-A
# 6 320-36665-A-1-A			# 6 320-36665-A-1-A
# 7 320-36665-A-2-A			# 7 320-36665-A-2-A
# 8 320-36665-A-3-A			# 8 320-36665-A-3-A
# 9 320-36665-A-4-A			# 9 320-36665-A-4-A
#10 320-37017-A-2-A			#10 320-37017-A-2-A
#11 320-37017-A-3-A			#11 320-37017-A-3-A
#12 320-37017-A-3-B MS			#12 320-37017-A-3-B MS
#13 320-37017-A-3-C MSD			#13 320-37017-A-3-C MSD
#14 CCV L4	#14 CCV L4	#14 CCV L4	#14 CCV L4
#15 320-37017-A-6-A			#15 320-37017-A-6-A
#16 320-37017-A-9-A			#16 320-37017-A-9-A
#17 CCV L5	#17 CCV L5	#17 CCV L5	#17 CCV L5

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 16MAR2018NC_2A_PFC Worklist Number: 55470
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b
QC Batch: Disabled Limit Group Batch: Enabled

* same day
as 10A

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 213556	LC PFC ICAL Raw Batch: 213557	LC PFC_QSM5-1 ICAL Raw Batch: 213558
# 1 CCV L4 # 2 320-36665-A-4-A # 3 320-37017-A-9-A # 4 320-36665-A-1-A # 5 320-37017-A-3-A # 6 320-37017-A-3-B MS # 7 320-37017-A-3-C MSD # 8 CCV L5	# 1 CCV L4 # 8 CCV L5	# 1 CCV L4 # 8 CCV L5	# 1 CCV L4 # 2 320-36665-A-4-A # 3 320-37017-A-9-A # 4 320-36665-A-1-A # 5 320-37017-A-3-A # 6 320-37017-A-3-B MS # 7 320-37017-A-3-C MSD # 8 CCV L5

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 19MAR2018NCA_PFC Worklist Number: 55502
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 213656	LC PFC ICAL Raw Batch: 213657	LC PFC_QSM5-1 ICAL Raw Batch: 213658
# 1 CCB	# 1 CCB	# 1 CCB	# 1 CCB
# 2 CCVL	# 2 CCVL	# 2 CCVL	# 2 CCVL
# 3 CCV L4	# 3 CCV L4	# 3 CCV L4	# 3 CCV L4
# 4 320-37017-A-9-A			# 4 320-37017-A-9-A
# 5 CCV L5	# 5 CCV L5	# 5 CCV L5	# 5 CCV L5

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 15MAR2018NCAAA_PFC

Worklist Num: 55403

Instrument: A8_N

Method: A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180316-55403.b

Analysis Type: SemiVOA

Creator: Royce, Amani A

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCB	320-0055403-001	CCB	16-Mar-2018 00:32:39	2018.03.15LLAAX_003.d	19	1.0		SV
CCVL	320-0055403-002	CCVL	16-Mar-2018 00:40:30	2018.03.15LLAAX_004.d	21	1.0		SV
CCV L5	320-0055403-003	CCVIS	16-Mar-2018 00:48:20	2018.03.15LLAAX_024.d	14	1.0		SV
MB 320-212840/1-A	320-0055403-004	MB	16-Mar-2018 00:56:11	2018.03.15LLAAX_025.d	13	1.0		SV
LCS 320-212840/2-A	320-0055403-005	LCS	16-Mar-2018 01:04:02	2018.03.15LLAAX_026.d	14	1.0		SV
320-36665-A-1-A	320-0055403-006	Client	16-Mar-2018 01:11:54	2018.03.15LLAAX_027.d	15	1.0	TP-PFC-027-TPI	SV
320-36665-A-2-A	320-0055403-007	Client	16-Mar-2018 01:19:46	2018.03.15LLAAX_028.d	16	1.0	TP-PFC-027-MID CARBON	SV
320-36665-A-3-A	320-0055403-008	Client	16-Mar-2018 01:27:38	2018.03.15LLAAX_029.d	17	1.0	TP-PFC-027-TPE	SV
320-36665-A-4-A	320-0055403-009	Client	16-Mar-2018 01:35:30	2018.03.15LLAAX_030.d	18	1.0	TP-PFC-027-TPE-D	SV
320-37017-A-2-A	320-0055403-010	Client	16-Mar-2018 01:43:21	2018.03.15LLAAX_031.d	19	1.0	18EIE378GW01	SV
320-37017-A-3-A	320-0055403-011	Client	16-Mar-2018 01:51:15	2018.03.15LLAAX_032.d	20	1.0	18EIE378SW01	SV
320-37017-A-3-B MS	320-0055403-012	MS	16-Mar-2018 01:59:07	2018.03.15LLAAX_033.d	21	1.0	18EIE378SW01	SV
320-37017-A-3-C MSD	320-0055403-013	MSD	16-Mar-2018 02:06:56	2018.03.15LLAAX_034.d	22	1.0	18EIE378SW01	SV
CCV L4	320-0055403-014	CCV	16-Mar-2018 02:14:44	2018.03.15LLAAX_035.d	13	1.0		SV
320-37017-A-6-A	320-0055403-015	Client	16-Mar-2018 02:22:33	2018.03.15LLAAX_036.d	23	1.0	18EIE378SW02	SV
320-37017-A-9-A	320-0055403-016	Client	16-Mar-2018 02:30:25	2018.03.15LLAAX_037.d	24	1.0	18EIE378SW21	SV
CCV L5	320-0055403-017	CCV	16-Mar-2018 02:38:17	2018.03.15LLAAX_038.d	14	1.0		SV

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 16MAR2018NC_ICAL_PFC

Worklist Num: 55469

Instrument: A8_N

Method: A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55469.b

Analysis Type: SemiVOA

Creator: Phomsopha, Thep

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Cal Lvl	Inj Date/Time	File Name	Vial	Dil Factor	Fract
RB	320-0055469-001	RB	0	16-Mar-2018 23:01:46	2018.03.16ICAL_001.d	19	1.0	sv
IC L1 Full	320-0055469-002	IC	1	16-Mar-2018 23:09:38	2018.03.16ICAL_002.d	10	1.0	sv
IC L2 Full	320-0055469-003	IC	2	16-Mar-2018 23:17:30	2018.03.16ICAL_003.d	11	1.0	sv
IC L3 Full	320-0055469-004	IC	3	16-Mar-2018 23:25:20	2018.03.16ICAL_004.d	12	1.0	sv
IC L4 Full	320-0055469-005	ICIS	4	16-Mar-2018 23:33:12	2018.03.16ICAL_005.d	13	1.0	sv
IC L5 Full	320-0055469-006	IC	5	16-Mar-2018 23:41:00	2018.03.16ICAL_006.d	14	1.0	sv
IC L6 Full	320-0055469-007	IC	6	16-Mar-2018 23:48:48	2018.03.16ICAL_007.d	15	1.0	sv
IC L7 Full	320-0055469-008	IC	7	16-Mar-2018 23:56:35	2018.03.16ICAL_008.d	16	1.0	sv
ICB	320-0055469-009	ICB	0	17-Mar-2018 00:04:26	2018.03.16ICAL_010.d	20	1.0	sv
ICV Full	320-0055469-010	ICV	0	17-Mar-2018 00:12:15	2018.03.16ICAL_011.d	18	1.0	sv
CCB	320-0055469-011	CCB	0	17-Mar-2018 00:20:05	2018.03.16ICAL_012.d	20	1.0	sv
CCVL	320-0055469-012	CCVL	0	17-Mar-2018 00:27:55	2018.03.16ICAL_013.d	21	1.0	sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 16MAR2018NC_2A_PFC

Worklist Num: 55470

Instrument: A8_N

Method: A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180318-55470.b

Analysis Type: SemiVOA

Creator: Phomsopha, Thep

Inj Volume: 2.00

Inj Vol Units: ul

* same day
as 10AL

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCV L4	320-0055470-001	CCV	17-Mar-2018 00:35:43	2018.03.16LLBX_033.d	13	1.0		sv
320-36665-A-4-A	320-0055470-002	Client	17-Mar-2018 00:43:30	2018.03.16LLBX_034.d	1	1.0	TP-PFC-027-TPE-D	sv
320-37017-A-9-A	320-0055470-003	Client	17-Mar-2018 00:51:19	2018.03.16LLBX_035.d	2	1.0	18EIE378SW21	sv
320-36665-A-1-A	320-0055470-004	Client	17-Mar-2018 00:59:09	2018.03.16LLBX_036.d	3	10.0	TP-PFC-027-TPI	sv
320-37017-A-3-A	320-0055470-005	Client	17-Mar-2018 01:06:57	2018.03.16LLBX_037.d	4	10.0	18EIE378SW01	sv
320-37017-A-3-B MS	320-0055470-006	MS	17-Mar-2018 01:14:46	2018.03.16LLBX_038.d	5	10.0	18EIE378SW01	sv
320-37017-A-3-C MSD	320-0055470-007	MSD	17-Mar-2018 01:22:36	2018.03.16LLBX_039.d	6	10.0	18EIE378SW01	sv
CCV L5	320-0055470-008	CCV	17-Mar-2018 01:30:26	2018.03.16LLBX_040.d	14	1.0		sv

TestAmerica Laboratories
Worklist Run Log Report

Worklist Name: 19MAR2018NCA_PFC

Worklist Num: 55502

Instrument: A8_N

Method: A8_N

Batch Directory: \\ChromNa\Sacramento\ChromData\A8_N\20180319-55502.b

Analysis Type: SemiVOA

Creator: Hannigan, Alyssa B

Inj Volume: 2.00

Inj Vol Units: ul

Lab ID	Worklist ID	Sample Type	Inj Date/Time	File Name	Vial	Dil Factor	Client ID	Fract
CCB	320-0055502-001	CCB	19-Mar-2018 10:10:32	2018.03.19LLA_003.d	20	1.0		sv
CCVL	320-0055502-002	CCVL	19-Mar-2018 10:18:23	2018.03.19LLA_004.d	21	1.0		sv
CCV L4	320-0055502-003	CCVIS	19-Mar-2018 10:26:10	2018.03.19LLA_005.d	13	1.0		sv
320-37017-A-9-A	320-0055502-004	Client	19-Mar-2018 10:33:59	2018.03.19LLA_024.d	13	10.0	18EIE378SW21	sv
CCV L5	320-0055502-005	CCV	19-Mar-2018 10:41:48	2018.03.19LLA_025.d	14	1.0		sv

RUSH!

