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BRUNSWICK_NAS
SSIC 5000-33c

LABORATORY DATA PACKAGE, 320-31407-1, NAS BRUNSWICK ME
09/22/2018
TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-31407-1

Job Description: TT: PFAS, Brunswick, Discharge

For:

Tetra Tech, Inc.
Foster Plaza VII
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Attention: Jeff Orient



Approved for release.
David R Alltucker
Project Manager I
9/22/2017 12:35 PM

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09/22/2017

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Definitions/Glossary

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

TestAmerica Job ID: 320-31407-1

Qualifiers

LCMS

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

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
320-31407-1

Receipt

The samples were received on 9/8/2017 9:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8° C.

LCMS

Method(s) 537 (modified): 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) 537 (modified): The concentration of Perfluorooctanoic acid (PFOA) associated with the following sample exceeded the instrument calibration range: TP-PFC-021-TPI (320-31407-1). This samples has been re-analyzed at dilution. Both sets of data have been reported.

Method(s) 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: TP-PFC-021-MID-CARBON (320-31407-2) and TP-PFC-021-TPE (320-31407-3). Reanalysis confirmed the results. 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) 537 (modified): Due to the sporadic recovery performance for the labeled analyte 13C8-FOSA, we are temporarily increasing the reporting limit (RL) for the target analyte FOSA in order to provide better confidence in its reported value. The RL for FOSA has been increased so the same concentration as that fortified into the laboratory control sample (LCS). At this concentration, the LCS demonstrates acceptable FOSA recovery regardless of the recovery of it labeled analog, 13C8-FOSA, which is used to quantitate FOSA. Thus, indicating sufficient analytical performance to support this RL increase. Techniques to improve the recovery performance of 13C8-FOSA are currently underway.

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

Organic Prep

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-183917.

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

Detection Summary

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

TestAmerica Job ID: 320-31407-1

Client Sample ID: TP-PFC-021-TPI

Lab Sample ID: 320-31407-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	82		2.4	0.44	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	190		2.4	0.95	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	340		2.4	0.75	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA)	82		2.4	0.77	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	1100	E M	2.4	0.72	ng/L	1		537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	2.7		2.4	0.63	ng/L	1		537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	1.0	J	2.4	0.42	ng/L	1		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	55		2.4	0.88	ng/L	1		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	330		2.4	0.83	ng/L	1		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	8.0		2.4	0.68	ng/L	1		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	310		3.8	1.2	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	1.8	J	38	0.61	ng/L	1		537 (modified)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	77	D	24	4.4	ng/L	10		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	210	D	24	9.5	ng/L	10		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	390	D	24	7.5	ng/L	10		537 (modified)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	78	D	24	7.7	ng/L	10		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1800	D M	24	7.2	ng/L	10		537 (modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	58	D	24	8.8	ng/L	10		537 (modified)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	420	D	24	8.3	ng/L	10		537 (modified)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS) - DL	9.9	J D	24	6.8	ng/L	10		537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	330	D	38	12	ng/L	10		537 (modified)	Total/NA

Client Sample ID: TP-PFC-021-MID-CARBON

Lab Sample ID: 320-31407-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	130		2.3	0.42	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	50		2.3	0.92	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.6		2.3	0.73	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.97	J M	2.3	0.69	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	0.68	J	37	0.59	ng/L	1		537 (modified)	Total/NA

Client Sample ID: TP-PFC-021-TPE

Lab Sample ID: 320-31407-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	120		2.4	0.44	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	37		2.4	0.96	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	7.7		2.4	0.76	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.78	J M	2.4	0.73	ng/L	1		537 (modified)	Total/NA
Perfluorooctane Sulfonamide (FOSA)	1.2	J	39	0.62	ng/L	1		537 (modified)	Total/NA

Client Sample ID: TP-PFC-021-TPE-D

Lab Sample ID: 320-31407-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	120		2.4	0.43	ng/L	1		537 (modified)	Total/NA
Perfluoropentanoic acid (PFPeA)	38		2.4	0.93	ng/L	1		537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	7.4		2.4	0.74	ng/L	1		537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	0.71	J M	2.4	0.70	ng/L	1		537 (modified)	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: 320-31407-1

Client Sample ID: TP-PFC-021-TPE-D (Continued) Lab Sample ID: 320-31407-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctane Sulfonamide (FOSA)	1.7	J	38	0.60	ng/L	1		537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

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

TestAmerica Job ID: 320-31407-1

Client Sample ID: TP-PFC-021-TPI

Lab Sample ID: 320-31407-1

Date Collected: 09/07/17 12:20

Matrix: Water

Date Received: 09/08/17 09:35

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	82		2.4	0.44	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluoropentanoic acid (PFPeA)	190		2.4	0.95	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorohexanoic acid (PFHxA)	340		2.4	0.75	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluoroheptanoic acid (PFHpA)	82		2.4	0.77	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorooctanoic acid (PFOA)	1100	E M	2.4	0.72	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorononanoic acid (PFNA)	2.7		2.4	0.63	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorodecanoic acid (PFDA)	1.0	J	2.4	0.42	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	0.72	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	0.56	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.4	0.53	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorotetradecanoic acid (PFTeA)	0.96	U	2.4	0.38	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorobutanesulfonic acid (PFBS)	55		2.4	0.88	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorohexanesulfonic acid (PFHxS)	330		2.4	0.83	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	8.0		2.4	0.68	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorooctanesulfonic acid (PFOS)	310		3.8	1.2	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.8	1.2	ng/L		09/12/17 08:51	09/15/17 22:48	1
Perfluorooctane Sulfonamide (FOSA)	1.8	J	38	0.61	ng/L		09/12/17 08:51	09/15/17 22:48	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	30		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C4 PFBA	69		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C2 PFHxA	70		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C4 PFOA	63		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C5 PFNA	88		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C2 PFDA	104		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C2 PFUnA	100		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C2 PFDoA	100		25 - 150	09/12/17 08:51	09/15/17 22:48	1
18O2 PFHxS	96		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C4 PFOS	101		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C4-PFHpA	86		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C5 PFPeA	77		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C3-PFBS	100		25 - 150	09/12/17 08:51	09/15/17 22:48	1
13C2-PFTeDA	108		25 - 150	09/12/17 08:51	09/15/17 22:48	1

Method: 537 (modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	77	D	24	4.4	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluoropentanoic acid (PFPeA)	210	D	24	9.5	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluorohexanoic acid (PFHxA)	390	D	24	7.5	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluoroheptanoic acid (PFHpA)	78	D	24	7.7	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluorooctanoic acid (PFOA)	1800	D M	24	7.2	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluorononanoic acid (PFNA)	19	U	24	6.3	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluorodecanoic acid (PFDA)	9.6	U	24	4.2	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluoroundecanoic acid (PFUnA)	19	U	24	7.2	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluorododecanoic acid (PFDoA)	19	U	24	5.6	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluorotridecanoic Acid (PFTriA)	19	U	24	5.3	ng/L		09/12/17 08:51	09/19/17 23:07	10

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-31407-1

Client Sample ID: TP-PFC-021-TPI

Lab Sample ID: 320-31407-1

Date Collected: 09/07/17 12:20

Matrix: Water

Date Received: 09/08/17 09:35

Method: 537 (modified) - Perfluorinated Hydrocarbons - DL (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorotetradecanoic acid (PFTeA)	9.6	U	24	3.8	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluorobutanesulfonic acid (PFBS)	58	D	24	8.8	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluorohexanesulfonic acid (PFHxS)	420	D	24	8.3	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluoroheptanesulfonic Acid (PFHpS)	9.9	J D	24	6.8	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluorooctanesulfonic acid (PFOS)	330	D	38	12	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluorodecanesulfonic acid (PFDS)	29	U	38	12	ng/L		09/12/17 08:51	09/19/17 23:07	10
Perfluorooctane Sulfonamide (FOSA)	19	U	380	6.1	ng/L		09/12/17 08:51	09/19/17 23:07	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	29		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C4 PFBA	90		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C2 PFHxA	93		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C4 PFOA	90		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C5 PFNA	97		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C2 PFDA	90		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C2 PFUnA	101		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C2 PFDoA	98		25 - 150				09/12/17 08:51	09/19/17 23:07	10
18O2 PFHxS	101		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C4 PFOS	91		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C4-PFHpA	103		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C5 PFPeA	89		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C3-PFBS	96		25 - 150				09/12/17 08:51	09/19/17 23:07	10
13C2-PFTeDA	93		25 - 150				09/12/17 08:51	09/19/17 23:07	10

Client Sample ID: TP-PFC-021-MID-CARBON

Lab Sample ID: 320-31407-2

Date Collected: 09/07/17 12:25

Matrix: Water

Date Received: 09/08/17 09:35

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	130		2.3	0.42	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluoropentanoic acid (PFPeA)	50		2.3	0.92	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluorohexanoic acid (PFHxA)	5.6		2.3	0.73	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	2.3	0.74	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluorooctanoic acid (PFOA)	0.97	J M	2.3	0.69	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluorononanoic acid (PFNA)	1.9	U	2.3	0.61	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluorodecanoic acid (PFDA)	0.93	U	2.3	0.41	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	2.3	0.69	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluorododecanoic acid (PFDoA)	1.9	U	2.3	0.54	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.3	0.51	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluorotetradecanoic acid (PFTeA)	0.93	U	2.3	0.37	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U M	2.3	0.85	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.3	0.81	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	2.3	0.66	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	1.2	ng/L		09/12/17 08:51	09/15/17 22:55	1
Perfluorodecanesulfonic acid (PFDS)	2.8	U	3.7	1.1	ng/L		09/12/17 08:51	09/15/17 22:55	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-31407-1

Client Sample ID: TP-PFC-021-MID-CARBON

Lab Sample ID: 320-31407-2

Date Collected: 09/07/17 12:25

Matrix: Water

Date Received: 09/08/17 09:35

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.68	J	37	0.59	ng/L		09/12/17 08:51	09/15/17 22:55	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	19	Q	25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C4 PFBA	98		25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C2 PFHxA	93		25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C4 PFOA	104		25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C5 PFNA	103		25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C2 PFDA	109		25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C2 PFUnA	95		25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C2 PFDoA	96		25 - 150				09/12/17 08:51	09/15/17 22:55	1
18O2 PFHxS	99		25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C4 PFOS	107		25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C4-PFHpA	107		25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C5 PFPeA	88		25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C3-PFBS	107		25 - 150				09/12/17 08:51	09/15/17 22:55	1
13C2-PFTeDA	121		25 - 150				09/12/17 08:51	09/15/17 22:55	1

Client Sample ID: TP-PFC-021-TPE

Lab Sample ID: 320-31407-3

Date Collected: 09/07/17 12:30

Matrix: Water

Date Received: 09/08/17 09:35

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	120		2.4	0.44	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluoropentanoic acid (PFPeA)	37		2.4	0.96	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorohexanoic acid (PFHxA)	7.7		2.4	0.76	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	0.78	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorooctanoic acid (PFOA)	0.78	J M	2.4	0.73	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorononanoic acid (PFNA)	1.9	U	2.4	0.63	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorodecanoic acid (PFDA)	0.97	U	2.4	0.43	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	0.73	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	0.57	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.4	0.53	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorotetradecanoic acid (PFTeA)	0.97	U	2.4	0.39	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.4	0.89	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.4	0.84	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	2.4	0.69	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	1.2	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.9	1.2	ng/L		09/12/17 08:51	09/15/17 23:02	1
Perfluorooctane Sulfonamide (FOSA)	1.2	J	39	0.62	ng/L		09/12/17 08:51	09/15/17 23:02	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	5	Q	25 - 150				09/12/17 08:51	09/15/17 23:02	1
13C4 PFBA	80		25 - 150				09/12/17 08:51	09/15/17 23:02	1
13C2 PFHxA	70		25 - 150				09/12/17 08:51	09/15/17 23:02	1
13C4 PFOA	67		25 - 150				09/12/17 08:51	09/15/17 23:02	1
13C5 PFNA	61		25 - 150				09/12/17 08:51	09/15/17 23:02	1
13C2 PFDA	70		25 - 150				09/12/17 08:51	09/15/17 23:02	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-31407-1

Client Sample ID: TP-PFC-021-TPE

Lab Sample ID: 320-31407-3

Date Collected: 09/07/17 12:30

Matrix: Water

Date Received: 09/08/17 09:35

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹³ C2 PFUnA	73		25 - 150	09/12/17 08:51	09/15/17 23:02	1
¹³ C2 PFDoA	89		25 - 150	09/12/17 08:51	09/15/17 23:02	1
¹⁸ O2 PFHxS	121		25 - 150	09/12/17 08:51	09/15/17 23:02	1
¹³ C4 PFOS	125		25 - 150	09/12/17 08:51	09/15/17 23:02	1
¹³ C4-PFHpA	76		25 - 150	09/12/17 08:51	09/15/17 23:02	1
¹³ C5 PFPeA	68		25 - 150	09/12/17 08:51	09/15/17 23:02	1
¹³ C3-PFBS	129		25 - 150	09/12/17 08:51	09/15/17 23:02	1
¹³ C2-PFTeDA	119		25 - 150	09/12/17 08:51	09/15/17 23:02	1

Client Sample ID: TP-PFC-021-TPE-D

Lab Sample ID: 320-31407-4

Date Collected: 09/07/17 00:00

Matrix: Water

Date Received: 09/08/17 09:35

Method: 537 (modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	120		2.4	0.43	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluoropentanoic acid (PFPeA)	38		2.4	0.93	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorohexanoic acid (PFHxA)	7.4		2.4	0.74	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	0.75	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorooctanoic acid (PFOA)	0.71	J M	2.4	0.70	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorononanoic acid (PFNA)	1.9	U	2.4	0.62	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorodecanoic acid (PFDA)	0.94	U	2.4	0.41	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	0.70	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	0.55	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.4	0.52	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorotetradecanoic acid (PFTeA)	0.94	U	2.4	0.38	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorobutanesulfonic acid (PFBS)	1.9	U M	2.4	0.86	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.4	0.82	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	2.4	0.67	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.8	1.2	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorodecanesulfonic acid (PFDS)	2.8	U	3.8	1.1	ng/L		09/12/17 08:51	09/15/17 23:09	1
Perfluorooctane Sulfonamide (FOSA)	1.7	J	38	0.60	ng/L		09/12/17 08:51	09/15/17 23:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
¹³ C8 FOSA	36		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C4 PFBA	96		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C2 PFHxA	99		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C4 PFOA	108		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C5 PFNA	105		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C2 PFDA	115		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C2 PFUnA	101		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C2 PFDoA	99		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹⁸ O2 PFHxS	117		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C4 PFOS	118		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C4-PFHpA	107		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C5 PFPeA	93		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C3-PFBS	126		25 - 150	09/12/17 08:51	09/15/17 23:09	1
¹³ C2-PFTeDA	117		25 - 150	09/12/17 08:51	09/15/17 23:09	1

TestAmerica Sacramento

Default Detection Limits

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

TestAmerica Job ID: 320-31407-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Prep: 3535

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	2.5	0.92	ng/L	537 (modified)
Perfluorobutanoic acid (PFBA)	2.5	0.46	ng/L	537 (modified)
Perfluorodecanesulfonic acid (PFDS)	4.0	1.2	ng/L	537 (modified)
Perfluorodecanoic acid (PFDA)	2.5	0.44	ng/L	537 (modified)
Perfluorododecanoic acid (PFDoA)	2.5	0.58	ng/L	537 (modified)
Perfluoroheptanesulfonic Acid (PFHpS)	2.5	0.71	ng/L	537 (modified)
Perfluoroheptanoic acid (PFHpA)	2.5	0.80	ng/L	537 (modified)
Perfluorohexanesulfonic acid (PFHxS)	2.5	0.87	ng/L	537 (modified)
Perfluorohexanoic acid (PFHxA)	2.5	0.79	ng/L	537 (modified)
Perfluorononanoic acid (PFNA)	2.5	0.65	ng/L	537 (modified)
Perfluorooctane Sulfonamide (FOSA)	40	0.64	ng/L	537 (modified)
Perfluorooctanesulfonic acid (PFOS)	4.0	1.3	ng/L	537 (modified)
Perfluorooctanoic acid (PFOA)	2.5	0.75	ng/L	537 (modified)
Perfluoropentanoic acid (PFPeA)	2.5	0.99	ng/L	537 (modified)
Perfluorotetradecanoic acid (PFTeA)	2.5	0.40	ng/L	537 (modified)
Perfluorotridecanoic Acid (PFTriA)	2.5	0.55	ng/L	537 (modified)
Perfluoroundecanoic acid (PFUnA)	2.5	0.75	ng/L	537 (modified)

Isotope Dilution Summary

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

TestAmerica Job ID: 320-31407-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3C8 FOS/ (25-150)	3C4 PFB/ (25-150)	3C2 PFHx (25-150)	3C4 PFO/ (25-150)	3C5 PFN/ (25-150)	3C2 PFD/ (25-150)	3C2 PFUn (25-150)	3C2 PFDo (25-150)
320-31407-1	TP-PFC-021-TPI	30	69	70	63	88	104	100	100
320-31407-1 - DL	TP-PFC-021-TPI	29	90	93	90	97	90	101	98
320-31407-2	TP-PFC-021-MID-CARBON	19 Q	98	93	104	103	109	95	96
320-31407-3	TP-PFC-021-TPE	5 Q	80	70	67	61	70	73	89
320-31407-4	TP-PFC-021-TPE-D	36	96	99	108	105	115	101	99
LCS 320-183917/2-A	Lab Control Sample	73	103	99	104	103	113	100	88
LCSD 320-183917/3-A	Lab Control Sample Dup	70	105	97	105	105	109	91	83
MB 320-183917/1-A	Method Blank	78	120	116	127	124	127	119	104

		Percent Isotope Dilution Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	3O2 PFHx (25-150)	3C4 PFO/ (25-150)	3C4-PFHp (25-150)	3C5 PFPe (25-150)	3C3-PFB/ (25-150)	3C2-PFTe/ (25-150)
320-31407-1	TP-PFC-021-TPI	96	101	86	77	100	108
320-31407-1 - DL	TP-PFC-021-TPI	101	91	103	89	96	93
320-31407-2	TP-PFC-021-MID-CARBON	99	107	107	88	107	121
320-31407-3	TP-PFC-021-TPE	121	125	76	68	129	119
320-31407-4	TP-PFC-021-TPE-D	117	118	107	93	126	117
LCS 320-183917/2-A	Lab Control Sample	103	102	111	94	107	122
LCSD 320-183917/3-A	Lab Control Sample Dup	103	100	116	98	107	109
MB 320-183917/1-A	Method Blank	111	117	136	116	125	123

Surrogate Legend

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

QC Sample Results

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

TestAmerica Job ID: 320-31407-1

Method: 537 (modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-183917/1-A

Matrix: Water

Analysis Batch: 184734

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 183917

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.513	J	2.5	0.46	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluoropentanoic acid (PFPeA)	2.0	U	2.5	0.99	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorohexanoic acid (PFHxA)	2.0	U	2.5	0.79	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	0.80	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	0.75	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	0.65	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorodecanoic acid (PFDA)	1.0	U	2.5	0.44	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluoroundecanoic acid (PFUnA)	2.0	U	2.5	0.75	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorododecanoic acid (PFDoA)	2.0	U	2.5	0.58	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorotridecanoic Acid (PFTriA)	2.0	U	2.5	0.55	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorotetradecanoic acid (PFTeA)	1.0	U	2.5	0.40	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	0.92	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	0.87	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.5	0.71	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U M	4.0	1.3	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorodecanesulfonic acid (PFDS)	3.0	U	4.0	1.2	ng/L		09/12/17 08:51	09/15/17 22:28	1
Perfluorooctane Sulfonamide (FOSA)	1.13	J	40	0.64	ng/L		09/12/17 08:51	09/15/17 22:28	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	78		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C4 PFBA	120		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C2 PFHxA	116		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C4 PFOA	127		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C5 PFNA	124		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C2 PFDA	127		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C2 PFUnA	119		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C2 PFDoA	104		25 - 150	09/12/17 08:51	09/15/17 22:28	1
18O2 PFHxS	111		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C4 PFOS	117		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C4-PFHpA	136		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C5 PFPeA	116		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C3-PFBS	125		25 - 150	09/12/17 08:51	09/15/17 22:28	1
13C2-PFTeDA	123		25 - 150	09/12/17 08:51	09/15/17 22:28	1

Lab Sample ID: LCS 320-183917/2-A

Matrix: Water

Analysis Batch: 184734

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 183917

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorobutanoic acid (PFBA)	40.0	45.6		ng/L		114	60 - 140
Perfluoropentanoic acid (PFPeA)	40.0	41.9		ng/L		105	60 - 140
Perfluorohexanoic acid (PFHxA)	40.0	45.0		ng/L		112	60 - 140
Perfluoroheptanoic acid (PFHpA)	40.0	47.0		ng/L		118	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	43.3		ng/L		108	60 - 140
Perfluorononanoic acid (PFNA)	40.0	46.4		ng/L		116	60 - 140
Perfluorodecanoic acid (PFDA)	40.0	44.5		ng/L		111	60 - 140
Perfluoroundecanoic acid (PFUnA)	40.0	41.8		ng/L		105	60 - 140

TestAmerica Sacramento

QC Sample Results

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

TestAmerica Job ID: 320-31407-1

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 320-183917/2-A

Matrix: Water

Analysis Batch: 184734

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 183917

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorododecanoic acid (PFDoA)	40.0	44.3		ng/L		111	60 - 140
Perfluorotridecanoic Acid (PFTriA)	40.0	48.2		ng/L		120	50 - 150
Perfluorotetradecanoic acid (PFTeA)	40.0	37.9		ng/L		95	50 - 150
Perfluorobutanesulfonic acid (PFBS)	35.4	38.6		ng/L		109	50 - 150
Perfluorohexanesulfonic acid (PFHxS)	36.4	42.9		ng/L		118	60 - 140
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	43.7		ng/L		115	50 - 150
Perfluorooctanesulfonic acid (PFOS)	37.1	39.8		ng/L		107	60 - 140
Perfluorodecanesulfonic acid (PFDS)	38.6	40.1		ng/L		104	50 - 150
Perfluorooctane Sulfonamide (FOSA)	40.0	49.7		ng/L		124	60 - 140

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C8 FOSA	73		25 - 150
13C4 PFBA	103		25 - 150
13C2 PFHxA	99		25 - 150
13C4 PFOA	104		25 - 150
13C5 PFNA	103		25 - 150
13C2 PFDA	113		25 - 150
13C2 PFUnA	100		25 - 150
13C2 PFDoA	88		25 - 150
18O2 PFHxS	103		25 - 150
13C4 PFOS	102		25 - 150
13C4-PFHpA	111		25 - 150
13C5 PFPeA	94		25 - 150
13C3-PFBS	107		25 - 150
13C2-PFTeDA	122		25 - 150

Lab Sample ID: LCSD 320-183917/3-A

Matrix: Water

Analysis Batch: 184734

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 183917

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	45.3		ng/L		113	60 - 140	1	30
Perfluoropentanoic acid (PFPeA)	40.0	41.1		ng/L		103	60 - 140	2	30
Perfluorohexanoic acid (PFHxA)	40.0	44.1		ng/L		110	60 - 140	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	45.2		ng/L		113	60 - 140	4	30
Perfluorooctanoic acid (PFOA)	40.0	42.5		ng/L		106	60 - 140	2	30
Perfluorononanoic acid (PFNA)	40.0	43.0		ng/L		107	60 - 140	8	30
Perfluorodecanoic acid (PFDA)	40.0	43.1		ng/L		108	60 - 140	3	30
Perfluoroundecanoic acid (PFUnA)	40.0	41.2		ng/L		103	60 - 140	1	30
Perfluorododecanoic acid (PFDoA)	40.0	42.1		ng/L		105	60 - 140	5	30

TestAmerica Sacramento

QC Sample Results

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

TestAmerica Job ID: 320-31407-1

Method: 537 (modified) - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 320-183917/3-A

Matrix: Water

Analysis Batch: 184734

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 183917

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorotridecanoic Acid (PFTriA)	40.0	41.3		ng/L		103	50 - 150	15	30
Perfluorotetradecanoic acid (PFTeA)	40.0	36.0		ng/L		90	50 - 150	5	30
Perfluorobutanesulfonic acid (PFBS)	35.4	38.8		ng/L		110	50 - 150	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	41.9		ng/L		115	60 - 140	2	30
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	44.4		ng/L		117	50 - 150	2	30
Perfluorooctanesulfonic acid (PFOS)	37.1	38.1		ng/L		103	60 - 140	5	30
Perfluorodecanesulfonic acid (PFDS)	38.6	36.4		ng/L		94	50 - 150	10	30
Perfluorooctane Sulfonamide (FOSA)	40.0	46.4		ng/L		116	60 - 140	7	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
13C8 FOSA	70		25 - 150
13C4 PFBA	105		25 - 150
13C2 PFHxA	97		25 - 150
13C4 PFOA	105		25 - 150
13C5 PFNA	105		25 - 150
13C2 PFDA	109		25 - 150
13C2 PFUnA	91		25 - 150
13C2 PFDoA	83		25 - 150
18O2 PFHxS	103		25 - 150
13C4 PFOS	100		25 - 150
13C4-PFHpA	116		25 - 150
13C5 PFPeA	98		25 - 150
13C3-PFBS	107		25 - 150
13C2-PFTeDA	109		25 - 150

QC Association Summary

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

TestAmerica Job ID: 320-31407-1

LCMS

Prep Batch: 183917

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31407-1	TP-PFC-021-TPI	Total/NA	Water	3535	
320-31407-1 - DL	TP-PFC-021-TPI	Total/NA	Water	3535	
320-31407-2	TP-PFC-021-MID-CARBON	Total/NA	Water	3535	
320-31407-3	TP-PFC-021-TPE	Total/NA	Water	3535	
320-31407-4	TP-PFC-021-TPE-D	Total/NA	Water	3535	
MB 320-183917/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-183917/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-183917/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 184734

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31407-1	TP-PFC-021-TPI	Total/NA	Water	537 (modified)	183917
320-31407-2	TP-PFC-021-MID-CARBON	Total/NA	Water	537 (modified)	183917
320-31407-3	TP-PFC-021-TPE	Total/NA	Water	537 (modified)	183917
320-31407-4	TP-PFC-021-TPE-D	Total/NA	Water	537 (modified)	183917
MB 320-183917/1-A	Method Blank	Total/NA	Water	537 (modified)	183917
LCS 320-183917/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	183917
LCSD 320-183917/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	183917

Analysis Batch: 185322

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-31407-1 - DL	TP-PFC-021-TPI	Total/NA	Water	537 (modified)	183917

Lab Chronicle

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

TestAmerica Job ID: 320-31407-1

Client Sample ID: TP-PFC-021-TPI

Date Collected: 09/07/17 12:20

Date Received: 09/08/17 09:35

Lab Sample ID: 320-31407-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			183917	09/12/17 08:51	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1	184734	09/15/17 22:48	CBW	TAL SAC
Total/NA	Prep	3535	DL		183917	09/12/17 08:51	NS1	TAL SAC
Total/NA	Analysis	537 (modified)	DL	10	185322	09/19/17 23:07	CBW	TAL SAC

Client Sample ID: TP-PFC-021-MID-CARBON

Date Collected: 09/07/17 12:25

Date Received: 09/08/17 09:35

Lab Sample ID: 320-31407-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			183917	09/12/17 08:51	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1	184734	09/15/17 22:55	CBW	TAL SAC

Client Sample ID: TP-PFC-021-TPE

Date Collected: 09/07/17 12:30

Date Received: 09/08/17 09:35

Lab Sample ID: 320-31407-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			183917	09/12/17 08:51	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1	184734	09/15/17 23:02	CBW	TAL SAC

Client Sample ID: TP-PFC-021-TPE-D

Date Collected: 09/07/17 00:00

Date Received: 09/08/17 09:35

Lab Sample ID: 320-31407-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			183917	09/12/17 08:51	NS1	TAL SAC
Total/NA	Analysis	537 (modified)		1	184734	09/15/17 23:09	CBW	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: 320-31407-1

Laboratory: TestAmerica Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Oregon	NELAP	10	4040	01-28-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	3535	Water	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	3535	Water	Perfluorobutanoic acid (PFBA)
537 (modified)	3535	Water	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	3535	Water	Perfluorodecanoic acid (PFDA)
537 (modified)	3535	Water	Perfluorododecanoic acid (PFDoA)
537 (modified)	3535	Water	Perfluoroheptanesulfonic Acid (PFHpS)
537 (modified)	3535	Water	Perfluoroheptanoic acid (PFHpA)
537 (modified)	3535	Water	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	3535	Water	Perfluorohexanoic acid (PFHxA)
537 (modified)	3535	Water	Perfluorononanoic acid (PFNA)
537 (modified)	3535	Water	Perfluorooctane Sulfonamide (FOSA)
537 (modified)	3535	Water	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	3535	Water	Perfluorooctanoic acid (PFOA)
537 (modified)	3535	Water	Perfluoropentanoic acid (PFPeA)
537 (modified)	3535	Water	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	3535	Water	Perfluorotridecanoic Acid (PFTriA)
537 (modified)	3535	Water	Perfluoroundecanoic acid (PFUnA)

Method Summary

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

TestAmerica Job ID: 320-31407-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

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: 320-31407-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-31407-1	TP-PFC-021-TPI	Water	09/07/17 12:20	09/08/17 09:35
320-31407-2	TP-PFC-021-MID-CARBON	Water	09/07/17 12:25	09/08/17 09:35
320-31407-3	TP-PFC-021-TPE	Water	09/07/17 12:30	09/08/17 09:35
320-31407-4	TP-PFC-021-TPE-D	Water	09/07/17 00:00	09/08/17 09:35

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 184734Lab Sample ID: MB 320-183917/1-A Client Sample ID: _____Date Analyzed: 09/15/17 22:28 Lab File ID: 2017.09.15D_002.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.04	Baseline	westendor fc	09/19/17 14:03

Lab Sample ID: 320-31407-1 Client Sample ID: TP-PFC-021-TPIDate Analyzed: 09/15/17 22:48 Lab File ID: 2017.09.15D_005.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.68	Isomers	westendor fc	09/19/17 14:07

Lab Sample ID: 320-31407-2 Client Sample ID: TP-PFC-021-MID-CARBONDate Analyzed: 09/15/17 22:55 Lab File ID: 2017.09.15D_006.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.78	Baseline	westendor fc	09/19/17 14:07
Perfluorooctanoic acid (PFOA)	2.68	Isomers	westendor fc	09/19/17 14:07

Lab Sample ID: 320-31407-3 Client Sample ID: TP-PFC-021-TPEDate Analyzed: 09/15/17 23:02 Lab File ID: 2017.09.15D_007.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.68	Isomers	westendor fc	09/19/17 14:08

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 184734Lab Sample ID: 320-31407-4 Client Sample ID: TP-PFC-021-TPE-DDate Analyzed: 09/15/17 23:09 Lab File ID: 2017.09.15D_008.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.78	Baseline	westendor fc	09/19/17 14:08
Perfluorooctanoic acid (PFOA)	2.69	Isomers	westendor fc	09/19/17 14:09

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 185079Lab Sample ID: IC 320-185079/4 Client Sample ID: _____Date Analyzed: 09/18/17 15:52 Lab File ID: 2017.09.18ICAL_004.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.75	Baseline	westendor fc	09/19/17 08:20

Lab Sample ID: IC 320-185079/7 Client Sample ID: _____Date Analyzed: 09/18/17 16:13 Lab File ID: 2017.09.18ICAL_007.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.75	Baseline	westendor fc	09/19/17 08:20
Perfluorooctanesulfonic acid (PFOS)	3.08	Baseline	westendor fc	09/19/17 08:21

Lab Sample ID: IC 320-185079/8 Client Sample ID: _____Date Analyzed: 09/18/17 16:20 Lab File ID: 2017.09.18ICAL_008.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.08	Baseline	westendor fc	09/19/17 08:21

Lab Sample ID: IC 320-185079/9 Client Sample ID: _____Date Analyzed: 09/18/17 16:27 Lab File ID: 2017.09.18ICAL_009.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.07	Baseline	westendor fc	09/19/17 08:21

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 185322Lab Sample ID: 320-31407-1 DL Client Sample ID: TP-PFC-021-TPI DLDate Analyzed: 09/19/17 23:07 Lab File ID: 2017.09.19B_014.d GC Column: GeminiC18 3x1 ID: 3 (mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.67	Isomers	westendor fc	09/20/17 14:14

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCM2-4:2FTSIC_00003	12/30/17	08/07/17	MeOH/H2O, Lot 09285	5000 uL	LCPFCIS_00003	50 uL	13C2-PFOA	50 ng/mL
.LCPFCIS_00003	12/30/17	06/30/17	Methanol, Lot 14139	5000 uL	LCM2PFOA_00005	500 uL	13C2-PFOA	5 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCMPFC_ALL_SU_00010	02/22/18	08/23/17	Methanol, Lot Baker 141039	200 mL	LCd-NETfOSA-M_00005	200 uL	d-N-EtFOSA-M	0.05 ug/mL
					LCd-NMeFOSA-M_00004	200 uL	d-N-MeFOSA-M	0.05 ug/mL
					LCd3-NMeFOSAA_00004	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETfOSA-M_00004	200 uL	d5-NETfOSA-M	0.05 ug/mL
					LCM2-6:FTS_00004	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00004	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00011	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA_00010	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00010	200 uL	13C4-PFHpa	0.05 ug/mL
					LCM5PFPEA_00011	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00014	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00011	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00004	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00016	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00011	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00017	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00011	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00011	200 uL	13C5 PFNA	0.05 ug/mL
.LCd-NETfOSA-M_00005	06/10/21		WELLINGTON, Lot dNETfOSA0616M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
.LCd-NMeFOSA-M_00004	06/10/21		WELLINGTON, Lot dNMeFOSA0616M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
.LCd3-NMeFOSAA_00004	11/22/21		WELLINGTON, Lot d3NMeFOSAA1116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
.LCd5-NETfOSA-M_00004	11/22/21		WELLINGTON, Lot d5NETfOSA1116		(Purchased Reagent)		d5-NETfOSA-M	50 ug/mL
.LCM2-6:FTS_00004	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
.LCM2-8:2FTS_00004	08/22/21		WELLINGTON, Lot M282FTS0816		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCM2PFHxDA_00011	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00010	12/07/20		Wellington Laboratories, Lot M2PFTeDA0217		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHPA_00010	05/03/22		Wellington Laboratories, Lot M4PFHpa0517		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
.LCM5PFPEA_00011	11/22/21		Wellington Laboratories, Lot M5PFPeA1116		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
.LCM8FOSA_00014	04/20/22		Wellington Laboratories, Lot M8FOSA0417I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00011	04/12/22		Wellington Laboratories, Lot MPFBA0417		(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFBS_00004	05/24/22		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
.LCMPFDA_00016	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00011	05/23/22		Wellington Laboratories, Lot MPFDoA0517		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00017	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00011	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00011	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00015	04/12/22		Wellington Laboratories, Lot MPFOA0417		(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00023	05/19/22		Wellington Laboratories, Lot MPFOS517		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUDa_00012	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC_FULL-L1_00005	12/27/17	07/07/17	MeOH/H2O, Lot 90285	5000 uL	LCMPFC_ALL_SU_00001	250 uL	d-N-EtFOSA-M	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C3-PFBS	46.5 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFC_ALL_SP_00001	25 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.467 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.474 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.479 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	0.5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ng/mL
							MeFOSA	0.5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ng/mL
							Perfluorobutanoic acid (PFBA)	0.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ng/mL
							Perfluorodecanoic acid (PFDA)	0.5 ng/mL
							Perfluorododecanoic acid (PFDoA)	0.5 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.5 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ng/mL
							Perfluorohexanoic acid (PFHxA)	0.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.455 ng/mL
							Perfluorononanoic acid (PFNA)	0.5 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctadecanoic acid	0.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.464 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	0.5 ng/mL
							Perfluoropentanoic acid (PFPeA)	0.5 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	0.5 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	0.5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	0.5 ng/mL
					LCPFCIS 00003	50 uL	13C2-PFOA	50 ng/mL
.LCMPFC_ALL_SU_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCd-NETFOSA-M_00005	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M 00004	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA 00004	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NETFOSAA 00004	200 uL	d5-NETFOSAA	1 ug/mL
					LCM2-6:FTS 00004	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS 00004	200 uL	M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA 00010	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA 00009	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA 00009	200 uL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA 00010	200 uL	13C5 PFPeA	1 ug/mL
					LCM8FOSA 00013	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA 00010	200 uL	13C4 PFBA	1 ug/mL
					LCMPFBS 00003	200 uL	13C3-PFBS	0.93 ug/mL
					LCMPFDA 00015	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA 00010	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA 00016	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS 00010	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA 00010	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA 00014	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS 00022	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa 00011	200 uL	13C2 PFUnA	1 ug/mL
..LCd-NETFOSA-M 00005	06/10/21		WELLINGTON, Lot dNetFOSA0616M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M 00004	06/10/21		WELLINGTON, Lot dNMeFOSA0616M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA 00004	11/22/21		WELLINGTON, Lot d3NMeFOSAA1116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA 00004	11/22/21		WELLINGTON, Lot d5NETFOSAA1116		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FTS 00004	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS 00004	08/22/21		WELLINGTON, Lot M282FTS0816		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA 00010	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA 00009	12/07/20		Wellington Laboratories, Lot M2PFTeDA0217		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM4PFHPA 00009	05/27/21		Wellington Laboratories, Lot M4PFHPA0516		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA 00010	11/22/21		Wellington Laboratories, Lot M5PFPeA1116		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA 00013	12/22/20		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00010	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00003	08/02/21		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00015	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00010	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00016	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00010	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA 00010	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00014	04/12/22		Wellington Laboratories, Lot MPFOA0417		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00022	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00011	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFC_ALL_SP_00001	12/27/17	07/07/17	Methanol, Lot 157237	10000 uL	LCPFC2SP_00037	1000 uL	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-ethylperfluoro-1-octanesulfo namide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
					LCPFCSP_00103	1000 uL	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
							Perfluorohexadecanoic acid	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
							Perfluorooctadecanoic acid	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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
..LCPFC2SP_00037	01/07/18	07/07/17	Methanol, Lot 104453	10 mL	LC4:2FTS_00002	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-EtFOSA-M_00004	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00002	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00003	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC4:2FTS_00002	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-EtFOSA-M_00004	05/24/21		WELLINGTON, Lot NETFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
...LCN-EtFOSAA_00002	01/20/21		WELLINGTON, Lot NETFOSAA0116		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00003	05/24/21		WELLINGTON, Lot NMeFOSA0516M		(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00003	01/20/21		WELLINGTON, Lot NMeFOSAA0116		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFCSP_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uL	LCPFBA_00006	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00006	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00007	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00006	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
...LCPFBFA_00006	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00006	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDDA_00006	05/31/21	Wellington Laboratories, Lot PFDA0516			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDDoA_00006	05/31/21	Wellington Laboratories, Lot PFDoA0516			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpA_00006	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpS_00010	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
...LCPFHxA_00005	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxDA_00007	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00003	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00007	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00007	08/02/21	Wellington Laboratories, Lot PFOA0716			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00007	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00003	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_00006	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFTeDA_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
...LCPFUdA_00006	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
.LCPFCIS_00003	12/30/17	06/30/17	Methanol, Lot 14139	5000 uL	LCM2PFOA_00005	500 uL	13C2-PFOA	5 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC_FULL-L2_00006	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC_ALL_SU_00001	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C3-PFBS	46.5 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFC_ALL_SP_00001	50 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-ethylperfluoro-1-octanesulfoamide	1 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	1 ng/mL
							MeFOSA	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.: 320-31407-1

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
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.91 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctadecanoic acid	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_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCPFCIS_00003	50 uL	13C2-PFOA	50 ng/mL
					LCd-NEtFOSA-M_00005	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00004	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00004	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00004	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00004	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00004	200 uL	M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA_00010	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00009	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00009	200 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00010	200 uL	13C5 PFPeA	1 ug/mL
					LCM8FOSA_00013	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00010	200 uL	13C4 PFBA	1 ug/mL
					LCMPFBS_00003	200 uL	13C3-PFBS	0.93 ug/mL
					LCMPFDA_00015	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00010	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00016	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00010	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00010	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00014	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00022	200 uL	13C4 PFOS	0.956 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCd-NETFOSA-M 00005	06/10/21		WELLINGTON, Lot dNetFOSA0616M		LCMPFUDa 00011	200 uL	13C2 PFUnA	1 ug/mL
..LCd-NMeFOSA-M 00004	06/10/21		WELLINGTON, Lot dNMeFOSA0616M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd3-NMeFOSAA 00004	11/22/21		WELLINGTON, Lot d3NMeFOSAA1116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA 00004	11/22/21		WELLINGTON, Lot d5NetFOSAA1116		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FTS 00004	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS 00004	08/22/21		WELLINGTON, Lot M282FTS0816		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA 00010	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA 00009	12/07/20		Wellington Laboratories, Lot M2PFTeDA0217		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA 00009	05/27/21		Wellington Laboratories, Lot M4PFHpA0516		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA 00010	11/22/21		Wellington Laboratories, Lot M5PFPeA1116		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA 00013	12/22/20		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00010	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00003	08/02/21		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00015	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00010	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00016	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00010	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2-PFHxS	47.3 ug/mL
..LCMPFNA 00010	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00014	04/12/22		Wellington Laboratories, Lot MPFOA0417		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00022	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00011	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFC_ALL_SP_00001	12/27/17	07/07/17	Methanol, Lot 157237	10000 uL	LCPFC2SP_00037	1000 uL	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-ethylperfluoro-1-octanesulfo namide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
					LCPFCSP_00103	1000 uL	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0952 ug/mL
							Perfluorohexanoic acid (PFHxA)	0.1 ug/mL
							Perfluorohexadecanoic acid	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
							Perfluorooctadecanoic acid	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
..LCPFC2SP_00037	01/07/18	07/07/17	Methanol, Lot 104453	10 mL	LC4:2FTS_00002	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-EtFOSA-M_00004	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00002	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00003	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC4:2FTS_00002	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-EtFOSA-M_00004	05/24/21		WELLINGTON, Lot NetFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
...LCN-EtFOSAA_00002	01/20/21		WELLINGTON, Lot NetFOSAA0116		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCN-MeFOSA-M_00003	05/24/21		WELLINGTON, Lot NMeFOSA0516M		(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00003	01/20/21		WELLINGTON, Lot NMeFOSAA0116		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFCSP_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uL	LCPFBA_00006	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00006	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00007	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUDa_00006	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
...LCPFBA_00006	05/27/21		Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00006	03/15/21		Wellington Laboratories, Lot LFPBS0316		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00006	05/31/21		Wellington Laboratories, Lot PFDA0516		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDoA_00006	05/31/21		Wellington Laboratories, Lot PFDoA0516		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LFPDS0615		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpA_00006	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpS_00010	11/06/20		Wellington Laboratories, Lot LFPHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
...LCPFHxA_00005	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxDA_00007	05/25/21		Wellington Laboratories, Lot PFHxDA0516		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00003	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFNA_00007	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00007	08/02/21		Wellington Laboratories, Lot PFOA0716		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00007	04/29/21		Wellington Laboratories, Lot PFODA0416		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00003	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_00006	05/31/21		Wellington Laboratories, Lot PFPeA0516		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFTeDA_00005	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTTrDA_00005	02/12/21		Wellington Laboratories, Lot PFTTrDA0216		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTTriA)	50 ug/mL
...LCPFUdA_00006	08/19/20		Wellington Laboratories, Lot PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
.LCPFCIS_00003	12/30/17	06/30/17	Methanol, Lot 14139	5000 uL	LCM2PFOA_00005	500 uL	13C2-PFOA	5 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC_FULL-L2_00009	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC_ALL_SU_00001	250 uL	13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C3-PFBS	46.5 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFC_ALL_SP_00001	50 uL	Perfluorobutanoic acid (PFBA)	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid (PFDA)	1 ng/mL
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCM2PFTeDA_00009	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00009	200 uL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00010	200 uL	13C5 PFPeA	1 ug/mL
					LCM8FOSA_00013	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00010	200 uL	13C4 PFBA	1 ug/mL
					LCMPFBS_00003	200 uL	13C3-PFBS	0.93 ug/mL
					LCMPFDA_00015	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00010	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00016	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00010	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00010	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00014	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00022	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00011	200 uL	13C2 PFUnA	1 ug/mL
..LCM2PFTeDA_00009	12/07/20	Wellington Laboratories, Lot M2PFTeDA0217			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00009	05/27/21	Wellington Laboratories, Lot M4PFHFA0516			(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00010	11/22/21	Wellington Laboratories, Lot M5PFPeA1116			(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00013	12/22/20	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00010	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00003	08/02/21	Wellington Laboratories, Lot M3PFBS0815			(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00015	09/30/21	Wellington Laboratories, Lot MPFDA0916			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00010	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00016	11/22/21	Wellington Laboratories, Lot MPFHxA1116			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00010	02/17/22	Wellington Laboratories, Lot MPFHxS0217			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00010	09/30/21	Wellington Laboratories, Lot MPFNA0916			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00014	04/12/22	Wellington Laboratories, Lot MPFOA0417			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00022	12/12/21	Wellington Laboratories, Lot MPFOS1216			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00011	11/22/21	Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFC_ALL_SP_00001	12/27/17	07/07/17	Methanol, Lot 157237	10000 uL	LCPFCSP_00103	1000 uL	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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uL	LCPFBA_00006	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00006	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFOS-br_00003	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUDa_00006	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFBA_00006	05/27/21		Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00006	03/15/21		Wellington Laboratories, Lot LPFBS0316		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00006	05/31/21		Wellington Laboratories, Lot PFDA0516		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDoA_00006	05/31/21		Wellington Laboratories, Lot PFDoA0516		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LPFDS0615		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpA_00006	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpS_00010	11/06/20		Wellington Laboratories, Lot LPFHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
...LCPFHxA_00005	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxS-br_00003	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00007	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00007	08/02/21		Wellington Laboratories, Lot PFOA0716		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFOS-br_00003	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_00006	05/31/21		Wellington Laboratories, Lot PFPeA0516		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFTeDA_00005	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTTrDA_00005	02/12/21		Wellington Laboratories, Lot PFTTrDA0216		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTTriA)	50 ug/mL
...LCPFUdA_00006	08/19/20		Wellington Laboratories, Lot PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_FULL-L3_00005	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC_ALL_SU_00001	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NMeFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C3-PFBS	46.5 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFC_ALL_SP_00001	250 uL	13C2 PFUnA	50 ng/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-ethylperfluoro-1-octanesulfoamide	5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							MeFOSA	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
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.55 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctadecanoic acid	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
							Perfluorotridecanoic Acid (PFTriA)	5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	5 ng/mL
					LCPFCIS_00003	50 uL	13C2-PFOA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCMPFC_ALL_SU_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCd-NEtFOSA-M_00005	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00004	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00004	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00004	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00004	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00004	200 uL	M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA_00010	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00009	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00009	200 uL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00010	200 uL	13C5 PFPeA	1 ug/mL
					LCM8FOSA_00013	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00010	200 uL	13C4 PFBA	1 ug/mL
					LCMPFBS_00003	200 uL	13C3-PFBS	0.93 ug/mL
					LCMPFDA_00015	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00010	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00016	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00010	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00010	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00014	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00022	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00011	200 uL	13C2 PFUnA	1 ug/mL
..LCd-NEtFOSA-M_00005	06/10/21		WELLINGTON, Lot dNetFOSA0616M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00004	06/10/21		WELLINGTON, Lot dNMeFOSA0616M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00004	11/22/21		WELLINGTON, Lot d3NMeFOSAA1116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00004	11/22/21		WELLINGTON, Lot d5NEtFOSAA1116		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00004	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00004	08/22/21		WELLINGTON, Lot M282FTS0816		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00010	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00009	12/07/20		Wellington Laboratories, Lot M2PFTeDA0217		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA_00009	05/27/21		Wellington Laboratories, Lot M4PFHFA0516		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA_00010	11/22/21		Wellington Laboratories, Lot M5PFPeA1116		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00013	12/22/20		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00010	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00003	08/02/21		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00015	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00010	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00016	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00010	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00010	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00014	04/12/22		Wellington Laboratories, Lot MPFOA0417		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00022	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00011	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFC_ALL_SP_00001	12/27/17	07/07/17	Methanol, Lot 157237	10000 uL	LCPFC2SP_00037	1000 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	0.0934 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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-ethylperfluoro-1-octanesulfo namide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
					LCPFCSP_00103	1000 uL	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
							Perfluorohexadecanoic acid	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
							Perfluorooctadecanoic acid	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
..LCPFC2SP_00037	01/07/18	07/07/17	Methanol, Lot 104453	10 mL	LC4:2FTS_00002	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.: 320-31407-1

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-EtFOSA-M_00004	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00002	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00003	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC4:2FTS_00002	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-EtFOSA-M_00004	05/24/21	WELLINGTON, Lot NetFOSA0516M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
...LCN-EtFOSAA_00002	01/20/21	WELLINGTON, Lot NetFOSAA0116			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00003	05/24/21	WELLINGTON, Lot NMeFOSA0516M			(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00003	01/20/21	WELLINGTON, Lot NMeFOSAA0116			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFCSP_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uL	LCPFBA_00006	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00006	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00007	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFPeA_00006	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUDa_00006	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
...LCPFBFA_00006	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00006	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00006	05/31/21	Wellington Laboratories, Lot PFDA0516			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDoA_00006	05/31/21	Wellington Laboratories, Lot PFDoA0516			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpA_00006	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpS_00010	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
...LCPFHxA_00005	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxDA_00007	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00003	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00007	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00007	08/02/21	Wellington Laboratories, Lot PFOA0716			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFOA_00007	04/29/21	Wellington Laboratories, Lot PFOA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00003	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_00006	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFTeDA_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
...LCPFUDa_00006	08/19/20	Wellington Laboratories, Lot PFUDa0815			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
.LCPFCIS_00003	12/30/17	06/30/17	Methanol, Lot 14139	5000 uL	LCM2PFOA_00005	500 uL	13C2-PFOA	5 ug/mL
..LCM2PFOA_00005	06/19/18	Wellington Laboratories, Lot M2PFOA0613			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC_FULL-L4_00008	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC_ALL_SU_00001	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NMeFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C3-PFBS	46.5 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFC2SP_00037	100 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	18.68 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	18.96 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	19.16 ng/mL
							N-ethylperfluoro-1-octanesulfoamide	20 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	20 ng/mL
							MeFOSA	20 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	20 ng/mL
					LCPFCIS_00003	50 uL	13C2-PFOA	50 ng/mL
					LCPFCSP_00103	100 uL	Perfluorobutanoic acid (PFBA)	20 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorodecanoic acid (PFDA)	20 ng/mL
							Perfluorododecanoic acid (PFDoA)	20 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	19.28 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	19.04 ng/mL
							Perfluorohexanoic acid (PFHxA)	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	18.2 ng/mL
							Perfluorononanoic acid (PFNA)	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctadecanoic acid	20 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	18.56 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	20 ng/mL
							Perfluoropentanoic acid (PFPeA)	20 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	20 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	20 ng/mL
							Perfluoroundecanoic acid (PFUnA)	20 ng/mL
.LCMPFC_ALL_SU_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCd-NEtFOSA-M_00005	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00004	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00004	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00004	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00004	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00004	200 uL	M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA_00010	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00009	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00009	200 uL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00010	200 uL	13C5 PFPeA	1 ug/mL
					LCM8FOSA_00013	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00010	200 uL	13C4 PFBA	1 ug/mL
					LCMPFBS_00003	200 uL	13C3-PFBS	0.93 ug/mL
					LCMPFDA_00015	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00010	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00016	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00010	200 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00010	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00014	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00022	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00011	200 uL	13C2 PFUnA	1 ug/mL
..LCd-NEtFOSA-M_00005	06/10/21		WELLINGTON, Lot dNetFOSA0616M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00004	06/10/21		WELLINGTON, Lot dNMeFOSA0616M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00004	11/22/21		WELLINGTON, Lot d3NMeFOSAA1116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00004	11/22/21		WELLINGTON, Lot d5NetFOSAA1116		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00004	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00004	08/22/21		WELLINGTON, Lot M282FTS0816		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00010	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00009	12/07/20		Wellington Laboratories, Lot M2PFTeDA0217		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00009	05/27/21		Wellington Laboratories, Lot M4PFHpA0516		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00010	11/22/21		Wellington Laboratories, Lot M5PFPeA1116		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00013	12/22/20		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00010	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00003	08/02/21		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00015	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00010	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFHxA_00016	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00010	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00010	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00014	04/12/22		Wellington Laboratories, Lot MPFOA0417		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00022	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00011	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFC2SP_00037	01/07/18	07/07/17	Methanol, Lot 104453	10 mL	LC4:2FTS_00002	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-EtFOSA-M_00004	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00002	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00003	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC4:2FTS_00002	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-EtFOSA-M_00004	05/24/21		WELLINGTON, Lot NetFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
..LCN-EtFOSAA_00002	01/20/21		WELLINGTON, Lot NetFOSAA0116		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00003	05/24/21		WELLINGTON, Lot NMeFOSA0516M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00003	01/20/21		WELLINGTON, Lot NMeFOSAA0116		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCPFCIS_00003	12/30/17	06/30/17	Methanol, Lot 14139	5000 uL	LCM2PFOA_00005	500 uL	13C2-PFOA	5 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCPFCSP_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uL	LCPFBa_00006	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBs_00006	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDa_00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDa_00006	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpa_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00007	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTEda_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFuDA_00006	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
..LCPFBA_00006	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00006	03/15/21	Wellington Laboratories, Lot LFPBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00006	05/31/21	Wellington Laboratories, Lot PFDA0516			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00006	05/31/21	Wellington Laboratories, Lot PFDoA0516			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LFPDS0615			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpa_00006	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpS_00010	11/06/20	Wellington Laboratories, Lot LFPHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00005	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00007	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00003	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00007	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00007	08/02/21	Wellington Laboratories, Lot PFOA0716			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00007	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00003	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_00006	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTEda_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFUdA_00006	08/19/20		Wellington Laboratories, Lot PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_FULL-L5_00008	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC_ALL_SU_00001	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NMeFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C3-PFBS	46.5 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							1802 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFC2SP_00037	250 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	47.9 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	50 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	50 ng/mL
							MeFOSA	50 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	50 ng/mL
					LCPFCIS_00003	50 uL	13C2-PFOA	50 ng/mL
					LCPFCSP_00103	250 uL	Perfluorobutanoic acid (PFBA)	50 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ng/mL
							Perfluorodecanoic acid (PFDA)	50 ng/mL
							Perfluorododecanoic acid (PFDoA)	50 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	48.2 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ng/mL
							Perfluorohexanoic acid (PFHxA)	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluorooctadecanoic acid	50 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	46.4 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	50 ng/mL
							Perfluoropentanoic acid (PFPeA)	50 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	50 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	50 ng/mL
							Perfluoroundecanoic acid (PFUnA)	50 ng/mL
.LCMPFC_ALL_SU_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCd-NETfOSA-M_00005	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00004	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00004	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NETFOSAA_00004	200 uL	d5-NETFOSAA	1 ug/mL
					LCM2-6:FTS_00004	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00004	200 uL	M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA_00010	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00009	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA_00009	200 uL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA_00010	200 uL	13C5 PFPeA	1 ug/mL
					LCM8FOSA_00013	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00010	200 uL	13C4 PFBA	1 ug/mL
					LCMPFBS_00003	200 uL	13C3-PFBS	0.93 ug/mL
					LCMPFDA_00015	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00010	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00016	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00010	200 uL	1802 PFHxS	0.946 ug/mL
					LCMPFNA_00010	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00014	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00022	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00011	200 uL	13C2 PFUnA	1 ug/mL
..LCd-NETfOSA-M_00005	06/10/21		WELLINGTON, Lot dNetFOSA0616M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00004	06/10/21		WELLINGTON, Lot dNMeFOSA0616M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00004	11/22/21		WELLINGTON, Lot d3NMeFOSAA1116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETfOSAA_00004	11/22/21		WELLINGTON, Lot d5NETfOSAA1116		(Purchased Reagent)		d5-NETfOSAA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2-6:FTS 00004	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS 00004	08/22/21		WELLINGTON, Lot M282FTS0816		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA 00010	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA 00009	12/07/20		Wellington Laboratories, Lot M2PFTeDA0217		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA 00009	05/27/21		Wellington Laboratories, Lot M4PFHPA0516		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA 00010	11/22/21		Wellington Laboratories, Lot M5PFPEA1116		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA 00013	12/22/20		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00010	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00003	08/02/21		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00015	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00010	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00016	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00010	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA 00010	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00014	04/12/22		Wellington Laboratories, Lot MPFOA0417		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00022	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00011	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFC2SP_00037	01/07/18	07/07/17	Methanol, Lot 104453	10 mL	LC4:2FTS_00002	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-EtFOSA-M_00004	200 uL	N-ethylperfluoro-1-octanesulfo namide	1 ug/mL
					LCN-EtFOSAA_00002	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00003	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC4:2FTS_00002	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-EtFOSA-M_00004	05/24/21		WELLINGTON, Lot NETFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
..LCN-EtFOSAA_00002	01/20/21		WELLINGTON, Lot NETFOSAA0116		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00003	05/24/21		WELLINGTON, Lot NMeFOSA0516M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00003	01/20/21		WELLINGTON, Lot NMeFOSAA0116		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCPFCIS_00003	12/30/17	06/30/17	Methanol, Lot 14139	5000 uL	LCM2PFOA_00005	500 uL	13C2-PFOA	5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCPFCSP_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uL	LCPFBA_00006	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00006	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00007	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00006	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
..LCPFBA_00006	05/27/21		Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00006	03/15/21		Wellington Laboratories, Lot LPFBS0316		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00006	05/31/21		Wellington Laboratories, Lot PFDA0516		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00006	05/31/21		Wellington Laboratories, Lot PFDoA0516		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LPFDS0615		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00006	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpS_00010	11/06/20		Wellington Laboratories, Lot LPFHpS1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00005	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00007	05/25/21		Wellington Laboratories, Lot PFHxDA0516		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00003	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00007	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00007	08/02/21		Wellington Laboratories, Lot PFOA0716		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFODA_00007	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00003	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_00006	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00006	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_FULL-L6_00006	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC_ALL_SU_00001	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C3-PFBS	46.5 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFC2SP_00037	500 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	93.4 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	94.8 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	95.8 ng/mL
							N-ethylperfluoro-1-octanesulfoamide	100 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	100 ng/mL
							MeFOSA	100 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-methyl perfluorooctane sulfonamidoacetic acid	100 ng/mL
					LCPFCIS_00003	50 uL	13C2-PFOA	50 ng/mL
					LCPFCSP_00103	500 uL	Perfluorobutanoic acid (PFBA)	100 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	88.4 ng/mL
							Perfluorodecanoic acid (PFDA)	100 ng/mL
							Perfluorododecanoic acid (PFDoA)	100 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	96.4 ng/mL
							Perfluoroheptanoic acid (PFHpA)	100 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	95.2 ng/mL
							Perfluorohexanoic acid (PFHxA)	100 ng/mL
							Perfluorohexadecanoic acid	100 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	91 ng/mL
							Perfluorononanoic acid (PFNA)	100 ng/mL
							Perfluorooctanoic acid (PFOA)	100 ng/mL
							Perfluorooctadecanoic acid	100 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	92.8 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	100 ng/mL
							Perfluoropentanoic acid (PFPeA)	100 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	100 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	100 ng/mL
							Perfluoroundecanoic acid (PFUnA)	100 ng/mL
.LCMPFC_ALL_SU_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCd-NETFOSA-M_00005	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00004	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00004	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NETFOSAA_00004	200 uL	d5-NETFOSAA	1 ug/mL
					LCM2-6:FTS_00004	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00004	200 uL	M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA_00010	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00009	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00009	200 uL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA_00010	200 uL	13C5 PFPeA	1 ug/mL
					LCM8FOSA_00013	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00010	200 uL	13C4 PFBA	1 ug/mL
					LCMPFBS_00003	200 uL	13C3-PFBS	0.93 ug/mL
					LCMPFDA_00015	200 uL	13C2 PFDA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFDoA_00010	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00016	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00010	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00010	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00014	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00022	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa_00011	200 uL	13C2 PFUnA	1 ug/mL
..LCd-NETFOA-M_00005	06/10/21		WELLINGTON, Lot dNetFOA0616M		(Purchased Reagent)		d-N-EtFOA-M	50 ug/mL
..LCd-NMeFOA-M_00004	06/10/21		WELLINGTON, Lot dNMeFOA0616M		(Purchased Reagent)		d-N-MeFOA-M	50 ug/mL
..LCd3-NMeFOSAA_00004	11/22/21		WELLINGTON, Lot d3NMeFOSAA1116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00004	11/22/21		WELLINGTON, Lot d5NETFOSAA1116		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FTS_00004	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00004	08/22/21		WELLINGTON, Lot M282FTS0816		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA_00010	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00009	12/07/20		Wellington Laboratories, Lot M2PFTeDA0217		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00009	05/27/21		Wellington Laboratories, Lot M4PFHPA0516		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00010	11/22/21		Wellington Laboratories, Lot M5PFPeA1116		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOA_00013	12/22/20		Wellington Laboratories, Lot M8FOA1215I		(Purchased Reagent)		13C8 FOA	50 ug/mL
..LCMPFBA_00010	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00003	08/02/21		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00015	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00010	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00016	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00010	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00010	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00014	04/12/22		Wellington Laboratories, Lot MPFOA0417		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00022	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00011	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFC2SP_00037	01/07/18	07/07/17	Methanol, Lot 104453	10 mL	LC4:2FTS_00002	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-EtFOA-M_00004	200 uL	N-ethylperfluoro-1-octanesulfoamide	1 ug/mL
					LCN-EtFOSAA_00002	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOA-M_00003	200 uL	MeFOA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC4:2FTS_00002	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	46.7 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LC6:2FTS_00003	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-EtFOSA-M_00004	05/24/21		WELLINGTON, Lot NetFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
..LCN-EtFOSAA_00002	01/20/21		WELLINGTON, Lot NetFOSAA0116		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00003	05/24/21		WELLINGTON, Lot NMeFOSA0516M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00003	01/20/21		WELLINGTON, Lot NMeFOSAA0116		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCPFCIS_00003	12/30/17	06/30/17	Methanol, Lot 14139	5000 uL	LCM2PFOA_00005	500 uL	13C2-PFOA	5 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCPFCSP_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uL	LCPFBA_00006	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00006	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00007	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00010	200 uL	Perfluorooctane Sulfonamide (FOSA)	1 ug/mL
					LCPFPeA_00006	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUdA_00006	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
..LCPFBA_00006	05/27/21		Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00006	03/15/21		Wellington Laboratories, Lot LFPBS0316		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00006	05/31/21		Wellington Laboratories, Lot PFDA0516		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFDoA_00006	05/31/21		Wellington Laboratories, Lot PFD0A0516		(Purchased Reagent)		Perfluorododecanoic acid (PFD0A)	50 ug/mL
..LCPFDS_00005	07/02/20		Wellington Laboratories, Lot LPFDS0615		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpa_00006	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHps_00010	11/06/20		Wellington Laboratories, Lot LPFHps1115		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00005	12/22/20		Wellington Laboratories, Lot PFHxA1215		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00007	05/25/21		Wellington Laboratories, Lot PFHxDA0516		(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00003	07/03/20		Wellington Laboratories, Lot brPFHxSK0615		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00007	10/23/20		Wellington Laboratories, Lot PFNA1015		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00007	08/02/21		Wellington Laboratories, Lot PFOA0716		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00007	04/29/21		Wellington Laboratories, Lot PFODA0416		(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00003	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_00006	05/31/21		Wellington Laboratories, Lot PFPeA0516		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00005	12/09/20		Wellington Laboratories, Lot PFTeDA1215		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00005	02/12/21		Wellington Laboratories, Lot PFTrDA0216		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00006	08/19/20		Wellington Laboratories, Lot PFUdA0815		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_FULLL-L7_00004	12/27/17	07/07/17	MeOH/H2O, Lot 090285	5000 uL	LCMPFC_ALL_SU_00001	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NETFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpa	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C3-PFBS	46.5 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFD0A	50 ng/mL
							13C2 PFHxA	50 ng/mL
							1802 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFC2SP_00037	1000 uL	Sodium 1H,1H,2H,2H-perfluorohexane sulfonate (4:2)	186.8 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	189.6 ng/mL
							Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	191.6 ng/mL
							N-ethylperfluoro-1-octanesulfo namide	200 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	200 ng/mL
							MeFOSA	200 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	200 ng/mL
					LCPFCIS_00003	50 uL	13C2-PFOA	50 ng/mL
					LCPFCSP_00103	1000 uL	Perfluorobutanoic acid (PFBA)	200 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	176.8 ng/mL
							Perfluorodecanoic acid (PFDA)	200 ng/mL
							Perfluorododecanoic acid (PFDoA)	200 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	192.8 ng/mL
							Perfluoroheptanoic acid (PFHpA)	200 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	190.4 ng/mL
							Perfluorohexanoic acid (PFHxA)	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	182 ng/mL
							Perfluorononanoic acid (PFNA)	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctadecanoic acid	200 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	185.6 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	200 ng/mL
							Perfluoropentanoic acid (PFPeA)	200 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	200 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	200 ng/mL
							Perfluoroundecanoic acid (PFUnA)	200 ng/mL
.LCMPFC_ALL_SU_00001	12/29/17	06/29/17	Methanol, Lot Baker 141039	10000 uL	LCD-NEtFOSA-M_00005	200 uL	d-N-EtFOSA-M	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCd-NMeFOSA-M 00004	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA 00004	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NMeFOSAA 00004	200 uL	d5-NMeFOSAA	1 ug/mL
					LCM2-6:FTS 00004	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS 00004	200 uL	M2-8:2FTS	0.958 ug/mL
					LCM2PFHxDA 00010	200 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA 00009	200 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA 00009	200 uL	13C4-PFHpa	1 ug/mL
					LCM5PFPEA 00010	200 uL	13C5 PFPeA	1 ug/mL
					LCM8FOSA 00013	200 uL	13C8 FOSA	1 ug/mL
					LCMPFBA 00010	200 uL	13C4 PFBA	1 ug/mL
					LCMPFBS 00003	200 uL	13C3-PFBS	0.93 ug/mL
					LCMPFDA 00015	200 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA 00010	200 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA 00016	200 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS 00010	200 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA 00010	200 uL	13C5 PFNA	1 ug/mL
					LCMPFOA 00014	200 uL	13C4 PFOA	1 ug/mL
					LCMPFOS 00022	200 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUDa 00011	200 uL	13C2 PFUnA	1 ug/mL
..LCd-NMeFOSA-M 00005	06/10/21		WELLINGTON, Lot dNetFOSA0616M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M 00004	06/10/21		WELLINGTON, Lot dNMeFOSA0616M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA 00004	11/22/21		WELLINGTON, Lot d3NMeFOSAA1116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NMeFOSAA 00004	11/22/21		WELLINGTON, Lot d5NetFOSAA1116		(Purchased Reagent)		d5-NMeFOSAA	50 ug/mL
..LCM2-6:FTS 00004	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS 00004	08/22/21		WELLINGTON, Lot M282FTS0816		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA 00010	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA 00009	12/07/20		Wellington Laboratories, Lot M2PFTeDA0217		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA 00009	05/27/21		Wellington Laboratories, Lot M4PFHpA0516		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA 00010	11/22/21		Wellington Laboratories, Lot M5PFPeA1116		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA 00013	12/22/20		Wellington Laboratories, Lot M8FOSA1215I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00010	05/24/21		Wellington Laboratories, Lot MPFBA0516		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00003	08/02/21		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00015	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00010	04/08/21		Wellington Laboratories, Lot MPFDoA0416		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00016	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00010	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA 00010	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00014	04/12/22		Wellington Laboratories, Lot MPFOA0417		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00022	12/12/21		Wellington Laboratories, Lot MPFOS1216		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00011	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPPC2SP_00037	01/07/18	07/07/17	Methanol, Lot 104453	10 mL	LC4:2FTS_00002	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.: 320-31407-1

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-EtFOSA-M_00004	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00002	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00003	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00003	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC4:2FTS_00002	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-EtFOSA-M_00004	05/24/21		WELLINGTON, Lot NETFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00002	01/20/21		WELLINGTON, Lot NETFOSAA0116		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00003	05/24/21		WELLINGTON, Lot NMeFOSA0516M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00003	01/20/21		WELLINGTON, Lot NMeFOSAA0116		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCPFCIS_00003	12/30/17	06/30/17	Methanol, Lot 14139	5000 uL	LCM2PFOA_00005	500 uL	13C2-PFOA	5 ug/mL
..LCM2PFOA_00005	06/19/18		Wellington Laboratories, Lot M2PFOA0613		(Purchased Reagent)		13C2-PFOA	50 ug/mL
.LCPFCSP_00103	12/27/17	06/27/17	Methanol, Lot 090285	10000 uL	LCPFBA_00006	200 uL	Perfluorobutanoic acid (PFBA)	1 ug/mL
					LCPFBS_00006	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00006	200 uL	Perfluorodecanoic acid (PFDA)	1 ug/mL
					LCPFDoA_00006	200 uL	Perfluorododecanoic acid (PFDoA)	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecanesulfonic acid (PFDS)	0.964 ug/mL
					LCPFHpA_00006	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00010	200 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.952 ug/mL
					LCPFHxA_00005	200 uL	Perfluorohexanoic acid (PFHxA)	1 ug/mL
					LCPFHxDA_00007	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00003	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00007	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00007	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00007	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00003	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

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_00006	200 uL	Perfluoropentanoic acid (PFPeA)	1 ug/mL
					LCPFTeDA_00005	200 uL	Perfluorotetradecanoic acid (PFTeA)	1 ug/mL
					LCPFTrDA_00005	200 uL	Perfluorotridecanoic Acid (PFTriA)	1 ug/mL
					LCPFUDa_00006	200 uL	Perfluoroundecanoic acid (PFUnA)	1 ug/mL
..LCPFBA_00006	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00006	03/15/21	Wellington Laboratories, Lot LFPBS0316			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00006	05/31/21	Wellington Laboratories, Lot PFDA0516			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00006	05/31/21	Wellington Laboratories, Lot PFDoA0516			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LFPDS0615			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpa_00006	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHps_00010	11/06/20	Wellington Laboratories, Lot LFPHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00005	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxDA_00007	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00003	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00007	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00007	08/02/21	Wellington Laboratories, Lot PFOA0716			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00007	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00003	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_00006	05/31/21	Wellington Laboratories, Lot PFPeA0516			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00005	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00005	02/12/21	Wellington Laboratories, Lot PFTTrDA0216			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUDa_00006	08/19/20	Wellington Laboratories, Lot PFUDa0815			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFCIC_FULL_00006	10/16/17	09/06/17	MeOH/H2O, Lot 09285	5000 uL	LCMPFC_ALL_SU_00011	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NMeFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
							13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C4-PFHpA	50 ng/mL
							13C5 PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C3-PFBS	46.5 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFACMXB_00010	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluorobutanoic acid (PFBA)	50 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	48.25 ng/mL
							Perfluorodecanoic acid (PFDA)	50 ng/mL
							Perfluorododecanoic acid (PFDoA)	50 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.25 ng/mL
							Perfluorohexanoic acid (PFHxA)	50 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	47.75 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluoropentanoic acid (PFPeA)	50 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	50 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	50 ng/mL
							Perfluoroundecanoic acid (PFUnA)	50 ng/mL
					LCPFC3IM_00008	250 uL	Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	50 ng/mL
.LCMPFC_ALL_SU_00011	02/22/18	08/23/17	Methanol, Lot Baker 141039	5 mL	LCd-NEtFOSA-M_00005	100 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00004	100 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00004	100 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00004	100 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00004	100 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00004	100 uL	M2-8:2FTS	0.958 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCM2PFHxDA 00011	100 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA 00010	100 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHFA 00010	100 uL	13C4-PFHFA	1 ug/mL
					LCM5PFPEA 00011	100 uL	13C5 PFPeA	1 ug/mL
					LCM8FOSA 00014	100 uL	13C8 FOSA	1 ug/mL
					LCMPFBA 00011	100 uL	13C4 PFBA	1 ug/mL
					LCMPFBS 00004	100 uL	13C3-PFBS	0.93 ug/mL
					LCMPFDA 00016	100 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA 00011	100 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA 00017	100 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS 00011	100 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA 00011	100 uL	13C5 PFNA	1 ug/mL
					LCMPFOA 00015	100 uL	13C4 PFOA	1 ug/mL
					LCMPFOS 00023	100 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA 00012	100 uL	13C2 PFUnA	1 ug/mL
..LCd-NETFOSA-M 00005	06/10/21		WELLINGTON, Lot dNetFOSA0616M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M 00004	06/10/21		WELLINGTON, Lot dNMeFOSA0616M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA 00004	11/22/21		WELLINGTON, Lot d3NMeFOSAA1116		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA 00004	11/22/21		WELLINGTON, Lot d5NETFOSAA1116		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FTS 00004	02/17/22		WELLINGTON, Lot M262FTS0217		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS 00004	08/22/21		WELLINGTON, Lot M282FTS0816		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA 00011	01/07/21		Wellington Laboratories, Lot M2PFHxDA1112		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA 00010	12/07/20		Wellington Laboratories, Lot M2PFTeDA0217		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHFA 00010	05/03/22		Wellington Laboratories, Lot M4PFHFA0517		(Purchased Reagent)		13C4-PFHFA	50 ug/mL
..LCM5PFPEA 00011	11/22/21		Wellington Laboratories, Lot M5PFPeA1116		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA 00014	04/20/22		Wellington Laboratories, Lot M8FOSA0417I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00011	04/12/22		Wellington Laboratories, Lot MPFBA0417		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00004	05/24/22		Wellington Laboratories, Lot M3PFBS0815		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00016	09/30/21		Wellington Laboratories, Lot MPFDA0916		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00011	05/23/22		Wellington Laboratories, Lot MPFDoA0517		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00017	11/22/21		Wellington Laboratories, Lot MPFHxA1116		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00011	02/17/22		Wellington Laboratories, Lot MPFHxS0217		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA 00011	09/30/21		Wellington Laboratories, Lot MPFNA0916		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00015	04/12/22		Wellington Laboratories, Lot MPFOA0417		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00023	05/19/22		Wellington Laboratories, Lot MPFOS517		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA 00012	11/22/21		Wellington Laboratories, Lot MPFUdA1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFACMXB_00010	06/20/19		Wellington Laboratories, Lot PFACMXB0614		(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
							Perfluoroheptanoic acid (PFHFA)	2 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	1.89 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexanoic acid (PFHxA)	2 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.91 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
.LCPFC3IM_00008	03/06/18	09/06/17	Methanol, Lot 090285	5 mL	LCPFHpsA_00002	0.1 mL	Perfluoroheptanesulfonic Acid (PFHps)	952 ng/mL
					LCPFOSA_00010	0.1 mL	Perfluorooctane Sulfonamide (FOSA)	1000 ng/mL
..LCPFHpsA_00002	10/18/21	Wellington Laboratories, Lot LPFHps1016			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHps)	47.6 ug/mL
..LCPFOSA_00010	09/30/21	Wellington Laboratories, Lot FOSA0916I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
LCPFCSP_00110	01/21/18	07/21/17	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
					LC8:2FTS_00003	100 uL	Sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)	0.01916 ug/mL
					LCN-EtFOSA-M_00004	100 uL	N-ethylperfluoro-1-octanesulfonamide	0.02 ug/mL
					LCN-EtFOSAA_00003	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCN-MeFOSA-M_00003	100 uL	MeFOSA	0.02 ug/mL
					LCN-MeFOSAA_00004	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCPFBA_00006	100 uL	Perfluorobutanoic acid (PFBA)	0.02 ug/mL
					LCPFBS_00006	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
					LCPFDS_00007	100 uL	Perfluorodecane Sulfonate	0.01928 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.01928 ug/mL
					LCPFHpA_00007	100 uL	Perfluoroheptanoic acid (PFHpA)	0.02 ug/mL
					LCPFHps_00010	100 uL	Perfluoroheptane Sulfonate	0.01904 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanesulfonic Acid (PFHpS)	0.01904 ug/mL
					LCPFHxA 00006	100 uL	Perfluorohexanoic acid (PFHxA)	0.02 ug/mL
					LCPFHxDA 00007	100 uL	Perfluorohexadecanoic acid	0.02 ug/mL
					LCPFHxS-br_00003	100 uL	Perfluorohexane Sulfonate	0.0182 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0182 ug/mL
					LCPFNA 00007	100 uL	Perfluorononanoic acid (PFNA)	0.02 ug/mL
					LCPFOA 00007	100 uL	Perfluorooctanoic acid (PFOA)	0.02 ug/mL
					LCPFODA 00007	100 uL	Perfluorooctadecanoic acid	0.02 ug/mL
					LCPFOS-br_00003	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.01856 ug/mL
					LCPFOSA_00010	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.02 ug/mL
					LCPFPeA_00006	100 uL	Perfluoropentanoic acid (PFPeA)	0.02 ug/mL
					LCPFTeDA_00007	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.02 ug/mL
					LCPFTrDA_00007	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.02 ug/mL
					LCPFUdA_00006	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
.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_00004	05/24/21		WELLINGTON, Lot NetFOSA0516M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfo namide	50 ug/mL
.LCN-EtFOSAA_00003	09/30/21		WELLINGTON, Lot NetFOSAA0916		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
.LCN-MeFOSA-M_00003	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 00006	05/27/21		Wellington Laboratories, Lot PFBA0516		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
.LCPFBS_00006	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
.LCPFDS_00007	05/24/21		Wellington Laboratories, Lot LPFDS0516		(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
.LCPFHpA_00007	01/22/21		Wellington Laboratories, Lot PFHpA0116		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFHpS_00010	11/06/20	Wellington Laboratories, Lot LPFHps1115			(Purchased Reagent)		Perfluoroheptane Sulfonate	47.6 ug/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
.LCPFHxA 00006	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
.LCPFHxDA 00007	05/25/21	Wellington Laboratories, Lot PFHxDA0516			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00003	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA 00007	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
.LCPFOA 00007	08/02/21	Wellington Laboratories, Lot PFOA0716			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA 00007	04/29/21	Wellington Laboratories, Lot PFODA0416			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS-br_00003	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_00006	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_00006	08/19/20	Wellington Laboratories, Lot PFUDa0815			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL

Reagent

LC4 : 2FTS_00002

R: 8BC 3/31/17

896827
ID: LC4:2FTS_00002
Exp: 12/12/21 Prpd:
4:2FTS

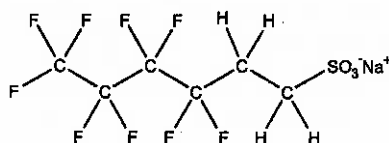


WELLINGTON LABORATORIES

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: $C_6H_4F_9SO_3Na$ **MOLECULAR WEIGHT:** 350.13
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
46.7 ± 2.3 µg/ml (4:2FTS anion)
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.

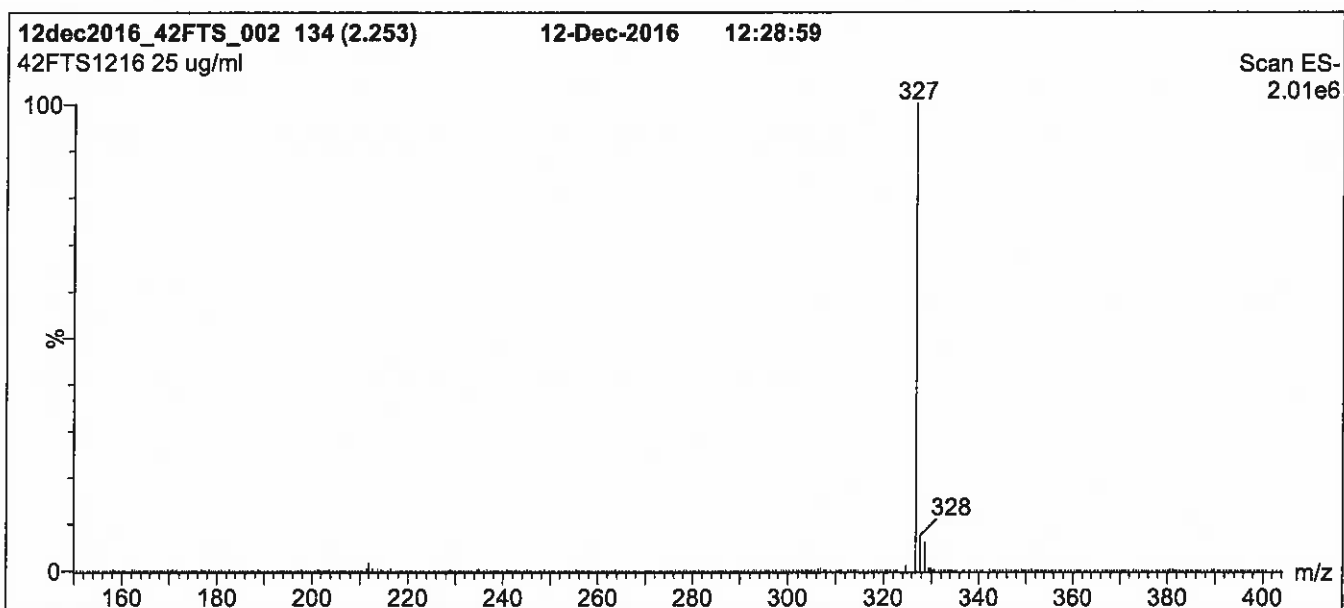
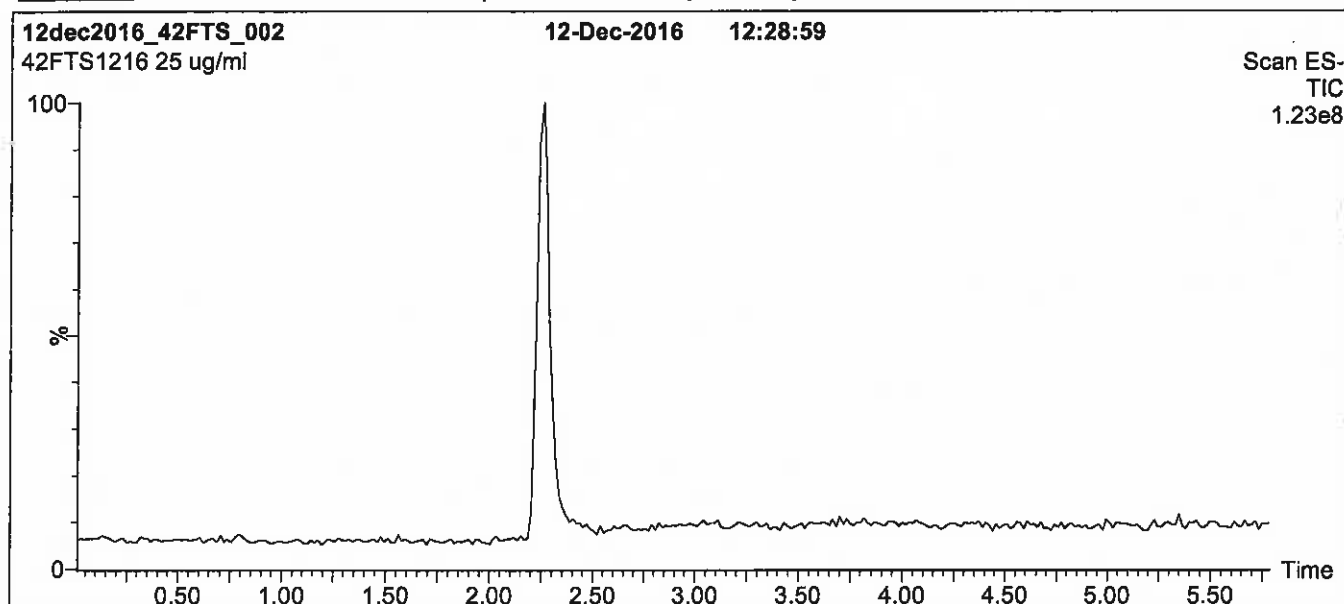
QUALITY MANAGEMENT:

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)

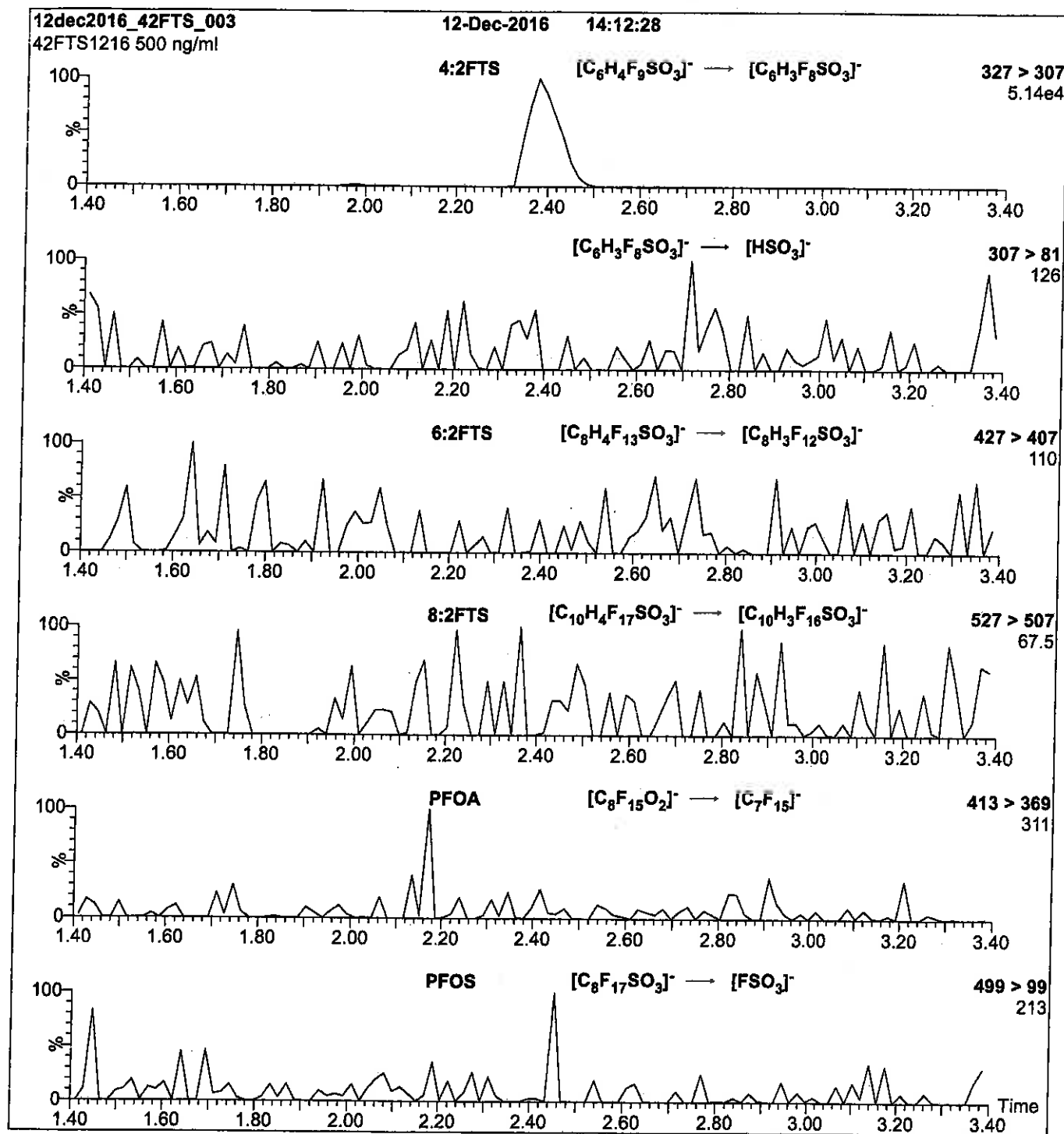
Capillary Voltage (kV) = 3.00

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

LC4 : 2FTS_00003



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

4:2FTS

LOT NUMBER:

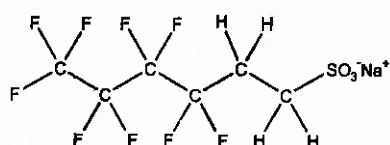
42FTS1216

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:

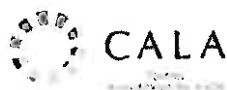
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

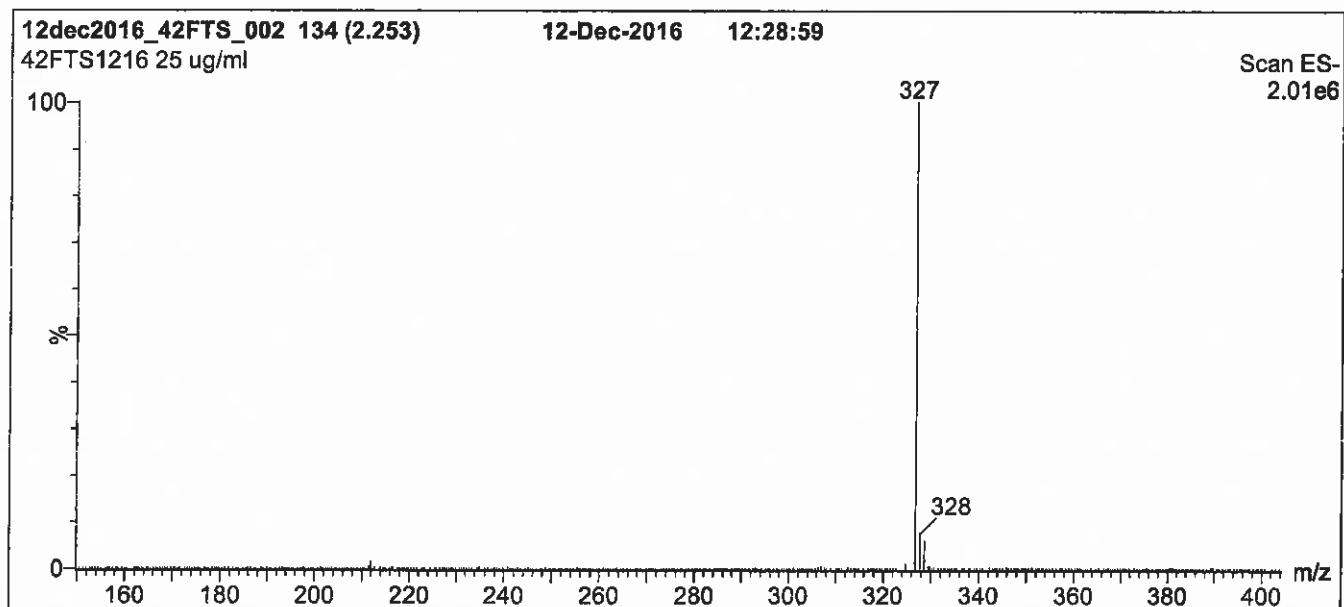
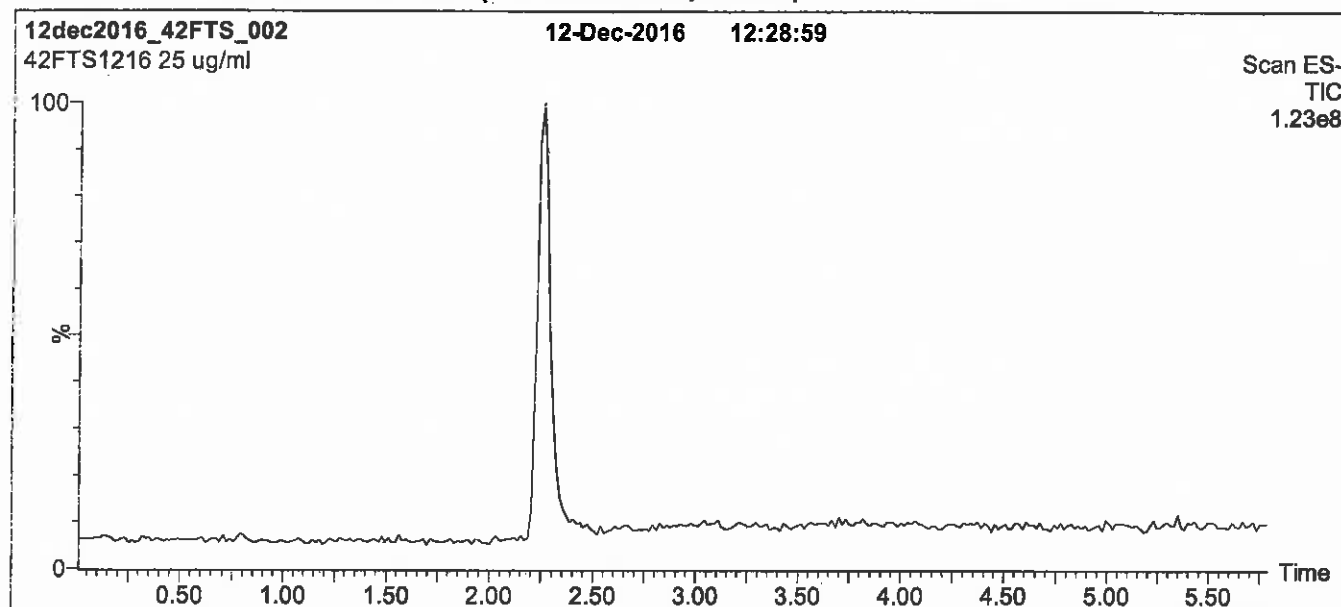
QUALITY MANAGEMENT:

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

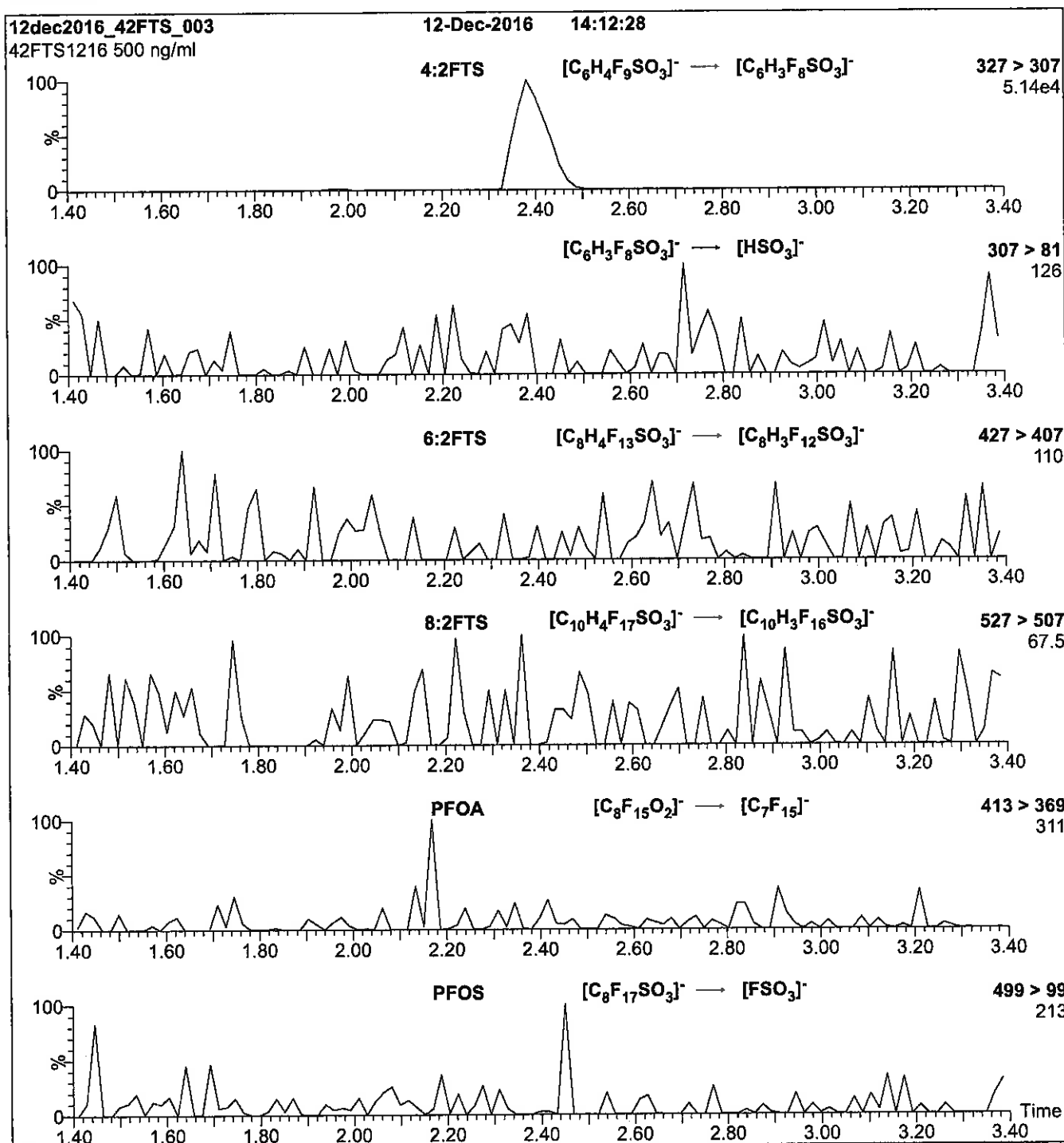
Flow: 300 μ l/min

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 μl (500 ng/ml 4:2FTS)

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) = 3.31e-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

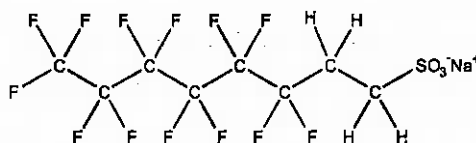
COMPOUND:

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

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

$C_8H_4F_{13}SO_3Na$

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

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.