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Kolstad, Kate M

Batch Number: 320-212840 ✓

Method Code: 320-3535_PFC-320

Batch Open: 3/14/2018 10:07:00AM

Batch End: 3/14/2018 4:32:00PM

A8 3/15/18

A8 3/16/18

A8 3/17/18

Solid-Phase Extraction (SPE)

3/15/18
due:
3/23 3/20

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs		Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
					Rcvd	Adj1 Adj2					
1	MB-320-212840/1 N/A	N/A		250.0 mL	NA		N/A	N/A	N/A		
				10.0 mL							
2	LCS-320-212840/2 N/A	N/A		250.0 mL	NA		N/A	N/A	N/A		
				10.0 mL							
3	320-36665-A-1 (PFC_IDA_DOD5.1)	N/A (320-36665-1)	280.68 g	252.6 mL	NA		3/18/18	16_Days	4	10X	
			28.13 g	10.0 mL							
4	320-36665-A-2 (PFC_IDA_DOD5.1)	N/A (320-36665-1)	279.27 g	251.1 mL	NA		3/18/18	16_Days	4		
			28.14 g	10.0 mL							
5	320-36665-A-3 (PFC_IDA_DOD5.1)	N/A (320-36665-1)	283.33 g	255.8 mL	NA		3/18/18	16_Days	4		
			27.57 g	10.0 mL							
6	320-36665-A-4 (PFC_IDA_DOD5.1)	N/A (320-36665-1)	279.37 g	251.7 mL	NA		3/18/18	16_Days	4	21	
			27.65 g	10.0 mL							
7	320-37017-A-2 (PFC_IDA_DOD5.1)	N/A (320-37017-1)	277.75 g	249.7 mL	NA		3/19/18	4_Day_RUSH	4		
			28.04 g	10.0 mL							
8	320-37017-A-3 (PFC_IDA_DOD5.1)	N/A (320-37017-1)	267.54 g	240 mL	NA		3/19/18	4_Day_RUSH	4	10X	
			27.50 g	10.0 mL							
9	320-37017-A-3-MS (PFC_IDA_DOD5.1)	N/A (320-37017-1)	268.06 g	240.8 mL	NA		3/19/18	4_Day_RUSH	4	10X	
			27.22 g	10.0 mL							
10	320-37017-A-3-MSD (PFC_IDA_DOD5.1)	N/A (320-37017-1)	262.23 g	234.5 mL	NA		3/19/18	4_Day_RUSH	4	10X	
			27.78 g	10.0 mL							

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212840

Analyst: Kolstad, Kate M

Batch Open: 3/14/2018 10:07:00AM

Method Code: 320-3535_PFC-320

Batch End: 3/14/2018 4:32:00PM

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320-37017-A-6 (PFC_IDA_DOD5.1)	N/A (320-37017-1)	272.05 g	243.8 mL	NA			3/19/18	4_Day_RUSH	4	light yellow	
		28.26 g	10.0 mL								
320-37017-A-9 (PFC_IDA_DOD5.1)	N/A (320-37017-1)	266.71 g	239.4 mL	NA			3/19/18	4_Day_RUSH	4	R1 10X	
		27.32 g	10.0 mL								

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212840

Analyst: Kolstad, Kate M

Batch Open: 3/14/2018 10:07:00AM

Method Code: 320-3535_PFC-320

Batch End: 3/14/2018 4:32:00PM

Batch Notes

Manifold ID 15
Methanol ID 1167500
Hexane ID 1174408
Sodium Hydroxide ID 1178465
First Start time NA
First End time NA
SPE Cartridge Type WAX 500mg
Solid Phase Extraction Disk ID 003237137A
Balance ID QA-078
H2O ID 3-8-18
Pipette ID N32761F
Solvent Name 0.3% NH4OH/MeOH
Solvent Lot # 1181200
Analyst ID - Reagent Drop KMK
Analyst ID - SU Reagent Drop KMK
Analyst ID - SU Reagent Drop TWL
Witness
Acid Name NA
Acid ID NA
Reagent ID NA
Reagent Lot Number NA
Analyst ID - IS Reagent Drop KMK

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212840

Analyst: Kolstad, Kate M

Batch Open: 3/14/2018 10:07:00AM

Method Code: 320-3535_PFC-320

Batch End: 3/14/2018 4:32:00PM

Analyst ID - IS Reagent Drop	NSH
Witness	
Internal Standard ID#	1140898
Analyst ID - Concentration	NA
Analyst ID - Aliquot Step	KMK
Analyst ID - Final Volume Step	KMK
SOP Number	WS-LC-0025
Batch Comment	Sample labels match: KMK. Envi-Carb: 96014.

Comments

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212840

Analyst: Kolstad, Kate M

Batch Open: 3/14/2018 10:07:00AM

Method Code: 320-3535_PFC-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-212840/1	LCMPFC_ALL_SU_00043	500 uL	10.0 mL	KMK 3-14-18	JR 3-14-18
LCS 320-212840/2	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
LCS 320-212840/2	LCPFCSP_00118	500 uL	10.0 mL		
320-36665-A-1	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-36665-A-2	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-36665-A-3	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-36665-A-4	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-2	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-3	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-3 MS	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-3 MS	LCPFCSP_00118	500 uL	10.0 mL		
320-37017-A-3 MSD	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-3 MSD	LCPFCSP_00118	500 uL	10.0 mL		
320-37017-A-6	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		
320-37017-A-9	LCMPFC_ALL_SU_00043	500 uL	10.0 mL		

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-212840

Analyst: Kolstad, Kate M

Batch Open: 3/14/2018 10:07:00AM

Method Code: 320-3535_PFC-320

Batch End:

Other Reagents:		
Reagent	Amount/Units	Lot#:

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Sacramento Preparation Data Review Checklist

Preparation Batch Number(s) 212840 Test 3535 - PFC
 Earliest Holding Time 3-14-18

Batch Information	1 st Level Reviewer	2 nd Level Reviewer
Date and time accurate and entered into TALS correctly	/	/
All necessary batch information complete and entered into TALS correctly	/	/
BD, FV, and AL initials are transcribed into the batch comment	/	/
Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	/	✓
Holding time violation NCM filed	NA	NA
MS/MSD or MS/DU NCM filed	NA	NA
NCM for any anomalies filed	/	✓
All NCMs include method code, matrix, and prep batch	/	/
Method/sample/login/QAS checked and correct	/	/
Batch contains no more than 20 live samples	/	/
Worksheet Tab	1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved	/	✓
Weights in anticipated range and not targeted	/	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	/	✓
The pH is transcribed properly in TALS	/	✓
All additional information is transcribed into TALS and is correct and raw data is attached	/	✓
Comments/Observations are transcribed correctly in TALS	/	/
Reagents Tab	1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and checked into TALS	/	✓
All spike amounts correct and added to necessary samples and QC	/	/
Internal Standard is added to the reagents	/	/
All units are correctly transcribed into TALS	/	✓

1st Level Reviewer: KMK

Date: 3-14-18

2nd Level Reviewer: VPM

Date: 3/14/18

Comments: _____

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-212932/2	2018.03.14LLICAL_002.d
Level 2	IC 320-212932/3	2018.03.14LLICAL_003.d
Level 3	IC 320-212932/4	2018.03.14LLICAL_004.d
Level 4	IC 320-212932/5	2018.03.14LLICAL_005.d
Level 5	IC 320-212932/6	2018.03.14LLICAL_006.d
Level 6	IC 320-212932/7	2018.03.14LLICAL_007.d
Level 7	IC 320-212932/8	2018.03.14LLICAL_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	0.9317 0.9738	0.9063 0.9322	0.9012	0.8916	0.9398	AveID		0.9252				3.0		20.0			
Perfluoropentanoic acid (PFPeA)	1.2405 1.2012	1.2193 1.1512	1.0796	1.1277	1.1788	AveID		1.1712				4.8		20.0			
Perfluorobutanesulfonic acid (PFBS)	70.494 77.528	78.826 72.379	76.673	77.940	80.784	AveID		76.375				4.8		20.0			
4:2 FTS	17.516 16.056	17.204 14.725	16.255	16.599	16.439	AveID		16.399				5.5		20.0			
Perfluorohexanoic acid (PFHxA)	1.0397 1.0246	1.0518 0.9709	0.9835	0.9668	1.0227	AveID		1.0086				3.4		20.0			
Perfluoroheptanoic acid (PFHpA)	1.0246 1.0718	1.0508 1.1008	1.0687	1.0020	1.1237	AveID		1.0632				3.9		20.0			
Perfluorohexanesulfonic acid (PFHxS)	1.3410 1.0927	1.1477 1.0558	1.0902	1.0284	1.1040	AveID		1.1228				9.2		20.0			
6:2FTS	1.6981 1.7541	1.7486 1.7769	1.6836	1.5419	1.7505	AveID		1.7077				4.7		20.0			
Perfluorooctanoic acid (PFOA)	1.3914 1.1423	1.2335 1.0968	1.0689	1.0639	1.1436	AveID		1.1629				10.0		20.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.3012 1.4054	1.4164 1.2954	1.3091	1.3541	1.4189	AveID		1.3572				4.1		20.0			
Perfluorooctanesulfonic acid (PFOS)	1.0405 1.0577	1.0713 1.0543	1.0500	1.0222	1.0530	AveID		1.0499				1.5		20.0			
Perfluorononanoic acid (PFNA)	0.9668 1.0888	0.9442 1.0147	0.9920	0.9885	1.0292	AveID		1.0035				4.7		20.0			
Perfluorooctane Sulfonamide (FOSA)	0.9935 1.0071	0.9446 0.9129	0.9684	0.9978	1.0264	AveID		0.9787				4.0		20.0			
8:2FTS	1.1828 1.3485	1.3217 1.3257	1.1832	1.1821	1.1954	AveID		1.2485				6.3		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorodecanoic acid (PFDA)	1.0148 1.0164	0.9581 0.9847	1.0665	0.9763	1.0320	AveID		1.0070				3.7		20.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	1.0288 1.0948	1.1014 +++++	1.0032	0.9927	1.0268	AveID		1.0413				4.4		20.0			
Perfluorodecanesulfonic acid (PFDS)	0.5138 0.6915	0.6400 0.6415	0.6209	0.6211	0.6750	AveID		0.6291				9.1		20.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.9036 0.9525	1.1702 0.9505	0.9700	0.9247	0.9230	AveID		0.9706				9.4		20.0			
Perfluoroundecanoic acid (PFUnA)	1.1292 1.2278	1.1171 0.9333	1.1400	0.9627	1.0968	AveID		1.0867				9.5		20.0			
Perfluorododecanoic acid (PFDoA)	1.1538 1.0168	1.0199 1.0931	0.9993	0.8611	0.9855	AveID		1.0185				9.0		20.0			
Perfluorotridecanoic Acid (PFTriA)	1.0604 1.0741	0.9738 1.0364	0.9296	0.8471	0.9312	AveID		0.9789				8.5		20.0			
Perfluorotetradecanoic acid (PFTeA)	0.2598 0.2521	0.2552 0.2622	0.2561	0.2368	0.2614	AveID		0.2548				3.4		20.0			
13C4 PFBA	1.3690 1.4585	1.3988 1.5176	1.4039	1.3931	1.4309	Ave		1.4245				3.5		20.0			
13C5 PFPeA	0.9105 0.9595	0.9508 0.9993	0.9689	0.9431	0.9546	Ave		0.9553				2.8		20.0			
13C3-PFBS	0.0238 0.0263	0.0240 0.0272	0.0244	0.0240	0.0249	Ave		0.0249				5.2		20.0			
13C2 PFHxA	1.0267 1.0454	1.0273 1.0486	1.0381	1.0354	1.0624	Ave		1.0405				1.2		20.0			
13C4-PFHpA	0.9748 0.9867	1.0242 0.9569	0.9906	1.0006	0.9595	Ave		0.9847				2.4		20.0			
18O2 PFHxS	1.4122 1.4976	1.4298 1.5163	1.4231	1.4747	1.4470	Ave		1.4573				2.7		20.0			
M2-6:2FTS	0.2491 0.2741	0.2567 0.2550	0.2539	0.2727	0.2747	Ave		0.2623				4.2		20.0			
13C4 PFOA	0.9462 0.9301	0.9543 0.9355	0.9619	0.9406	0.9753	Ave		0.9491				1.7		20.0			
13C4 PFOS	0.9640 1.0419	0.9652 1.0726	0.9913	0.9769	0.9938	Ave		1.0008				4.1		20.0			
13C5 PFNA	0.7108 0.7220	0.7403 0.7392	0.7736	0.7520	0.7345	Ave		0.7389				2.7		20.0			
13C8 FOSA	1.4091 1.4645	1.4558 1.5155	1.4836	1.4004	1.4816	Ave		1.4586				2.8		20.0			
M2-8:2FTS	0.2571 0.2570	0.2674 0.2531	0.2804	0.2582	0.2623	Ave		0.2622				3.5		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C2 PFDA	0.6033 0.5878	0.6229 0.5840	0.5971	0.6002	0.5868	Ave		0.5974				2.2		20.0			
d3-NMeFOSAA	0.1863 0.2048	0.1878 +++++	0.1828	0.2027	0.2043	Ave		0.1948				5.2		20.0			
d5-NEtFOSAA	0.1987 0.2143	0.2118 0.2100	0.2154	0.2080	0.2206	Ave		0.2113				3.3		20.0			
13C2 PFUnA	0.4480 0.4153	0.4473 0.4016	0.4587	0.4501	0.4778	Ave		0.4427				5.9		20.0			
13C2 PFDoA	0.4145 0.4331	0.4673 0.4628	0.4337	0.4709	0.4660	Ave		0.4498				4.9		20.0			
13C2-PFTeDA	0.3788 0.4197	0.3765 0.4323	0.3881	0.3904	0.3973	Ave		0.3976				5.3		20.0			
13C2-PFHxDA	0.7956 0.7525	0.7230 0.8094	0.7427	0.7378	0.7840	Ave		0.7636				4.3		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-212932/2	2018.03.14LLICAL_002.d
Level 2	IC 320-212932/3	2018.03.14LLICAL_003.d
Level 3	IC 320-212932/4	2018.03.14LLICAL_004.d
Level 4	IC 320-212932/5	2018.03.14LLICAL_005.d
Level 5	IC 320-212932/6	2018.03.14LLICAL_006.d
Level 6	IC 320-212932/7	2018.03.14LLICAL_007.d
Level 7	IC 320-212932/8	2018.03.14LLICAL_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	55368 11035941	107080 20465640	538630	2135395	5442114	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	49030 8955564	97934 16643085	445329	1828513	4554126	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	64517 14018860	141035 25157098	705287	2838516	7196018	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	16938 3067449	32523 5407650	157984	638735	1547164	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	46338 8322619	91268 14728676	434674	1721120	4396908	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanoic acid (PFHpA)		AveID	43357 8217290	90904 15239764	450709	1723802	4363135	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	74808 11570747	126142 21076868	601108	2372721	5883216	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
6:2FTS		AveID	17409 3541999	35948 6214880	172556	685355	1844839	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	57153 8254965	99440 14845460	437730	1720392	4513615	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	51839 10831503	109944 19136926	525960	2165087	5432633	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorooctanesulfonic acid (PFOS)		AveID	40409 7946100	81060 15183603	411222	1593171	3930025	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)		AveID	29831 6107971	59051 10850588	326734	1278096	3059094	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctane Sulfonamide (FOSA)		AveID	60774 11459354	116163 20017278	611619	2402477	6154228	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
8:2FTS		AveID	12649 2579923	28600 4649520	135310	502781	1215769	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorodecanoic acid (PFDA)		AveID	26577 4641972	50417 8319158	271134	1007443	2450527	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	8319 1742154	17472 +++++	78085	345992	849018	0.0250 5.00	0.0500 +++++	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	20726 5396895	50302 9596144	252605	1005551	2616932	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	7794 1585656	20933 2887942	88954	330726	823932	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	21960 3962001	42207 5423061	222626	744959	2120834	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid (PFDoA)		AveID	20759 3422264	40258 7319601	184508	697101	1858687	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	19077 3614945	38439 6940025	171629	685794	1756243	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	4271 822206	8117 1640040	42319	158940	420346	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	5943002 5666362	5907827 5488770	5976824	5987787	5790839	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C5 PFPeA	13PF OA	Ave	3952391 3727810	4016016 3614376	4125093	4053545	3863265	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	96284 95116	94115 91415	96773	95786	93712	2.33 2.33	2.33 2.33	2.33	2.33	2.33
13C2 PFHxA	13PF OA	Ave	4456675 4061548	4338762 3792481	4419581	4450458	4299284	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PF OA	Ave	4231431 3833431	4325636 3460967	4217304	4300707	3882850	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5799398 5503944	5713010 5188043	5731606	5996185	5539746	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	1027377 1011755	1030064 876238	1027059	1113542	1056146	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	4107442 3613402	4030734 3383697	4095323	4042821	3947007	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	4000772 3869709	3897319 3708881	4034460	4014112	3844762	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	3085683 2804832	3126930 2673393	3293525	3232270	2972367	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	6116928 5689527	6148839 5481492	6316094	6019215	5995855	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	1069393 956603	1081959 876818	1143567	1063315	1017048	2.40 2.40	2.40 2.40	2.40	2.40	2.40
13C2 PFDA	13PF OA	Ave	2618994 2283470	2631089 2112175	2542258	2579687	2374640	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	808599 795679	793186 +++++	778323	871338	826844	2.50 2.50	2.50 +++++	2.50	2.50	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
d5-NEtFOSAA	13PF OA	Ave	862558 832409	894414 759604	917080	894155	892685	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFUnA	13PF OA	Ave	1944744 1613432	1889085 1452593	1952789	1934488	1933584	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDaA	13PF OA	Ave	1799119 1682803	1973562 1674041	1846309	2023893	1886034	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	1644167 1630645	1590115 1563578	1652398	1678172	1607962	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	3453839 2923634	3053517 2927472	3161940	3171057	3172627	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-212932/2	2018.03.14LLICAL_002.d
Level 2	IC 320-212932/3	2018.03.14LLICAL_003.d
Level 3	IC 320-212932/4	2018.03.14LLICAL_004.d
Level 4	IC 320-212932/5	2018.03.14LLICAL_005.d
Level 5	IC 320-212932/6	2018.03.14LLICAL_006.d
Level 6	IC 320-212932/7	2018.03.14LLICAL_007.d
Level 7	IC 320-212932/8	2018.03.14LLICAL_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid (PFBA)	0.7 0.8	-2.0	-2.6	-3.6	1.6	5.3	30 30	30	30	30	30	30
Perfluoropentanoic acid (PFPeA)	5.9 -1.7	4.1	-7.8	-3.7	0.7	2.6	30 30	30	30	30	30	30
Perfluorobutanesulfonic acid (PFBS)	-7.7 -5.2	3.2	0.4	2.0	5.8	1.5	30 30	30	30	30	30	30
4:2 FTS	6.8 -10.2	4.9	-0.9	1.2	0.2	-2.1	30 30	30	30	30	30	30
Perfluorohexanoic acid (PFHxA)	3.1 -3.7	4.3	-2.5	-4.1	1.4	1.6	30 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	-3.6 3.5	-1.2	0.5	-5.8	5.7	0.8	30 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	19.4 -6.0	2.2	-2.9	-8.4	-1.7	-2.7	30 30	30	30	30	30	30
6:2FTS	-0.6 4.1	2.4	-1.4	-9.7	2.5	2.7	30 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	19.7 -5.7	6.1	-8.1	-8.5	-1.7	-1.8	30 30	30	30	30	30	30
Perfluoroheptanesulfonic Acid (PFHpS)	-4.1 -4.6	4.4	-3.5	-0.2	4.5	3.6	30 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	-0.9 0.4	2.0	0.0	-2.6	0.3	0.7	30 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-3.7 1.1	-5.9	-1.1	-1.5	2.6	8.5	30 30	30	30	30	30	30
Perfluorooctane Sulfonamide (FOSA)	1.5 -6.7	-3.5	-1.1	2.0	4.9	2.9	30 30	30	30	30	30	30
8:2FTS	-5.3 6.2	5.9	-5.2	-5.3	-4.3	8.0	30 30	30	30	30	30	30
Perfluorodecanoic acid (PFDA)	0.8 -2.2	-4.9	5.9	-3.0	2.5	0.9	30 30	30	30	30	30	30

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 212932
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 03/14/2018 13:59 Calibration End Date: 03/14/2018 14:46 Calibration ID: 38157

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	-1.2 ++++	5.8	-3.7	-4.7	-1.4	5.1	30	30	30	30	30	30
Perfluorodecanesulfonic acid (PFDS)	-18.3 2.0	1.7	-1.3	-1.3	7.3	9.9	30 30	30	30	30	30	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	-6.9 -2.1	20.6	-0.1	-4.7	-4.9	-1.9	30 30	30	30	30	30	30
Perfluoroundecanoic acid (PFUnA)	3.9 -14.1	2.8	4.9	-11.4	0.9	13.0	30 30	30	30	30	30	30
Perfluorododecanoic acid (PFDoA)	13.3 7.3	0.1	-1.9	-15.5	-3.2	-0.2	30 30	30	30	30	30	30
Perfluorotridecanoic Acid (PFTriA)	8.3 5.9	-0.5	-5.0	-13.5	-4.9	9.7	30 30	30	30	30	30	30
Perfluorotetradecanoic acid (PFTeA)	1.9 2.9	0.2	0.5	-7.1	2.6	-1.1	30 30	30	30	30	30	30