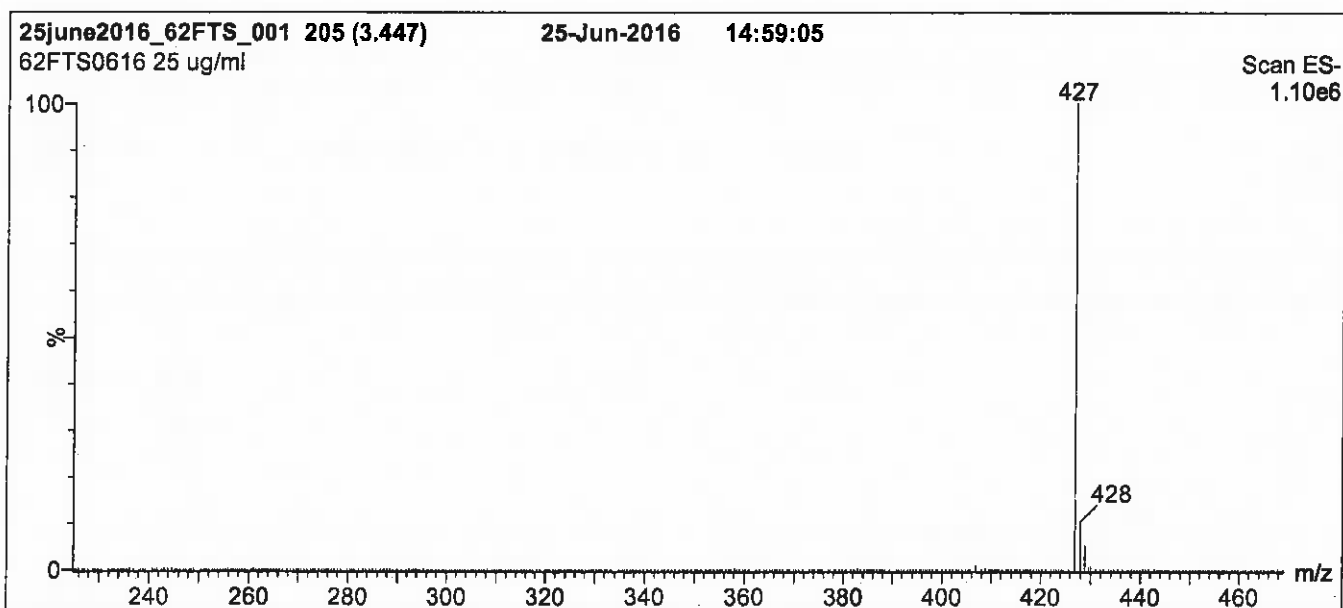
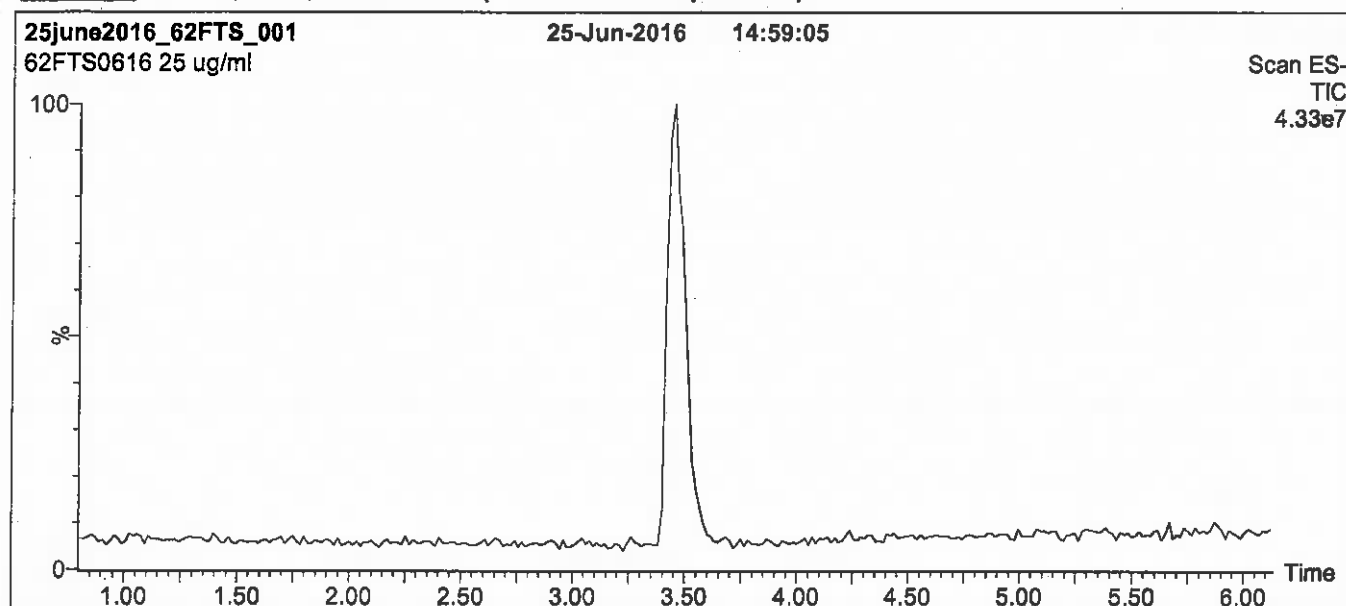
QUALITY MANAGEMENT:

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: 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

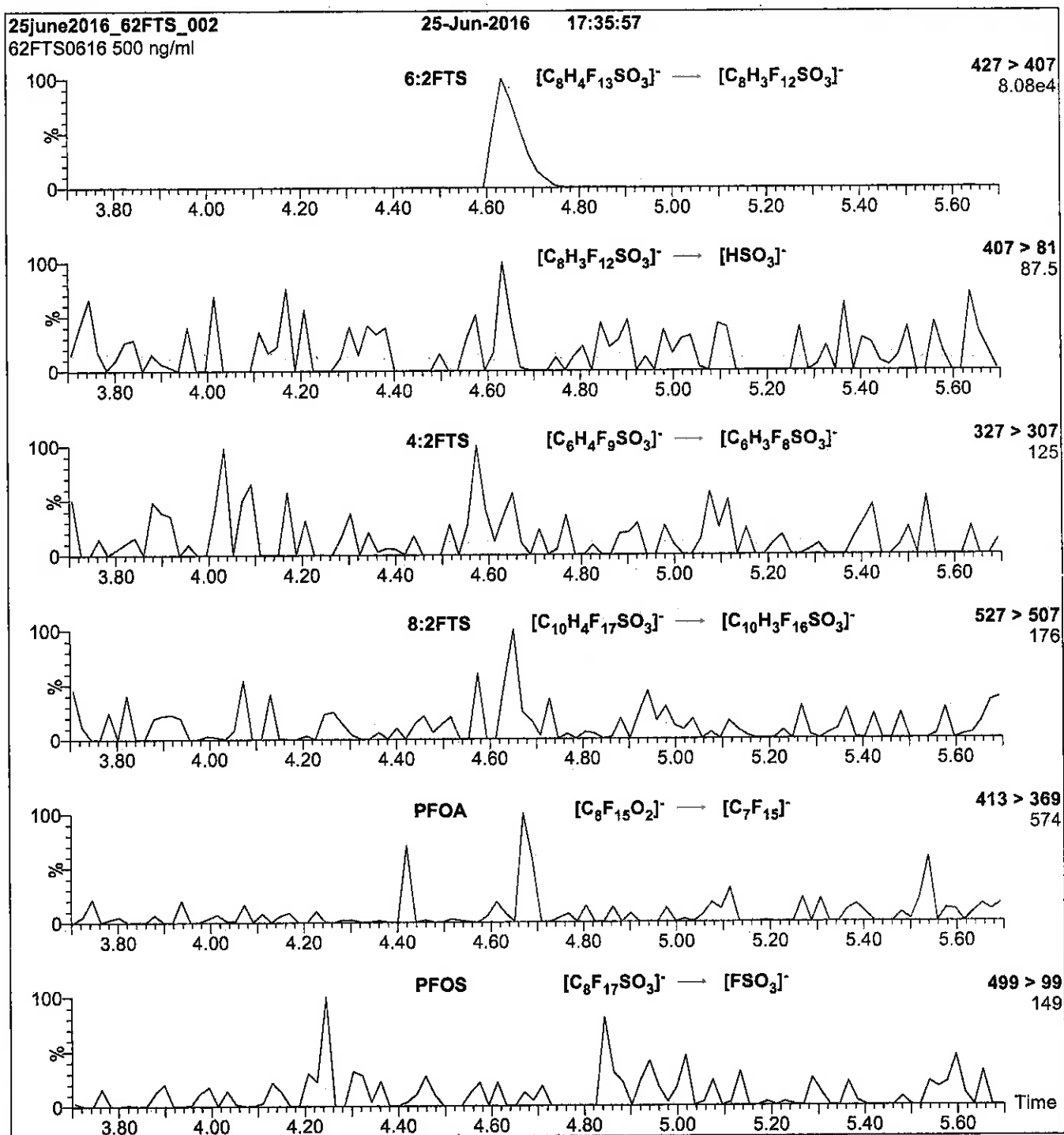
Flow: 300 μ l/min

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

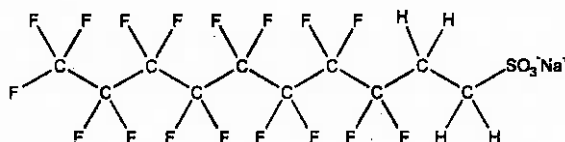
LC8 : 2FTS_00003



WELLINGTON LABORATORIES

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:

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SYNTHESIS / CHARACTERIZATION:

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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:

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.

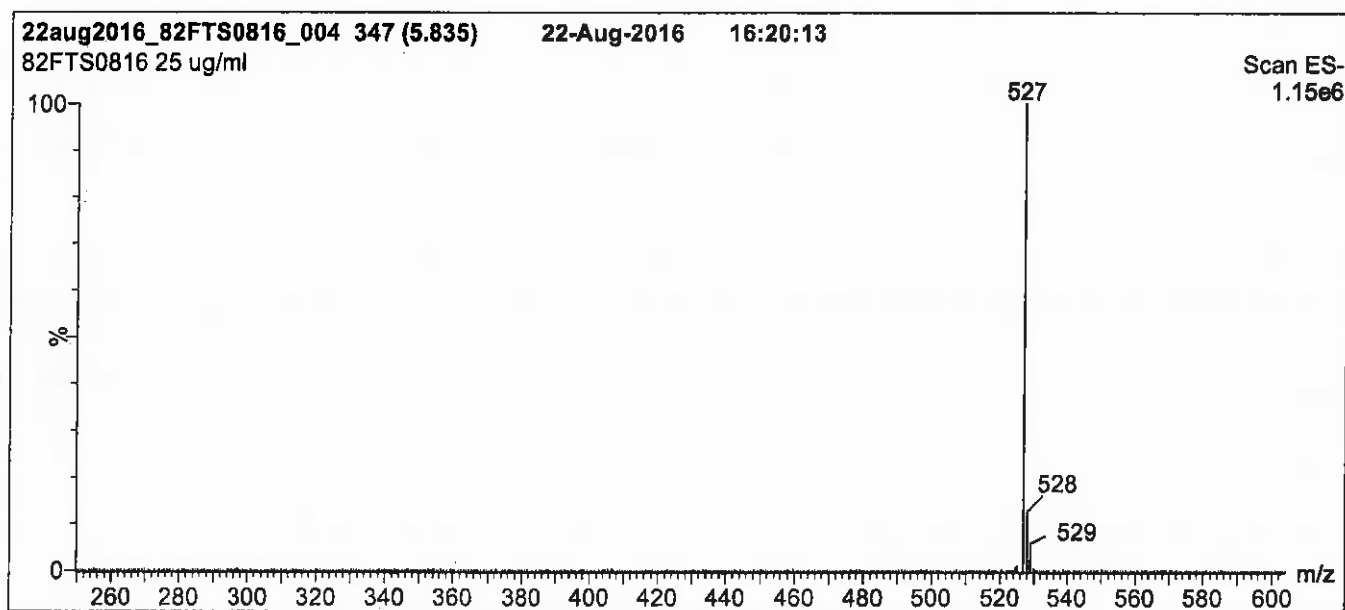
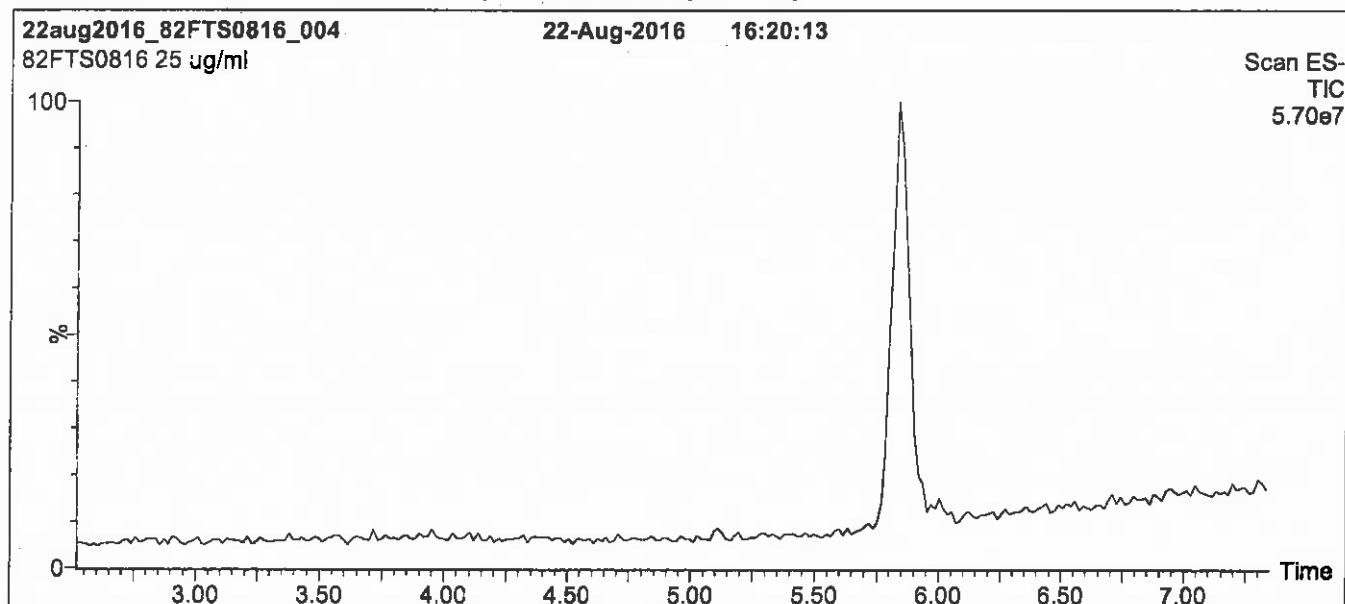
QUALITY MANAGEMENT:

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

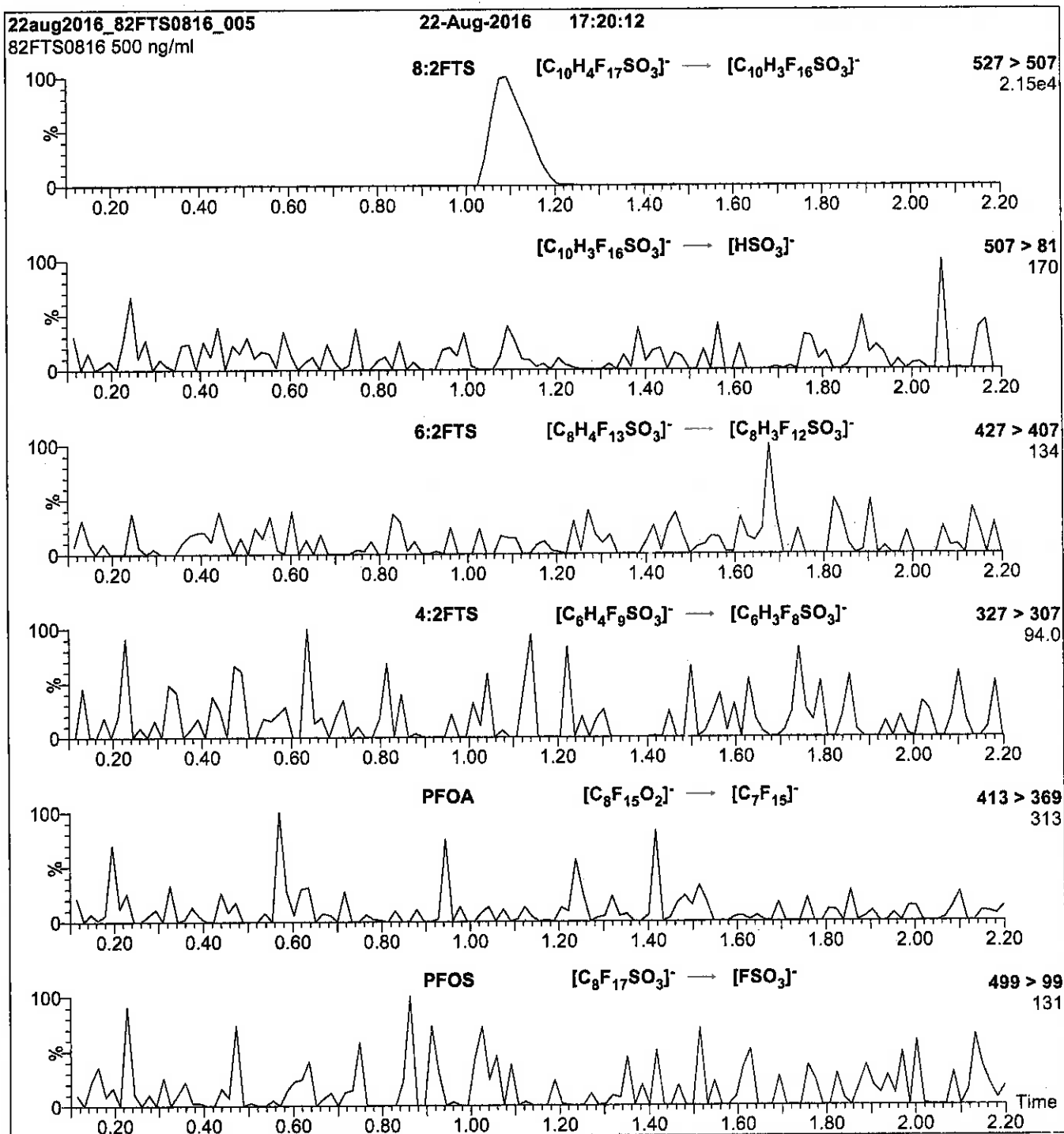
Flow: 300 μ l/min

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% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCd-NEtFOSA-M_00005

R: 3720/17



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

d-N-EtFOSA-M

LOT NUMBER:

dNEtFOSA0616M

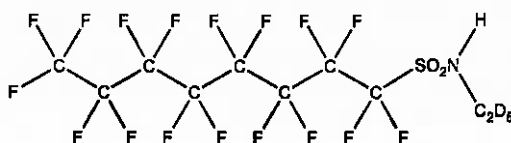
COMPOUND:

N-ethyl-d₅-perfluoro-1-octanesulfonamide

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₁₀D₅HF₁₇NO₂S

MOLECULAR WEIGHT:

532.23

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥98% ²H₅

LAST TESTED: (mm/dd/yyyy)

06/10/2016

EXPIRY DATE: (mm/dd/yyyy)

06/10/2021

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 ~ 0.5% of N-methyl-d₅-perfluoro-1-octanesulfonamide (d-N-MeFOSA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 07/14/2016

(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.

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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:

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

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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:

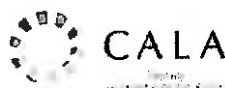
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

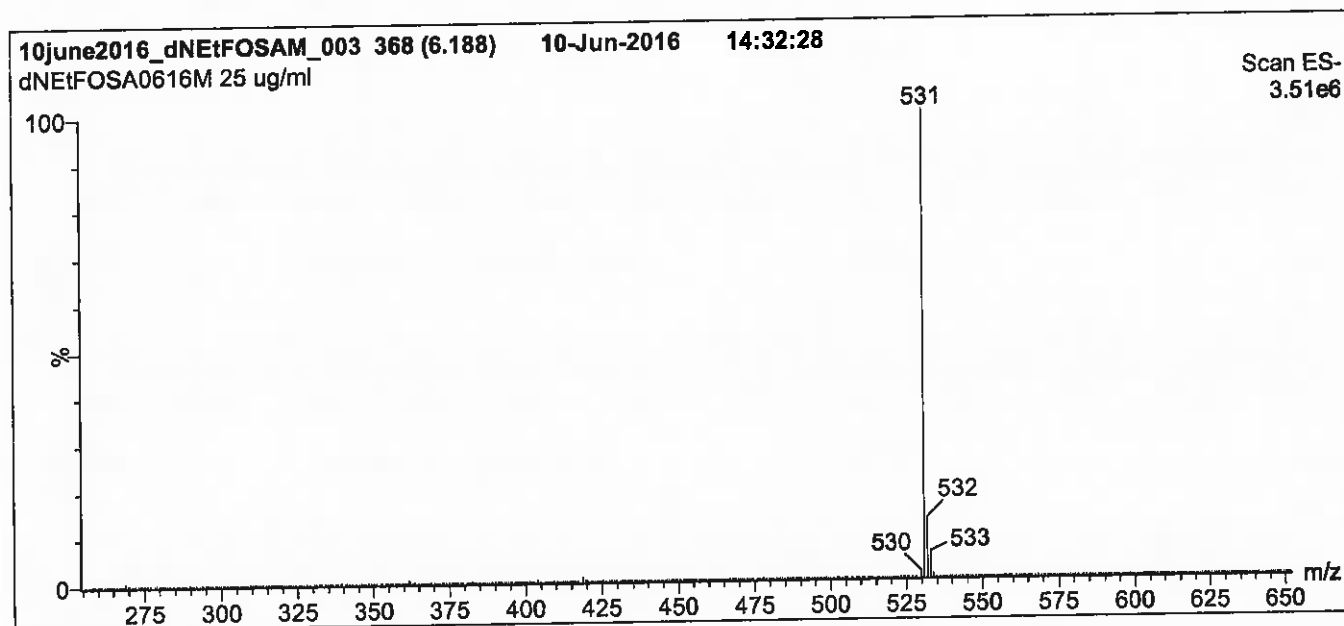
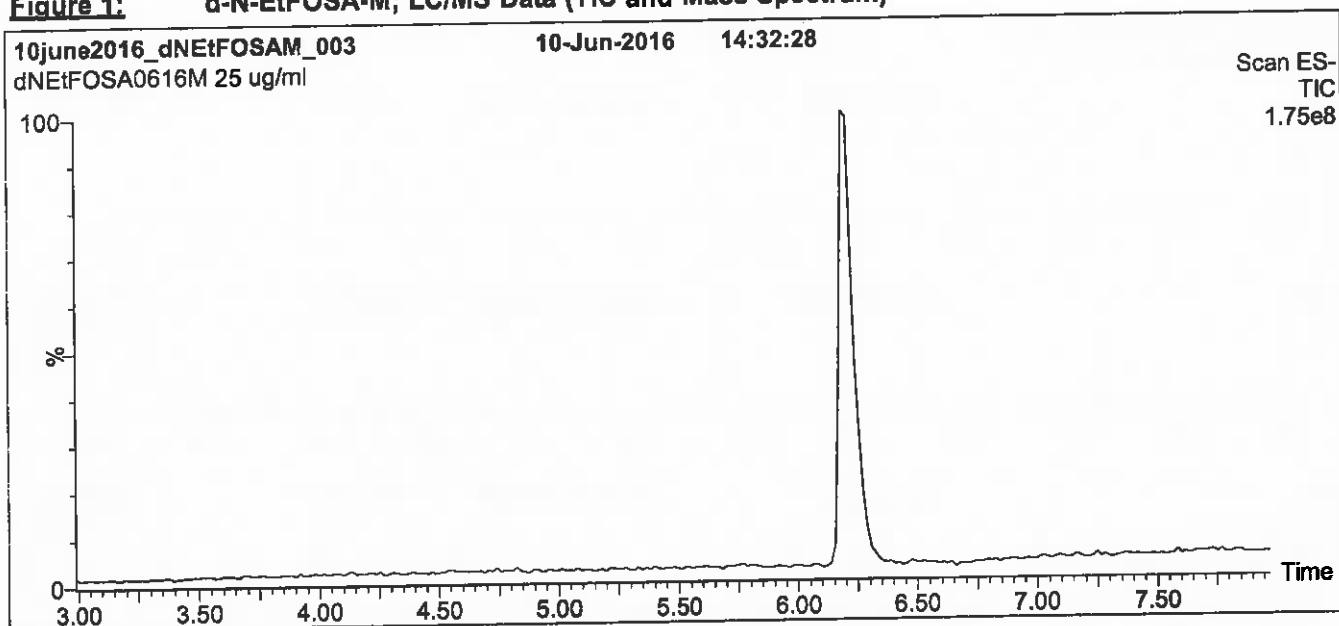
QUALITY MANAGEMENT:

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: d-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: 40% H₂O / 60% (80:20 MeOH:ACN)
(both with 10mM 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

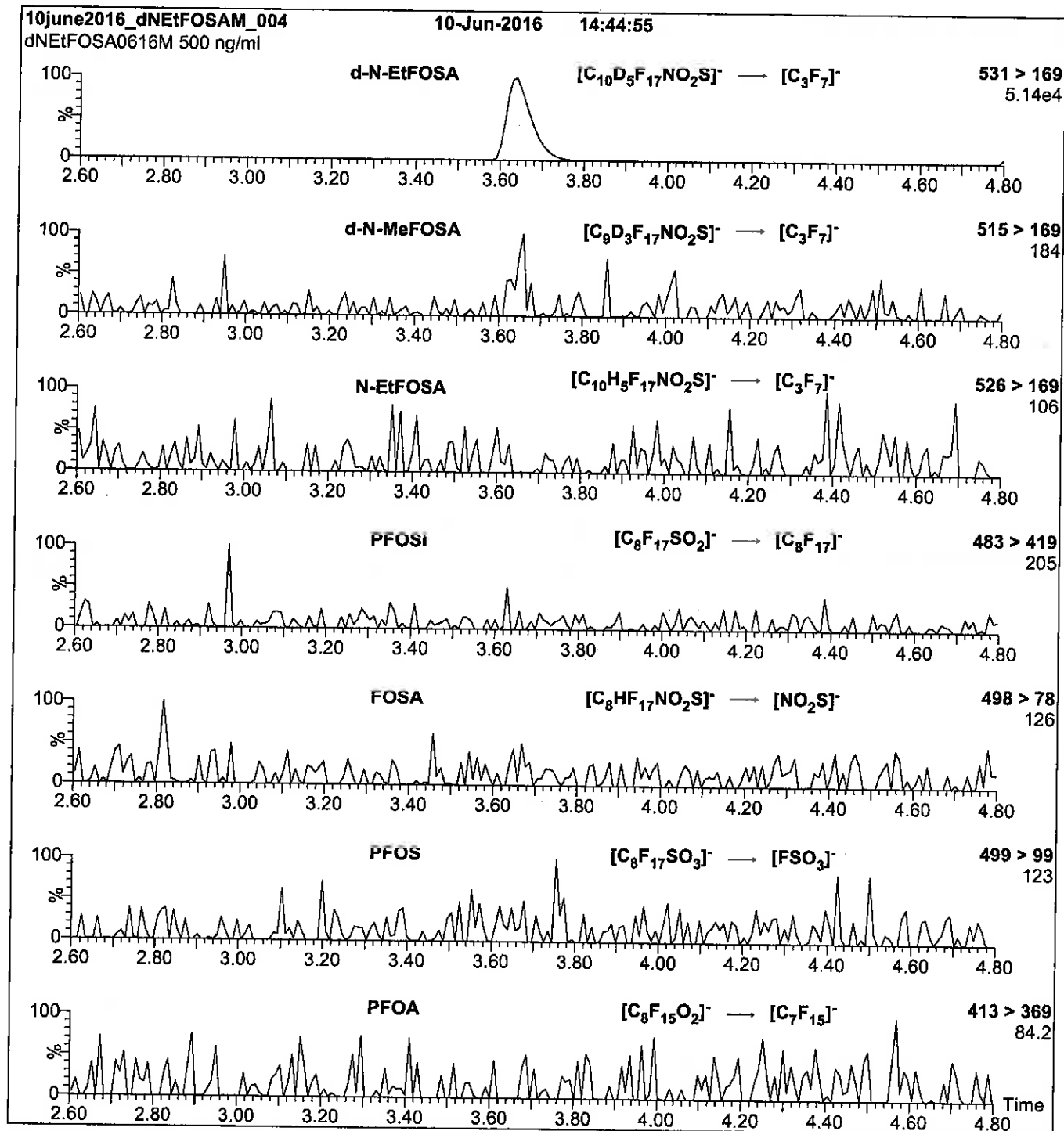
Flow: 300 μ l/min

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



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d-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) = 3.39e-3
Collision Energy (eV) = 25

Reagent

LCd-NMeFOSA-M_00004



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

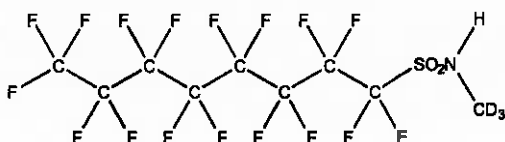
PRODUCT CODE:
COMPOUND:

d-N-MeFOSA-M
N-methyl-d₃-perfluoro-1-octanesulfonamide

LOT NUMBER: dNMeFOSA0616M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:

C₈D₃HF₁₇NO₂S

CONCENTRATION:

50 ± 2.5 µg/ml

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

06/10/2016

EXPIRY DATE: (mm/dd/yyyy)

06/10/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 516.19

SOLVENT(S): Methanol

ISOTOPIC PURITY: ≥98% ²H₃

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: 06/16/2016

(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:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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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.

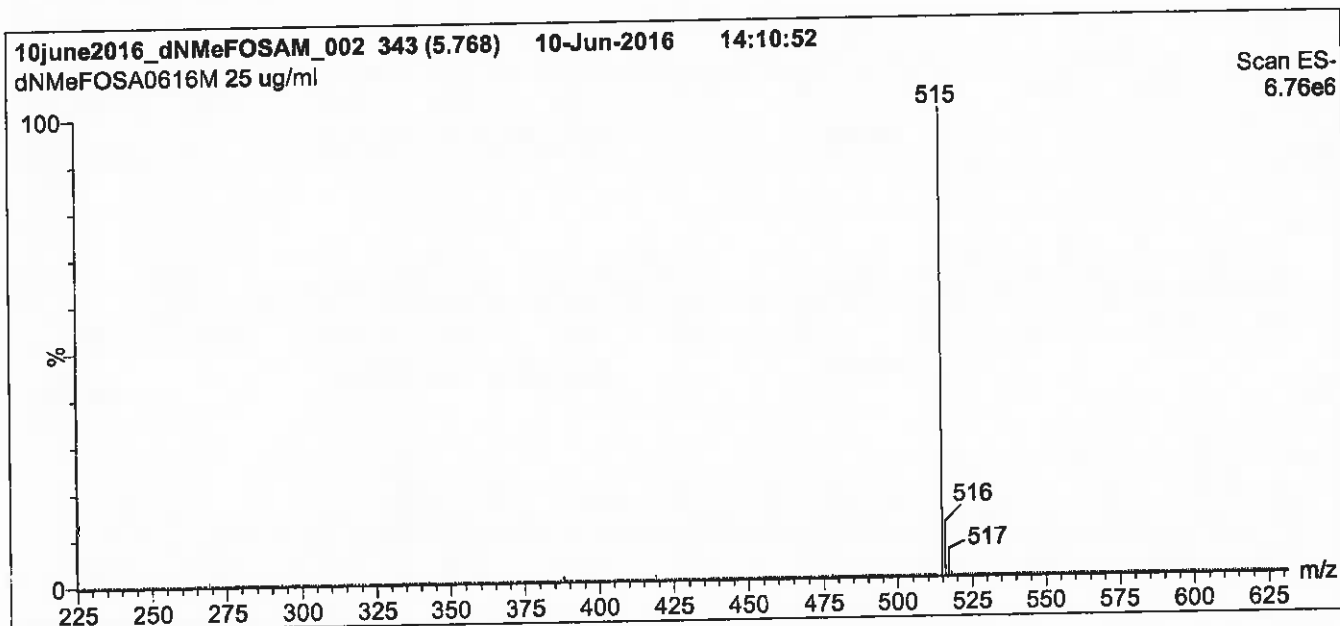
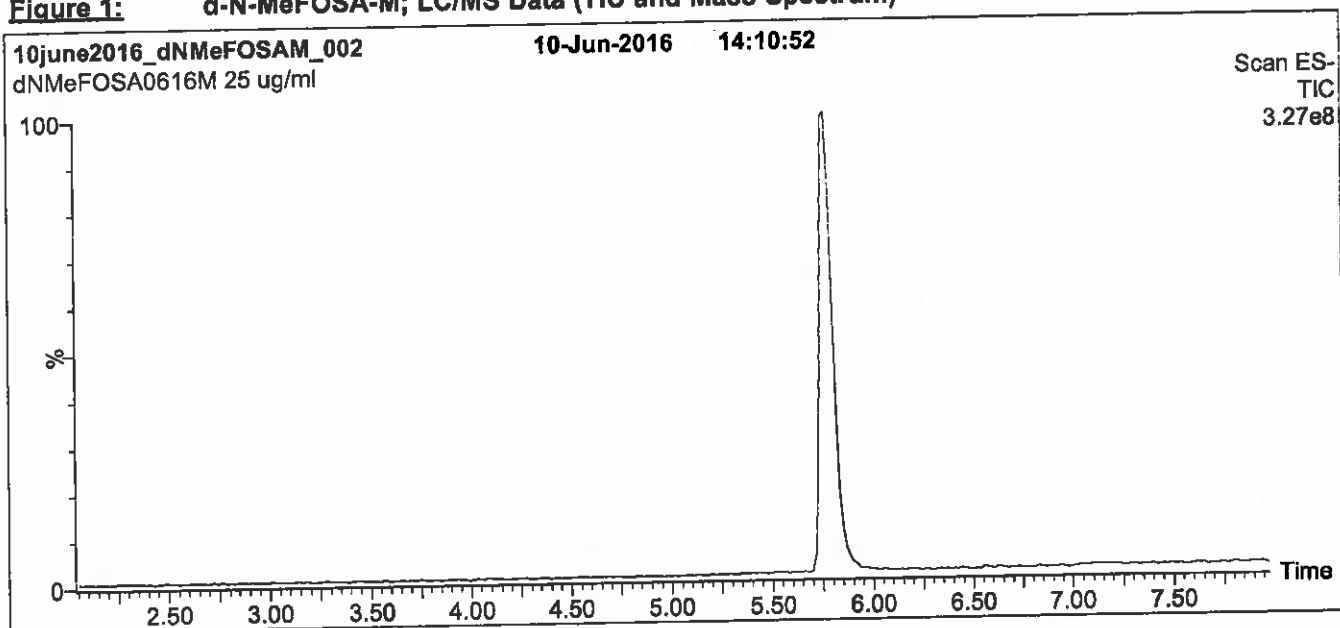
QUALITY MANAGEMENT:

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: d-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: 40% H₂O / 60% (80:20 MeOH:ACN)
(both with 10mM 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

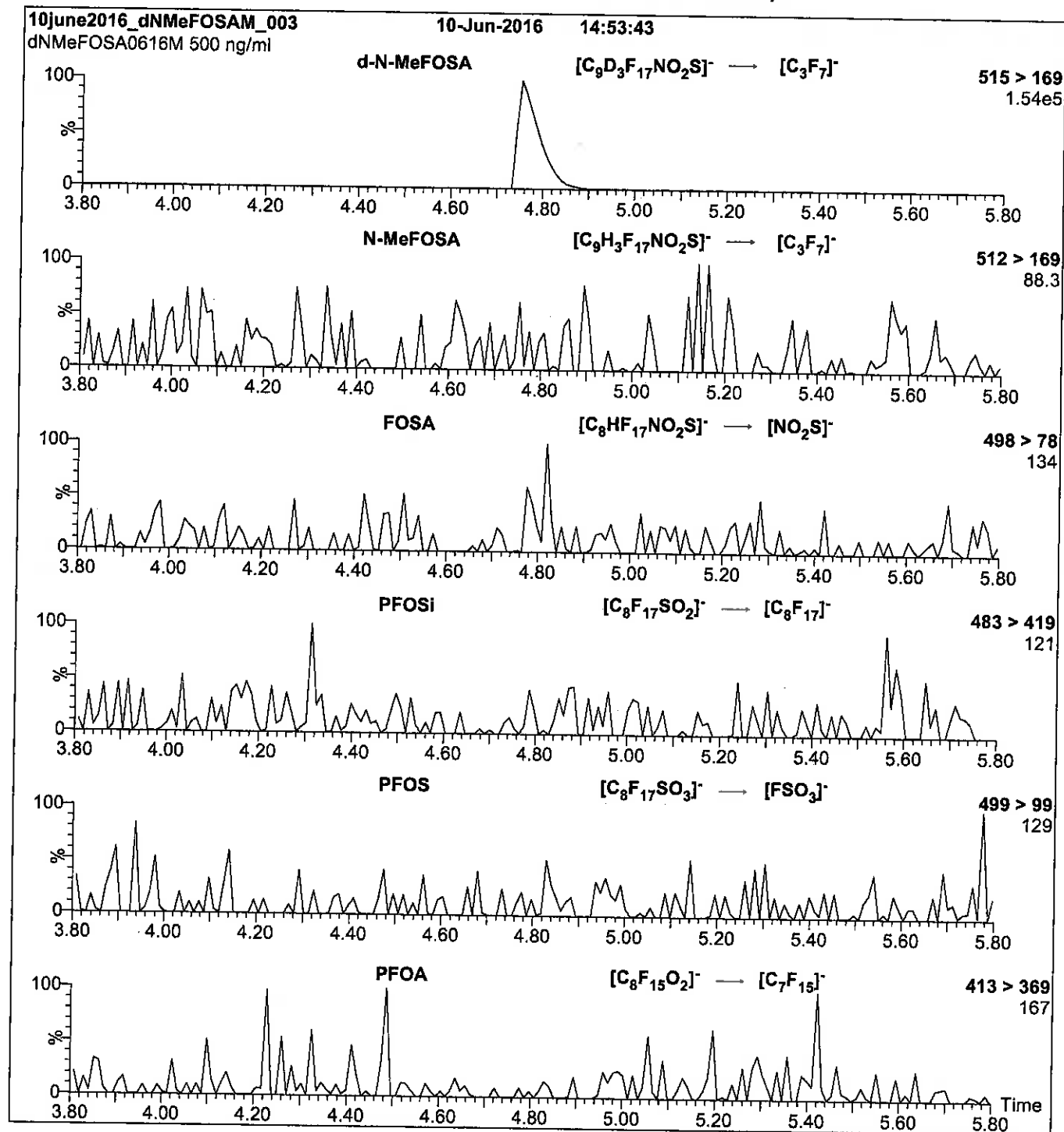
Flow: 300 μ l/min

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



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml d-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) = 3.39e-3
Collision Energy (eV) = 25

Reagent

LCd3-NMeFOSAA_00004

3: 3/20/17 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

d3-N-MeFOSAA

LOT NUMBER:

d3NMeFOSAA1116

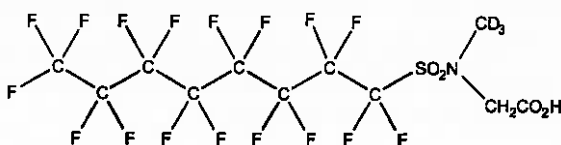
COMPOUND:

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

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

C₁₁D₃H₃F₁₇NO₄S

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

574.23

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥98% ²H₃

LAST TESTED: (mm/dd/yyyy)

11/22/2016

EXPIRY DATE: (mm/dd/yyyy)

11/22/2021

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.
- 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: 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

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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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:

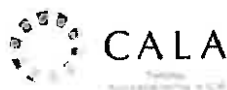
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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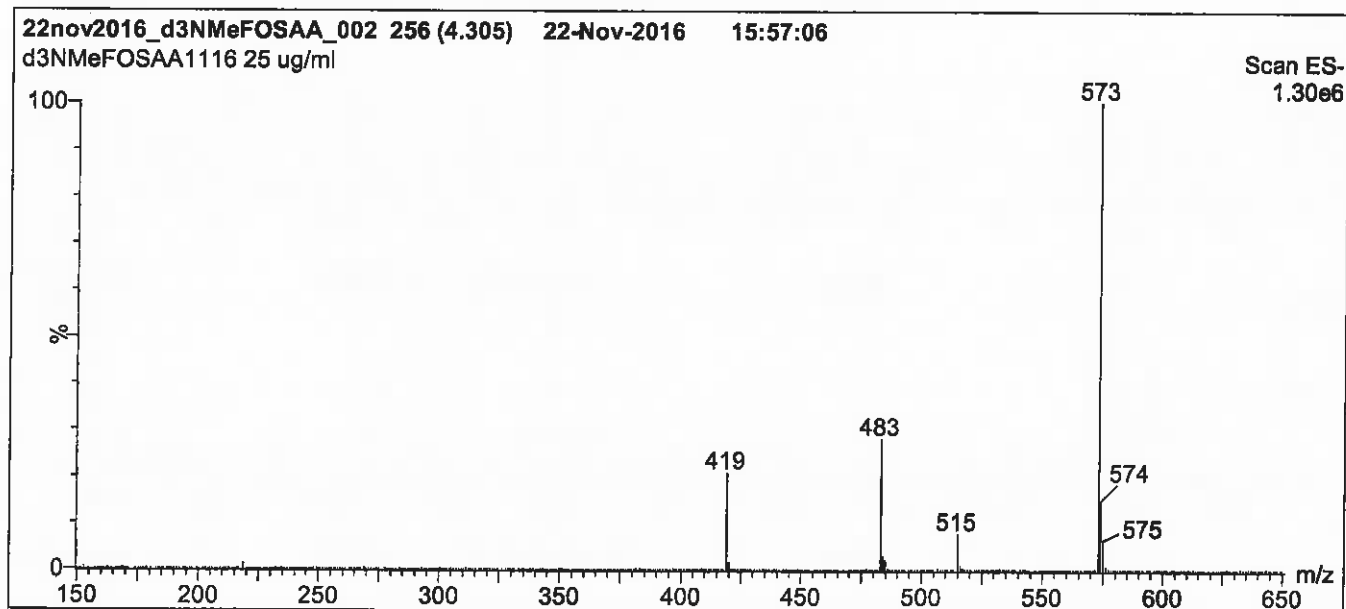
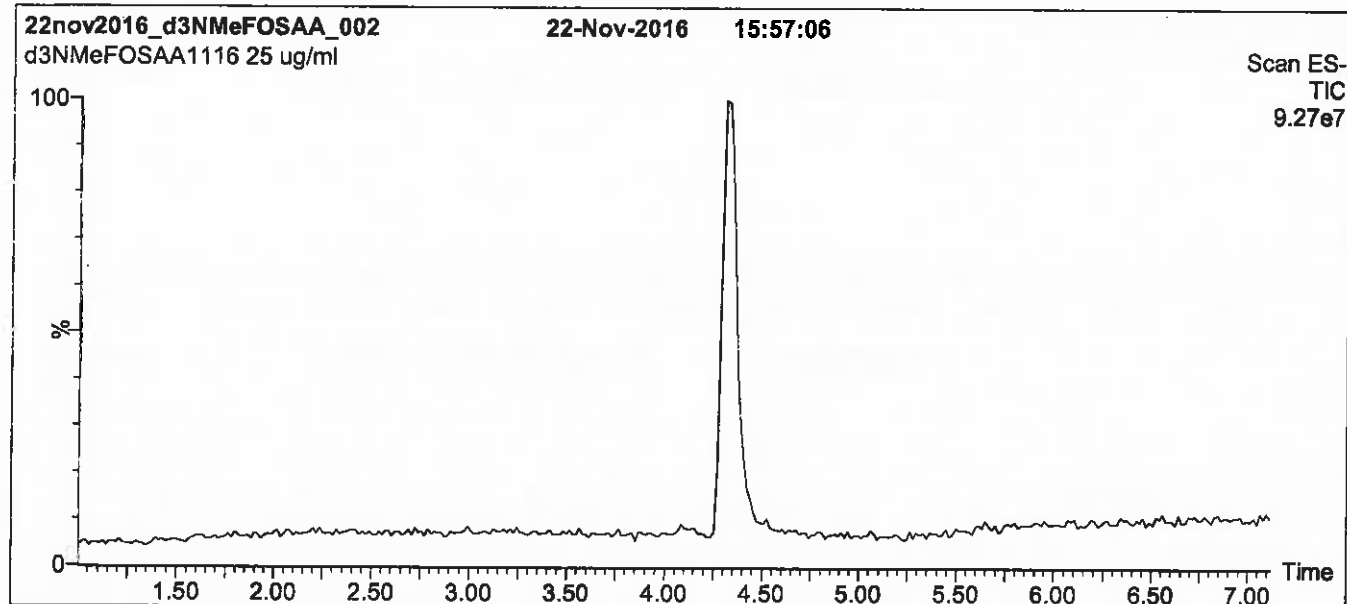
QUALITY MANAGEMENT:

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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

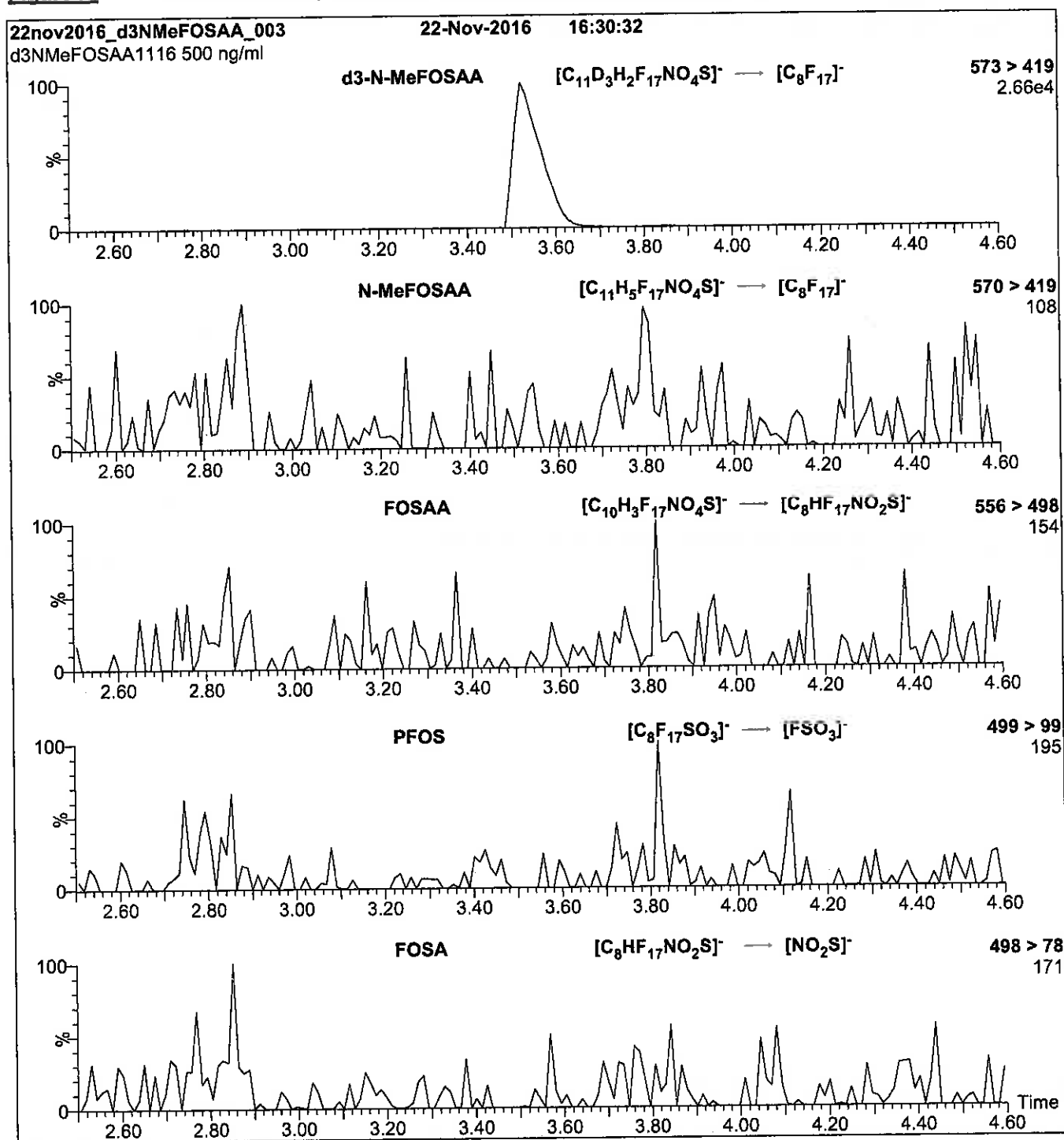
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 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) = 3.43e-3
Collision Energy (eV) = 20

Reagent

LCd5-NEtFOSAA_00004

P: 3/20/17 SW



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

d5-N-EtFOSAA

LOT NUMBER:

d5NEtFOSAA1116

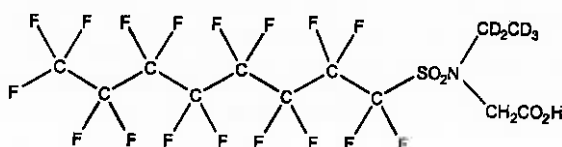
COMPOUND:

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

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

$C_{12}D_5H_3F_{17}NO_4S$

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT:

590.26

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

11/22/2016

EXPIRY DATE: (mm/dd/yyyy)

11/22/2021

ISOTOPIC PURITY:

$\geq 98\% \text{ } ^2\text{H}_5$

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: 12/01/2016
(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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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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EXPIRY DATE / PERIOD OF VALIDITY:

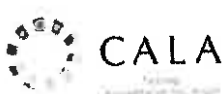
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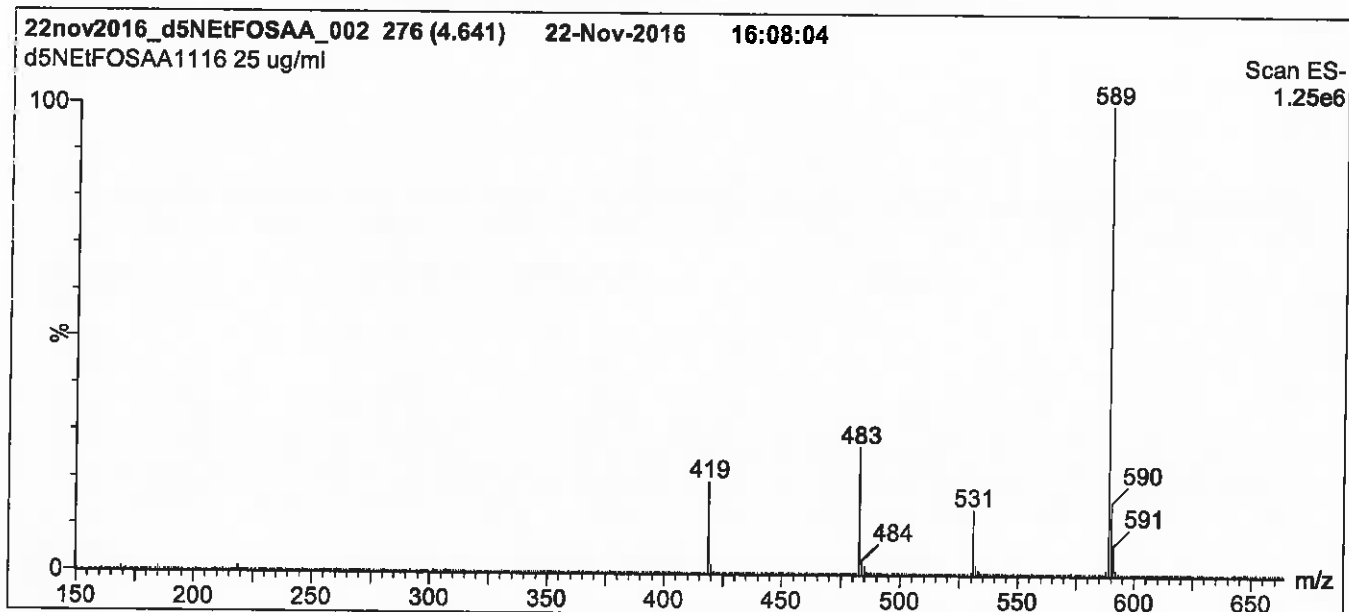
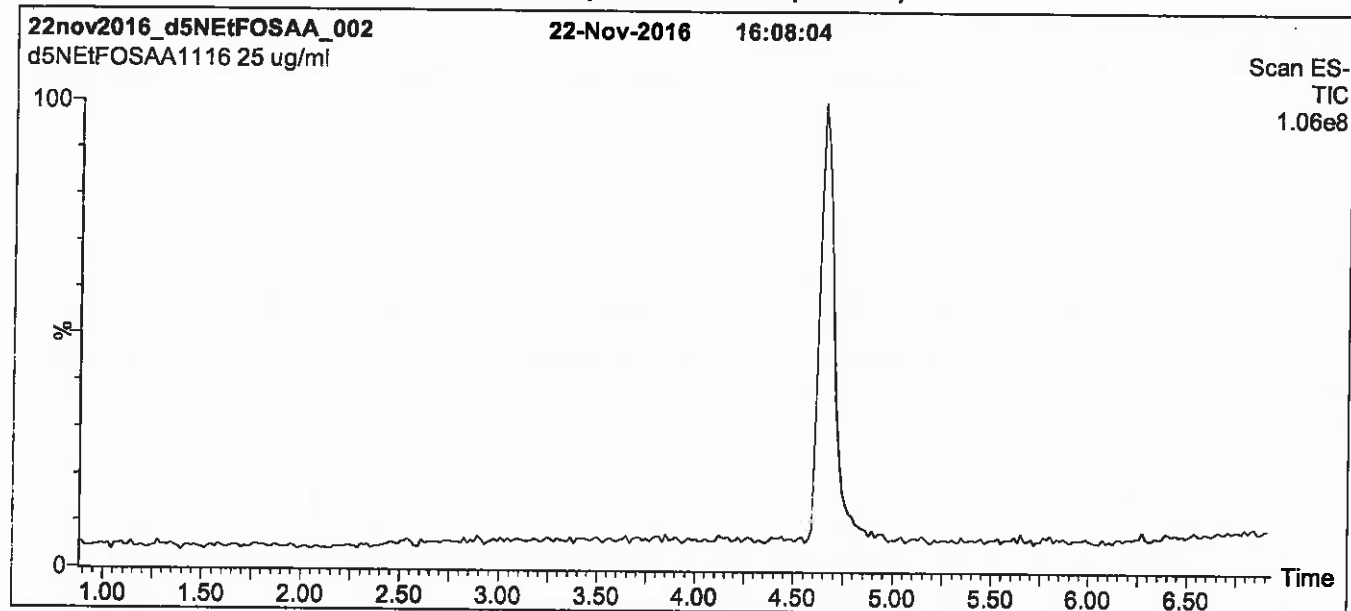
QUALITY MANAGEMENT:

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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

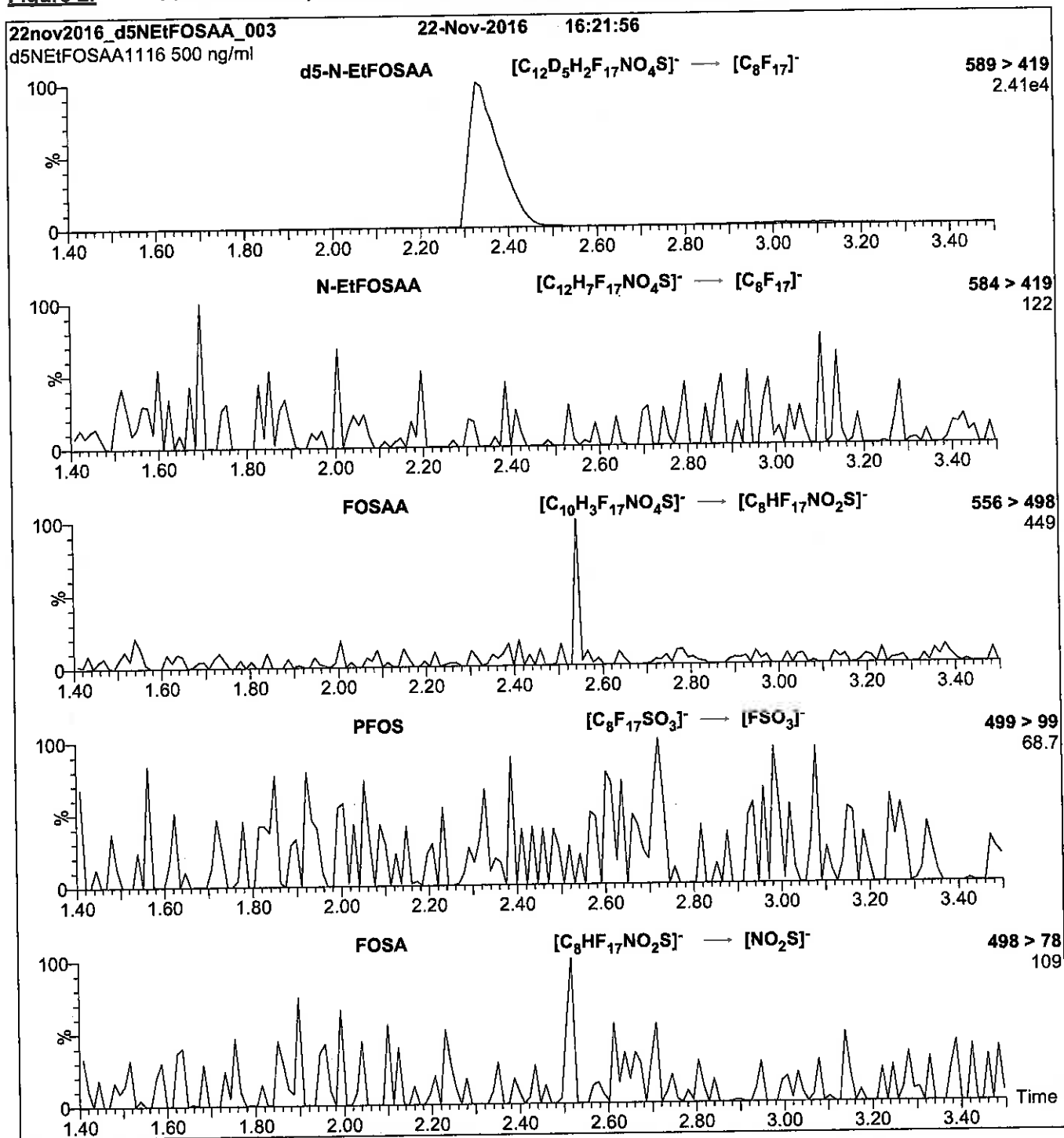
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 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% 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) = 20

Reagent

LCM2-6:FTS_00004

03/20/17 SKV

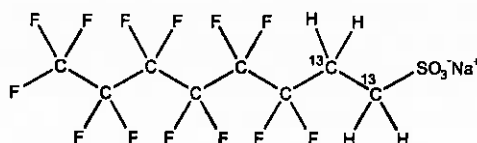


WELLINGTON LABORATORIES

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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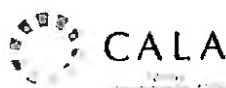
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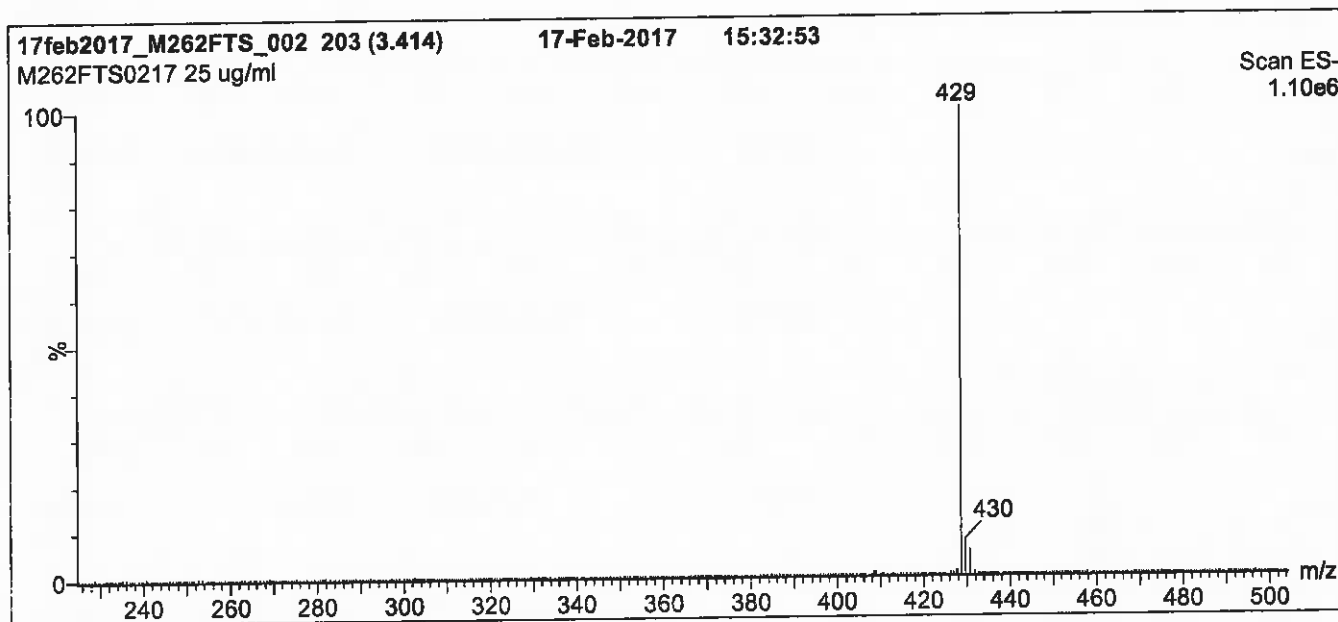
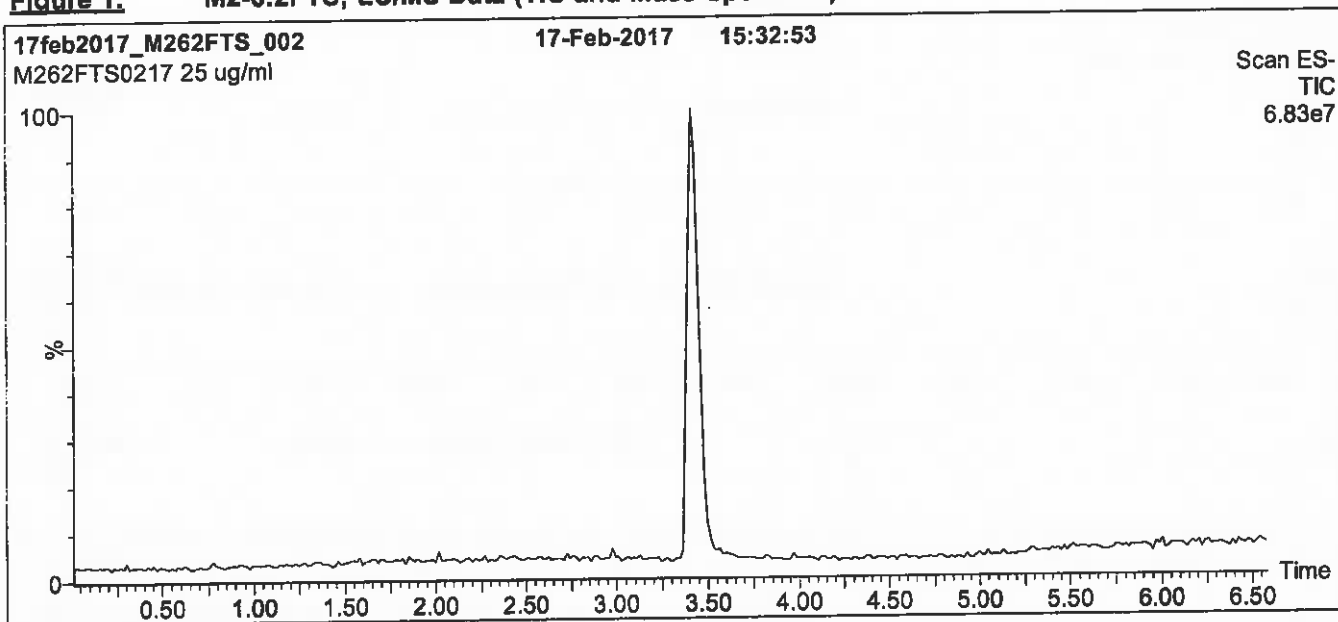
QUALITY MANAGEMENT:

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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

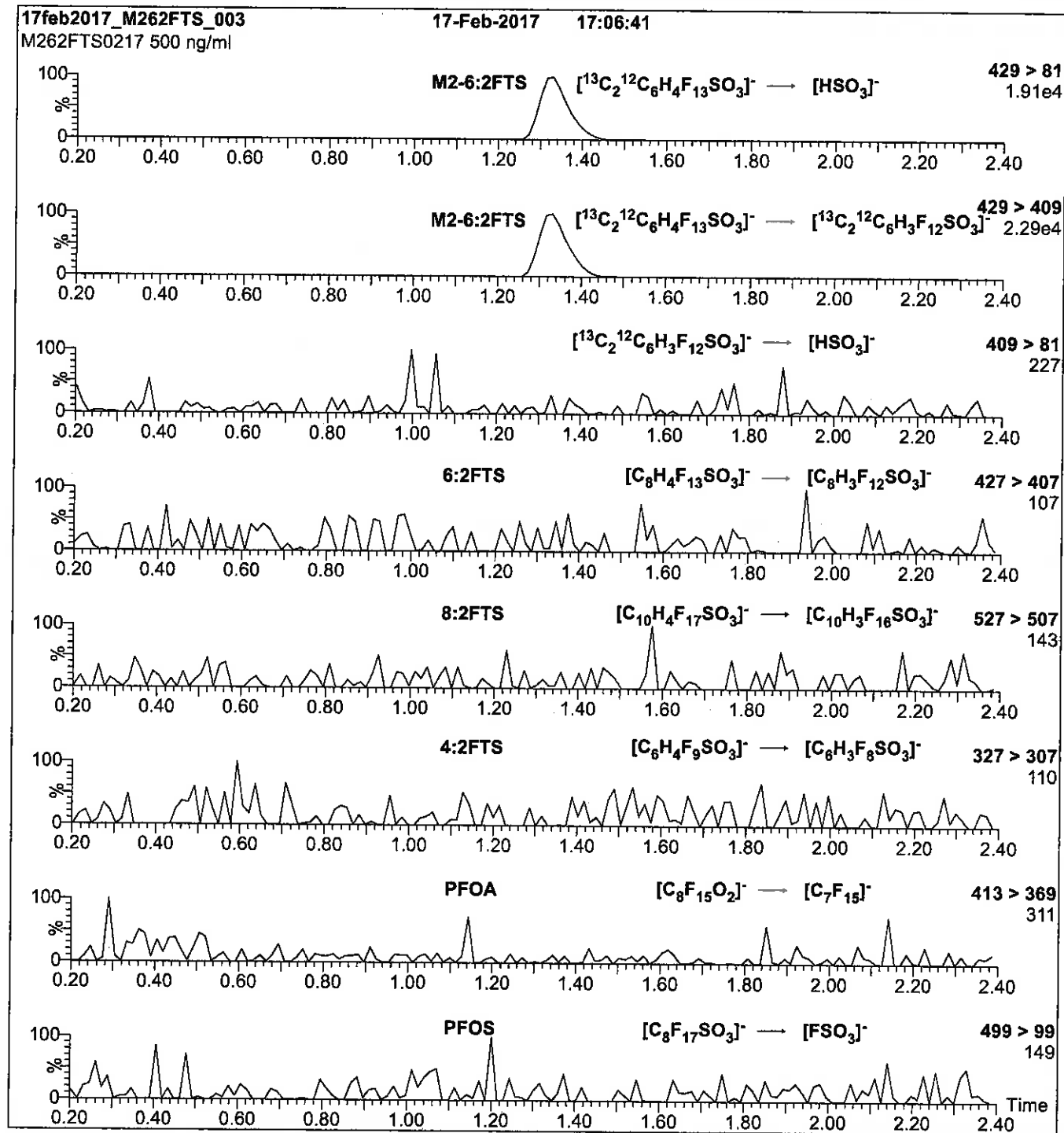
Flow: 300 μ l/min

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_00004

r: 3/2017 sev

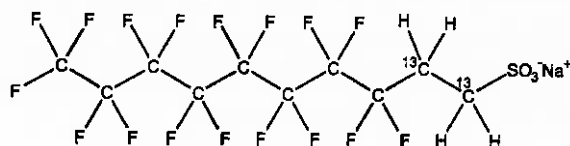


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0816
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈H₄F₁₇SO₃Na **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% ¹³C
LAST TESTED: (mm/dd/yyyy) 08/22/2016 (1,2-¹³C₂)
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.
- 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: **Date:** 09/02/2016
 B.G. Chittim (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:

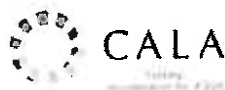
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

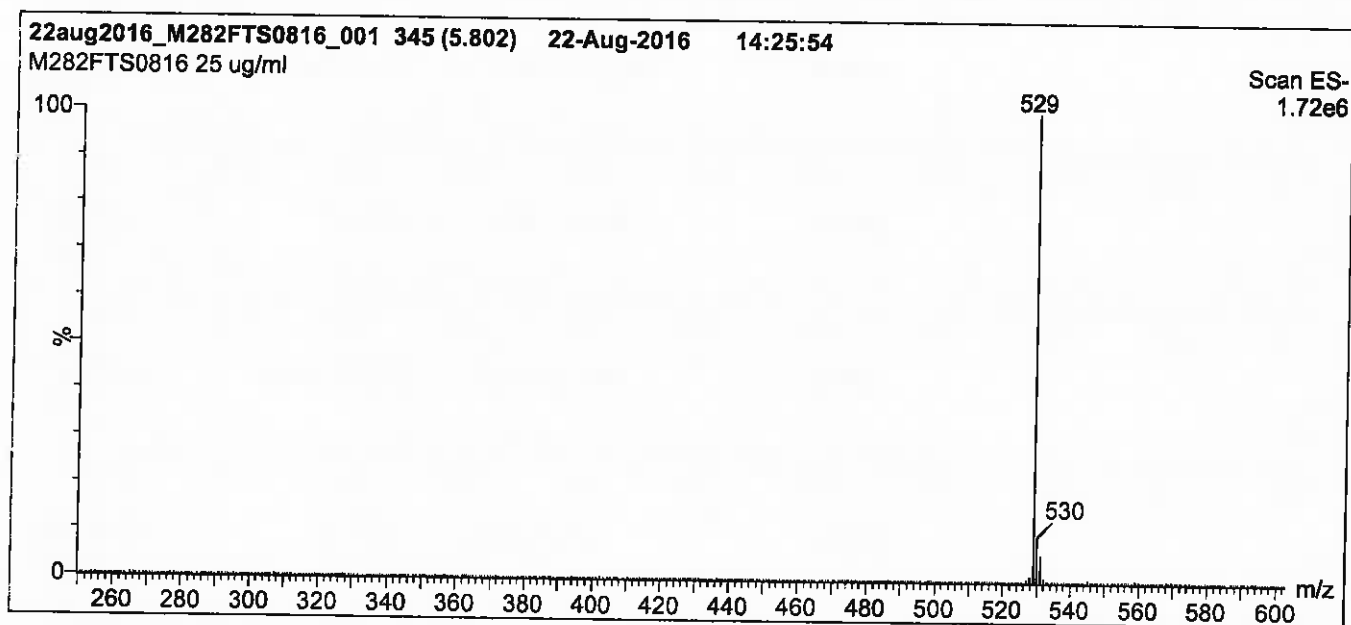
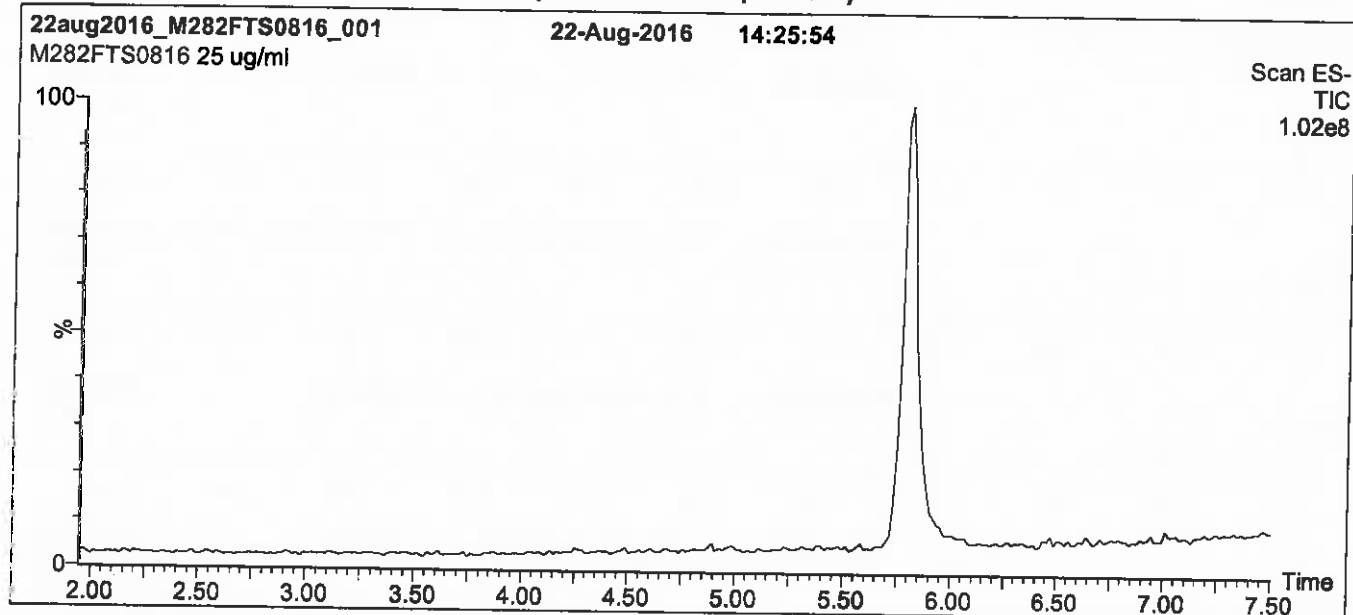
QUALITY MANAGEMENT:

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: 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: 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

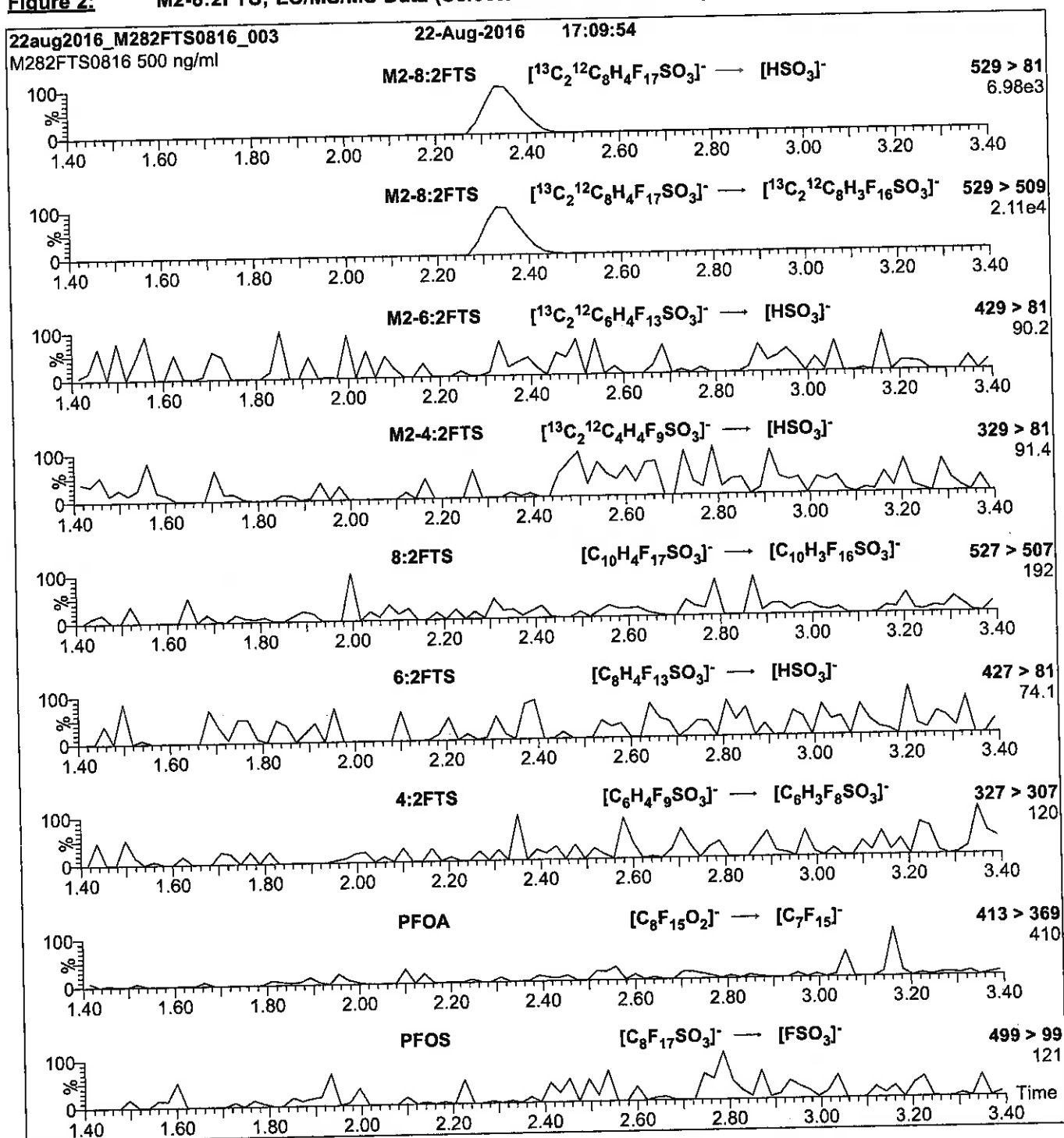
Flow: 300 μ l/min

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: 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) = 3.31e-3
Collision Energy (eV) = 30

Reagent

LCM2PFHxDA_00010

n: 5/3/17 SK

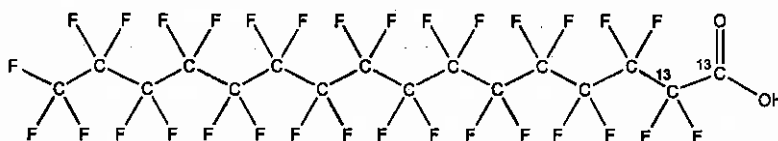


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA **LOT NUMBER:** M2PFHxDA1112
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₂ ¹² C ₁₄ HF ₃₁ O ₂	MOLECULAR WEIGHT:	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C (1,2- ¹³ C ₂)
LAST TESTED: (mm/dd/yyyy)	01/07/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/07/2021		
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 native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/11/2016
(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:

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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.

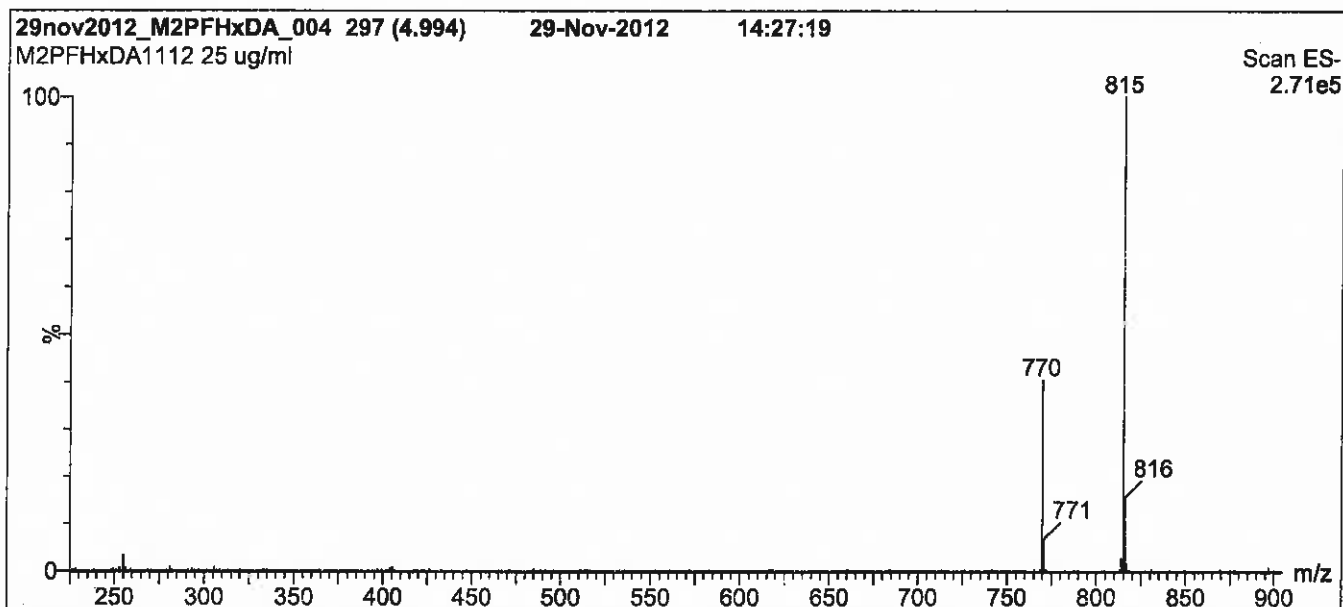
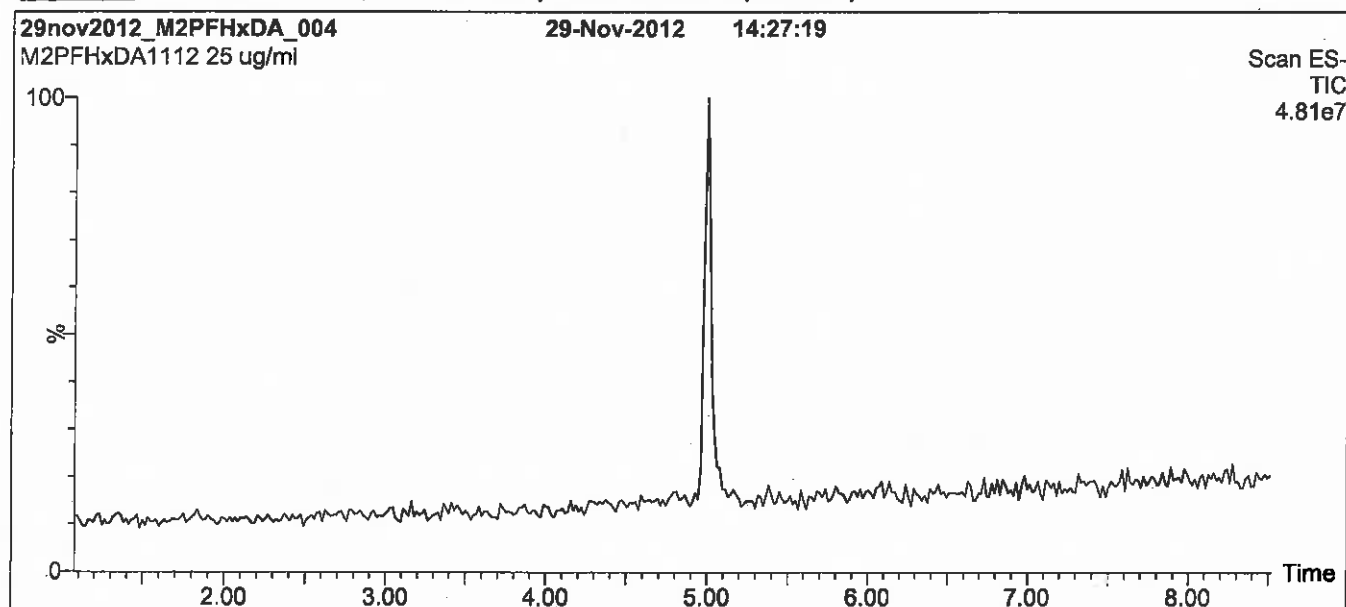
QUALITY MANAGEMENT:

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: 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: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

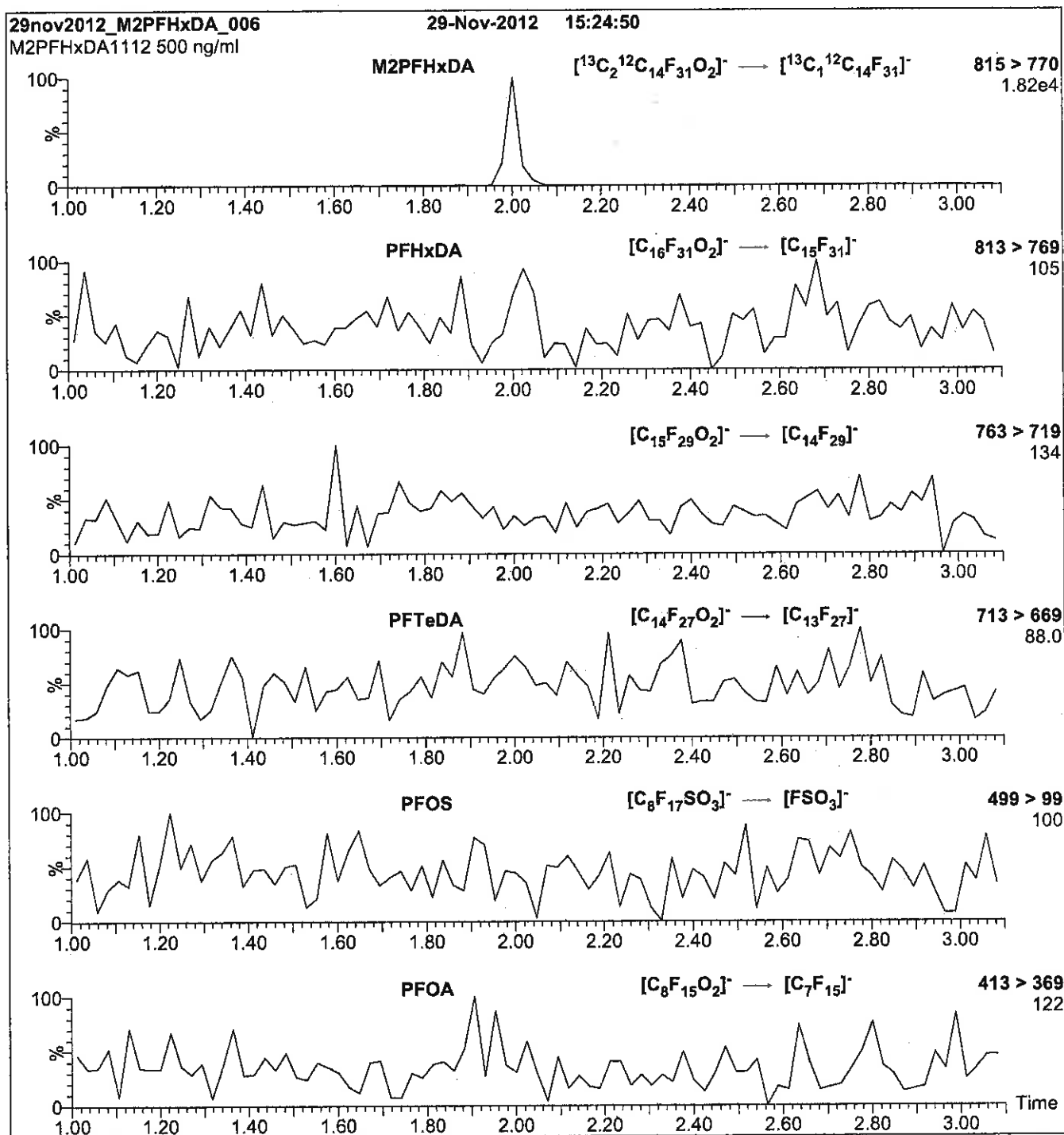
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
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% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCM2PFHxDA_00011

r: 11/17/17

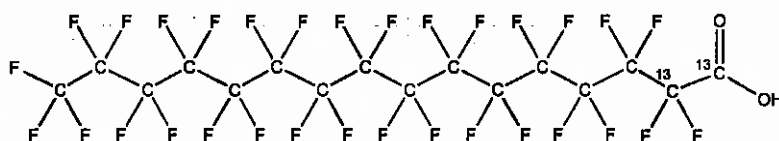


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA **LOT NUMBER:** M2PFHxDA1112
COMPOUND: Perfluoro-n-[1,2-¹³C₂]hexadecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₄HF₃₁O₂ **MOLECULAR WEIGHT:** 816.11
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 01/07/2016 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 01/07/2021
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 native perfluoro-n-hexadecanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 01/11/2016
(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:

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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.

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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:

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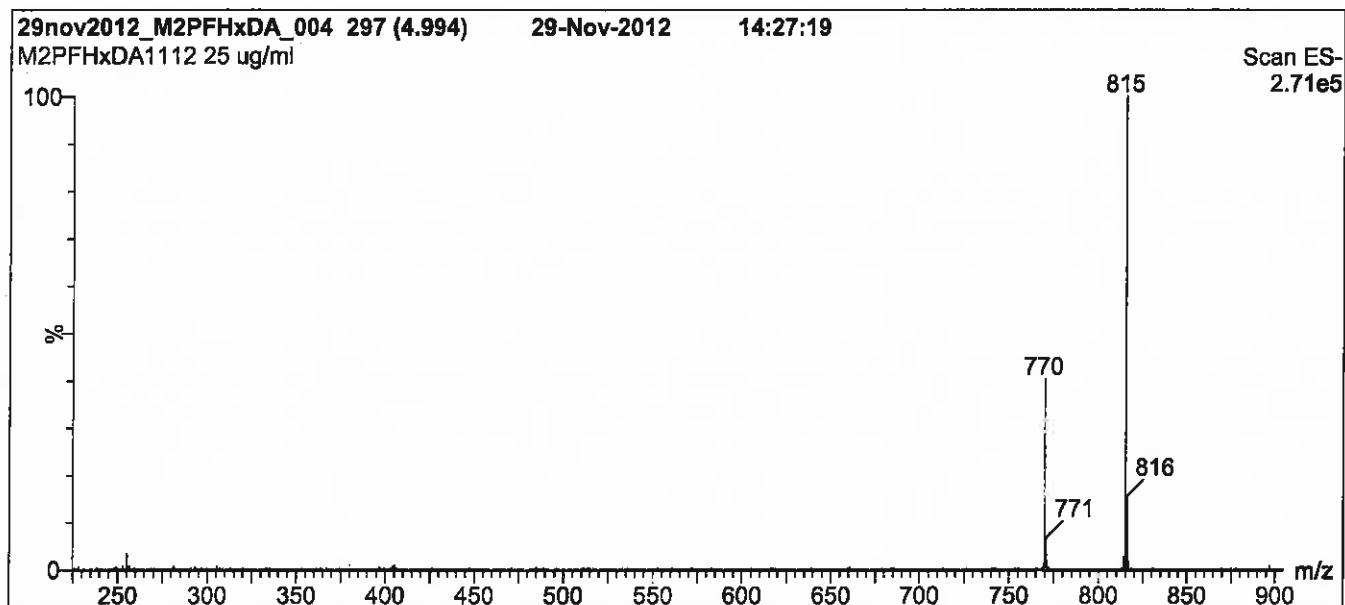
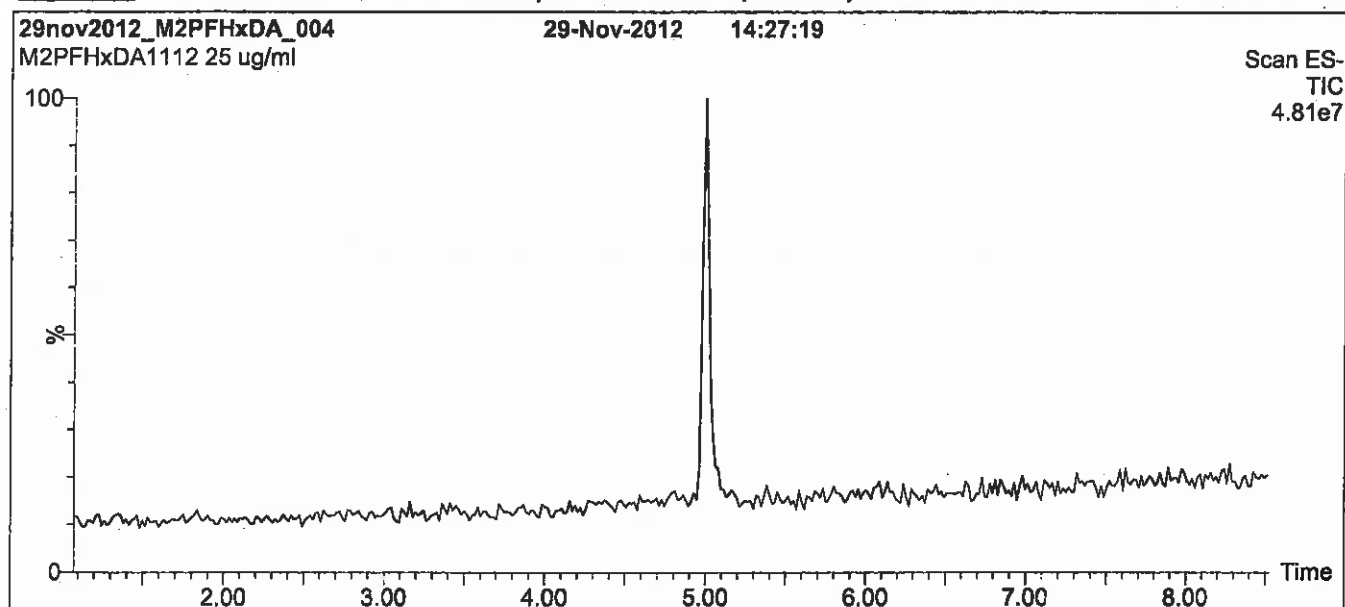
QUALITY MANAGEMENT:

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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: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 100% organic over 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

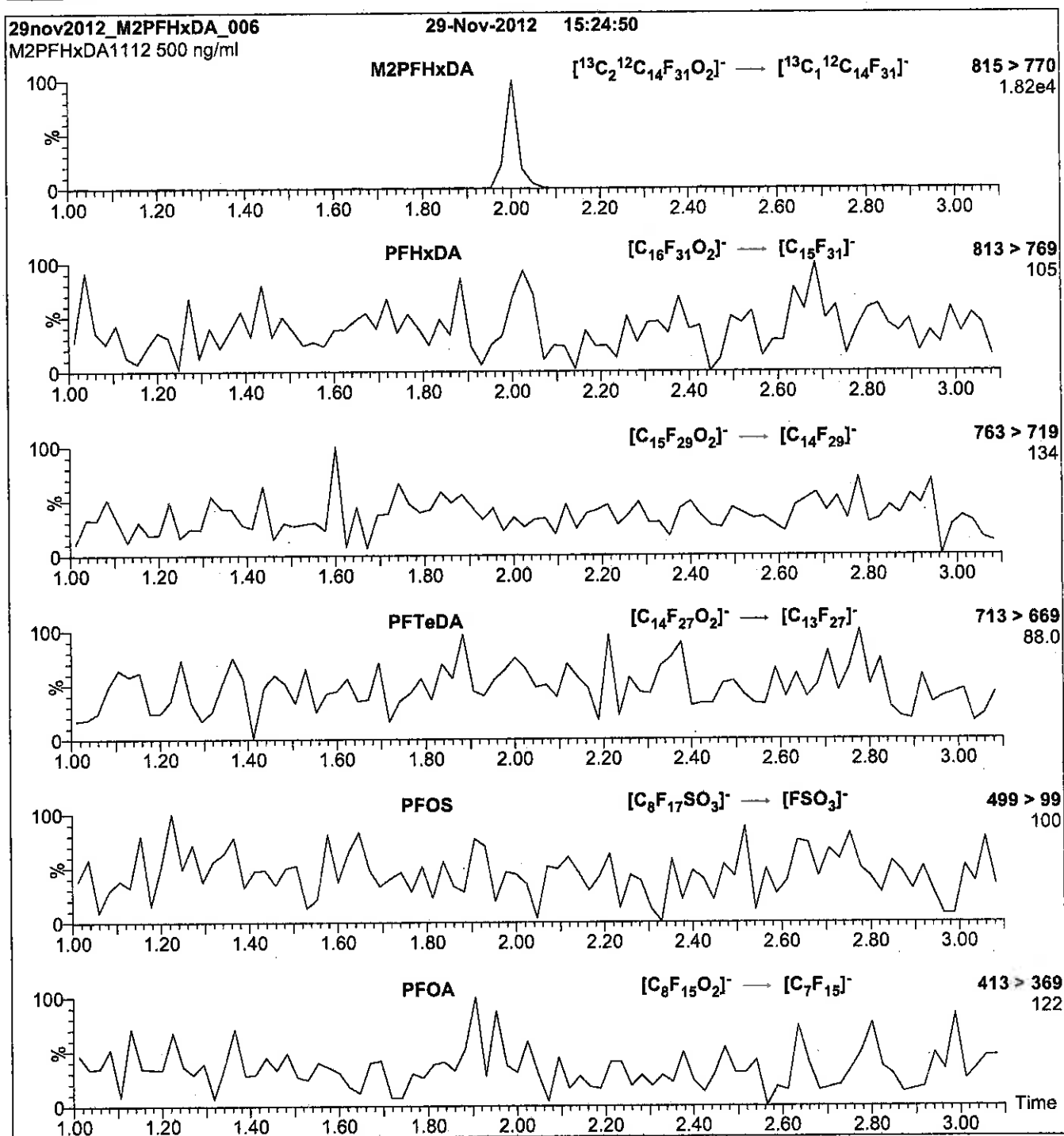
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
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) = 3.39e-3
Collision Energy (eV) = 15

Reagent

LCM2PFOA_00005



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

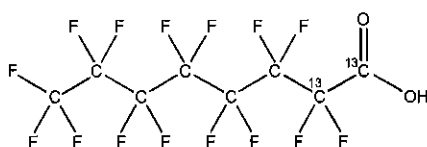
M2PFOA

LOT NUMBER:

M2PFOA0613

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

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₆H₁₅O₂**MOLECULAR WEIGHT:**

416.05

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

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

06/19/2013

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

06/19/2018

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: 07/16/2013

(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:

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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 17025:2005 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 for the period of time specified by the 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.