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-213555/2	2018.03.16ICAL_002.d
Level 2	IC 320-213555/3	2018.03.16ICAL_003.d
Level 3	IC 320-213555/4	2018.03.16ICAL_004.d
Level 4	IC 320-213555/5	2018.03.16ICAL_005.d
Level 5	IC 320-213555/6	2018.03.16ICAL_006.d
Level 6	IC 320-213555/7	2018.03.16ICAL_007.d
Level 7	IC 320-213555/8	2018.03.16ICAL_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	0.9031 0.9533	0.9199 0.9384	0.9308	0.8987	0.9480	AveID		0.9274				2.3		20.0			
Perfluoropentanoic acid (PFPeA)	1.2009 1.1519	1.2167 1.1599	1.1152	1.1407	1.1917	AveID		1.1681				3.1		20.0			
Perfluorobutanesulfonic acid (PFBS)	78.227 81.199	75.406 70.304	75.634	77.520	83.350	AveID		77.377				5.5		20.0			
4:2 FTS	16.857 15.350	17.089 14.717	16.180	16.069	16.257	AveID		16.074				5.1		20.0			
Perfluorohexanoic acid (PFHxA)	1.0350 1.0221	1.0062 1.0289	0.9979	0.9561	1.0171	AveID		1.0090				2.6		20.0			
Perfluoroheptanoic acid (PFHpA)	1.0914 1.0923	0.9748 1.0133	1.0620	1.0062	1.0155	AveID		1.0365				4.4		20.0			
Perfluorohexanesulfonic acid (PFHxS)	1.3314 1.0433	1.1983 1.0665	1.0904	0.9939	1.0839	AveID		1.1154				10.2		20.0			
6:2FTS	1.4578 1.7282	1.6726 1.7536	1.7189	1.5984	1.7228	AveID		1.6646				6.3		20.0			
Perfluorooctanoic acid (PFOA)	1.2771 1.1667	1.0727 1.1183	1.0176	1.0536	1.1087	AveID		1.1164				7.7		20.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.2442 1.3776	1.3119 1.2616	1.2979	1.3309	1.3750	AveID		1.3142				3.9		20.0			
Perfluorooctanesulfonic acid (PFOS)	1.1186 1.1281	1.0756 1.0976	1.0125	1.0497	1.0960	AveID		1.0826				3.7		20.0			
Perfluorononanoic acid (PFNA)	0.9418 1.1047	1.0637 1.0209	0.9751	0.9774	1.0532	AveID		1.0196				5.7		20.0			
Perfluorooctane Sulfonamide (FOSA)	0.9443 1.0041	0.9582 0.9184	0.9707	0.9921	1.0142	AveID		0.9717				3.5		20.0			
8:2FTS	1.1650 1.3410	1.2889 1.1925	1.2506	1.2474	1.3153	AveID		1.2573				5.1		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorodecanoic acid (PFDA)	0.8359 1.0050	0.9109 0.9765	0.9435	0.9911	0.9791	AveID		0.9489				6.2		20.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.9706 1.0514	1.1969 1.0691	0.9778	0.9880	1.0369	AveID		1.0415				7.5		20.0			
Perfluorodecanesulfonic acid (PFDS)	0.6130 0.6489	0.6312 0.6417	0.6325	0.6589	0.6434	AveID		0.6385				2.3		20.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	1.0125 1.0565	1.0388 0.9572	0.9286	0.9109	0.9491	AveID		0.9791				5.8		20.0			
Perfluoroundecanoic acid (PFUnA)	1.0505 0.8162	0.9268 0.8167	0.7463	0.7128	0.7970	AveID		0.8380				13.8		20.0			
Perfluorododecanoic acid (PFDoA)	0.9632 1.0357	0.9788 1.0559	1.0311	1.0661	1.0300	AveID		1.0230				3.7		20.0			
Perfluorotridecanoic Acid (PFTriA)	0.8910 1.0818	1.0005 1.0734	1.0473	1.0432	1.0643	AveID		1.0288				6.4		20.0			
Perfluorotetradecanoic acid (PFTeA)	0.3265 0.2648	0.3171 0.2554	0.2524	0.2568	0.2575	AveID		0.2758				11.5		20.0			
13C4 PFBA	1.2265 1.3466	1.2477 1.3727	1.2117	1.2531	1.2775	Ave		1.2765				4.8		20.0			
13C5 PFPeA	0.8872 0.9351	0.9058 0.9286	0.8843	0.8735	0.8895	Ave		0.9006				2.6		20.0			
13C3-PFBS	0.0208 0.0233	0.0220 0.0255	0.0212	0.0213	0.0216	Ave		0.0222				7.4		20.0			
13C2 PFHxA	0.9862 1.0374	1.0207 1.0115	0.9703	1.0040	0.9998	Ave		1.0043				2.2		20.0			
13C4-PFHpA	0.9921 0.9834	1.0180 0.9949	0.9154	0.9647	0.9683	Ave		0.9767				3.3		20.0			
18O2 PFHxS	1.2954 1.3719	1.2605 1.3987	1.2062	1.3166	1.2722	Ave		1.3031				5.1		20.0			
M2-6:2FTS	0.2545 0.2618	0.2468 0.2527	0.2417	0.2487	0.2447	Ave		0.2501				2.7		20.0			
13C4 PFOA	0.9512 0.9322	0.9573 0.9523	0.9243	0.9466	0.9377	Ave		0.9431				1.3		20.0			
13C4 PFOS	0.8639 0.9586	0.8770 1.0055	0.8622	0.8952	0.9169	Ave		0.9113				5.9		20.0			
13C5 PFNA	0.7492 0.7662	0.7527 0.7694	0.7279	0.7580	0.7581	Ave		0.7545				1.8		20.0			
13C8 FOSA	1.2871 1.3566	1.3145 1.3871	1.2648	1.3058	1.3205	Ave		1.3195				3.1		20.0			
M2-8:2FTS	0.2435 0.2384	0.2372 0.2331	0.2312	0.2322	0.2292	Ave		0.2350				2.1		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
 Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
13C2 PFDA	0.6263 0.6332	0.6245 0.6212	0.6276	0.6404	0.6390	Ave		0.6303				1.2		20.0			
d3-NMeFOSAA	0.2079 0.2129	0.1974 0.2312	0.1977	0.2031	0.2066	Ave		0.2081				5.6		20.0			
d5-NEtFOSAA	0.1986 0.1928	0.1988 0.2089	0.1891	0.2048	0.2000	Ave		0.1990				3.4		20.0			
13C2 PFUnA	0.4833 0.5045	0.4984 0.4965	0.4885	0.4973	0.4862	Ave		0.4935				1.6		20.0			
13C2 PFDoA	0.4493 0.4968	0.4705 0.5082	0.4480	0.4436	0.4594	Ave		0.4680				5.4		20.0			
13C2-PFTeDA	0.3906 0.4640	0.4021 0.4788	0.4082	0.4159	0.4304	Ave		0.4272				7.7		20.0			
13C2-PFHxDA	0.5746 0.6782	0.5826 0.6550	0.6045	0.6305	0.6481	Ave		0.6248				6.2		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-213555/2	2018.03.16ICAL_002.d
Level 2	IC 320-213555/3	2018.03.16ICAL_003.d
Level 3	IC 320-213555/4	2018.03.16ICAL_004.d
Level 4	IC 320-213555/5	2018.03.16ICAL_005.d
Level 5	IC 320-213555/6	2018.03.16ICAL_006.d
Level 6	IC 320-213555/7	2018.03.16ICAL_007.d
Level 7	IC 320-213555/8	2018.03.16ICAL_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	50796 10415661	102112 19640198	528325	2048994	5293287	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	48859 8739905	98047 16422736	461977	1812805	4633188	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	65826 13581651	130200 24136015	662611	2653315	6966452	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	14987 2712672	31176 5338400	149763	581100	1435640	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	46811 8603151	91368 15868989	453548	1746371	4444832	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanoic acid (PFHpA)		AveID	49656 8715974	88286 15371232	455401	1765971	4297988	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	71975 10568253	122279 20699070	560663	2166532	5484826	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
6:2FTS		AveID	16131 3480117	34810 6406487	184494	685622	1746834	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	55709 8824823	91352 16238419	440615	1814577	4544060	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	46925 10200411	97440 18413921	499055	2063678	5246040	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorooctanesulfonic acid (PFOS)		AveID	41124 8142540	77874 15616435	379502	1586675	4076350	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)		AveID	32357 6868229	71226 11976618	332490	1348017	3490132	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctane Sulfonamide (FOSA)		AveID	55737 11053457	112048 19424864	575124	2356961	5854030	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
8:2FTS		AveID	12463 2485319	26051 4059707	129787	504855	1262293	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorodecanoic acid (PFDA)		AveID	24009 5163613	50605 9249996	277398	1154786	2734556	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	9255 1816591	21013 3769629	90574	365056	936613	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	23409 4865112	47472 9484295	246261	1034588	2485881	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	9219 1652592	18367 3048852	82250	339482	829764	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	23282 3341411	41093 6182513	170791	644915	1693687	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid (PFDoA)		AveID	19846 4174943	40972 8183198	216392	860515	2068374	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	18358 4360483	41880 8318181	219791	842010	2137089	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	5848 997084	11344 1864512	48261	194321	484453	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	5624795 5463195	5550000 5232633	5676105	5699617	5583889	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C5 PFPeA	13PF OA	Ave	4068590 3793612	4029181 3539835	4142560	3973031	3888024	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	88526 87984	90825 90294	92166	90021	87930	2.33 2.33	2.33 2.33	2.33	2.33	2.33
13C2 PFHxA	13PF OA	Ave	4522587 4208738	4540073 3855910	4545197	4566628	4369955	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PF OA	Ave	4549638 3989677	4528336 3792427	4288080	4387932	4232279	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5619871 5265275	5304007 5044040	5345110	5665272	5260610	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	1108827 1008963	1042798 915248	1075617	1074637	1016091	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	4362221 3782089	4258090 3630259	4329764	4305669	4098618	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	3787315 3717789	3729283 3664287	3861206	3892764	3831418	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	3435835 3108543	3347940 2932926	3409796	3447867	3313741	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	5902761 5503896	5846985 5287574	5924910	5939465	5771845	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	1069796 926664	1010561 851096	1037774	1011812	959683	2.40 2.40	2.40 2.40	2.40	2.40	2.40
13C2 PFDA	13PF OA	Ave	2872260 2569062	2777841 2368082	2940123	2912792	2792979	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	953572 863871	877839 881475	926313	923680	903252	2.50 2.50	2.50 2.50	2.50	2.50	2.50

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
d5-NEtFOSAA	13PF OA	Ave	910554 782136	884068 796299	885725	931709	874289	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFUnA	13PF OA	Ave	2216285 2046915	2216867 1892487	2288527	2262020	2125072	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDaA	13PF OA	Ave	2060387 2015472	2093019 1937420	2098644	2017899	2008069	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	1791304 1882383	1788676 1825202	1912234	1891848	1881480	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	2634864 2751498	2591496 2496909	2831717	2868070	2832854	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-213555/2	2018.03.16ICAL_002.d
Level 2	IC 320-213555/3	2018.03.16ICAL_003.d
Level 3	IC 320-213555/4	2018.03.16ICAL_004.d
Level 4	IC 320-213555/5	2018.03.16ICAL_005.d
Level 5	IC 320-213555/6	2018.03.16ICAL_006.d
Level 6	IC 320-213555/7	2018.03.16ICAL_007.d
Level 7	IC 320-213555/8	2018.03.16ICAL_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid (PFBA)	-2.6 1.2	-0.8	0.4	-3.1	2.2	2.8	30 30	30	30	30	30	30
Perfluoropentanoic acid (PFPeA)	2.8 -0.7	4.2	-4.5	-2.3	2.0	-1.4	30 30	30	30	30	30	30
Perfluorobutanesulfonic acid (PFBS)	1.1 -9.1	-2.5	-2.3	0.2	7.7	4.9	30 30	30	30	30	30	30
4:2 FTS	4.9 -8.4	6.3	0.7	0.0	1.1	-4.5	30 30	30	30	30	30	30
Perfluorohexanoic acid (PFHxA)	2.6 2.0	-0.3	-1.1	-5.3	0.8	1.3	30 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	5.3 -2.2	-6.0	2.5	-2.9	-2.0	5.4	30 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	19.4 -4.4	7.4	-2.2	-10.9	-2.8	-6.5	30 30	30	30	30	30	30
6:2FTS	-12.4 5.3	0.5	3.3	-4.0	3.5	3.8	30 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	14.4 0.2	-3.9	-8.8	-5.6	-0.7	4.5	30 30	30	30	30	30	30
Perfluoroheptanesulfonic Acid (PFHpS)	-5.3 -4.0	-0.2	-1.2	1.3	4.6	4.8	30 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	3.3 1.4	-0.6	-6.5	-3.0	1.2	4.2	30 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	-7.6 0.1	4.3	-4.4	-4.1	3.3	8.4	30 30	30	30	30	30	30
Perfluorooctane Sulfonamide (FOSA)	-2.8 -5.5	-1.4	-0.1	2.1	4.4	3.3	30 30	30	30	30	30	30
8:2FTS	-7.3 -5.2	2.5	-0.5	-0.8	4.6	6.7	30 30	30	30	30	30	30
Perfluorodecanoic acid (PFDA)	-11.9 2.9	-4.0	-0.6	4.5	3.2	5.9	30 30	30	30	30	30	30

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1 Analy Batch No.: 213555
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 03/16/2018 23:09 Calibration End Date: 03/16/2018 23:56 Calibration ID: 38194

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	-6.8 2.6	14.9	-6.1	-5.1	-0.4	0.9	30 30	30	30	30	30	30
Perfluorodecanesulfonic acid (PFDS)	-4.0 0.5	-1.1	-0.9	3.2	0.8	1.6	30 30	30	30	30	30	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.4 -2.2	6.1	-5.2	-7.0	-3.1	7.9	30 30	30	30	30	30	30
Perfluoroundecanoic acid (PFUnA)	25.4 -2.5	10.6	-10.9	-14.9	-4.9	-2.6	30 30	30	30	30	30	30
Perfluorododecanoic acid (PFDoA)	-5.8 3.2	-4.3	0.8	4.2	0.7	1.2	30 30	30	30	30	30	30
Perfluorotridecanoic Acid (PFTriA)	-13.4 4.3	-2.7	1.8	1.4	3.5	5.2	30 30	30	30	30	30	30
Perfluorotetradecanoic acid (PFTeA)	18.4 -7.4	15.0	-8.5	-6.9	-6.6	-4.0	30 30	30	30	30	30	30

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: ICV 320-212932/10 Calibration Date: 03/14/2018 15:02

Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46

Lab File ID: 2018.03.14LLICAL_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9252	0.9661		2.61	2.50	4.4	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.171	1.153		2.46	2.50	-1.6	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.37	81.98		2.37	2.21	7.3	30.0
4:2 FTS	AveID	16.40	16.26		2.32	2.34	-0.9	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.9856		2.44	2.50	-2.3	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.063	1.072		2.52	2.50	0.8	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.123	1.013		2.06	2.28	-9.7	30.0
6:2FTS	AveID	1.708	1.647		2.29	2.38	-3.5	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.163	1.145		2.46	2.50	-1.6	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.357	1.332		2.33	2.38	-1.8	30.0
Perfluorononanoic acid (PFNA)	AveID	1.003	1.070		2.66	2.50	6.6	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.050	1.072		2.36	2.31	2.1	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9787	1.036		2.65	2.50	5.9	30.0
8:2FTS	AveID	1.248	1.229		2.36	2.40	-1.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.007	1.001		2.49	2.50	-0.6	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.041	0.999		2.40	2.50	-4.0	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6291	0.6614		2.54	2.41	5.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9706	0.9622		2.48	2.50	-0.9	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.087	1.095		2.52	2.50	0.8	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.019	1.143		2.80	2.50	12.2	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9789	1.021		2.61	2.50	4.3	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2548	0.2671		2.62	2.50	4.8	30.0
Perfluorononanesulfonic acid	None				10.0	2.40	-100.0*	30.0
Perfluoropentanesulfonic acid	None				10.0	2.35	-100.0*	30.0
13C4 PFBA	Ave	1.425	1.381		2.42	2.50	-3.1	30.0
13C5 PFPeA	Ave	0.9553	0.9448		2.47	2.50	-1.1	30.0
13C3-PFBS	Ave	0.0249	0.0240		2.24	2.33	-3.6	30.0
13C2 PFHxA	Ave	1.041	1.036		2.49	2.50	-0.4	30.0
13C4-PFHpA	Ave	0.9847	1.000		2.54	2.50	1.5	30.0
18O2 PFHxS	Ave	1.457	1.489		2.42	2.37	2.2	30.0
M2-6:2FTS	Ave	0.2623	0.2524		2.28	2.38	-3.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: ICV 320-212932/10 Calibration Date: 03/14/2018 15:02
 Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46
 Lab File ID: 2018.03.14LLICAL_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9491	0.9220		2.43	2.50	-2.9	30.0
13C4 PFOS	Ave	1.001	1.018		2.43	2.39	1.7	30.0
13C5 PFNA	Ave	0.7389	0.7589		2.57	2.50	2.7	30.0
13C8 FOSA	Ave	1.459	1.459		2.50	2.50	0.0	30.0
M2-8:2FTS	Ave	0.2622	0.2568		2.35	2.40	-2.1	30.0
13C2 PFDA	Ave	0.5974	0.5684		2.38	2.50	-4.9	30.0
d3-NMeFOSAA	Ave	0.1948	0.2071		2.66	2.50	6.3	30.0
13C2 PFUnA	Ave	0.4427	0.4427		2.50	2.50	-0.0	30.0
d5-NEtFOSAA	Ave	0.2113	0.2108		2.49	2.50	-0.2	30.0
13C2 PFDoA	Ave	0.4498	0.3990		2.22	2.50	-11.3	30.0
13C2-PFTEdA	Ave	0.3976	0.4066		2.56	2.50	2.3	30.0
13C2-PFHxDA	Ave	0.7636	0.7942		2.60	2.50	4.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCV 320-213304/3 Calibration Date: 03/16/2018 00:48

Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46

Lab File ID: 2018.03.15LLAAX_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9252	0.9400		2.54	2.50	1.6	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.171	1.155		2.47	2.50	-1.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.37	82.39		2.38	2.21	7.9	30.0
4:2 FTS	AveID	16.40	12.25		1.74	2.34	-25.3	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	1.014		2.51	2.50	0.5	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.063	1.058		2.49	2.50	-0.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.123	1.038		2.10	2.28	-7.5	30.0
6:2FTS	AveID	1.708	1.693		2.35	2.37	-0.9	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.357	1.472		2.58	2.38	8.4	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.163	1.166		2.51	2.50	0.2	30.0
Perfluorononanoic acid (PFNA)	AveID	1.003	1.005		2.50	2.50	0.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.050	1.091		2.41	2.32	3.9	30.0
8:2FTS	AveID	1.248	1.301		2.50	2.40	4.2	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9787	1.022		2.61	2.50	4.4	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.007	1.009		2.51	2.50	0.2	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.041	1.063		2.55	2.50	2.1	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6291	0.6941		2.66	2.41	10.3	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9706	0.9551		2.46	2.50	-1.6	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.087	1.162		2.67	2.50	7.0	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.019	1.092		2.68	2.50	7.2	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9789	0.9426		2.41	2.50	-3.7	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2548	0.2749		2.70	2.50	7.9	30.0
13C4 PFBA	Ave	1.425	1.292		2.27	2.50	-9.3	30.0
13C5 PFPeA	Ave	0.9553	0.8696		2.28	2.50	-9.0	30.0
13C3-PFBS	Ave	0.0249	0.0227		2.12	2.33	-8.9	30.0
13C2 PFHxA	Ave	1.041	0.9716		2.33	2.50	-6.6	30.0
13C4-PFHpA	Ave	0.9847	0.9590		2.43	2.50	-2.6	30.0
1802 PFHxS	Ave	1.457	1.392		2.26	2.37	-4.5	30.0
M2-6:2FTS	Ave	0.2623	0.2332		2.11	2.38	-11.1	30.0
13C4 PFOA	Ave	0.9491	0.9327		2.46	2.50	-1.7	30.0
13C4 PFOS	Ave	1.001	0.9090		2.17	2.39	-9.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCV 320-213304/3 Calibration Date: 03/16/2018 00:48
 Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46
 Lab File ID: 2018.03.15LLAAX_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7389	0.7536		2.55	2.50	2.0	30.0
M2-8:2FTS	Ave	0.2622	0.2554		2.33	2.40	-2.6	30.0
13C8 FOSA	Ave	1.459	1.366		2.34	2.50	-6.3	30.0
13C2 PFDA	Ave	0.5974	0.5945		2.49	2.50	-0.5	30.0
d3-NMeFOSAA	Ave	0.1948	0.2203		2.83	2.50	13.1	30.0
d5-NEtFOSAA	Ave	0.2113	0.2297		2.72	2.50	8.8	30.0
13C2 PFUnA	Ave	0.4427	0.4403		2.49	2.50	-0.5	30.0
13C2 PFDoA	Ave	0.4498	0.4267		2.37	2.50	-5.1	30.0
13C2-PFTeDA	Ave	0.3976	0.3769		2.37	2.50	-5.2	30.0
13C2-PFHxDA	Ave	0.7636	0.6424		2.10	2.50	-15.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCVL 320-213304/2 Calibration Date: 03/16/2018 00:40

Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46

Lab File ID: 2018.03.15LLAAX_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9252	0.9490		0.0513	0.0500	2.6	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.171	1.258		0.0537	0.0500	7.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.37	80.65		0.0467	0.0442	5.6	30.0
4:2 FTS	AveID	16.40	12.30		0.400	0.0467	-25.0	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	1.047		0.0519	0.0500	3.8	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.063	0.9352		0.0440	0.0500	-12.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.123	1.188		0.0481	0.0455	5.8	30.0
6:2FTS	AveID	1.708	1.687		0.400	0.0474	-1.2	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.357	1.331		0.0467	0.0476	-2.0	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.163	1.199		0.0516	0.0500	3.1	30.0
Perfluorononanoic acid (PFNA)	AveID	1.003	0.9122		0.0455	0.0500	-9.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.050	1.045		0.0462	0.0464	-0.4	30.0
8:2FTS	AveID	1.248	1.248		0.400	0.0479	-0.0	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9787	0.9511		0.0486	0.0500	-2.8	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.007	0.8715		0.0433	0.0500	-13.5	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.041	0.8688		0.400	0.0500	-16.6	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6291	0.5854		0.0449	0.0482	-6.9	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9706	1.017		0.0524	0.0500	4.8	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.087	1.346		0.0619	0.0500	23.9	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.019	1.227		0.0602	0.0500	20.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9789	0.9479		0.0484	0.0500	-3.2	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2548	0.2539		0.0498	0.0500	-0.3	30.0
13C4 PFBA	Ave	1.425	1.210		2.12	2.50	-15.0	30.0
13C5 PFPeA	Ave	0.9553	0.8004		2.09	2.50	-16.2	30.0
13C3-PFBS	Ave	0.0249	0.0218		2.03	2.33	-12.6	30.0
13C2 PFHxA	Ave	1.041	0.9431		2.27	2.50	-9.4	30.0
13C4-PFHpA	Ave	0.9847	0.9621		2.44	2.50	-2.3	30.0
1802 PFHxS	Ave	1.457	1.315		2.13	2.37	-9.8	30.0
M2-6:2FTS	Ave	0.2623	0.2344		2.12	2.38	-10.6	30.0
13C4 PFOA	Ave	0.9491	0.9291		2.45	2.50	-2.1	30.0
13C4 PFOS	Ave	1.001	0.9053		2.16	2.39	-9.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-213304/2 Calibration Date: 03/16/2018 00:40
 Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46
 Lab File ID: 2018.03.15LLAAX_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7389	0.7630		2.58	2.50	3.3	30.0
13C8 FOSA	Ave	1.459	1.313		2.25	2.50	-10.0	30.0
M2-8:2FTS	Ave	0.2622	0.2422		2.21	2.40	-7.6	30.0
13C2 PFDA	Ave	0.5974	0.6088		2.55	2.50	1.9	30.0
d3-NMeFOSAA	Ave	0.1948	0.2118		2.72	2.50	8.7	30.0
d5-NEtFOSAA	Ave	0.2113	0.2364		2.80	2.50	11.9	30.0
13C2 PFUnA	Ave	0.4427	0.4682		2.64	2.50	5.8	30.0
13C2 PFDoA	Ave	0.4498	0.4027		2.24	2.50	-10.5	30.0
13C2-PFTeDA	Ave	0.3976	0.4010		2.52	2.50	0.9	30.0
13C2-PFHxDA	Ave	0.7636	0.5701		1.87	2.50	-25.3	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCV 320-213304/3 Calibration Date: 03/16/2018 00:48

Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46

Lab File ID: 2018.03.15LLAAX_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9252	0.9400		2.54	2.50	1.6	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.171	1.155		2.47	2.50	-1.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.37	82.39		2.38	2.21	7.9	30.0
4:2 FTS	AveID	16.40	12.25		1.74	2.34	-25.3	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	1.014		2.51	2.50	0.5	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.063	1.058		2.49	2.50	-0.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.123	1.038		2.10	2.28	-7.5	30.0
6:2FTS	AveID	1.708	1.693		2.35	2.37	-0.9	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.357	1.472		2.58	2.38	8.4	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.163	1.166		2.51	2.50	0.2	30.0
Perfluorononanoic acid (PFNA)	AveID	1.003	1.005		2.50	2.50	0.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.050	1.091		2.41	2.32	3.9	30.0
8:2FTS	AveID	1.248	1.301		2.50	2.40	4.2	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9787	1.022		2.61	2.50	4.4	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.007	1.009		2.51	2.50	0.2	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.041	1.063		2.55	2.50	2.1	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6291	0.6941		2.66	2.41	10.3	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9706	0.9551		2.46	2.50	-1.6	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.087	1.162		2.67	2.50	7.0	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.019	1.092		2.68	2.50	7.2	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9789	0.9426		2.41	2.50	-3.7	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2548	0.2749		2.70	2.50	7.9	30.0
13C4 PFBA	Ave	1.425	1.292		2.27	2.50	-9.3	30.0
13C5 PFPeA	Ave	0.9553	0.8696		2.28	2.50	-9.0	30.0
13C3-PFBS	Ave	0.0249	0.0227		2.12	2.33	-8.9	30.0
13C2 PFHxA	Ave	1.041	0.9716		2.33	2.50	-6.6	30.0
13C4-PFHpA	Ave	0.9847	0.9590		2.43	2.50	-2.6	30.0
1802 PFHxS	Ave	1.457	1.392		2.26	2.37	-4.5	30.0
M2-6:2FTS	Ave	0.2623	0.2332		2.11	2.38	-11.1	30.0
13C4 PFOA	Ave	0.9491	0.9327		2.46	2.50	-1.7	30.0
13C4 PFOS	Ave	1.001	0.9090		2.17	2.39	-9.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCV 320-213304/3 Calibration Date: 03/16/2018 00:48
 Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46
 Lab File ID: 2018.03.15LLAAX_024.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7389	0.7536		2.55	2.50	2.0	30.0
M2-8:2FTS	Ave	0.2622	0.2554		2.33	2.40	-2.6	30.0
13C8 FOSA	Ave	1.459	1.366		2.34	2.50	-6.3	30.0
13C2 PFDA	Ave	0.5974	0.5945		2.49	2.50	-0.5	30.0
d3-NMeFOSAA	Ave	0.1948	0.2203		2.83	2.50	13.1	30.0
d5-NEtFOSAA	Ave	0.2113	0.2297		2.72	2.50	8.8	30.0
13C2 PFUnA	Ave	0.4427	0.4403		2.49	2.50	-0.5	30.0
13C2 PFDoA	Ave	0.4498	0.4267		2.37	2.50	-5.1	30.0
13C2-PFTeDA	Ave	0.3976	0.3769		2.37	2.50	-5.2	30.0
13C2-PFHxDA	Ave	0.7636	0.6424		2.10	2.50	-15.9	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCV 320-213304/14 Calibration Date: 03/16/2018 02:14

Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46

Lab File ID: 2018.03.15LLAAX_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9252	0.9004		0.973	1.00	-2.7	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.171	1.122		0.958	1.00	-4.2	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.37	78.88		0.913	0.884	3.3	30.0
4:2 FTS	AveID	16.40	11.58		0.659	0.934	-29.4	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.9472		0.939	1.00	-6.1	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.063	1.006		0.946	1.00	-5.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.123	0.9880		0.801	0.910	-12.0	30.0
6:2FTS	AveID	1.708	1.723		0.957	0.948	0.9	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.357	1.419		0.995	0.952	4.5	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.163	1.118		0.961	1.00	-3.9	30.0
Perfluorononanoic acid (PFNA)	AveID	1.003	0.9799		0.976	1.00	-2.4	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.050	1.074		0.949	0.928	2.3	30.0
8:2FTS	AveID	1.248	1.249		0.958	0.958	0.0	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9787	0.999		1.02	1.00	2.1	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.007	0.9899		0.983	1.00	-1.7	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.041	0.9906		0.951	1.00	-4.9	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6291	0.6883		1.05	0.964	9.4	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9706	0.8372		0.862	1.00	-13.8	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.087	0.9528		0.877	1.00	-12.3	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.019	1.067		1.05	1.00	4.8	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9789	1.055		1.08	1.00	7.7	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2548	0.2590		1.02	1.00	1.6	30.0
13C4 PFBA	Ave	1.425	1.263		2.22	2.50	-11.4	30.0
13C5 PFPeA	Ave	0.9553	0.8506		2.23	2.50	-11.0	30.0
13C3-PFBS	Ave	0.0249	0.0224		2.09	2.33	-10.1	30.0
13C2 PFHxA	Ave	1.041	0.9694		2.33	2.50	-6.8	30.0
13C4-PFHpA	Ave	0.9847	0.9567		2.43	2.50	-2.8	30.0
1802 PFHxS	Ave	1.457	1.364		2.21	2.37	-6.4	30.0
M2-6:2FTS	Ave	0.2623	0.2269		2.05	2.38	-13.5	30.0
13C4 PFOA	Ave	0.9491	0.9504		2.50	2.50	0.1	30.0
13C4 PFOS	Ave	1.001	0.8744		2.09	2.39	-12.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCV 320-213304/14 Calibration Date: 03/16/2018 02:14
 Instrument ID: A8_N Calib Start Date: 03/14/2018 13:59
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/14/2018 14:46
 Lab File ID: 2018.03.15LLAAX_035.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7389	0.7520		2.54	2.50	1.8	30.0
13C8 FOSA	Ave	1.459	1.355		2.32	2.50	-7.1	30.0
M2-8:2FTS	Ave	0.2622	0.2590		2.37	2.40	-1.2	30.0
13C2 PFDA	Ave	0.5974	0.6063		2.54	2.50	1.5	30.0
d3-NMeFOSAA	Ave	0.1948	0.2166		2.78	2.50	11.2	30.0
d5-NEtFOSAA	Ave	0.2113	0.2381		2.82	2.50	12.7	30.0
13C2 PFUnA	Ave	0.4427	0.4495		2.54	2.50	1.6	30.0
13C2 PFDoA	Ave	0.4498	0.4133		2.30	2.50	-8.1	30.0
13C2-PFTeDA	Ave	0.3976	0.3917		2.46	2.50	-1.5	30.0
13C2-PFHxDA	Ave	0.7636	0.5837		1.91	2.50	-23.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: ICV 320-213555/10 Calibration Date: 03/17/2018 00:12