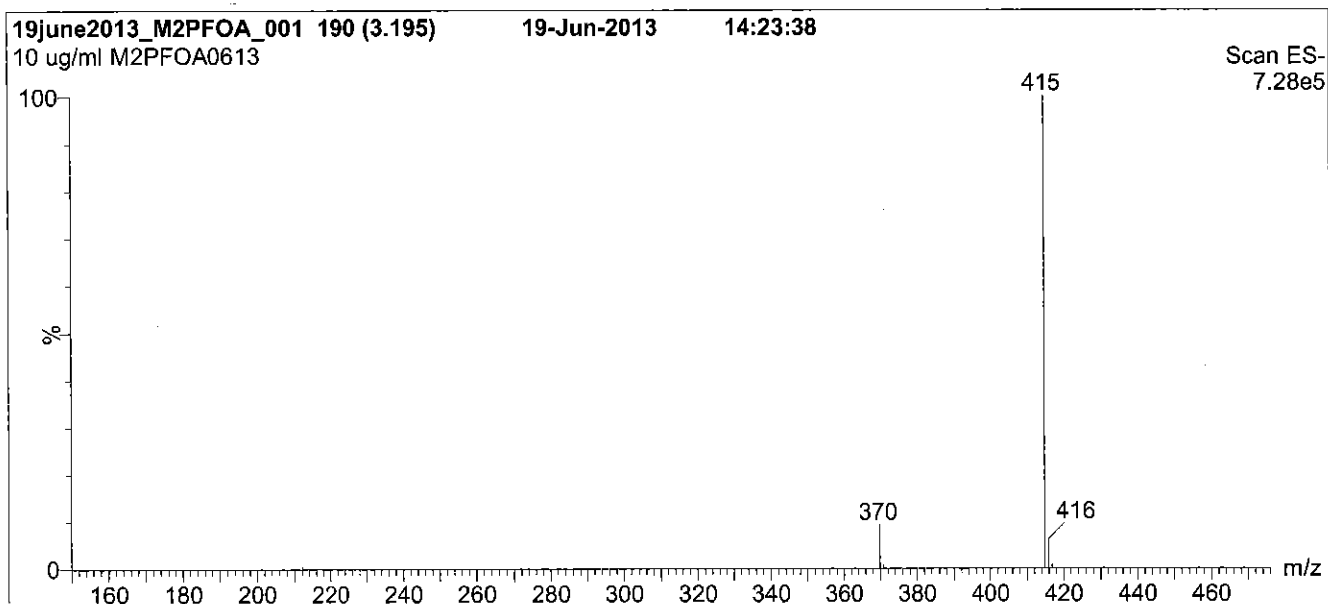
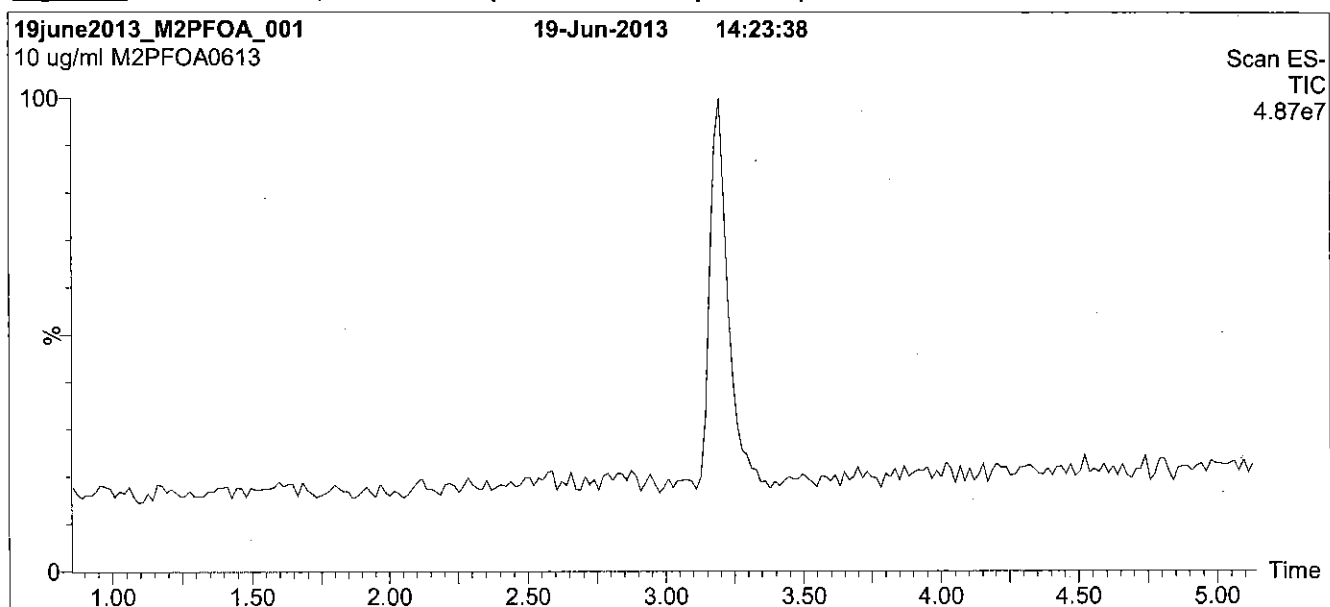
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number 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: 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 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

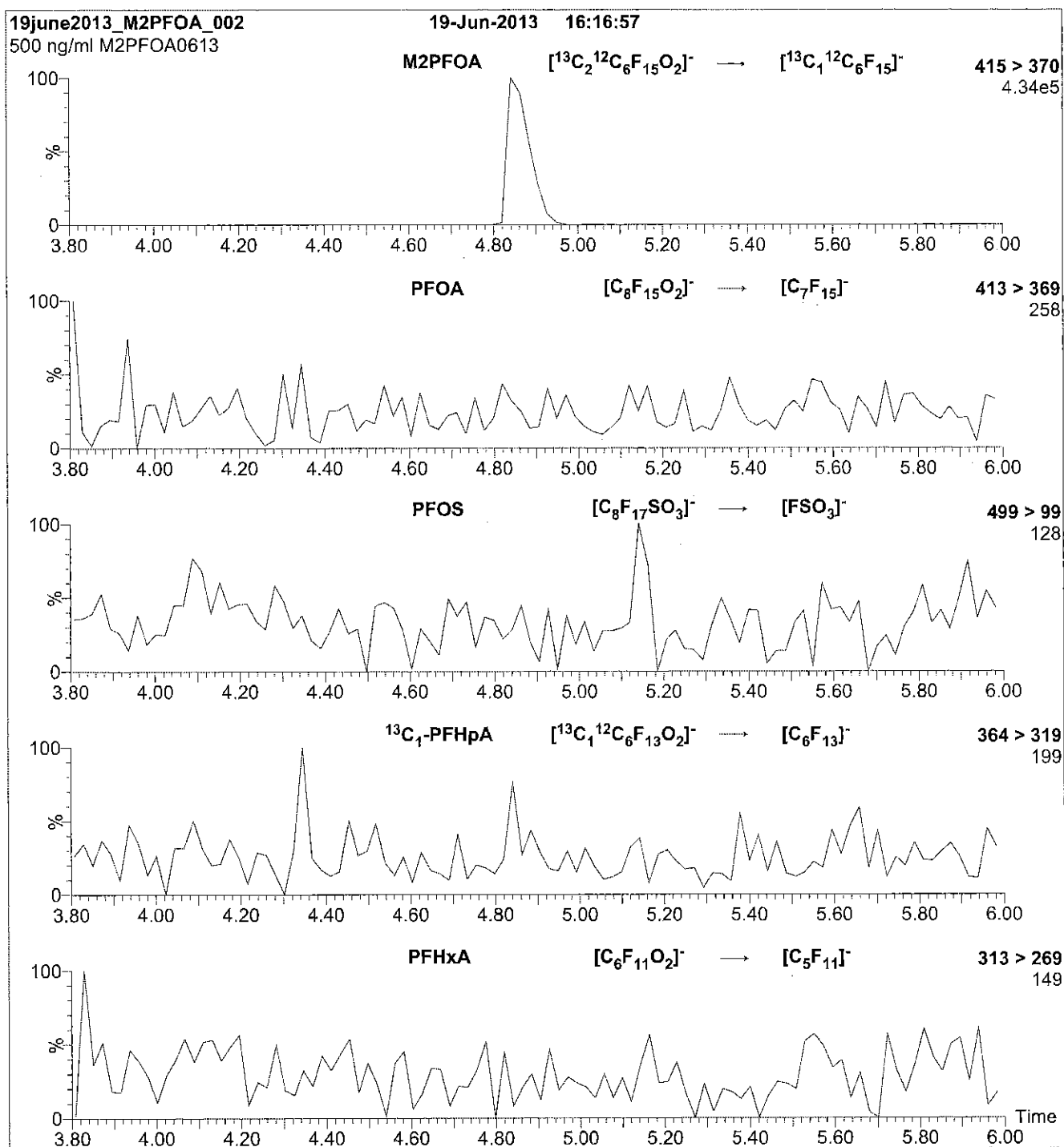
Flow: 300 μ l/min

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) = 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% (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) = 3.66e-3
Collision Energy (eV) = 11

Reagent

LCM2PFTeDA_00009

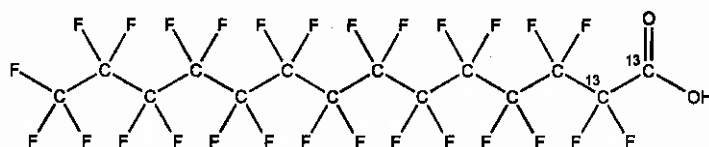
R: 5/31/17 SGL



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA **LOT NUMBER:** M2PFTeDA0217
COMPOUND: Perfluoro-n-[1,2-¹³C₂]tetradecanoic acid
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₂HF₂₇O₂ **MOLECULAR WEIGHT:** 716.10
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
(1,2-¹³C₂)
LAST TESTED: (mm/dd/yyyy) 03/01/2017
EXPIRY DATE: (mm/dd/yyyy) 03/01/2022
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 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: 03/07/2017
(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:

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.

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:

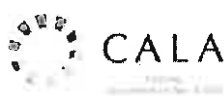
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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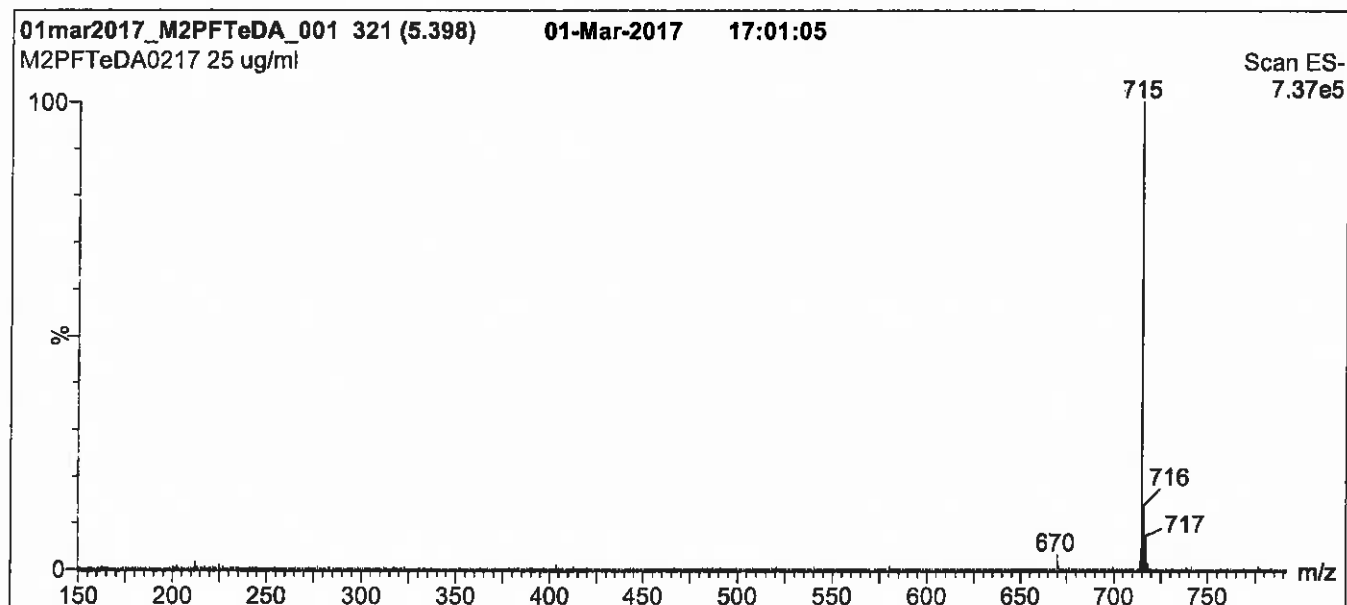
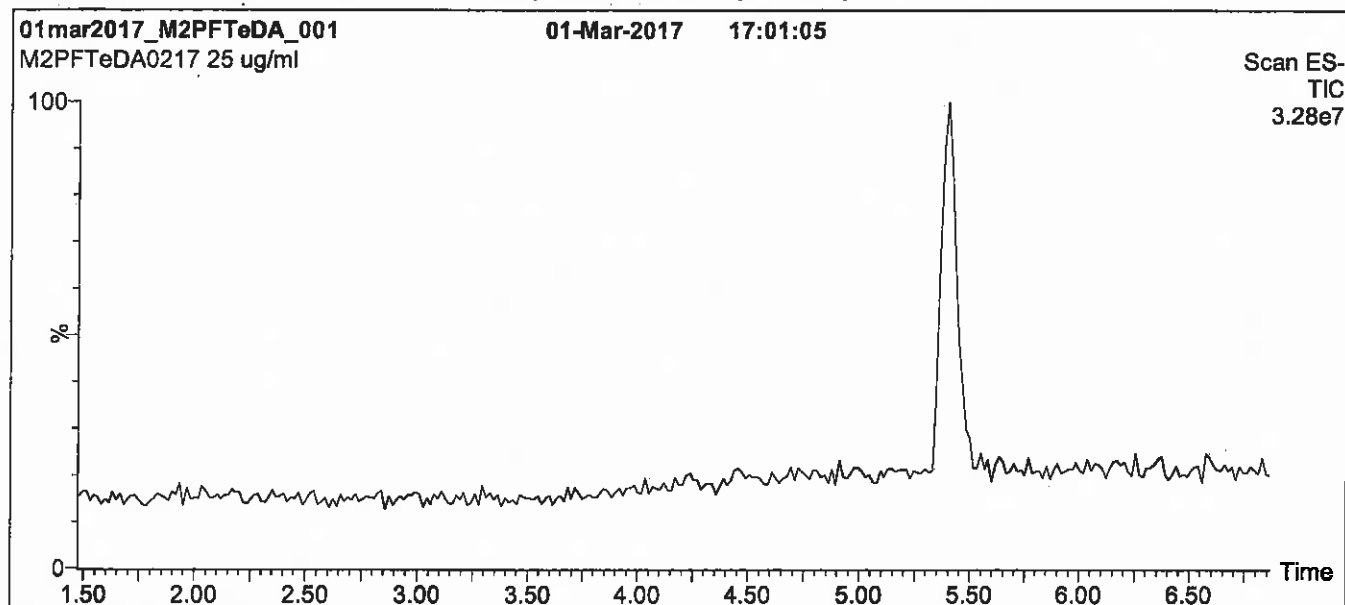
QUALITY MANAGEMENT:

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: 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

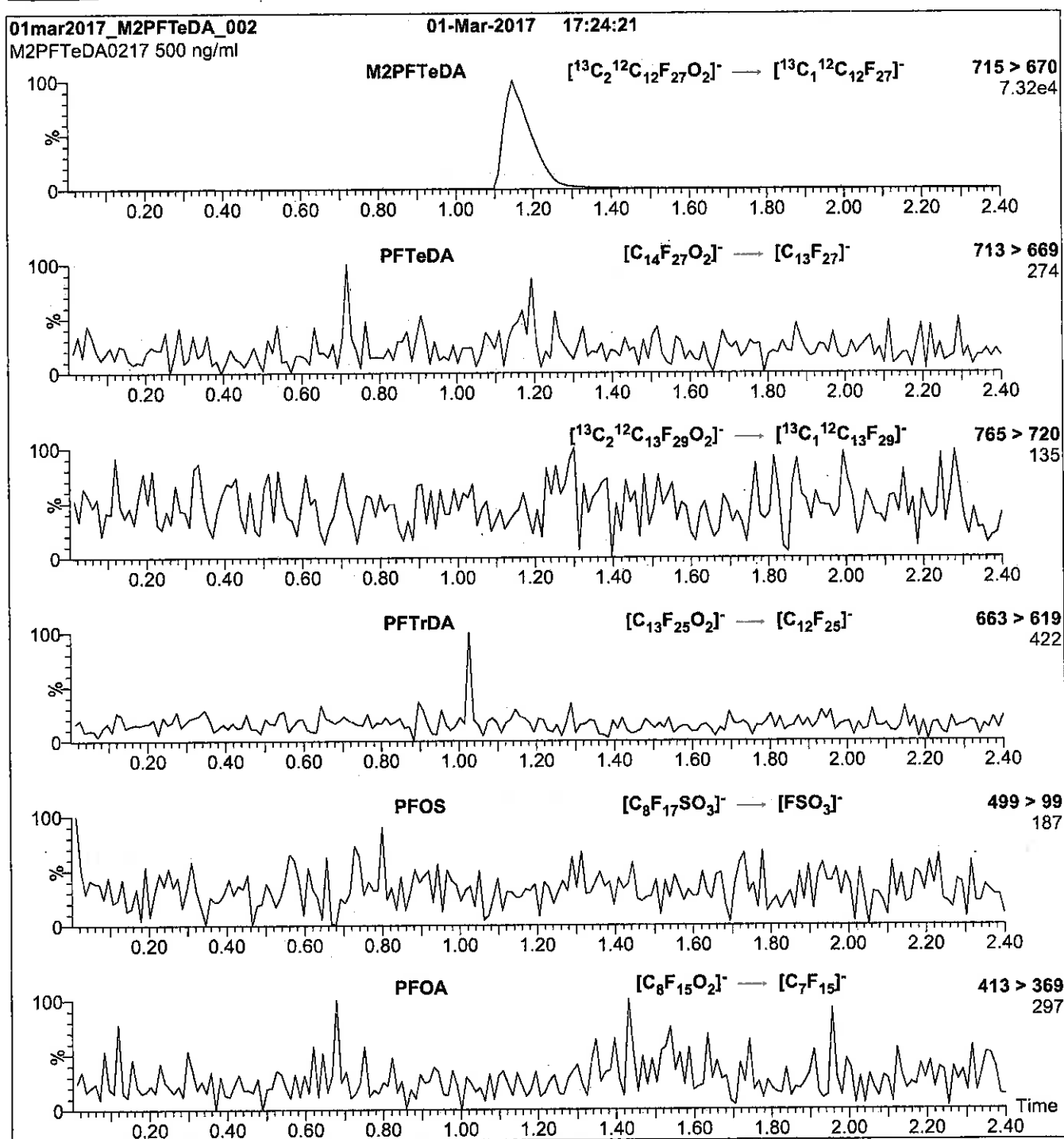
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 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: 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) = $3.46\text{e-}3$
 Collision Energy (eV) = 14

Reagent

LCM2PFTeDA_00010

r: 7/5/17 SW



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

M2PFTeDA

LOT NUMBER:

M2PFTeDA0217

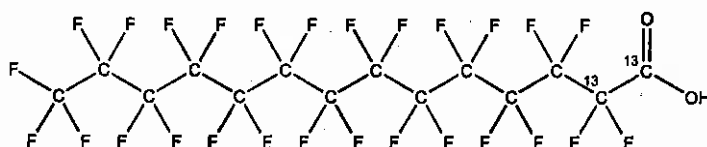
COMPOUND:

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

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₁₂HF₂₇O₂

MOLECULAR WEIGHT:

716.10

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

03/01/2017

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

03/01/2022

RECOMMENDED STORAGE:

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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.

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Certified By:

B.G. Chittim, General Manager

Date: 03/07/2017

(mm/dd/yyyy)

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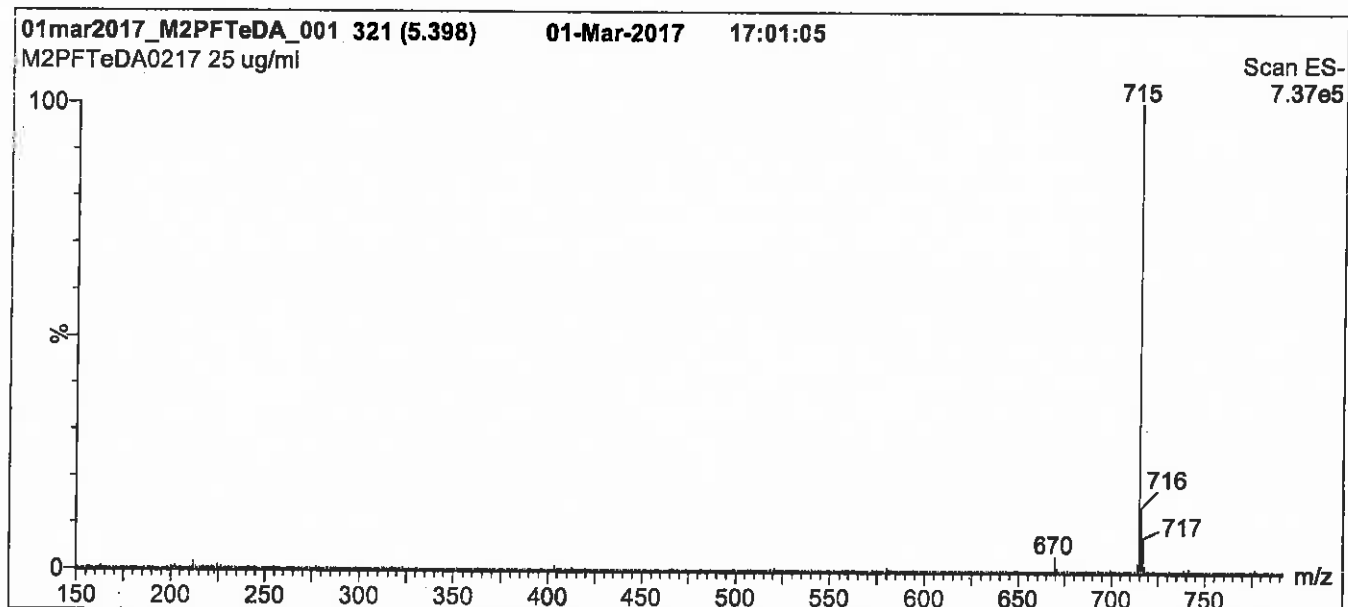
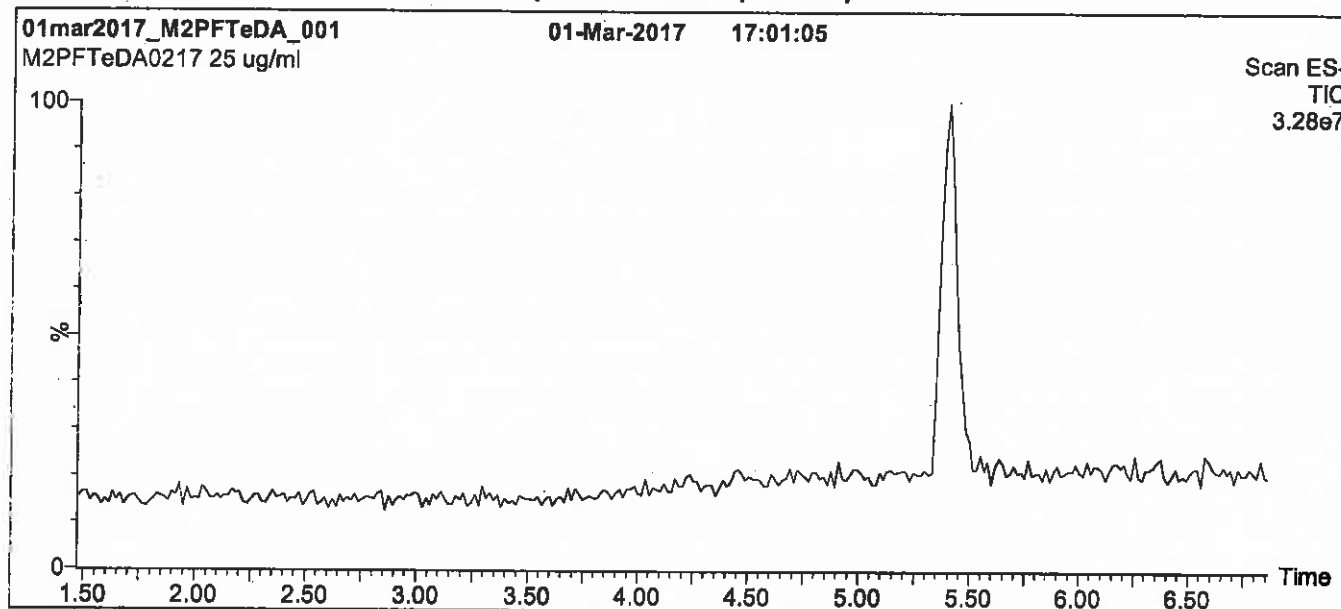
QUALITY MANAGEMENT:

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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

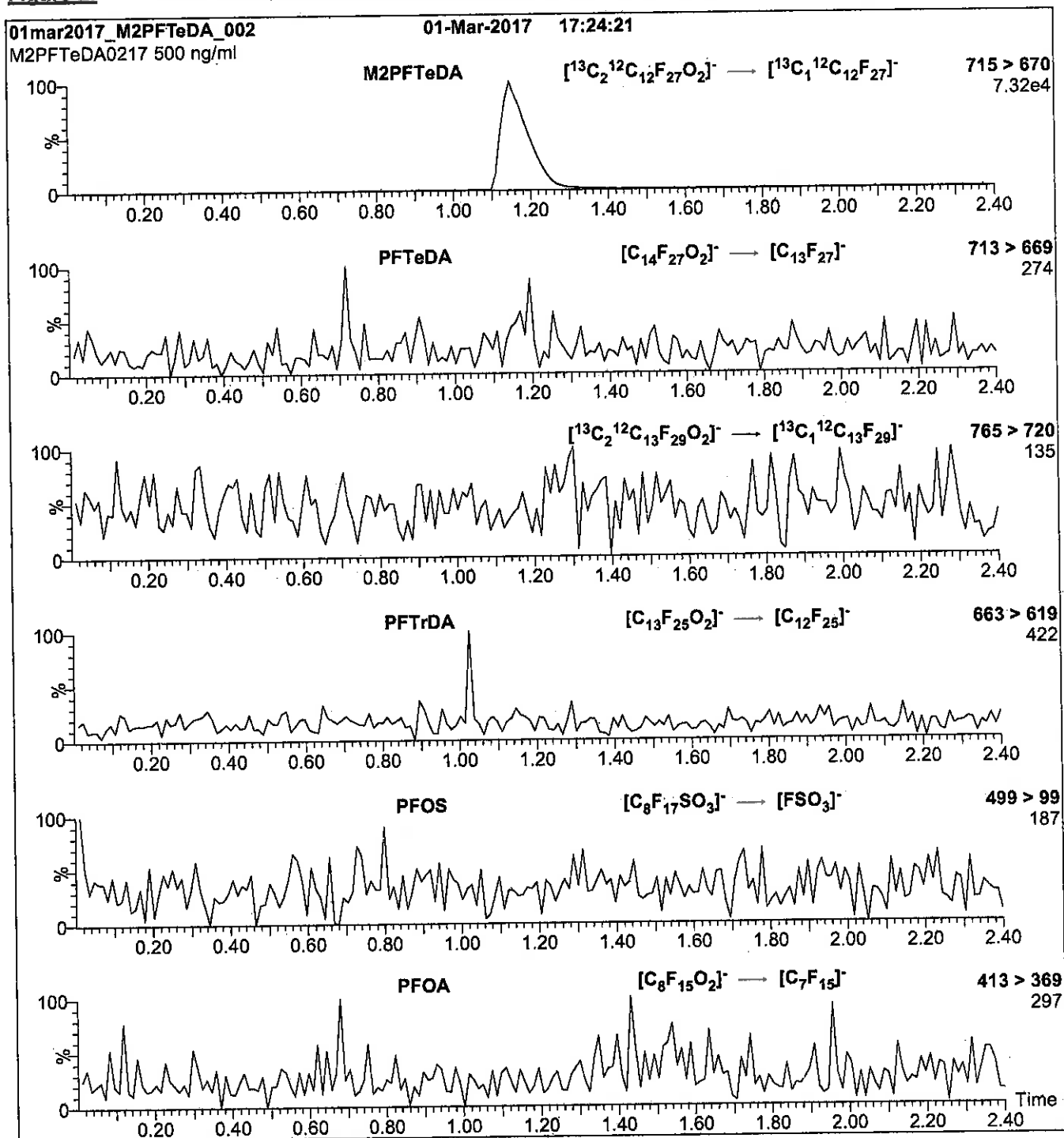
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 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: 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) = 3.46e-3
Collision Energy (eV) = 14

Reagent

LCM4PFHPA_00009



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

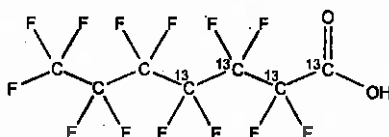
M4PFHpA

LOT NUMBER:

M4PFHpA0516

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

Not available

**MOLECULAR FORMULA:**¹³C₄¹²C₃HF₁₃O₂**CONCENTRATION:**

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

368.03

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:≥99%¹³C**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

(1,2,3,4-¹³C₄)**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: 07/05/2016

(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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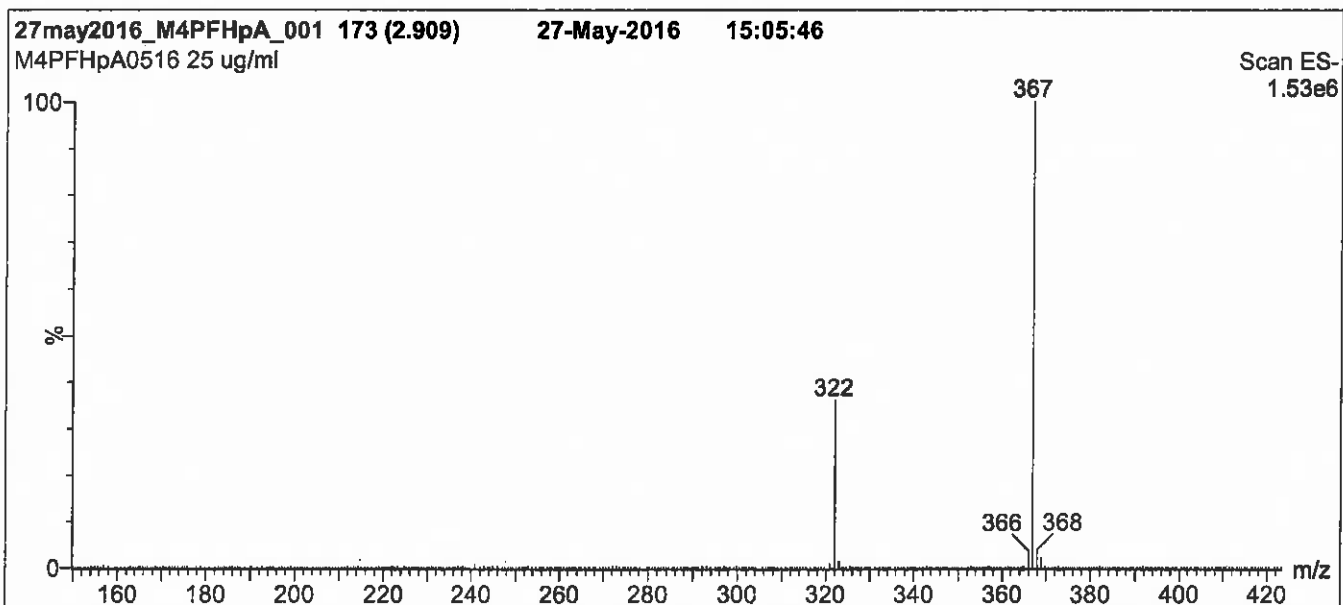
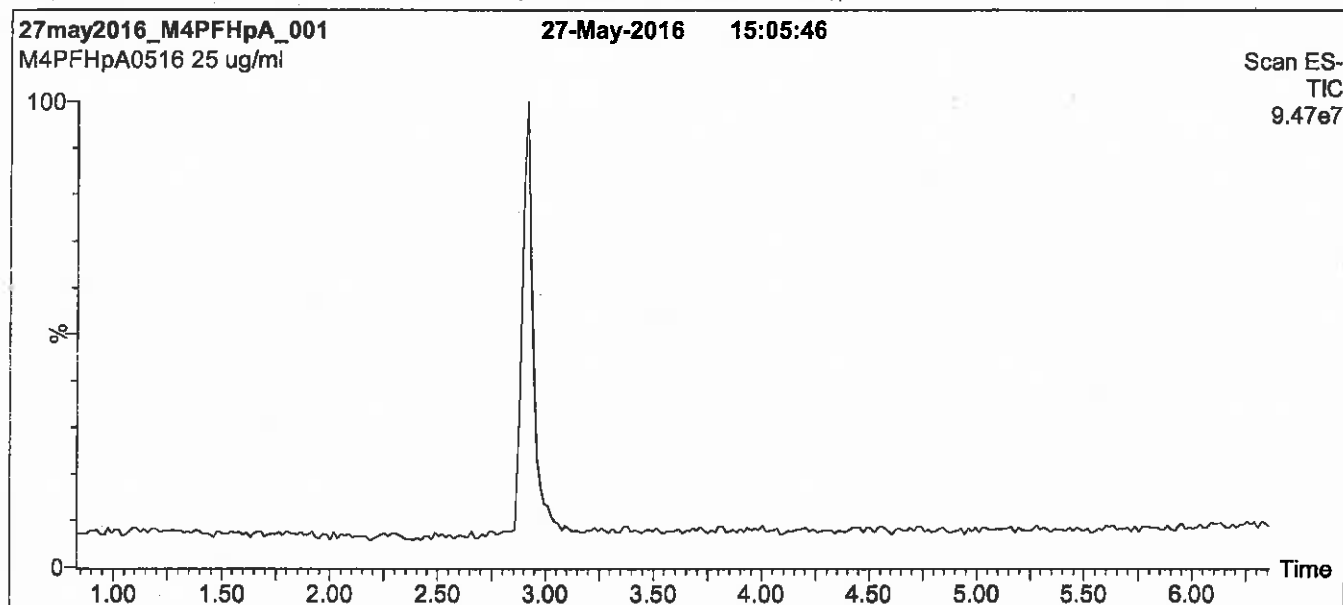
QUALITY MANAGEMENT:

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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 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

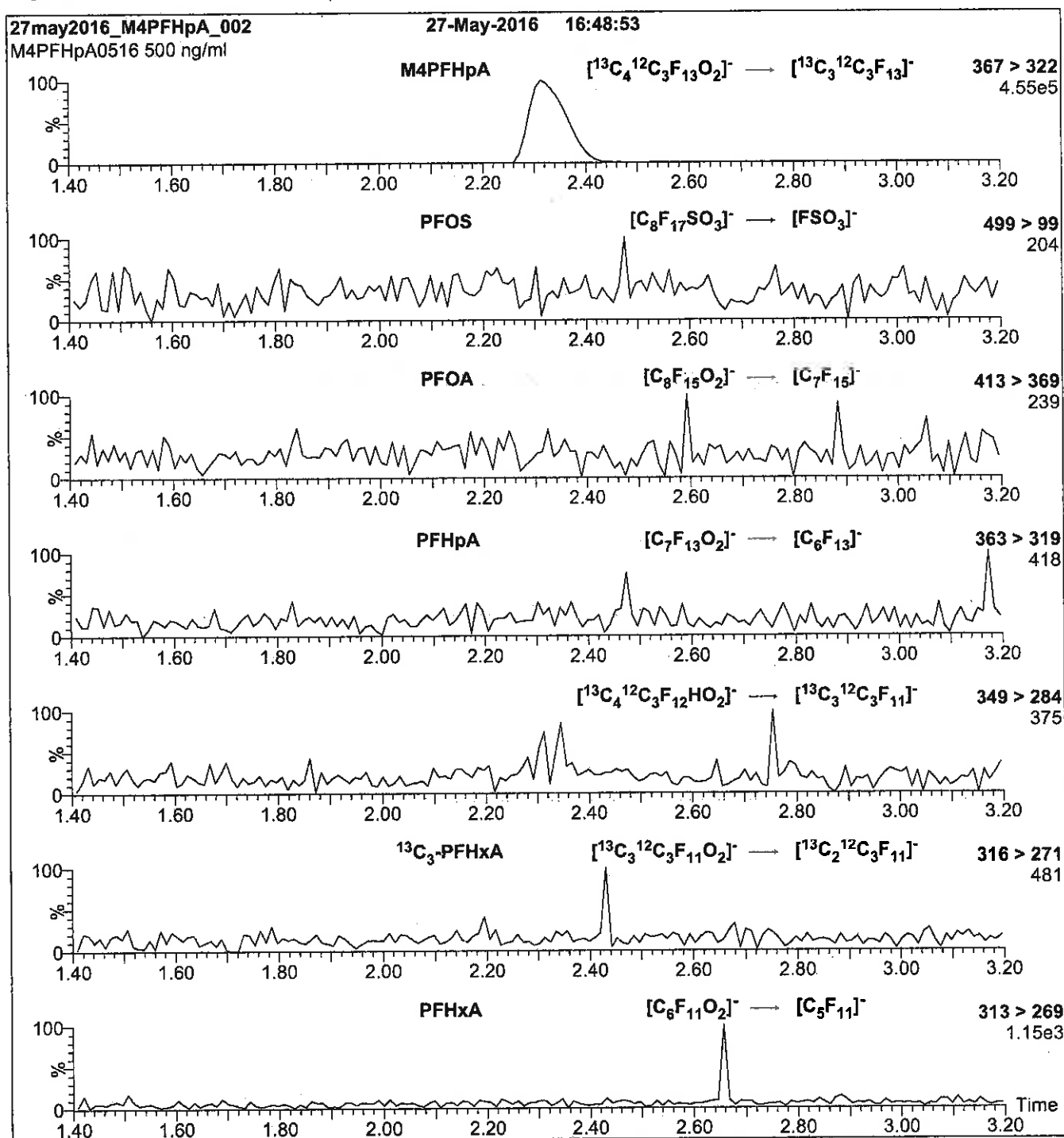
Flow: 300 μ l/min

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: 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) = 3.35e-3
Collision Energy (eV) = 11

Reagent

LCM4PFHPA_00010



WELLINGTON LABORATORIES

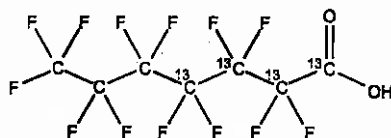
CERTIFICATE OF ANALYSIS DOCUMENTATION

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%)

CHEMICAL PURITY: >98%

ISOTOPIC PURITY: ≥99% ¹³C
(1,2,3,4-¹³C₄)

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:

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:

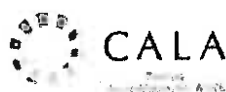
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

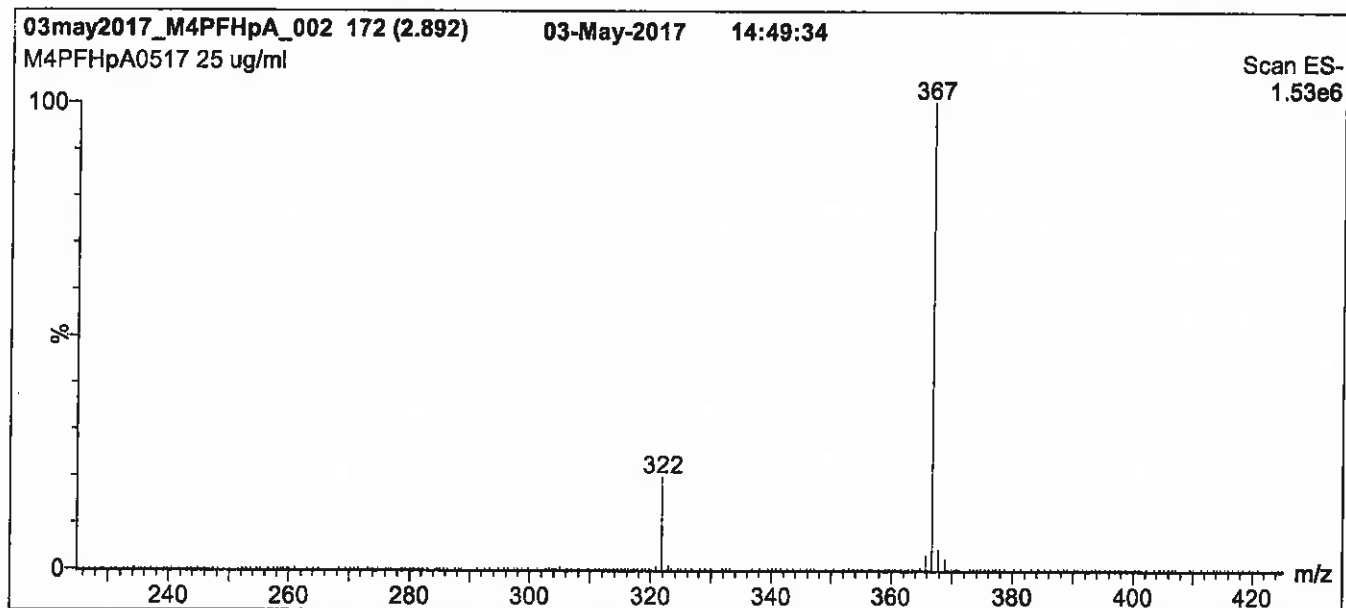
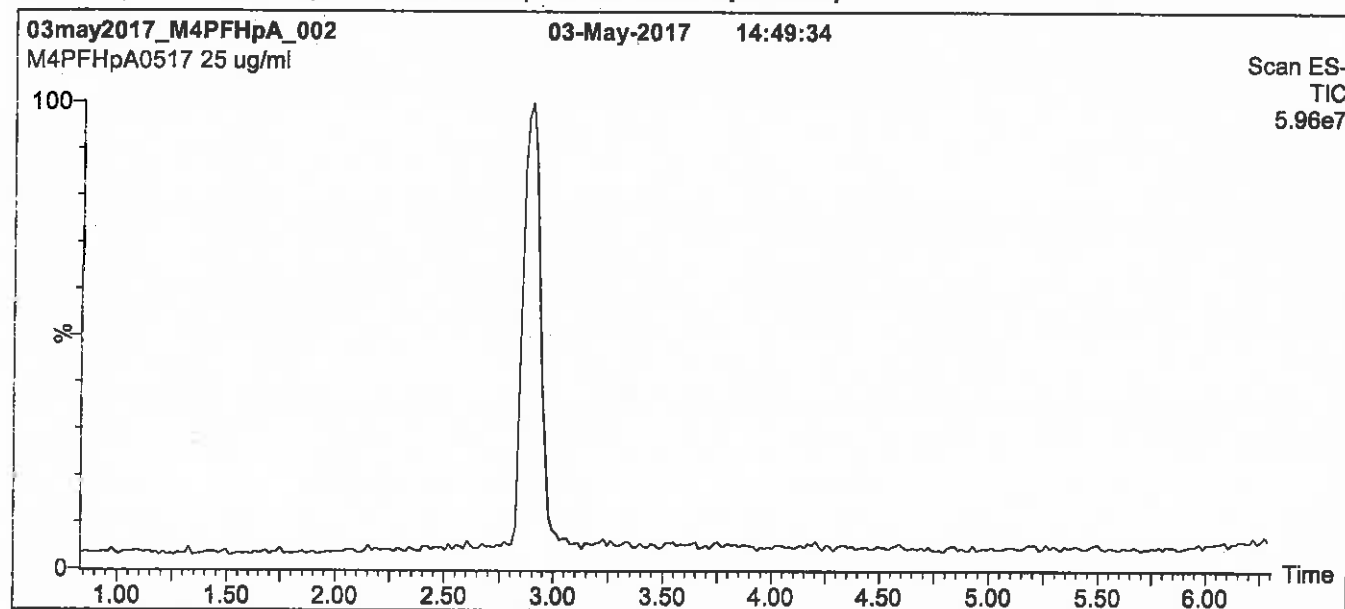
QUALITY MANAGEMENT:

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).



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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

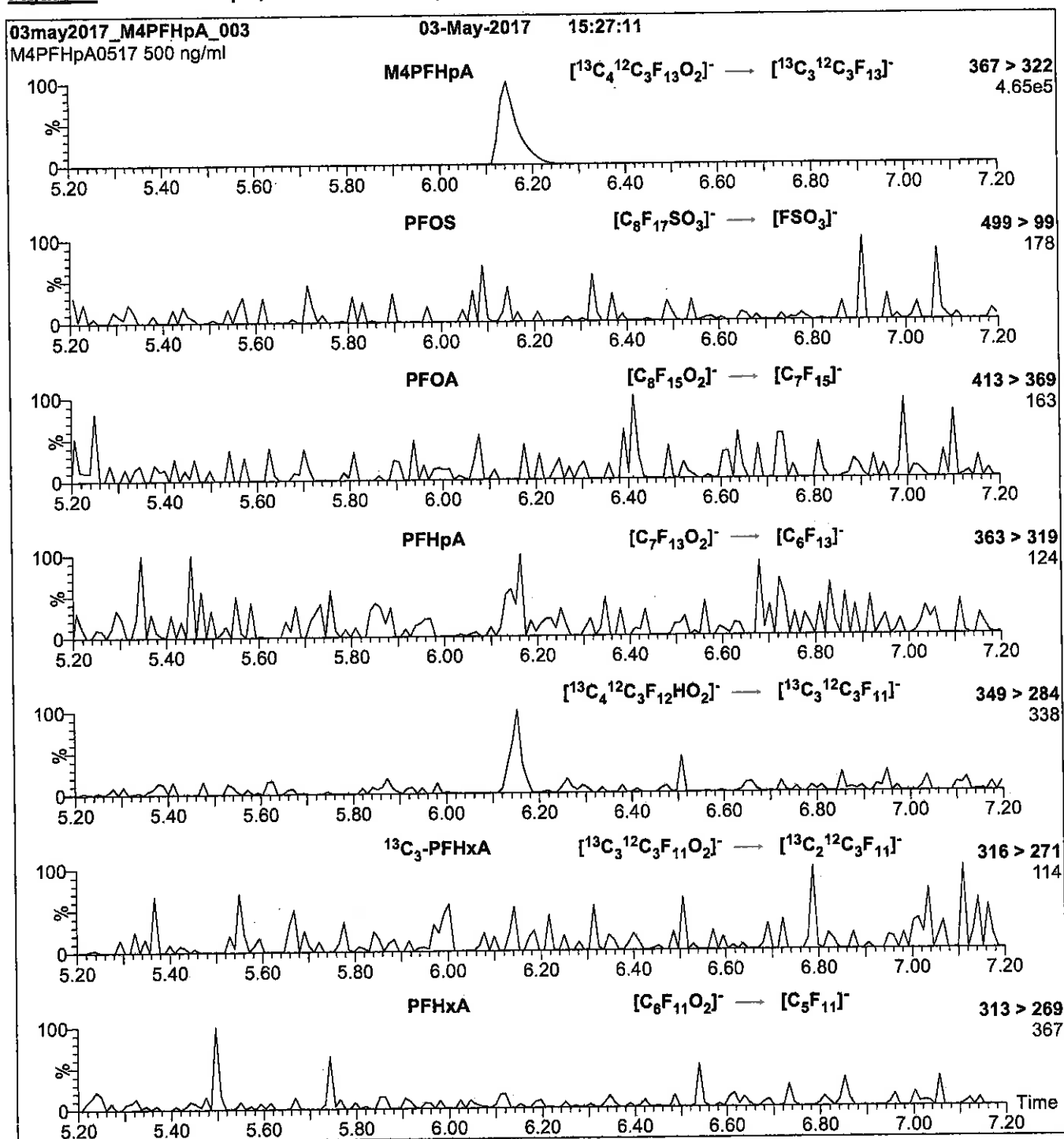
Flow: 300 μ l/min

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_00010



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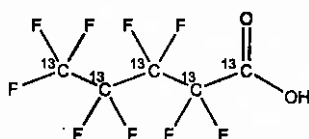
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: M5PFPeA1116

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) 11/22/2016

ISOTOPIC PURITY: ≥99% ¹³C
(¹³C₅)

EXPIRY DATE: (mm/dd/yyyy) 11/22/2021

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 perfluoro-n-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/09/2016
(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:

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.

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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.

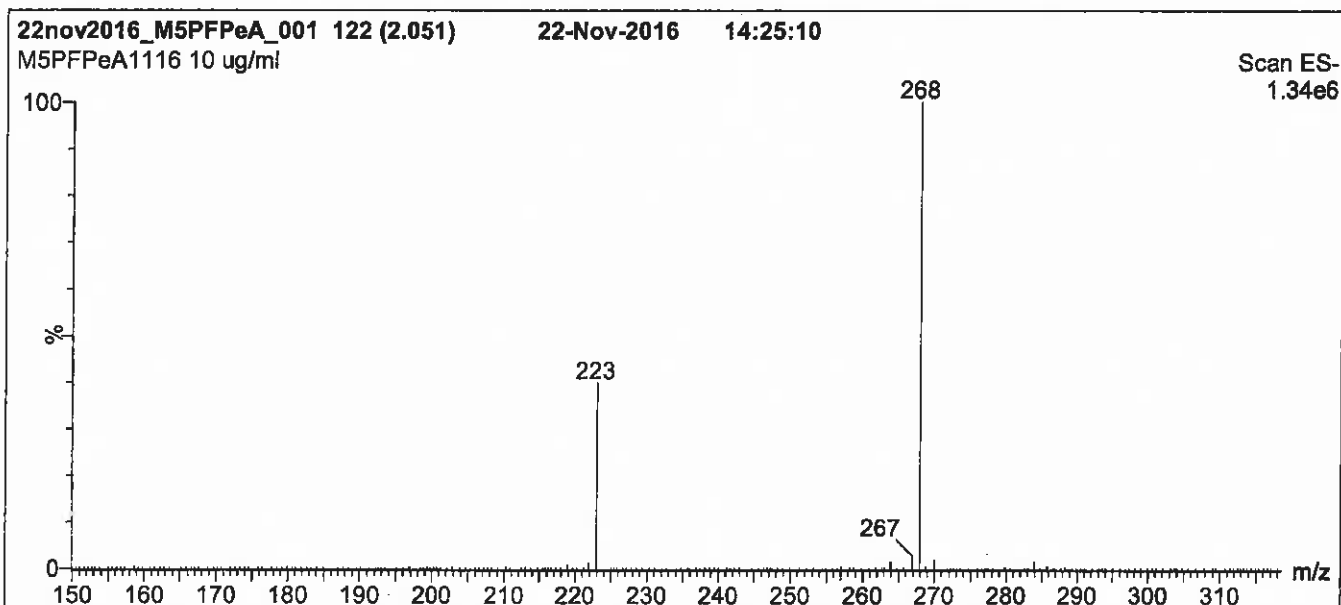
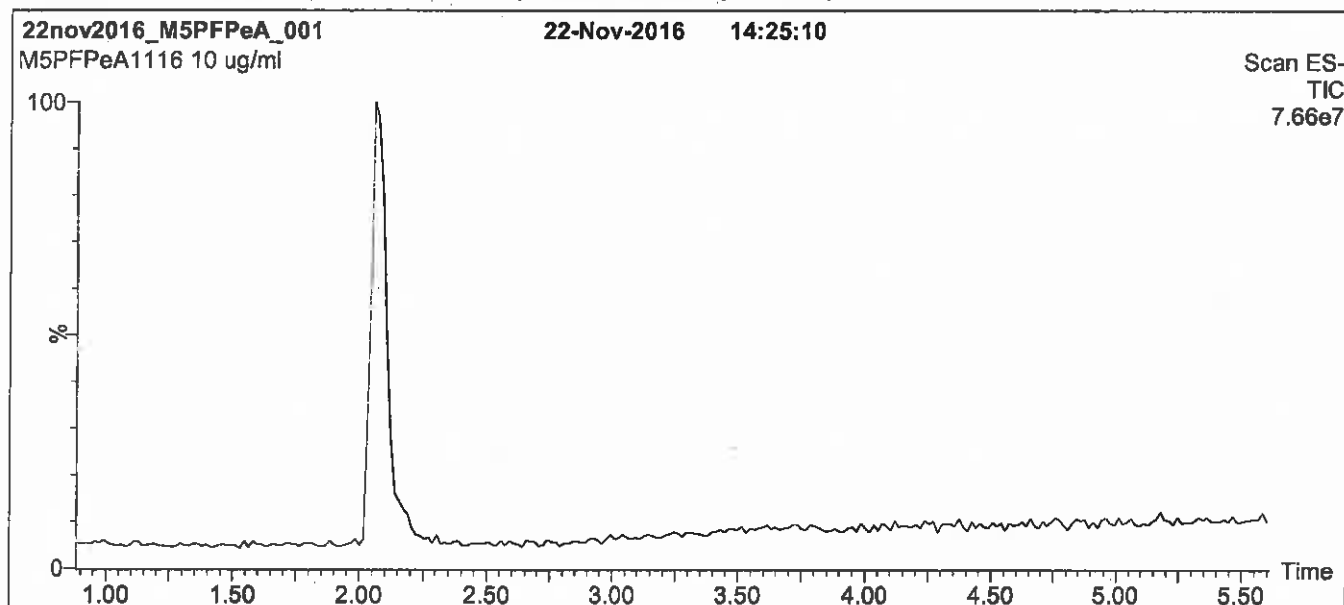
QUALITY MANAGEMENT:

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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: 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

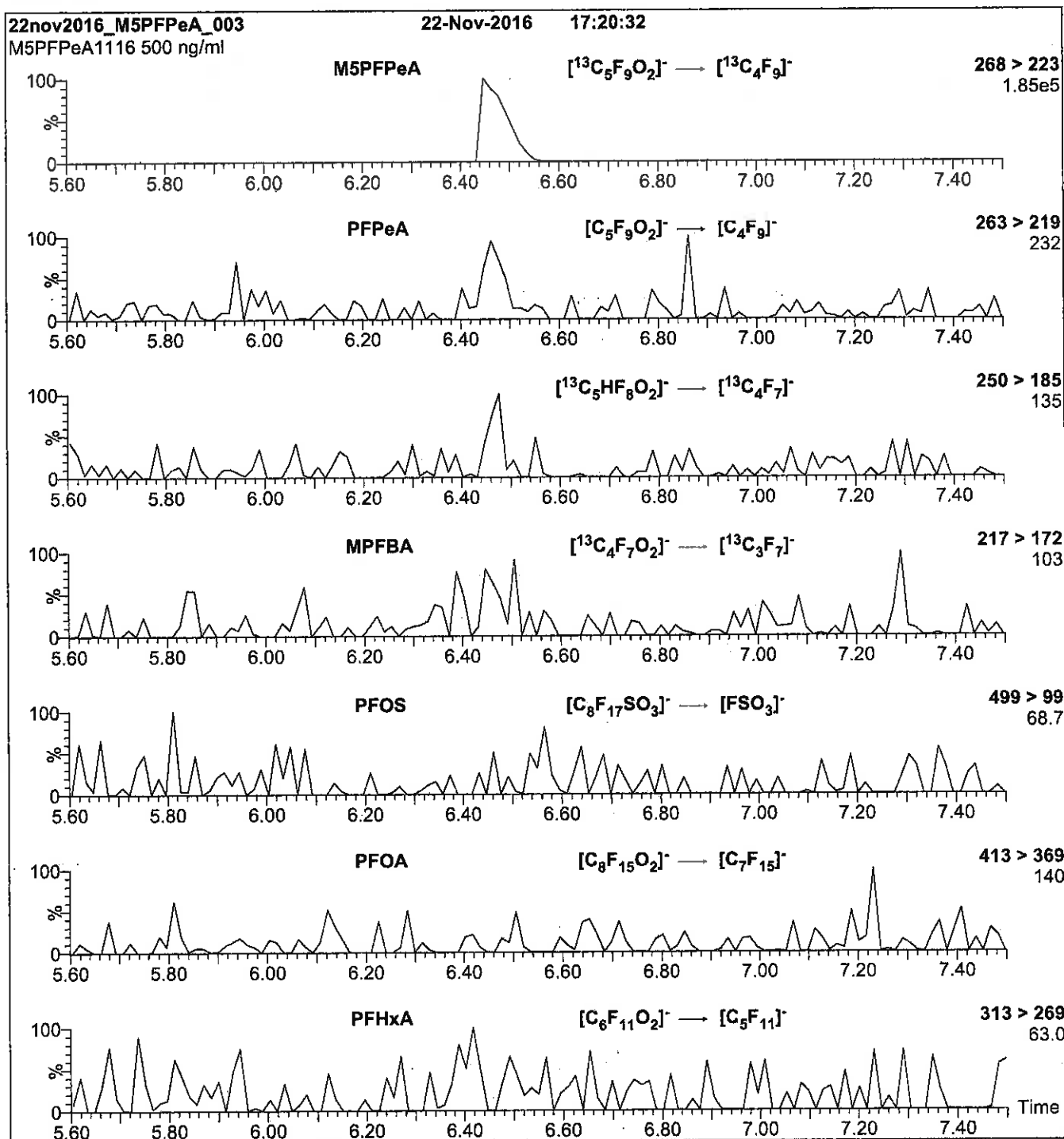
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 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) = 3.46e-3
Collision Energy (eV) = 9

Reagent

LCM5PFPEA_00011

17/5/17 SKV



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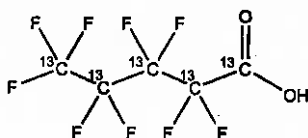
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M5PFPeA
COMPOUND: Perfluoro-n-[¹³C₆]pentanoic acid

LOT NUMBER: M5PFPeA1116

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₆HF₉O₂
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021

ISOTOPIC PURITY: ≥99% ¹³C
(¹³C₆)

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

Date: 12/09/2016
(mm/dd/yyyy)

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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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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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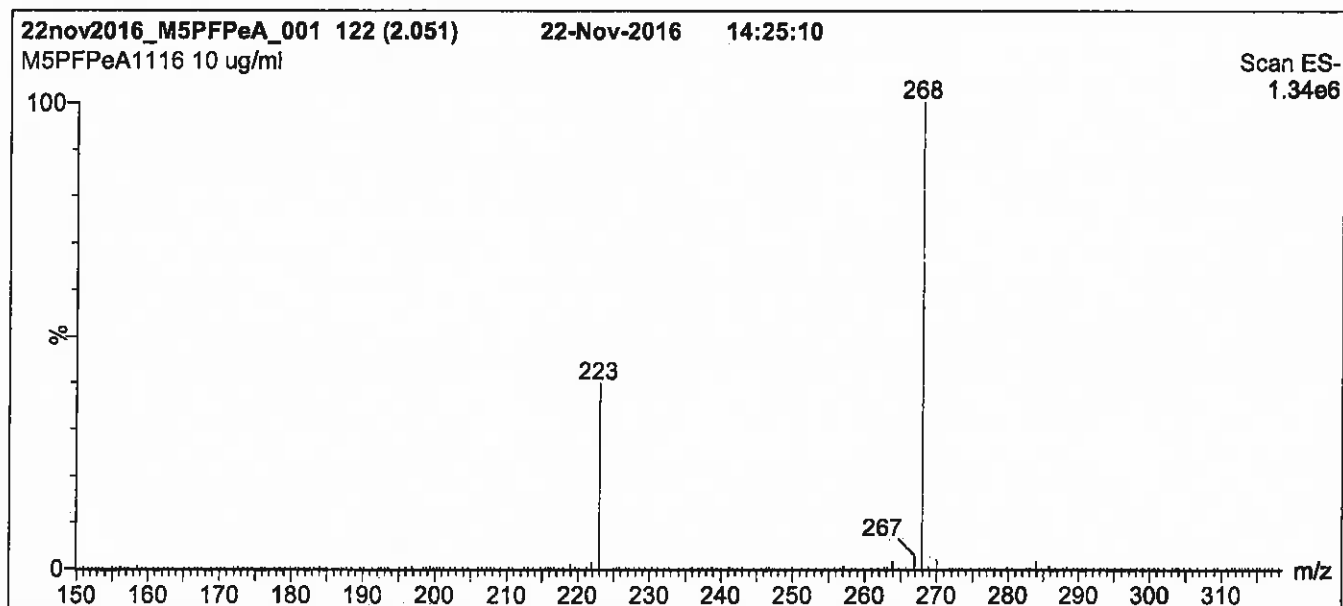
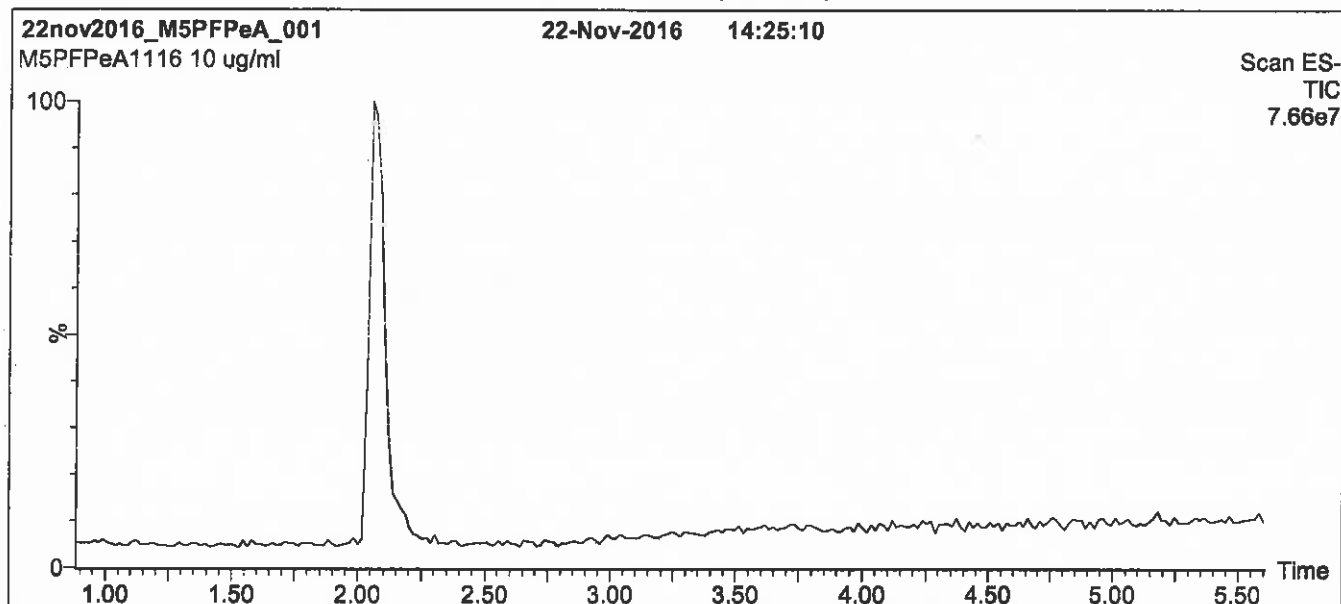
QUALITY MANAGEMENT:

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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: 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

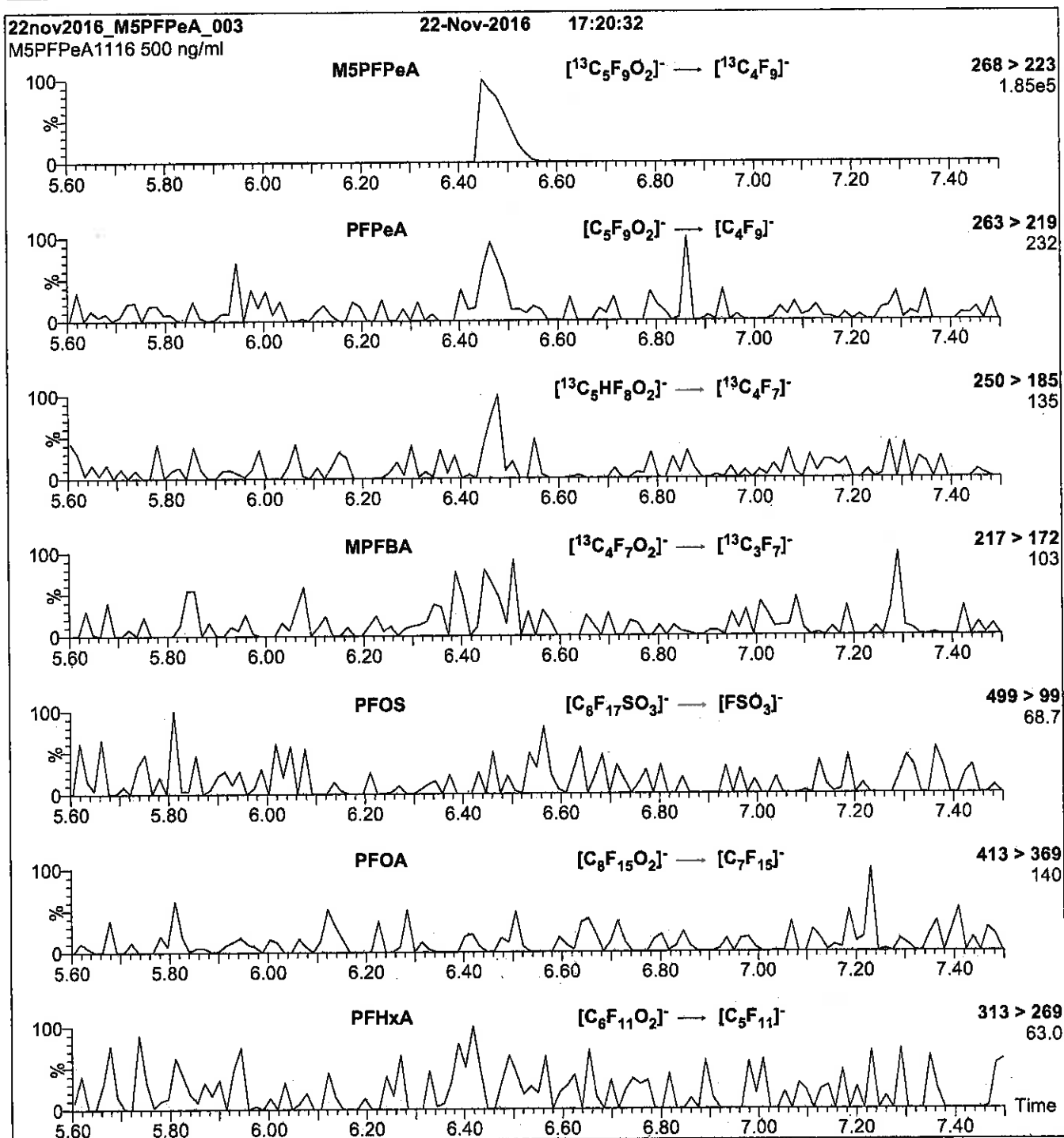
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 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) = 3.46e-3
Collision Energy (eV) = 9

Reagent

LCM8FOSA_00013

r: 5/3/17 ~~SPV~~



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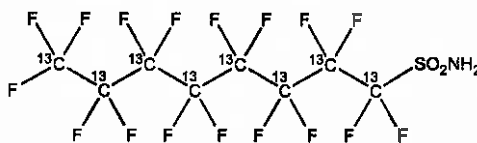
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-¹³C₈octanesulfonamide

LOT NUMBER: M8FOSA1215I

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₈H₂F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/22/2015
EXPIRY DATE: (mm/dd/yyyy) 12/22/2020
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/13/2016
(mm/dd/yyyy)

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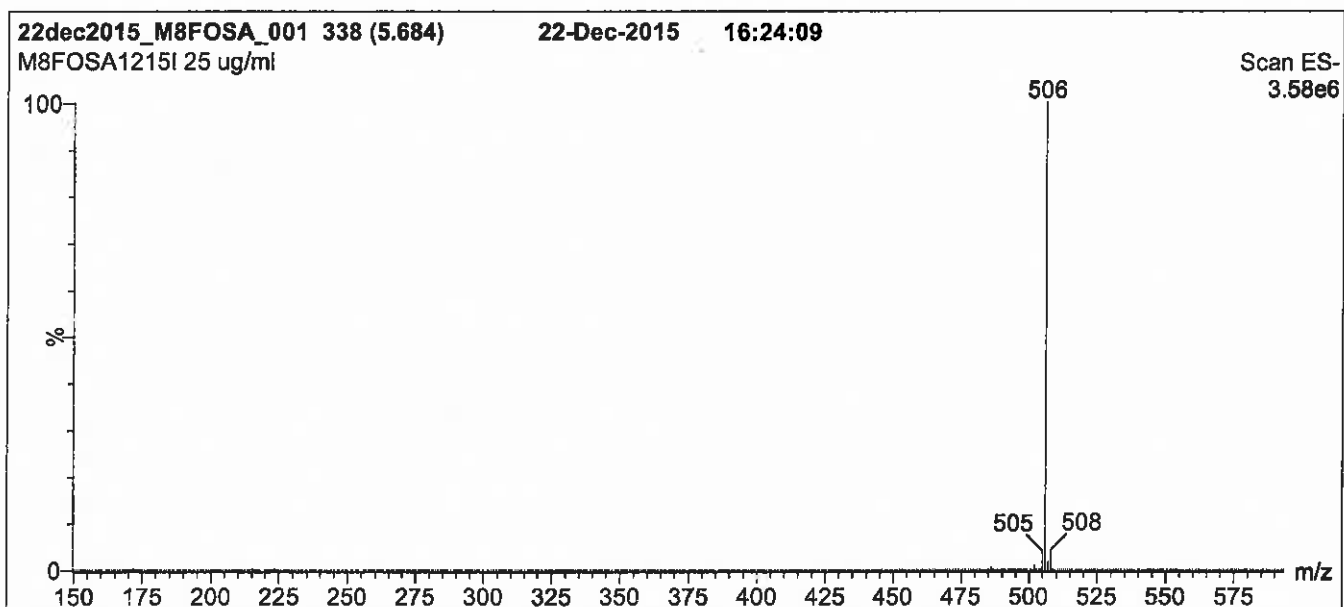
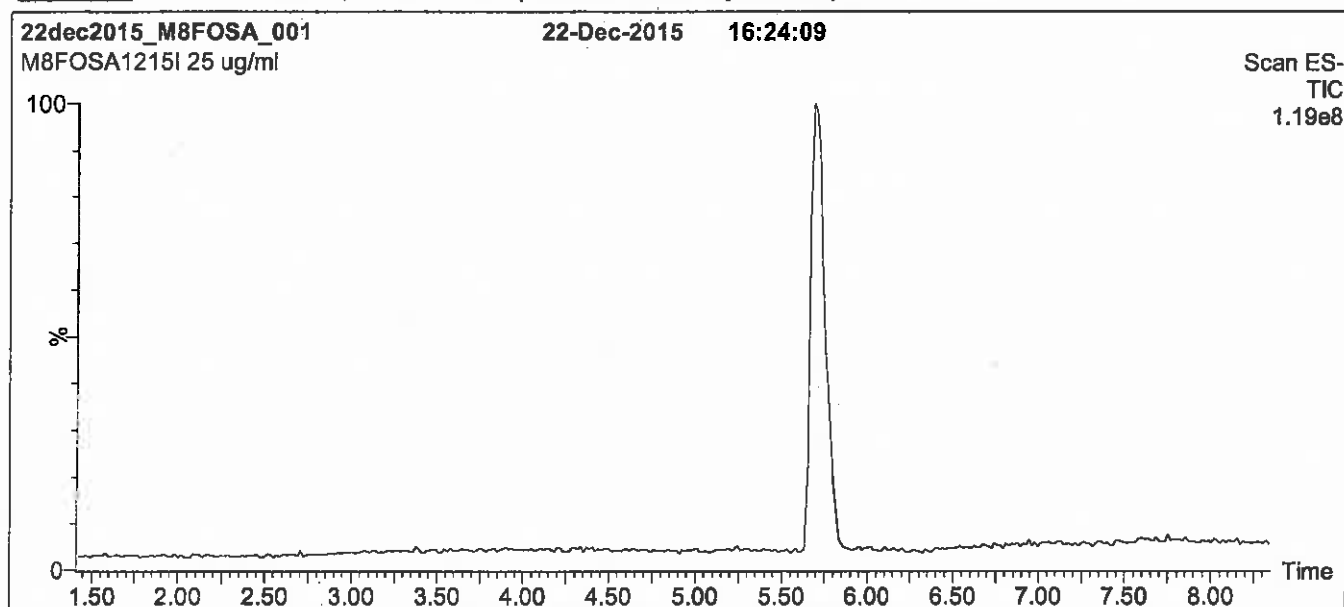
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Figure 1: M8FOSA-I; LC/MS Data (TIC and Mass Spectrum)



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 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

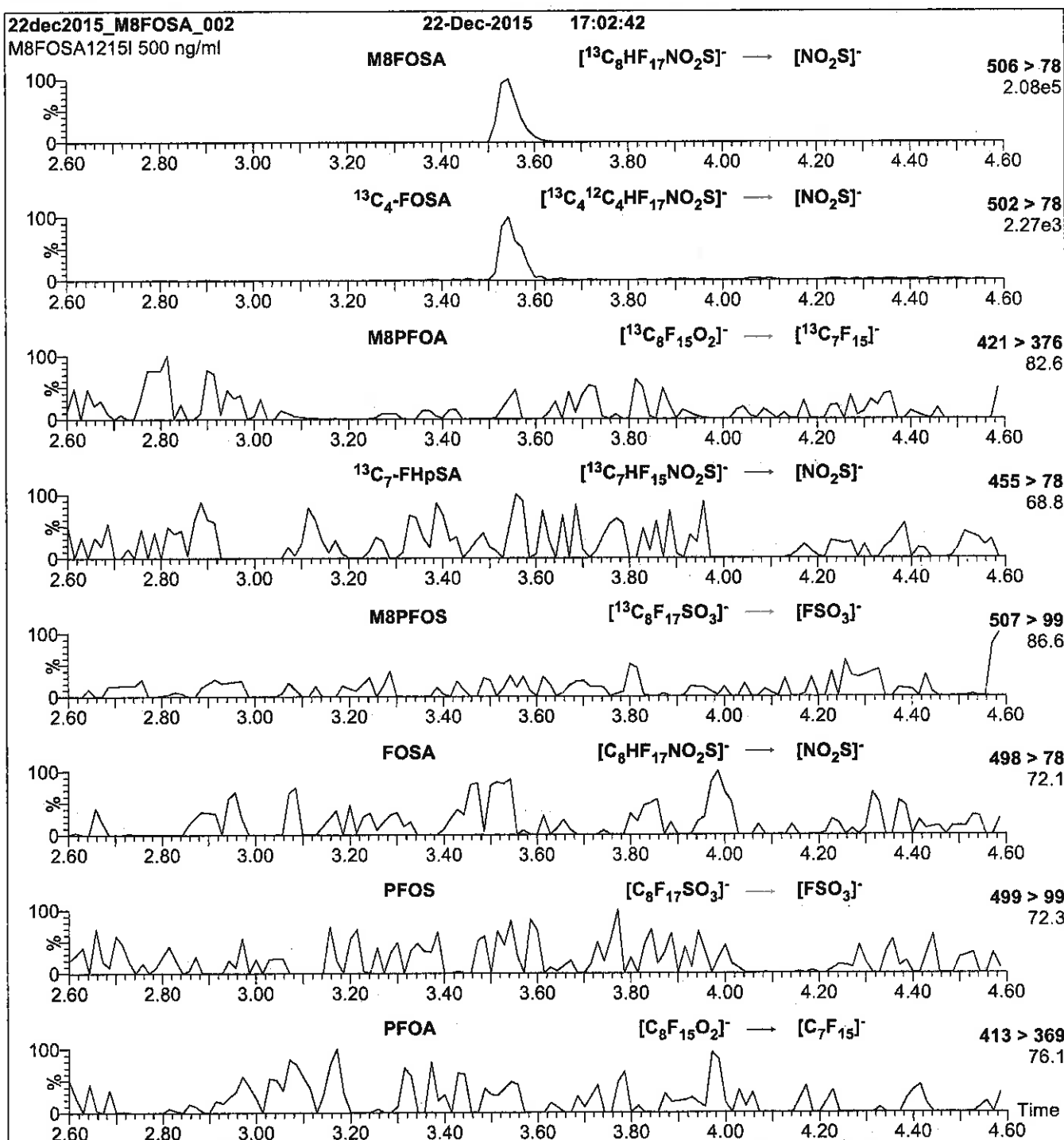
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
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) = 3.39e-3
 Collision Energy (eV) = 30

Reagent

LCM8FOSA_00014



WELLINGTON LABORATORIES

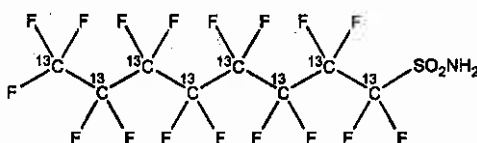
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M8FOSA-I
COMPOUND: Perfluoro-1-[¹³C₈]octanesulfonamide

LOT NUMBER: M8FOSA0417I

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₈H₂F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/20/2017
EXPIRY DATE: (mm/dd/yyyy) 04/20/2022
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-[¹³C₇]heptanesulfonamide 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: 05/04/2017
(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:

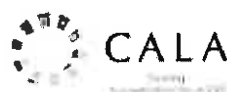
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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.

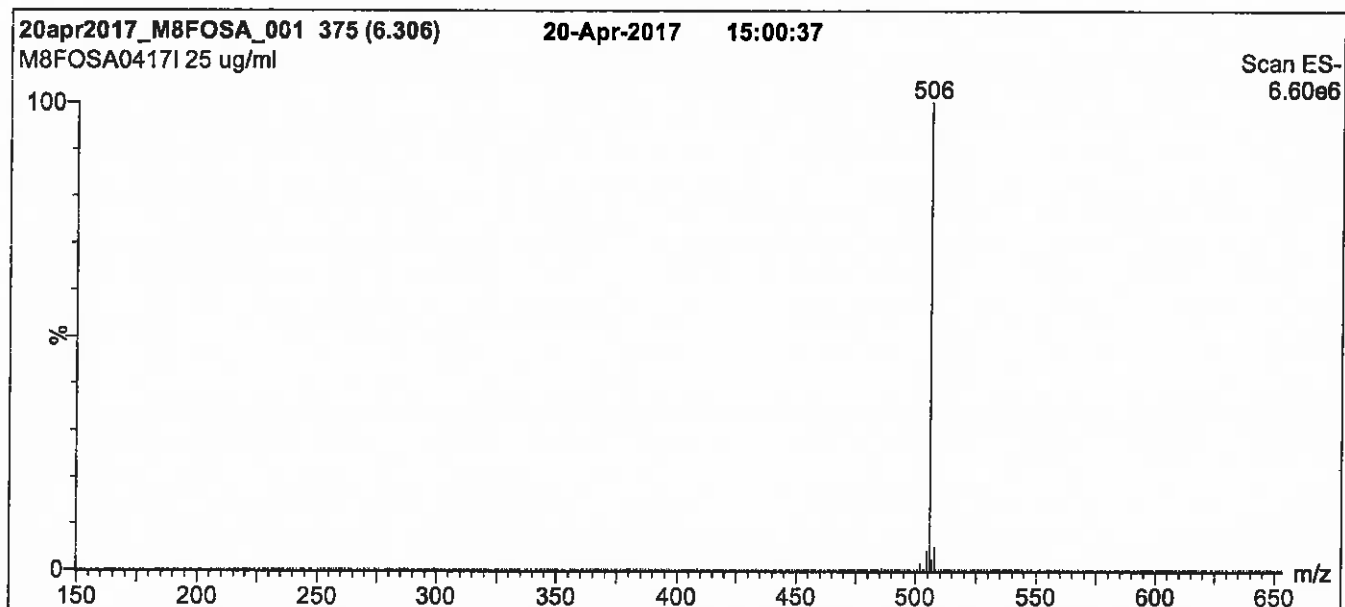
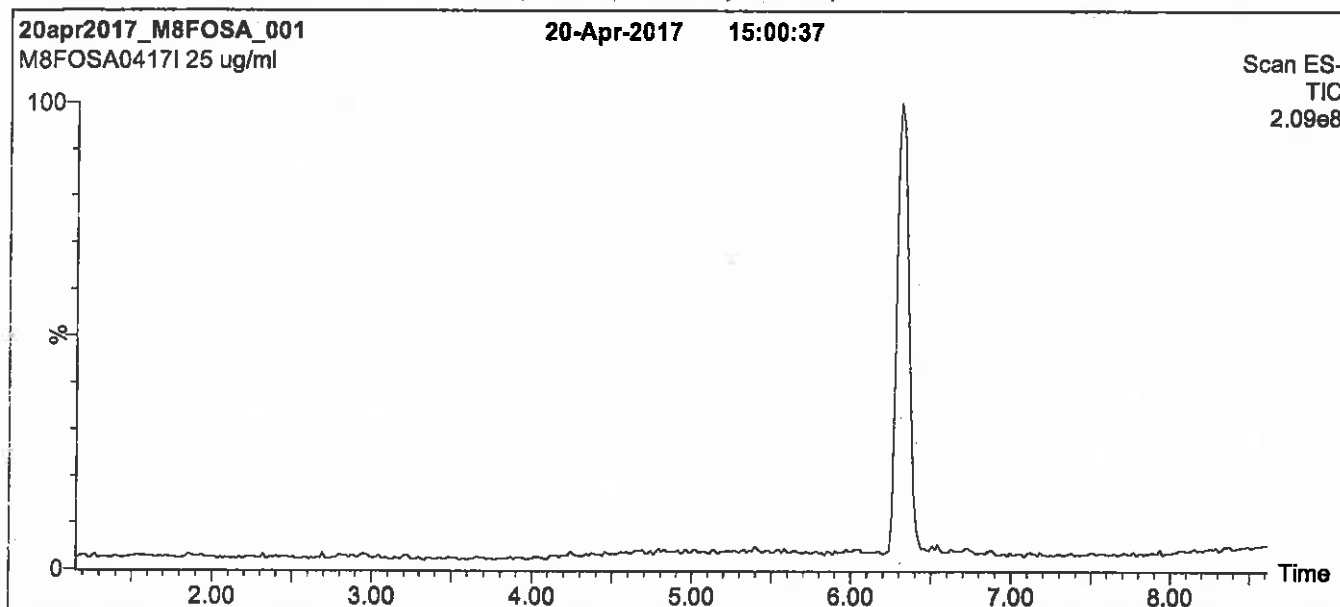
QUALITY MANAGEMENT:

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 w/ 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

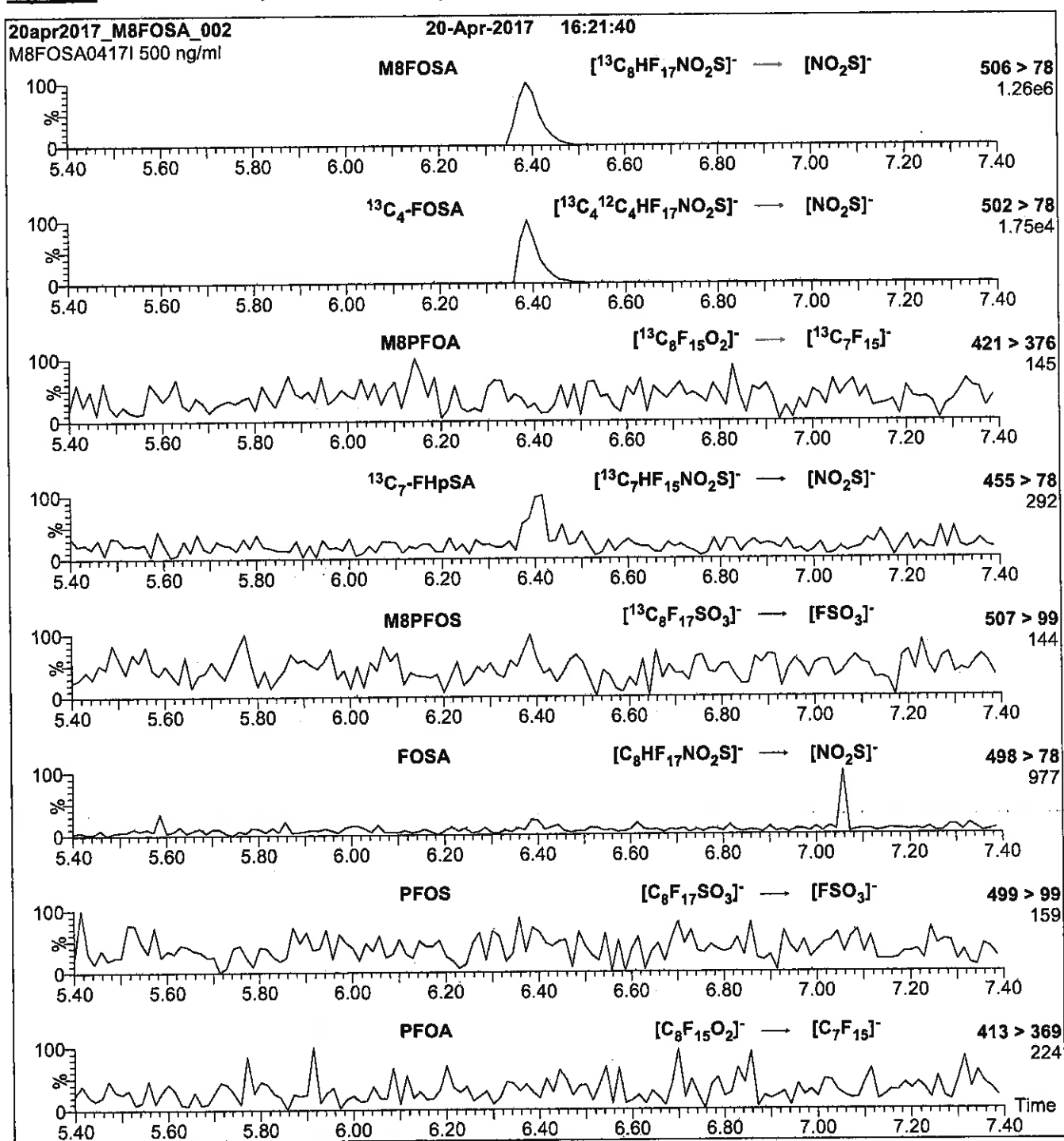
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (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: 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) = 3.17e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00010

17: 513/17 SPV



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFBA

LOT NUMBER:

MPFBA0516

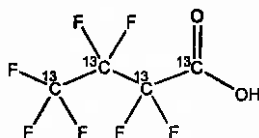
COMPOUND:

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

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₄HF₇O₂

MOLECULAR WEIGHT:

218.01

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

05/24/2016

(1,2,3,4-¹³C₄)

EXPIRY DATE: (mm/dd/yyyy)

05/24/2021

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: 05/30/2016

(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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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:

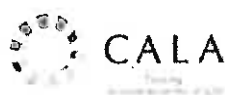
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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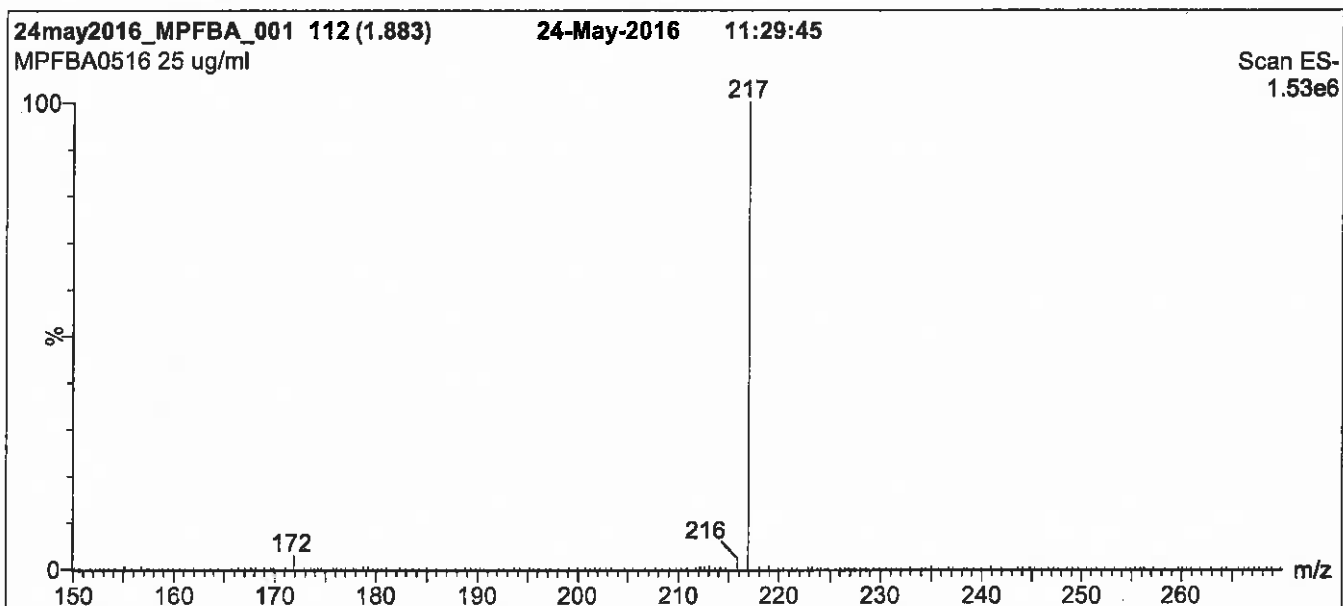
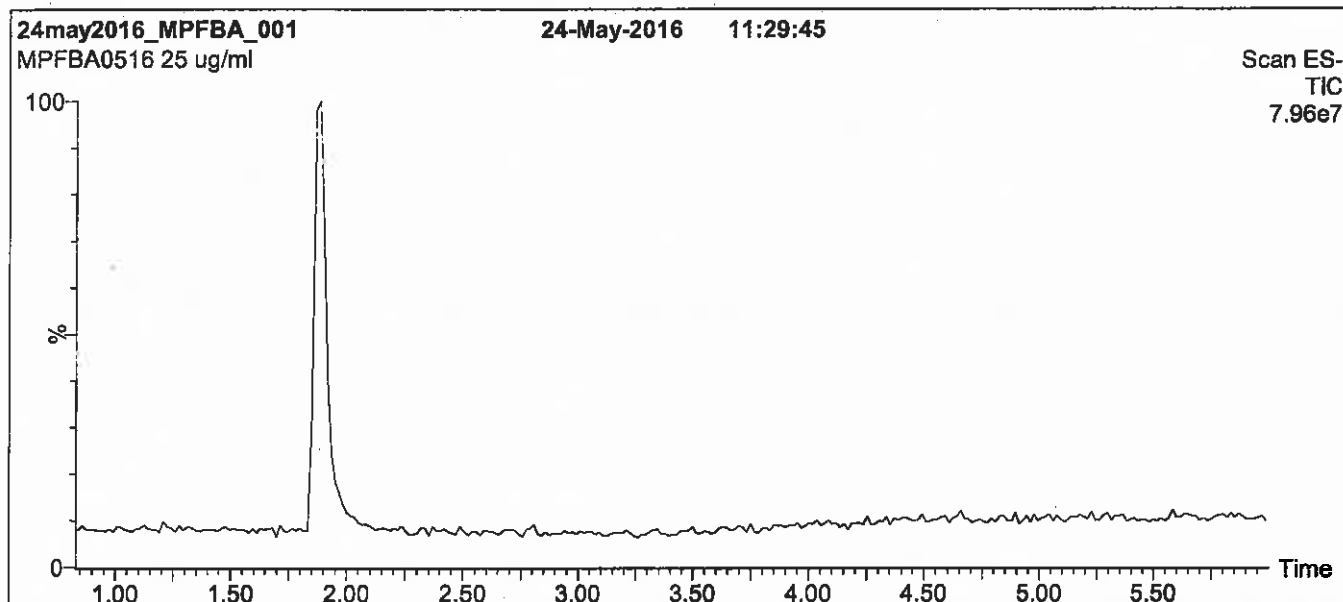
QUALITY MANAGEMENT:

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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

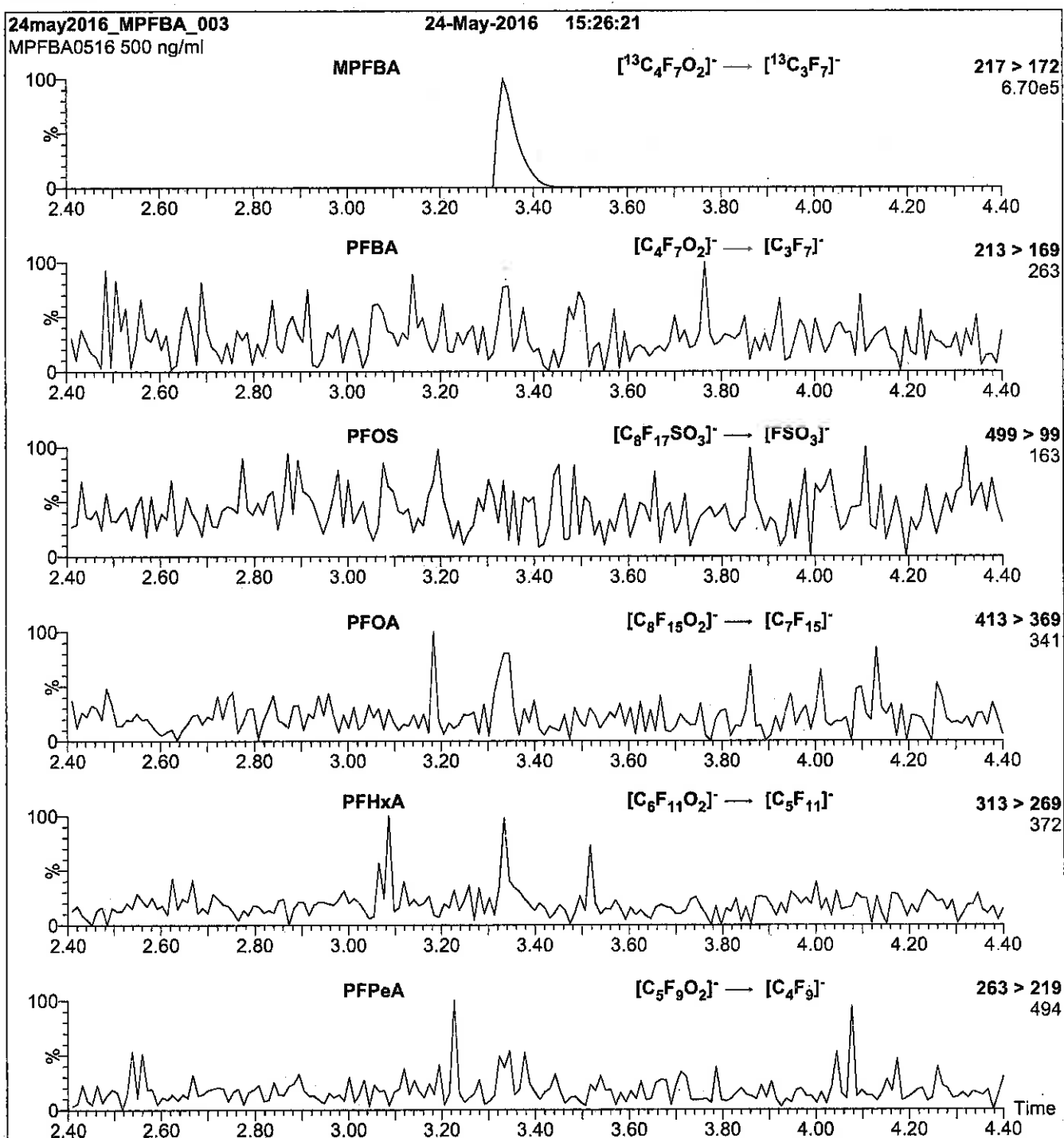
Flow: 300 μ l/min

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) = 3.50e-3
Collision Energy (eV) = 10

Reagent

LCMPFBA_00011



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

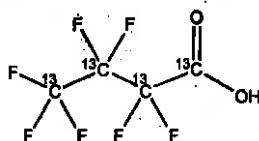
MPFBA

LOT NUMBER:

MPFBA0417

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

Not available

**MOLECULAR FORMULA:**¹³C₄HF₇O₂**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

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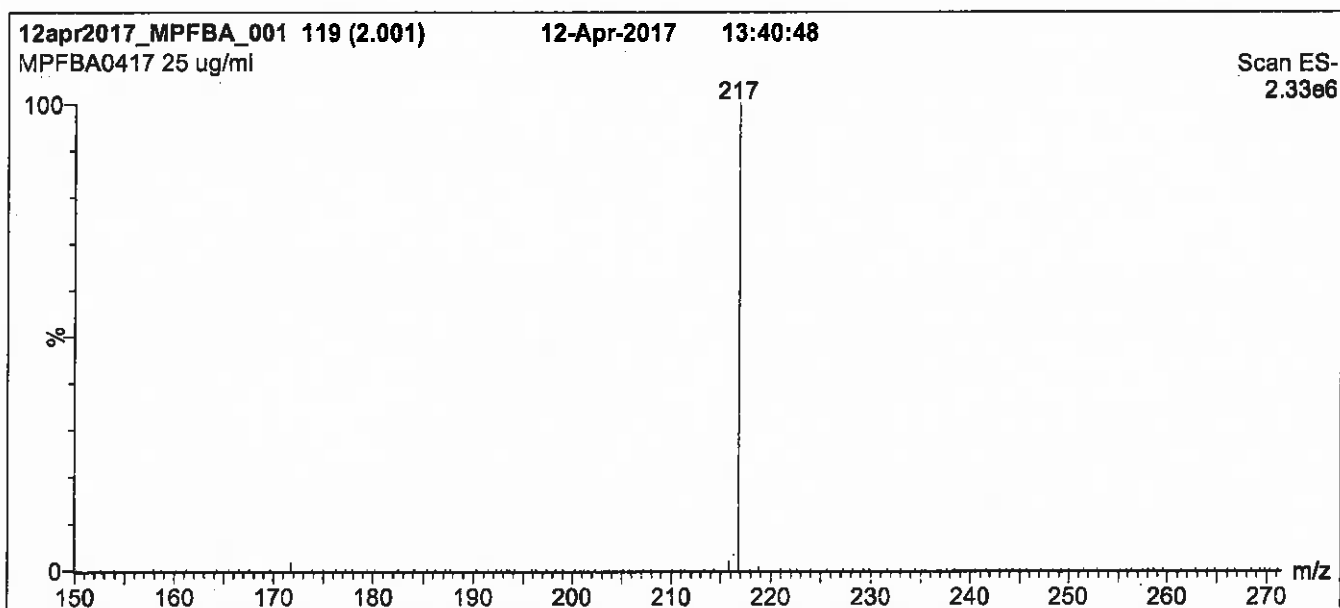
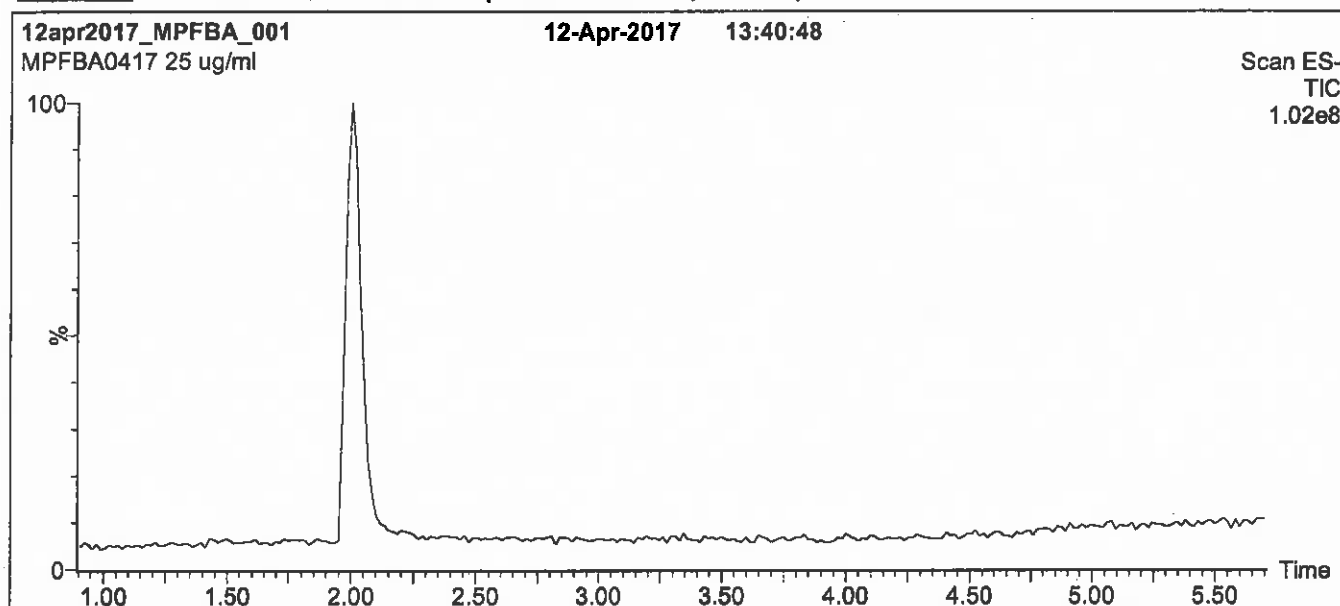
QUALITY MANAGEMENT:

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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

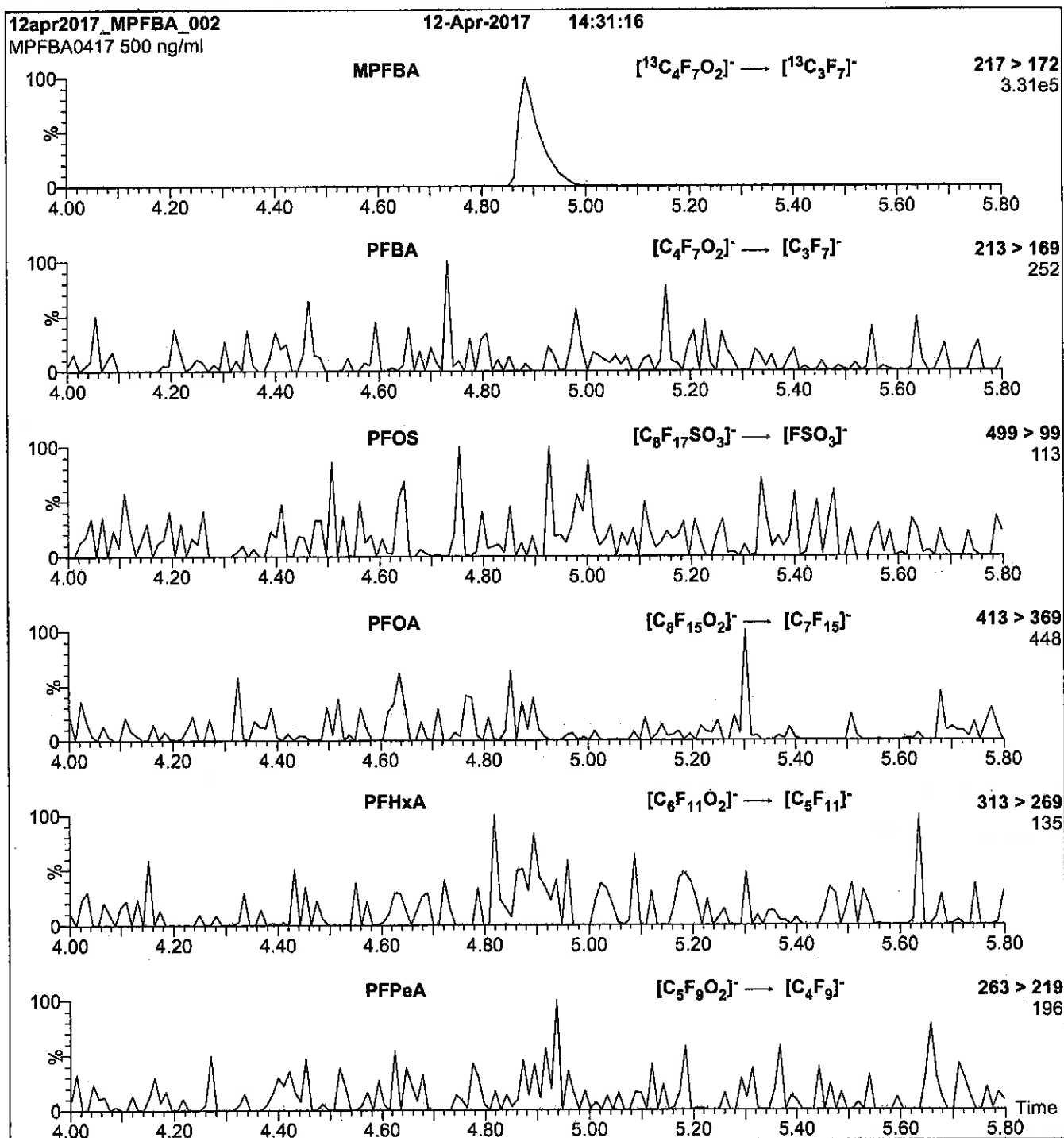
Flow: 300 μ l/min

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_00003

P. 5/3/17 SN

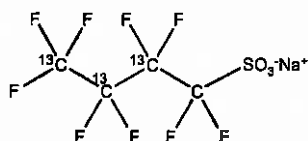


WELLINGTON LABORATORIES

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 ₉ 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)	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.