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.16ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9442		2.55	2.50	1.8	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.141		2.44	2.50	-2.3	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	80.09		2.29	2.21	3.5	30.0
4:2 FTS	AveID	16.07	16.34		2.38	2.34	1.7	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.9865		2.44	2.50	-2.2	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.084		2.61	2.50	4.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.081		2.21	2.28	-3.1	30.0
6:2FTS	AveID	1.665	1.612		2.30	2.38	-3.2	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.132		2.53	2.50	1.4	30.0
Perfluorooctanesulfonic Acid (PFHpS)	AveID	1.314	1.364		2.46	2.38	3.8	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	1.055		2.59	2.50	3.4	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.106		2.36	2.31	2.2	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9717	1.048		2.70	2.50	7.9	30.0
8:2FTS	AveID	1.257	1.264		2.41	2.40	0.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	1.023		2.69	2.50	7.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.082		2.60	2.50	3.9	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6837		2.58	2.41	7.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	1.001		2.56	2.50	2.2	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7586		2.26	2.50	-9.5	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.089		2.66	2.50	6.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	1.066		2.59	2.50	3.6	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2637		2.39	2.50	-4.4	30.0
Perfluorononanesulfonic acid	None				10.0	2.40	-100.0*	30.0
Perfluoropentanesulfonic acid	None				10.0	2.35	-100.0*	30.0
13C4 PFBA	Ave	1.277	1.322		2.59	2.50	3.5	30.0
13C5 PFPeA	Ave	0.9006	0.9221		2.56	2.50	2.4	30.0
13C3-PFBS	Ave	0.0222	0.0230		2.40	2.33	3.3	30.0
13C2 PFHxA	Ave	1.004	1.051		2.62	2.50	4.7	30.0
13C4-PFHpA	Ave	0.9767	0.9820		2.51	2.50	0.5	30.0
18O2 PFHxS	Ave	1.303	1.344		2.44	2.37	3.2	30.0
M2-6:2FTS	Ave	0.2501	0.2591		2.46	2.38	3.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: ICV 320-213555/10 Calibration Date: 03/17/2018 00:12
 Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56
 Lab File ID: 2018.03.16ICAL_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9431	0.9566		2.54	2.50	1.4	30.0
13C4 PFOS	Ave	0.9113	0.9222		2.42	2.39	1.2	30.0
13C5 PFNA	Ave	0.7545	0.7649		2.53	2.50	1.4	30.0
13C8 FOSA	Ave	1.319	1.362		2.58	2.50	3.2	30.0
M2-8:2FTS	Ave	0.2350	0.2426		2.47	2.40	3.3	30.0
13C2 PFDA	Ave	0.6303	0.6356		2.52	2.50	0.8	30.0
d3-NMeFOSAA	Ave	0.2081	0.2105		2.53	2.50	1.1	30.0
13C2 PFUnA	Ave	0.4935	0.4851		2.46	2.50	-1.7	30.0
d5-NEtFOSAA	Ave	0.1990	0.2082		2.62	2.50	4.6	30.0
13C2 PFDoA	Ave	0.4680	0.4577		2.45	2.50	-2.2	30.0
13C2-PFTeDA	Ave	0.4272	0.4340		2.54	2.50	1.6	30.0
13C2-PFHxDA	Ave	0.6248	0.6152		2.46	2.50	-1.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCVL 320-213555/12 Calibration Date: 03/17/2018 00:27

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.16ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9109		0.0491	0.0500	-1.8	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.263		0.0541	0.0500	8.1	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	83.50		0.0477	0.0442	7.9	30.0
4:2 FTS	AveID	16.07	16.25		0.400	0.0467	1.1	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.999		0.0495	0.0500	-1.0	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.043		0.0503	0.0500	0.6	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.166		0.0476	0.0455	4.5	30.0
6:2FTS	AveID	1.665	1.726		0.400	0.0474	3.7	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.093		0.0490	0.0500	-2.1	30.0
Perfluorooctanesulfonic Acid (PFHpS)	AveID	1.314	1.386		0.0502	0.0476	5.5	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.089		0.0467	0.0464	0.6	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	0.998		0.0490	0.0500	-2.1	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9717	0.8981		0.0462	0.0500	-7.6	30.0
8:2FTS	AveID	1.257	1.138		0.400	0.0479	-9.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	0.9920		0.0523	0.0500	4.5	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.059		0.400	0.0500	1.6	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.7168		0.0541	0.0482	12.3	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	1.019		0.0520	0.0500	4.1	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.8521		0.0508	0.0500	1.7	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.049		0.0513	0.0500	2.6	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	1.145		0.0557	0.0500	11.3	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2459		0.0446	0.0500	-10.8	30.0
Perfluorononanesulfonic acid	None				10.0	0.0480	-100.0*	30.0
Perfluoropentanesulfonic acid	None				10.0	0.0469	-100.0*	30.0
13C4 PFBA	Ave	1.277	1.203		2.36	2.50	-5.7	30.0
13C5 PFPeA	Ave	0.9006	0.8712		2.42	2.50	-3.3	30.0
13C3-PFBS	Ave	0.0222	0.0204		2.13	2.33	-8.2	30.0
13C2 PFHxA	Ave	1.004	0.9863		2.46	2.50	-1.8	30.0
13C4-PFHpA	Ave	0.9767	0.9560		2.45	2.50	-2.1	30.0
18O2 PFHxS	Ave	1.303	1.218		2.21	2.37	-6.5	30.0
M2-6:2FTS	Ave	0.2501	0.2450		2.33	2.38	-2.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-213555/12 Calibration Date: 03/17/2018 00:27
 Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56
 Lab File ID: 2018.03.16ICAL_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9431	0.9293		2.46	2.50	-1.5	30.0
13C4 PFOS	Ave	0.9113	0.8434		2.21	2.39	-7.5	30.0
13C5 PFNA	Ave	0.7545	0.7424		2.46	2.50	-1.6	30.0
13C8 FOSA	Ave	1.319	1.326		2.51	2.50	0.5	30.0
M2-8:2FTS	Ave	0.2350	0.2377		2.42	2.40	1.1	30.0
13C2 PFDA	Ave	0.6303	0.6287		2.49	2.50	-0.3	30.0
d3-NMeFOSAA	Ave	0.2081	0.1934		2.32	2.50	-7.1	30.0
d5-NEtFOSAA	Ave	0.1990	0.2113		2.66	2.50	6.2	30.0
13C2 PFUnA	Ave	0.4935	0.4670		2.37	2.50	-5.4	30.0
13C2 PFDoA	Ave	0.4680	0.4503		2.41	2.50	-3.8	30.0
13C2-PFTeDA	Ave	0.4272	0.4073		2.38	2.50	-4.6	30.0
13C2-PFHxDA	Ave	0.6248	0.5766		2.31	2.50	-7.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCV 320-213558/1 Calibration Date: 03/17/2018 00:35

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.16LLBX_033.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9000		0.970	1.00	-3.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.096		0.938	1.00	-6.2	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	78.06		0.892	0.884	0.9	30.0
4:2 FTS	AveID	16.07	15.31		0.890	0.934	-4.8	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	0.996		0.987	1.00	-1.3	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.035		0.999	1.00	-0.1	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.079		0.880	0.910	-3.3	30.0
6:2FTS	AveID	1.665	1.685		0.959	0.948	1.2	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.073		0.961	1.00	-3.9	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.314	1.251		0.906	0.952	-4.8	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	0.9774		0.959	1.00	-4.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.037		0.889	0.928	-4.2	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9717	0.9791		1.01	1.00	0.8	30.0
8:2FTS	AveID	1.257	1.185		0.903	0.958	-5.7	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	1.006		1.06	1.00	6.0	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	0.9489		0.911	1.00	-8.9	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6288		0.949	0.964	-1.5	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.9543		0.975	1.00	-2.5	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7336		0.875	1.00	-12.5	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.008		0.985	1.00	-1.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	0.9499		0.923	1.00	-7.7	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2545		0.923	1.00	-7.7	30.0
13C4 PFBA	Ave	1.277	1.267		2.48	2.50	-0.7	30.0
13C5 PFPeA	Ave	0.9006	0.8866		2.46	2.50	-1.6	30.0
13C3-PFBS	Ave	0.0222	0.0218		2.28	2.33	-1.9	30.0
13C2 PFHxA	Ave	1.004	0.9747		2.43	2.50	-2.9	30.0
13C4-PFHpA	Ave	0.9767	0.9503		2.43	2.50	-2.7	30.0
1802 PFHxS	Ave	1.303	1.238		2.25	2.37	-5.0	30.0
M2-6:2FTS	Ave	0.2501	0.2436		2.31	2.38	-2.6	30.0
13C4 PFOA	Ave	0.9431	0.9609		2.55	2.50	1.9	30.0
13C4 PFOS	Ave	0.9113	0.9058		2.38	2.39	-0.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCV 320-213558/1 Calibration Date: 03/17/2018 00:35
 Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56
 Lab File ID: 2018.03.16LLBX_033.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7671		2.54	2.50	1.7	30.0
13C8 FOSA	Ave	1.319	1.347		2.55	2.50	2.1	30.0
M2-8:2FTS	Ave	0.2350	0.2487		2.54	2.40	5.9	30.0
13C2 PFDA	Ave	0.6303	0.6119		2.43	2.50	-2.9	30.0
d3-NMeFOSAA	Ave	0.2081	0.2037		2.45	2.50	-2.1	30.0
d5-NEtFOSAA	Ave	0.1990	0.2020		2.54	2.50	1.5	30.0
13C2 PFUnA	Ave	0.4935	0.4938		2.50	2.50	0.0	30.0
13C2 PFDoA	Ave	0.4680	0.4693		2.51	2.50	0.3	30.0
13C2-PFTeDA	Ave	0.4272	0.4193		2.45	2.50	-1.8	30.0
13C2-PFHxDA	Ave	0.6248	0.5862		2.35	2.50	-6.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1