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
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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:

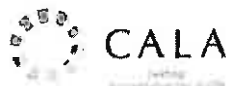
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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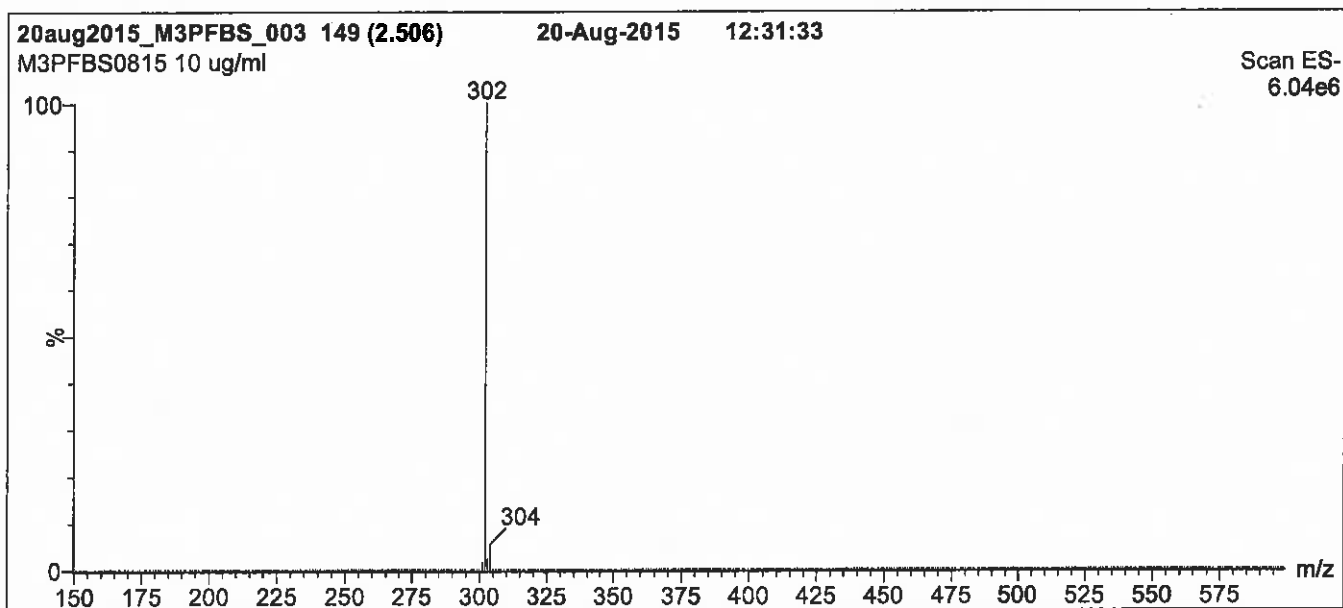
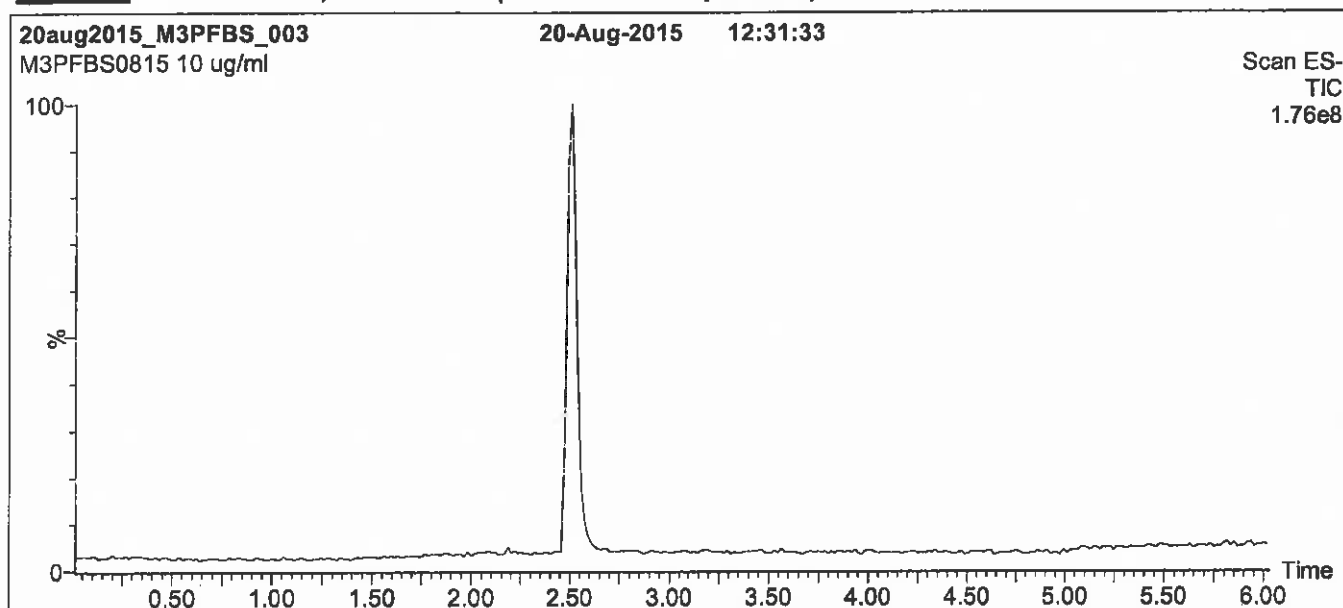
QUALITY MANAGEMENT:

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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

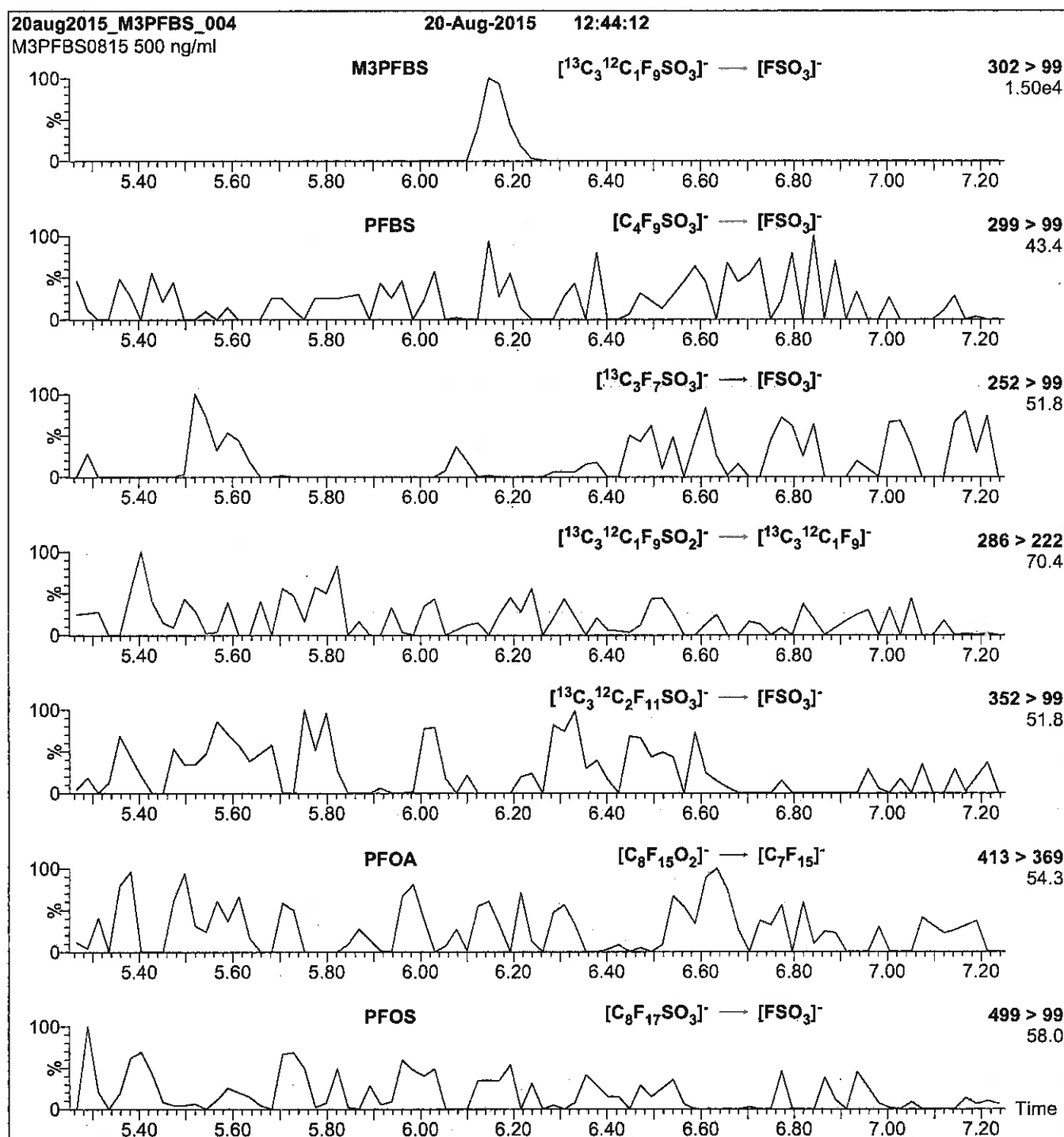
Flow: 300 μ l/min

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

LCMPFBS_00004

r: 7/5/2 92

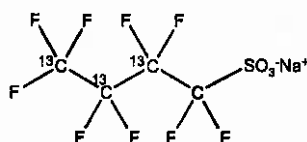


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CERTIFICATE OF ANALYSIS DOCUMENTATION

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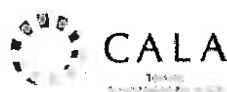
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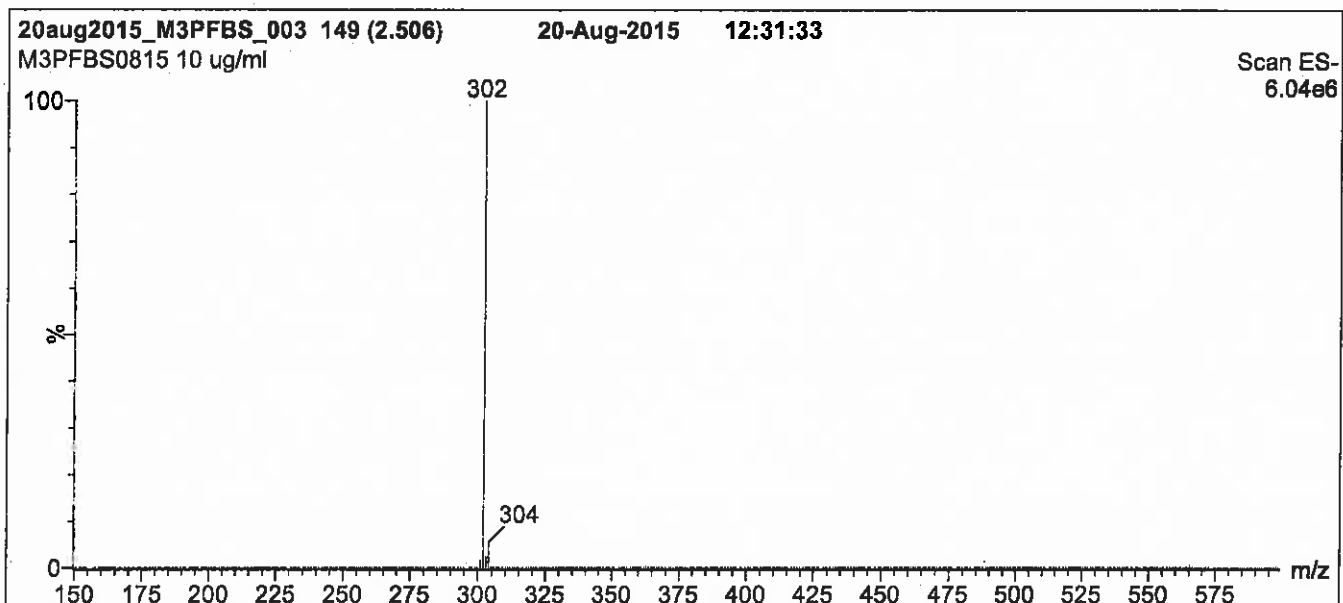
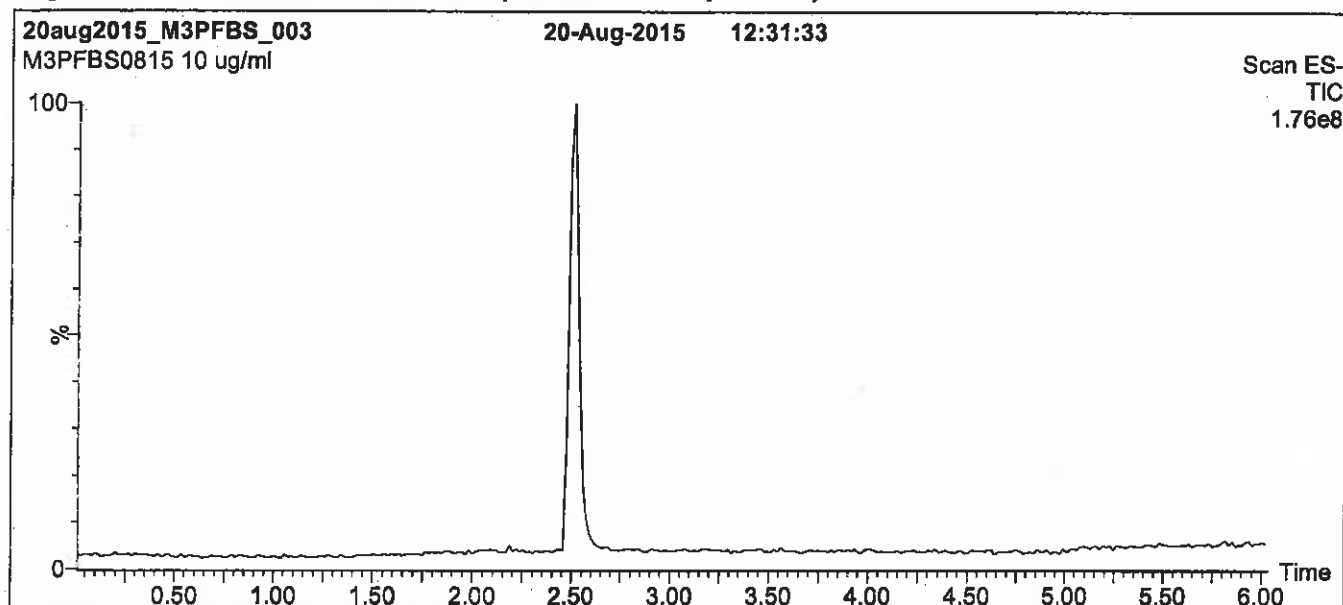
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Figure 1: M3PFBS; LC/MS Data (TIC and Mass Spectrum)



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

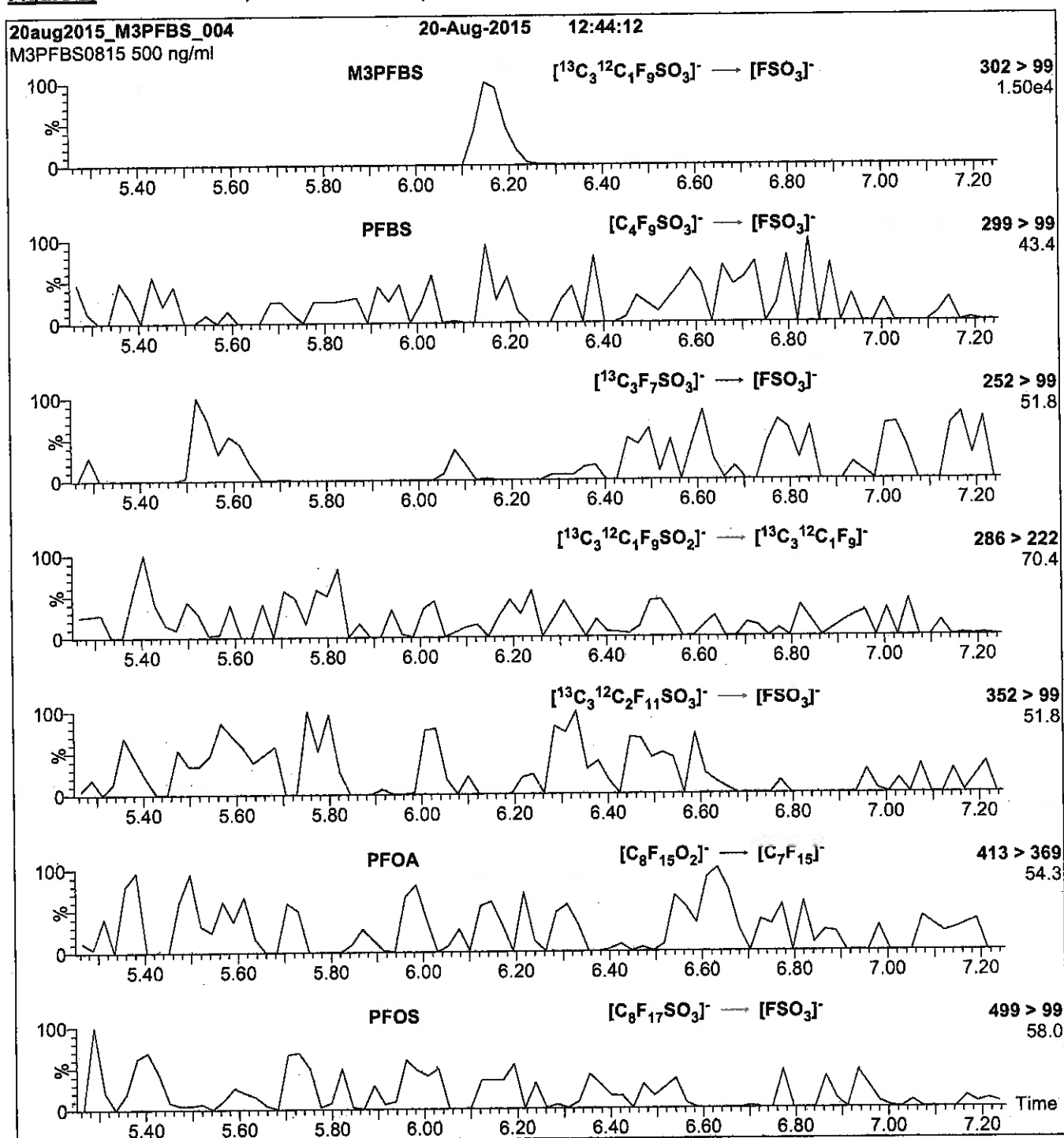
Flow: 300 μ l/min

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_00015

P: 5/3/17-SK
S: 5/8/17-SK



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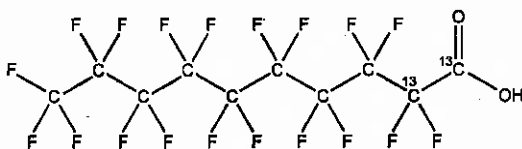
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]decanoic acid

LOT NUMBER: MPFDA0916

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₈HF₁₈O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 516.07
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/30/2016
EXPIRY DATE: (mm/dd/yyyy) 09/30/2021

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

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

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

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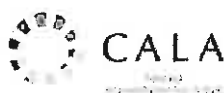
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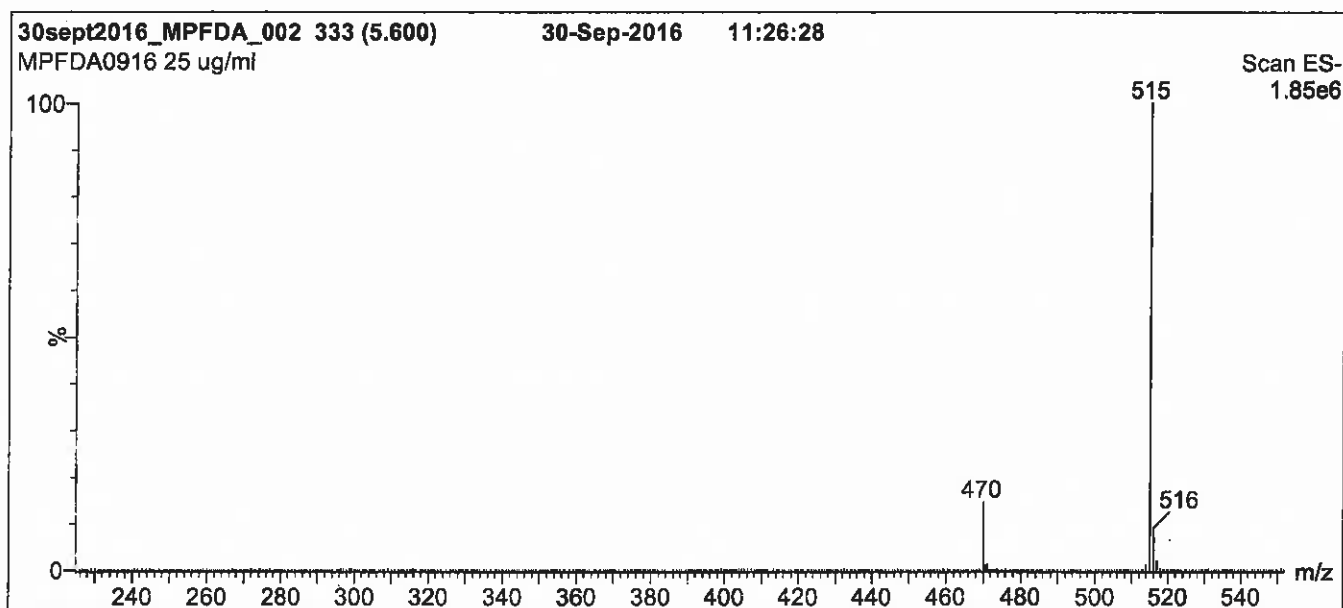
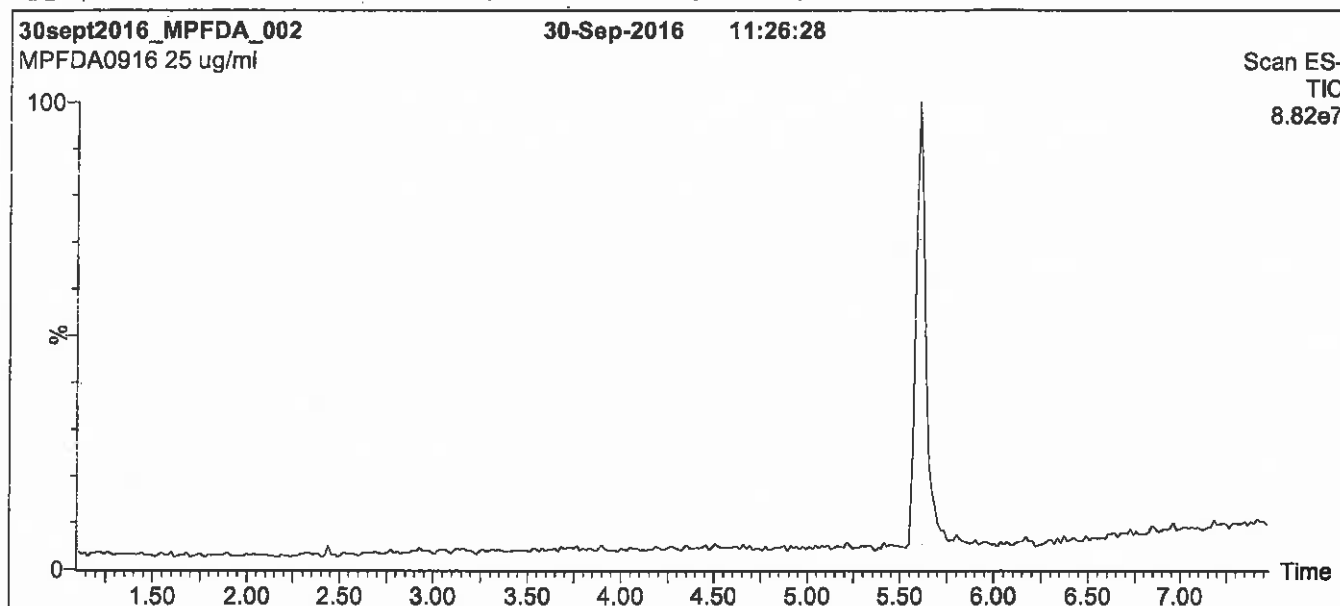
QUALITY MANAGEMENT:

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Figure 1: MPFDA; 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

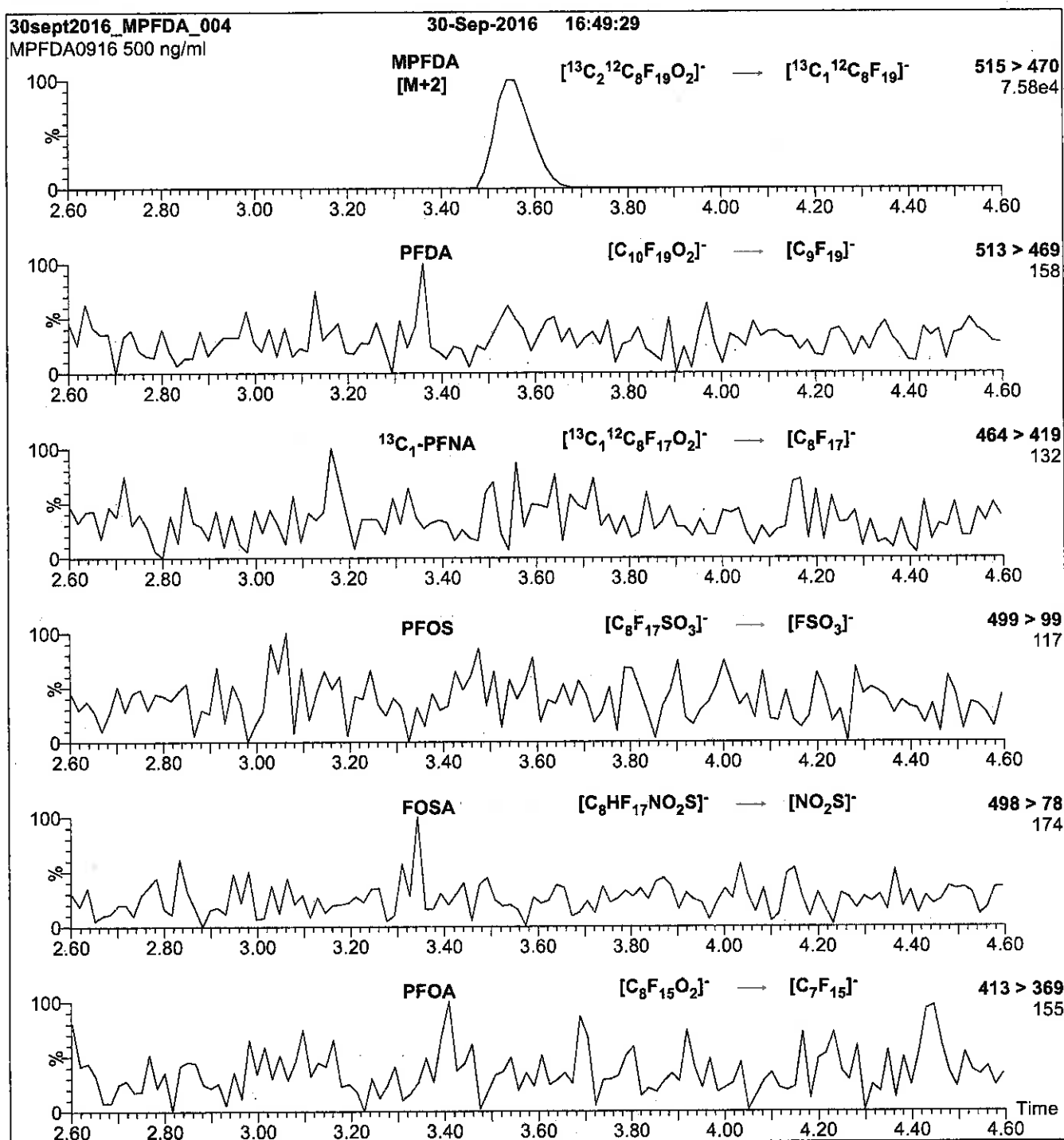
Flow: 300 μ l/min

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: 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) = 3.31e-3
Collision Energy (eV) = 13

Reagent

LCMPFDA_00016



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

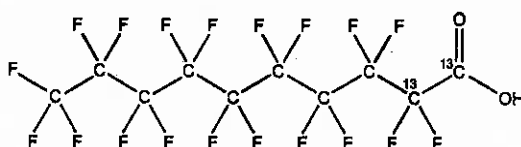
MPFDA

LOT NUMBER:

MPFDA0916

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

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₈HF₁₉O₂**MOLECULAR WEIGHT:**

516.07

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

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

09/30/2016

(1,2-¹³C₂)**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.
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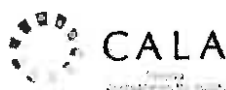
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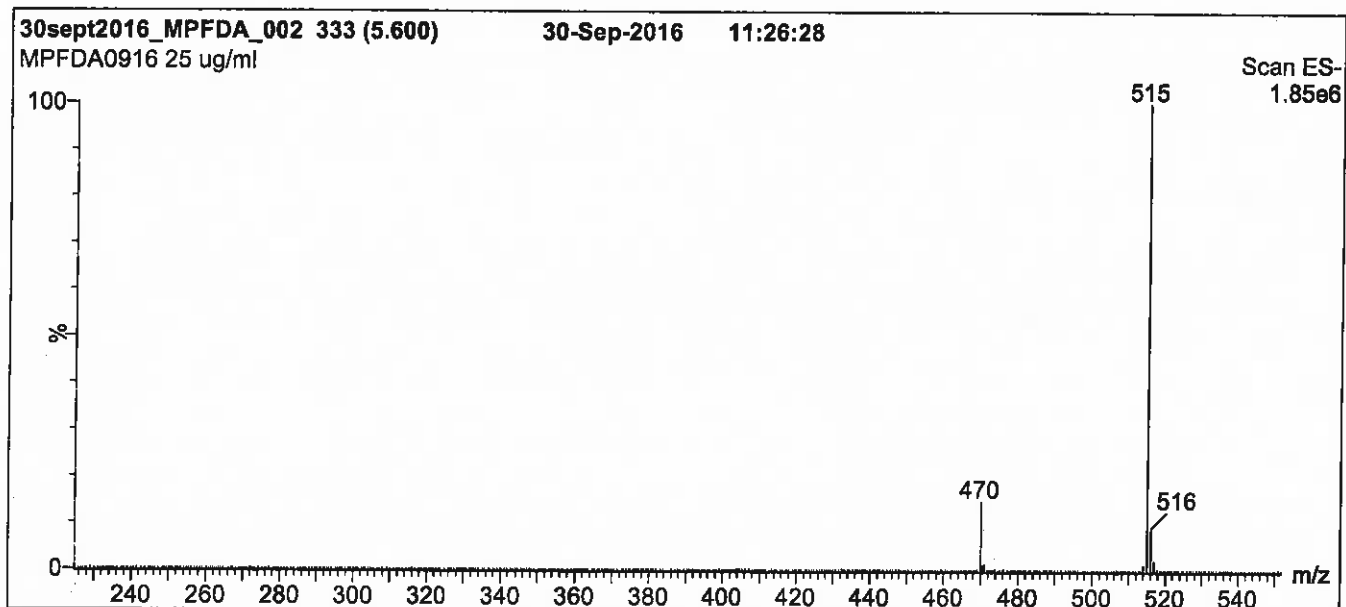
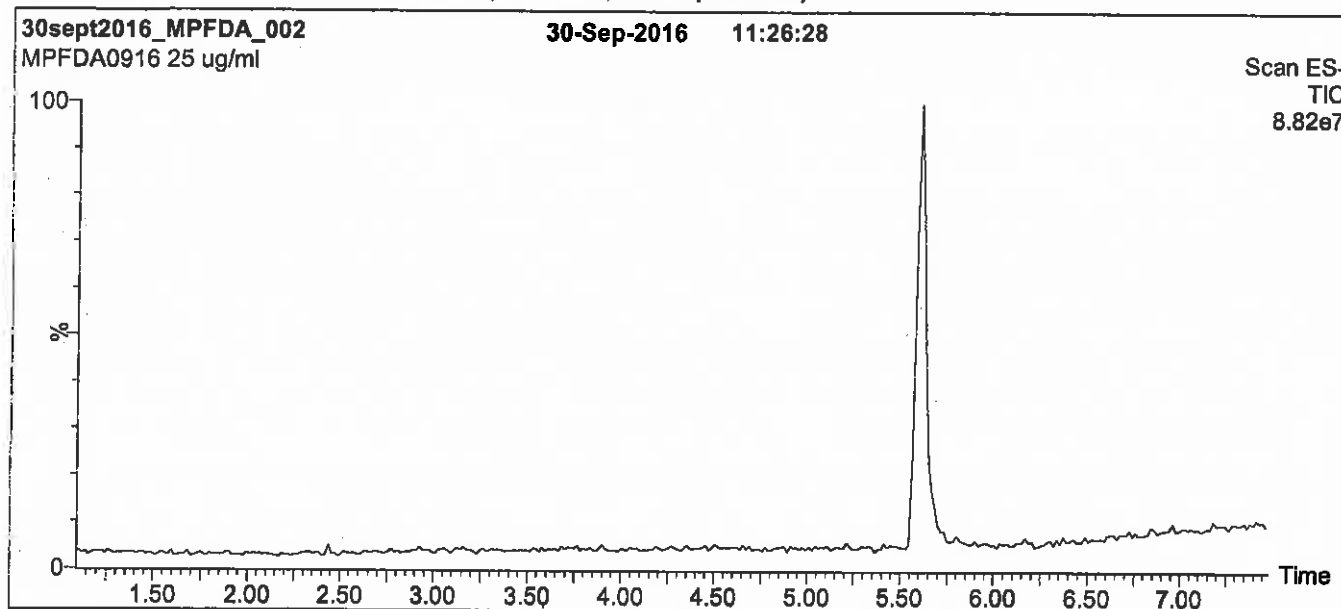
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1.7 μ m, 2.1 x 100 mm

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before returning to initial conditions in 0.5 min.
Time: 10 min

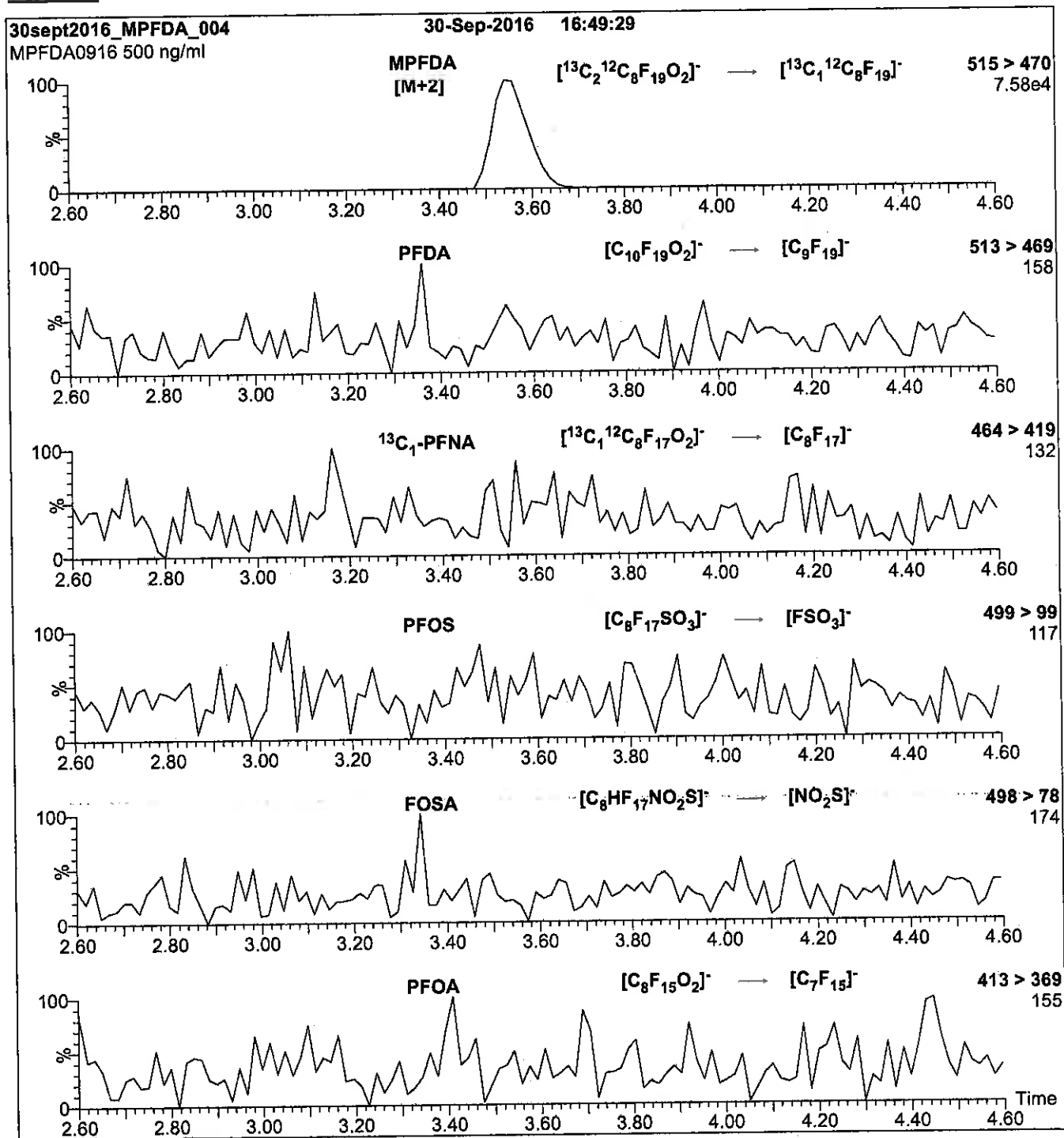
Flow: 300 μ l/min

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: 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) = 3.31e-3
Collision Energy (eV) = 13

Reagent

LCMPFD_oA_00010



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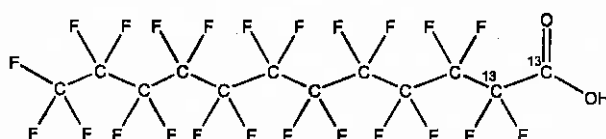
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]dodecanoic acid

LOT NUMBER: MPFDoA0416

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%
LAST TESTED: (mm/dd/yyyy) 04/08/2016
EXPIRY DATE: (mm/dd/yyyy) 04/08/2021

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

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: 04/15/2016
(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.

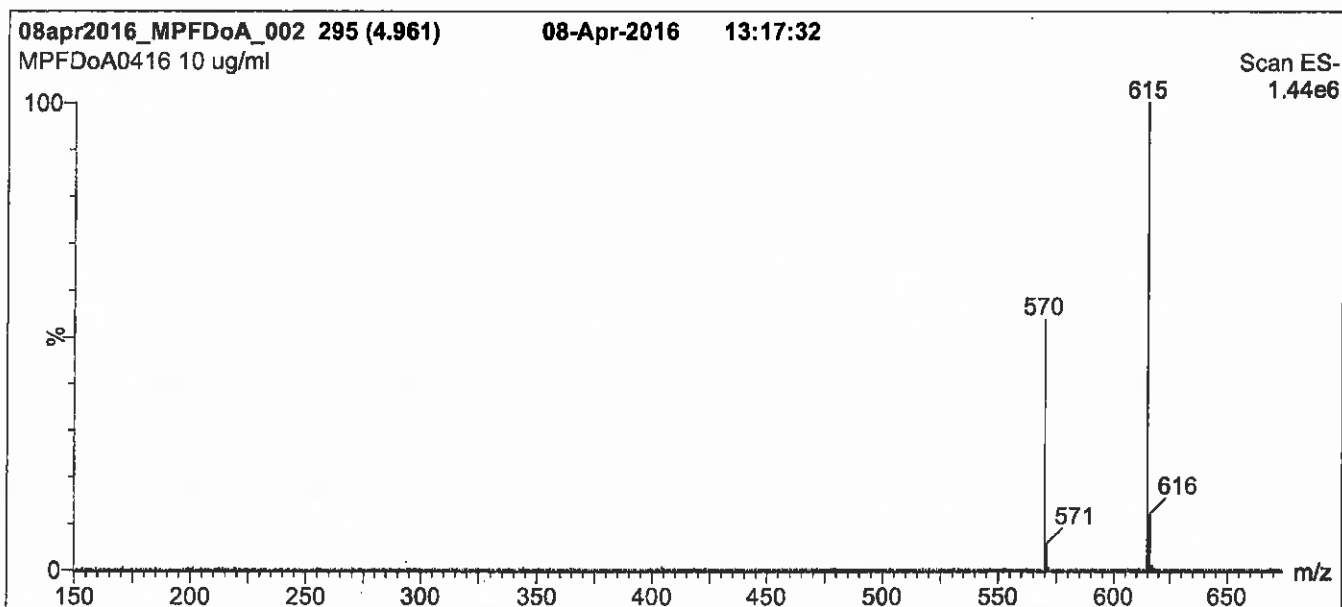
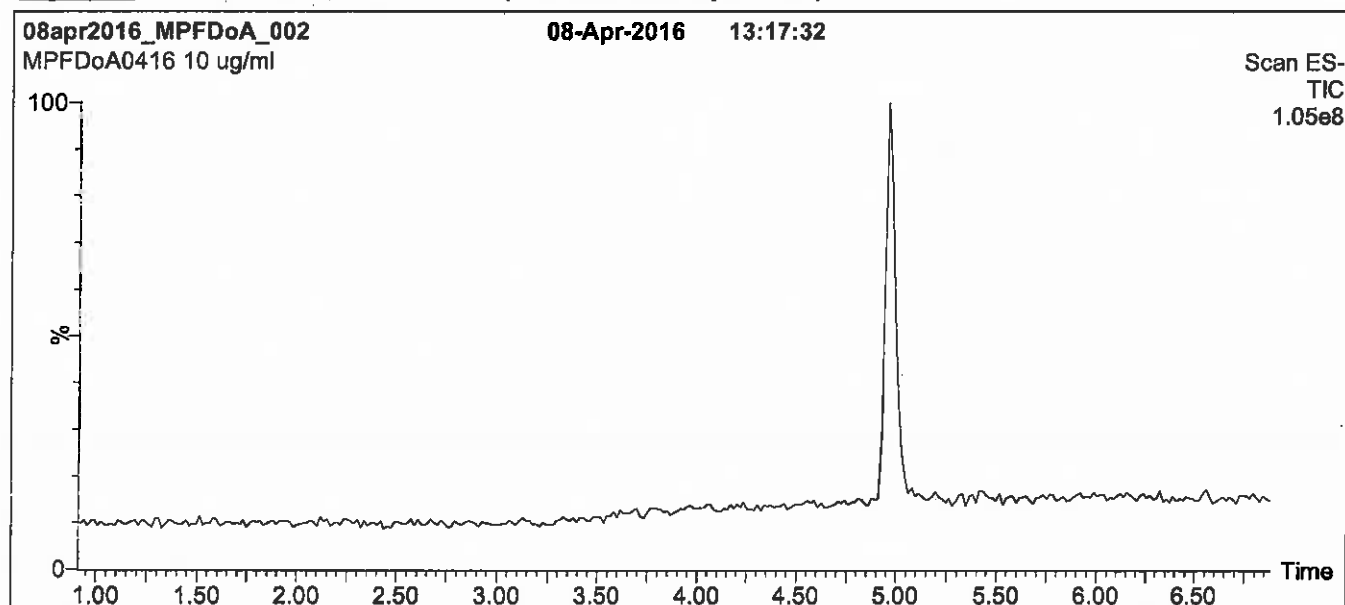
QUALITY MANAGEMENT:

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: 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

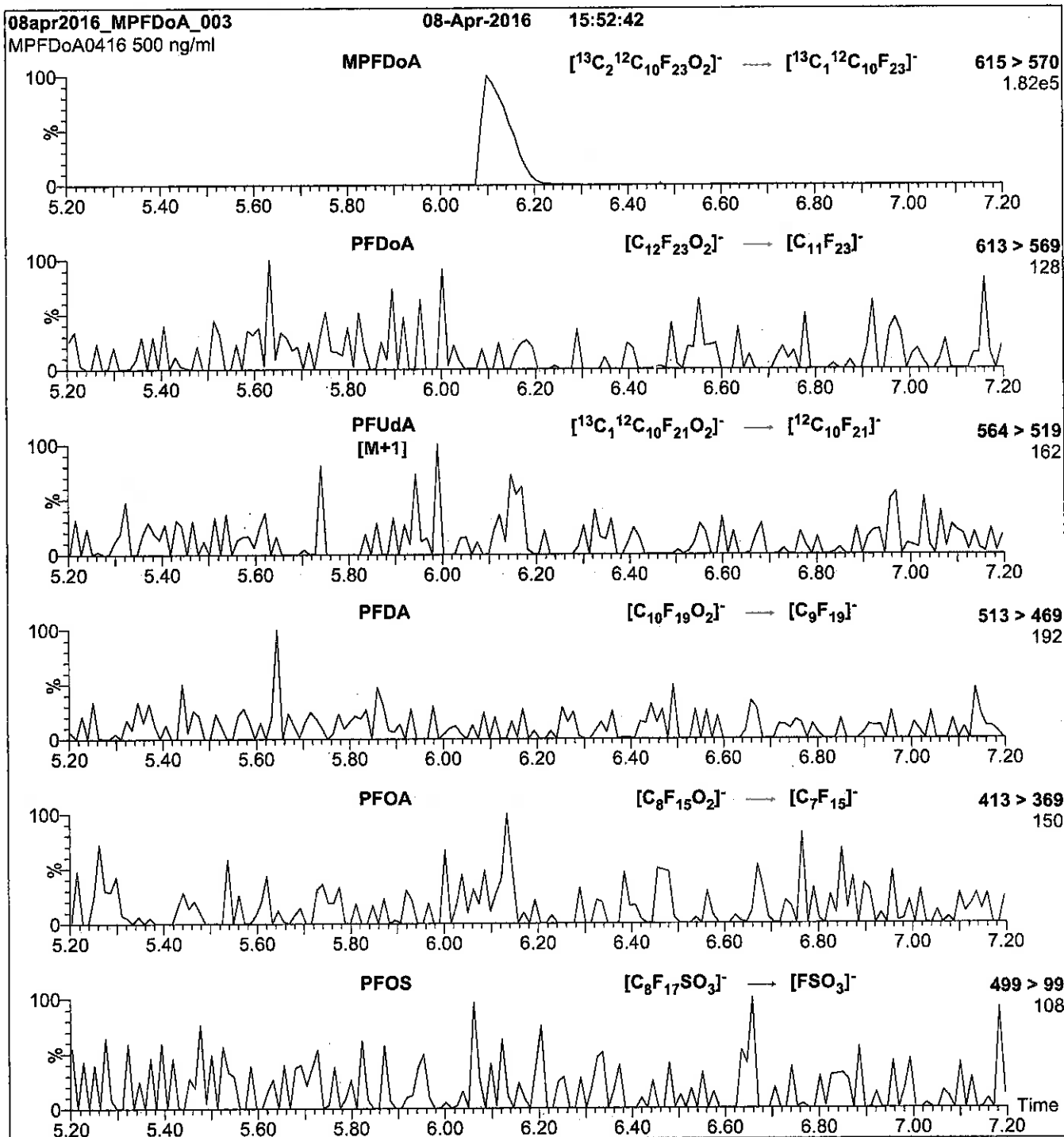
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (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: 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) = $3.24\text{e-}3$
Collision Energy (eV) = 13

Reagent

LCMPFD_oA_00011



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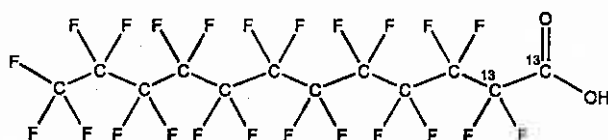
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]dodecanoic acid

LOT NUMBER: MPFDoA0517

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₀HF₂₃O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 616.08
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

CHEMICAL PURITY: >98%
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.

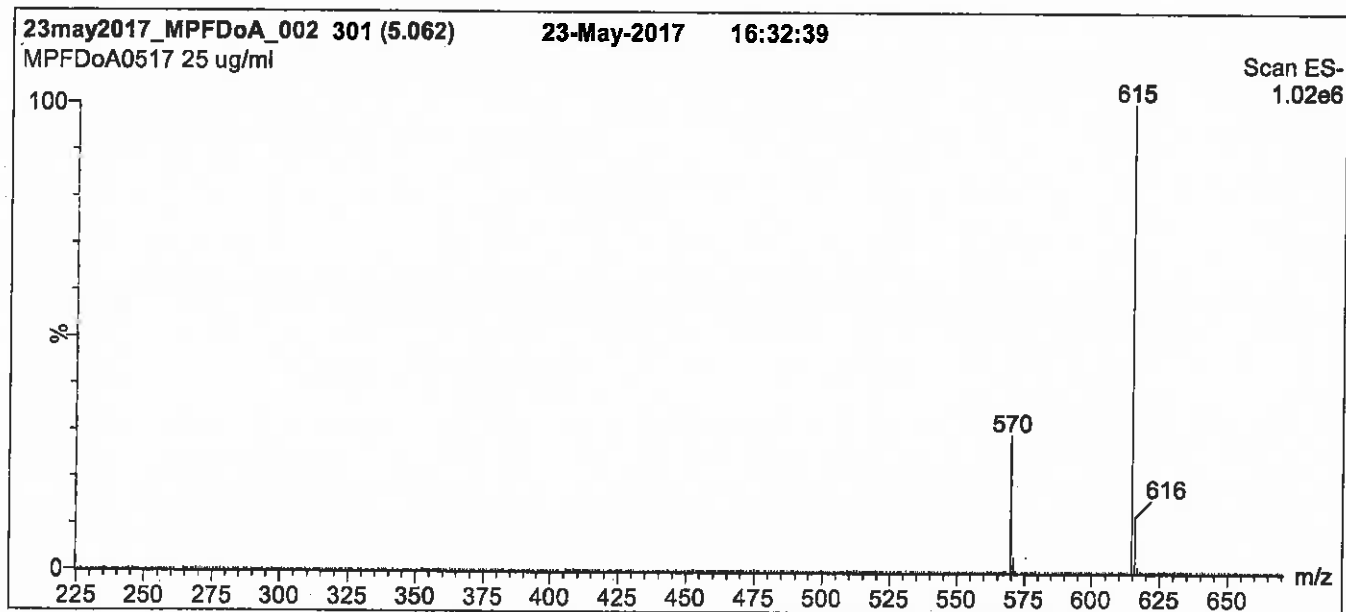
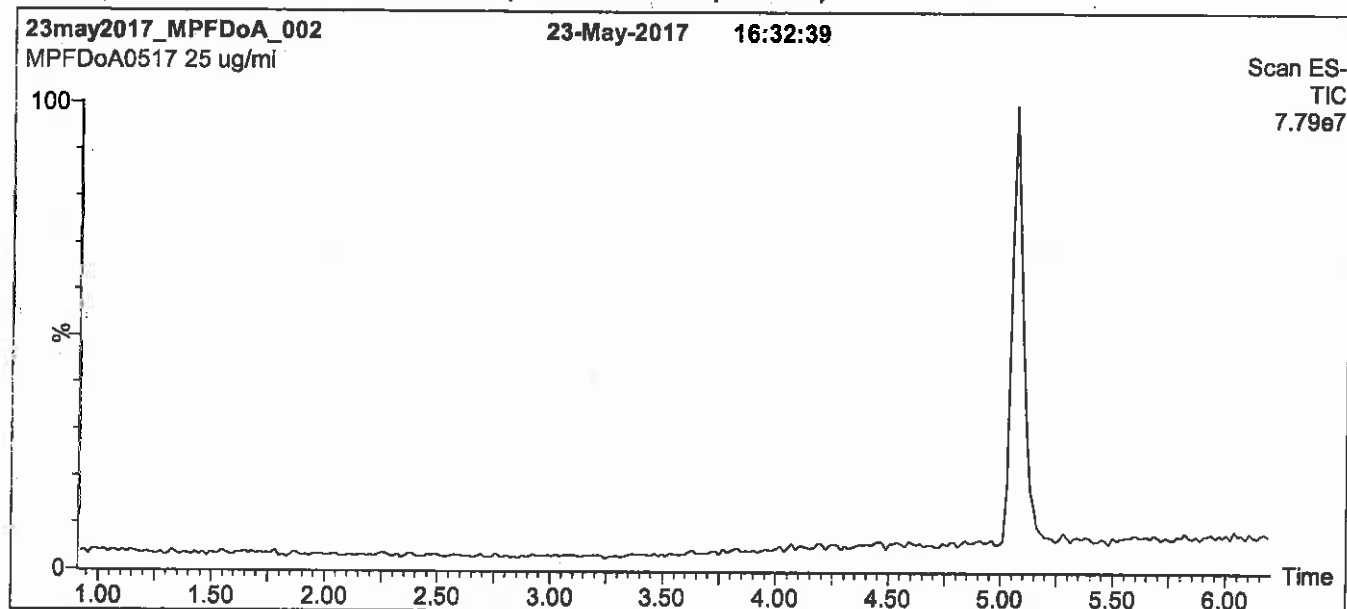
QUALITY MANAGEMENT:

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

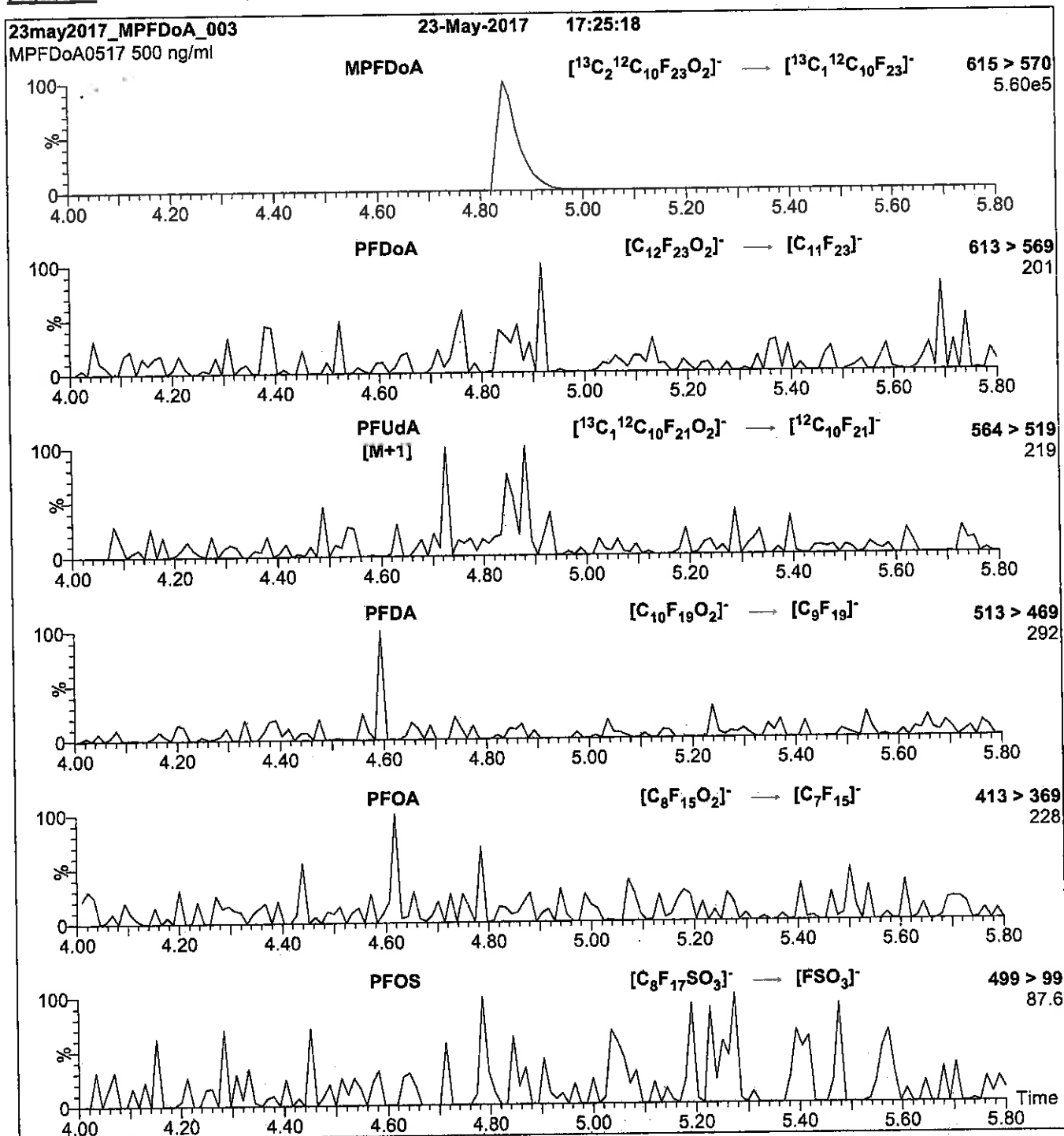
Flow: 300 μ l/min

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_00016

R: 5/31/17 SKV
S: 5/31/17 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFHxA

LOT NUMBER:

MPFHxA1116

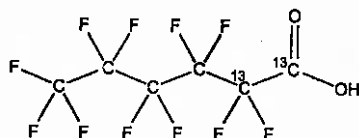
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]hexanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₄HF₁₁O₂

CONCENTRATION:

50 ± 2.5 µg/ml

MOLECULAR WEIGHT:

316.04

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99%¹³C

(1,2-¹³C₂)

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

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

Date: 12/13/2016

(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

INTENDED USE:

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HAZARDS:

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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.

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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.

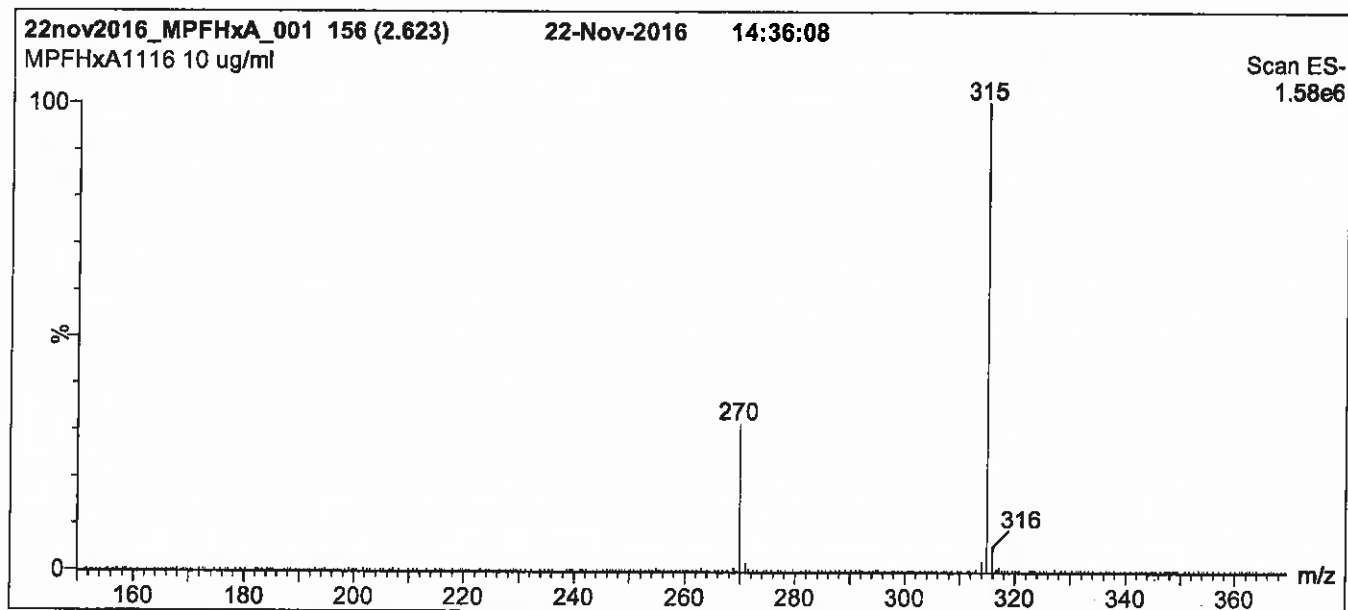
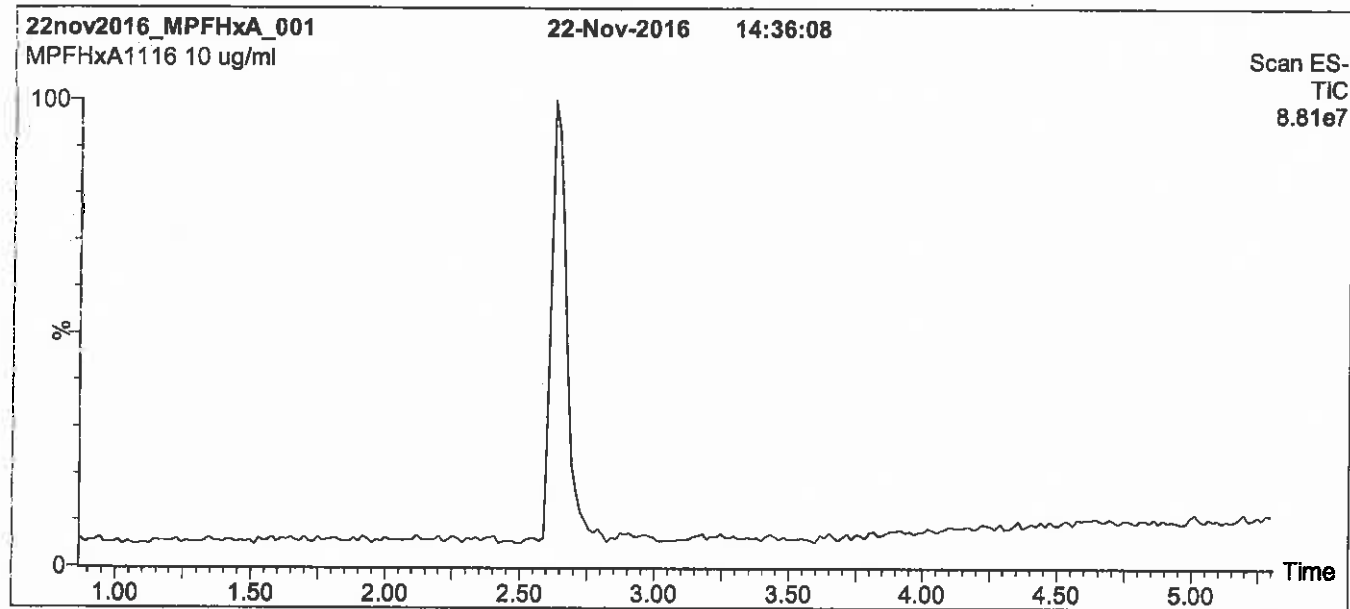
QUALITY MANAGEMENT:

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Figure 1: 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

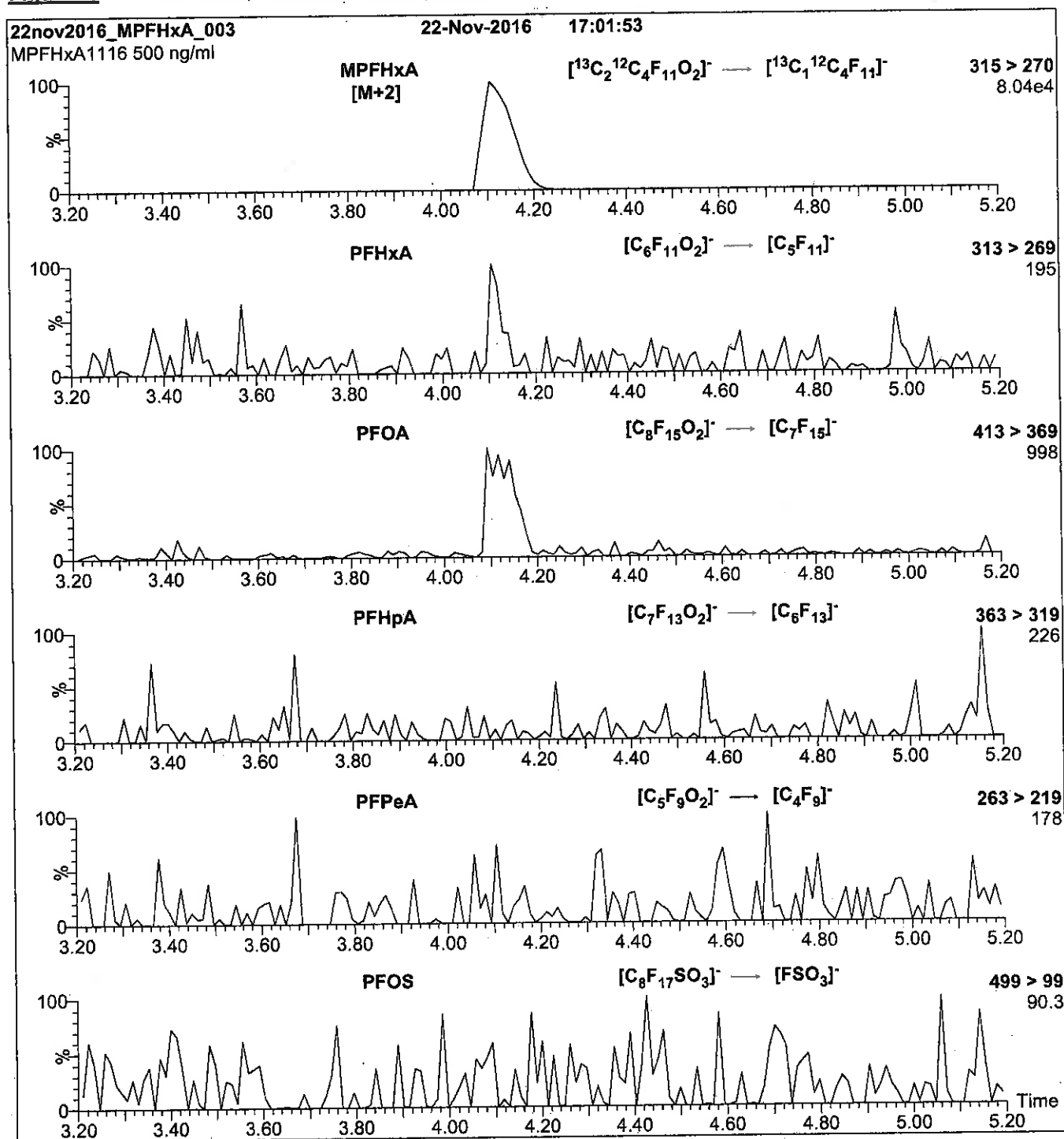
Flow: 300 μ l/min

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) = 3.46e-3
Collision Energy (eV) = 10

Reagent

LCMPFHxA_00017



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

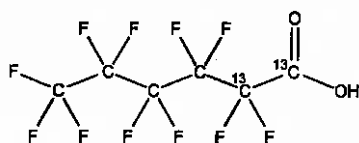
MPFHxA

LOT NUMBER:

MPFHxA1116

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

Not available

**MOLECULAR FORMULA:**¹³C₂¹²C₄HF₁₁O₂**MOLECULAR WEIGHT:**

316.04

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

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

11/22/2016

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

11/22/2021

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 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

Date: 12/13/2016

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

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:

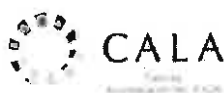
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

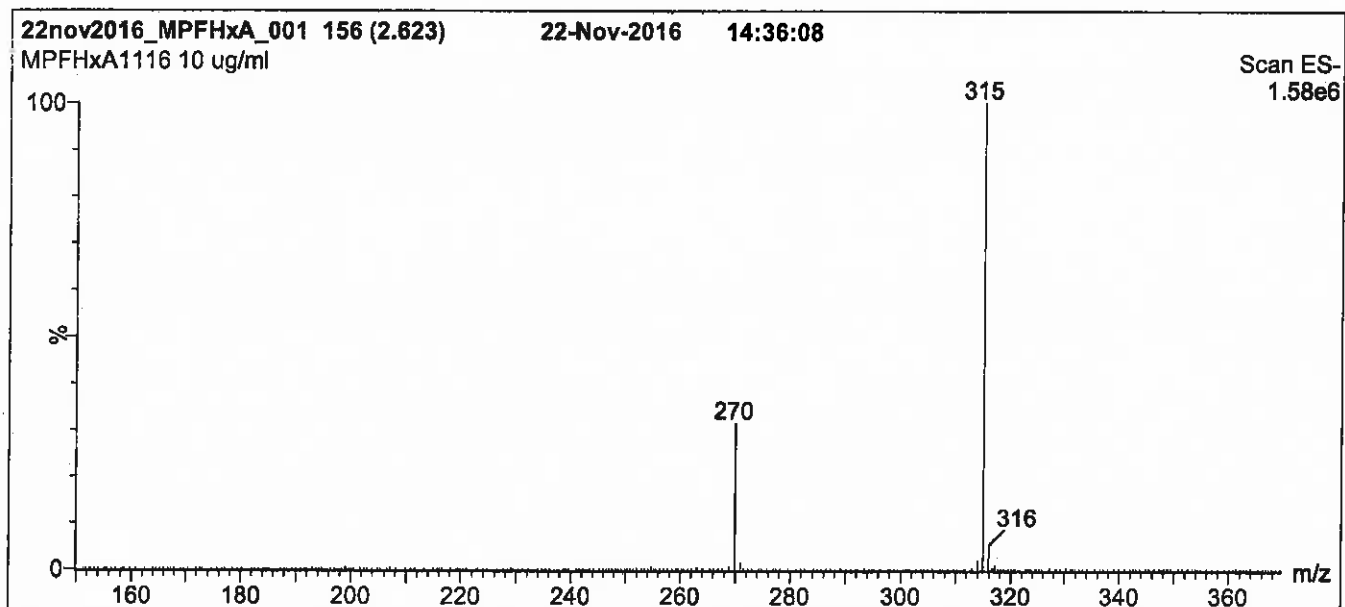
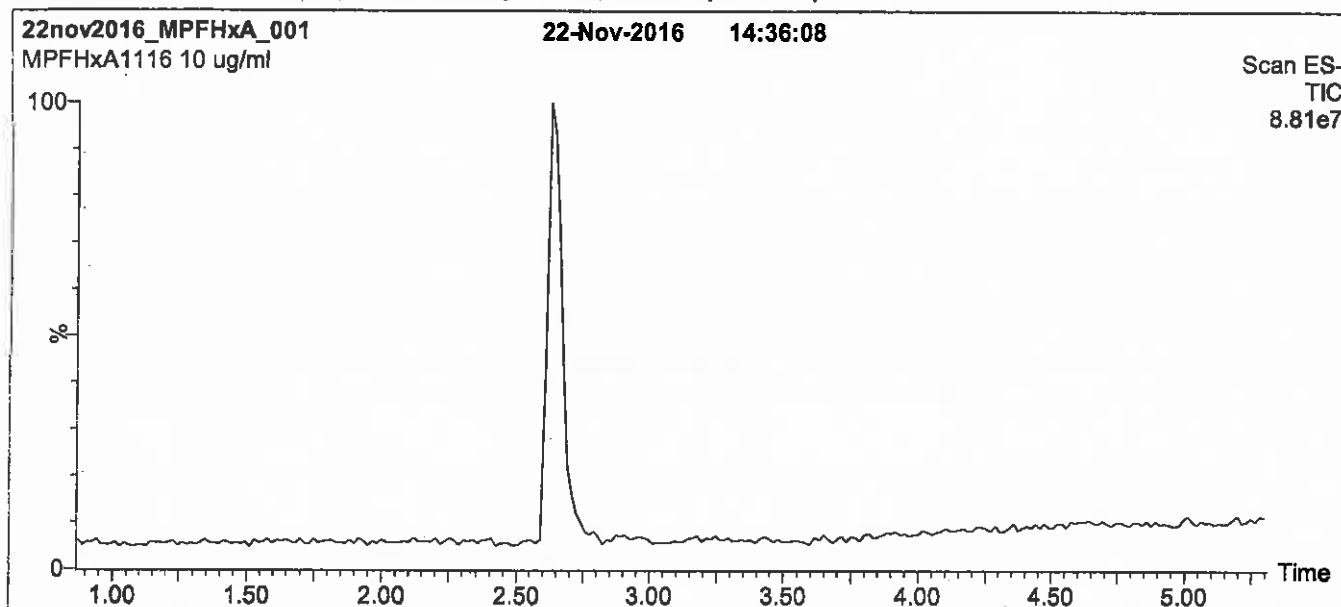
QUALITY MANAGEMENT:

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

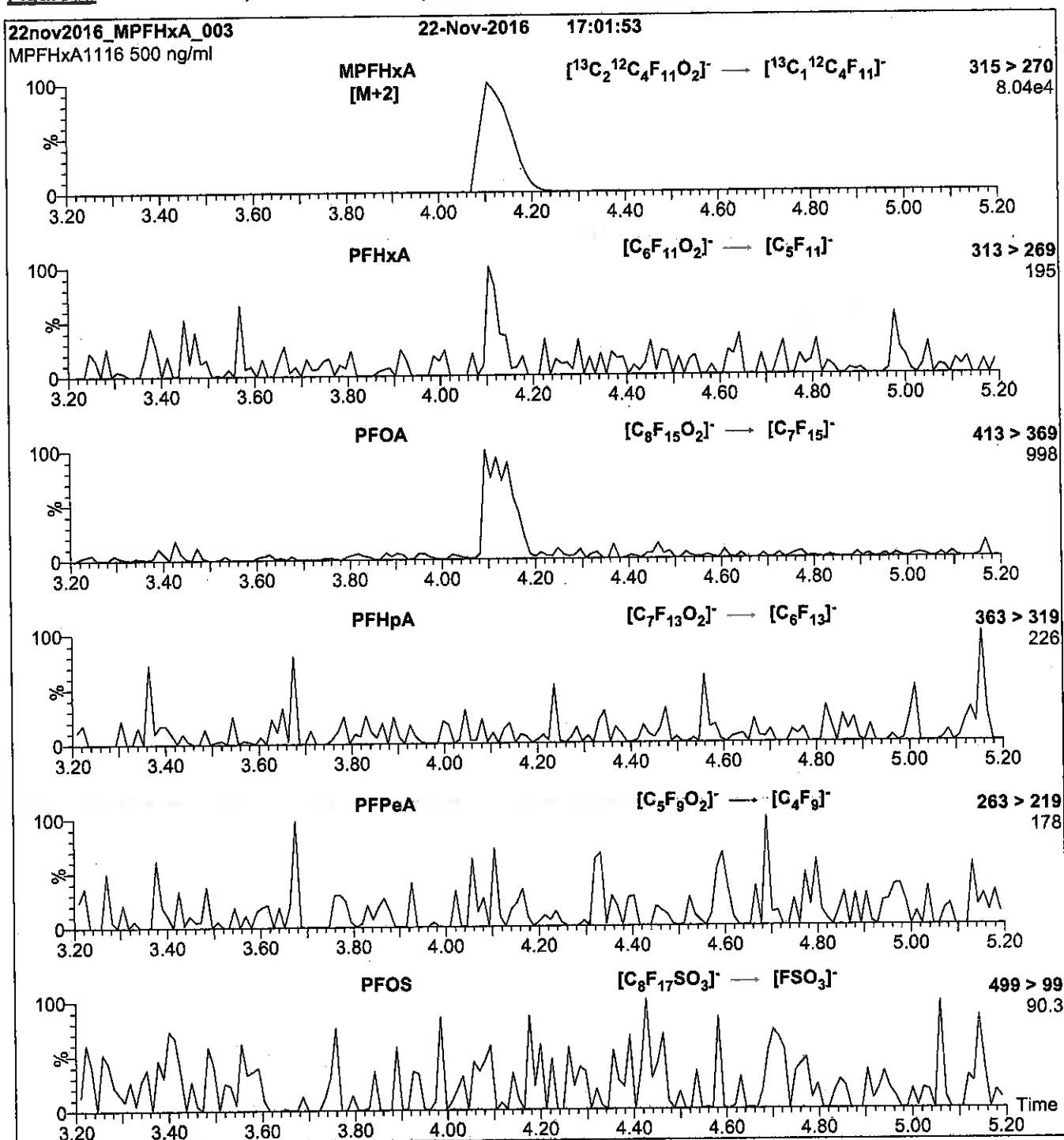
Flow: 300 μ l/min

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% 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) = 10

Reagent

LCMPFHxS_00010



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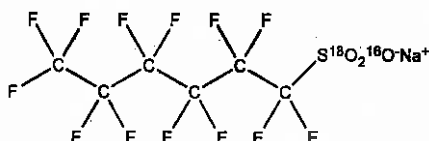
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxS
COMPOUND: Sodium perfluoro-1-hexane[$^{18}\text{O}_2$]sulfonate

LOT NUMBER: MPFHxS0217

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $\text{C}_6\text{F}_{13}\text{S}^{18}\text{O}_2^{16}\text{ONa}$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)
 $47.3 \pm 2.4 \mu\text{g/ml}$ (MPFHxS anion)
CHEMICAL PURITY: >98%
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

MOLECULAR WEIGHT: 426.10
SOLVENT(S): Methanol
ISOTOPIC PURITY: >94% ($^{18}\text{O}_2$)

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 ($\text{C}_6\text{F}_{13}\text{S}^{18}\text{O}_2^{16}\text{O}^-$) has been observed to be up to 10% lower than for PFHxS ($\text{C}_6\text{F}_{13}\text{S}^{18}\text{O}_3^-$) when both compounds are injected together. This difference may vary between instruments.
- Contains ~ 1.0% of sodium perfluoro-1-octane[$^{18}\text{O}_2$]sulfonate ($^{18}\text{O}_2$ -PFOS).
- Due to the isotopic purity of the starting material ($^{18}\text{O}_2$ >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:

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.

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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:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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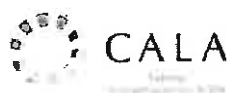
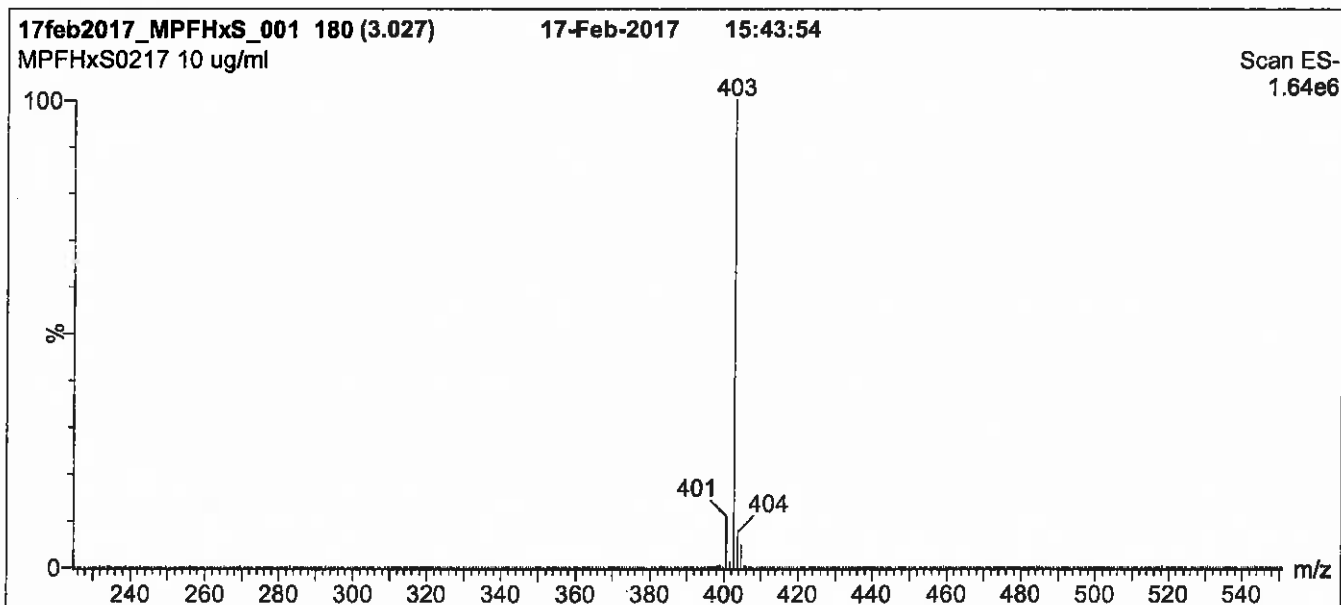
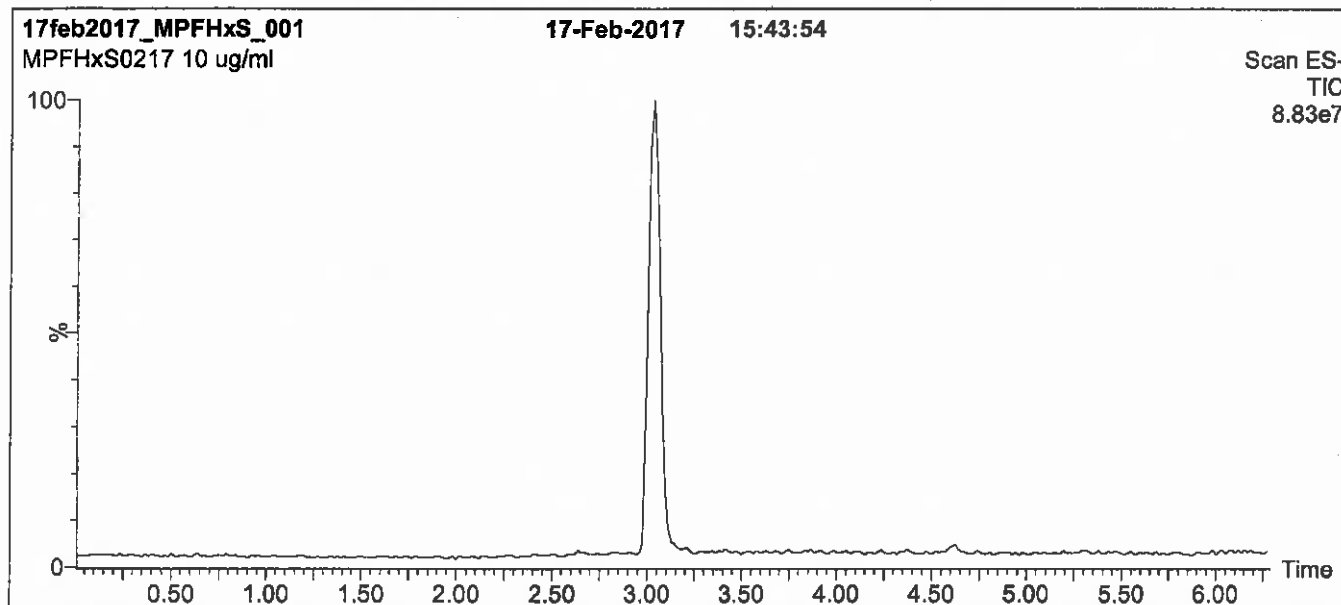


Figure 1: MPFHxS; LC/MS Data (TIC and Mass Spectrum)



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

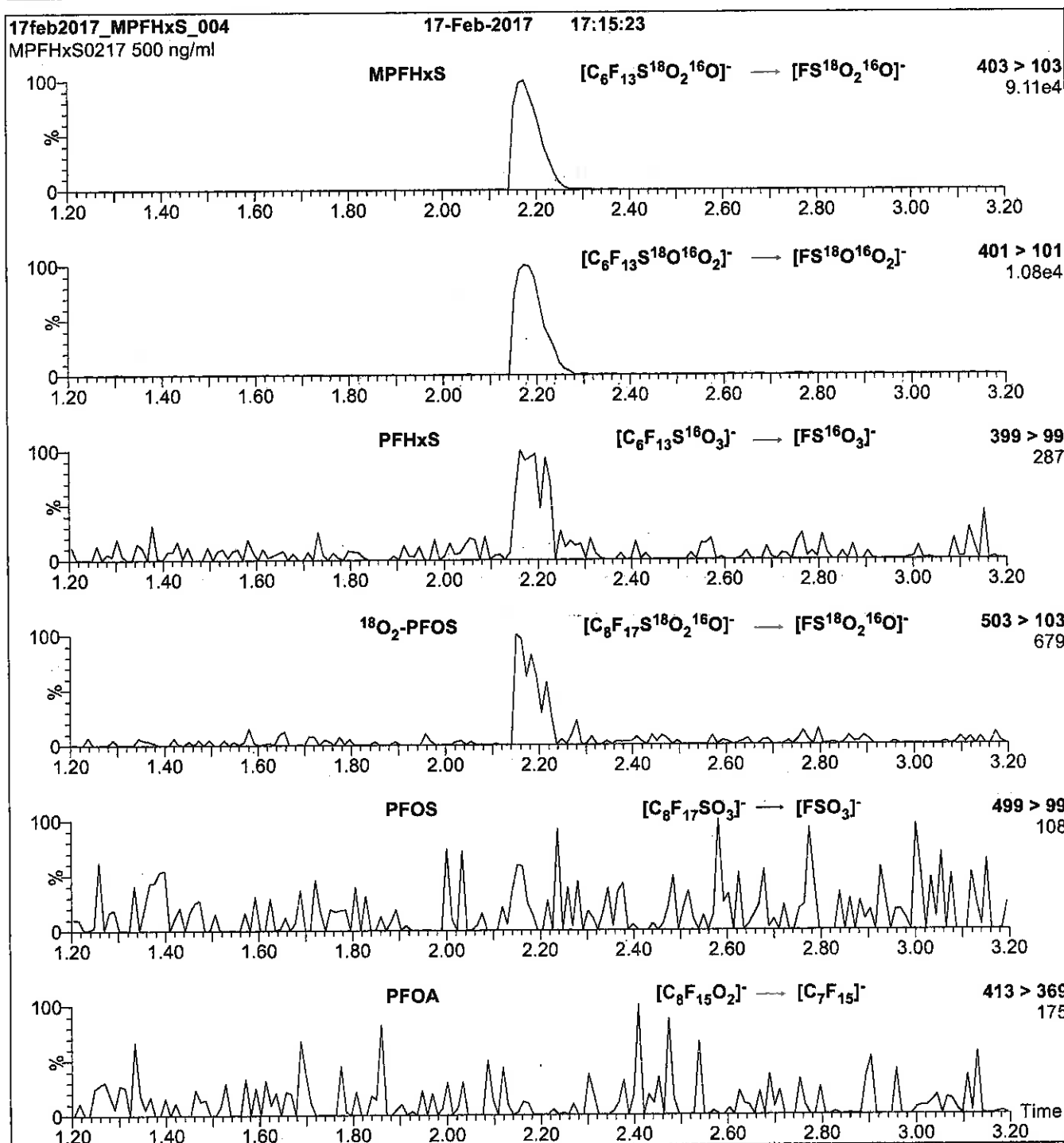
Flow: 300 μ l/min

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

LCMPFHxS_00011



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

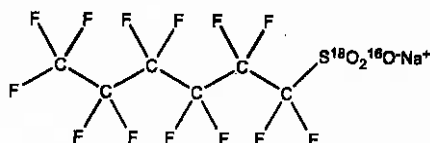
MPFHxS

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)

SOLVENT(S):

Methanol

47.3 ± 2.4 µg/ml (MPFHxS anion)

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.

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Certified By:

B.G. Chittim

Date: 03/02/2017

(mm/dd/yyyy)

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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

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EXPIRY DATE / PERIOD OF VALIDITY:

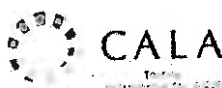
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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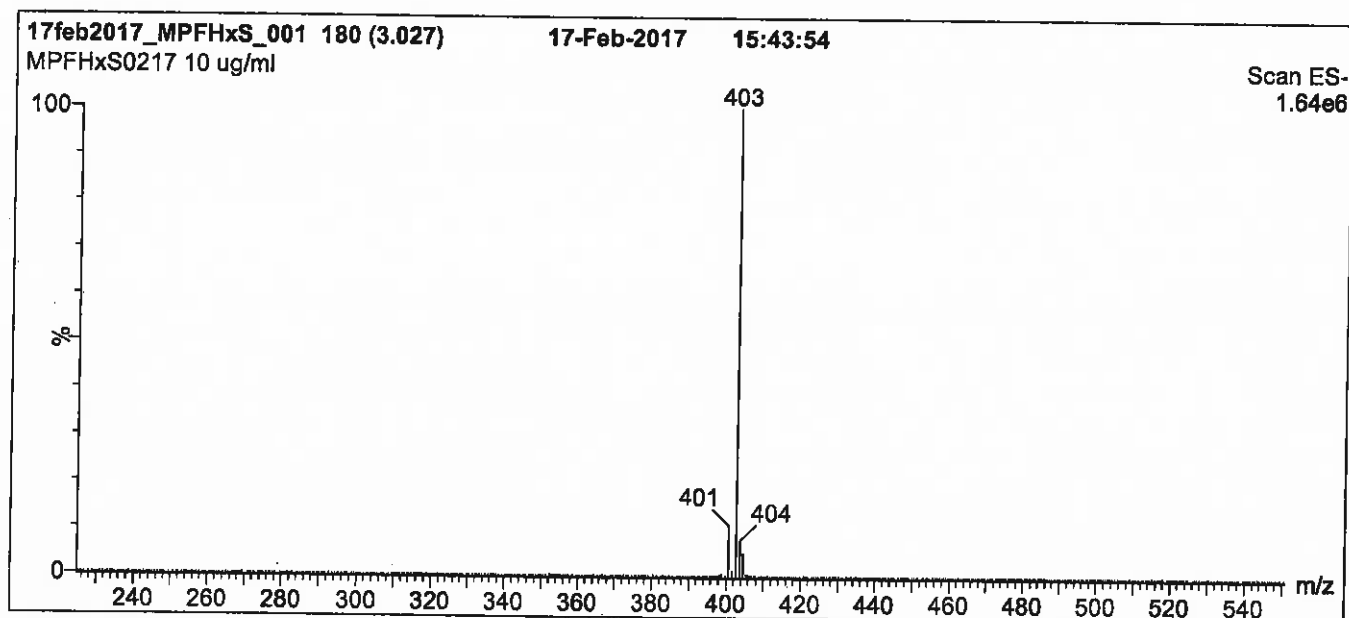
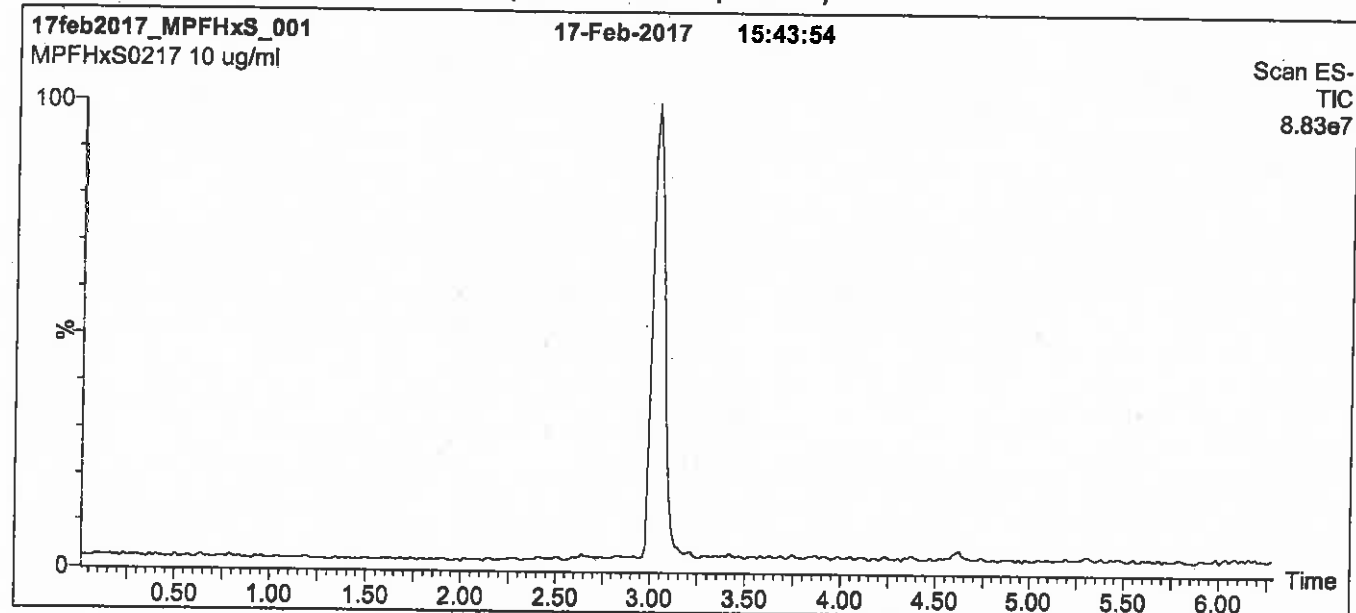
QUALITY MANAGEMENT:

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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

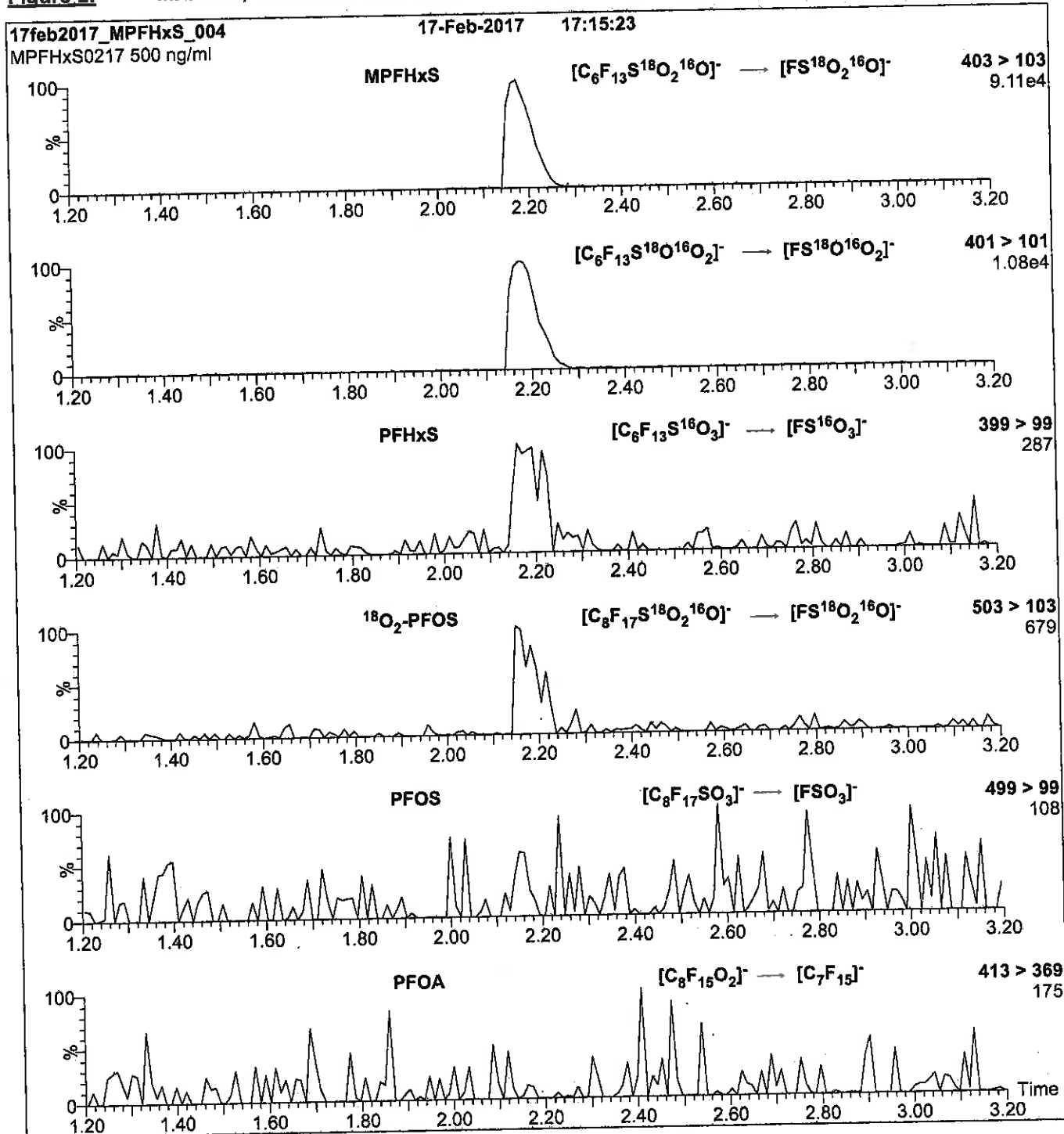
Flow: 300 μ l/min

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_00010

r: 5/3/19 SCV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFNA

LOT NUMBER:

MPFNA0916

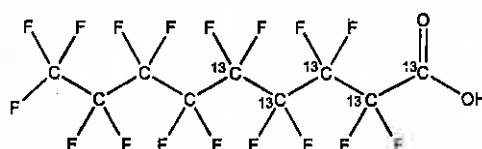
COMPOUND:

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

EXPIRY DATE: (mm/dd/yyyy)

09/30/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

(1,2,3,4,5-¹³C₅)

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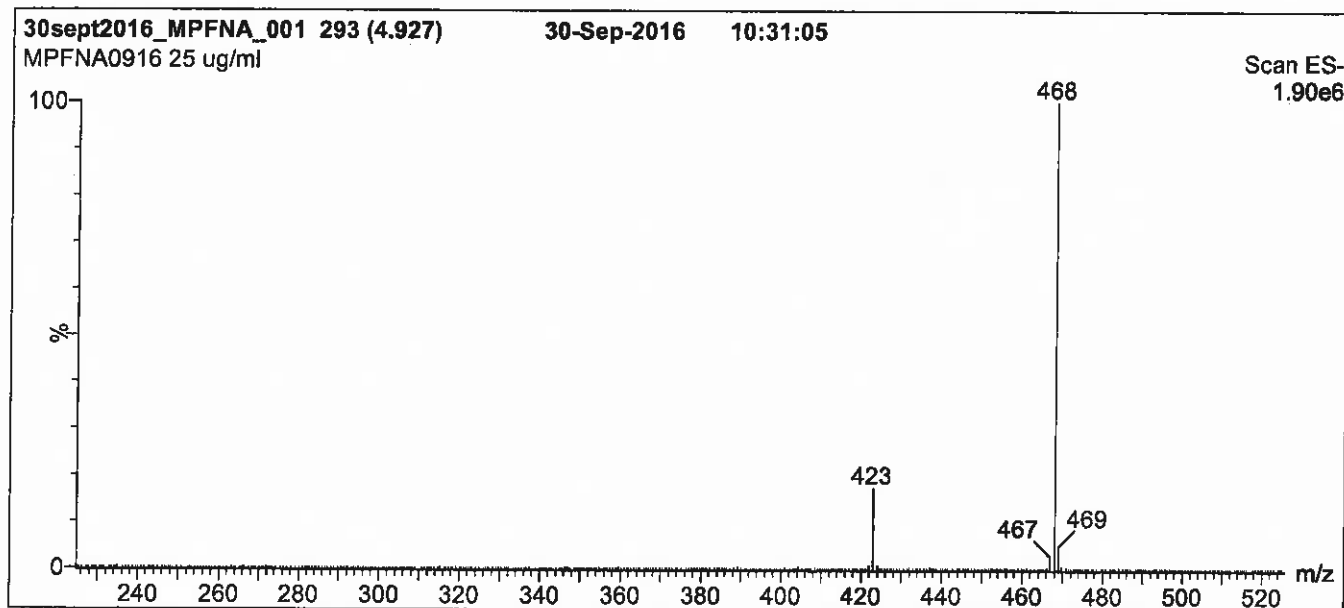
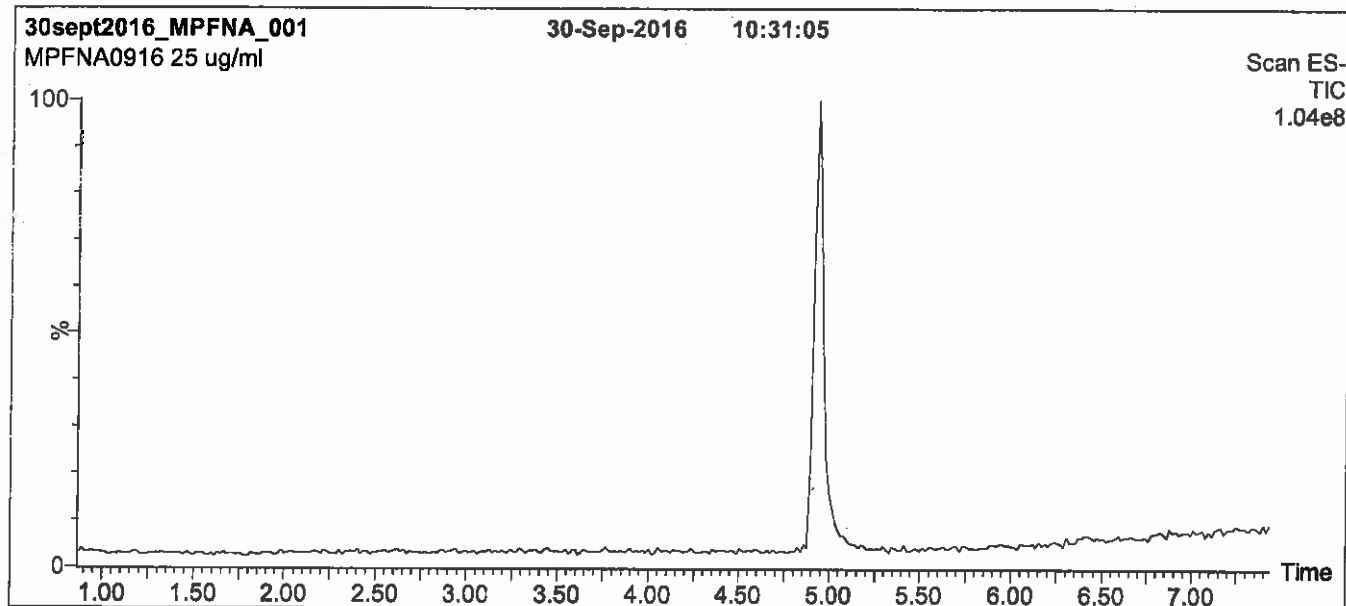
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Figure 1: MPFNA; LC/MS Data (TIC and Mass Spectrum)



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

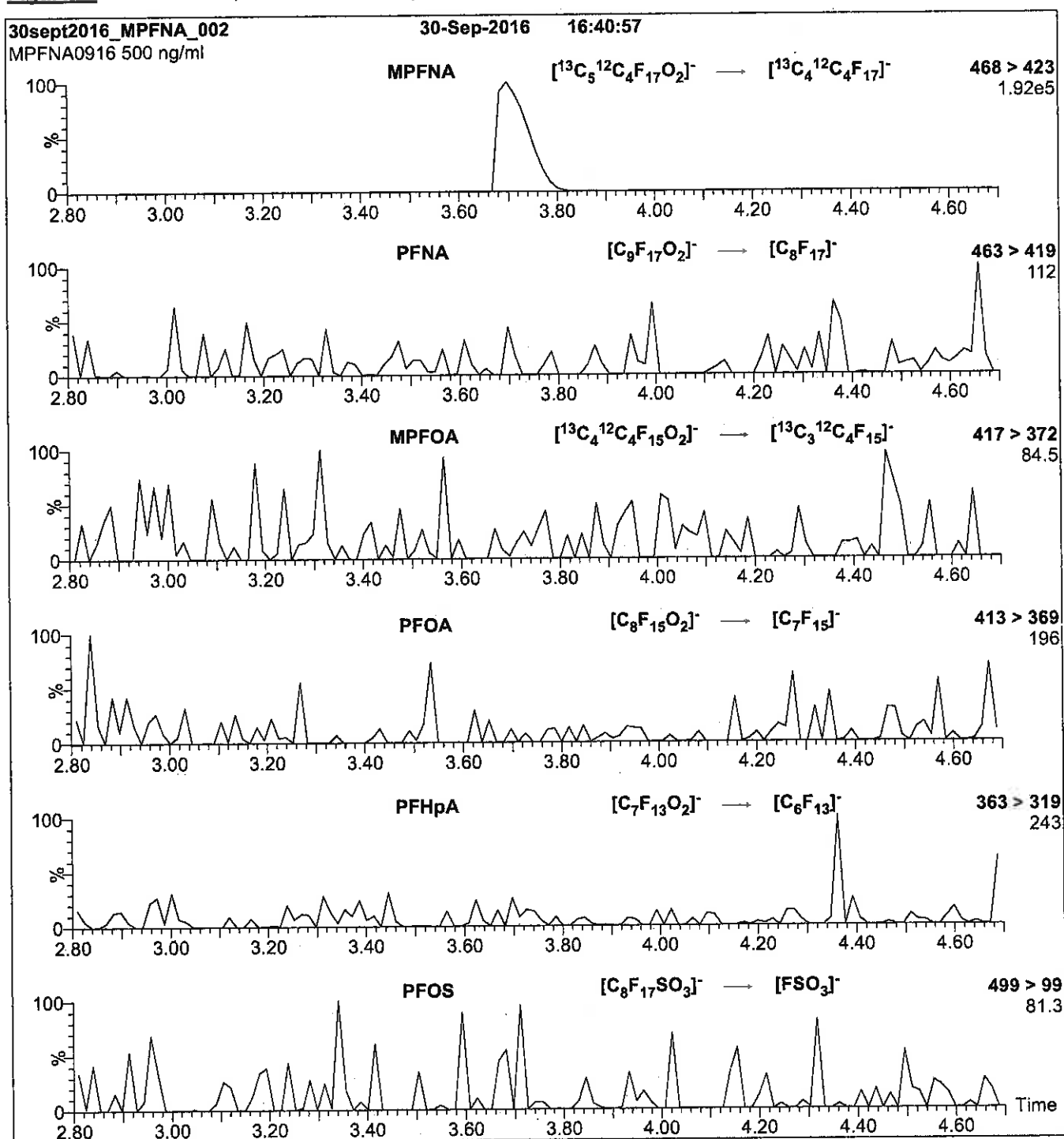
Flow: 300 μ l/min

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

LCMPFNA_00011

r: 71517-561



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFNA

LOT NUMBER:

MPFNA0916

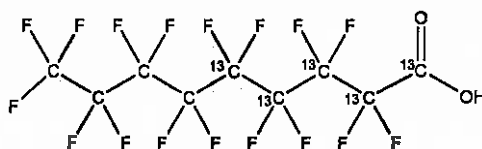
COMPOUND:

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

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₅¹²C₄HF₁₇O₂

MOLECULAR WEIGHT:

469.04

CONCENTRATION:

50 ± 2.5 µg/ml

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
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.

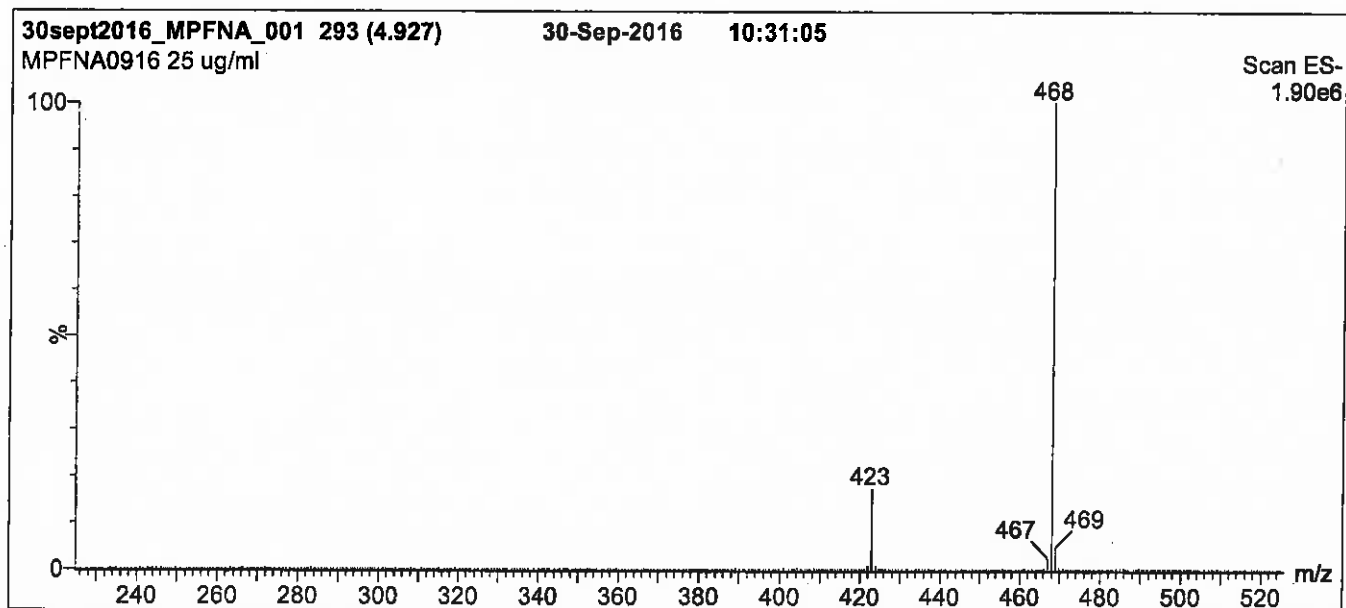
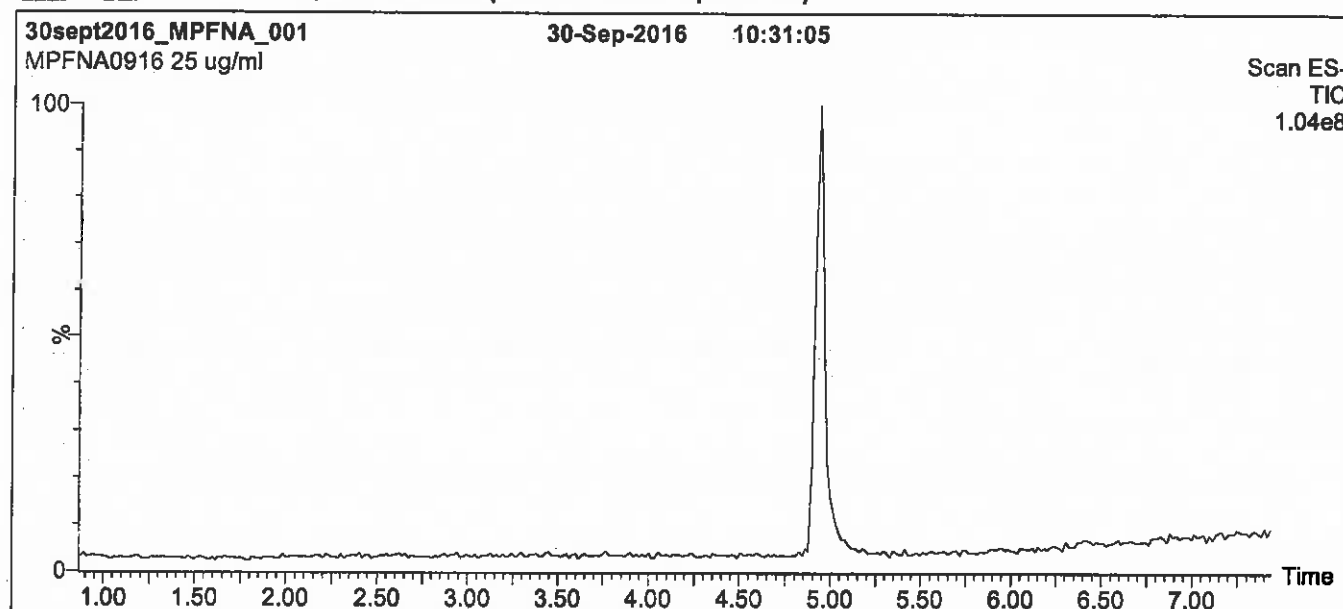
QUALITY MANAGEMENT:

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: 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

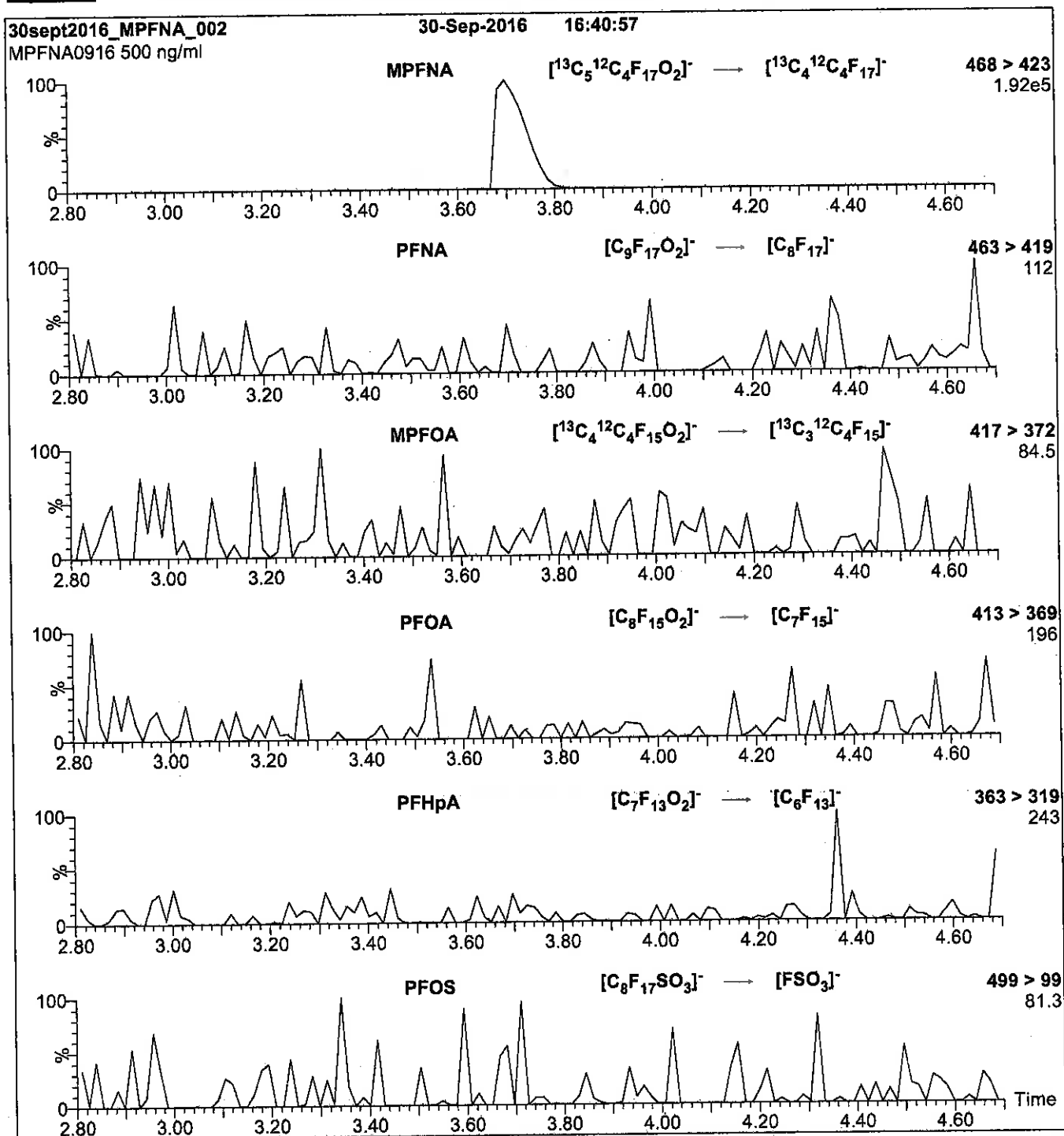
Flow: 300 μ l/min

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_00014



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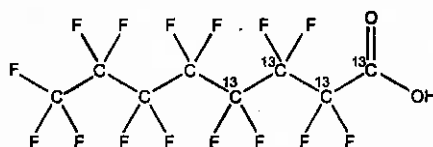
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFOA0417

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄HF₁₆O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 418.04
SOLVENT(S): Methanol
Water (<1%)
ISOTOPIC PURITY: ≥99% ¹³C
(1,2,3,4-¹³C₄)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/12/2017
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.
- 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: 04/28/2017
(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

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:

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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.

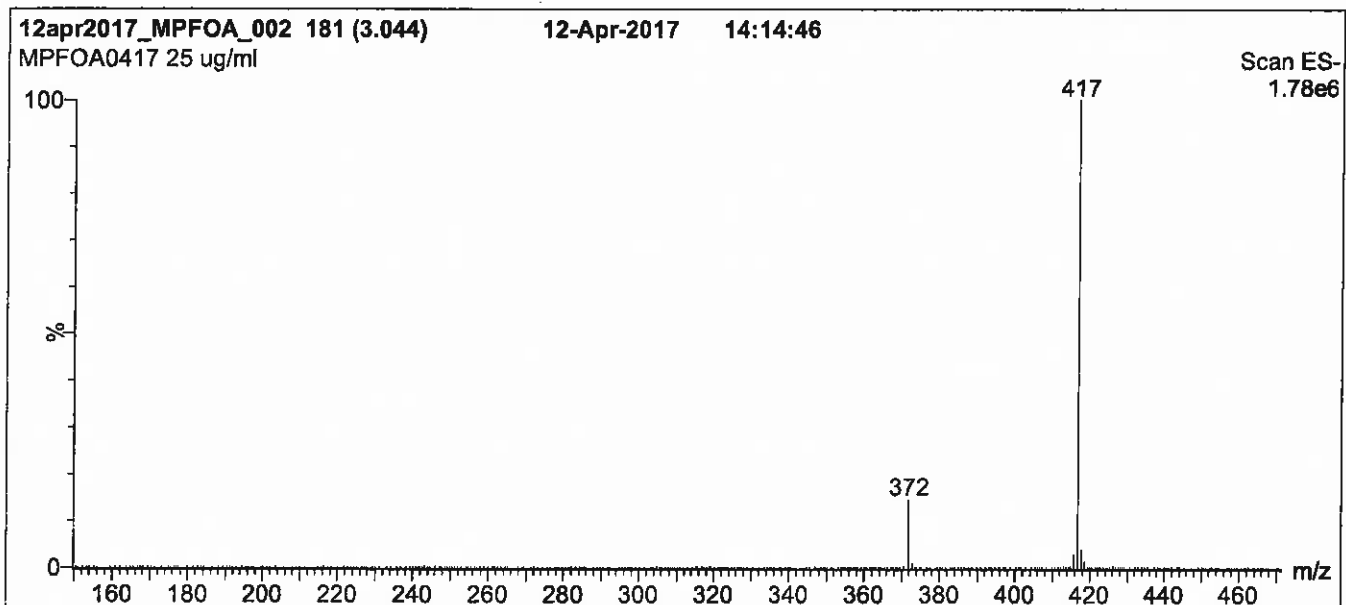
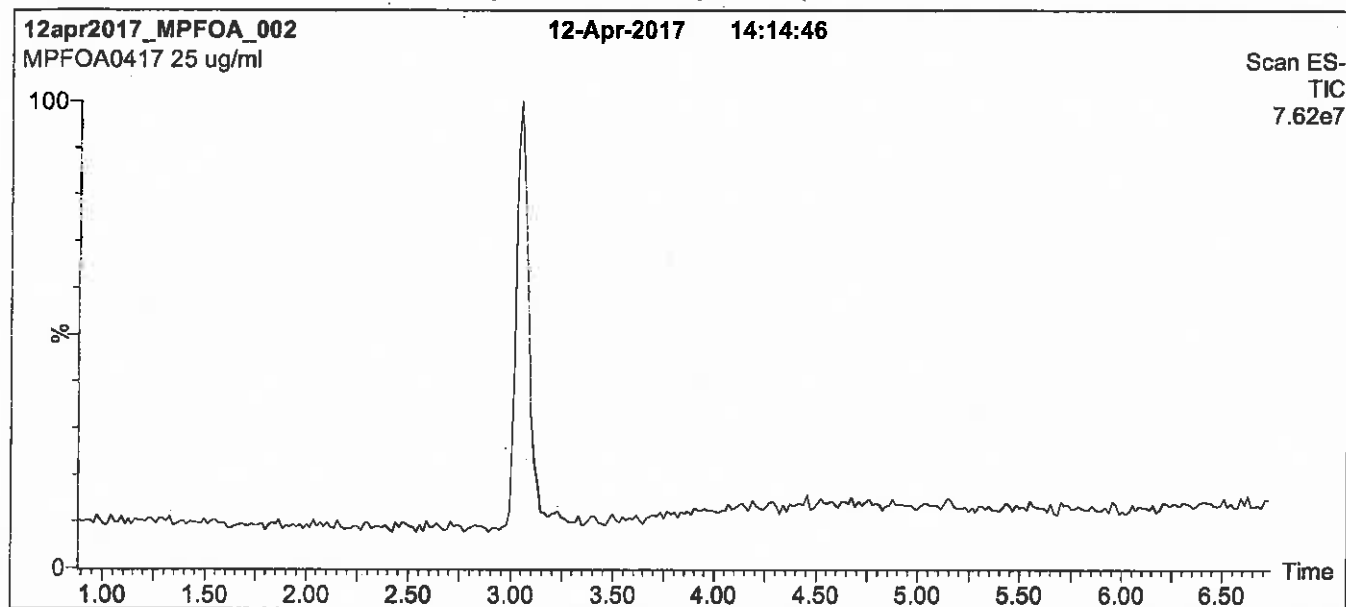
QUALITY MANAGEMENT:

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).



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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: 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

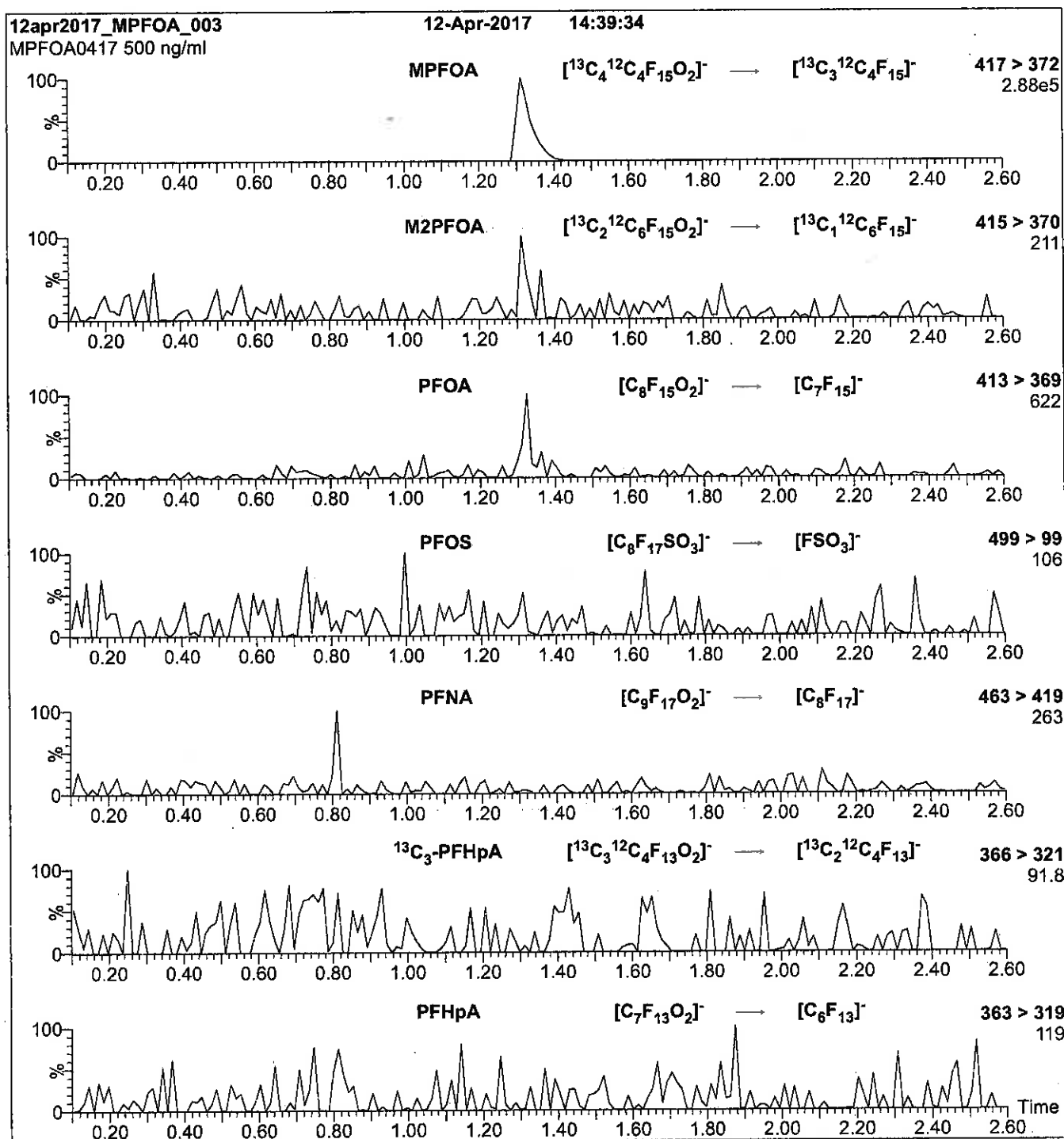
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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) = 3.46e-3
Collision Energy (eV) = 10

Reagent

LCMPFOA_00015



WELLINGTON LABORATORIES

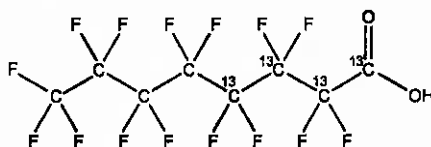
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: MPFOA0417

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄HF₁₅O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 418.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/12/2017

ISOTOPIC PURITY: ≥99% ¹³C
(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.
- 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: 04/28/2017
(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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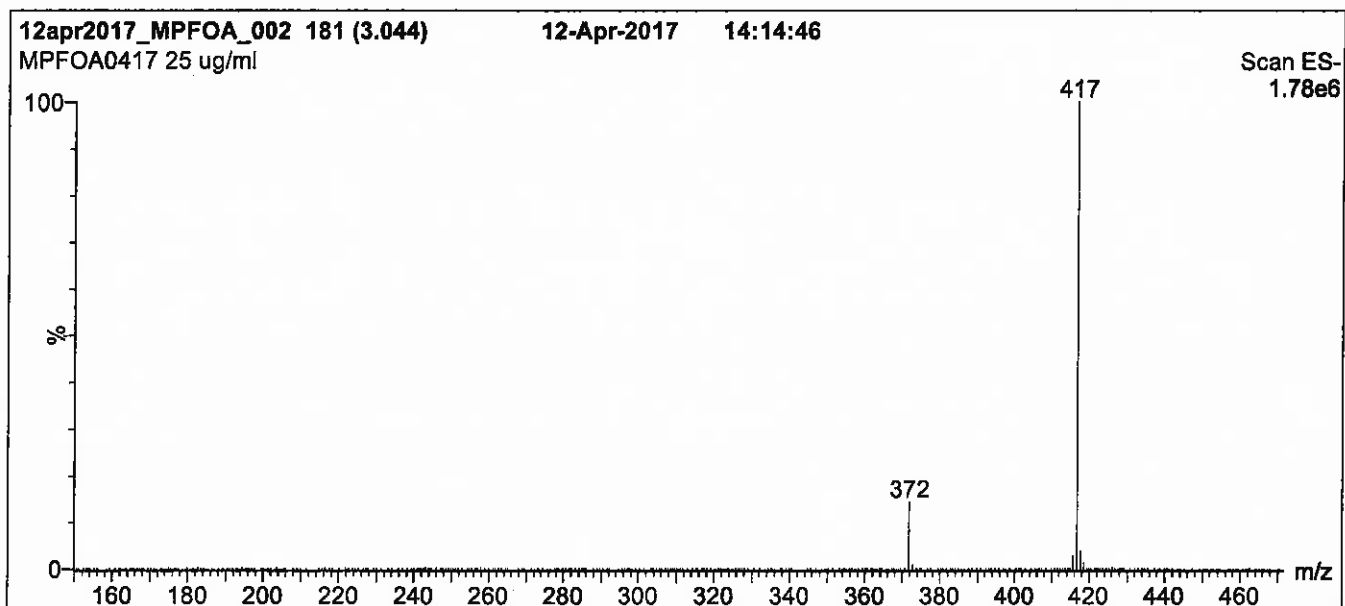
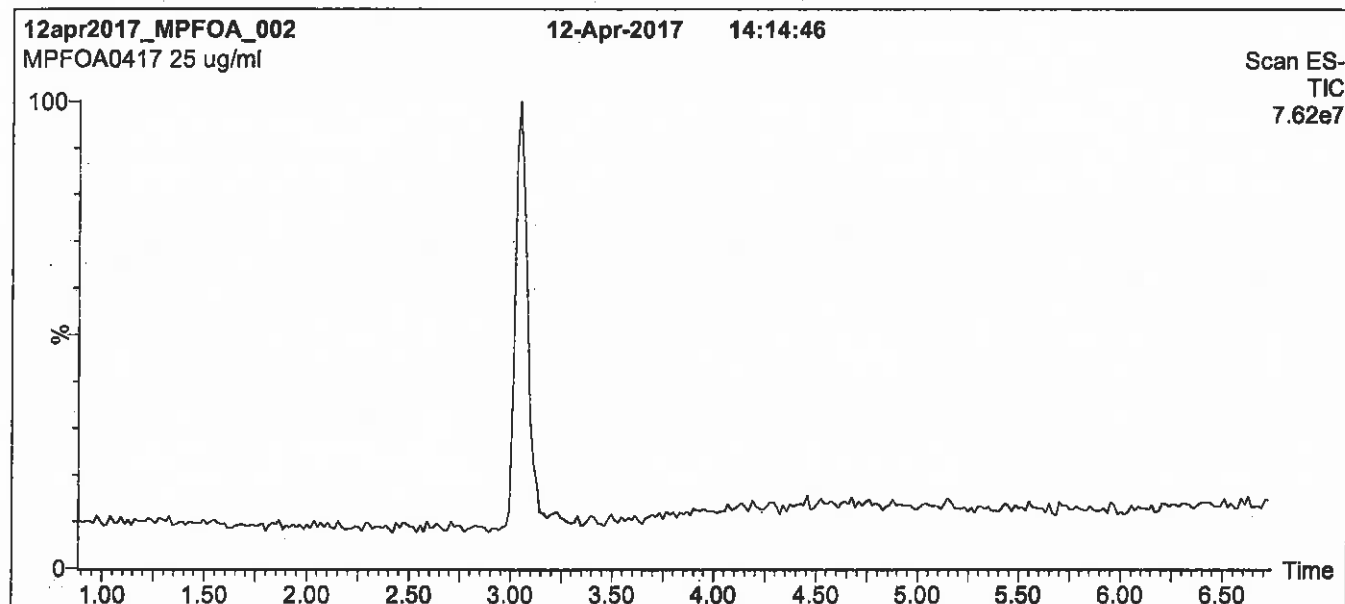
QUALITY MANAGEMENT:

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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: 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

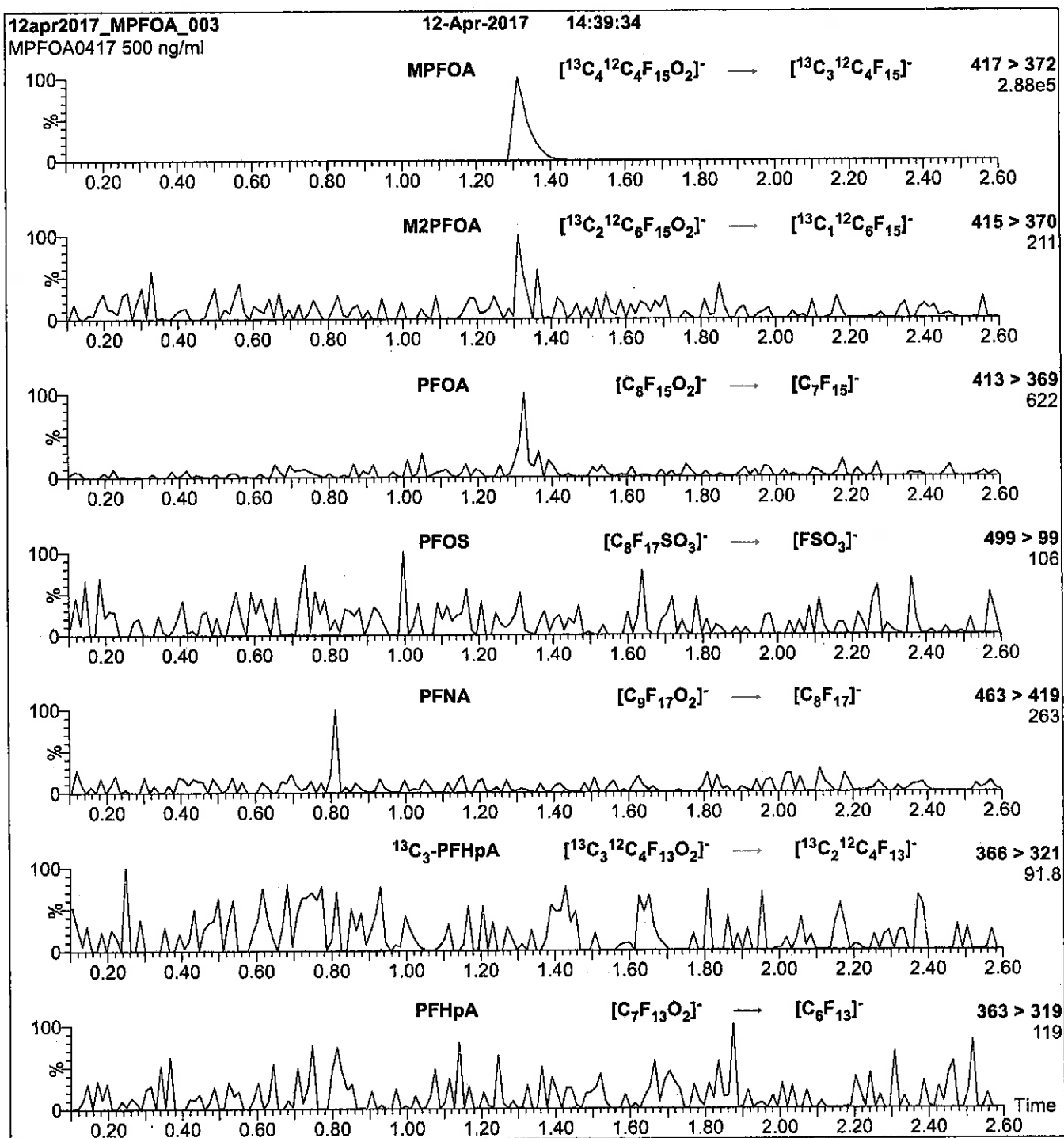
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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) = 3.46e-3
Collision Energy (eV) = 10

Reagent

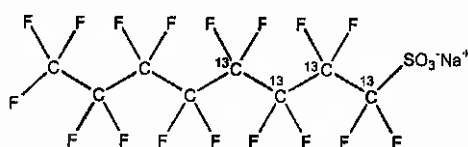
LCMPFOS_00022



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS1216
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate
STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄F₁₇SO₃Na **MOLECULAR WEIGHT:** 526.08
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.8 ± 2.4 µg/ml (MPFOS anion)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
LAST TESTED: (mm/dd/yyyy) 12/12/2016 (1,2,3,4-¹³C₄)
EXPIRY DATE: (mm/dd/yyyy) 12/12/2021
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 ~ 0.8% Sodium perfluoro-1-[1,2,3-¹³C₃]heptanesulfonate.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 12/14/2016
(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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HOMOGENEITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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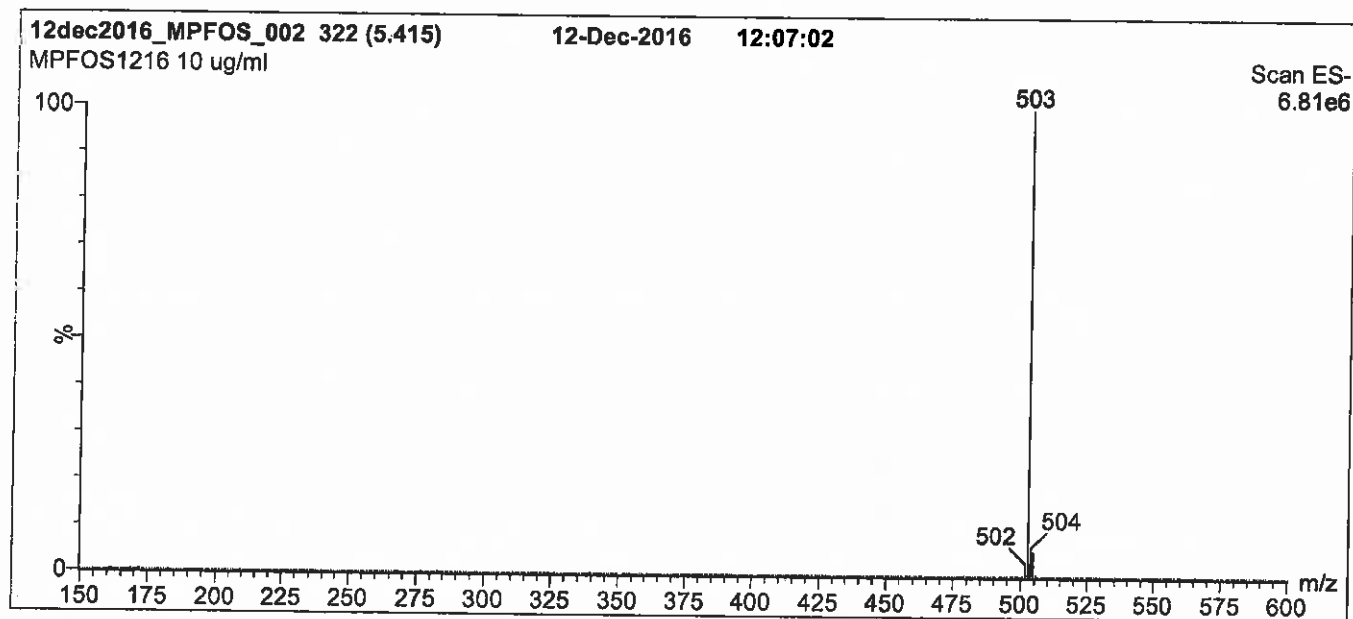
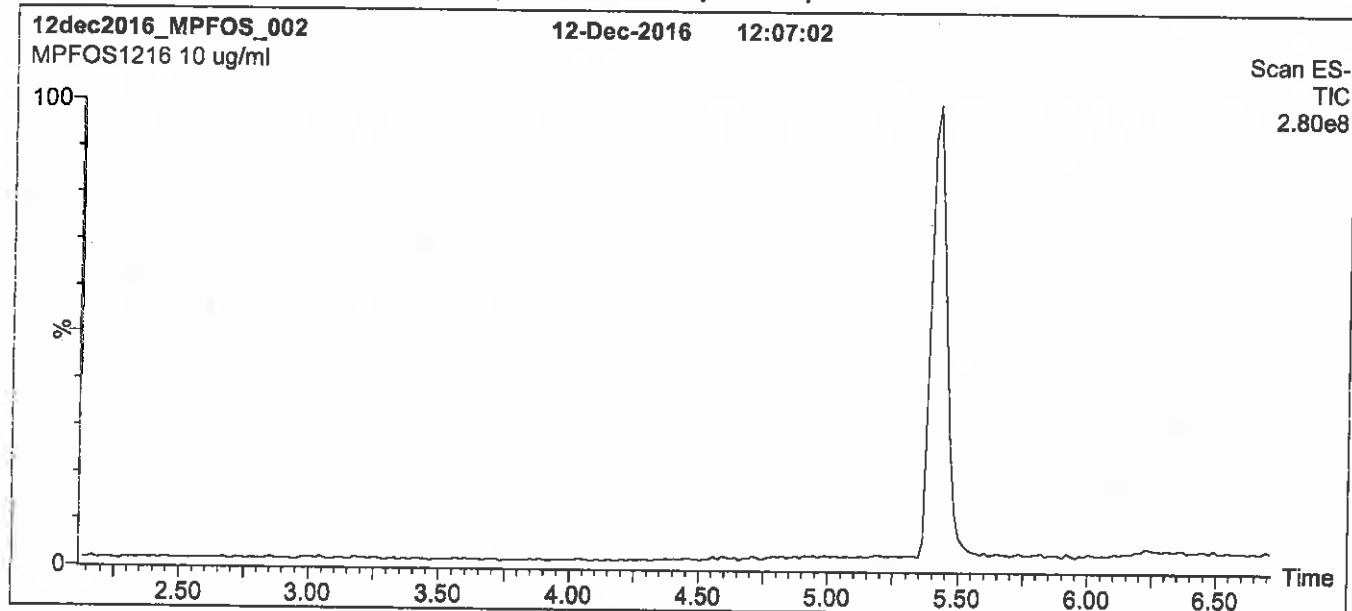
QUALITY MANAGEMENT:

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: 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 85% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

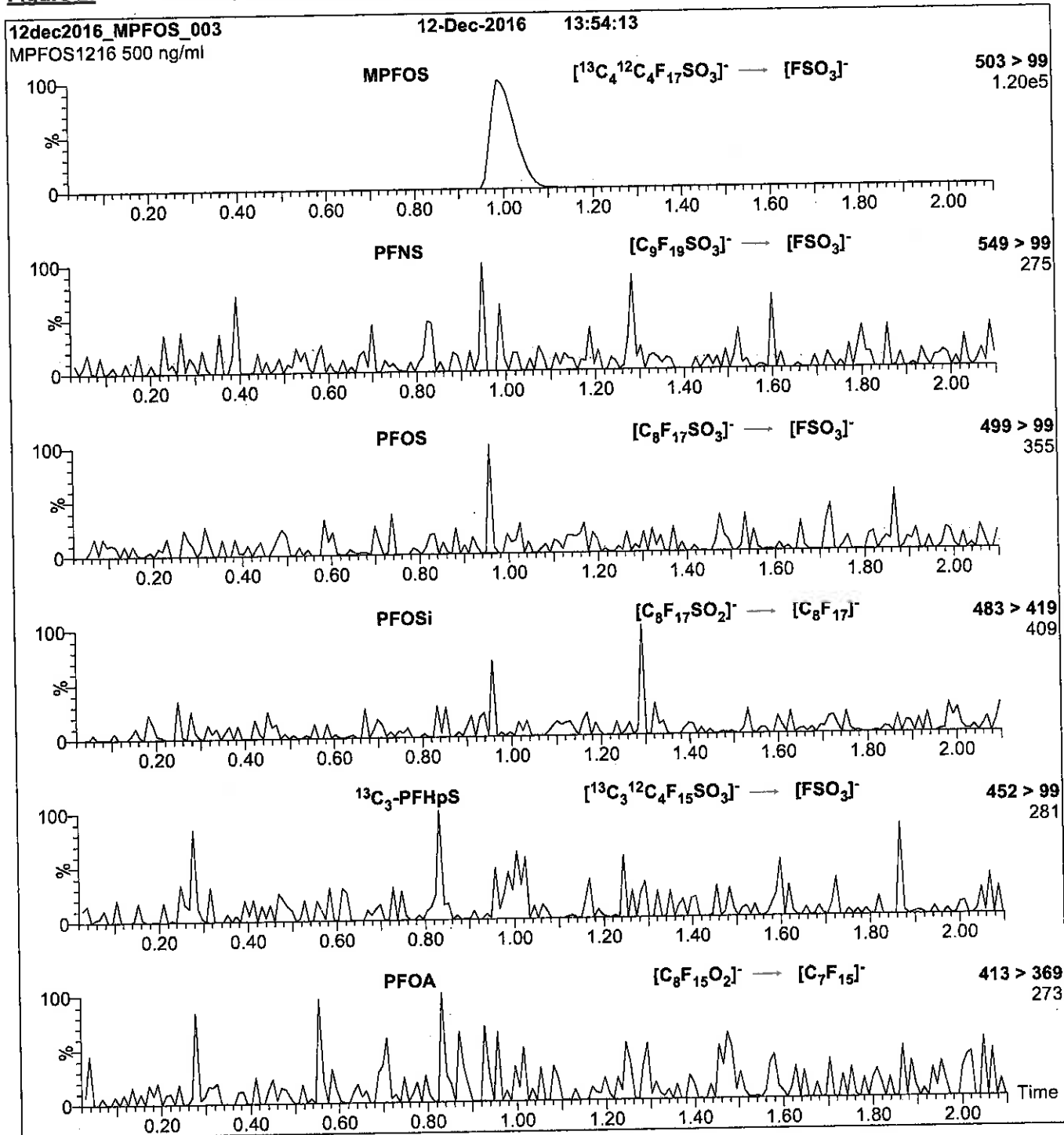
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 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) = 3.35e-3
Collision Energy (eV) = 40

Reagent

LCMPFOS_00023

n: 7/5/17 SKV

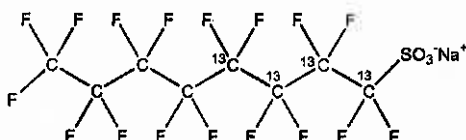


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0517
COMPOUND: Sodium perfluoro-1-[1,2,3,4-¹³C₄]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₄ ¹² C ₄ F ₁₇ SO ₃ Na	MOLECULAR WEIGHT:	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	SOLVENT(S):	Methanol
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C (1,2,3,4- ¹³ C ₄)
LAST TESTED: (mm/dd/yyyy)	05/19/2017		
EXPIRY DATE: (mm/dd/yyyy)	05/19/2022		
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 ~ 0.8% 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: 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.

HAZARDS:

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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:

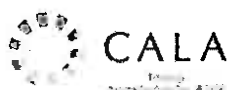
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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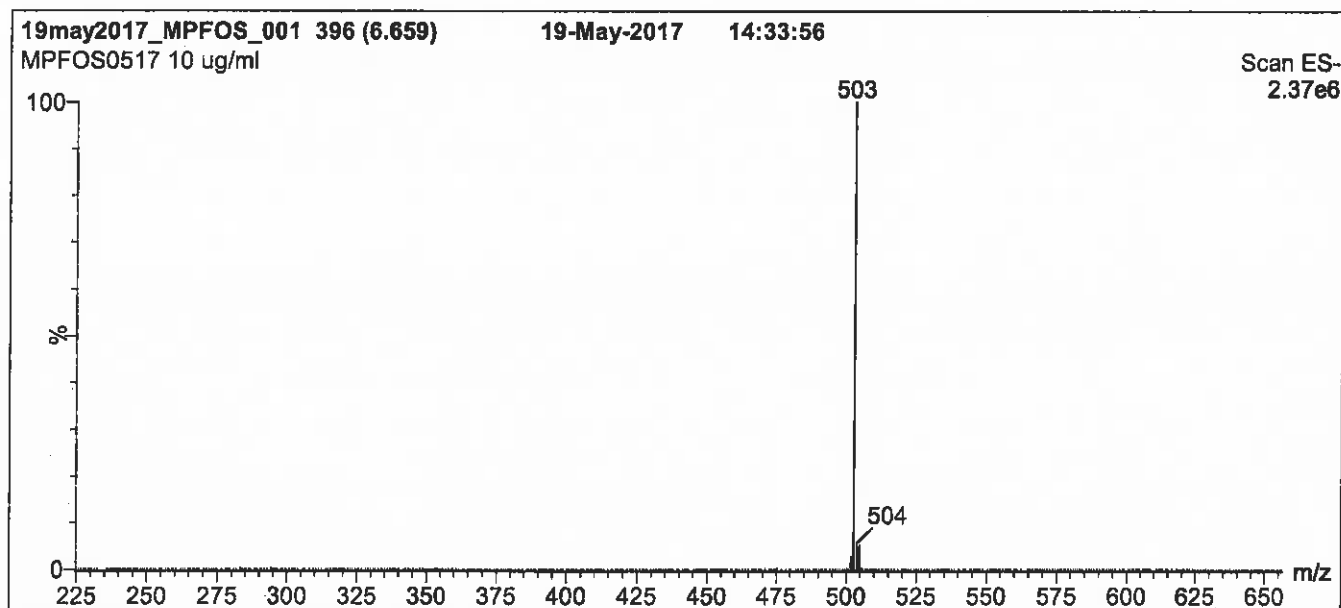
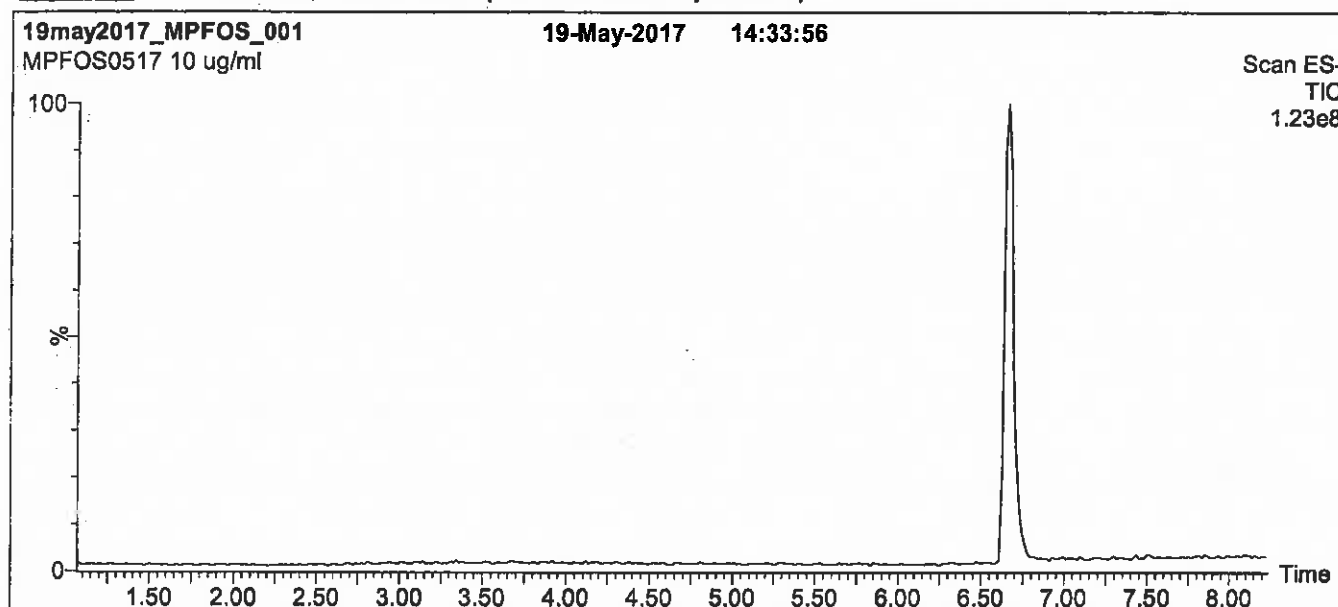
QUALITY MANAGEMENT:

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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 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)

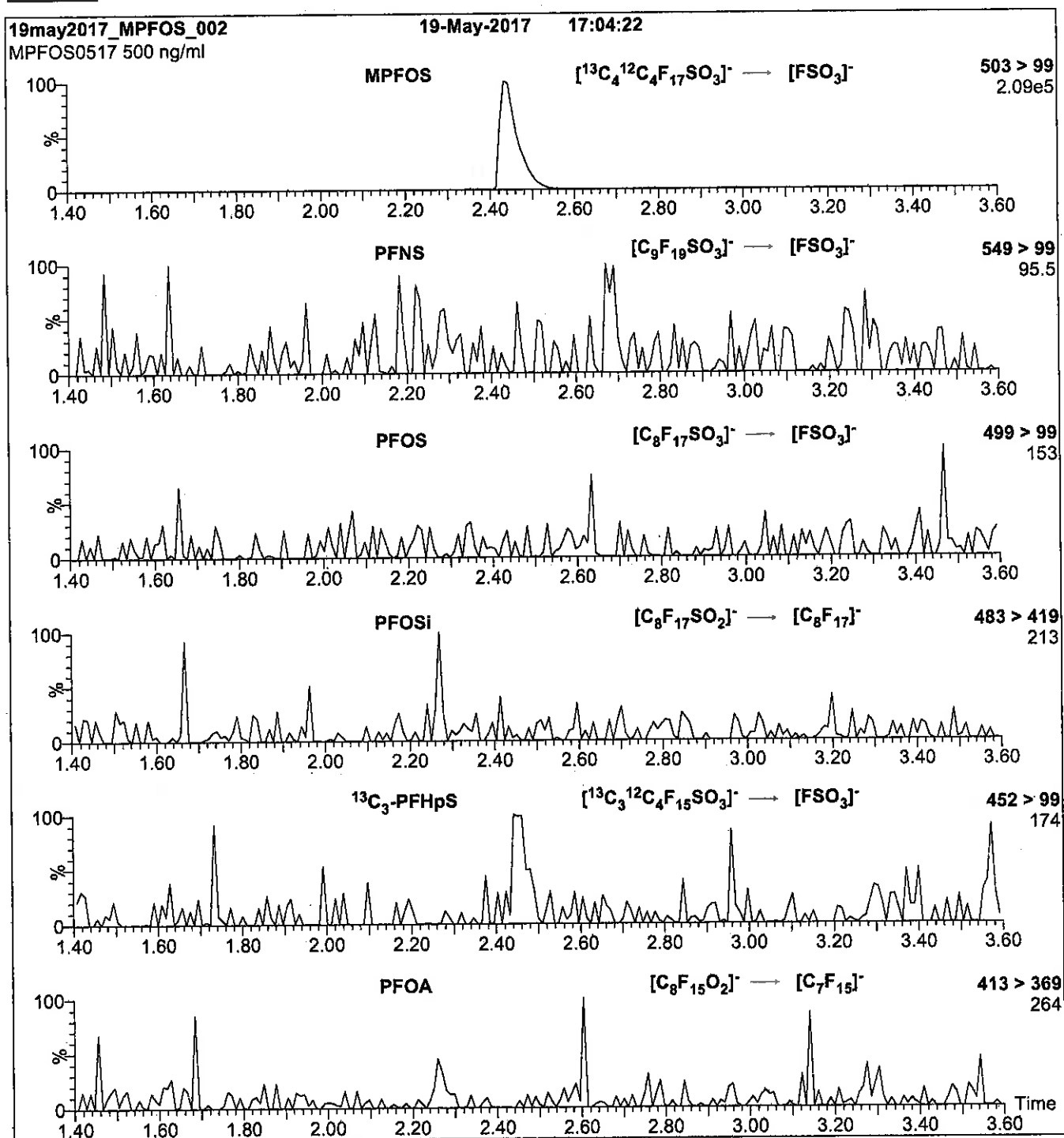
Capillary Voltage (kV) = 3.00

Cone Voltage (V) = 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) = $3.31\text{e-}3$
Collision Energy (eV) = 40

Reagent

LCMPFUdA_00011



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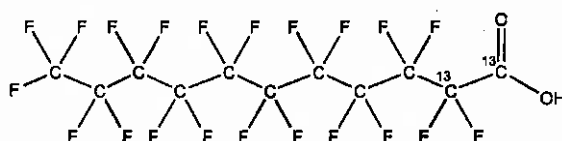
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFUdA
COMPOUND: Perfluoro-n-[1,2-¹³C₂]undecanoic acid

LOT NUMBER: MPFUdA1116

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%
LAST TESTED: (mm/dd/yyyy) 11/22/2016
EXPIRY DATE: (mm/dd/yyyy) 11/22/2021

ISOTOPIC PURITY: ≥99% ¹³C
(1,2-¹³C₂)

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.
- 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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EXPIRY DATE / PERIOD OF VALIDITY:

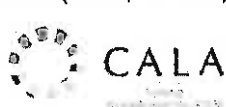
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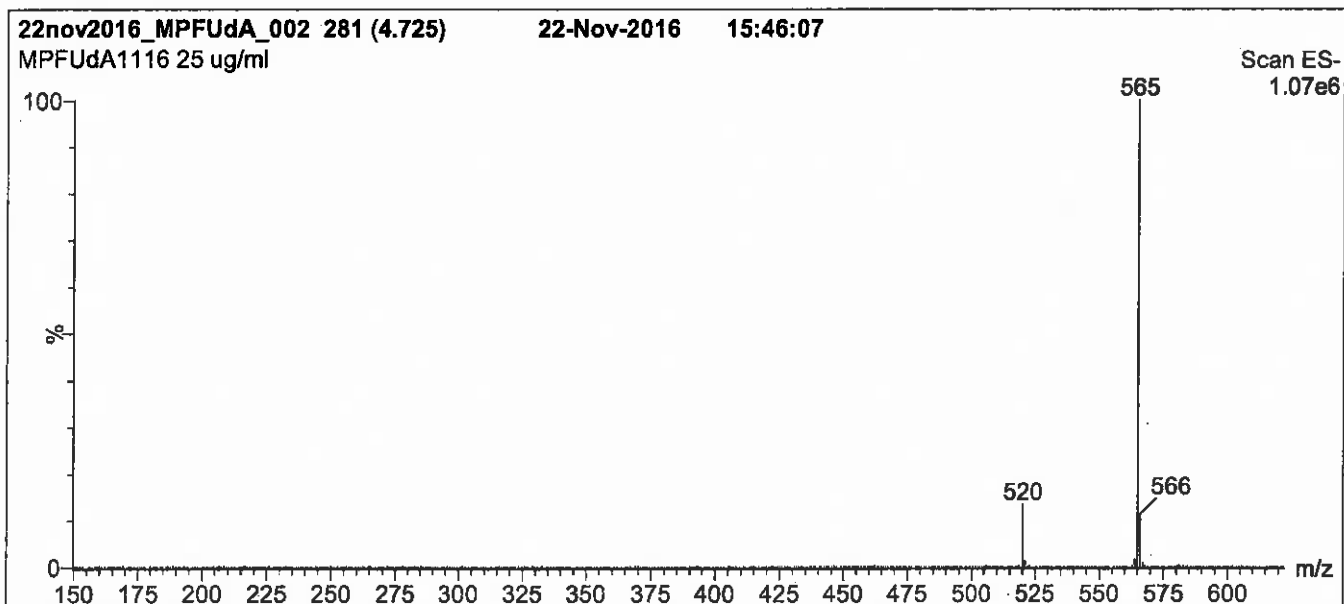
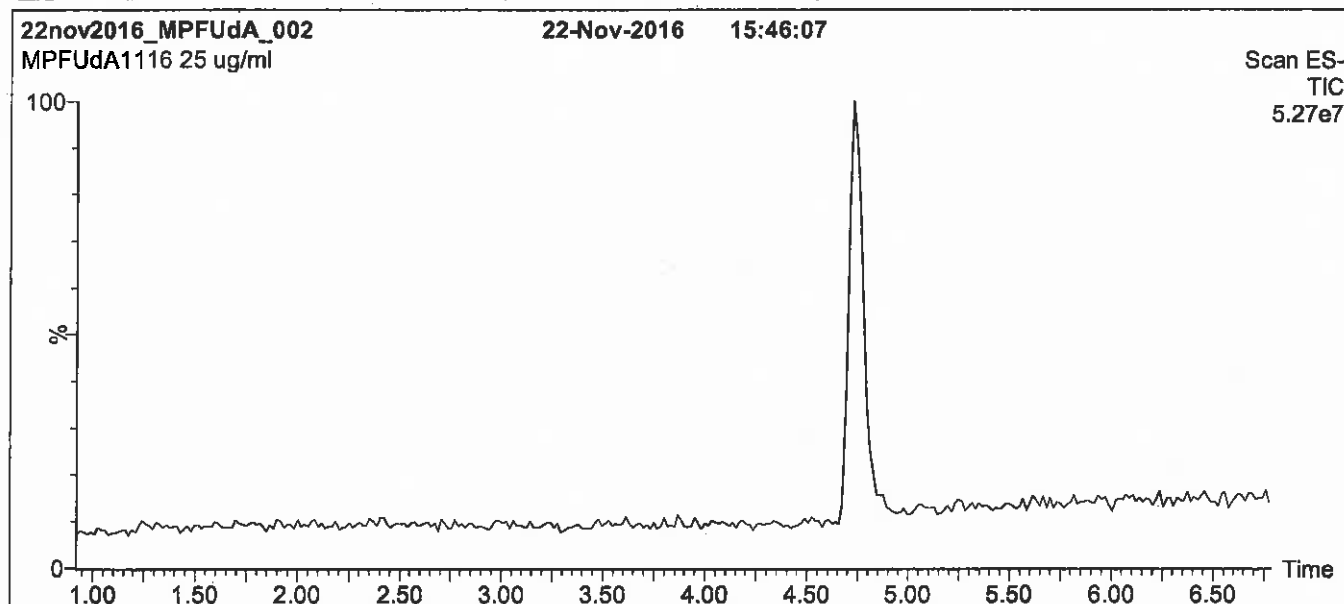
QUALITY MANAGEMENT:

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Figure 1: MPFUdA; 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

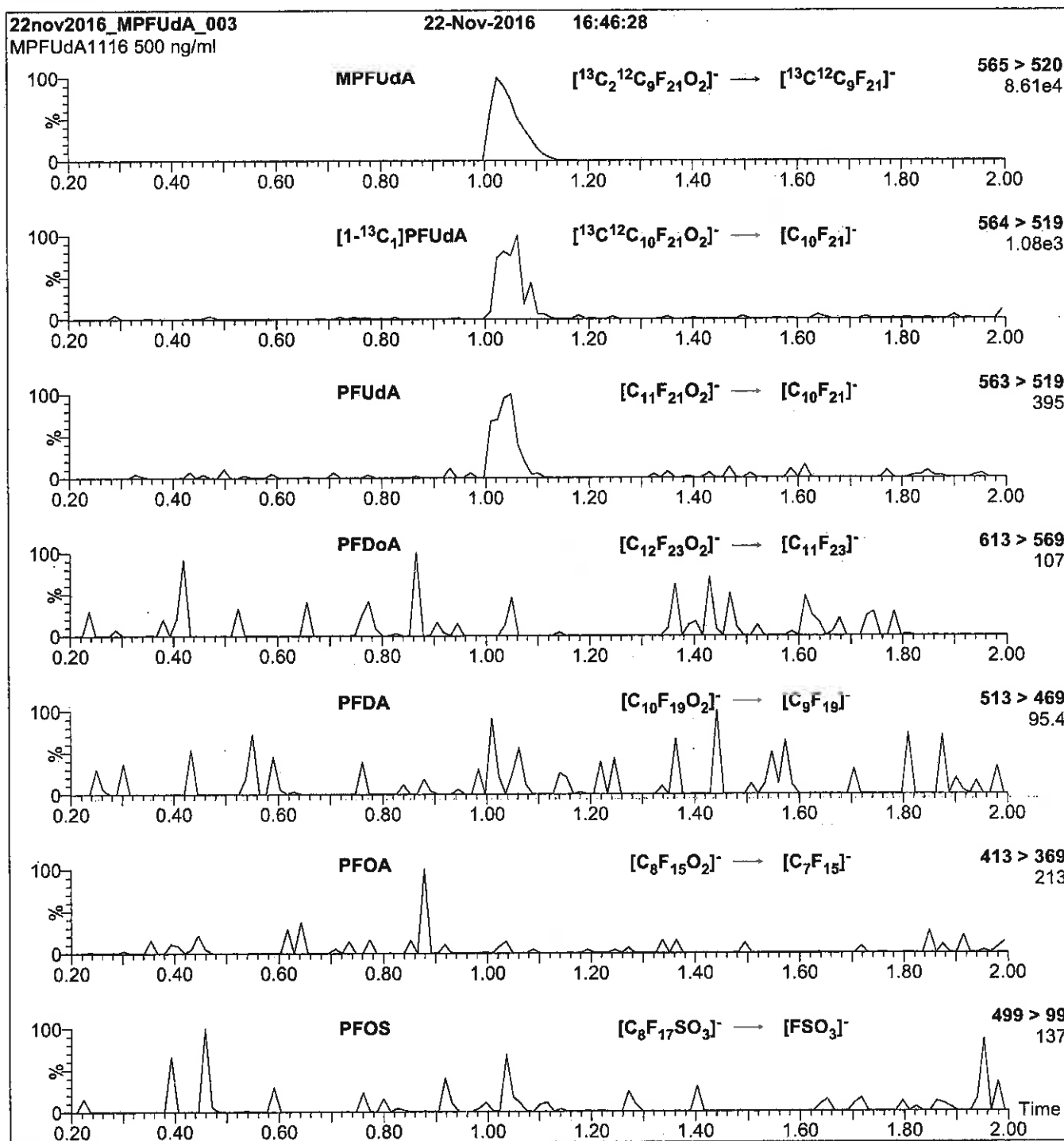
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 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

LCMPFUdA_00012

7: 7/5/17



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

MPFUdA

LOT NUMBER:

MPFUdA1116

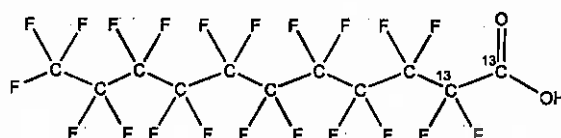
COMPOUND:

Perfluoro-n-[1,2-¹³C₂]undecanoic acid

STRUCTURE:

CAS #:

Not available



MOLECULAR FORMULA:

¹³C₂¹²C₉HF₂₁O₂

MOLECULAR WEIGHT:

566.08

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

ISOTOPIC PURITY:

≥99% ¹³C

LAST TESTED: (mm/dd/yyyy)

11/22/2016

(1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy)

11/22/2021

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.
- 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.

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Certified By:

B.G. Chittim

Date: 12/07/2016

(mm/dd/yyyy)

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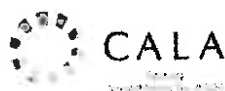
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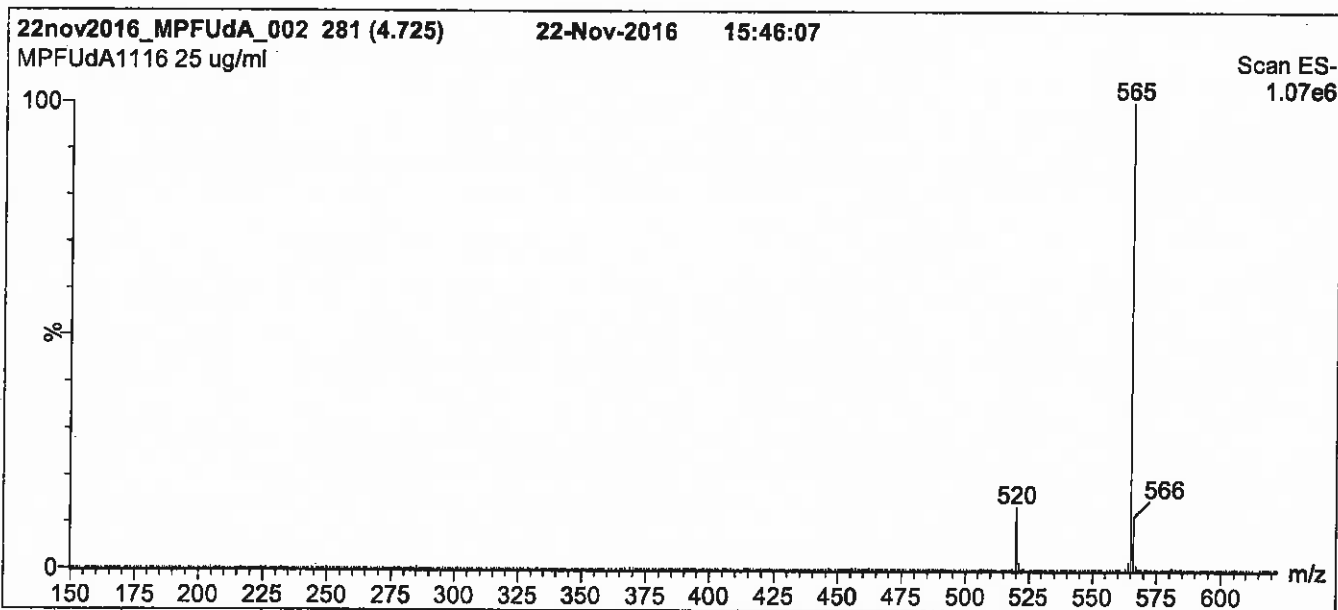
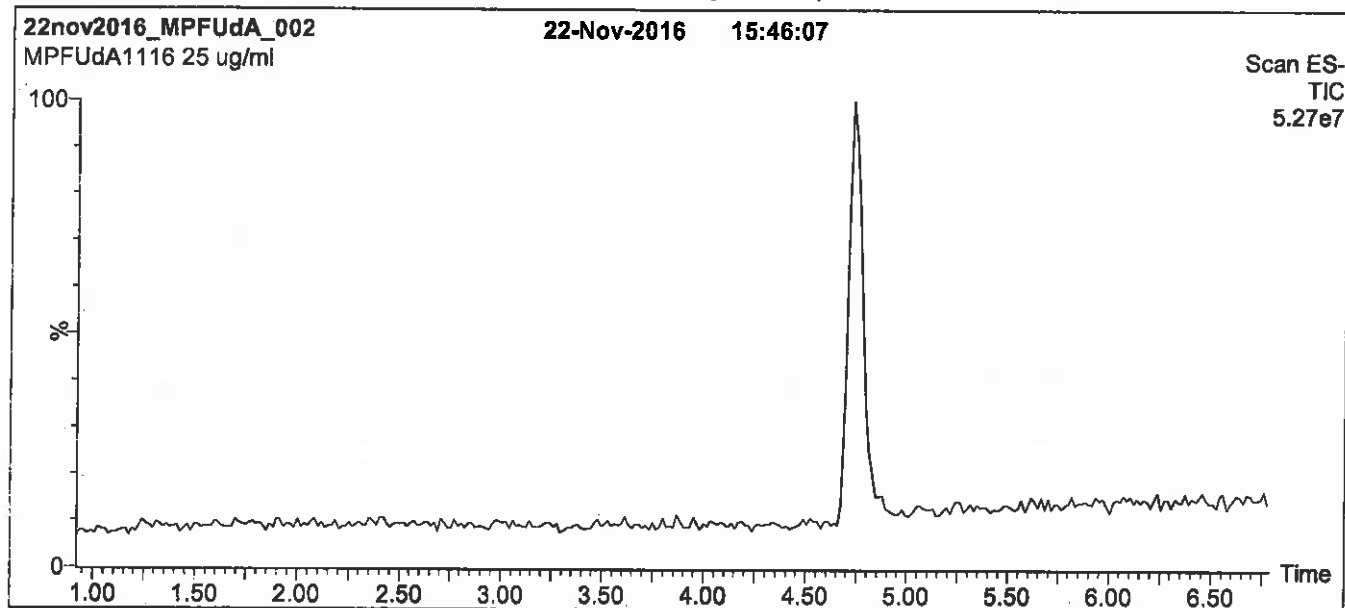
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Conditions for Figure 1:

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

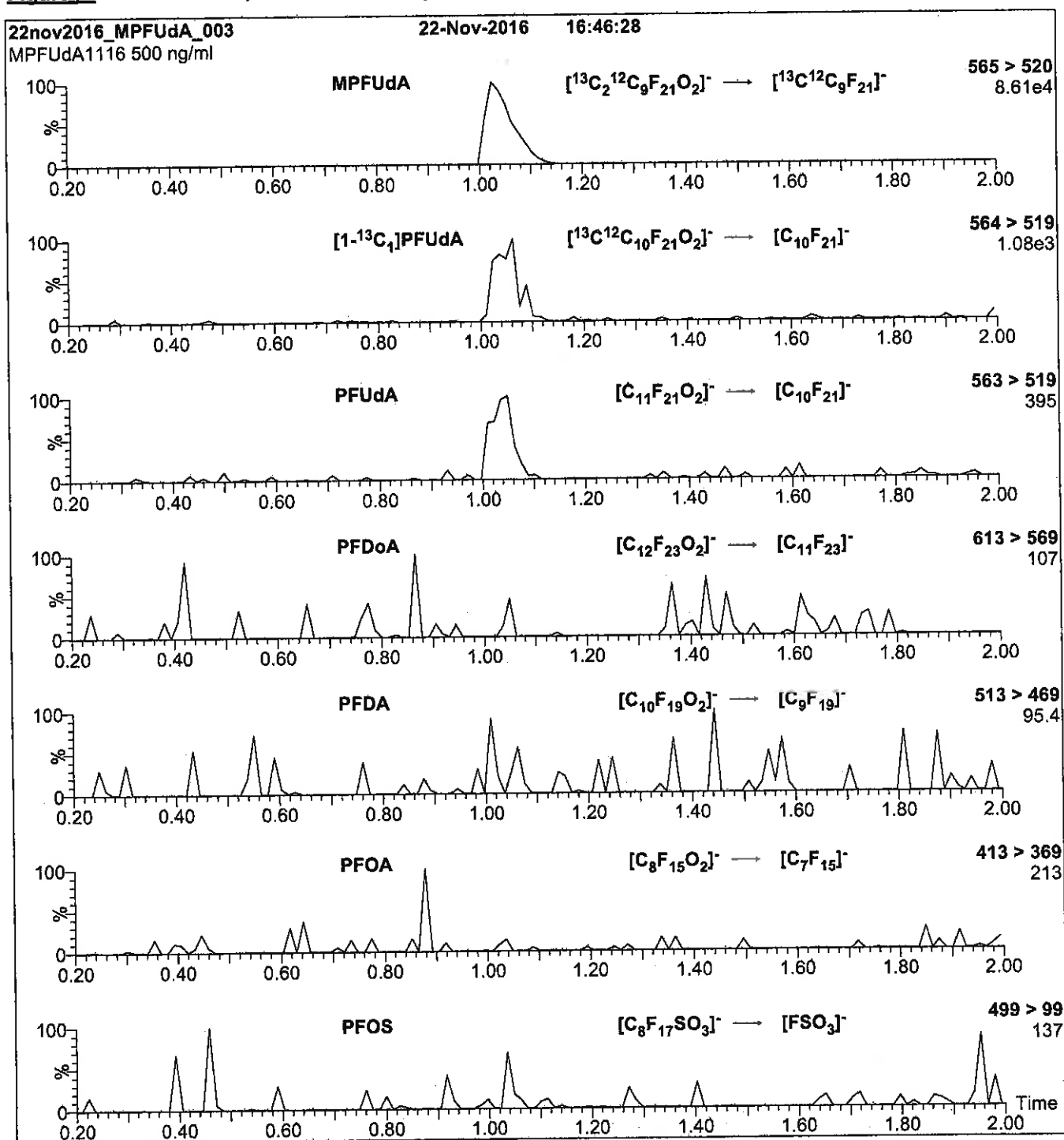
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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_00004

R: 12/29/16 SKV



WELLINGTON LABORATORIES

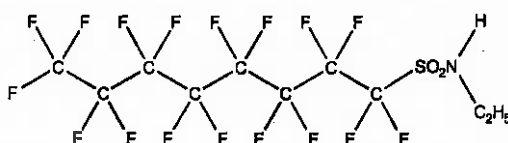
CERTIFICATE OF ANALYSIS DOCUMENTATION

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:

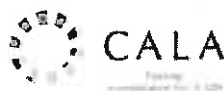
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

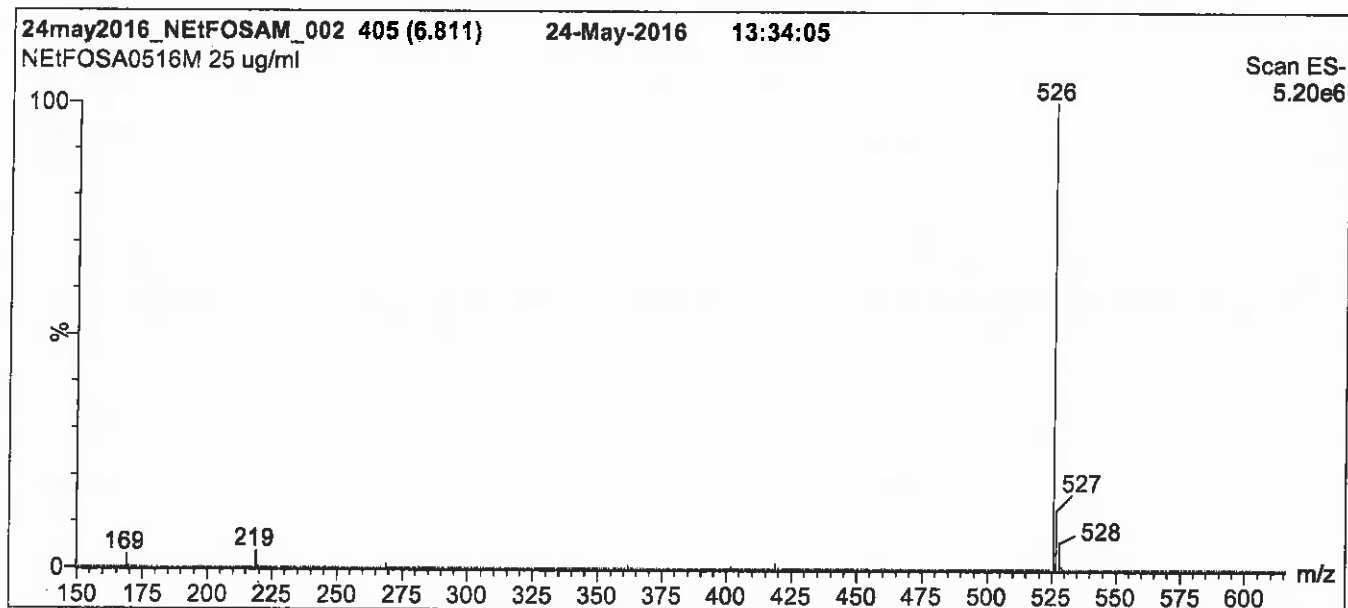
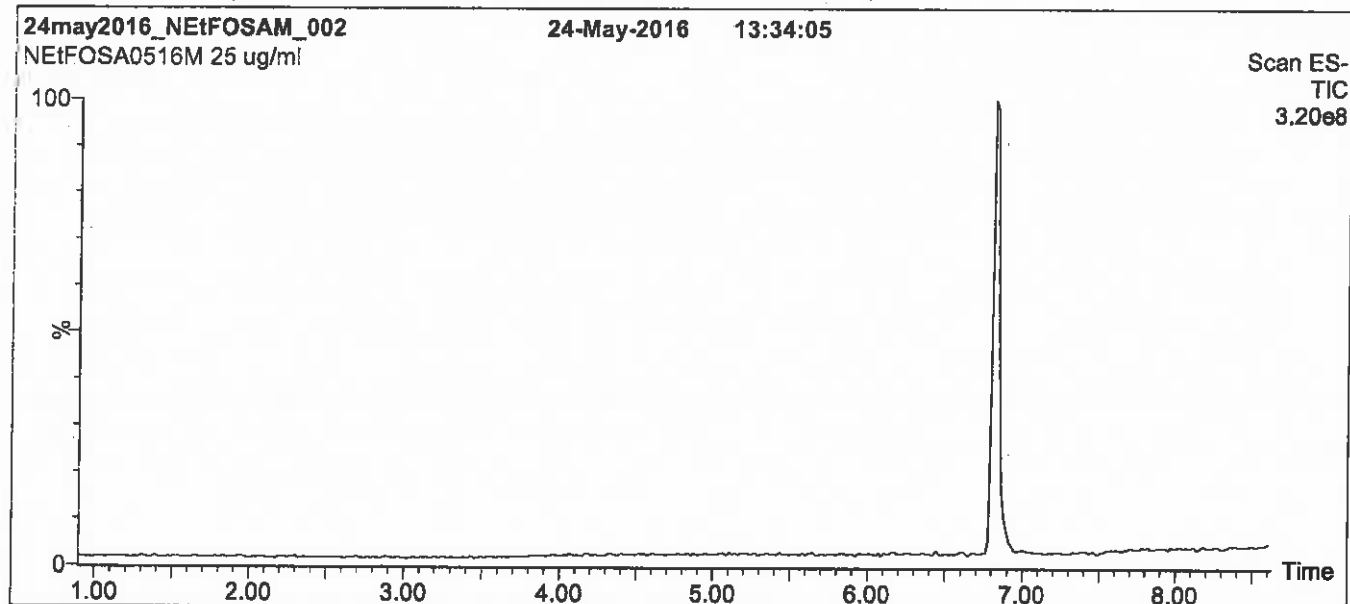
QUALITY MANAGEMENT:

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

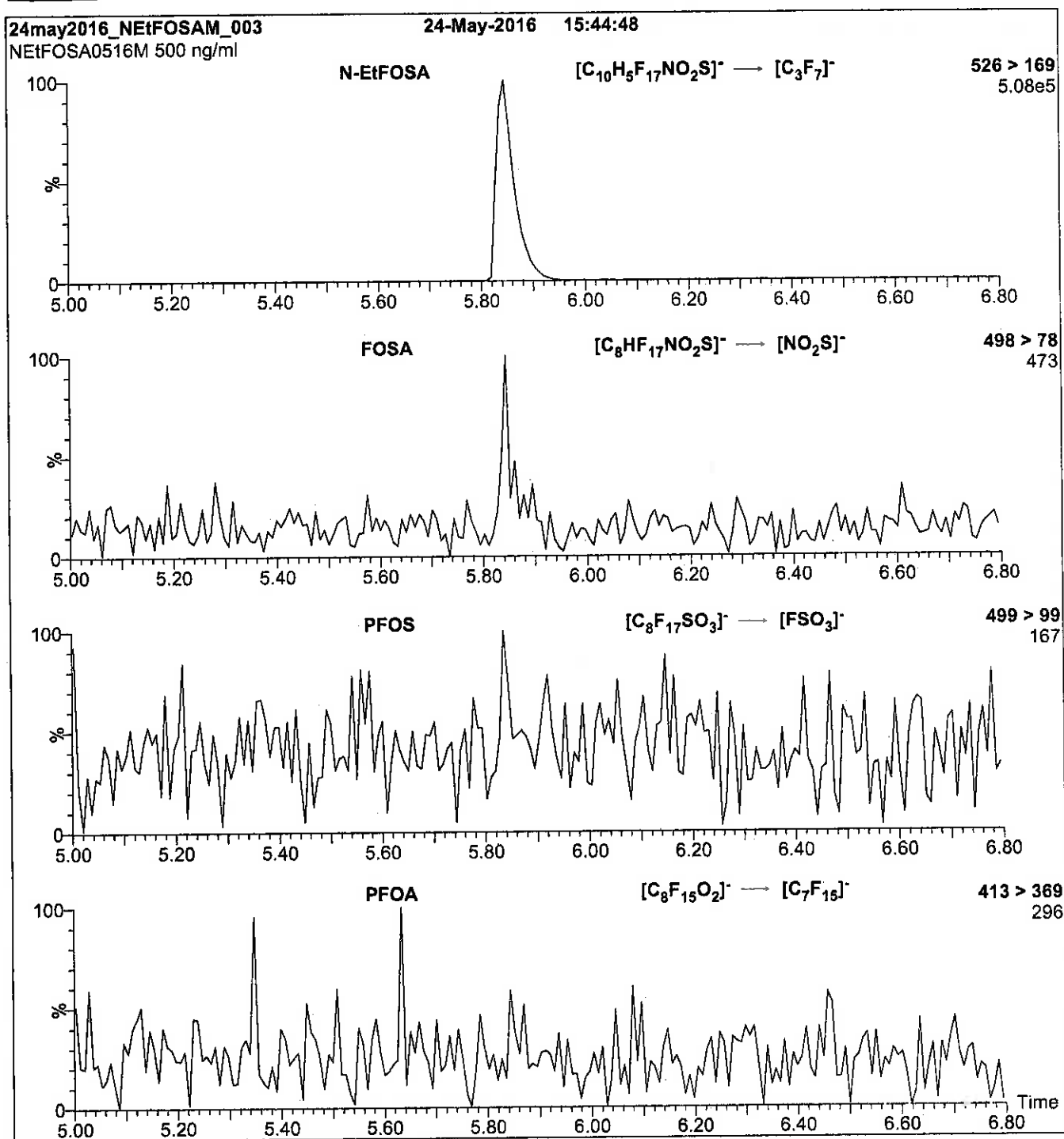
Flow: 300 μ l/min

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 µl (500 ng/ml N-EtFOSA-M)

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

Reagent

LCN-EtFOSAA_00002

R: 8/23/16 SBC



715561

ID: LCN-EtFOSAA_00002

Exp: 01/20/21 Ppd: SBC

N-EtFOSAA



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-EtFOSAA

LOT NUMBER:

NEtFOSAA0116

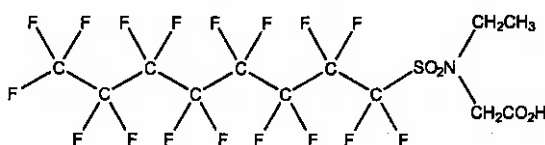
COMPOUND:

N-ethylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:

CAS #:

2991-50-6



MOLECULAR FORMULA:

C₁₂H₈F₁₇NO₄S

MOLECULAR WEIGHT:

585.23

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

01/20/2016

EXPIRY DATE: (mm/dd/yyyy)

01/20/2021

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: 01/21/2016

(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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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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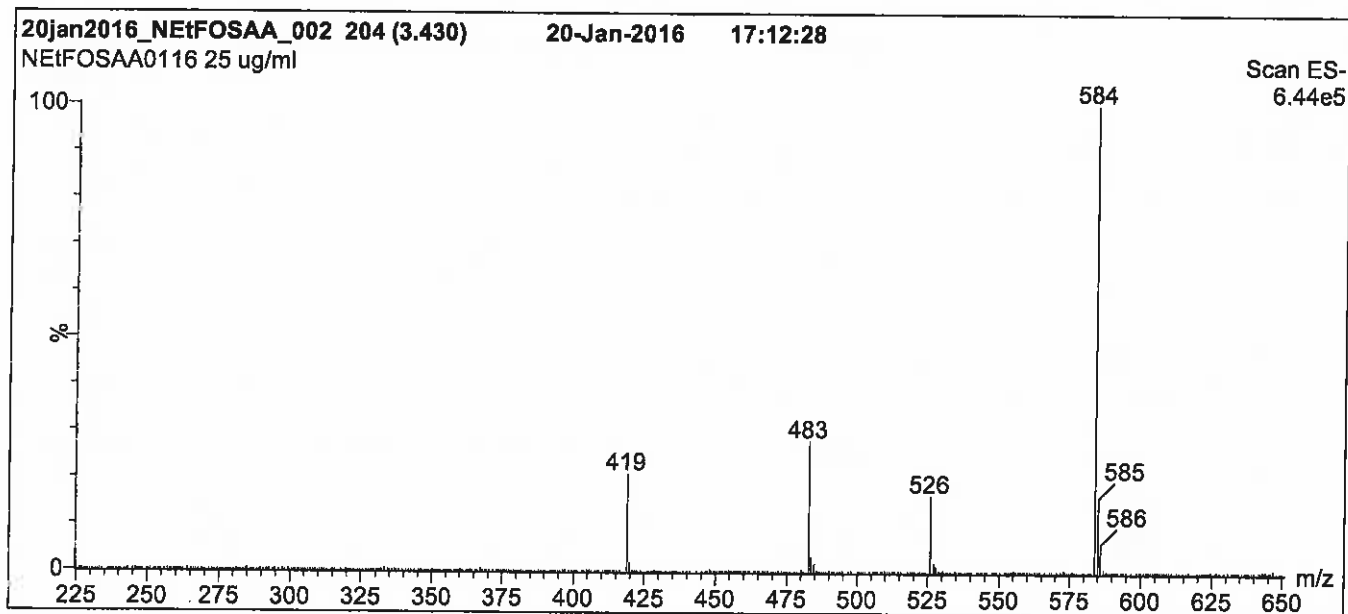
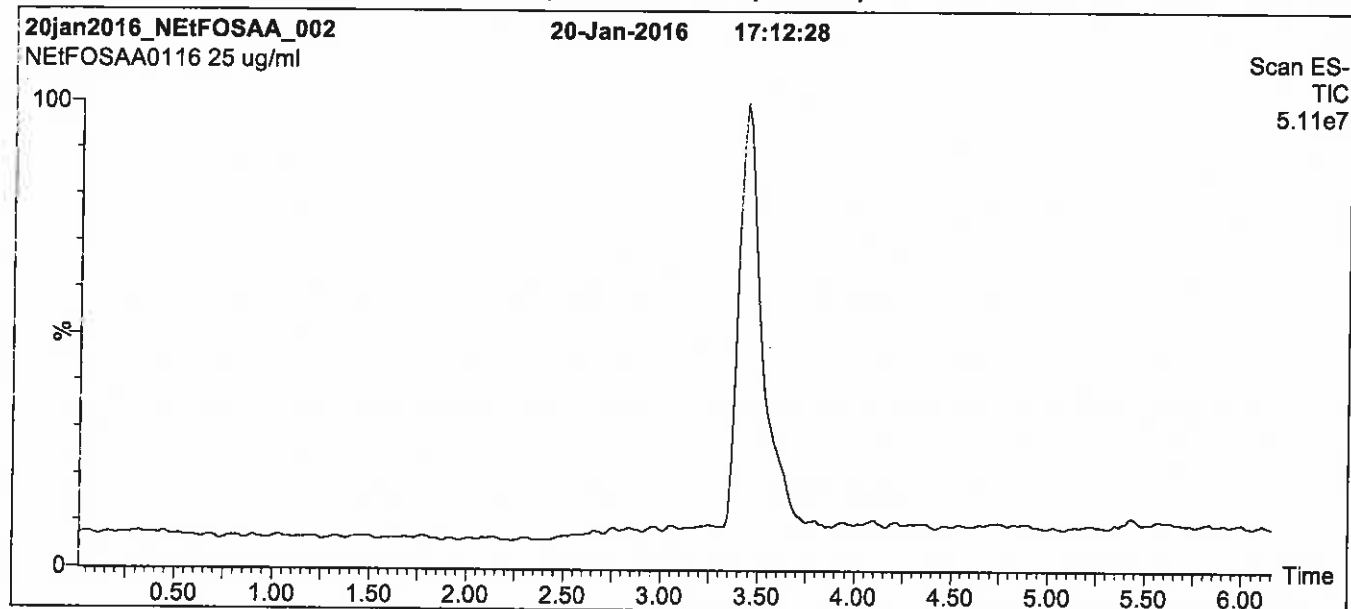
QUALITY MANAGEMENT:

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-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

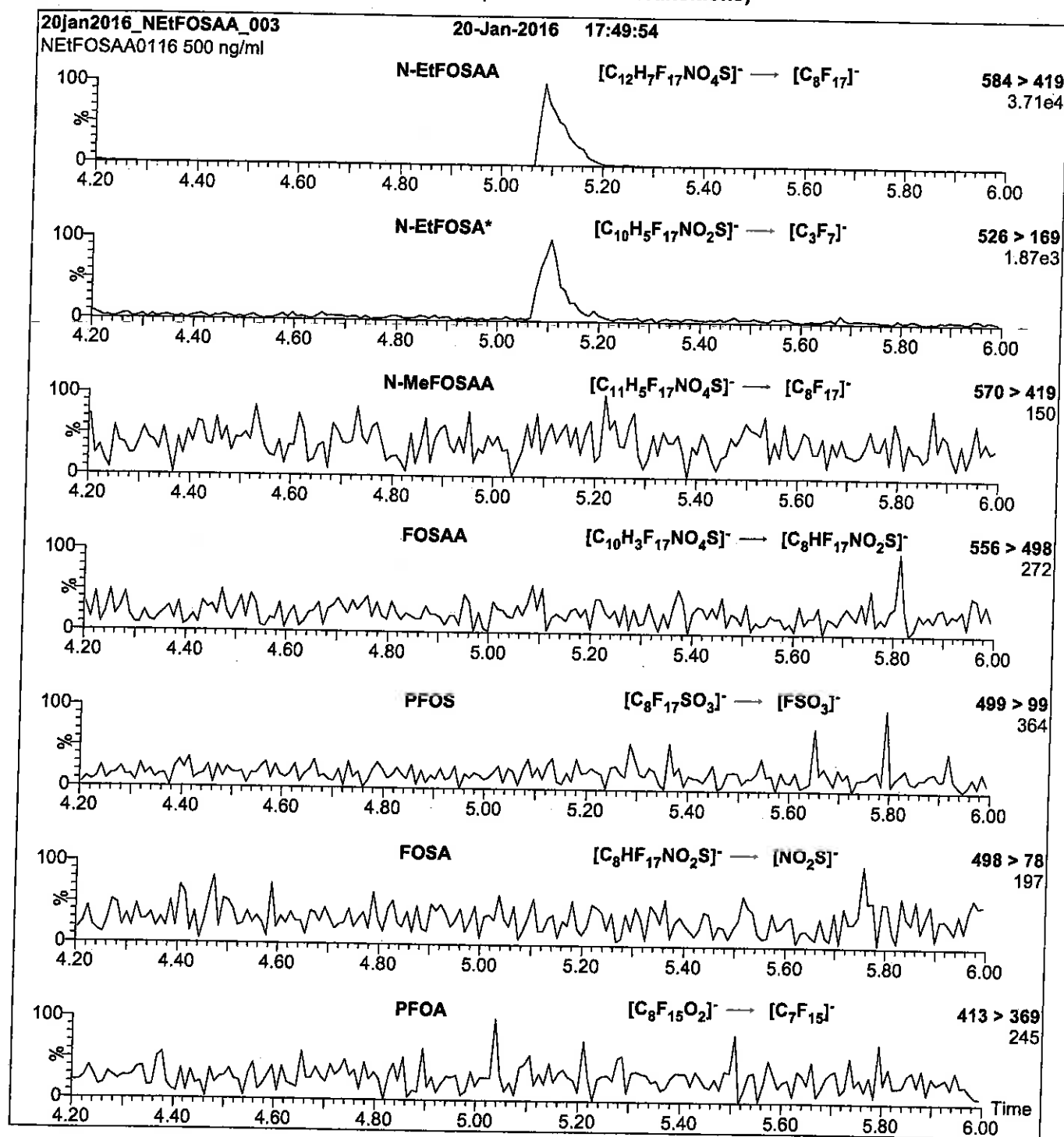
Flow: 300 μ l/min

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: 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% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 25

Reagent

LCN-EtFOSAA_00003

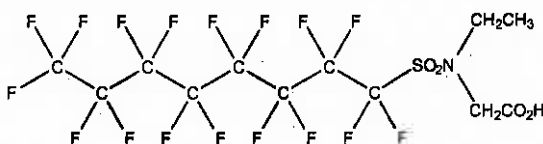


WELLINGTON LABORATORIES

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:

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HAZARDS:

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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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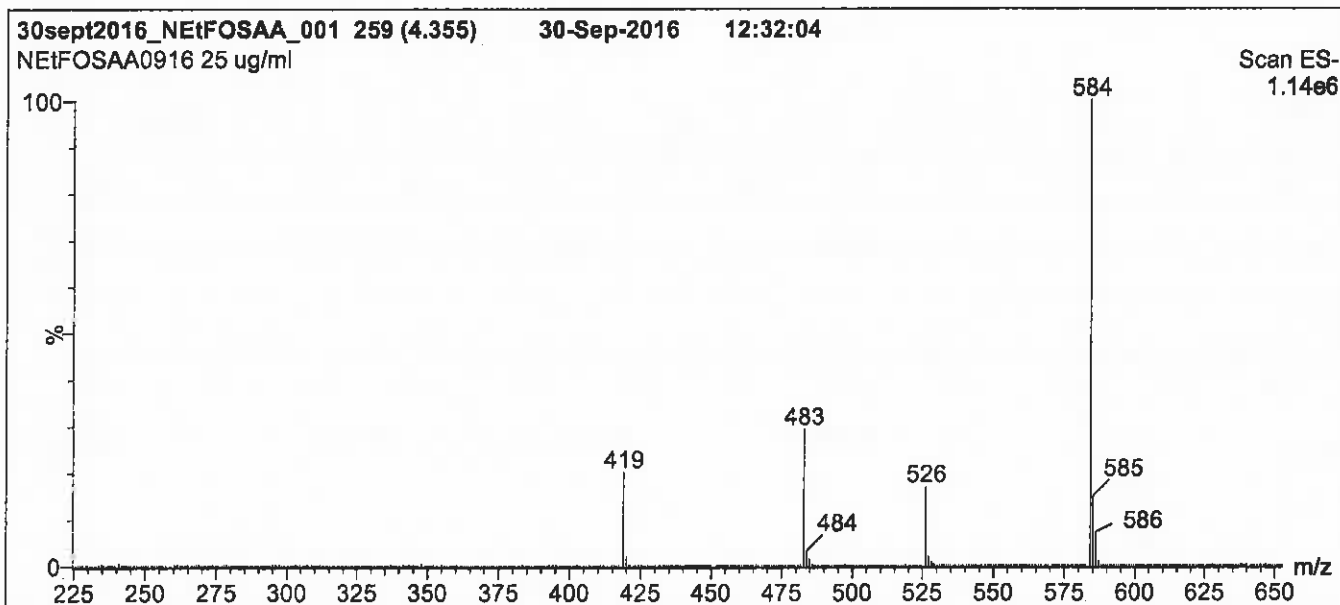
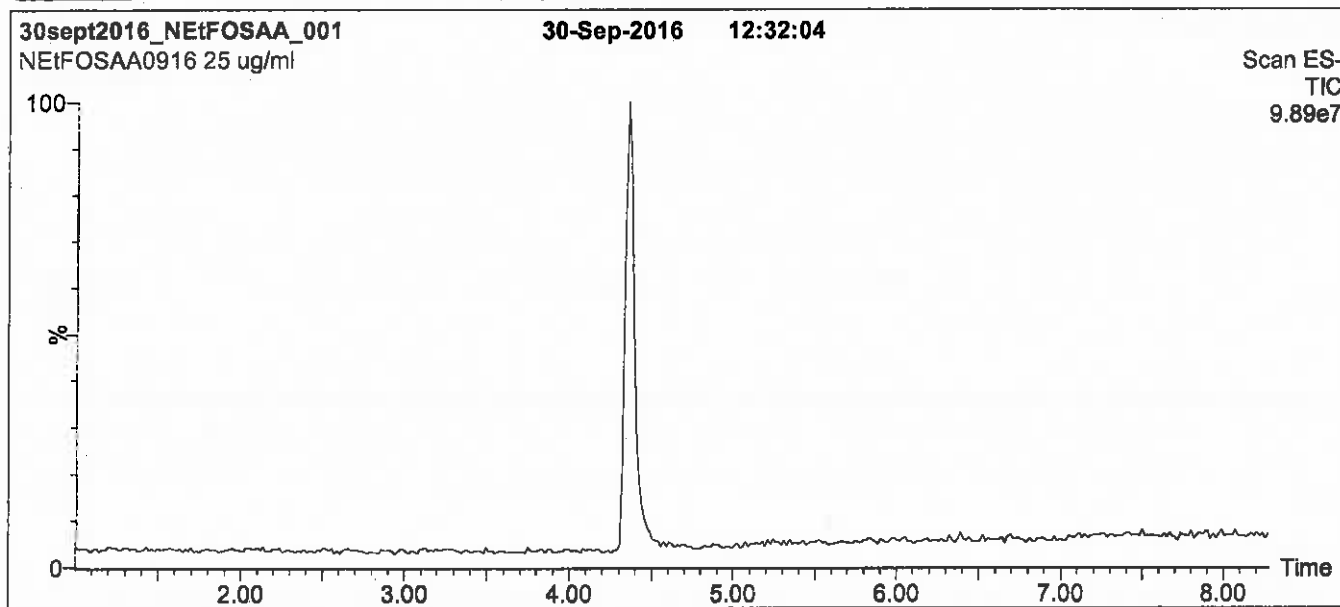
QUALITY MANAGEMENT:

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Figure 1: 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

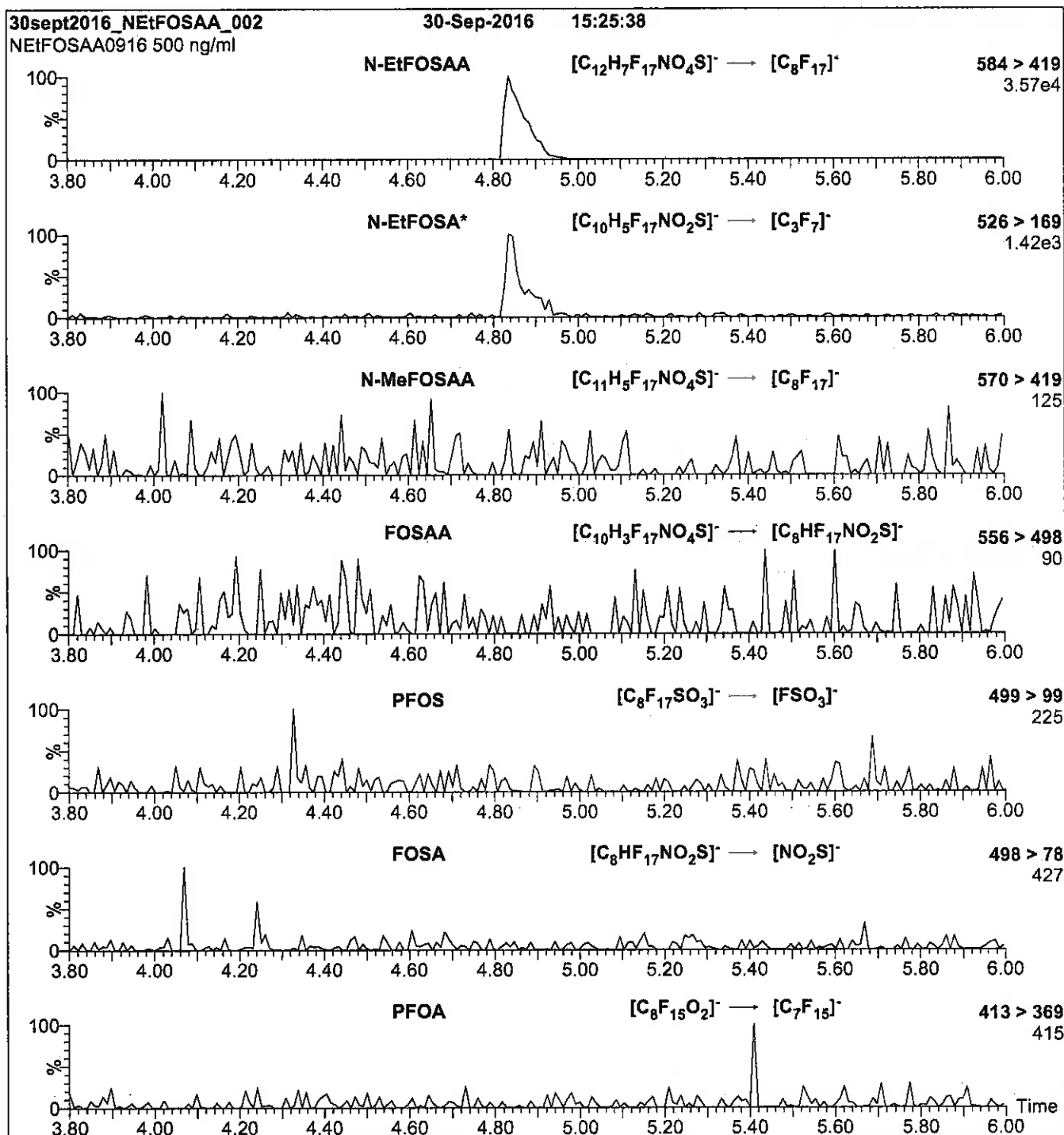
Flow: 300 μ l/min

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_00003



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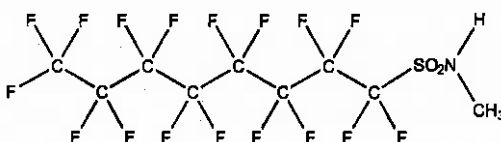
CERTIFICATE OF ANALYSIS DOCUMENTATION

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
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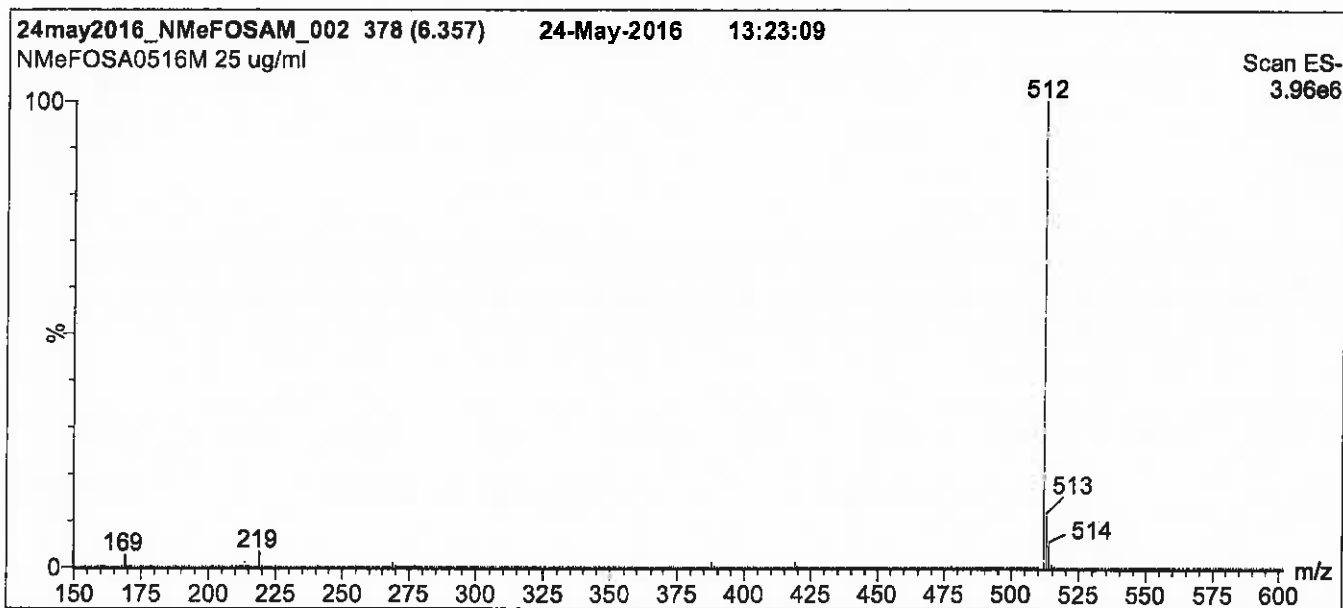
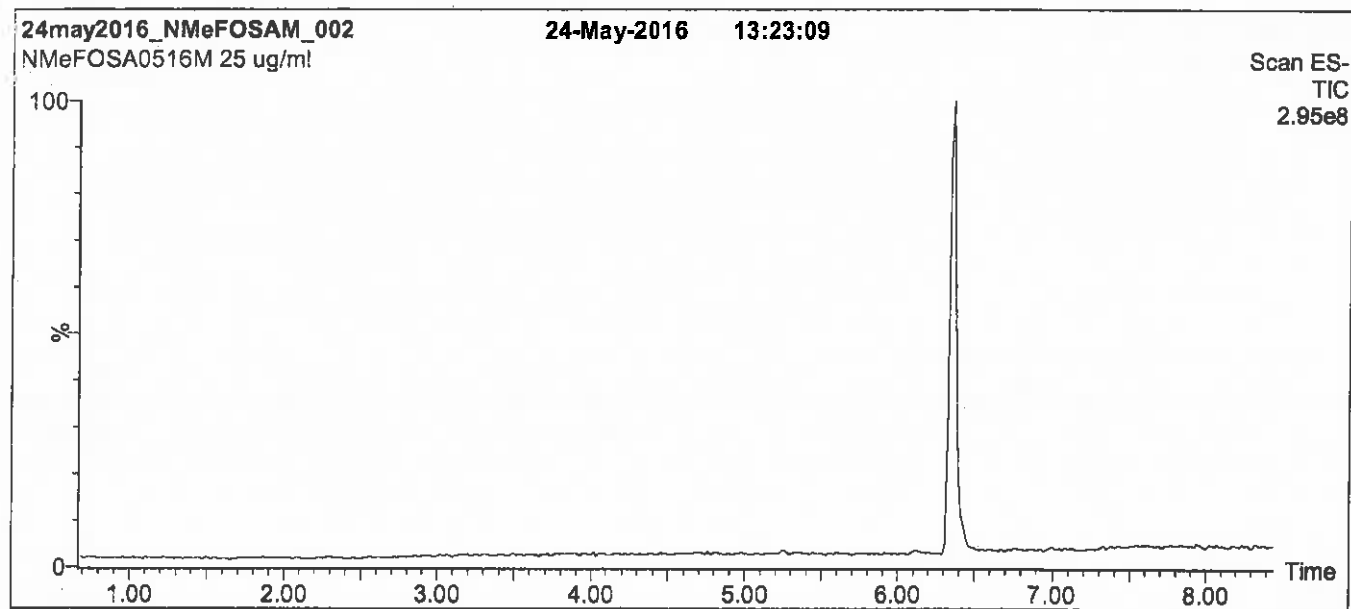
QUALITY MANAGEMENT:

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).