SDG No.: _____

Lab Sample ID: CCV 320-213558/8 Calibration Date: 03/17/2018 01:30

Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56

Lab File ID: 2018.03.16LLBX_040.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9274	0.9459		2.55	2.50	2.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.168	1.204		2.58	2.50	3.1	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.38	80.14		2.29	2.21	3.6	30.0
4:2 FTS	AveID	16.07	15.02		2.18	2.34	-6.5	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.009	1.004		2.49	2.50	-0.5	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.037	1.050		2.53	2.50	1.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.115	1.122		2.29	2.28	0.6	30.0
6:2FTS	AveID	1.665	1.644		2.34	2.37	-1.3	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.116	1.128		2.53	2.50	1.1	30.0
Perfluorooctanesulfonic Acid (PFHpS)	AveID	1.314	1.385		2.51	2.38	5.4	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.083	1.157		2.48	2.32	6.9	30.0
Perfluorononanoic acid (PFNA)	AveID	1.020	1.063		2.61	2.50	4.3	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9717	1.024		2.63	2.50	5.4	30.0
8:2FTS	AveID	1.257	1.249		2.38	2.40	-0.6	30.0
Perfluorodecanoic acid (PFDA)	AveID	0.9489	0.9663		2.55	2.50	1.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.042	1.048		2.52	2.50	0.7	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6385	0.6724		2.54	2.41	5.3	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.9791	0.9742		2.49	2.50	-0.5	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8380	0.7960		2.37	2.50	-5.0	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.023	1.028		2.51	2.50	0.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.029	1.057		2.57	2.50	2.7	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2758	0.2891		2.62	2.50	4.8	30.0
13C4 PFBA	Ave	1.277	1.291		2.53	2.50	1.1	30.0
13C5 PFPeA	Ave	0.9006	0.8979		2.49	2.50	-0.3	30.0
13C3-PFBS	Ave	0.0222	0.0230		2.40	2.33	3.4	30.0
13C2 PFHxA	Ave	1.004	1.018		2.53	2.50	1.4	30.0
13C4-PFHpA	Ave	0.9767	0.9907		2.54	2.50	1.4	30.0
1802 PFHxS	Ave	1.303	1.264		2.29	2.37	-3.0	30.0
M2-6:2FTS	Ave	0.2501	0.2486		2.36	2.38	-0.6	30.0
13C4 PFOA	Ave	0.9431	0.9523		2.52	2.50	1.0	30.0
13C4 PFOS	Ave	0.9113	0.9155		2.40	2.39	0.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Lab Sample ID: CCV 320-213558/8 Calibration Date: 03/17/2018 01:30
 Instrument ID: A8_N Calib Start Date: 03/16/2018 23:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 03/16/2018 23:56
 Lab File ID: 2018.03.16LLBX_040.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C5 PFNA	Ave	0.7545	0.7666		2.54	2.50	1.6	30.0
13C8 FOSA	Ave	1.319	1.340		2.54	2.50	1.5	30.0
M2-8:2FTS	Ave	0.2350	0.2368		2.41	2.40	0.8	30.0
13C2 PFDA	Ave	0.6303	0.6356		2.52	2.50	0.8	30.0
d3-NMeFOSAA	Ave	0.2081	0.2086		2.51	2.50	0.2	30.0
13C2 PFUnA	Ave	0.4935	0.5028		2.55	2.50	1.9	30.0
d5-NEtFOSAA	Ave	0.1990	0.2007		2.52	2.50	0.8	30.0
13C2 PFDoA	Ave	0.4680	0.4791		2.56	2.50	2.4	30.0
13C2-PFTeDA	Ave	0.4272	0.4050		2.37	2.50	-5.2	30.0
13C2-PFHxDA	Ave	0.6248	0.6547		2.62	2.50	4.8	30.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-212840/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_025.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>250.0 (mL)</u>	Date Analyzed: <u>03/16/2018 00:56</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	1.5	U	2.0	1.5	0.59
2706-90-3	Perfluoropentanoic acid (PFPeA)	1.0	U M	2.0	1.0	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	1.0	U	2.0	1.0	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	0.585	J	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.0	1.0	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U	2.0	1.5	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	3.0	0.76
376-06-7	Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	3.0	0.83
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	1.0	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.0	U	2.0	1.0	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.56
754-91-6	Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-212840/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_025.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>03/14/2018 10:07</u>
Sample wt/vol: <u>250.0 (mL)</u>	Date Analyzed: <u>03/16/2018 00:56</u>
Con. Extract Vol.: <u>10.0 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>2 (uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	76		50-150
STL00992	13C4 PFBA	82		50-150
STL01893	13C5 PFPeA	79		50-150
STL00993	13C2 PFHxA	82		50-150
STL01892	13C4-PFHpA	87		50-150
STL00990	13C4 PFOA	90		50-150
STL00995	13C5 PFNA	94		50-150
STL00996	13C2 PFDA	95		50-150
STL00997	13C2 PFUnA	95		50-150
STL00998	13C2 PFDoA	80		50-150
STL00994	18O2 PFHxS	79		50-150
STL02116	13C2-PFTeDA	94		50-150
STL00991	13C4 PFOS	82		50-150
STL02337	13C3-PFBS	78		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>CCB 320-213304/1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.15LLAAX_003.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: _____
Extraction Method: _____	Date Extracted: _____
Sample wt/vol: <u>1(mL)</u>	Date Analyzed: <u>03/16/2018 00:32</u>
Con. Extract Vol.: _____	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213304</u>	Units: <u>ng/mL</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U M	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00643	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-213304/1
 Matrix: Water Lab File ID: 2018.03.15LLAAX_003.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 03/16/2018 00:32
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 213304 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	97		50-150
STL00992	13C4 PFBA	86		50-150
STL01893	13C5 PFPeA	88		50-150
STL00993	13C2 PFHxA	93		50-150
STL01892	13C4-PFHpA	96		50-150
STL00990	13C4 PFOA	100		50-150
STL00995	13C5 PFNA	104		50-150
STL00996	13C2 PFDA	104		50-150
STL00997	13C2 PFUnA	107		50-150
STL00998	13C2 PFDoA	97		50-150
STL00994	18O2 PFHxS	93		50-150
STL02116	13C2-PFTeDA	101		50-150
STL00991	13C4 PFOS	91		50-150
STL02337	13C3-PFBS	92		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-213555/11
 Matrix: Water Lab File ID: 2018.03.16ICAL_012.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 03/17/2018 00:20
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 213555 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U M	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00712	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>CCB 320-213555/11</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.16ICAL_012.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: _____
Extraction Method: _____	Date Extracted: _____
Sample wt/vol: <u>1(mL)</u>	Date Analyzed: <u>03/17/2018 00:20</u>
Con. Extract Vol.: _____	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100</u> ID: <u>3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>213555</u>	Units: <u>ng/mL</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	98		50-150
STL00992	13C4 PFBA	95		50-150
STL01893	13C5 PFPeA	97		50-150
STL00993	13C2 PFHxA	95		50-150
STL01892	13C4-PFHpA	97		50-150
STL00990	13C4 PFOA	99		50-150
STL00995	13C5 PFNA	100		50-150
STL00996	13C2 PFDA	99		50-150
STL00997	13C2 PFUnA	95		50-150
STL00998	13C2 PFDoA	97		50-150
STL00994	18O2 PFHxS	99		50-150
STL02116	13C2-PFTeDA	97		50-150
STL00991	13C4 PFOS	96		50-150
STL02337	13C3-PFBS	96		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-36665-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>ICB 320-212932/9</u>
Matrix: <u>Water</u>	Lab File ID: <u>2018.03.14LLICAL_009.d</u>
Analysis Method: <u>EPA 537 (Mod)</u>	Date Collected: _____
Extraction Method: _____	Date Extracted: _____
Sample wt/vol: <u>1(mL)</u>	Date Analyzed: <u>03/14/2018 14:54</u>
Con. Extract Vol.: _____	Dilution Factor: <u>1</u>
Injection Volume: <u>2(uL)</u>	GC Column: <u>GeminiC18 3x100 ID: 3(mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>212932</u>	Units: <u>ng/mL</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U M	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U M	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00728	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-212932/9
 Matrix: Water Lab File ID: 2018.03.14LLICAL_009.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 03/14/2018 14:54
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 212932 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	99		50-150
STL00992	13C4 PFBA	97		50-150
STL01893	13C5 PFPeA	100		50-150
STL00993	13C2 PFHxA	99		50-150
STL01892	13C4-PFHpA	100		50-150
STL00990	13C4 PFOA	99		50-150
STL00995	13C5 PFNA	107		50-150
STL00996	13C2 PFDA	98		50-150
STL00997	13C2 PFUnA	98		50-150
STL00998	13C2 PFDoA	94		50-150
STL00994	18O2 PFHxS	96		50-150
STL02116	13C2-PFTeDA	97		50-150
STL00991	13C4 PFOS	100		50-150
STL02337	13C3-PFBS	99		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-213555/9
 Matrix: Water Lab File ID: 2018.03.16ICAL_010.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 03/17/2018 00:04
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 213555 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U M	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00935	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.00488	J	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-36665-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-213555/9
 Matrix: Water Lab File ID: 2018.03.16ICAL_010.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 03/17/2018 00:04
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 213555 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	101		50-150
STL00992	13C4 PFBA	95		50-150
STL01893	13C5 PFPeA	96		50-150
STL00993	13C2 PFHxA	96		50-150
STL01892	13C4-PFHpA	98		50-150
STL00990	13C4 PFOA	101		50-150
STL00995	13C5 PFNA	100		50-150
STL00996	13C2 PFDA	103		50-150
STL00997	13C2 PFUnA	95		50-150
STL00998	13C2 PFDoA	98		50-150
STL00994	18O2 PFHxS	98		50-150
STL02116	13C2-PFTeDA	100		50-150
STL00991	13C4 PFOS	98		50-150
STL02337	13C3-PFBS	95		50-150

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC	BRUNSWICK_NAS	320-36665-1	SITE 00011	SITE 00011	TP-PFC-INFLUENT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-027-TPI	Ground water	Normal (Regular)	1-Mar-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-36665-1	SITE 00011	SITE 00011	TP-PFC-MIDPOINT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-027-MID CARBON	Ground water	Normal (Regular)	1-Mar-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-36665-1	SITE 00011	SITE 00011	TP-PFC-EFFLUENT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-027-TPE	Ground water	Normal (Regular)	1-Mar-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-36665-1	SITE 00011	SITE 00011	TP-PFC-EFFLUENT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-027-TPE-D	Ground water	Field duplicate	1-Mar-18	537	Perfluoroalkyl Compounds