****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-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

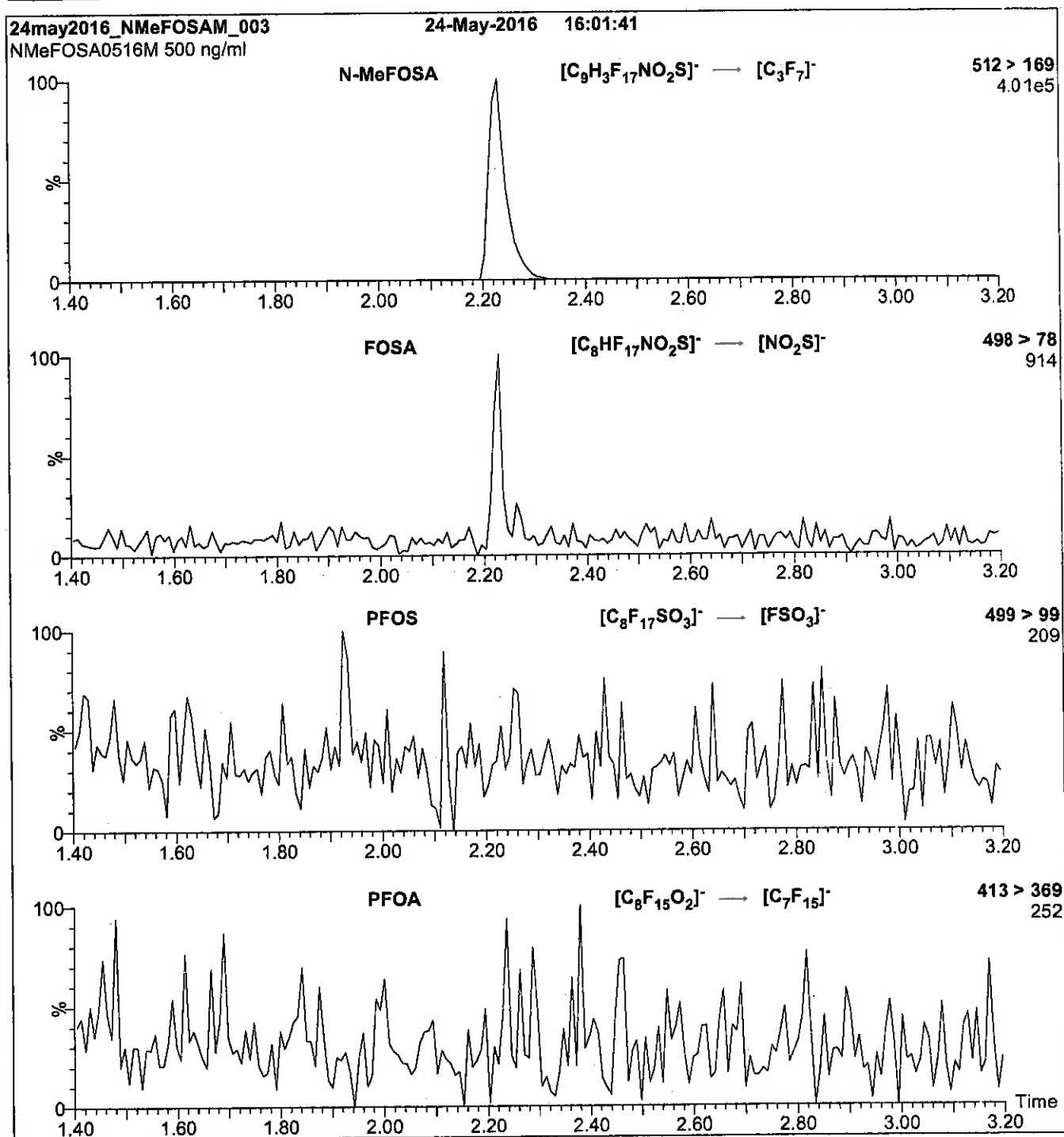
Flow: 300 μ l/min

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_00003

R: 8/23/16 SAE



715562

ID: LCN-MeFOSAA_00003

Exp: 01/20/21 Prod: SEC

N-MeFOSAA



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

N-MeFOSAA

LOT NUMBER:

NMeFOSAA0116

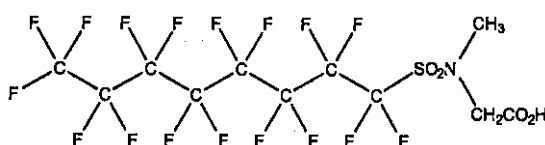
COMPOUND:

N-methylperfluoro-1-octanesulfonamidoacetic acid

STRUCTURE:

CAS #:

2355-31-9



MOLECULAR FORMULA:

C₁₁H₈F₁₇NO₄S

MOLECULAR WEIGHT:

571.21

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

01/20/2016

EXPIRY DATE: (mm/dd/yyyy)

01/20/2021

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: 01/21/2016

(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:

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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:

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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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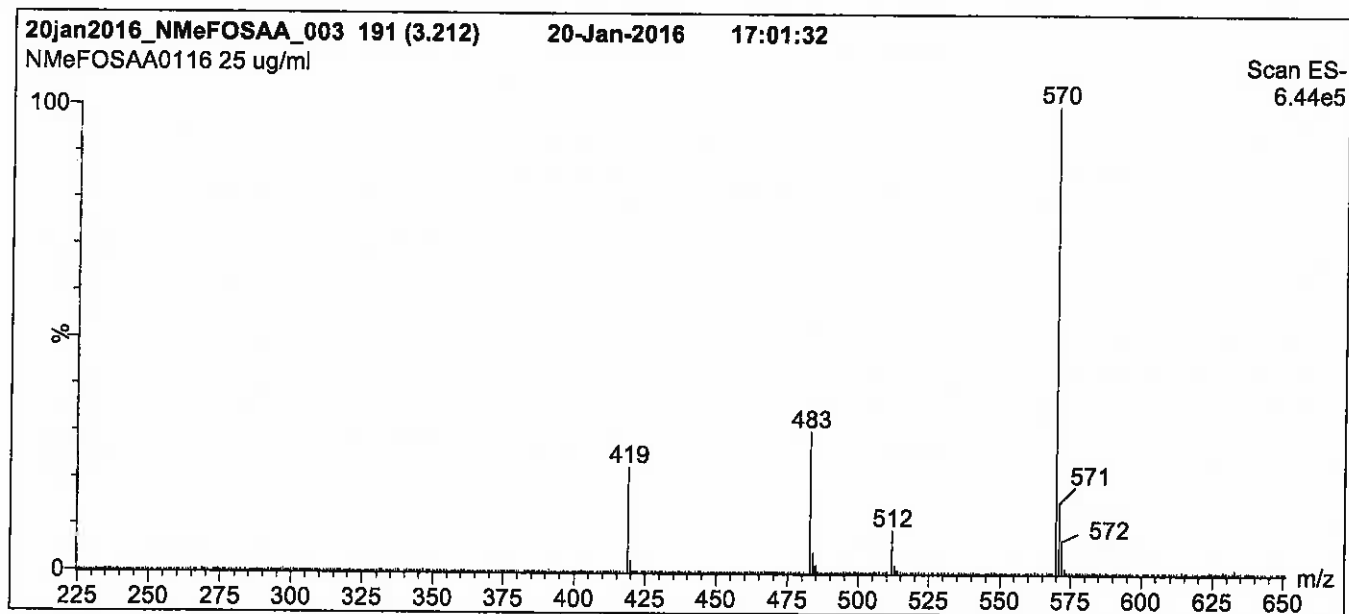
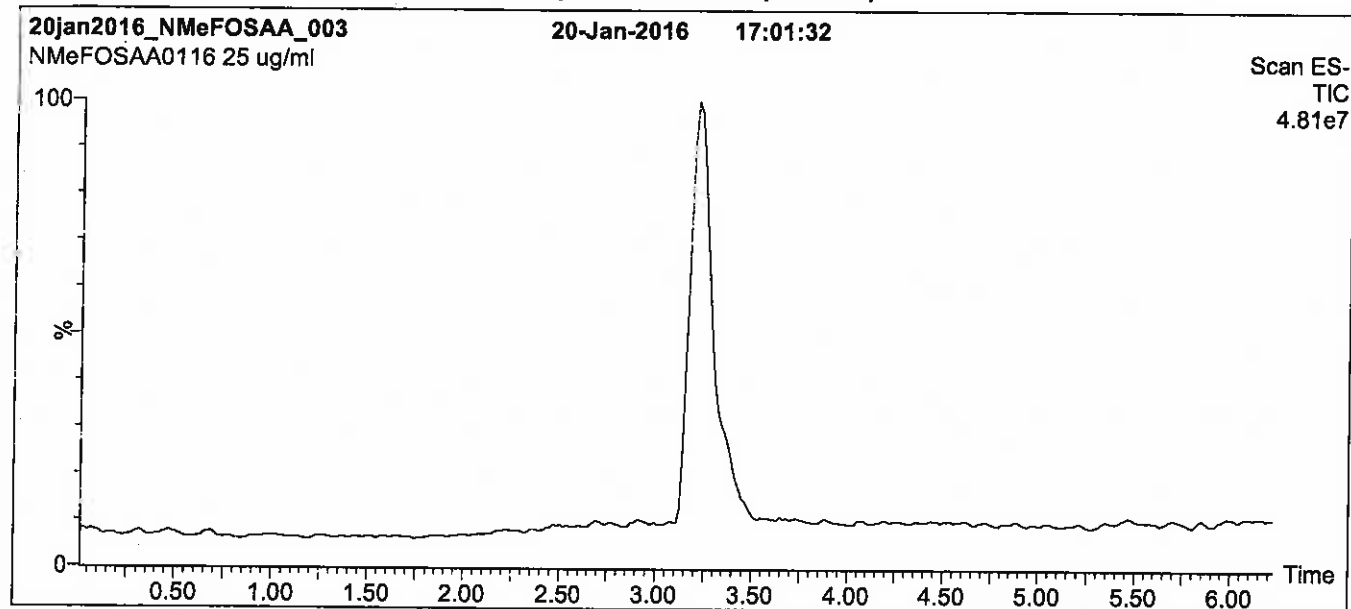
QUALITY MANAGEMENT:

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Figure 1: 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

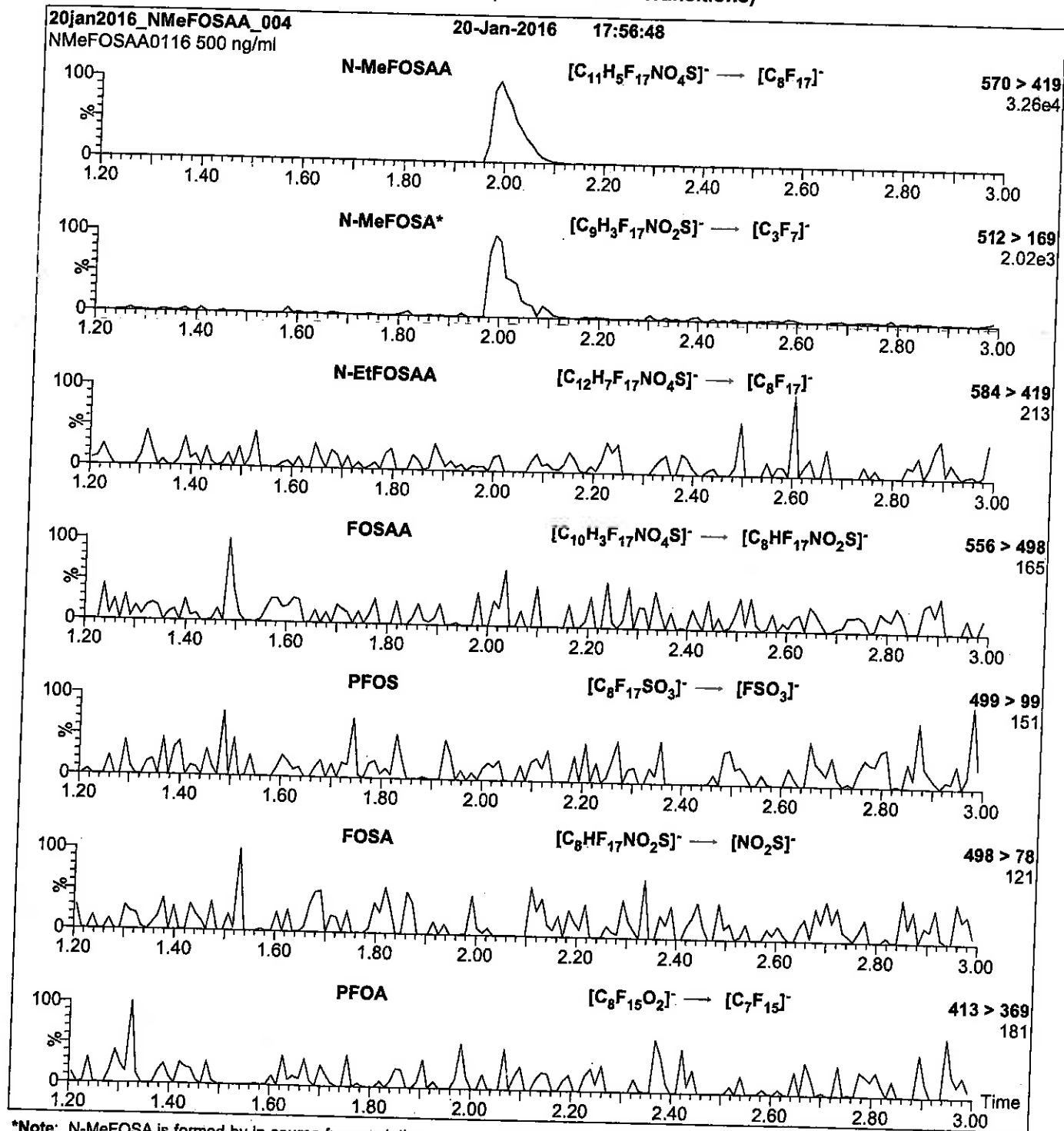
Flow: 300 μ l/min

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: 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% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 25

Reagent

LCN-MeFOSAA_00004

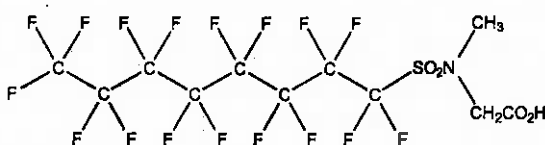


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

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

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



MOLECULAR FORMULA: $C_{11}H_8F_{17}NO_4S$ **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:

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

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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:

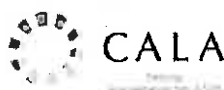
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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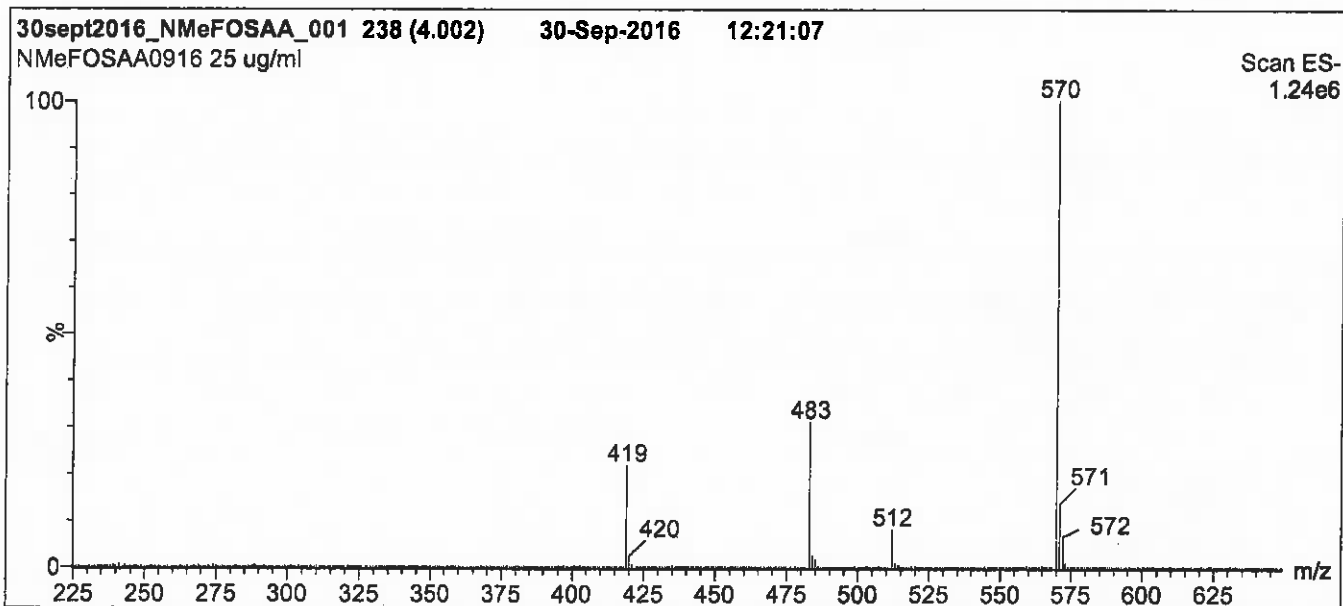
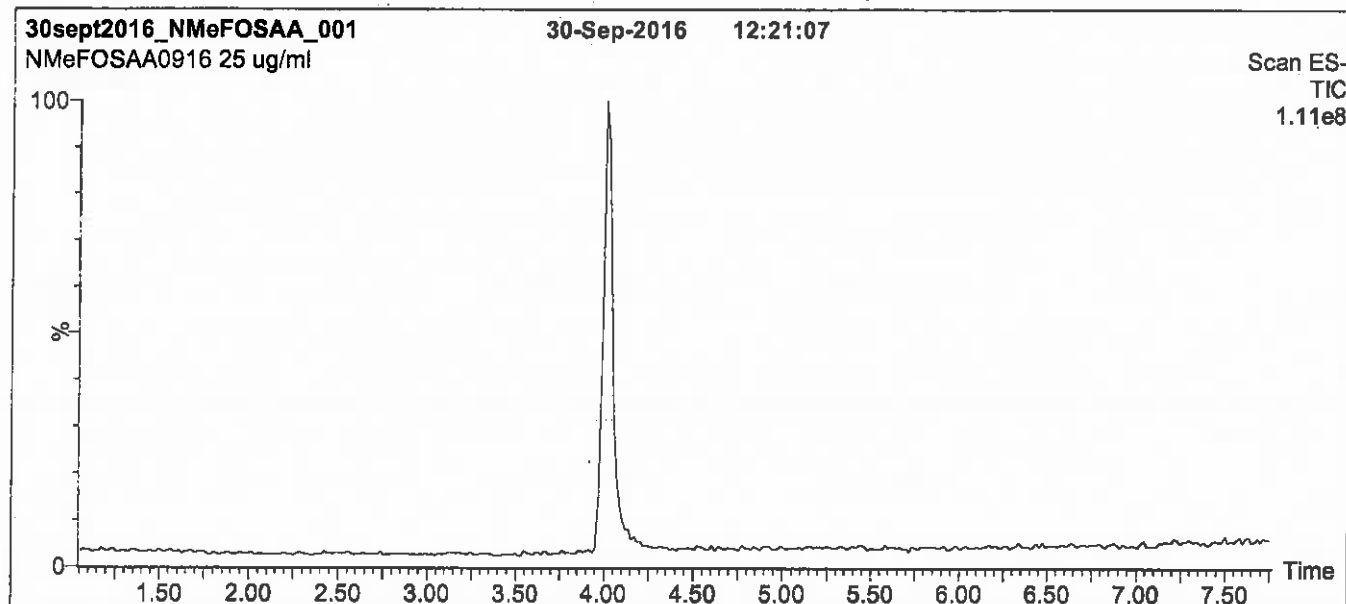
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Figure 1: N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)



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

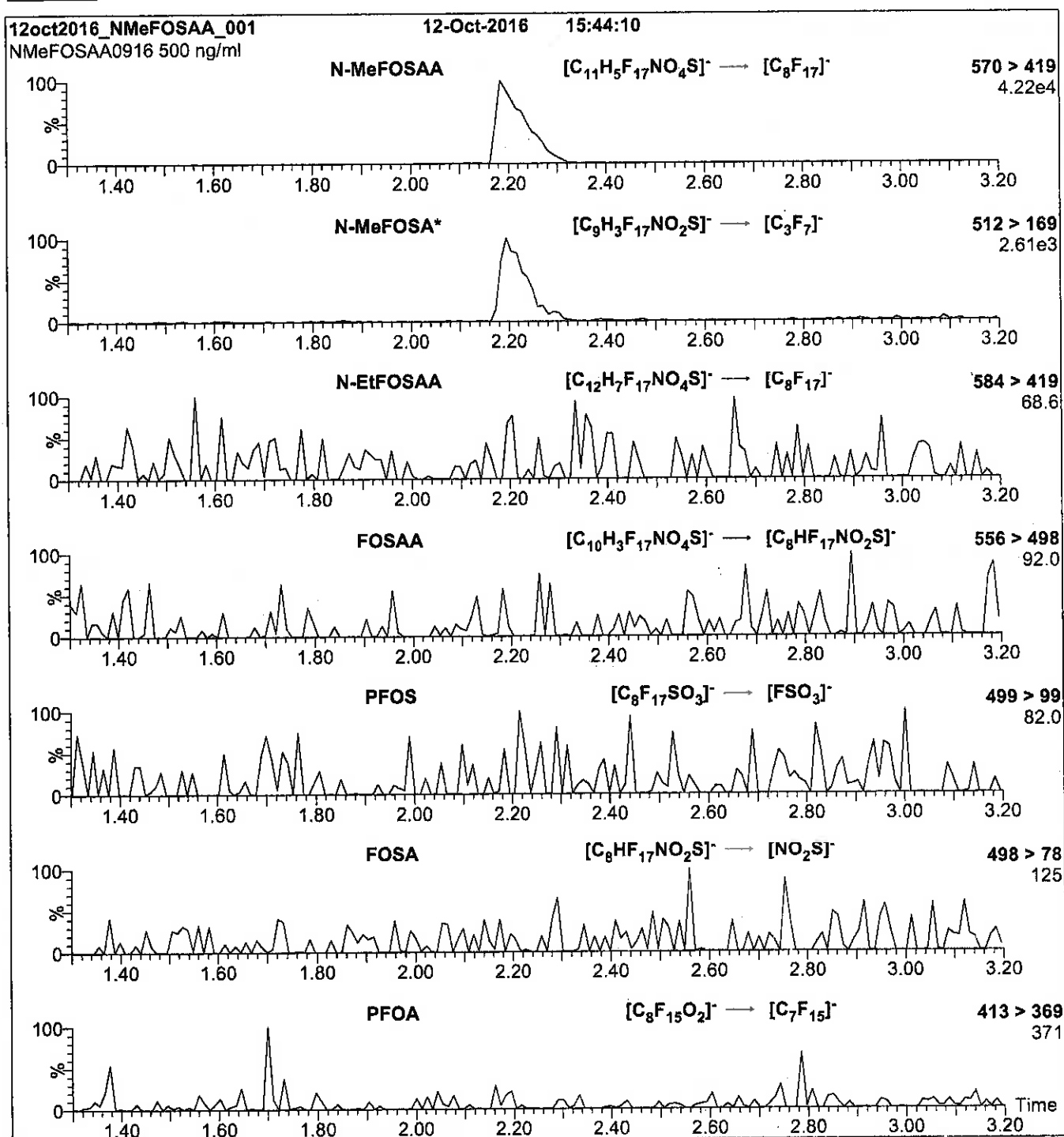
Flow: 300 μ l/min

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

LCPFBA_00006

Scanned
10/16/14

R: SBC 9/13/16



730531
ID: LCPFBA_00005
Exp: 05/27/21 Ppd: SBC
PF-n-butanoic acid



730532
ID: LCPFBA_00006
Exp: 05/27/21 Ppd: SBC
PF-n-butanoic acid



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LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFBA

LOT NUMBER:

PFBA0516

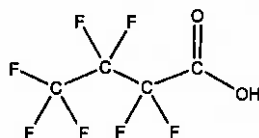
COMPOUND:

Perfluoro-n-butanoic acid

STRUCTURE:

CAS #:

375-22-4



MOLECULAR FORMULA:

C₄HF₇O₂

MOLECULAR WEIGHT:

214.04

CONCENTRATION:

50 ± 2.5 µg/ml

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

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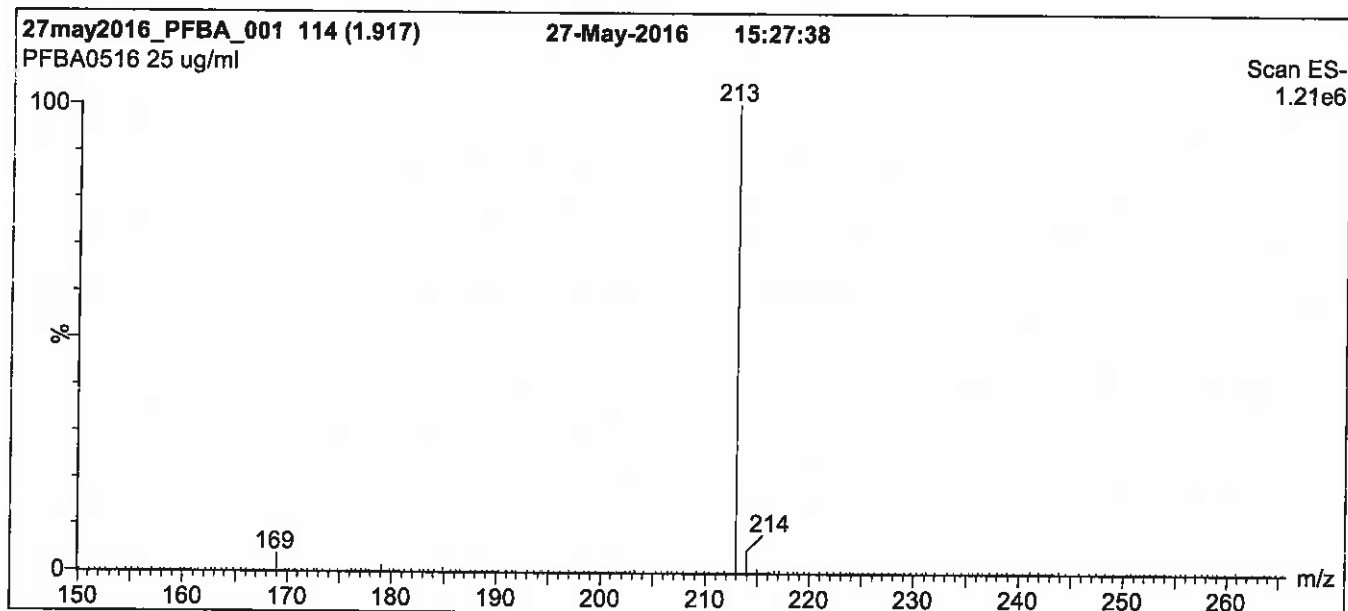
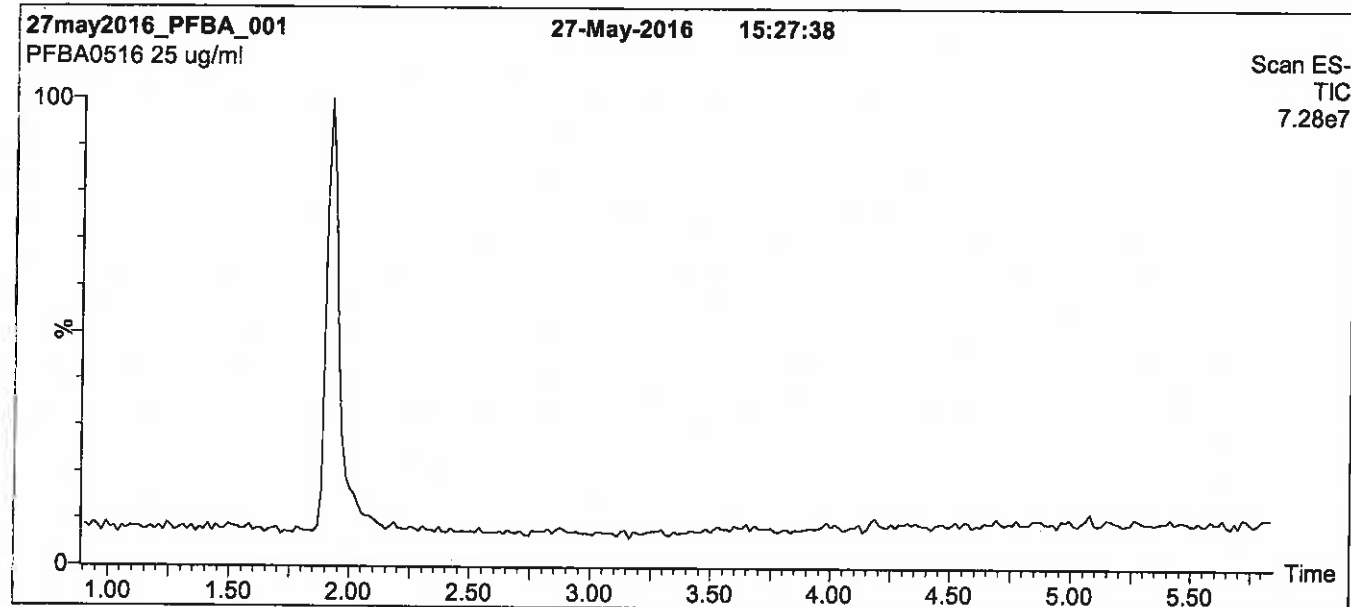
QUALITY MANAGEMENT:

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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

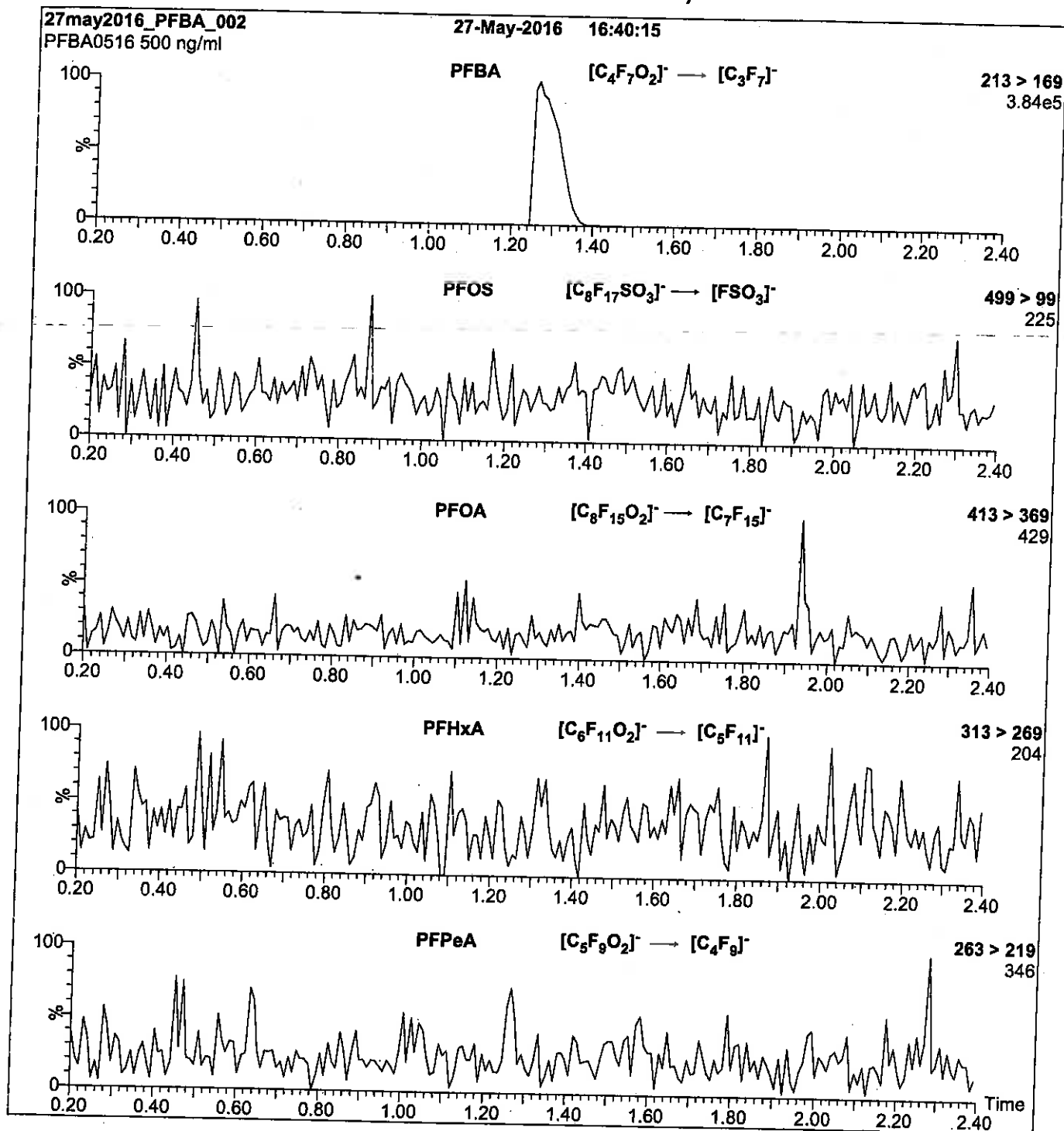
Flow: 300 μ l/min

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_00006

R: SBC 9/13/16



730511

ID: LCPFBFS_00005

Exp: 03/15/21 Pripd: SBC

PF-1-butanedisulfonate K sa



730512

ID: LCPFBFS_00006

Exp: 03/15/21 Pripd: SBC

PF-1-butanedisulfonate K sa



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

L-PFBS

COMPOUND:

Potassium perfluoro-1-butanedisulfonate

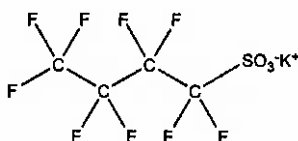
LOT NUMBER:

LPFBFS0316

STRUCTURE:

CAS #:

29420-49-3



MOLECULAR FORMULA:

C₄F₉SO₃K

CONCENTRATION:

50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)

MOLECULAR WEIGHT:

338.19

SOLVENT(S):

Methanol

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

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

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:

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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.

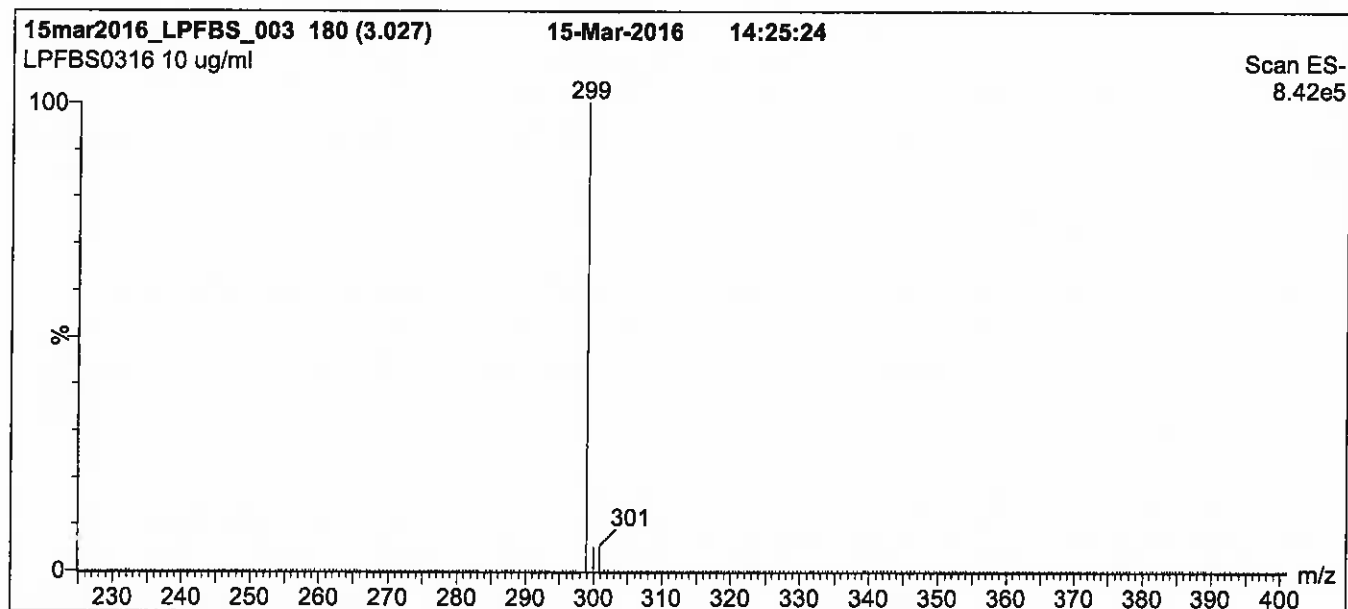
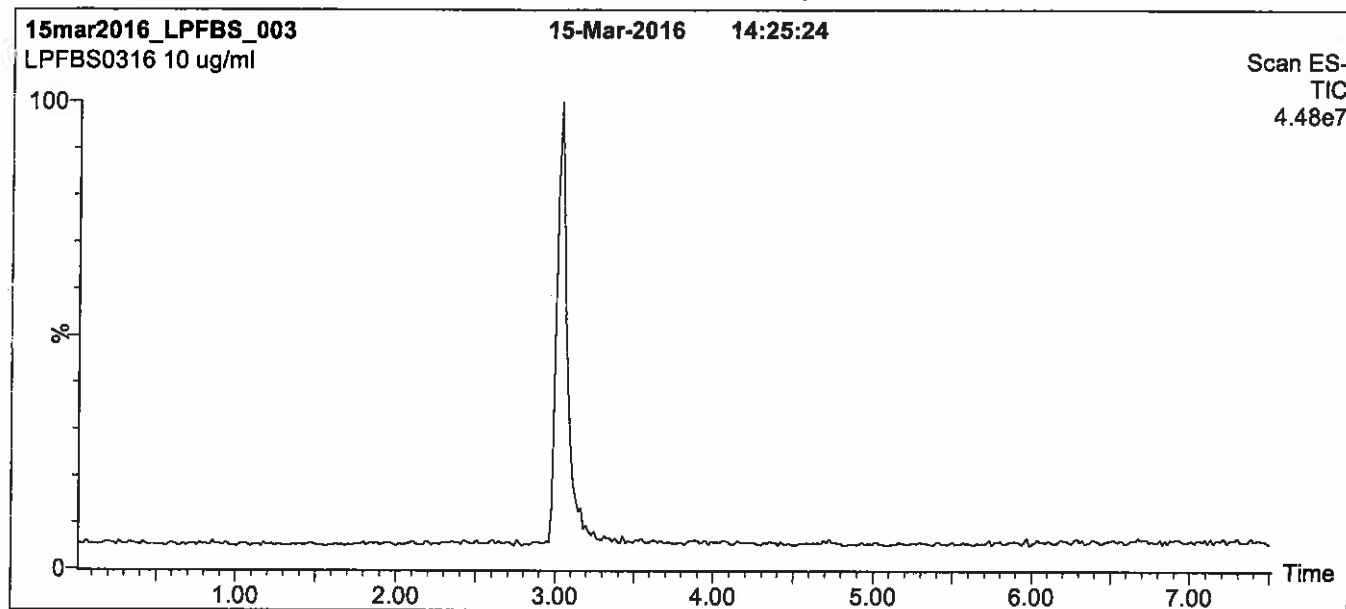
QUALITY MANAGEMENT:

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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

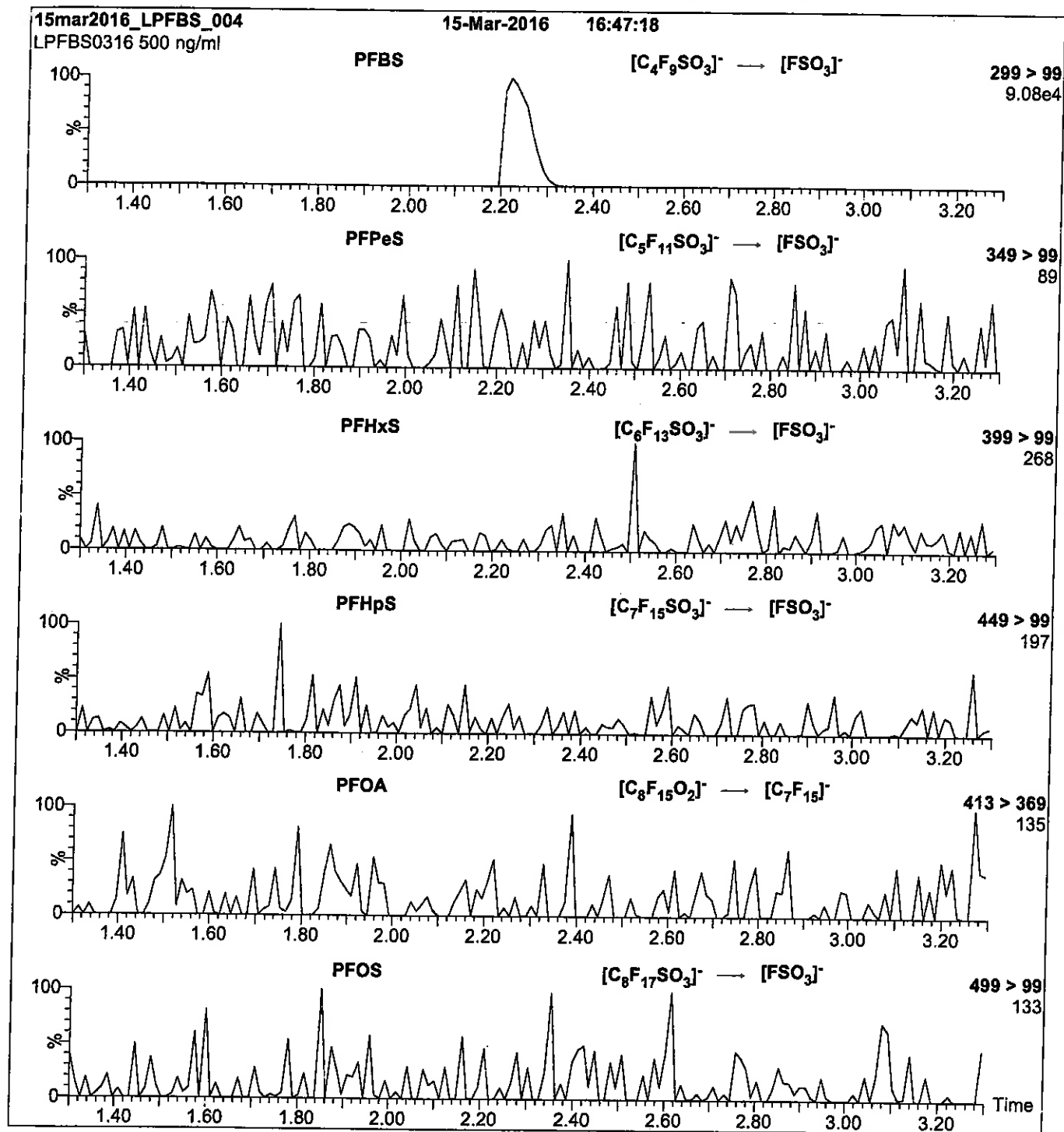
Flow: 300 μ l/min

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_00006

R: 8BZ 9/13/16
Scanned 10/14/16 SR



730620
ID: LCPFDA_00006
Exp: 05/31/21 Prep: SBC
PF-n-decanoic acid



730621
ID: LCPFDA_00007
Exp: 05/31/21 Prep: SBC
PF-n-decanoic acid



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFDA

LOT NUMBER:

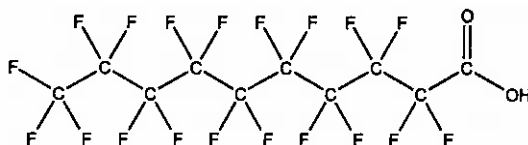
PFDA0516

COMPOUND:

Perfluoro-n-decanoic acid

STRUCTURE:**CAS #:**

335-76-2

**MOLECULAR FORMULA:** $C_{10}HF_{19}O_2$ **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).

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Certified By:

B.G. Chittim

Date: 06/13/2016

(mm/dd/yyyy)

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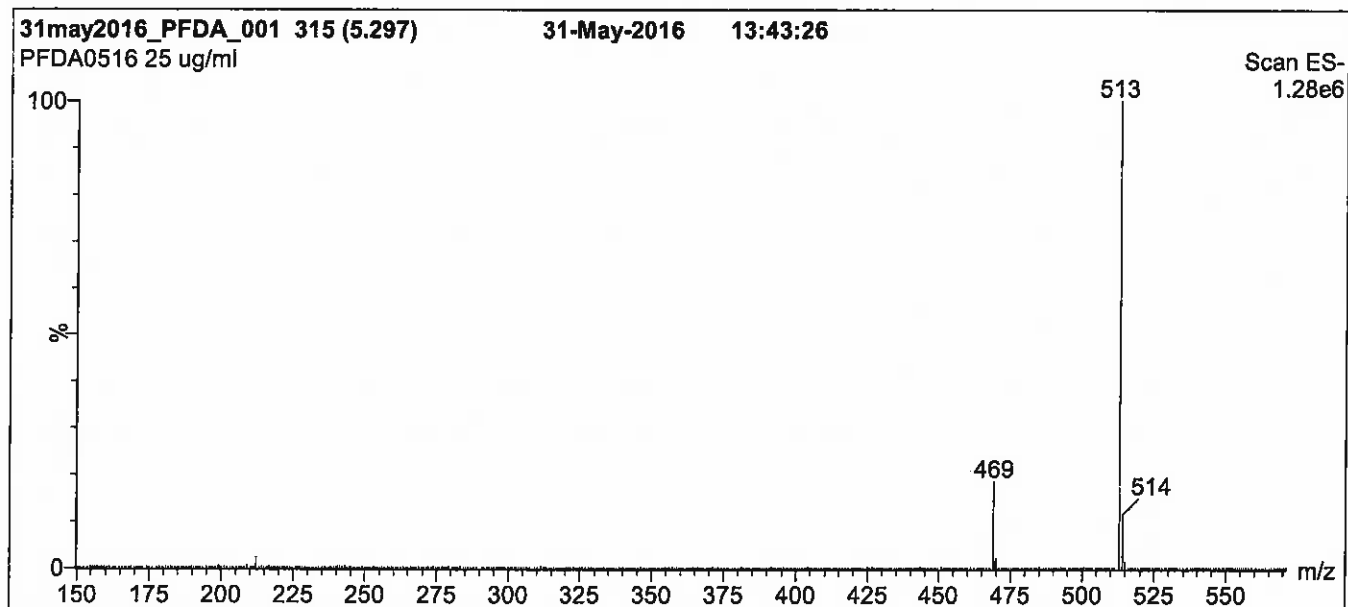
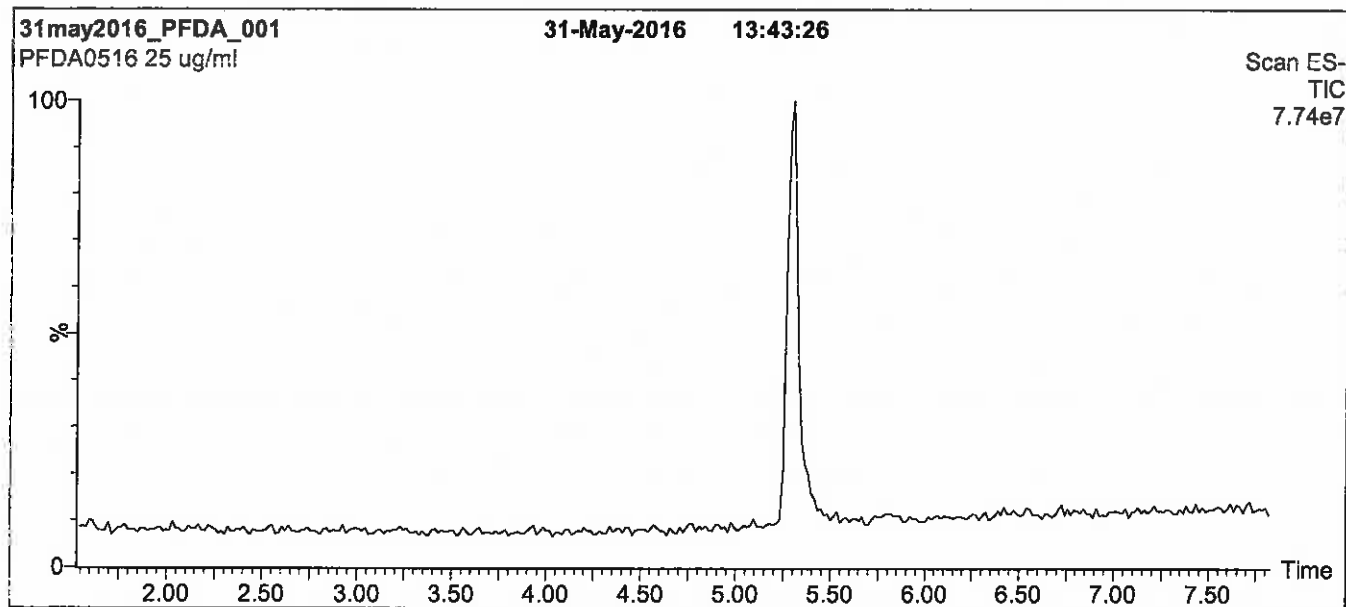
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Figure 1: PFDA; LC/MS Data (TIC and Mass Spectrum)



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)

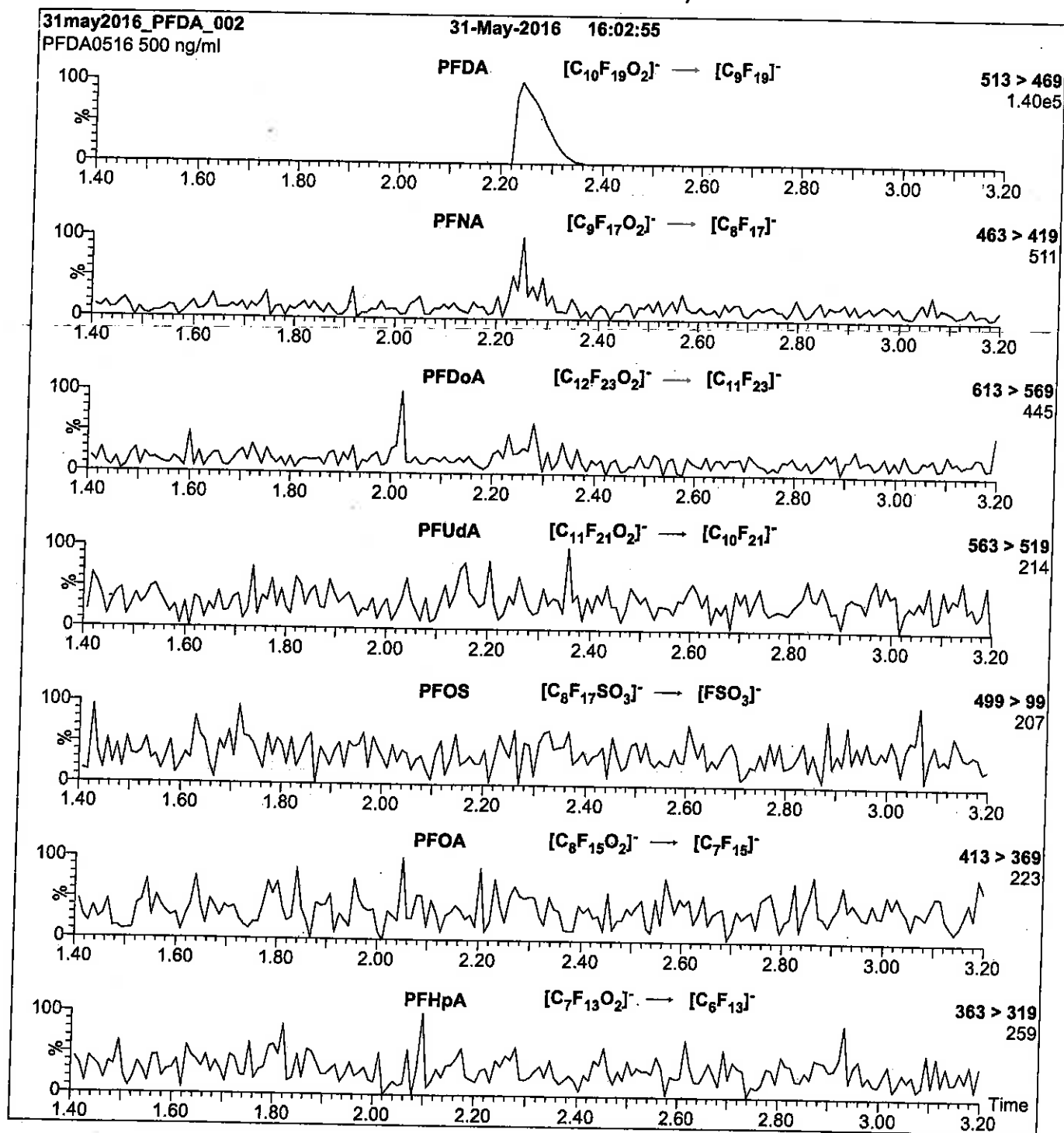
Capillary Voltage (kV) = 2.00

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% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFDA_00007

R: SBC 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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LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFDA

LOT NUMBER:

PFDA0516

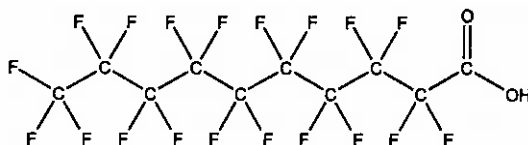
COMPOUND:

Perfluoro-n-decanoic acid

STRUCTURE:

CAS #:

335-76-2



MOLECULAR FORMULA:

$C_{10}H_2F_{18}O_2$

MOLECULAR WEIGHT:

514.08

CONCENTRATION:

$50 \pm 2.5 \mu\text{g/ml}$

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/31/2016

EXPIRY DATE: (mm/dd/yyyy)

05/31/2021

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

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ADDITIONAL INFORMATION:

- See page 2 for further details.
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Certified By:

B.G. Chittim

Date: 06/13/2016

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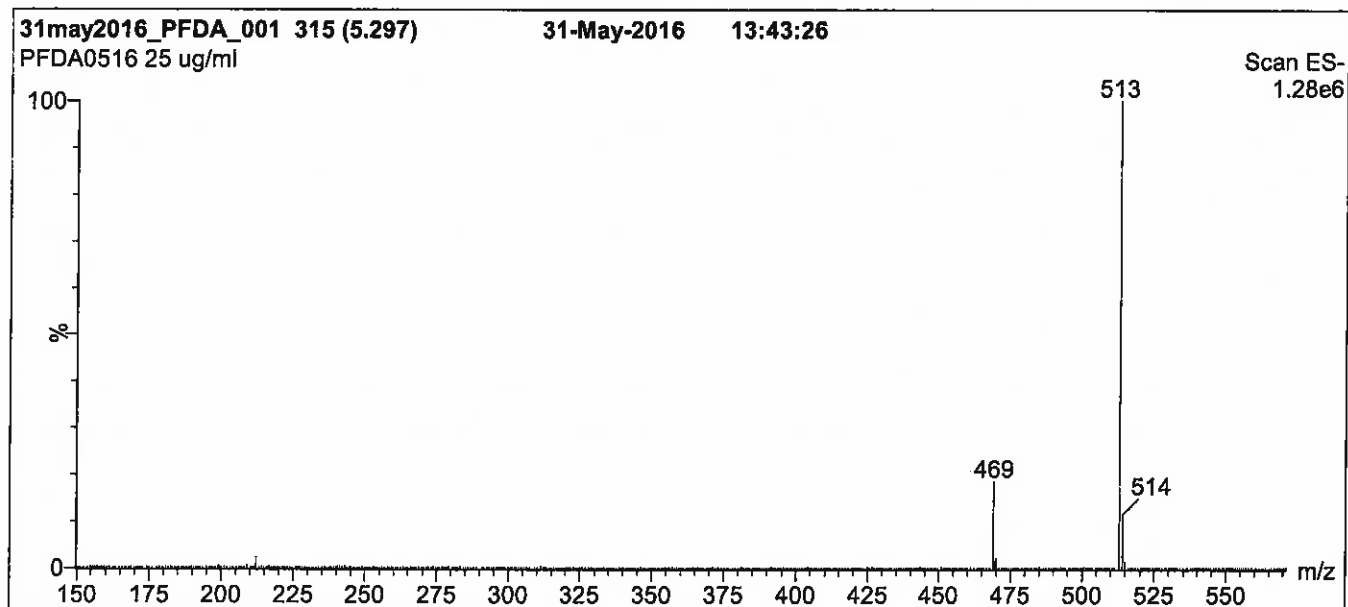
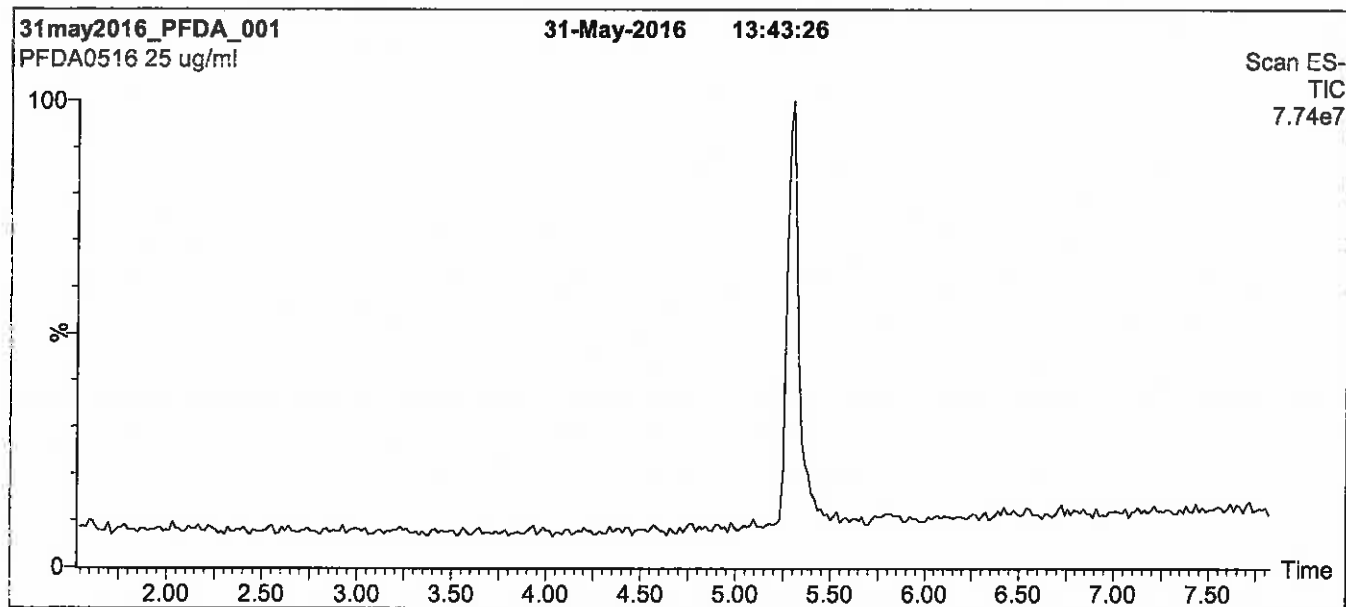
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Figure 1: PFDA; LC/MS Data (TIC and Mass Spectrum)



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)

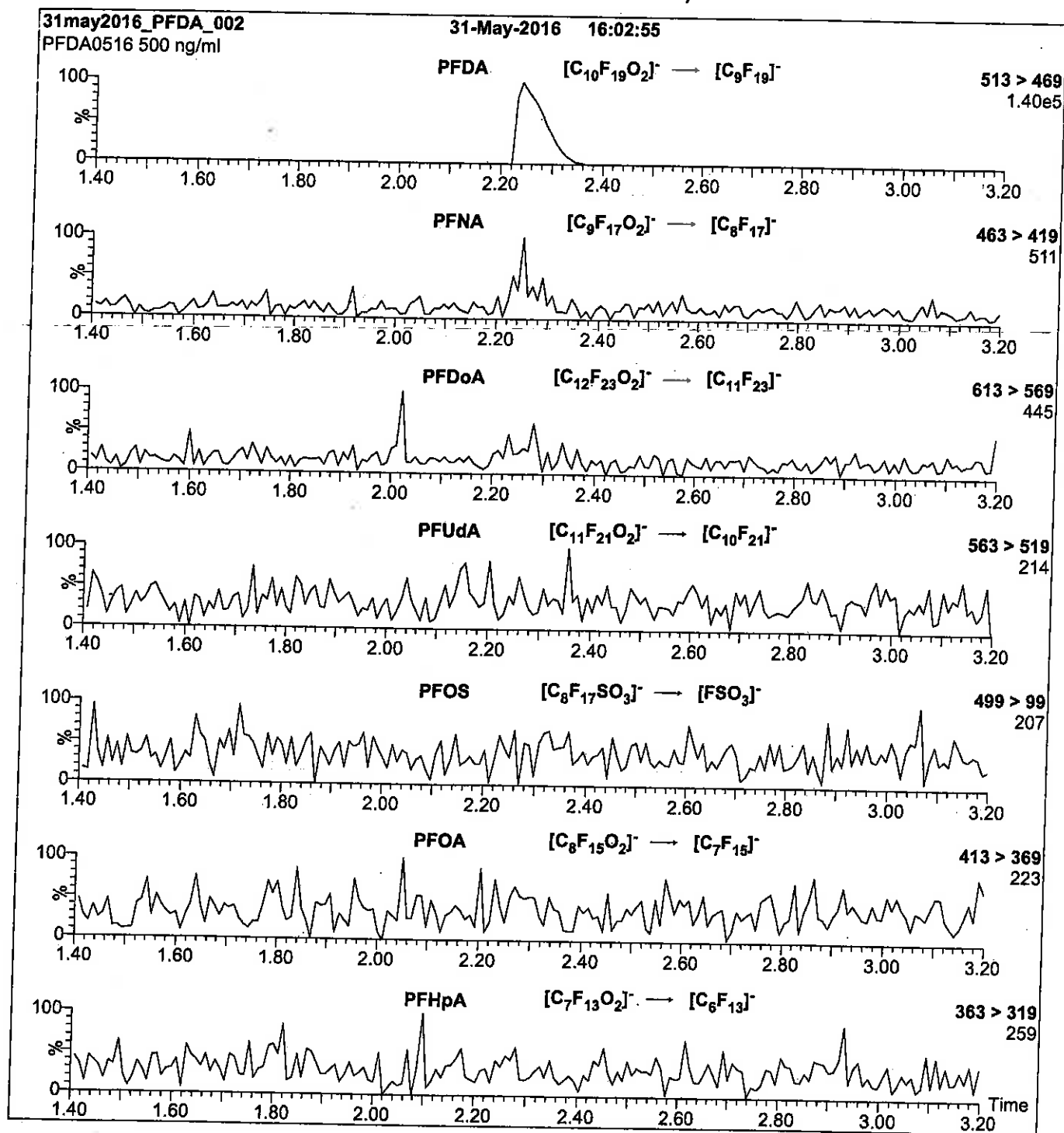
Capillary Voltage (kV) = 2.00

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

LCPFDoA_00006

r: 12/21/16 SPV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFD0A

LOT NUMBER: PFD0A0516

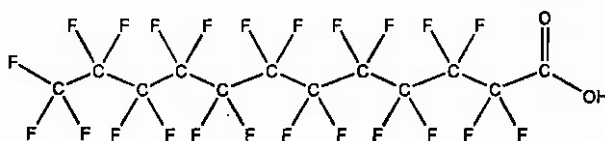
COMPOUND:

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

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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.

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Certified By:

B.G. Chittim

Date: 06/02/2016

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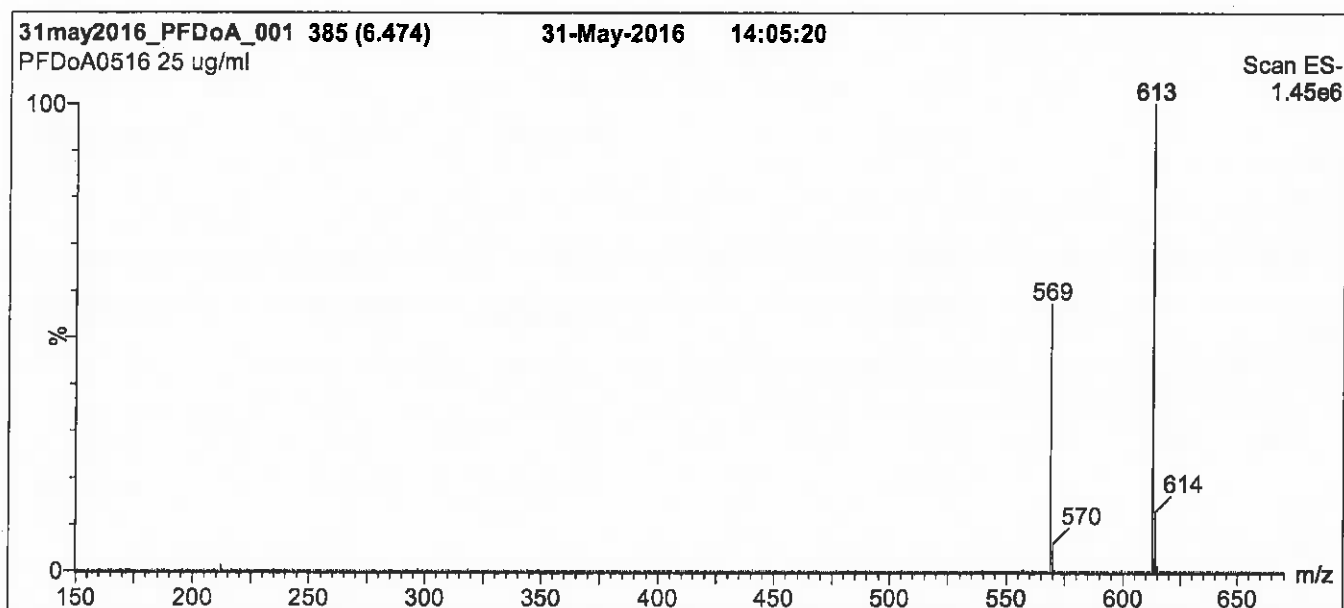
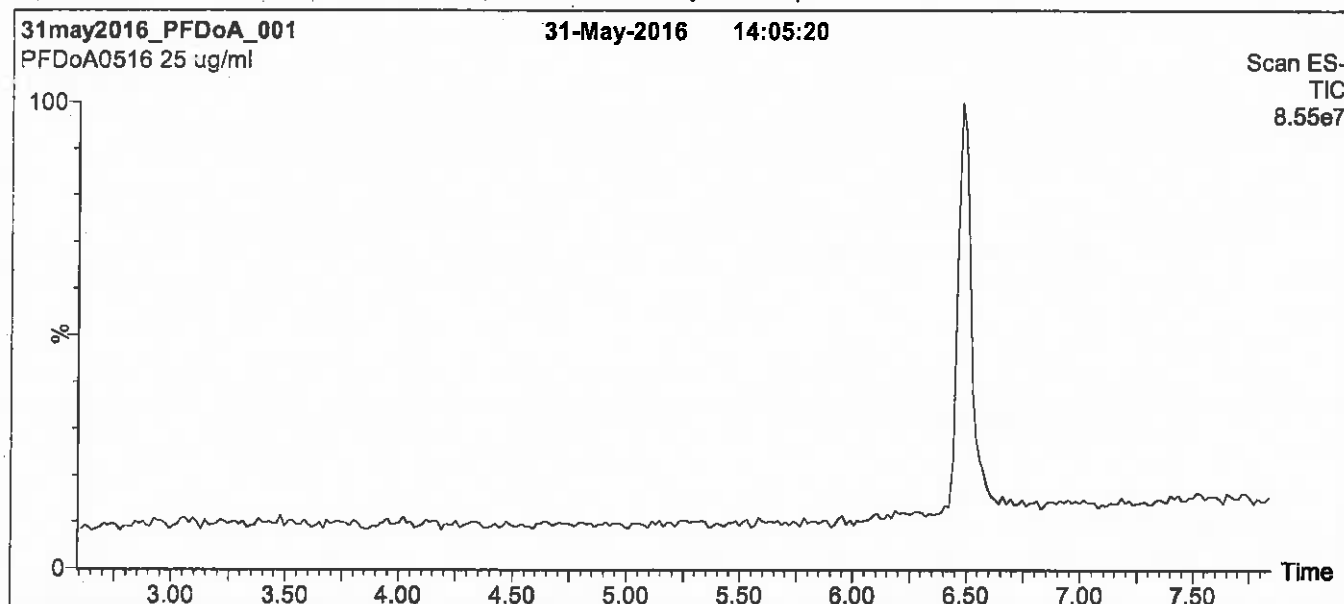
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Figure 1: PFD_oA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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MS: Micromass Quattro micro API MS

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

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(both with 10 mM NH₄OAc buffer)

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Flow: 300 μ l/min

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Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)

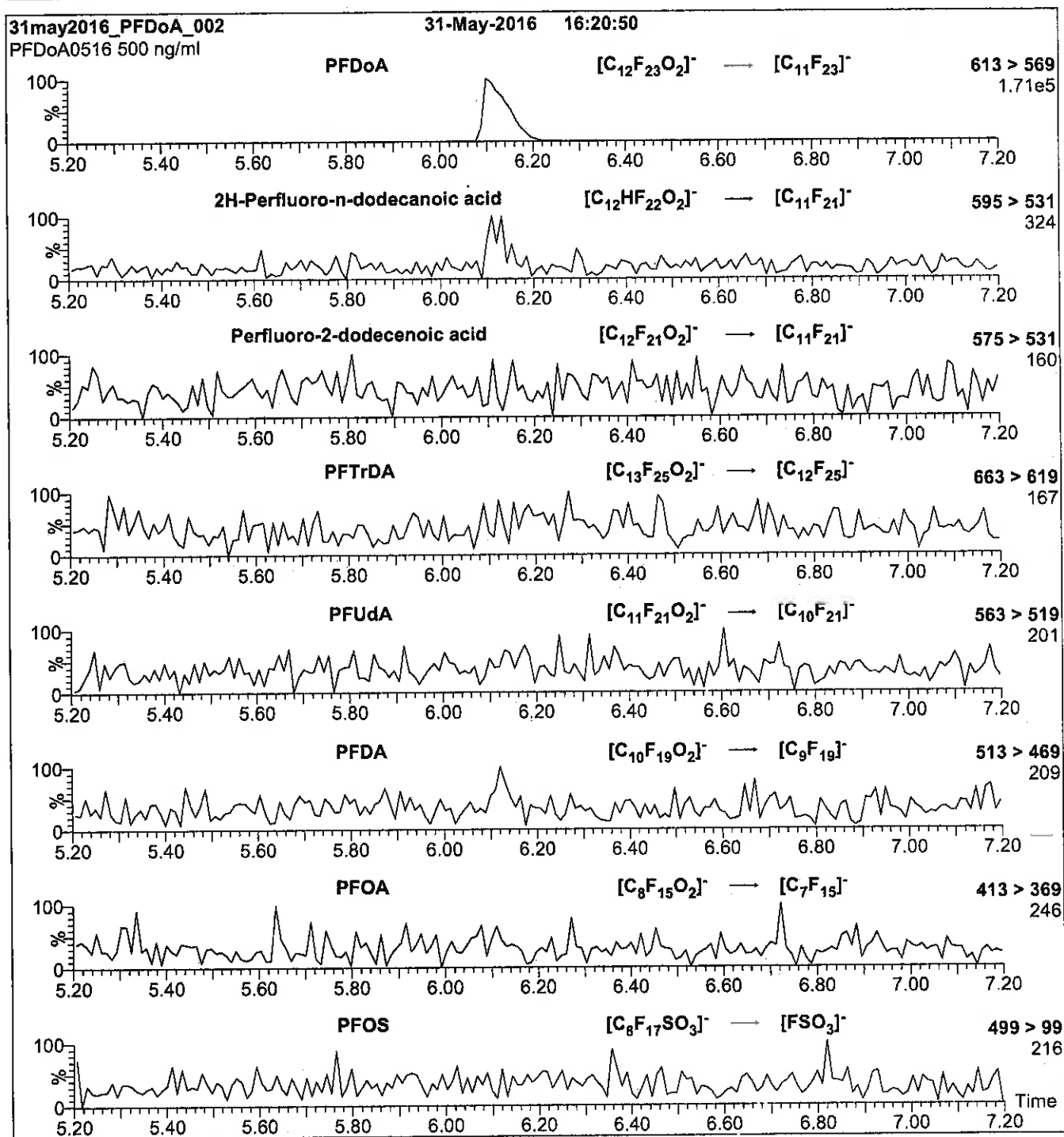
Capillary Voltage (kV) = 2.00

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_00007

r: 12/21/16 SPV



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFD0A

LOT NUMBER: PFD0A0516

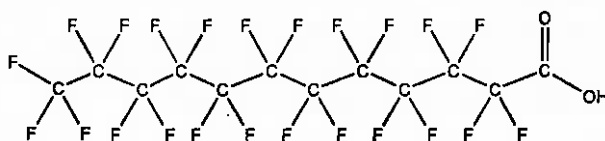
COMPOUND:

Perfluoro-n-dodecanoic acid

STRUCTURE:

CAS #:

307-55-1



MOLECULAR FORMULA:

C₁₂HF₂₃O₂

MOLECULAR WEIGHT:

614.10

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.

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:

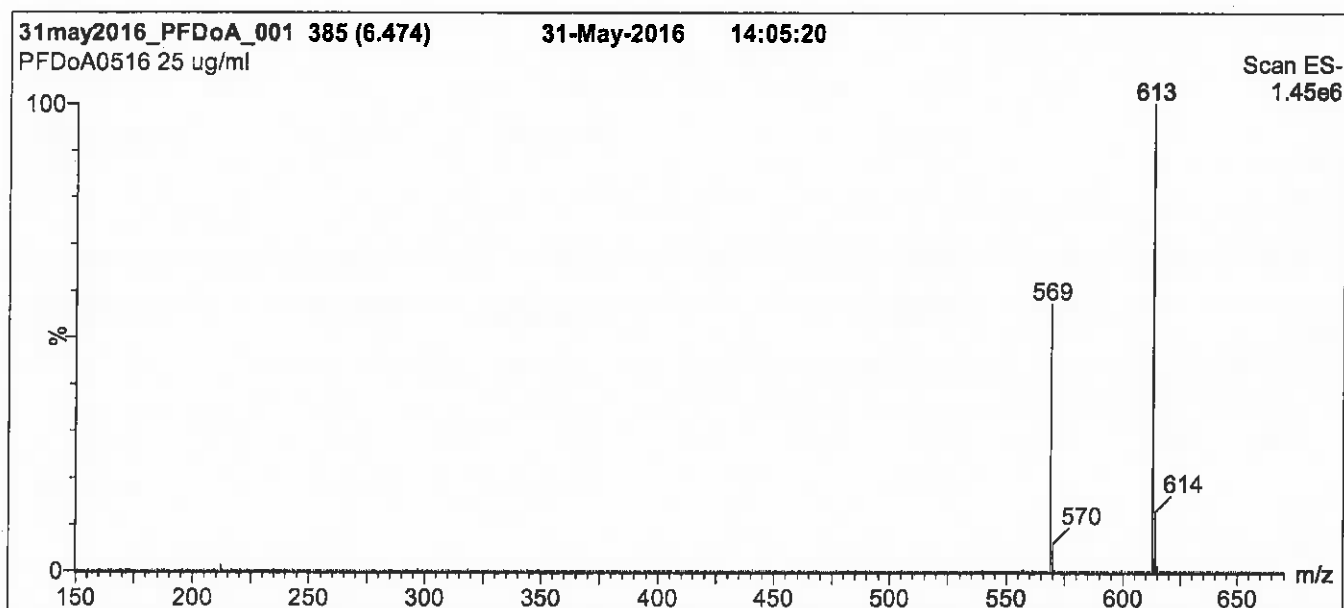
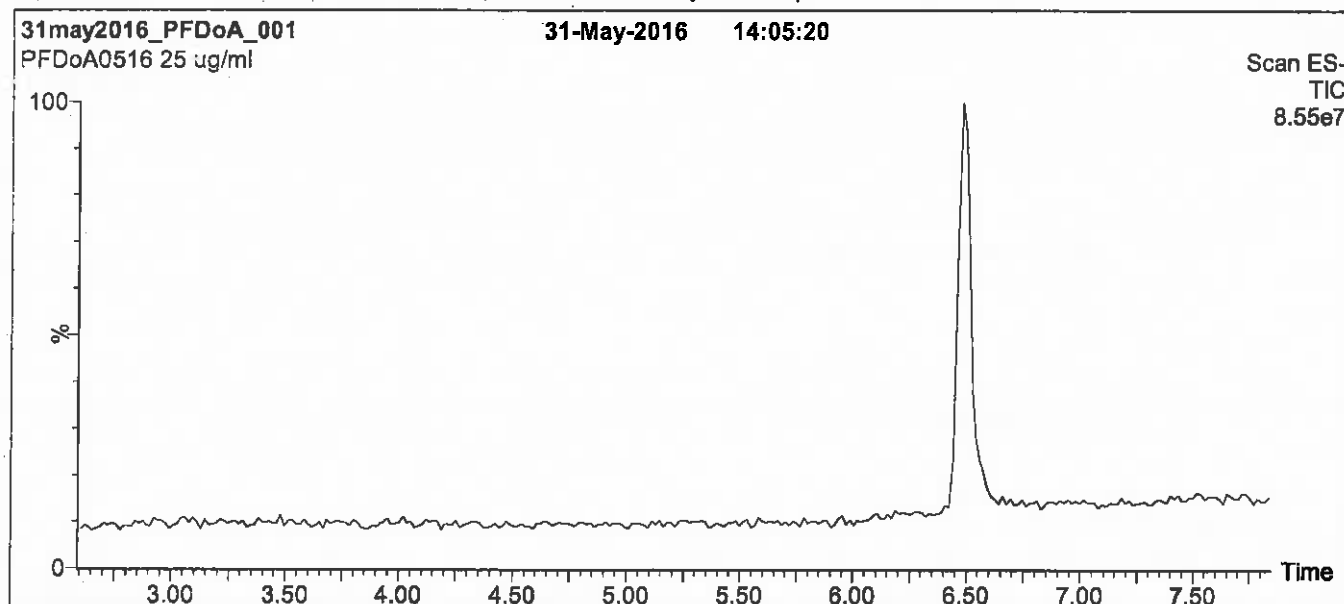
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

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: PFD_oA; 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)

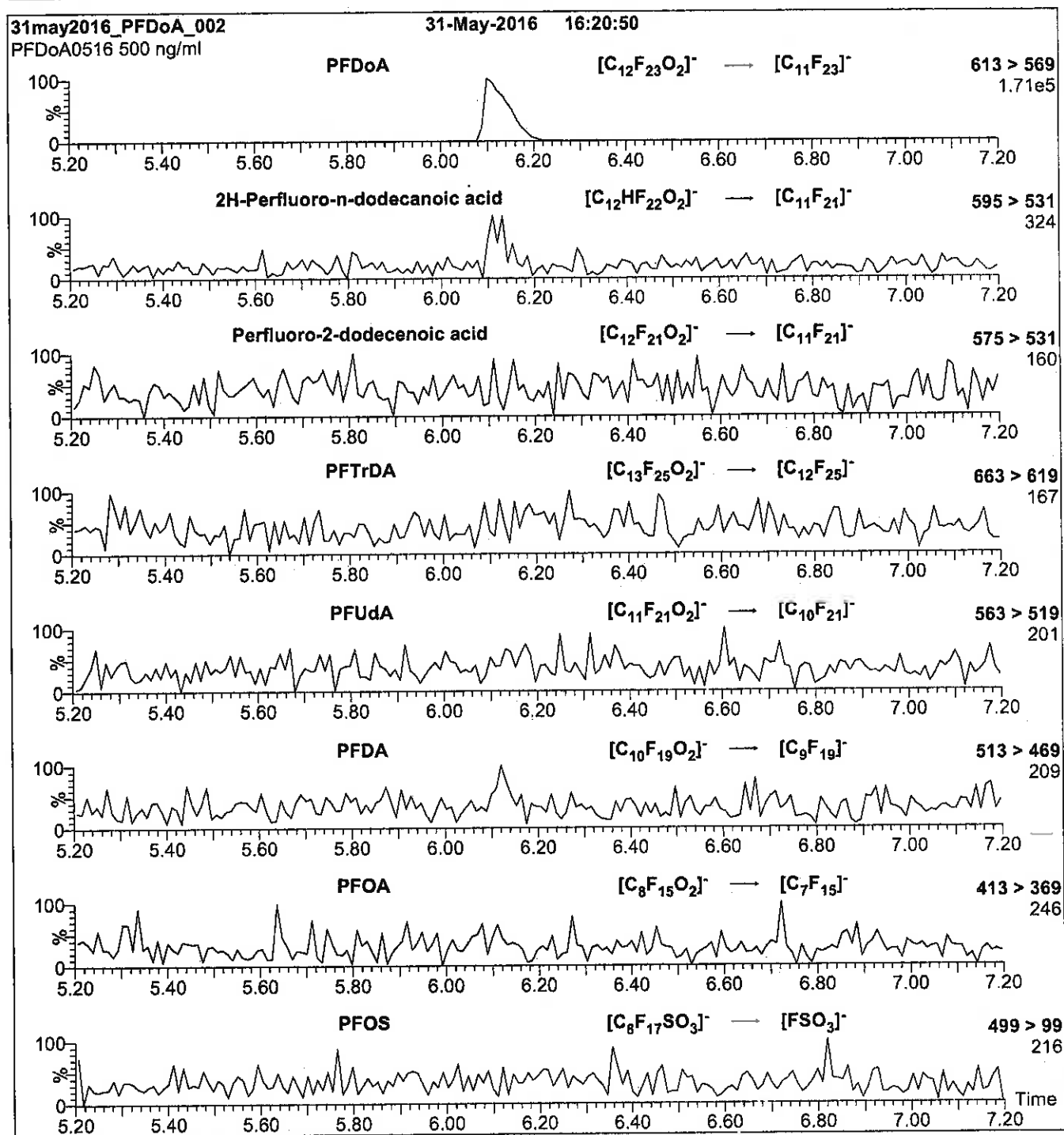
Capillary Voltage (kV) = 2.00

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

LCPFDS_00005



ID: LCPFDS_00005
Exp: 07/02/20 Prpd: CBW
PF-1-decanesulfonate sodi

Rec. 3/29/16 JRB



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CERTIFICATE OF ANALYSIS

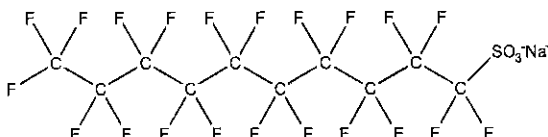
DOCUMENTATION

<u>PRODUCT CODE:</u>	L-PFDS
<u>COMPOUND:</u>	Sodium perfluoro-1-decanesulfonate

LOT NUMBER: LPFDS0615

STRUCTURE:

CAS #: 2806-15-7



<u>MOLECULAR FORMULA:</u>	C ₁₀ F ₂₁ SO ₃ Na
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/ml (Na salt) 48.2 ± 2.4 µg/ml (PFDS anion)
<u>CHEMICAL PURITY:</u>	>98%
<u>LAST TESTED:</u> (mm/dd/yyyy)	07/02/2015
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	07/02/2020
<u>RECOMMENDED STORAGE:</u>	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: 12/07/2015
(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

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HOMOGENEITY:

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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:

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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.

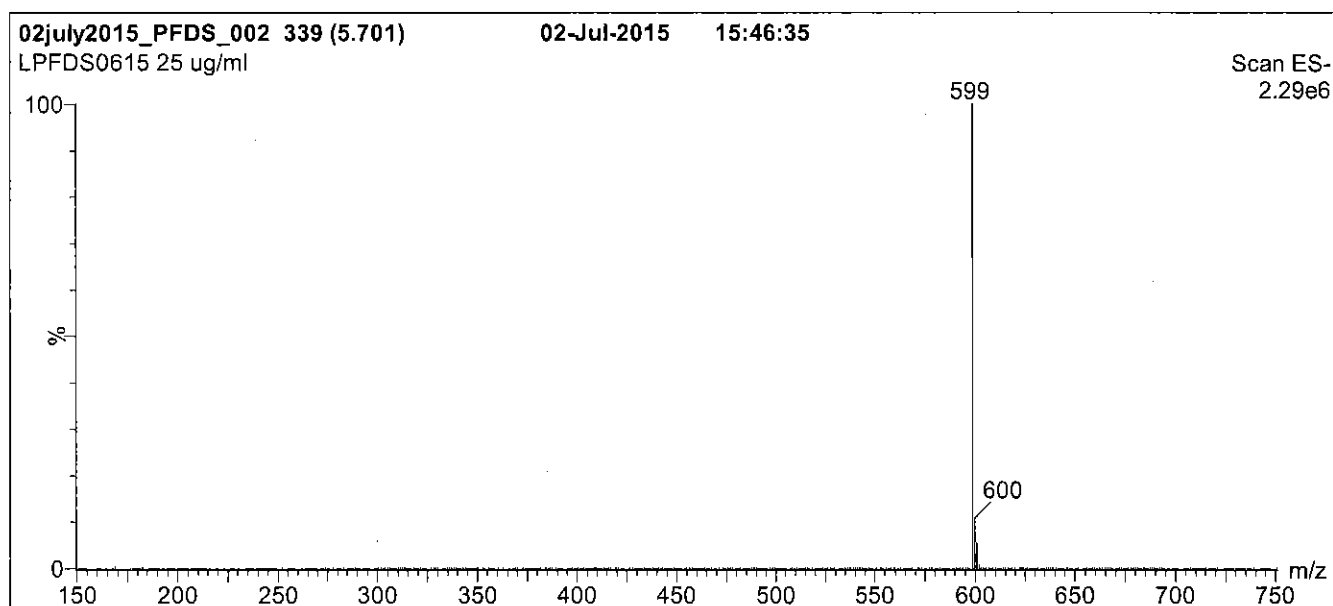
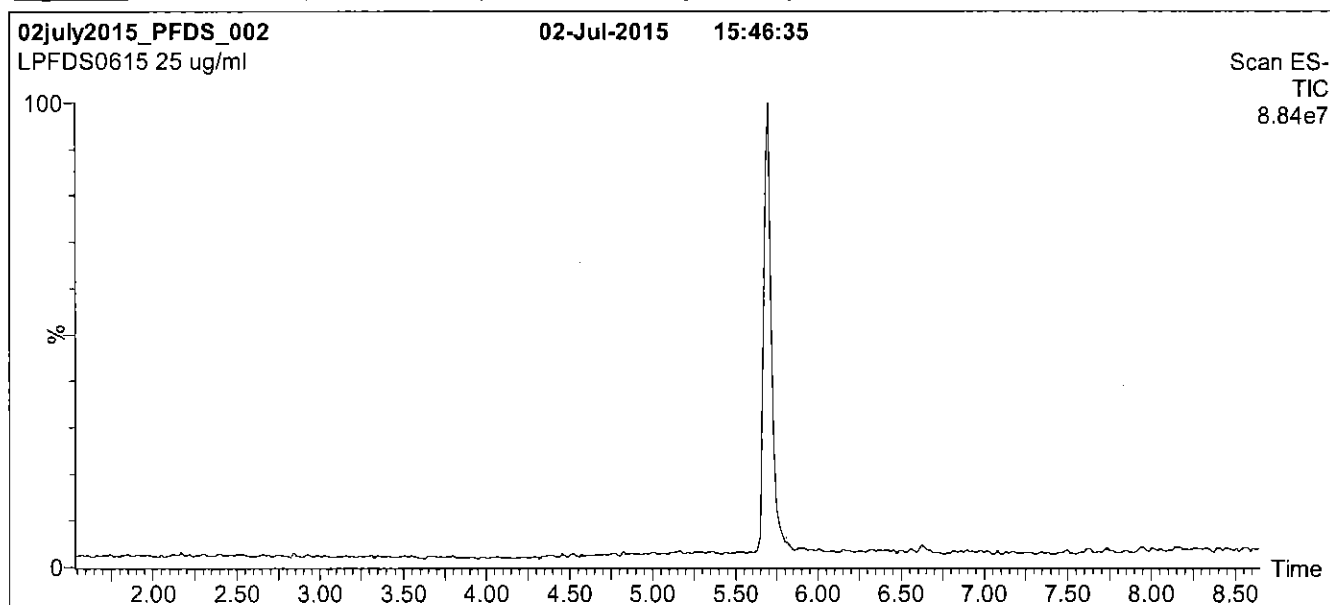
QUALITY MANAGEMENT:

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).



****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: 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: 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

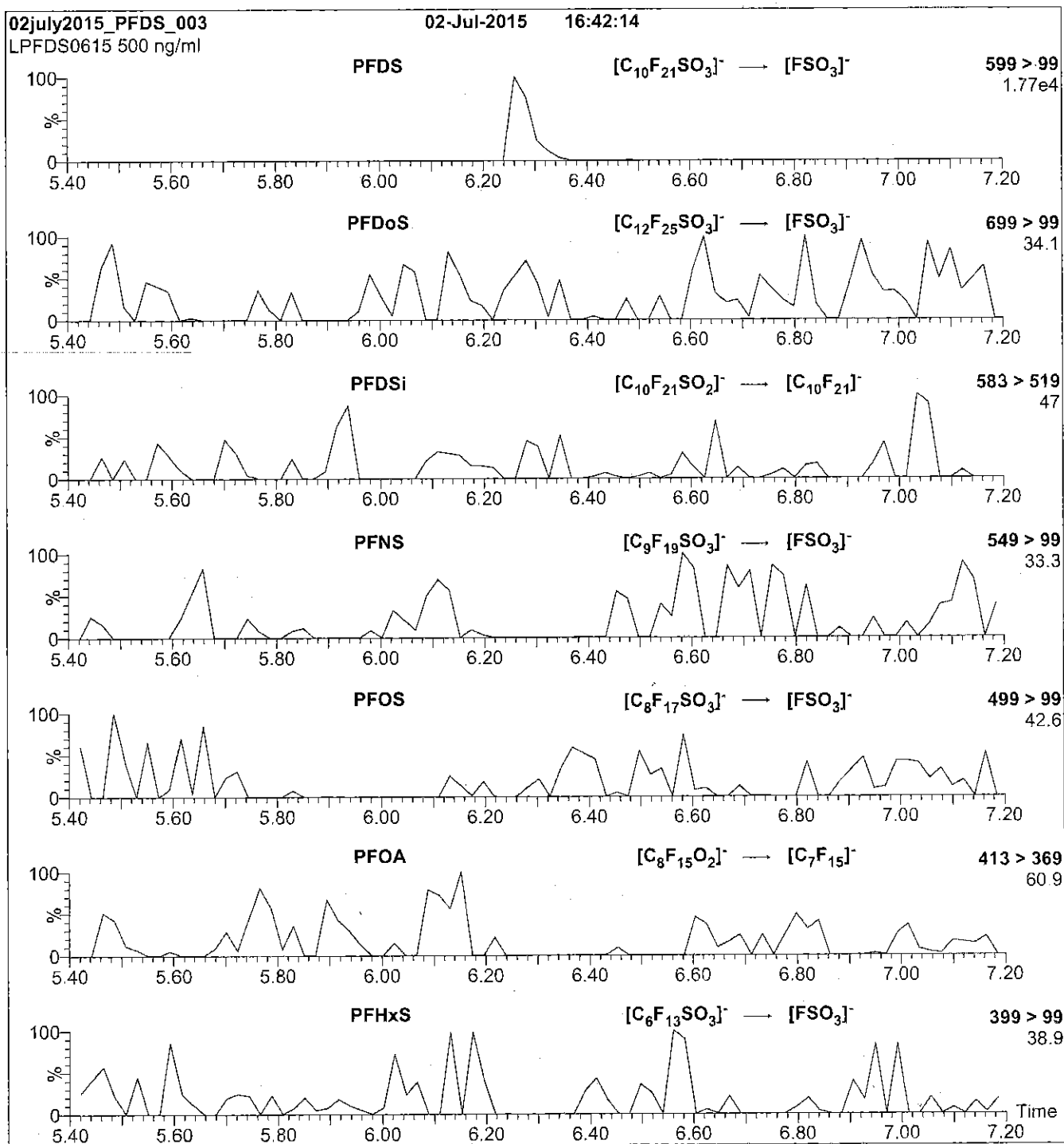
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 50

Reagent

LCPFDS_00007

Scanned
10/14/16 SP R: 88C 9/13/16



730549

ID: LCPFDS_00006

Exp: 05/24/21 Ppd: SBC

PF-1-decanesulfonate sodi



730550

ID: LCPFDS_00007

Exp: 05/24/21 Ppd: SBC

PF-1-decanesulfonate sodi



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

L-PFDS

LOT NUMBER:

LPFDS0516

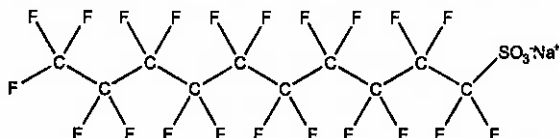
COMPOUND:

Sodium perfluoro-1-decanesulfonate

STRUCTURE:

CAS #:

2806-15-7



MOLECULAR FORMULA:

$C_{10}F_{21}SO_3Na$

MOLECULAR WEIGHT:

622.13

CONCENTRATION:

$50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)

SOLVENT(S):

Methanol

$48.2 \pm 2.4 \mu\text{g/ml}$ (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

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

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HOMOGENEITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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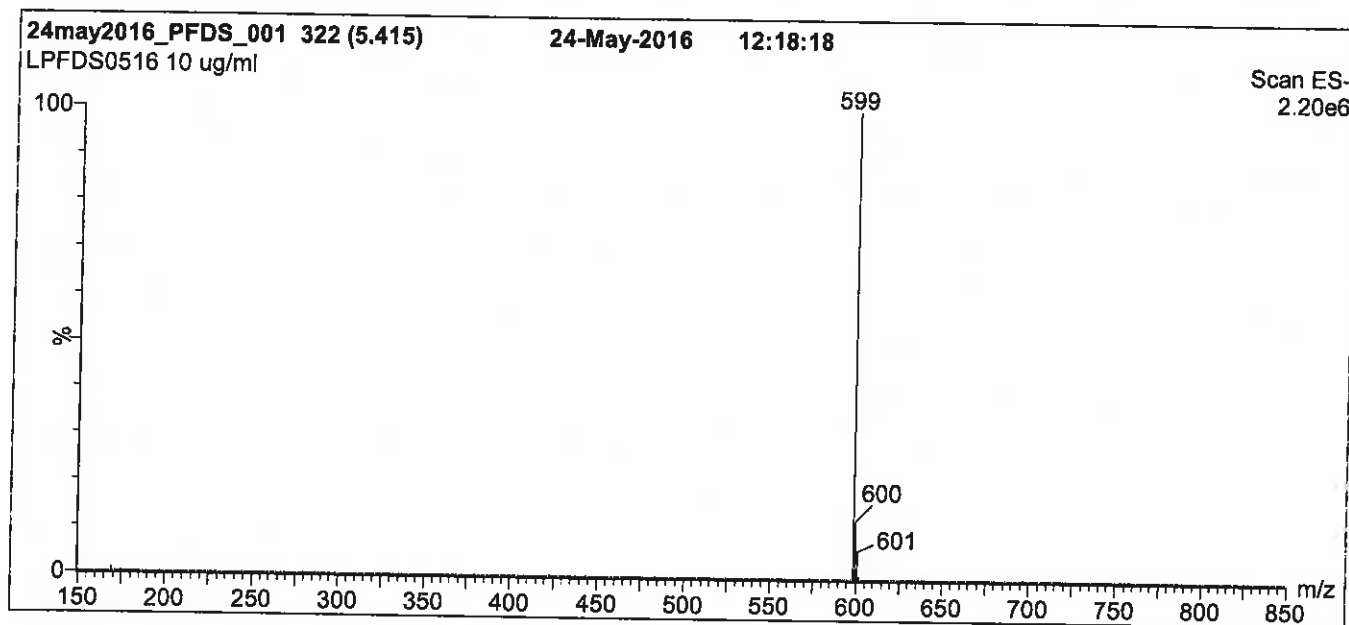
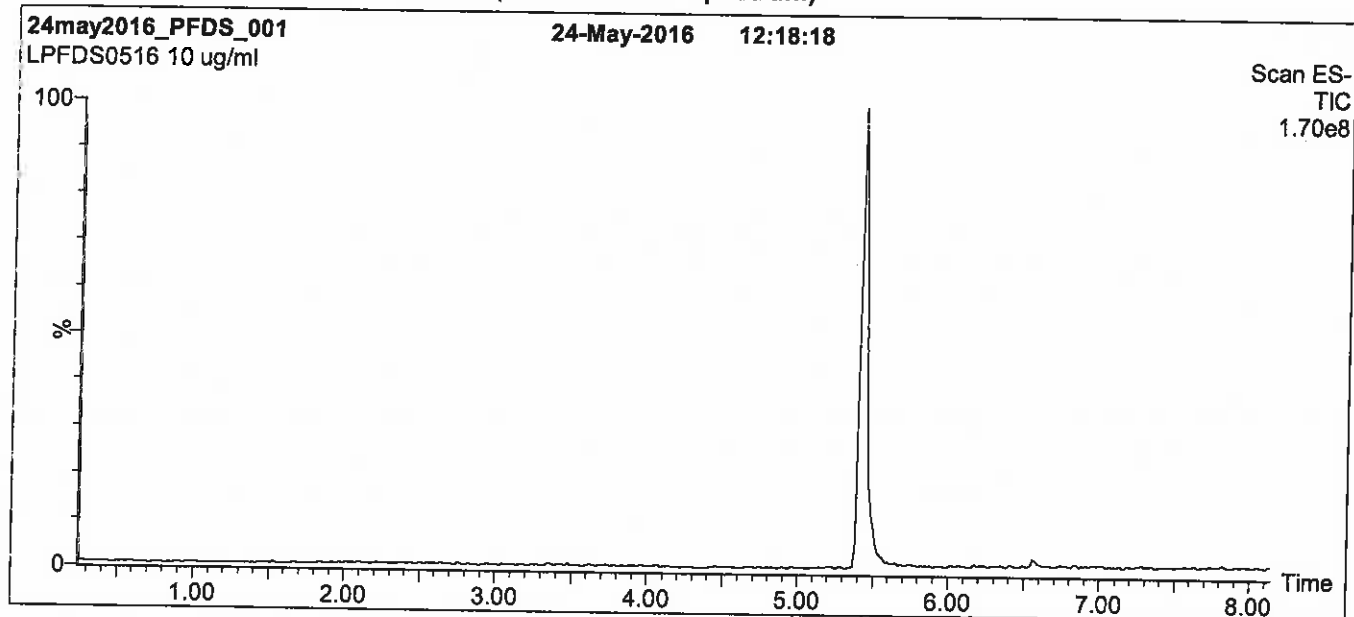
QUALITY MANAGEMENT:

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Figure 1: 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

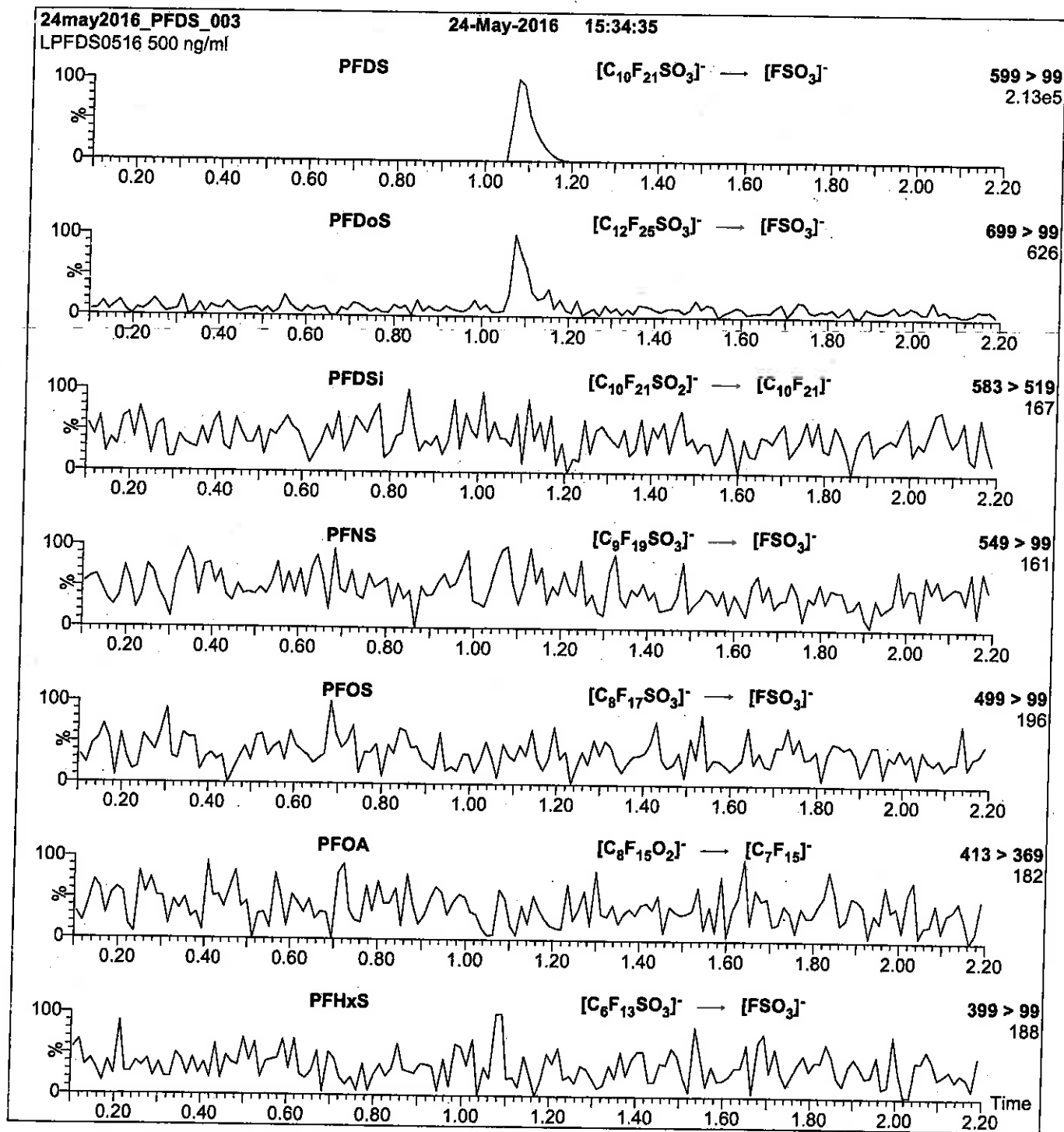
Flow: 300 μ l/min

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_00006

Scanned R: SBC 9/13/16
10/14/16 JK



730517
ID: LCPFHpa_00006
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid



730518
ID: LCPFHpa_00007
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHpA

LOT NUMBER:

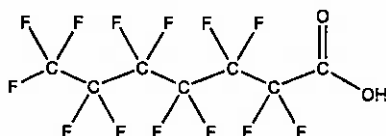
PFHpA0116

COMPOUND:

Perfluoro-n-heptanoic acid

STRUCTURE:**CAS #:**

375-85-9

**MOLECULAR FORMULA:** $C_7H_2F_{13}O_2$ **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)

01/22/2016

EXPIRY DATE: (mm/dd/yyyy)

01/22/2021

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: 02/02/2016

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

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.

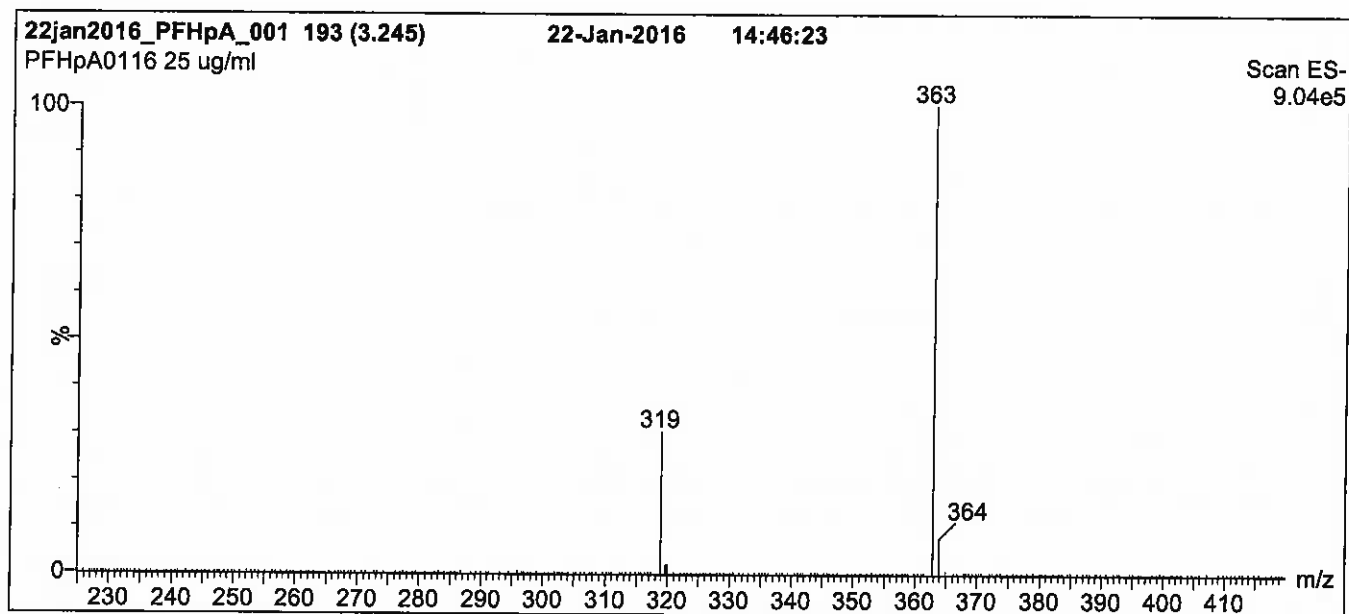
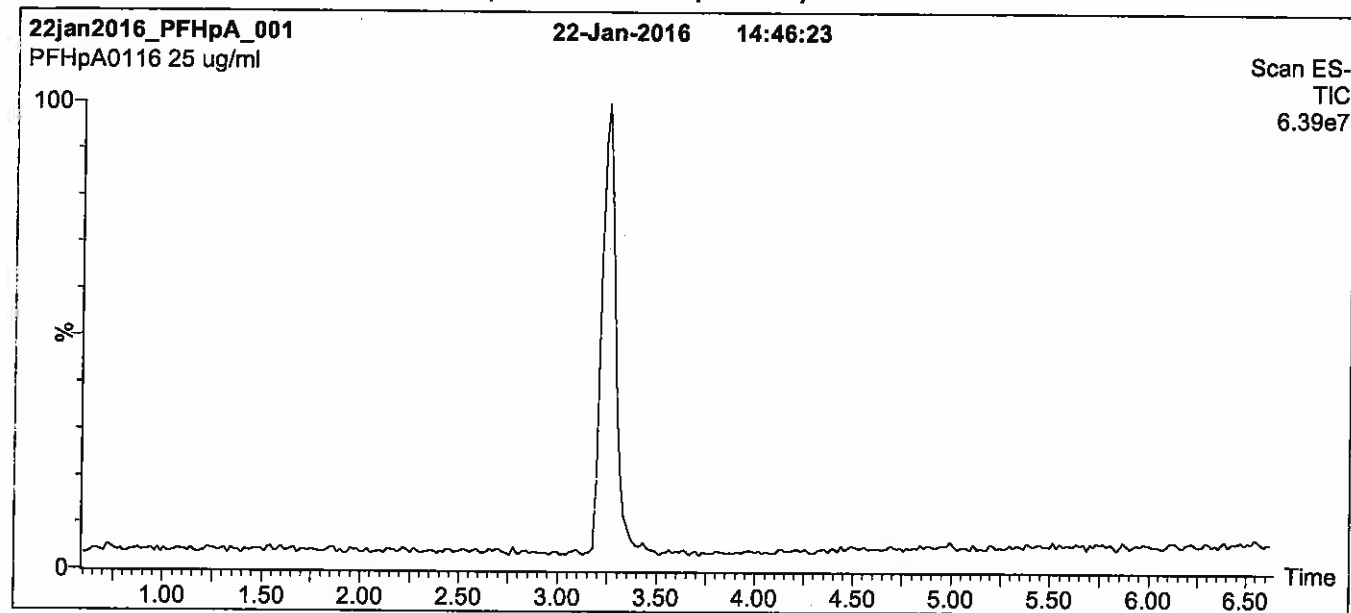
QUALITY MANAGEMENT:

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: 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

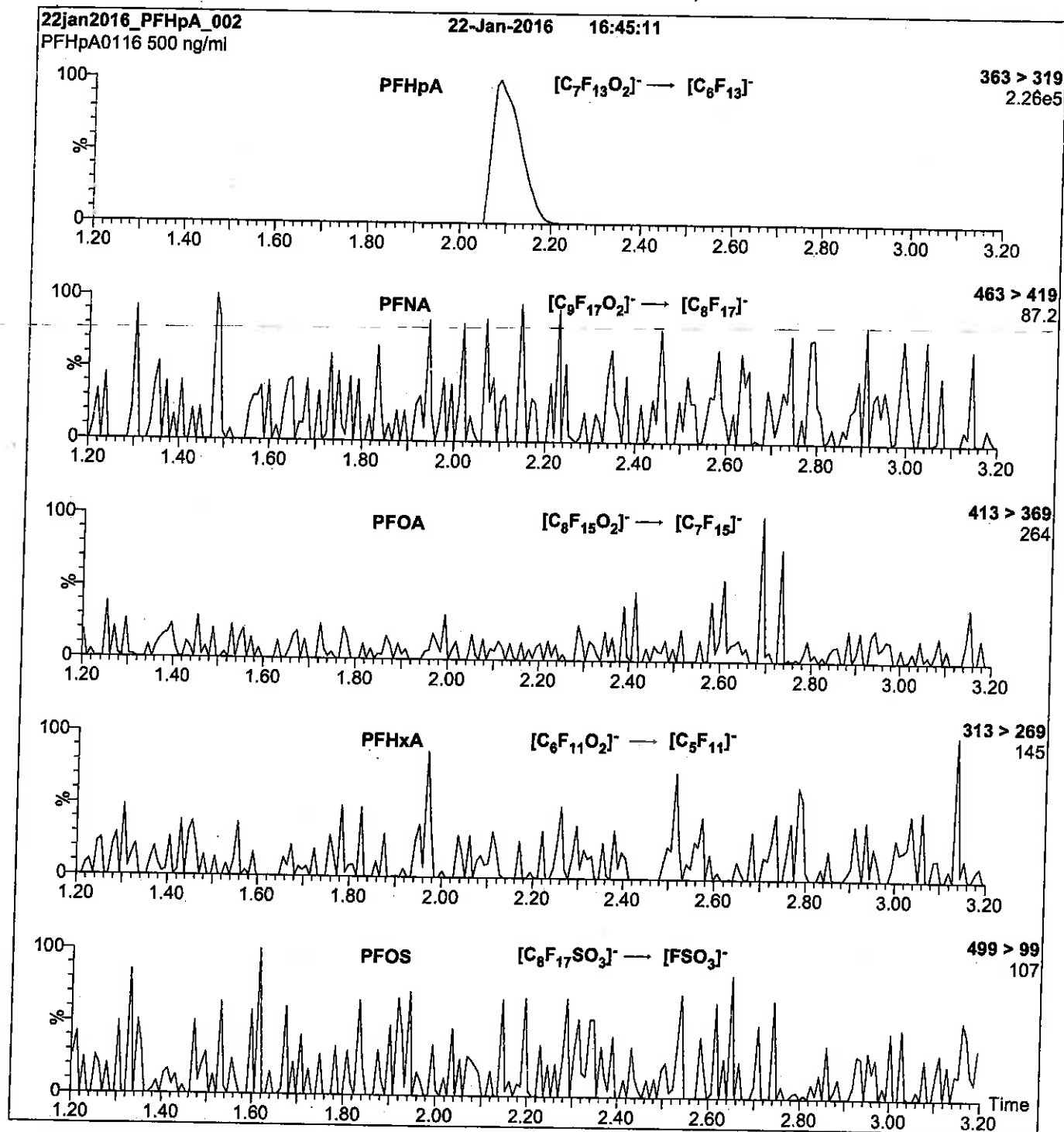
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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% 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

LCPFHpA_00007

Scanned R: SBC 9/13/16
10/14/16 JK



730517
ID: LCPFHpa_00006
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid



730518
ID: LCPFHpa_00007
Exp: 01/22/21 Prpd: SBC
PF-n-heptanoic acid



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHpA

LOT NUMBER:

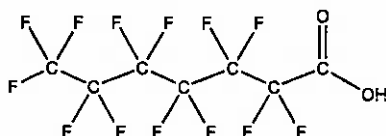
PFHpA0116

COMPOUND:

Perfluoro-n-heptanoic acid

STRUCTURE:**CAS #:**

375-85-9

**MOLECULAR FORMULA:** $C_7H_2F_{13}O_2$ **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)

01/22/2016

EXPIRY DATE: (mm/dd/yyyy)

01/22/2021

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: 02/02/2016

(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:

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HOMOGENEITY:

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LIMITED WARRANTY:

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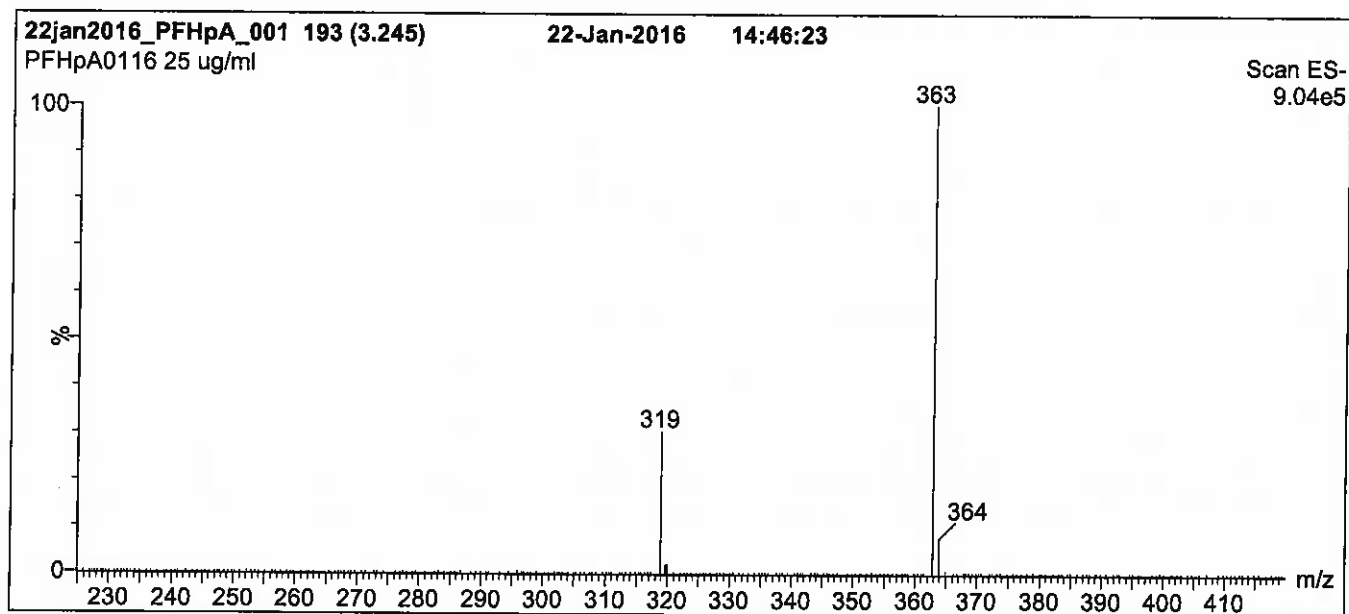
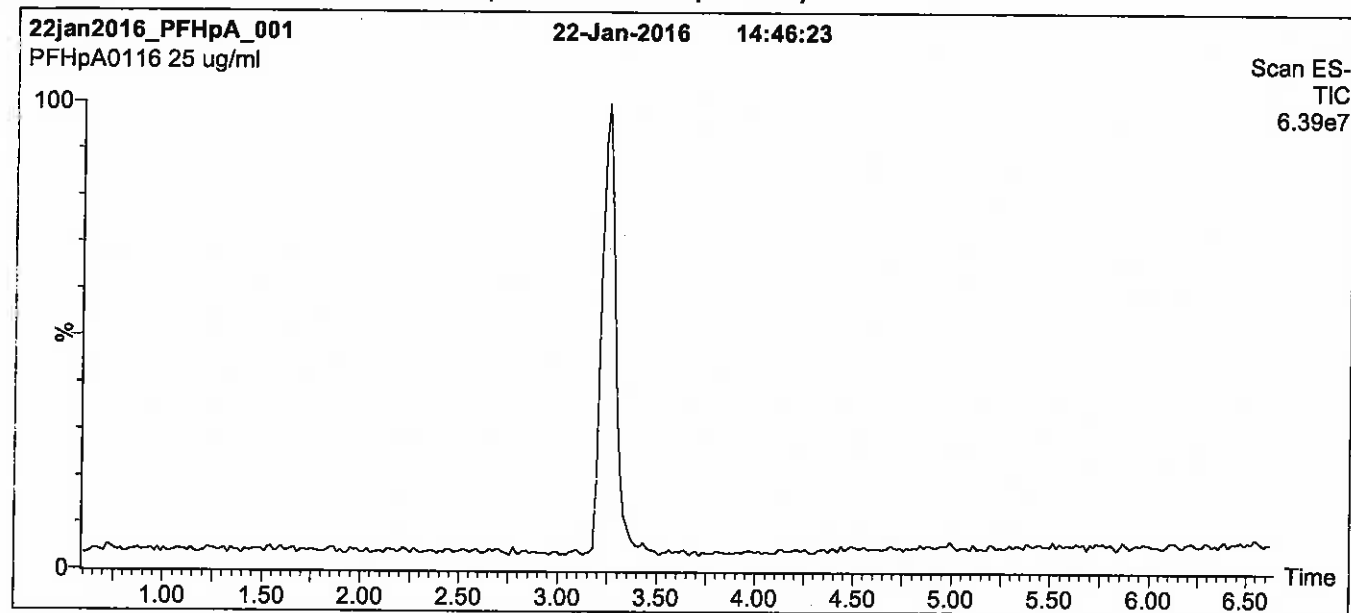
QUALITY MANAGEMENT:

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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: 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

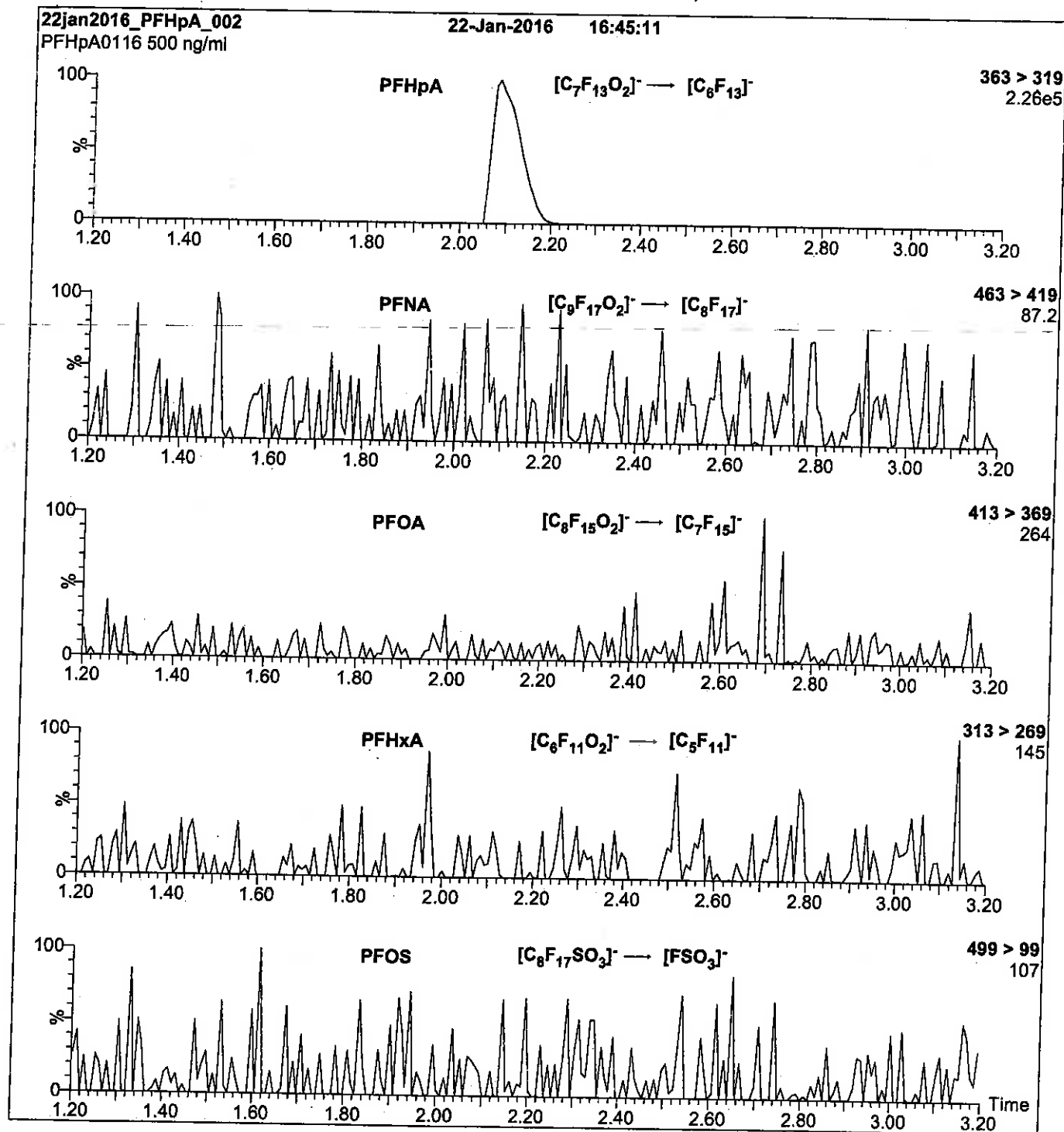
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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

LCPFHpS_00010

Scanned
10/14/16 SP
R: SBC 9/13/16

730635
ID: LCPFHPS_00009
Exp: 11/06/20 Prpd: SBC
PFHpS at 47.6ug/mL

730639
ID: LCPFHPS_00010
Exp: 11/06/20 Prpd: SBC
PFHpS at 47.6ug/mL



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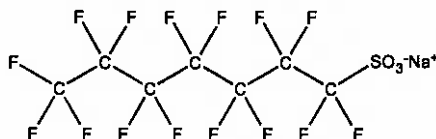
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHPS
COMPOUND: Sodium perfluoro-1-heptanesulfonate

LOT NUMBER: LPFHPS1115

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $C_7F_{15}SO_3Na$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/mL}$ (Na salt)
 $47.6 \pm 2.4 \mu\text{g/mL}$ (PFHpS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/06/2015
EXPIRY DATE: (mm/dd/yyyy) 11/06/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 472.10
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 ~ 0.1% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.2% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 11/09/2015
(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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HAZARDS:

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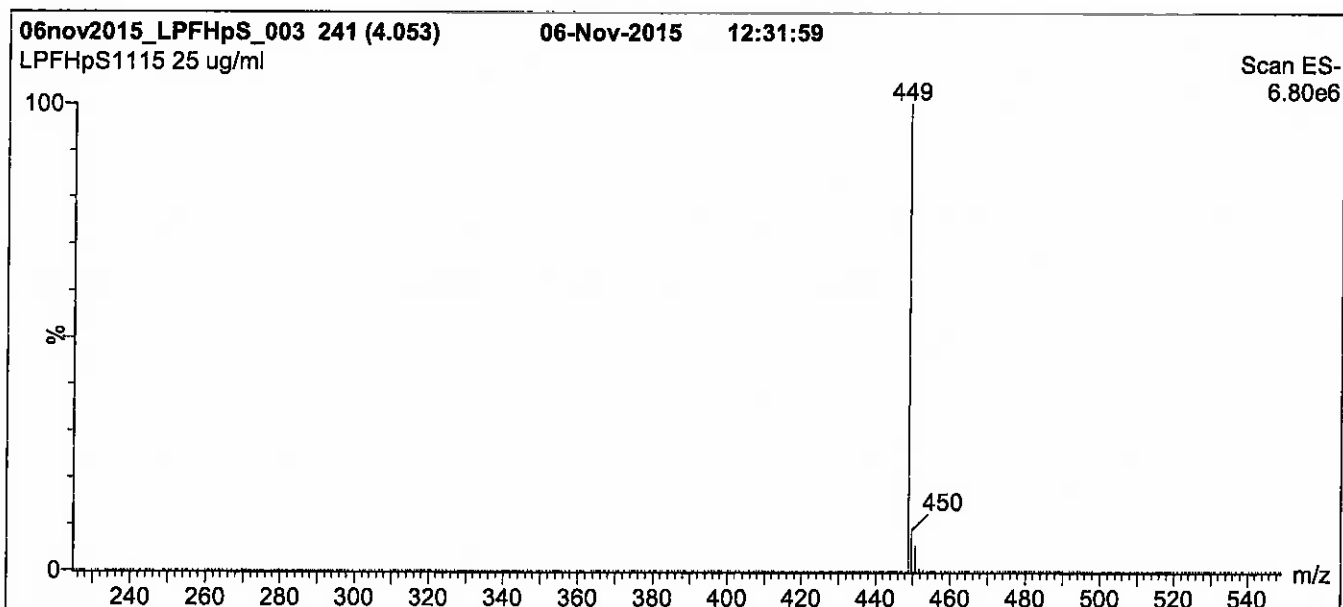
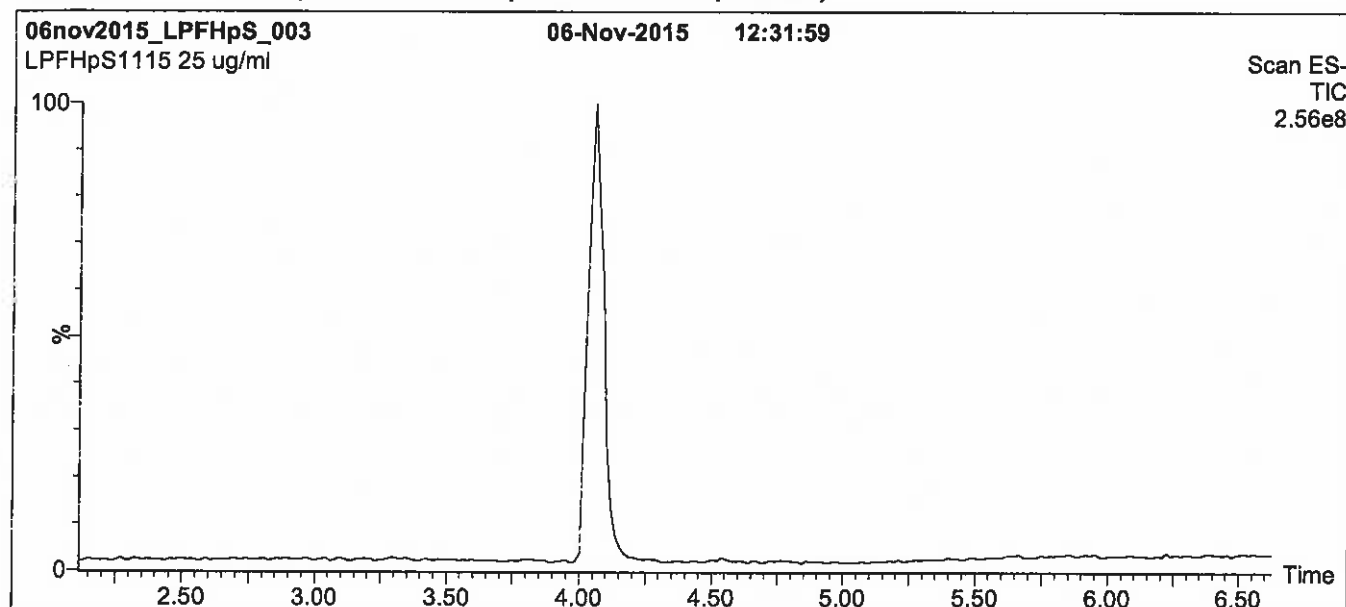
QUALITY MANAGEMENT:

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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 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)

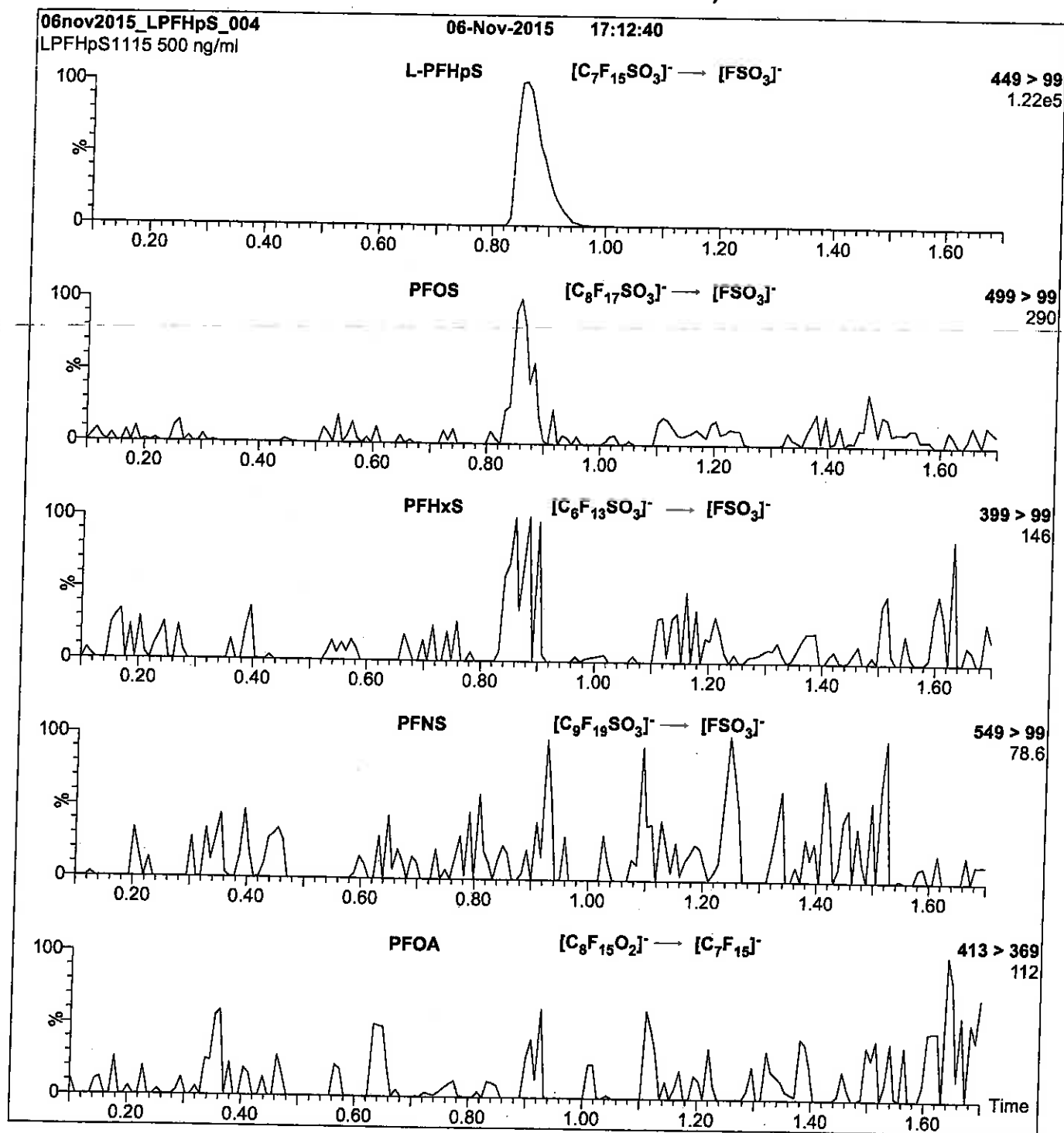
Capillary Voltage (kV) = 2.00

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% 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) = 35

Reagent

LCPFHpSA_00002

r: 12/29/16 SPV



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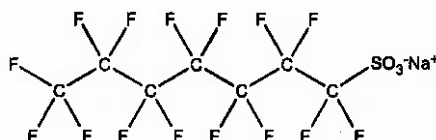
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate

LOT NUMBER: LPFHpS1016

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: $C_7F_{16}SO_3Na$
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (Na salt)
 $47.6 \pm 2.4 \mu\text{g/ml}$ (PFHpS anion)
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

MOLECULAR WEIGHT: 472.10
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 ~ 0.2% 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

Date: 10/20/2016
(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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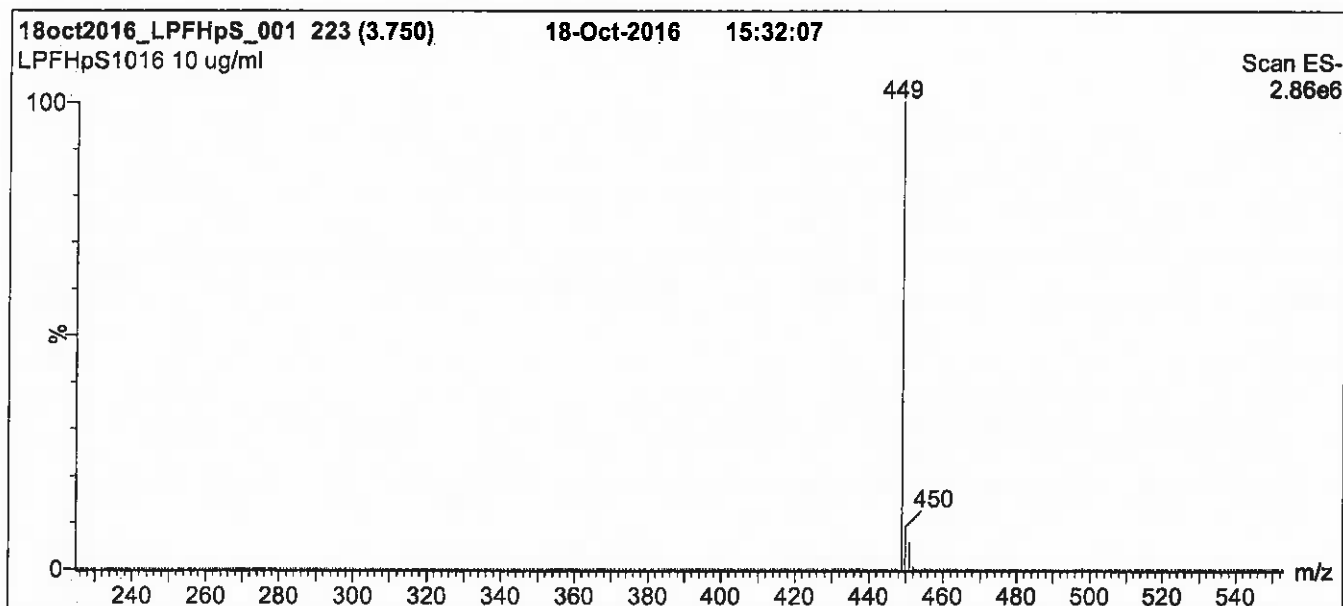
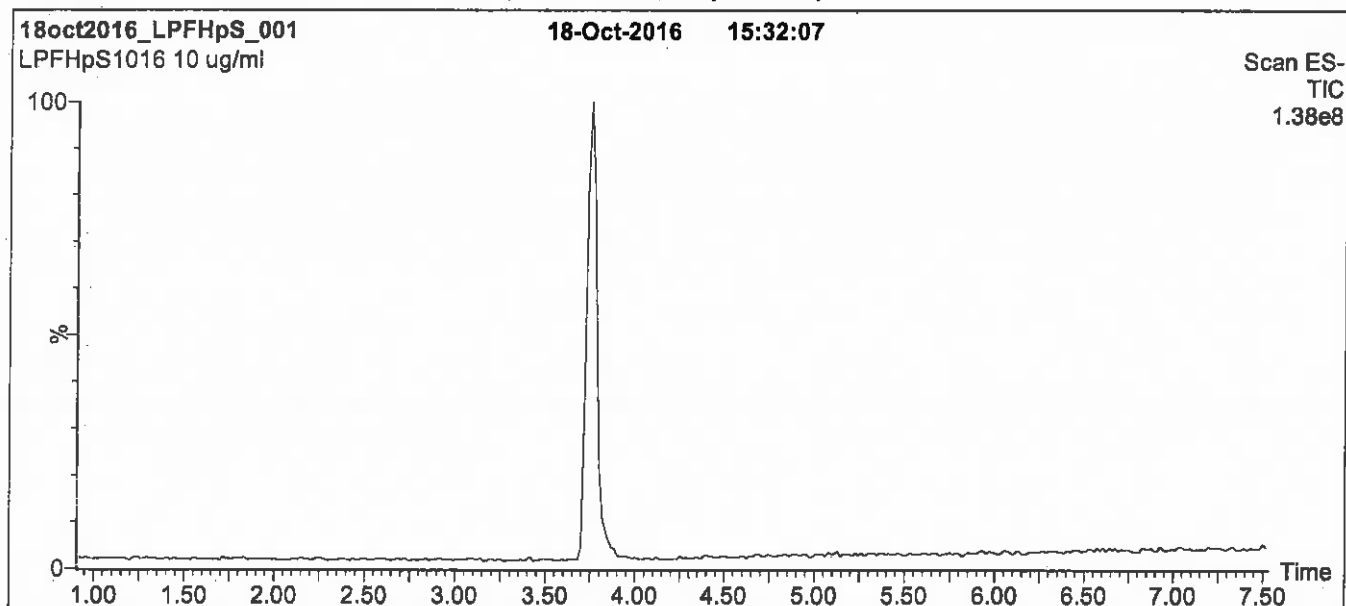
QUALITY MANAGEMENT:

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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: 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)

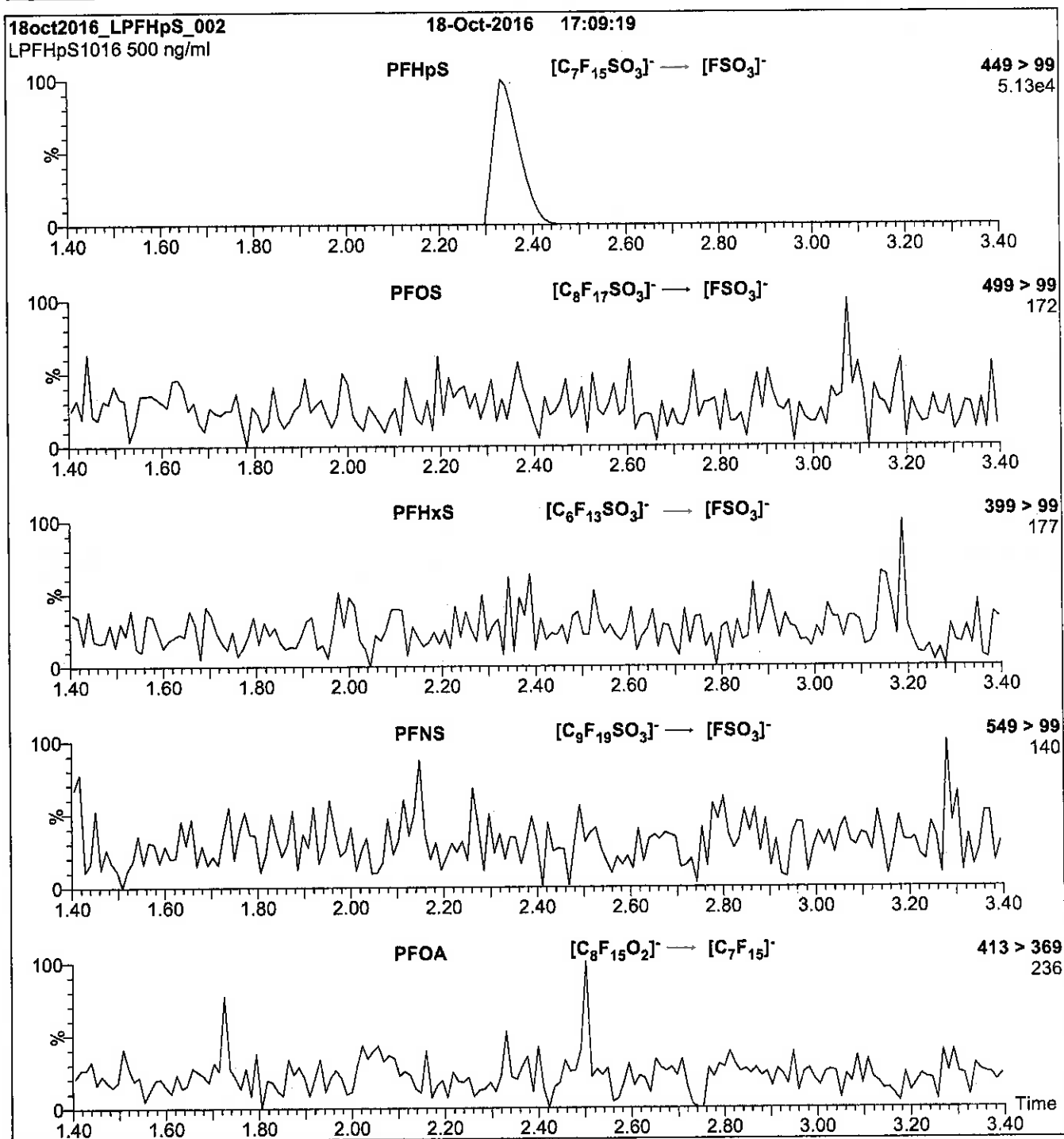
Capillary Voltage (kV) = 2.00

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) = 3.43e-3

Collision Energy (eV) = 35

Reagent

LCPFHxA_00005

R: 832 9/13/16



730551
ID: LCPFHxA_00005
Exp: 12/22/20 Prpd: SBC
PF-n-hexanoic acid



730552
ID: LCPFHxA_00006
Exp: 12/22/20 Prpd: SBC
PF-n-hexanoic acid



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHxA

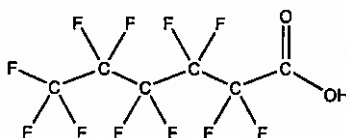
LOT NUMBER: PFHxA1215

COMPOUND:

Perfluoro-n-hexanoic acid

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA:

$C_6HF_{11}O_2$

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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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:

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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:

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.

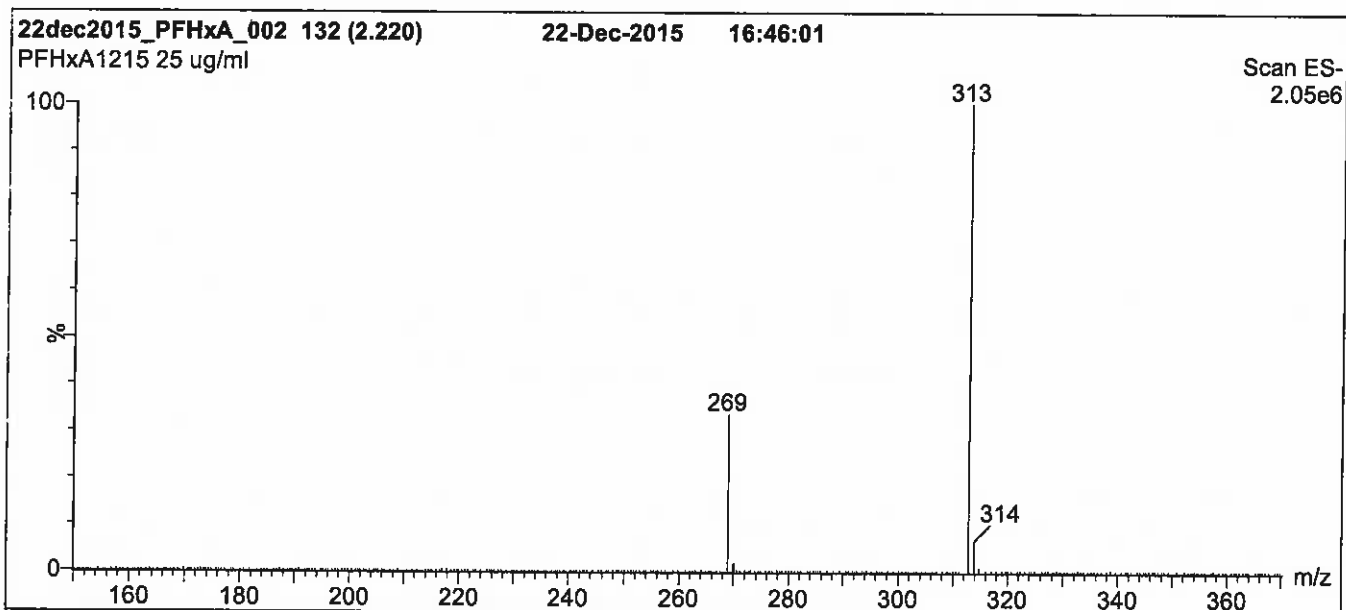
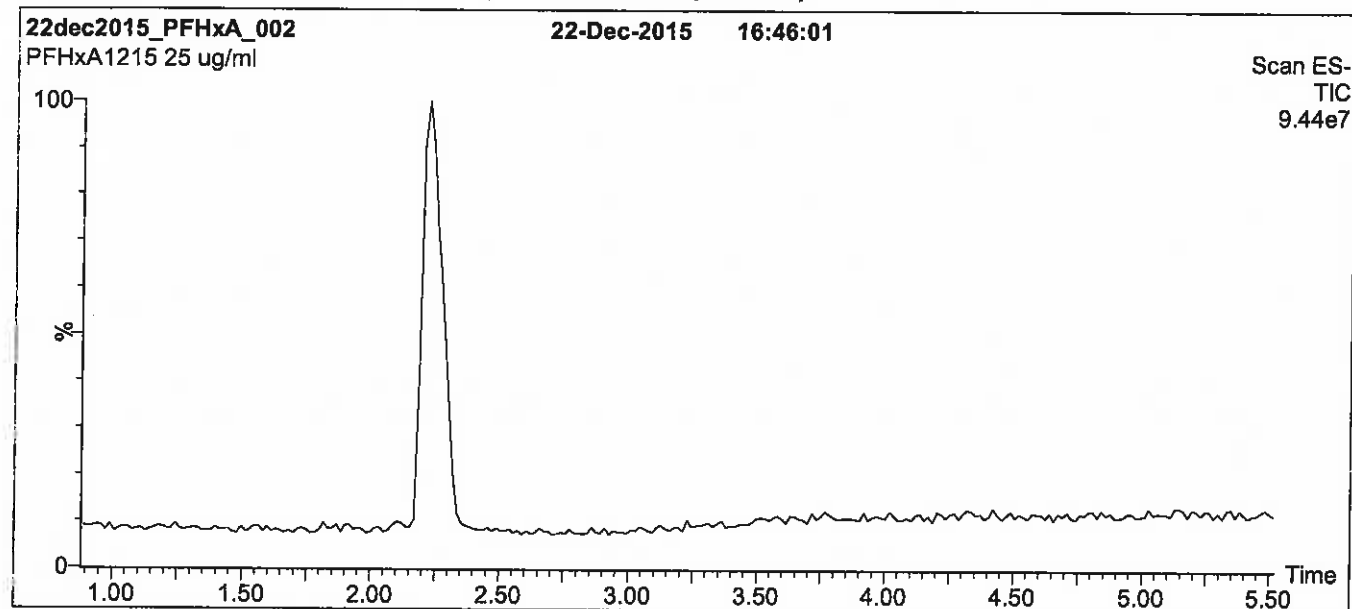
QUALITY MANAGEMENT:

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: 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

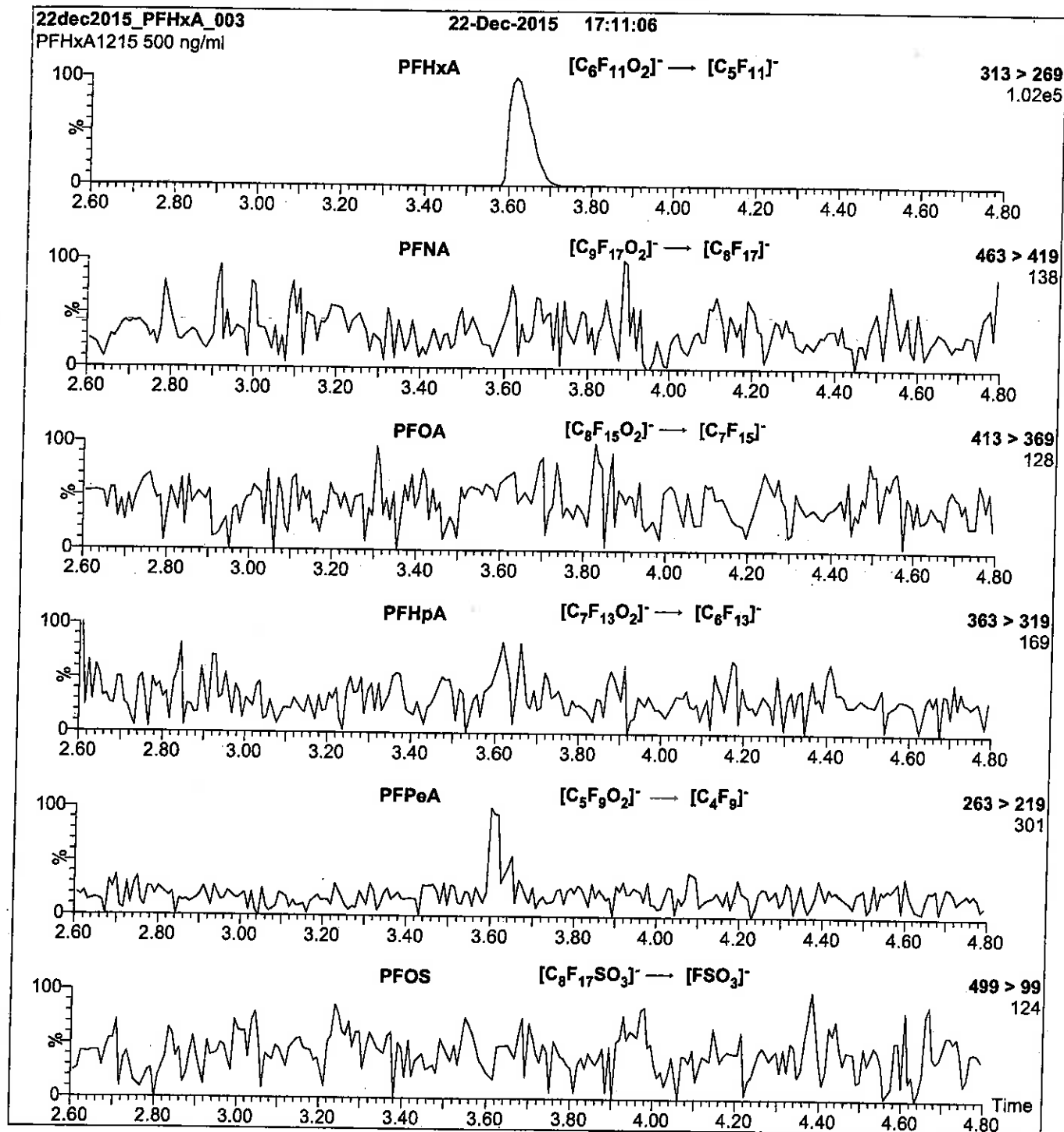
Flow: 300 μ l/min

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

LCPFHxA_00006

R: 832 9/13/16



730551
ID: LCPFHxA_00005
Exp: 12/22/20 Prod: SBC
PF-n-hexanoic acid



730552
ID: LCPFHxA_00006
Exp: 12/22/20 Prod: SBC
PF-n-hexanoic acid



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHxA

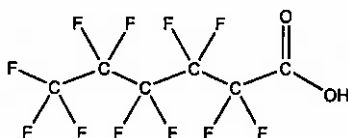
LOT NUMBER: PFHxA1215

COMPOUND:

Perfluoro-n-hexanoic acid

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA:

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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:

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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).

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Certified By:

B.G. Chittim

Date: 12/23/2015

(mm/dd/yyyy)

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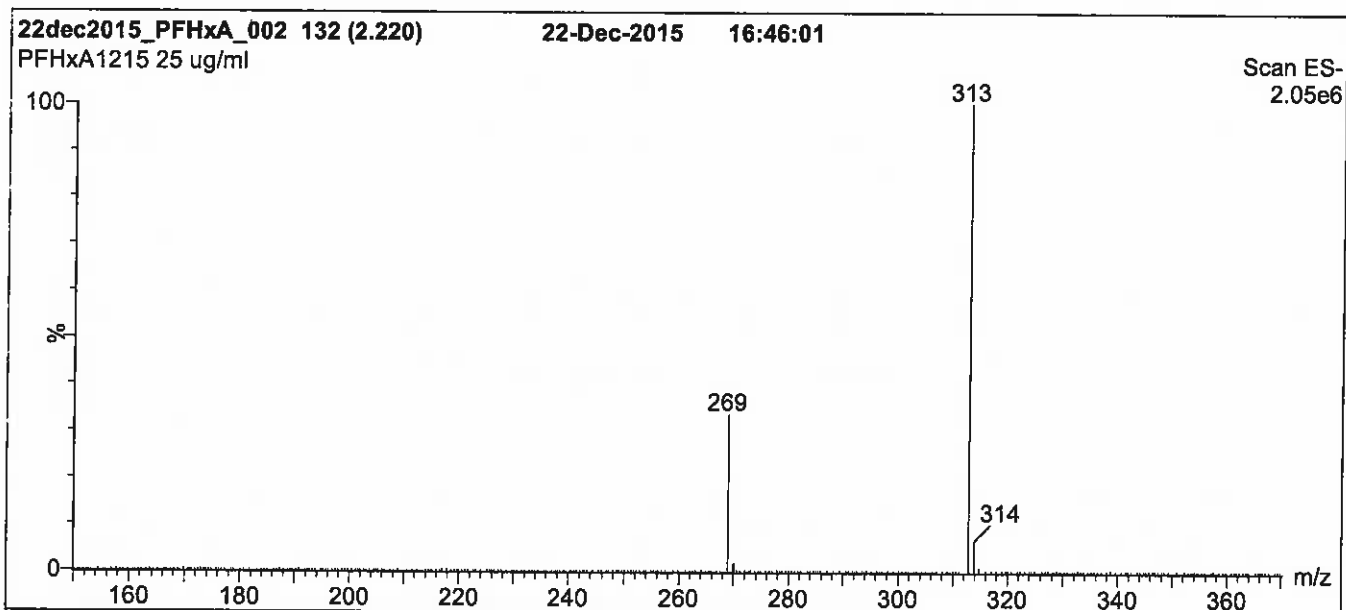
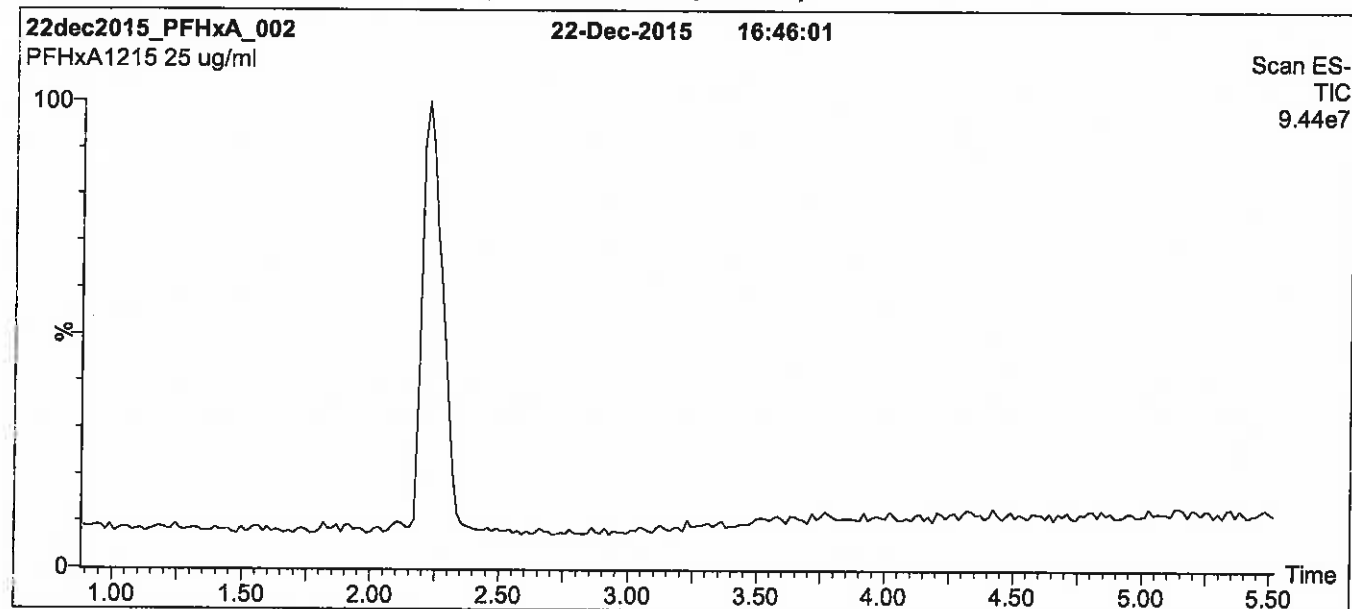
QUALITY MANAGEMENT:

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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

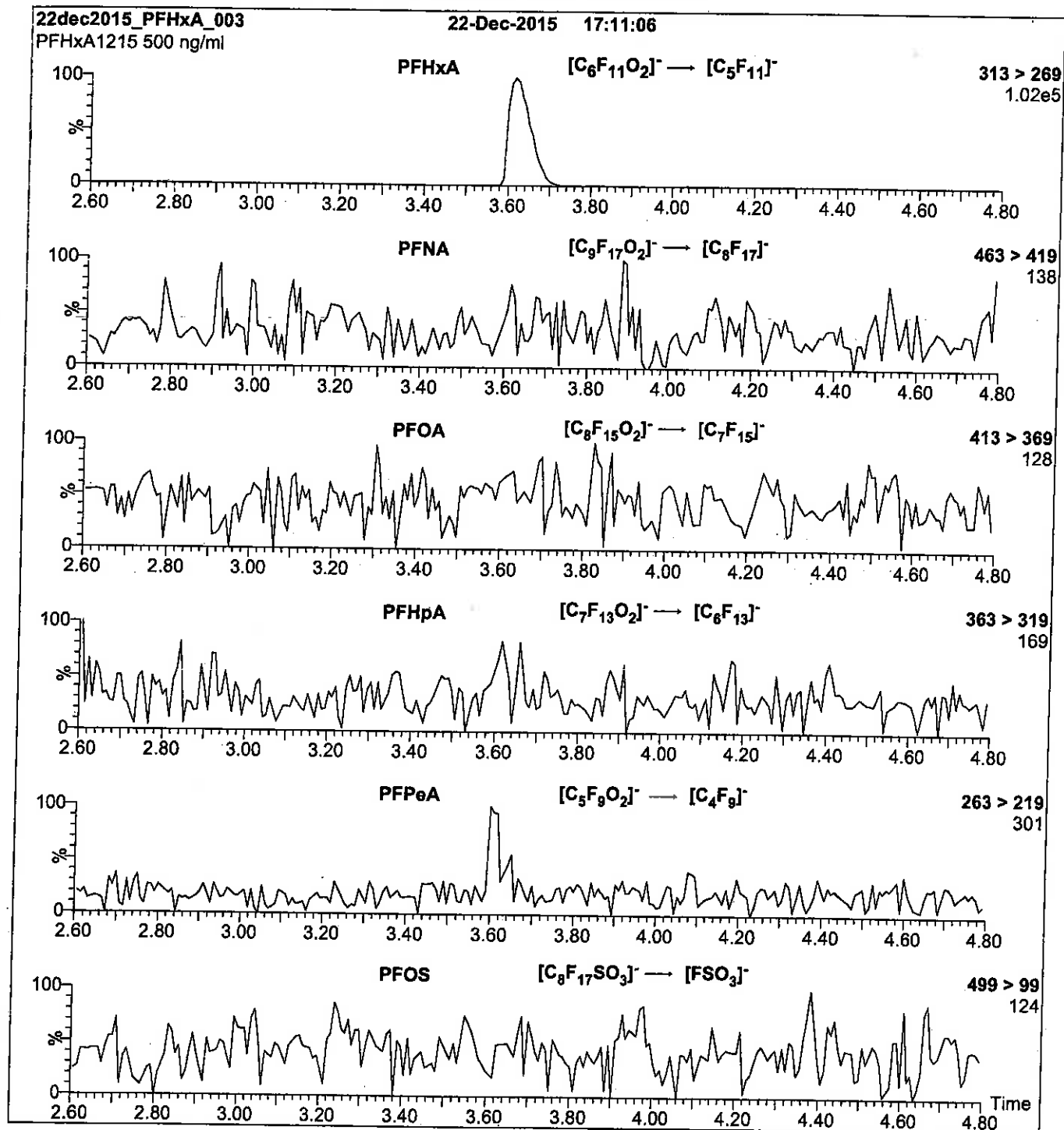
Flow: 300 μ l/min

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_00007



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730630
ID: LCPFHxDA_00006
Exp: 05/25/21 Prpd: SBC
PFHxDA stock 50ug/mL



730631
ID: LCPFHxDA_00007
Exp: 05/25/21 Prpd: SBC
PFHxDA stock 50ug/mL

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFHxDA

LOT NUMBER:

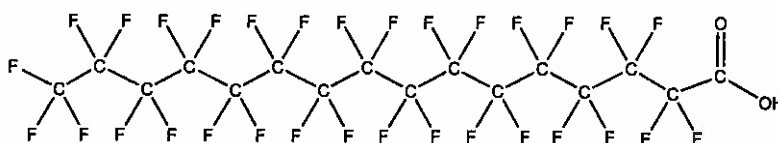
PFHxDA0516

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

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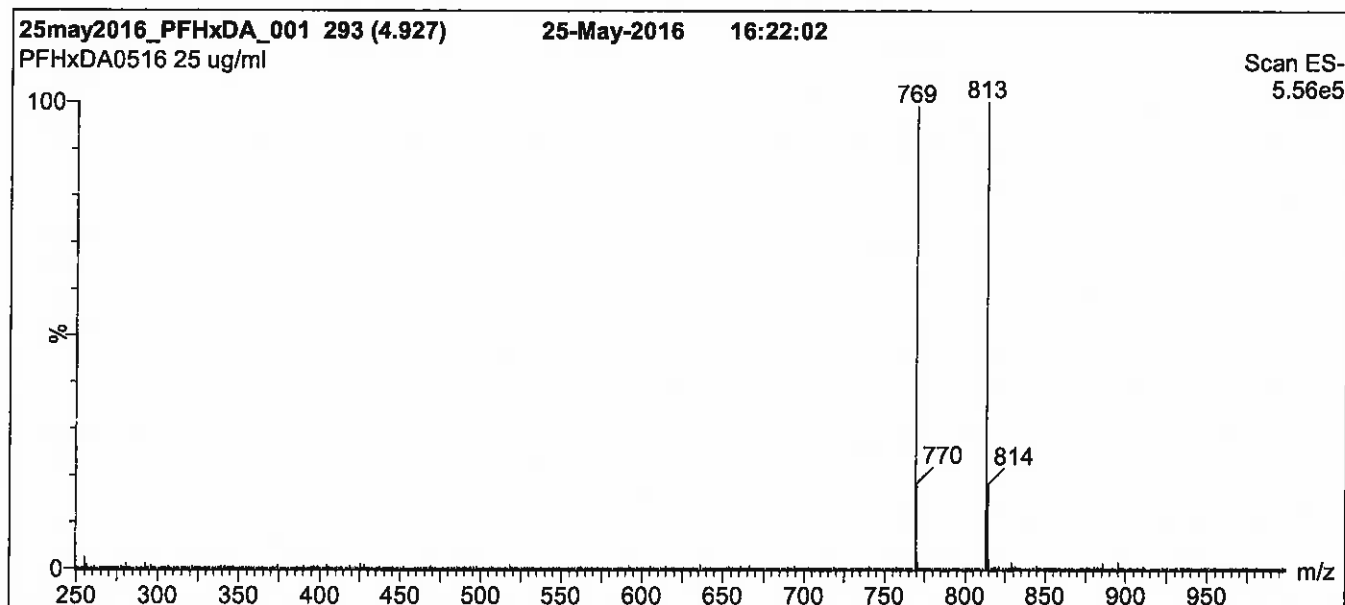
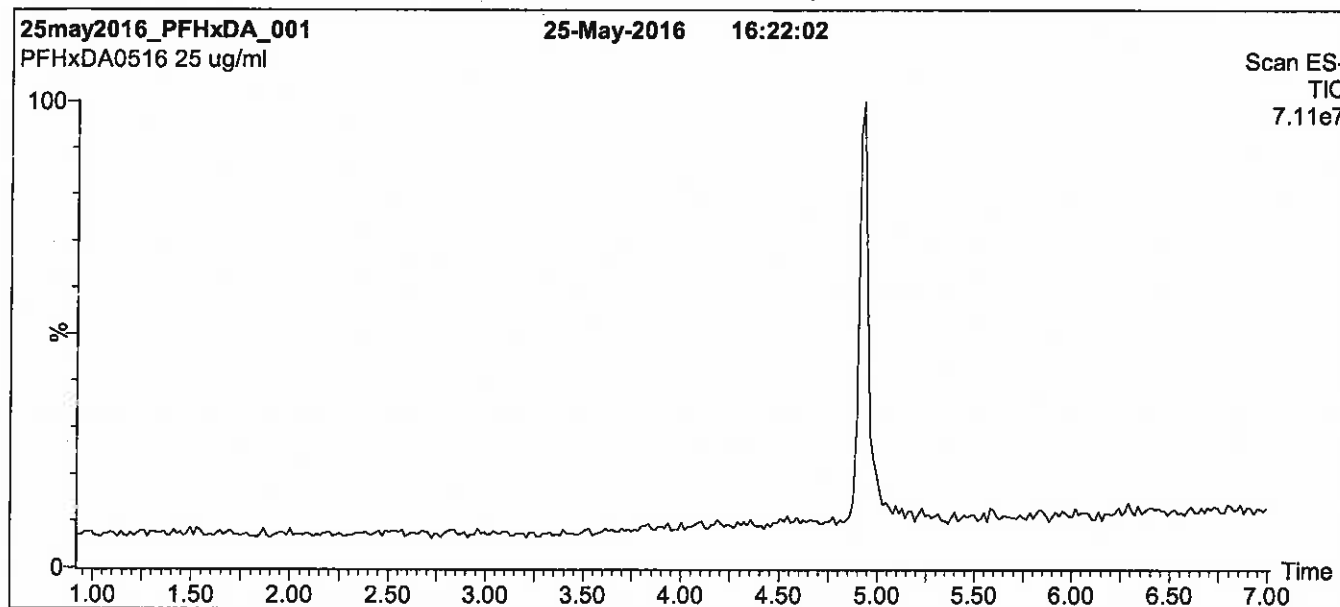
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Figure 1: PFHxDA; LC/MS Data (TIC and Mass Spectrum)



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

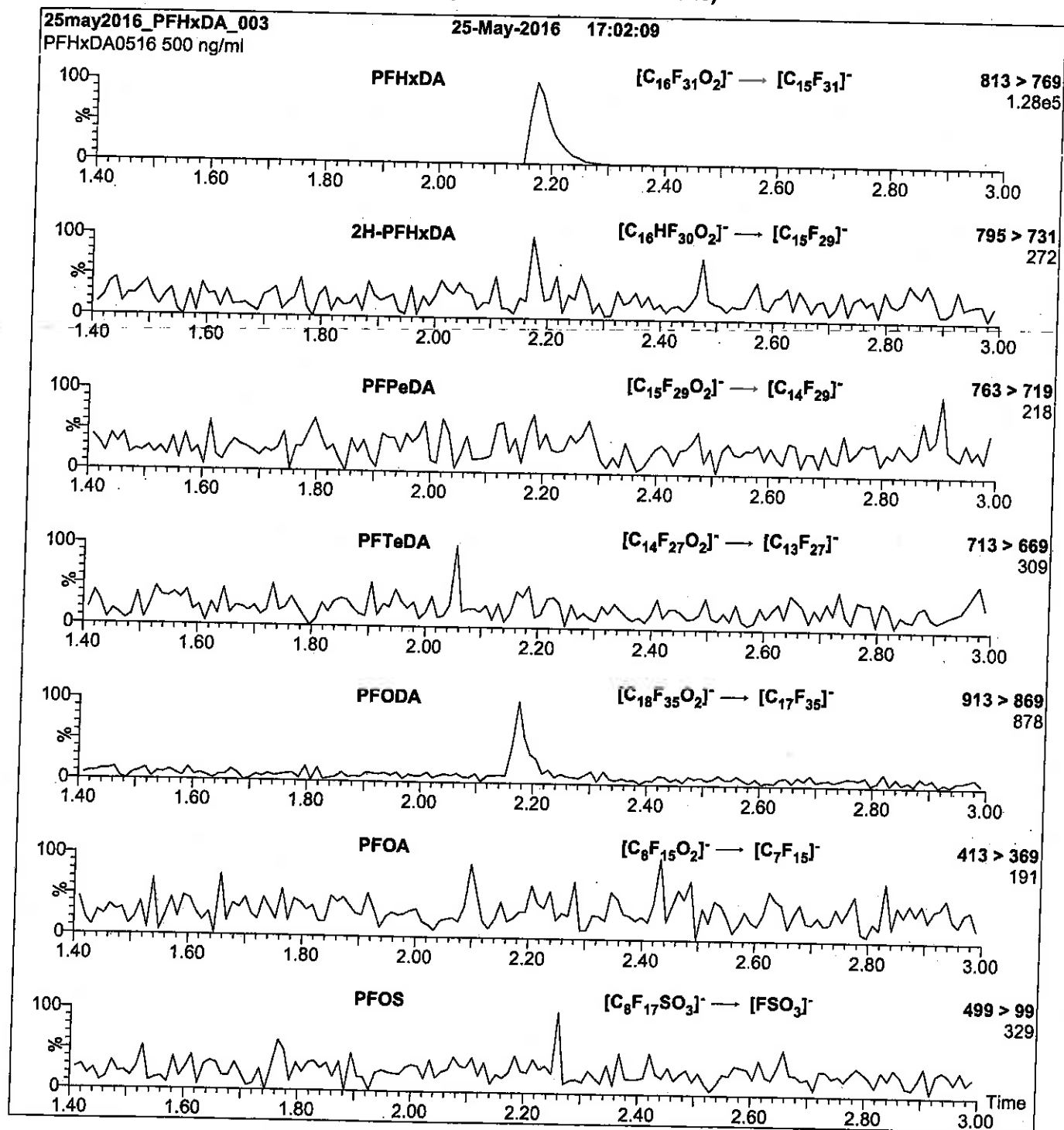
Flow: 300 μ l/min

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_00003

SBC
R: 9/13/16



730513
ID: LCPFHxS-br_00002
Exp: 07/03/20 Pripd: SBC
Potassium Perfluorohexane



730514
ID: LCPFHxS-br_00003
Exp: 07/03/20 Pripd: SBC
Potassium Perfluorohexane



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers

PRODUCT CODE: br-PFHxSK
LOT NUMBER: brPFHxSK0615
CONCENTRATION: 50.0 ± 2.5 µg/ml (total potassium salt)
45.5 ± 2.3 µg/ml (total PFHxS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 06/29/2015
LAST TESTED: (mm/dd/yyyy) 07/03/2015
EXPIRY DATE: (mm/dd/yyyy) 07/03/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorohexanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the identified 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
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.5% of perfluoro-1-pentanesulfonate and ~ 0.2% of perfluoro-1-octanesulfonate.
- CAS#: 3871-99-6 (for linear isomer; potassium salt).

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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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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**	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$\begin{array}{c} \text{CF}_3\text{CF}_2\text{CF}_2\text{CF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3\text{CCF}_2\text{CF}_2\text{SO}_3^-\text{K}^+ \\ \\ \text{CF}_3 \end{array}$	0.2
7	Other Unidentified Isomers		0.5

* Percent of total perfluorohexanesulfonate isomers only.
** Systematic Name: Potassium perfluorohexane-2-sulfonate.

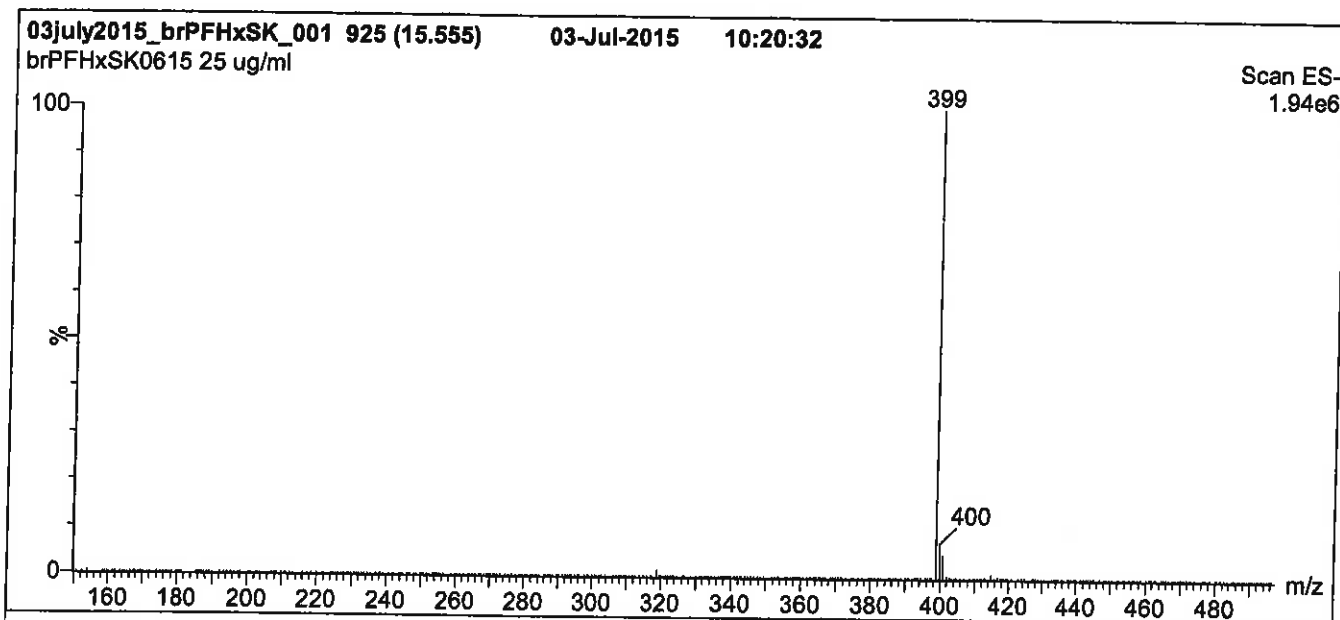
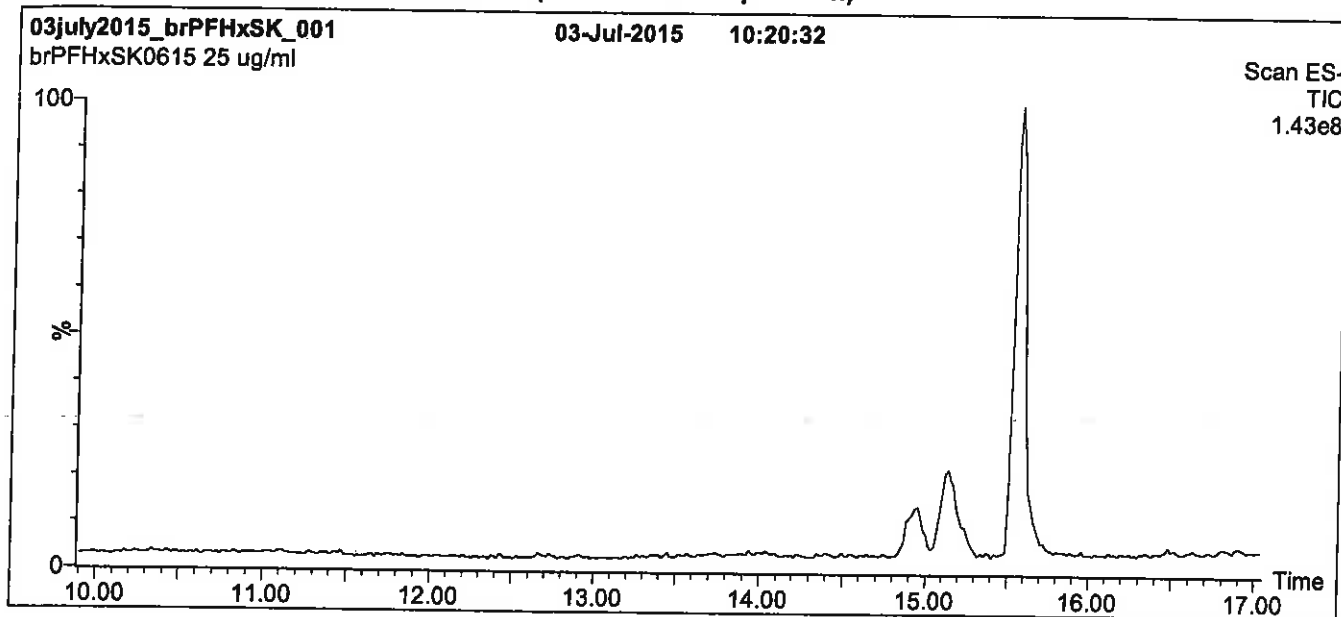
Certified By:


B.G. Chittim

Date: 07/15/2015

(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

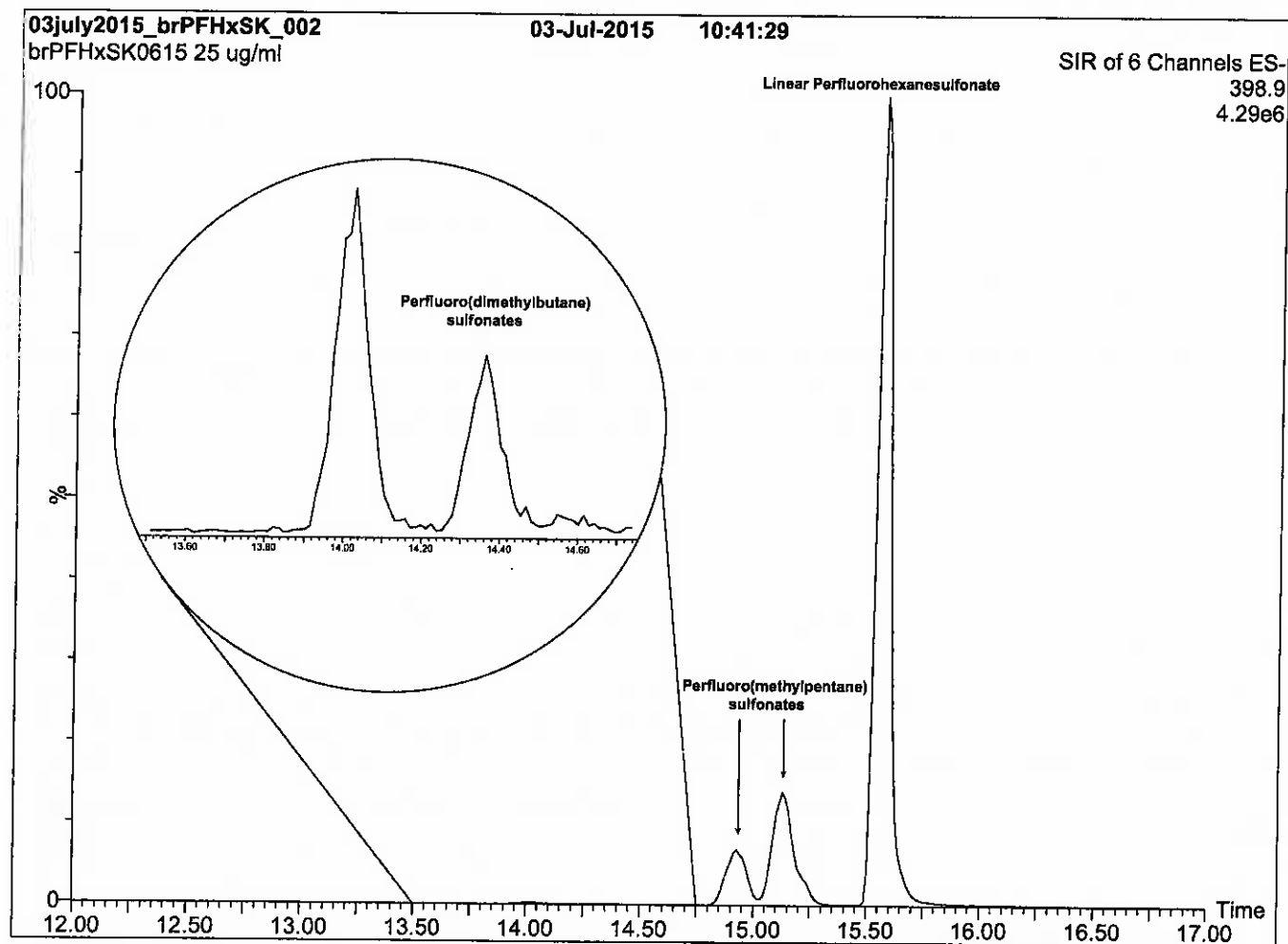
Flow: 300 μ l/min

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

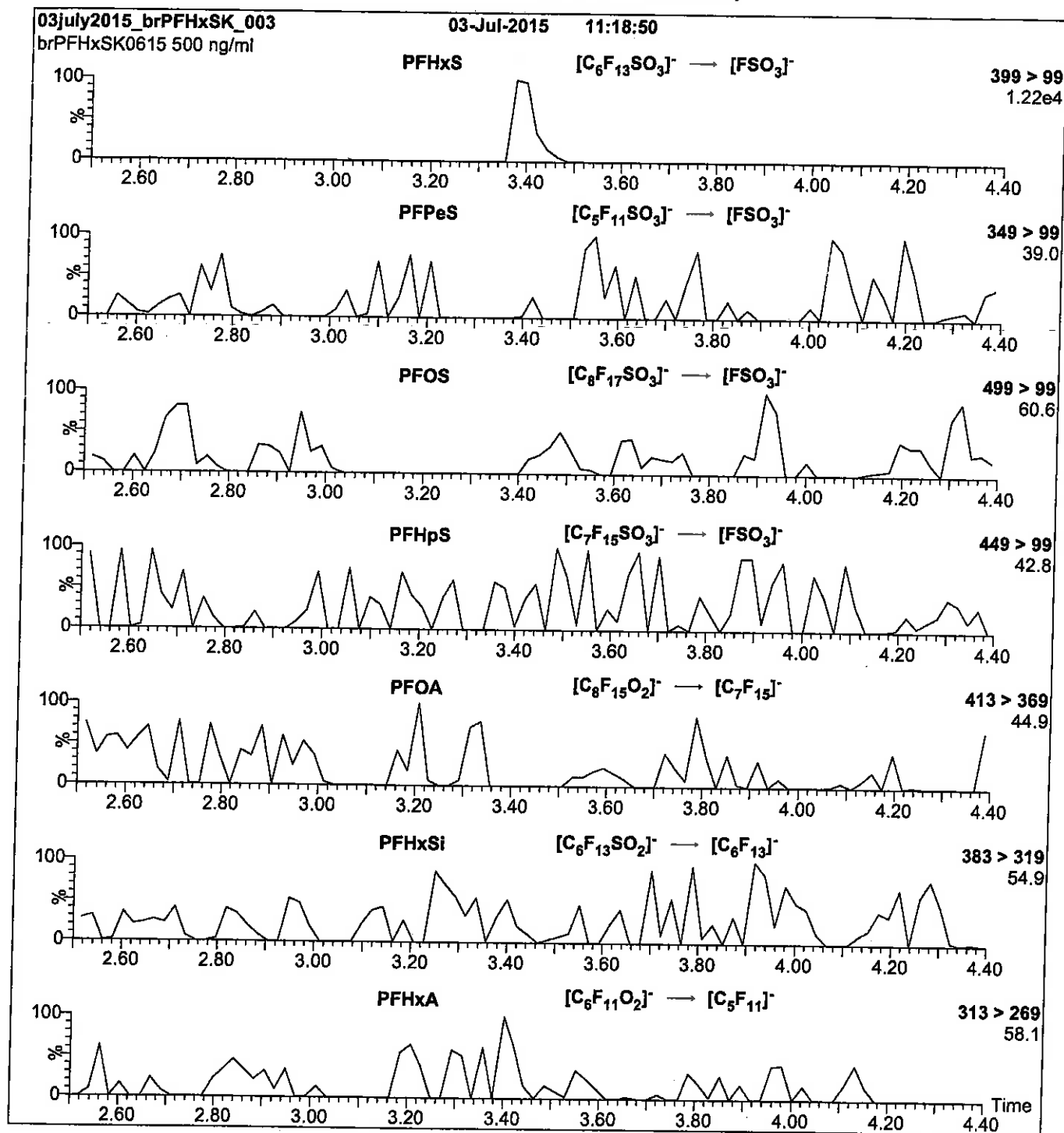
Flow: 300 μ l/min

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% 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

LCPFNA_00007



WELLINGTON
LABORATORIES



730559
ID: LCPFNA_00006
Exp: 10/23/20 Pp4: SBC
PF-n-nonanoic acid



730560
ID: LCPFNA_00007
Exp: 10/23/20 Pp4: SBC
PF-n-nonanoic acid

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFNA

LOT NUMBER:

PFNA1015

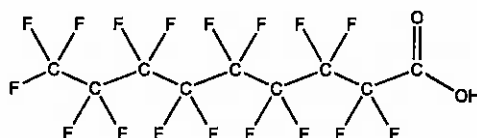
COMPOUND:

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)

10/23/2015

EXPIRY DATE: (mm/dd/yyyy)

10/23/2020

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 ~ 0.1% of perfluoro-n-octanoic acid (PFOA) and < 0.1% of perfluoro-n-heptanoic acid (PFHpA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/30/2015

(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:

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.

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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:

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.

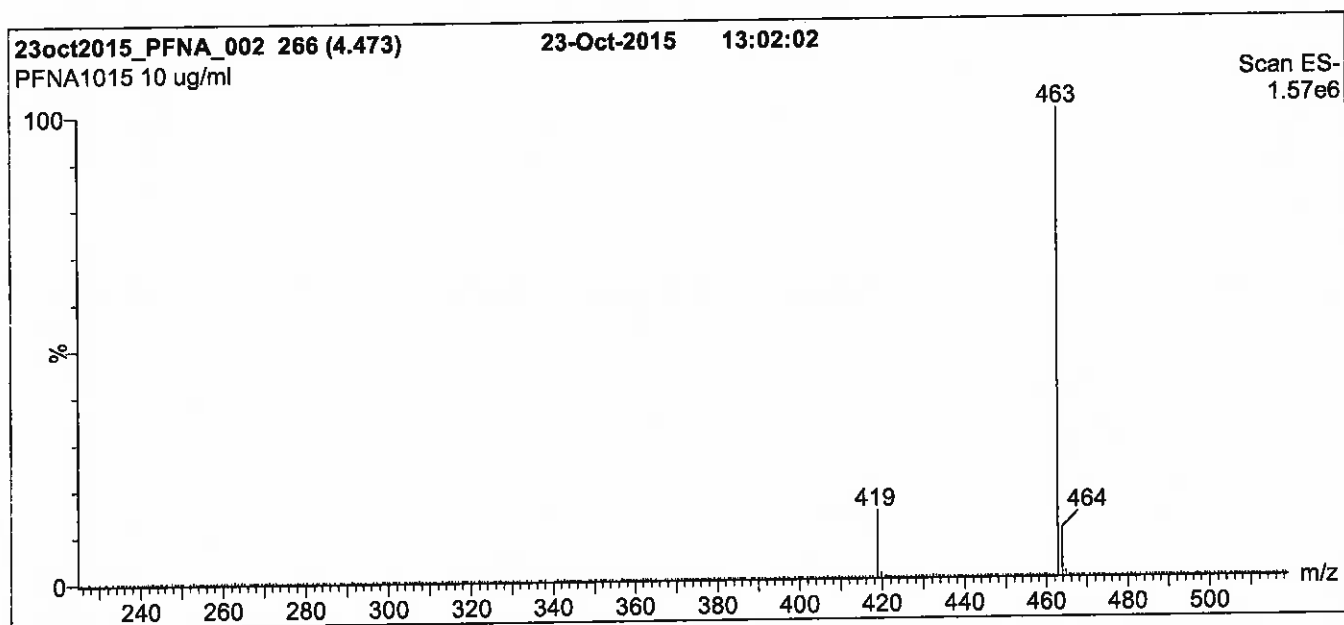
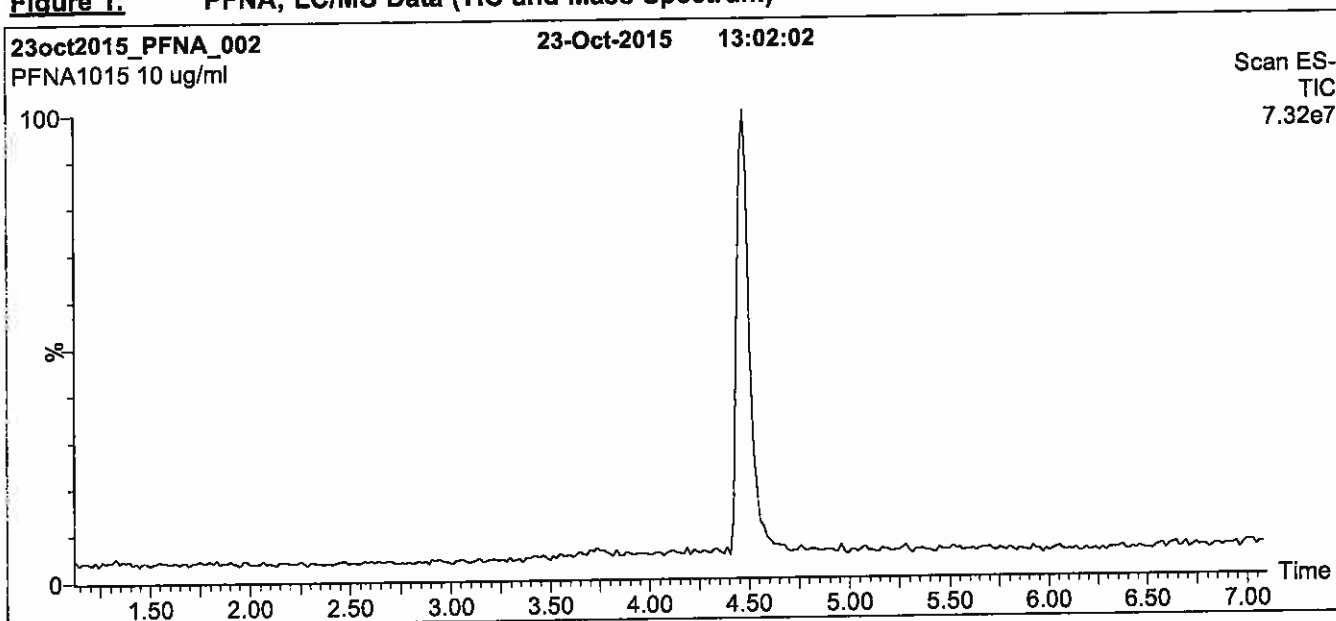
QUALITY MANAGEMENT:

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Figure 1: 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)
Ramp to 90% organic over 7 min and hold for 2 min
before returning to initial conditions in 0.5 min.
Time: 10 min

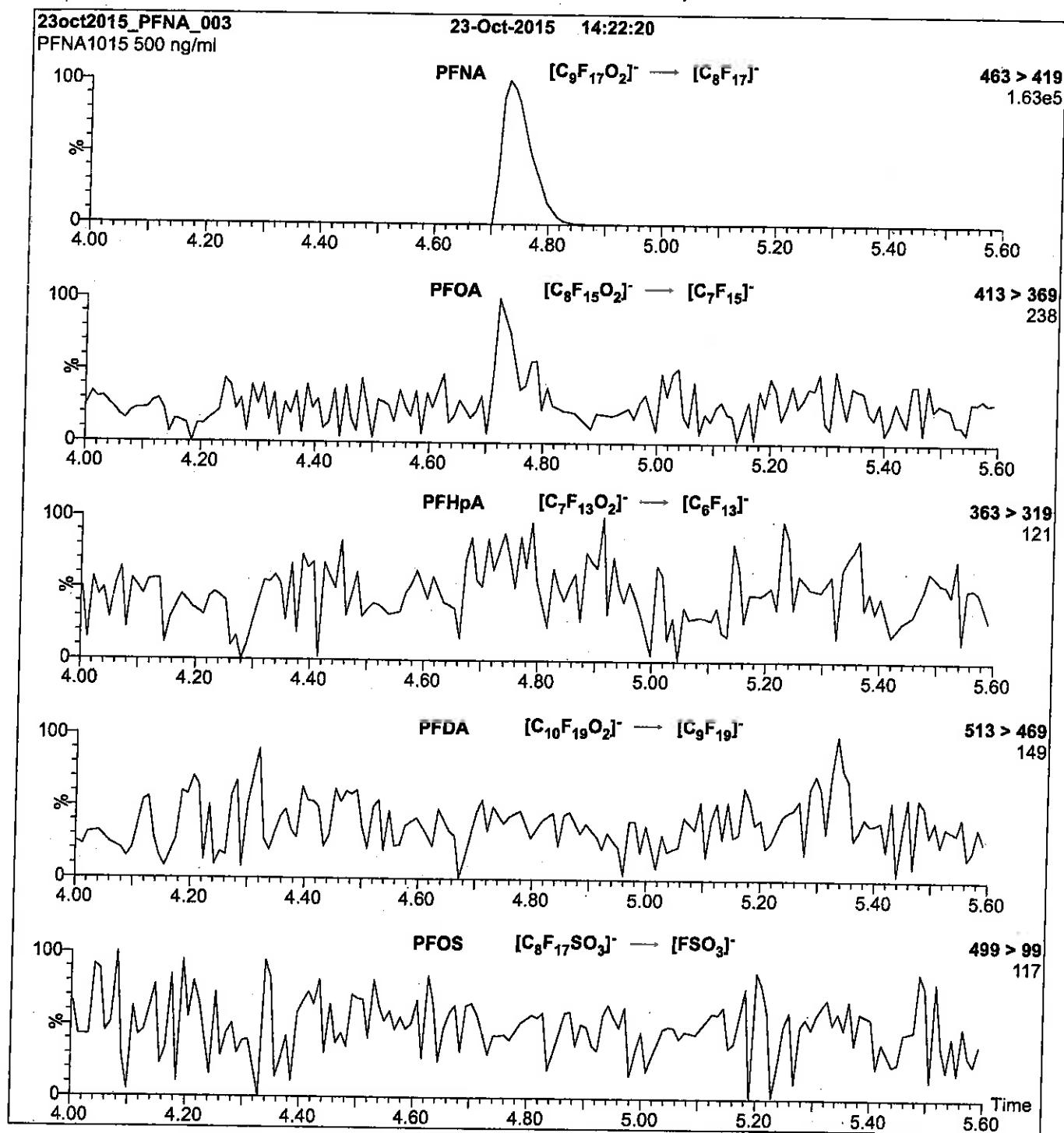
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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) = 3.28e-3
Collision Energy (eV) = 11

Reagent

LCPFOA_00007

n: 12/24/16 Spd



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFOA

LOT NUMBER:

PFOA0716

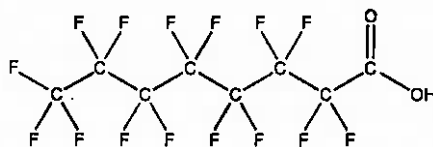
COMPOUND:

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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EXPIRY DATE / PERIOD OF VALIDITY:

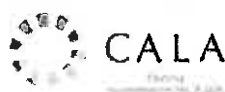
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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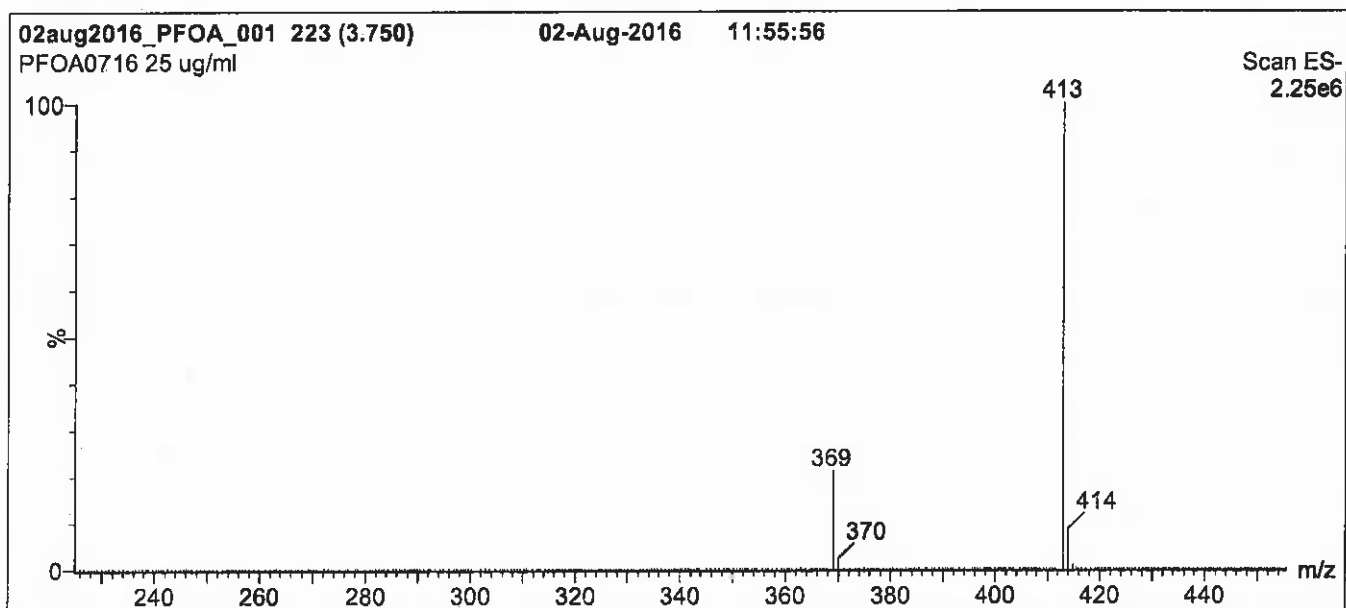
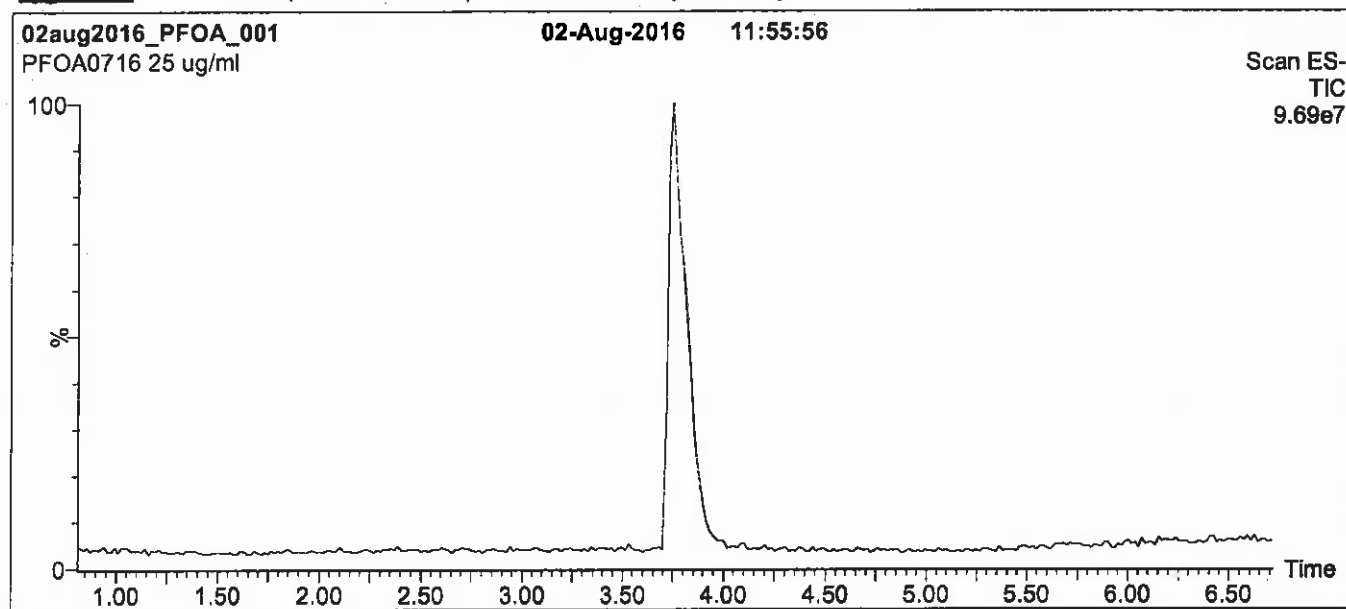
QUALITY MANAGEMENT:

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Figure 1: 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

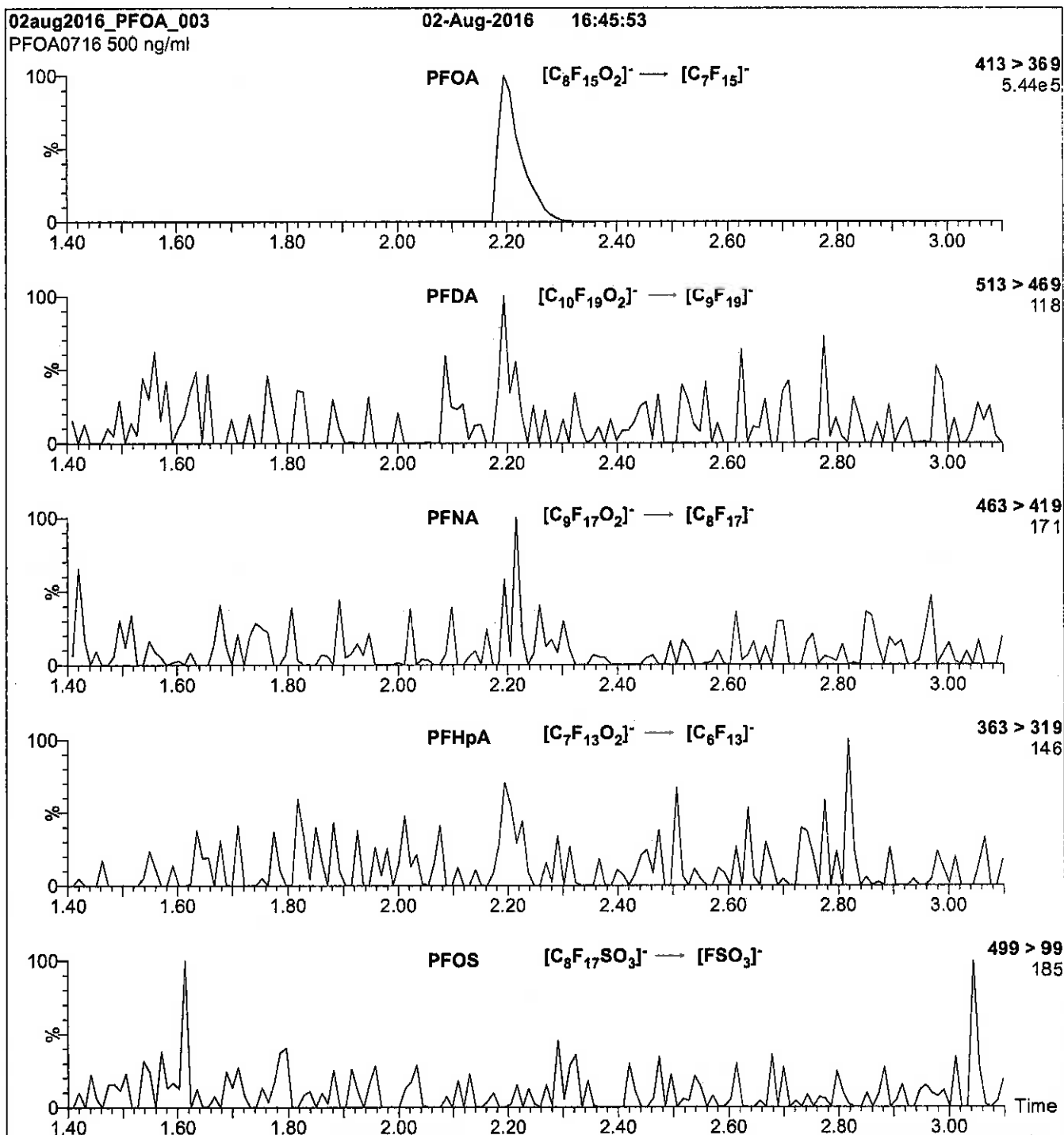
Flow: 300 μ l/min

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

LCPFODA_00007



Scanned
10/14/16
P: SBC
9/13/16

**WELLINGTON
LABORATORIES**

730632
ID: LCPFODA_00006
Exp: 04/29/21 Prod: SBC
PFODA stock 50ug/mL

730633
ID: LCPFODA_00007
Exp: 04/29/21 Prod: SBC
PFODA stock 50ug/mL

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE:

PFODA

LOT NUMBER:

PFODA0416

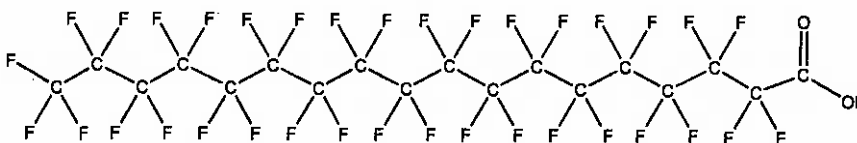
COMPOUND:

Perfluoro-n-octadecanoic acid

STRUCTURE:

CAS #:

16517-11-6



MOLECULAR FORMULA:

$C_{18}H_{36}O_2$

MOLECULAR WEIGHT:

914.14

CONCENTRATION:

50 ± 2.5 µg/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)

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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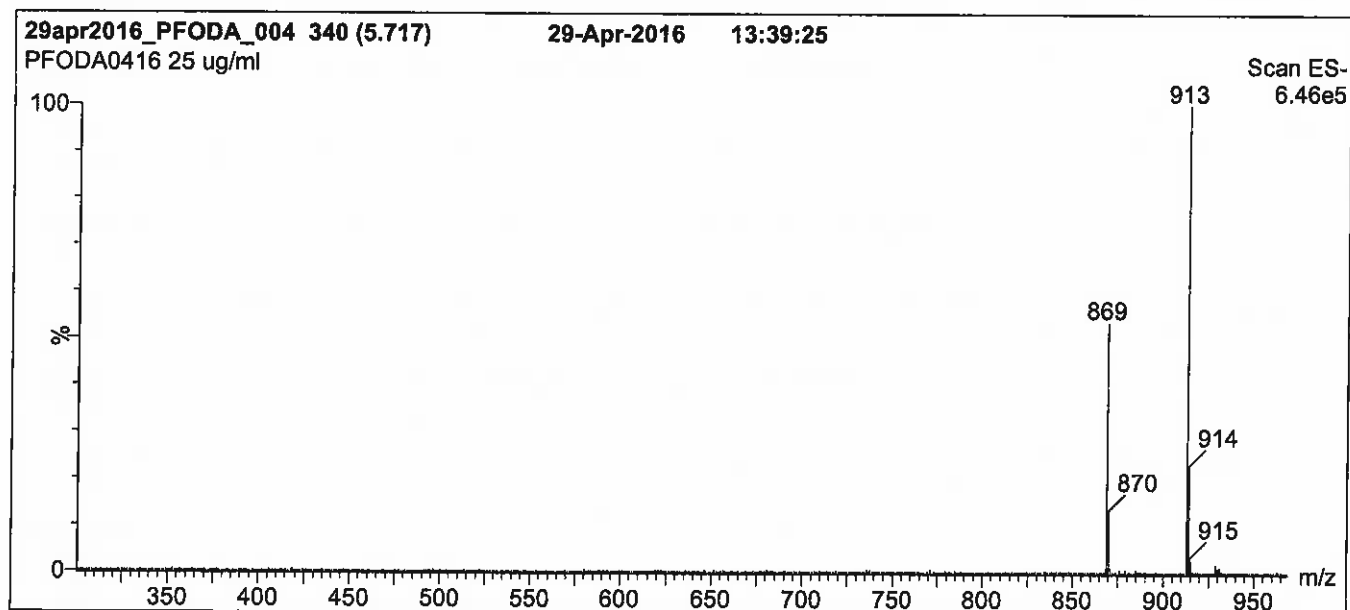
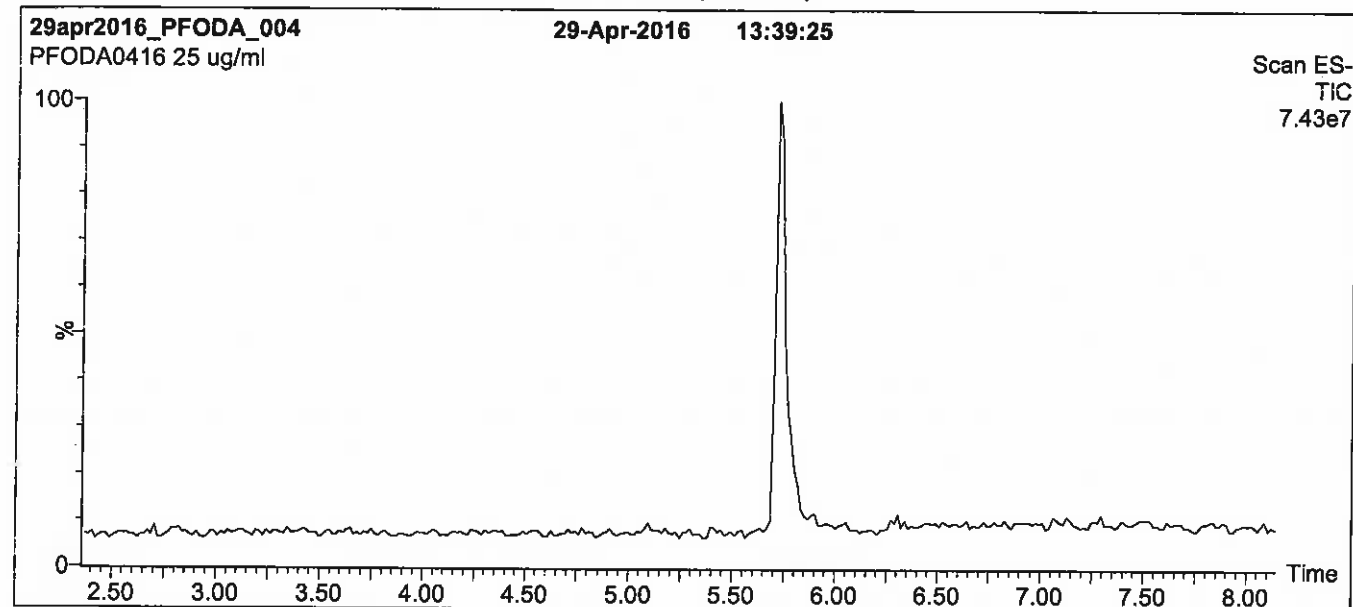
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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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: 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

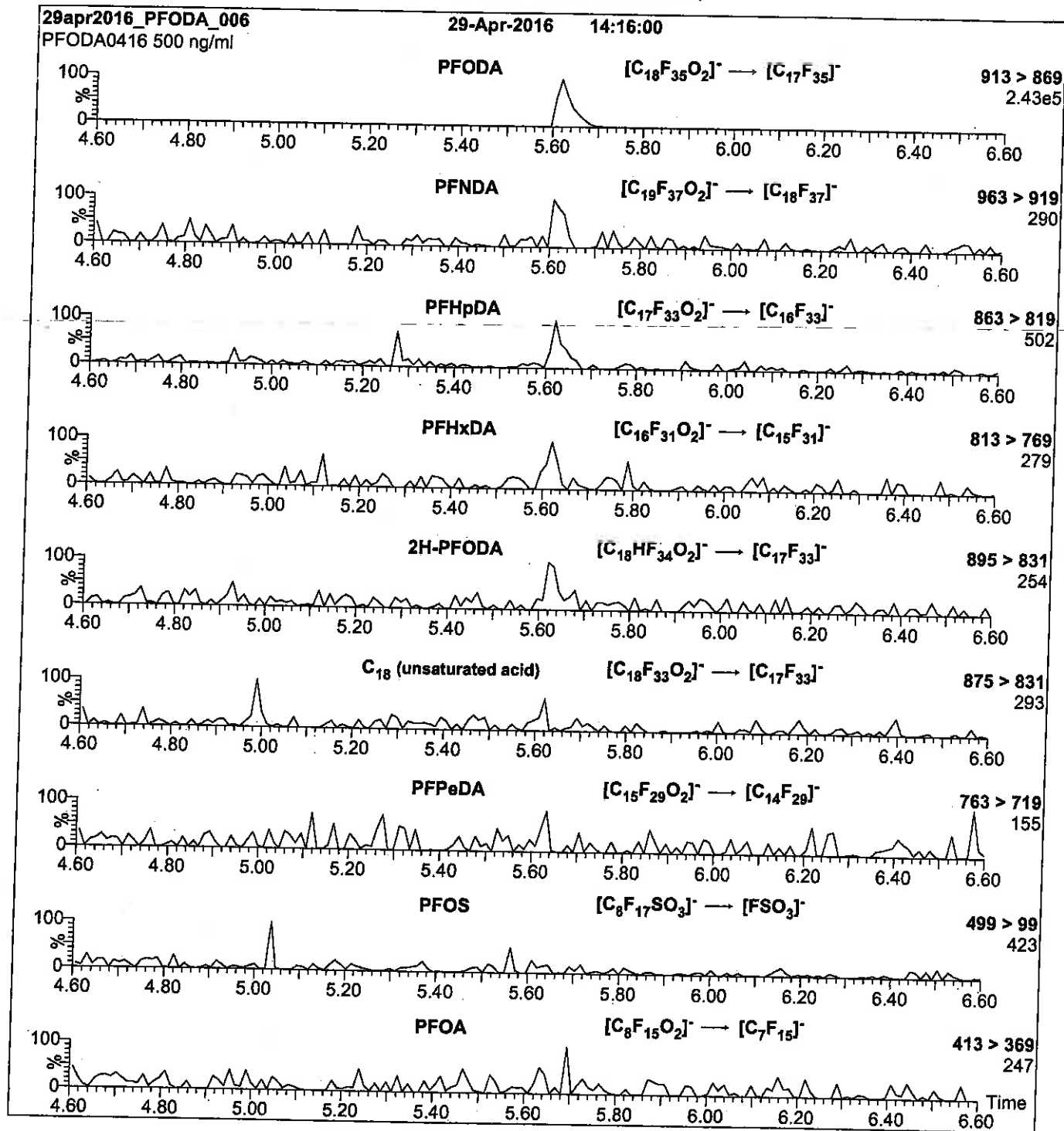
Flow: 300 μ l/min

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_00003

Scanned
10/14/16 SR

R: SBC 9/13/16



730515

ID: LCPFOS-br_00002

Exp: 10/14/20 Ppdt: SBC

Potassium Perfluorooctane



730516

ID: LCPFOS-br_00003

Exp: 10/14/20 Ppdt: SBC

Potassium Perfluorooctane



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate
Solution/Mixture of Linear and
Branched Isomers

PRODUCT CODE: br-PFOSK
LOT NUMBER: brPFOSK1015
CONCENTRATION: 50 ± 2.5 µg/ml (total potassium salt)
46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S): Methanol
DATE PREPARED: (mm/dd/yyyy) 10/13/2015
LAST TESTED: (mm/dd/yyyy) 10/14/2015
EXPIRY DATE: (mm/dd/yyyy) 10/14/2020
RECOMMENDED STORAGE: 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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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 compounds it contains.

HAZARDS:

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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:

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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.

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Table A: br-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 CF ₂ SO ₃ K ⁺	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
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF(CF ₃)SO ₃ K ⁺	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF(CF ₃)CF ₂ SO ₃ K ⁺	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF(CF ₃)CF ₂ CF ₂ SO ₃ K ⁺	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF(CF ₃)CF ₂ CF ₂ CF ₂ SO ₃ K ⁺	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF(CF ₃)CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ K ⁺	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₃ CF(CF ₃)CF ₂ CF ₂ CF ₂ SO ₃ K ⁺	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF(CF ₃)CF(CF ₃)CF ₂ SO ₃ K ⁺	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF(CF ₃)CF(CF ₃)CF ₂ CF ₂ SO ₃ K ⁺	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF(CF ₃)CF ₂ CF(CF ₃)CF ₂ SO ₃ K ⁺	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labelled in Figure 2.

** Systematic Name: Potassium perfluorooctane-2-sulfonate.

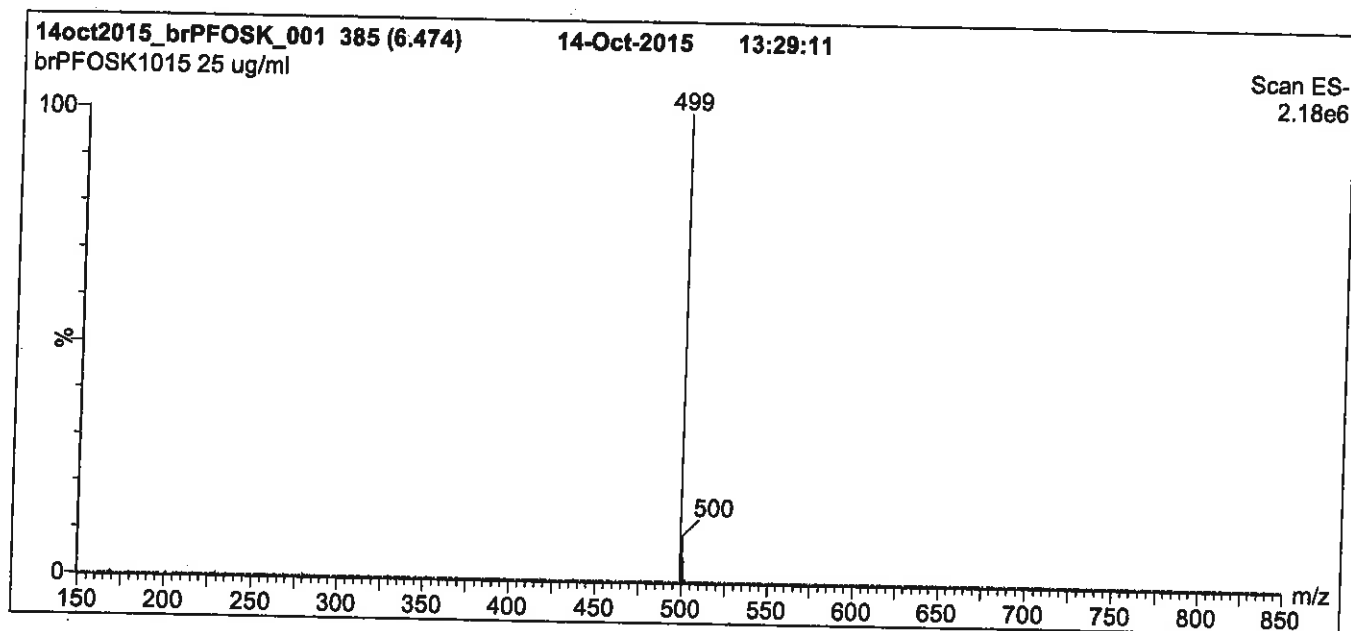
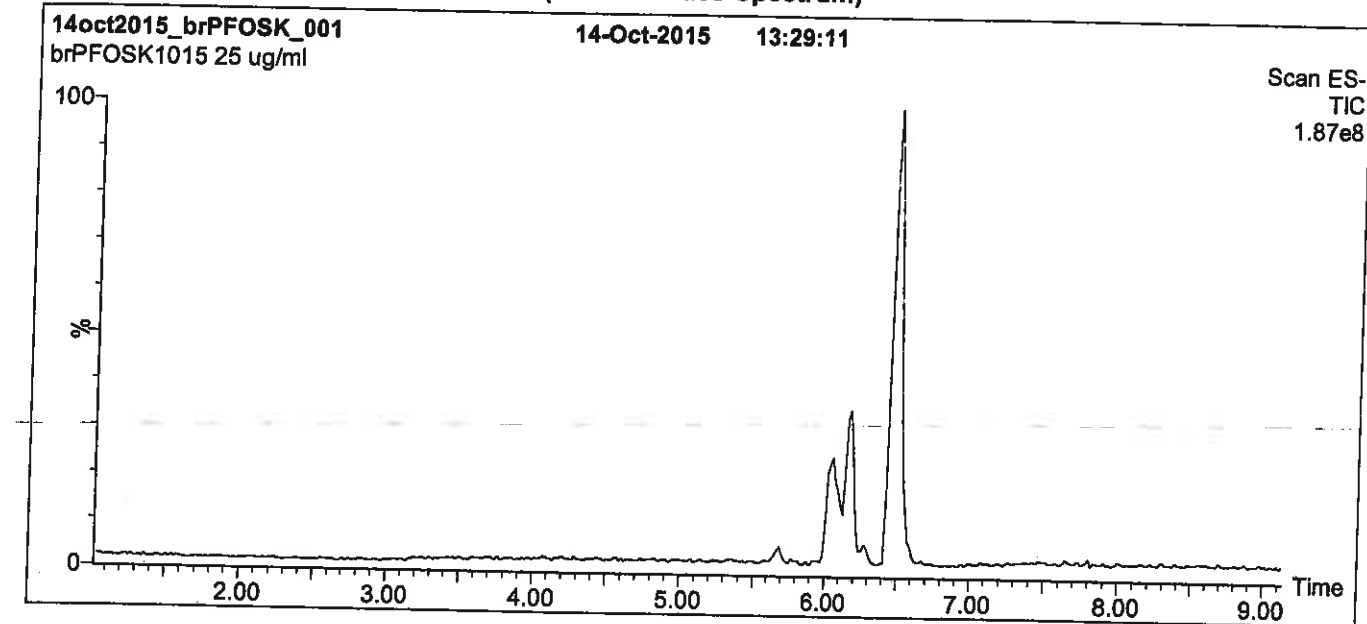
Certified By:


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

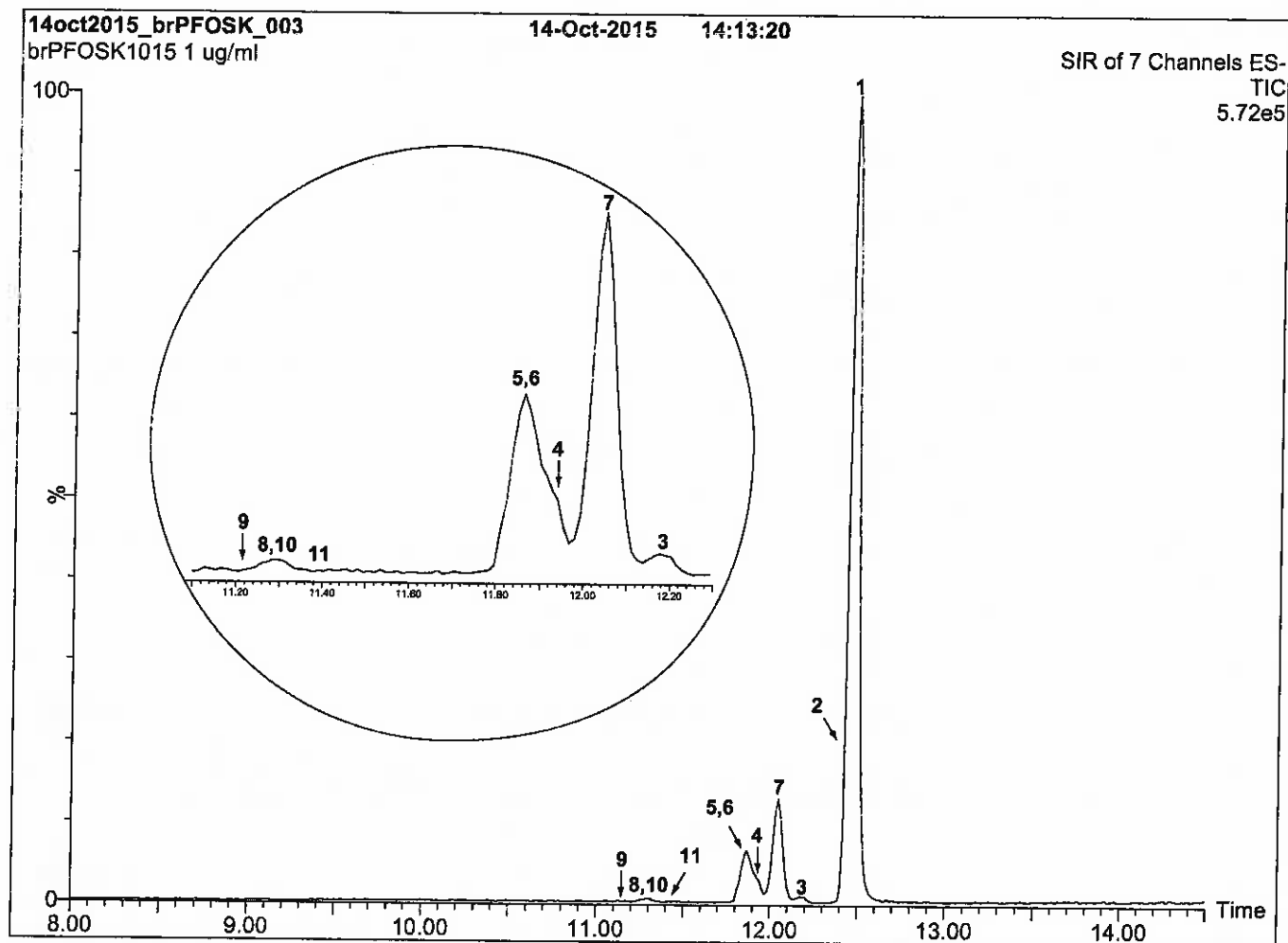
Flow: 300 μ l/min

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

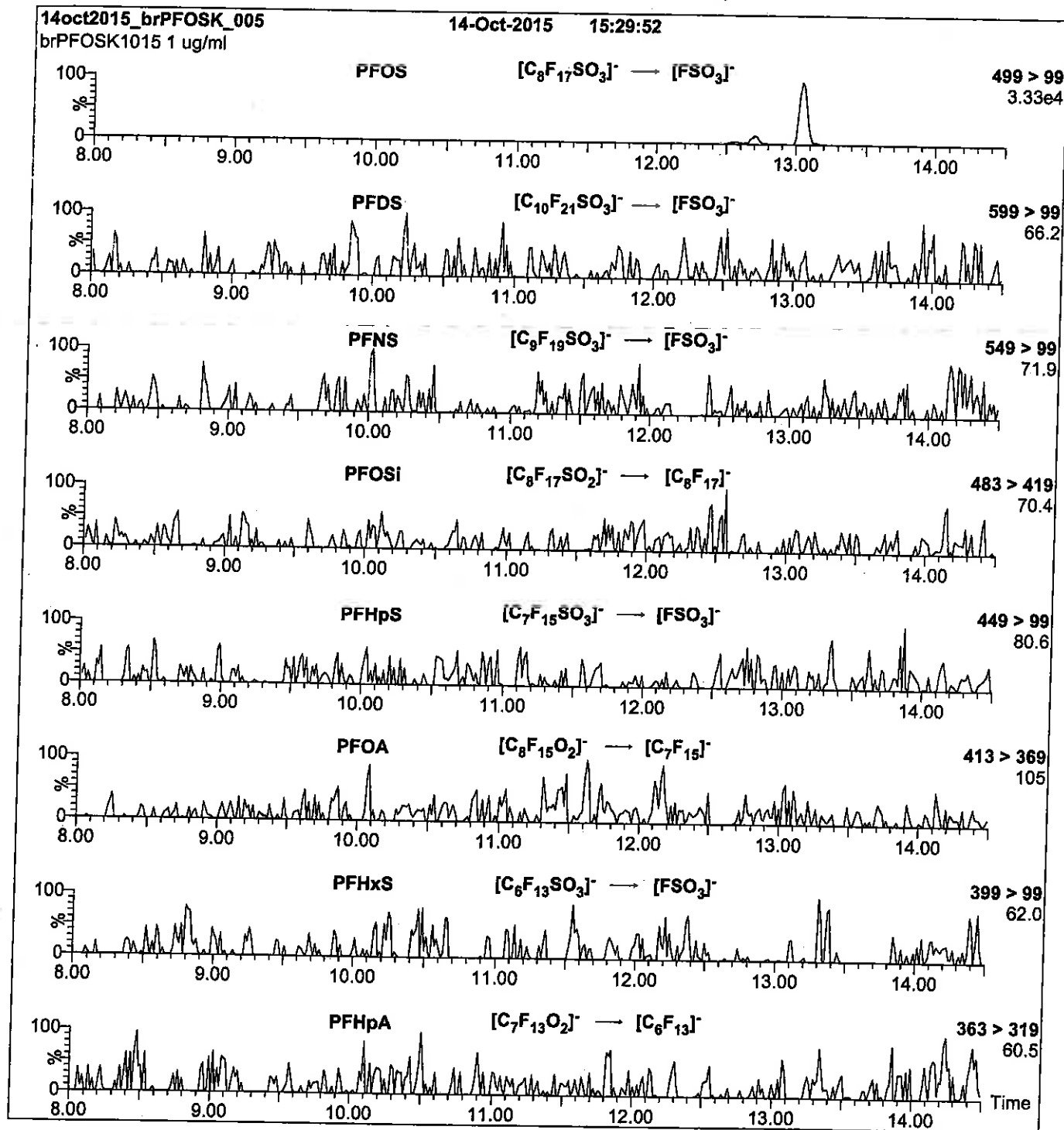
Chromatographic Conditions:

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 $^{\circ}$ C
Desolvation = 325 $^{\circ}$ 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 /min

MS Parameters

Collision Gas (mbar) = 3.06e-3

Collision Energy (eV) = 11-50 (variable)

Reagent

LCPFOSA_00010

12/20/16 SFL



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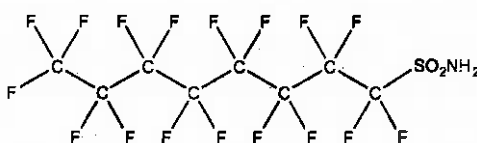
CERTIFICATE OF ANALYSIS DOCUMENTATION

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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$x_1, x_2, \dots, x_n$ 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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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:

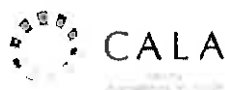
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LIMITED WARRANTY:

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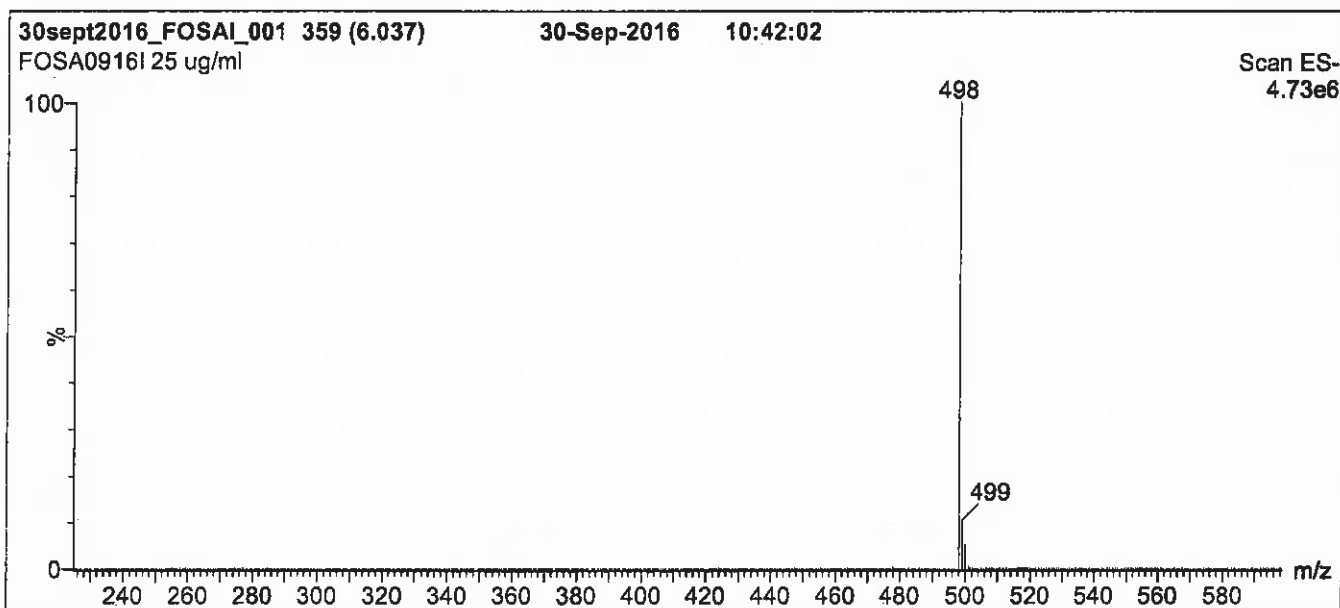
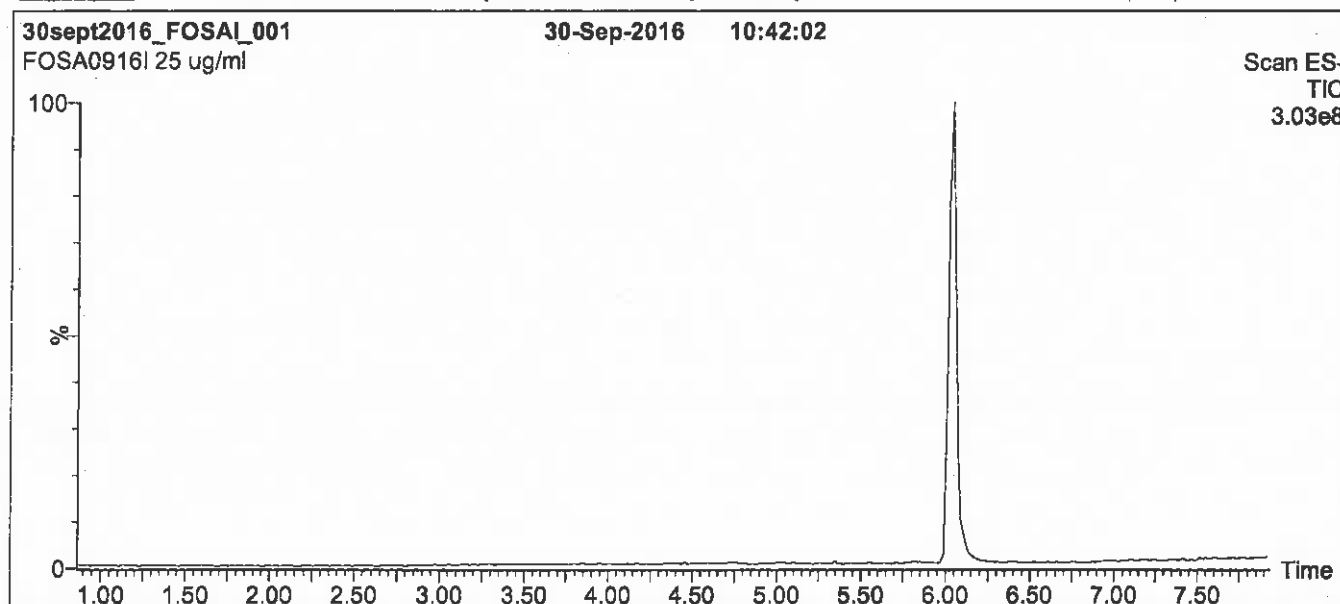
QUALITY MANAGEMENT:

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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

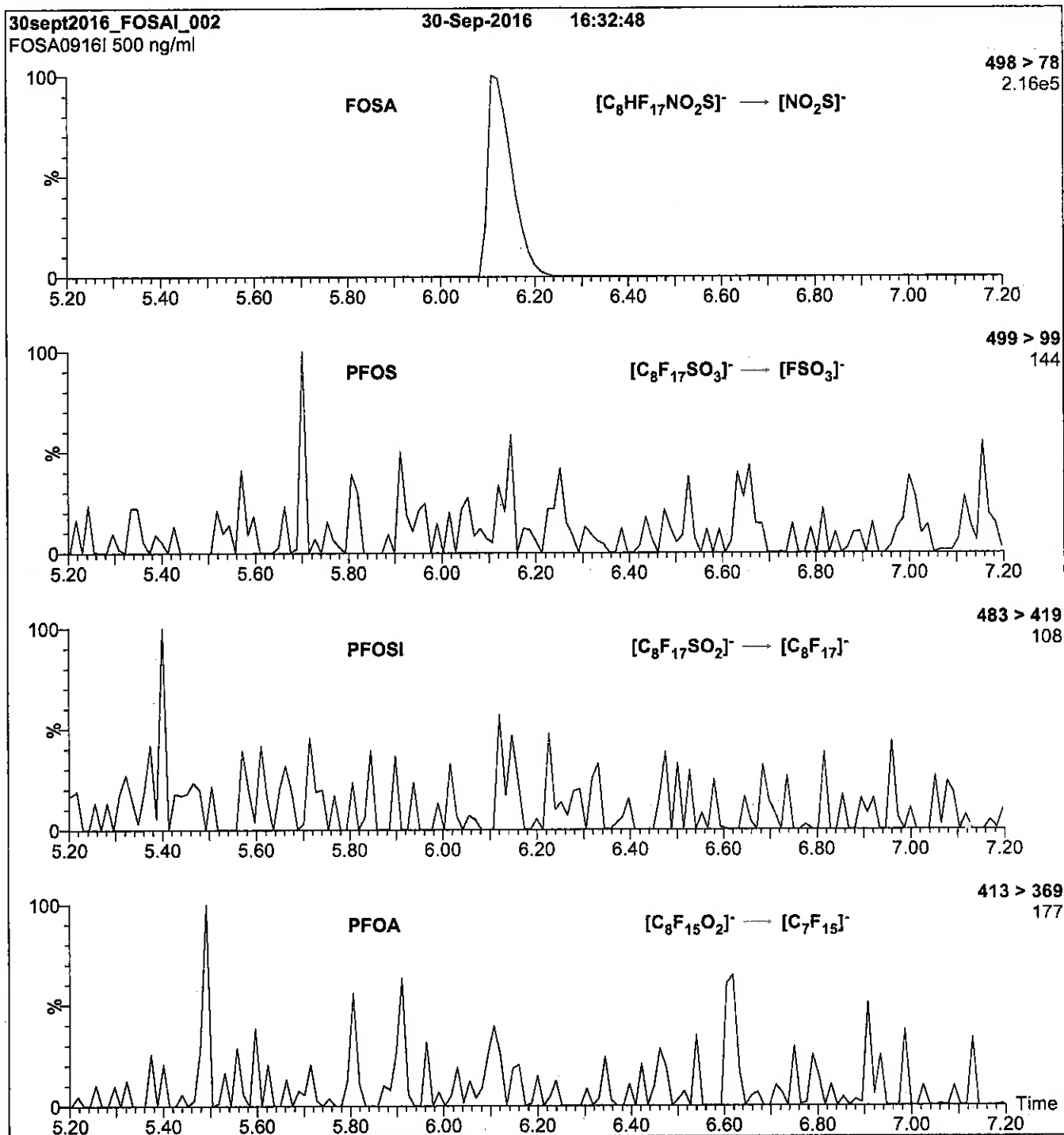
Flow: 300 μ l/min

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_00006

r: 12/20/16 Std
s: 1/6/17 Std



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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFPeA

LOT NUMBER:

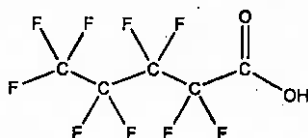
PFPeA0516

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

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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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EXPIRY DATE / PERIOD OF VALIDITY:

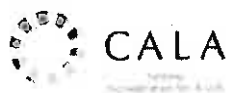
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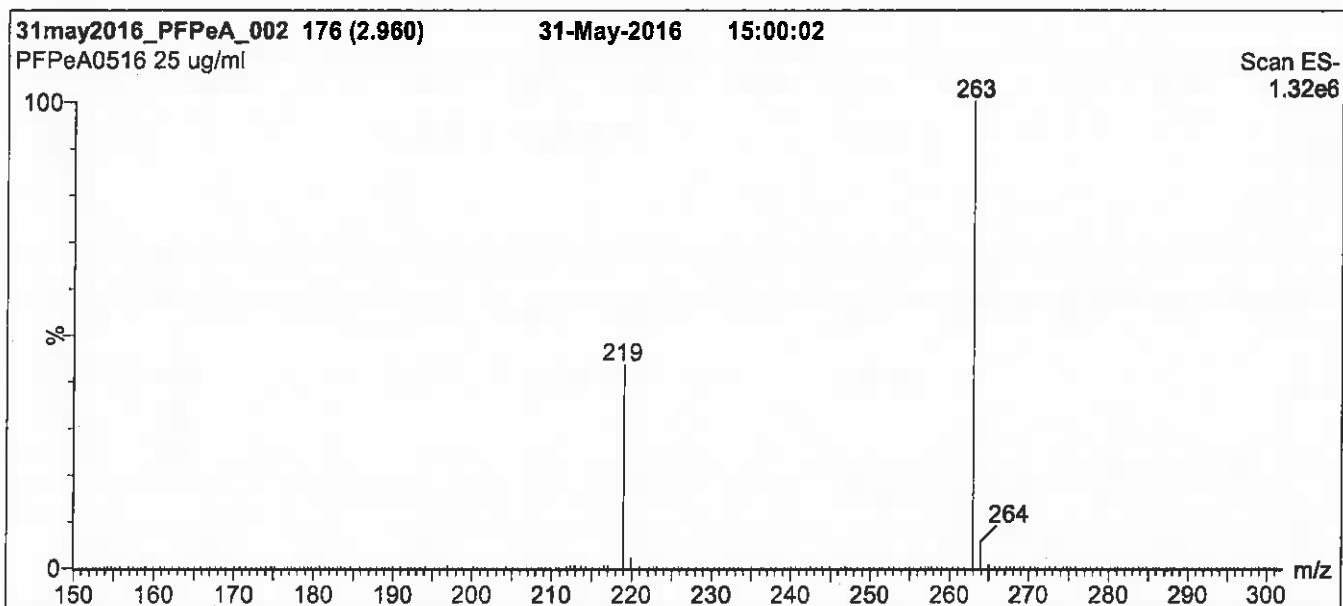
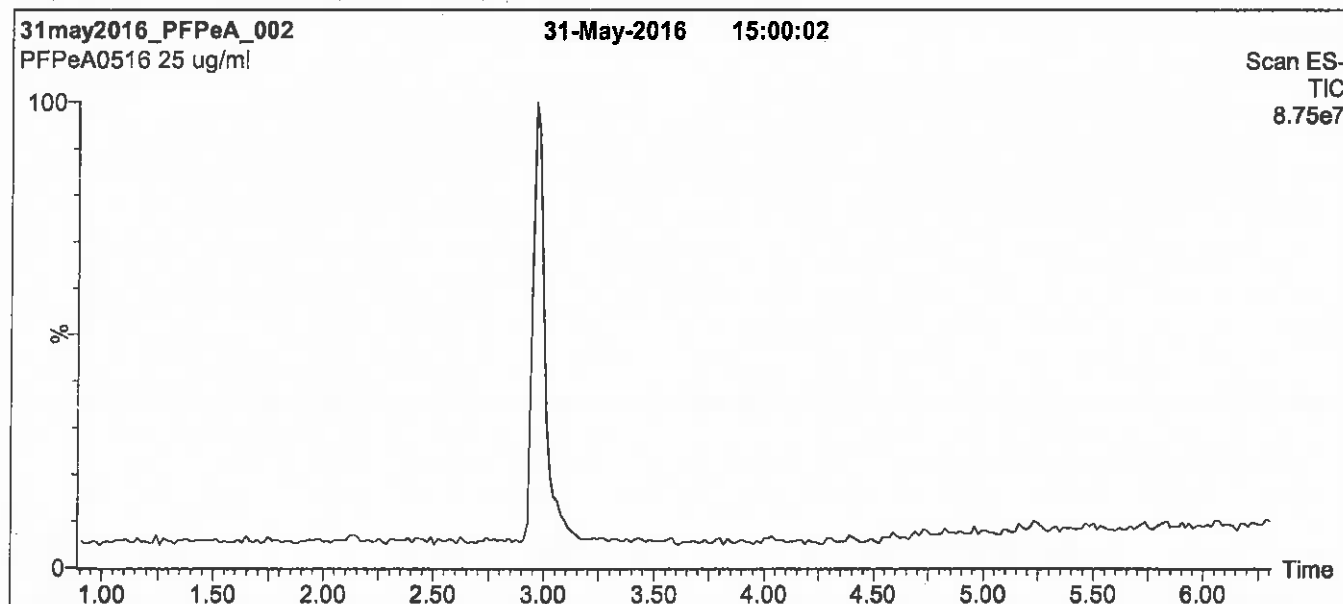
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Figure 1: PFPeA; LC/MS Data (TIC and Mass Spectrum)



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

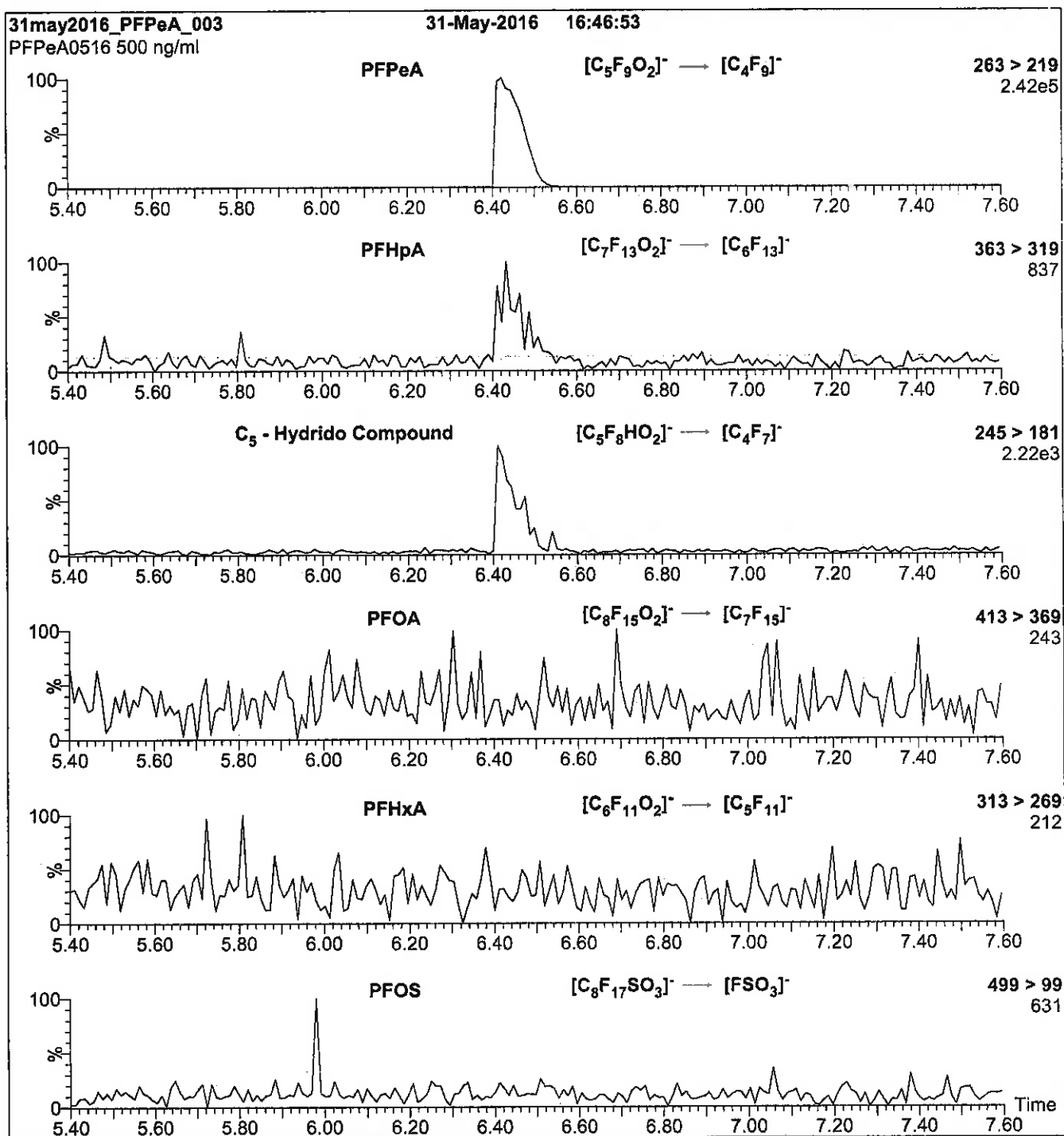
Flow: 300 μ l/min

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_00005

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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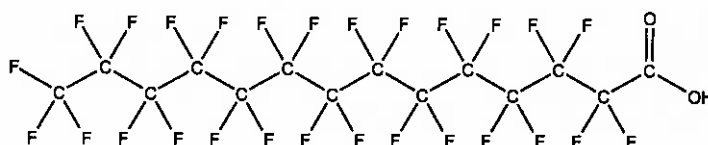
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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:

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.

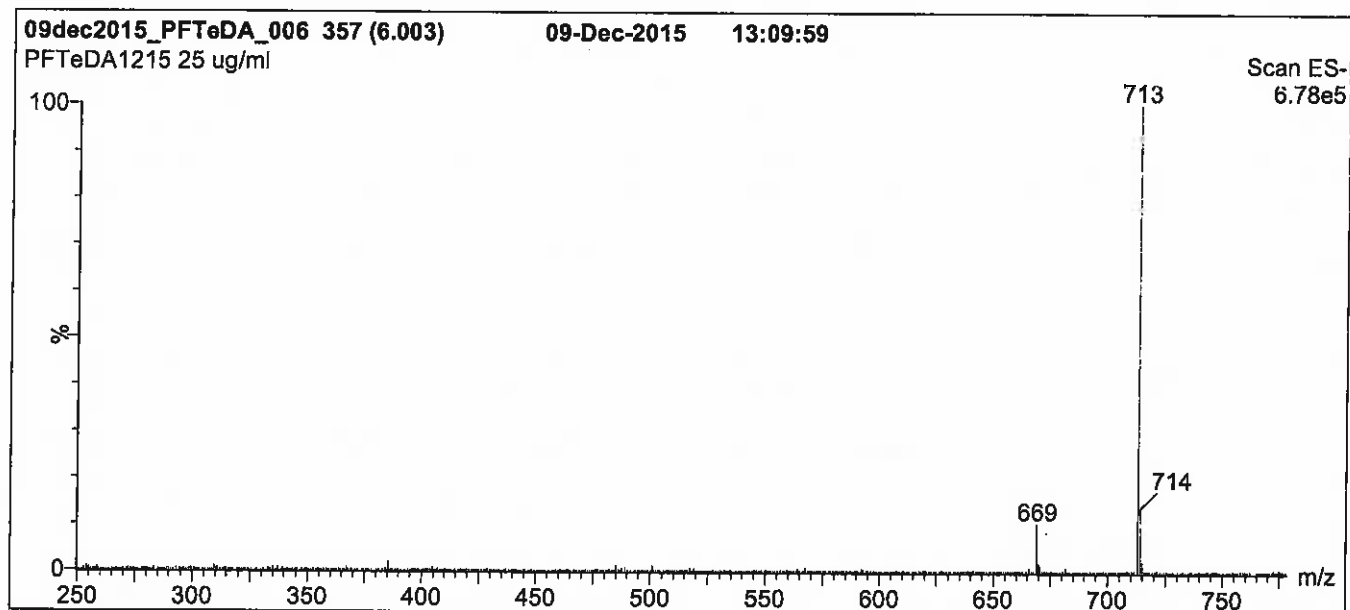
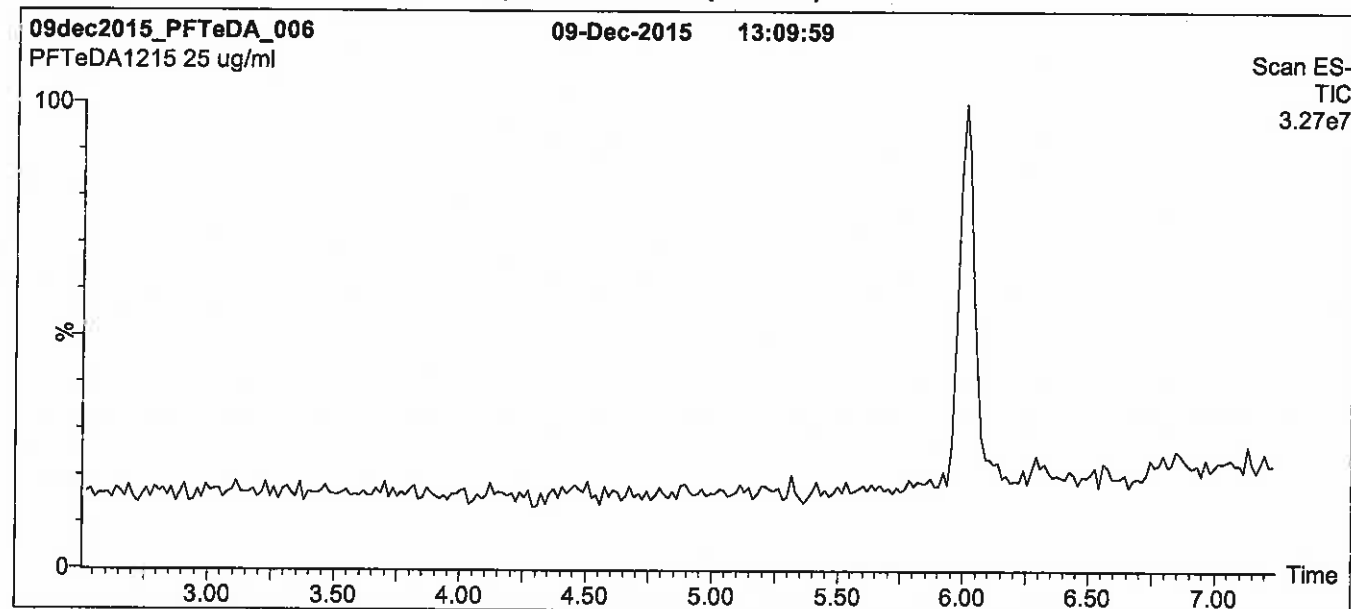
QUALITY MANAGEMENT:

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: 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

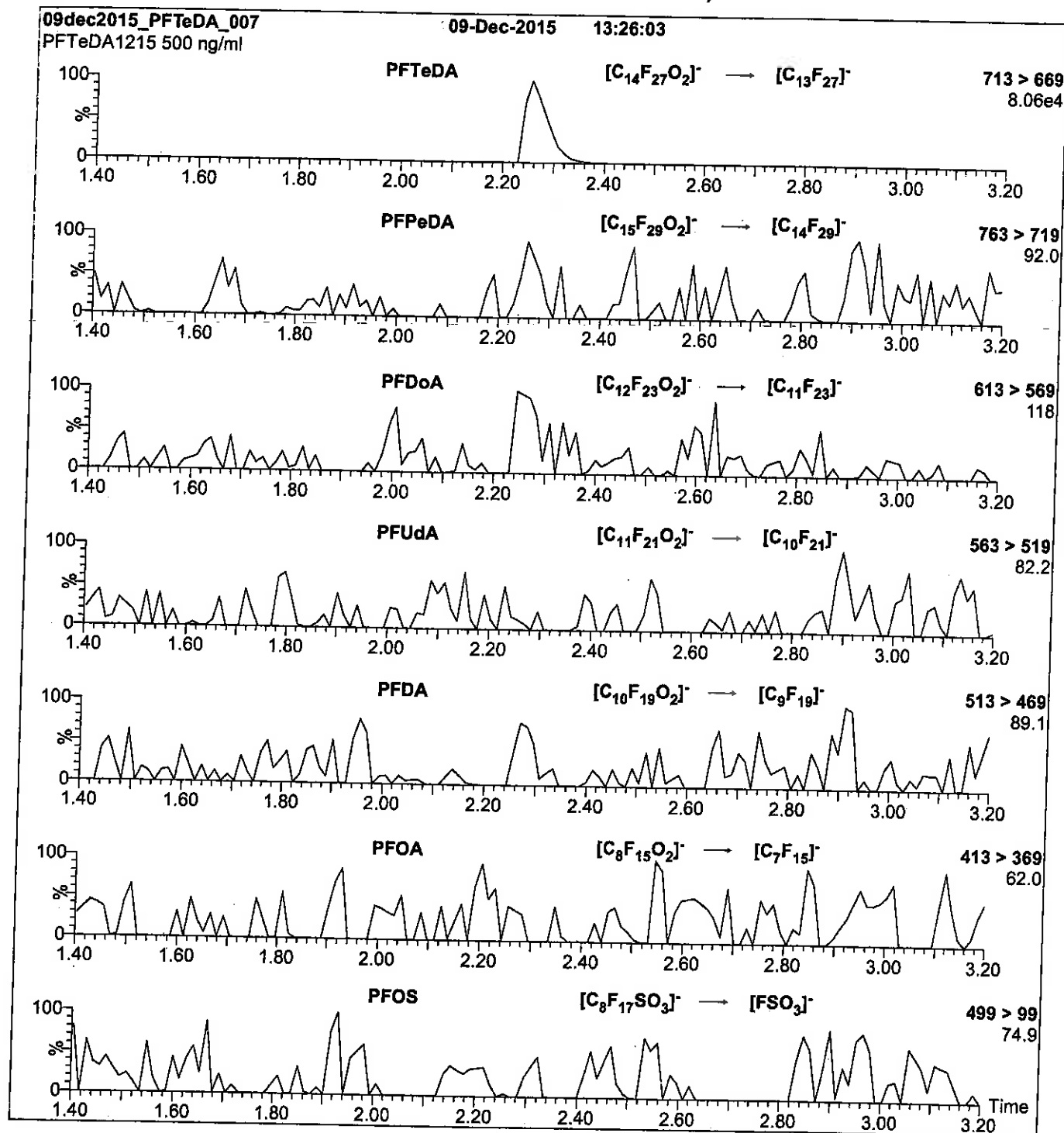
Flow: 300 μ l/min

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



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFTeDA

LOT NUMBER:

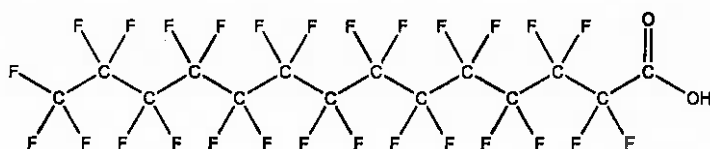
PFTeDA0916

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)

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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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:

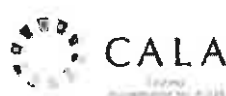
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

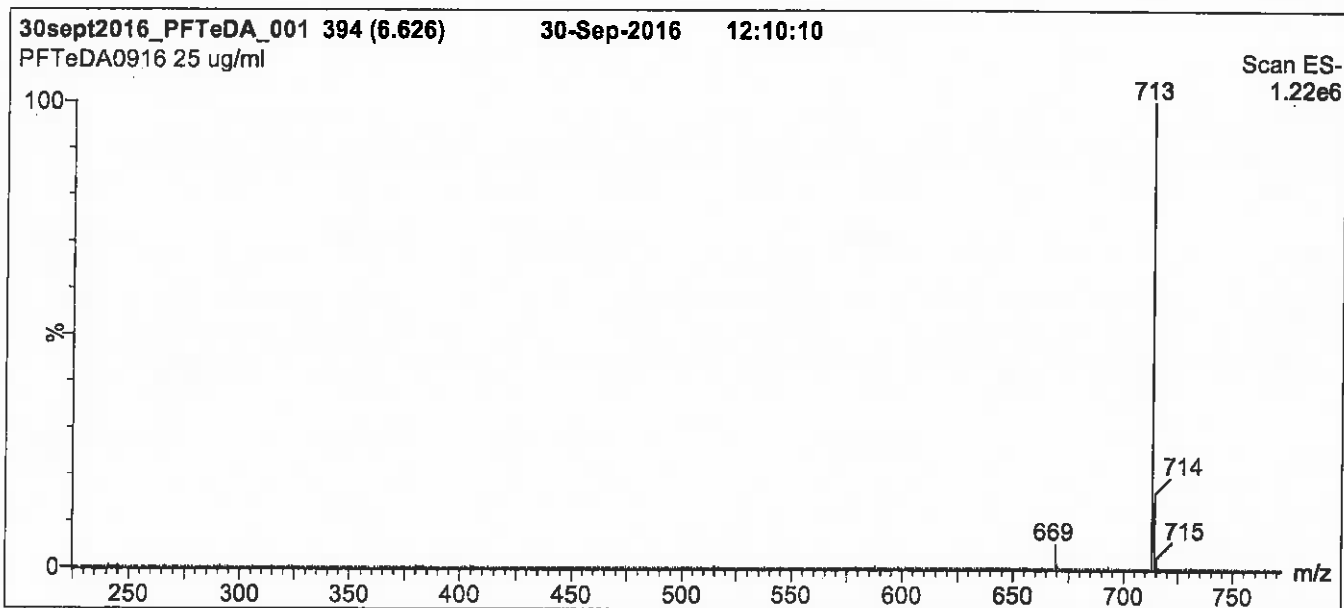
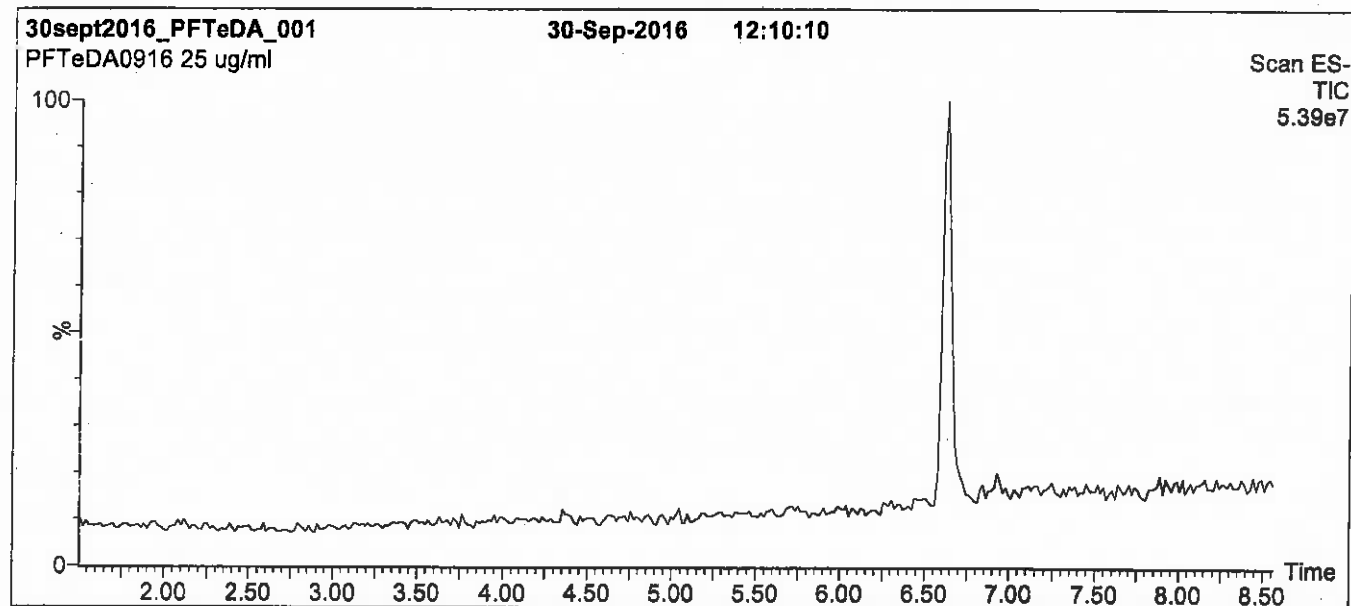
QUALITY MANAGEMENT:

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: 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

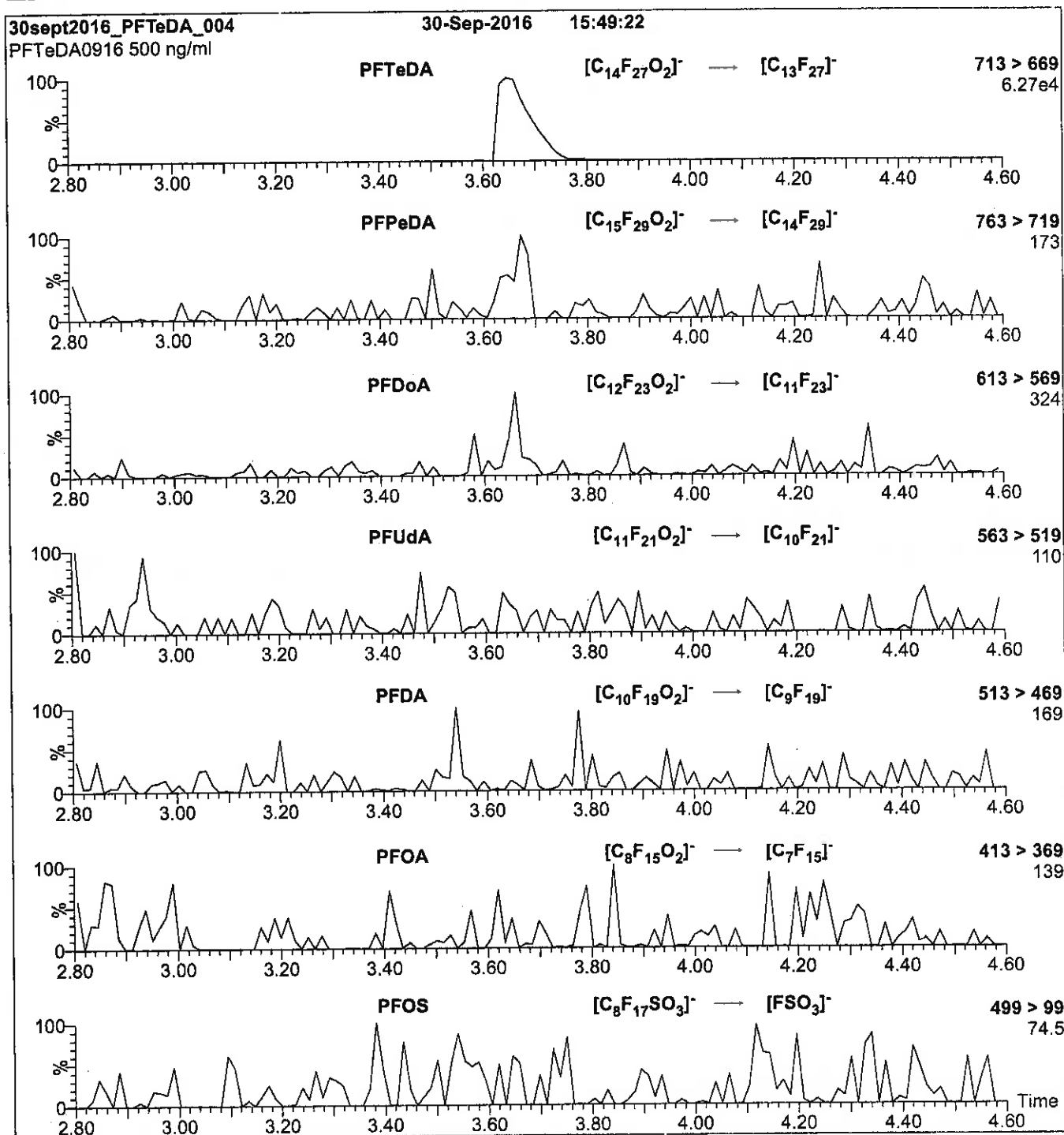
Flow: 300 μ l/min

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_00005

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



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFTTrDA

LOT NUMBER:

PFTTrDA0216

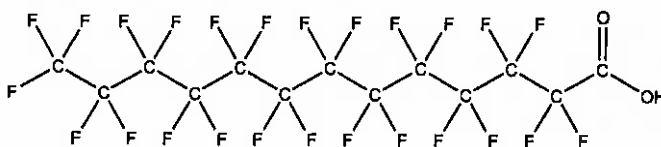
COMPOUND:

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 PFDaA ($C_{12}H_{23}O_2$), 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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EXPIRY DATE / PERIOD OF VALIDITY:

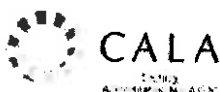
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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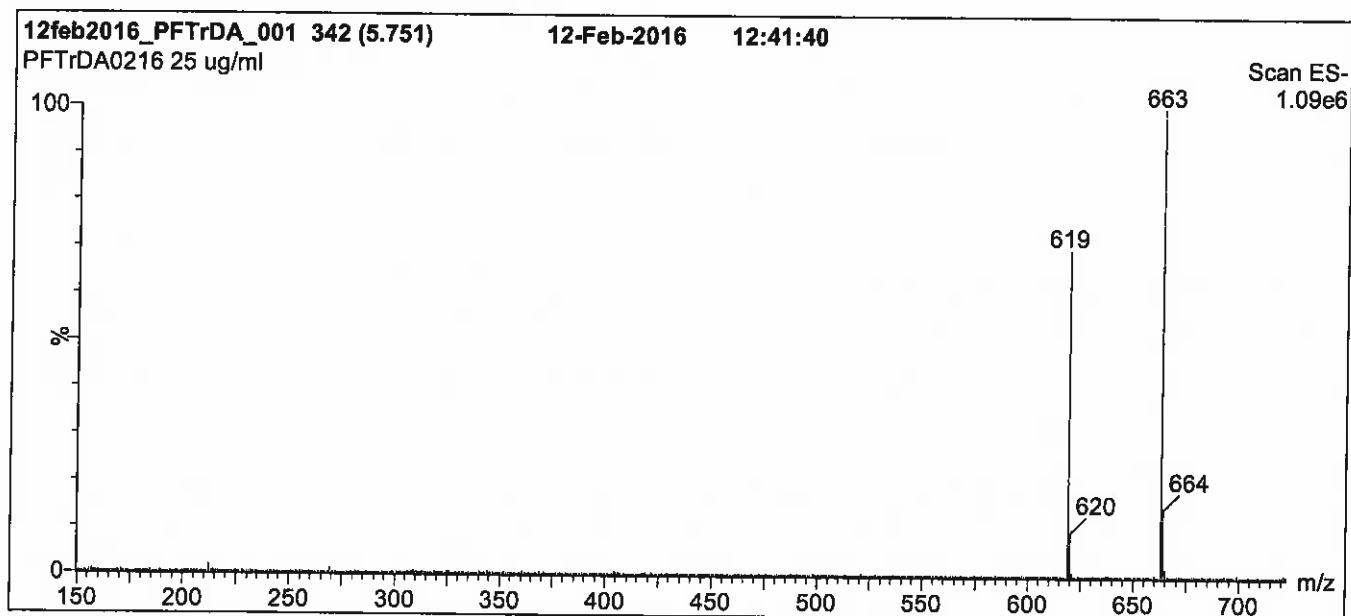
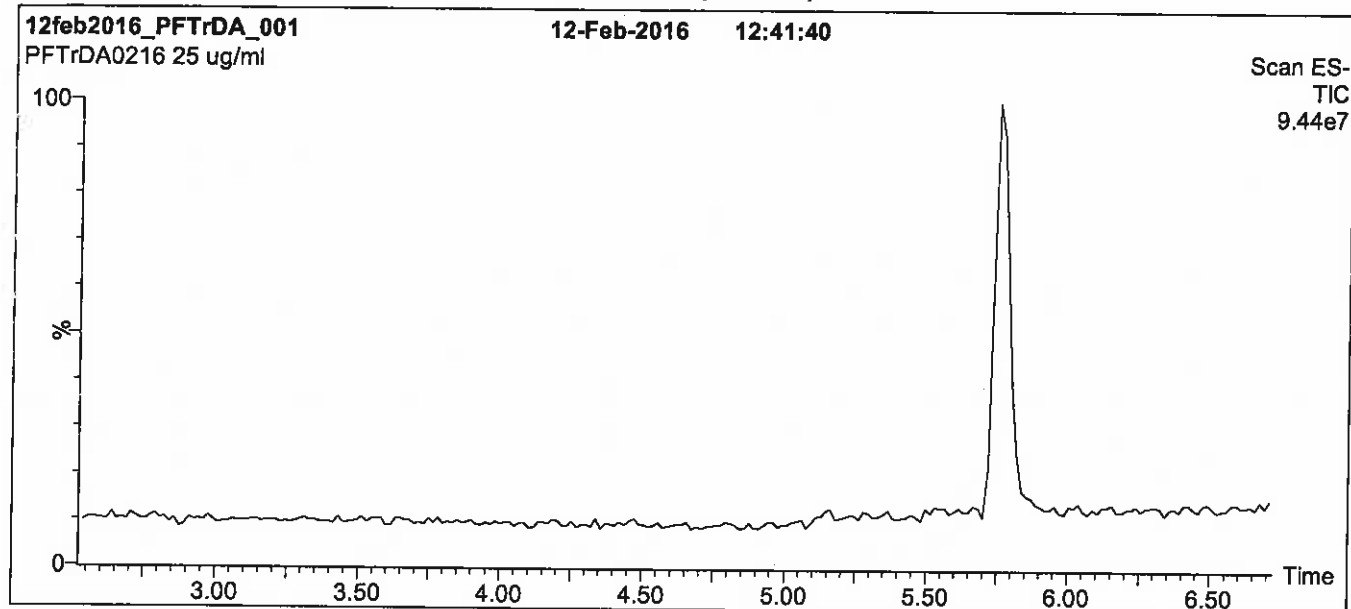
QUALITY MANAGEMENT:

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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

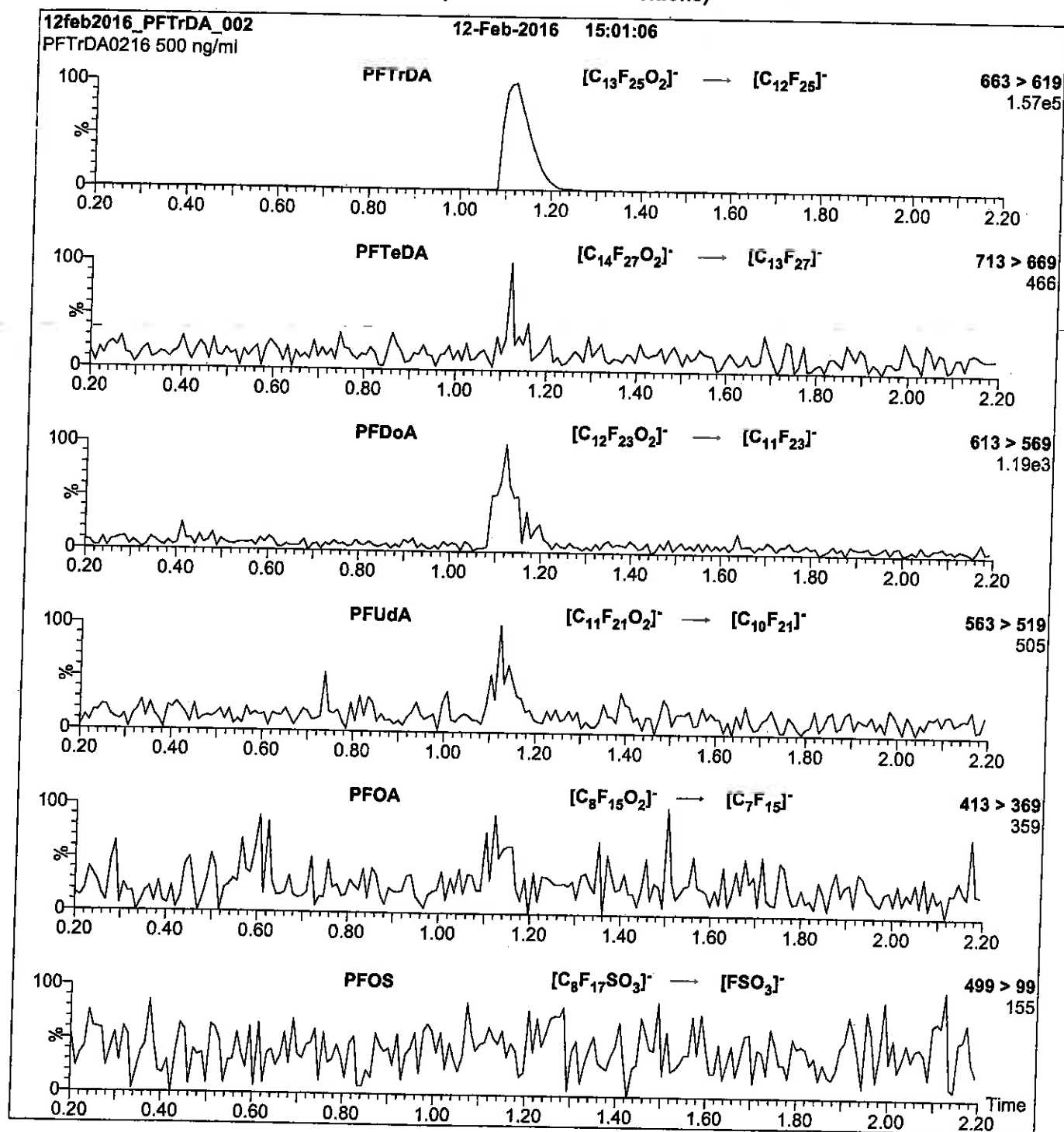
Flow: 300 μ l/min

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

r : 12/29/16 S4/



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFTTrDA

LOT NUMBER:

PFTTrDA0216

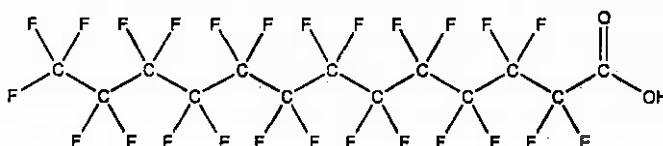
COMPOUND:

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 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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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).

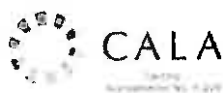
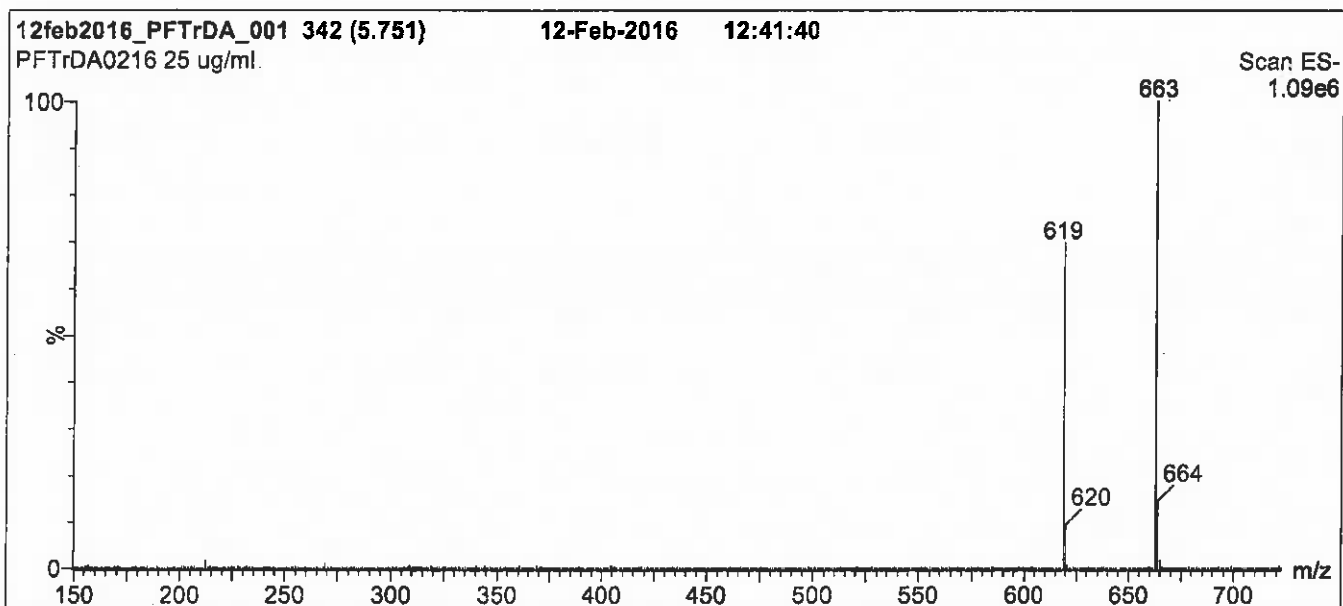
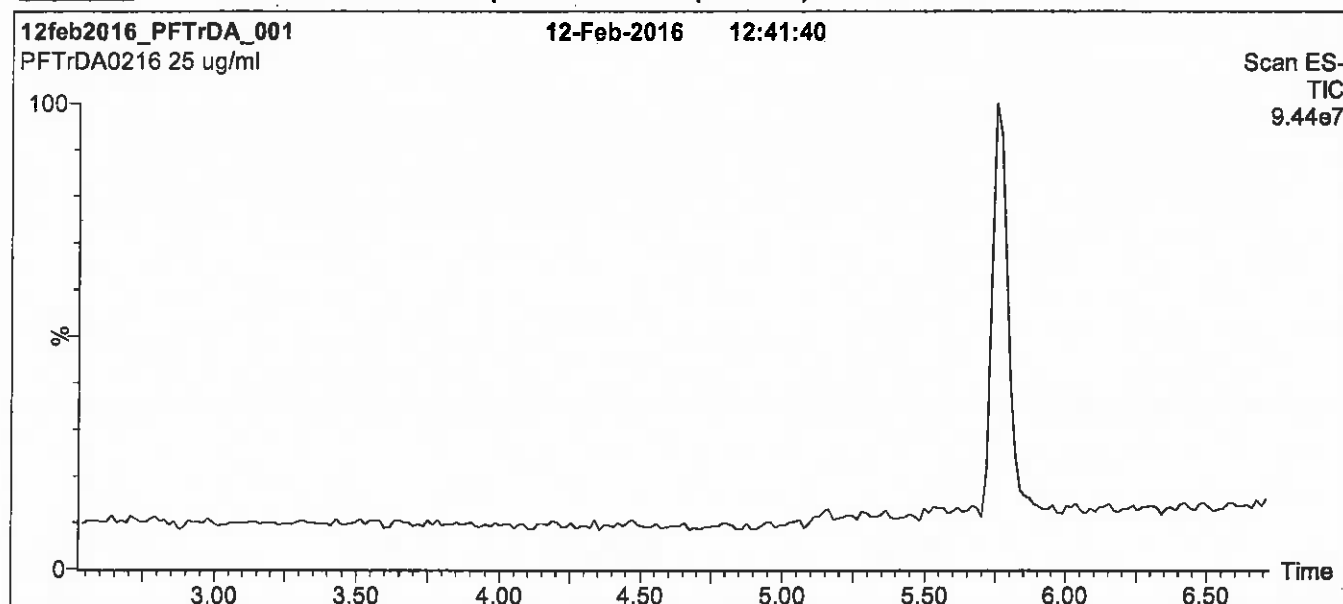


Figure 1: PFTTrDA; LC/MS Data (TIC and Mass Spectrum)



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

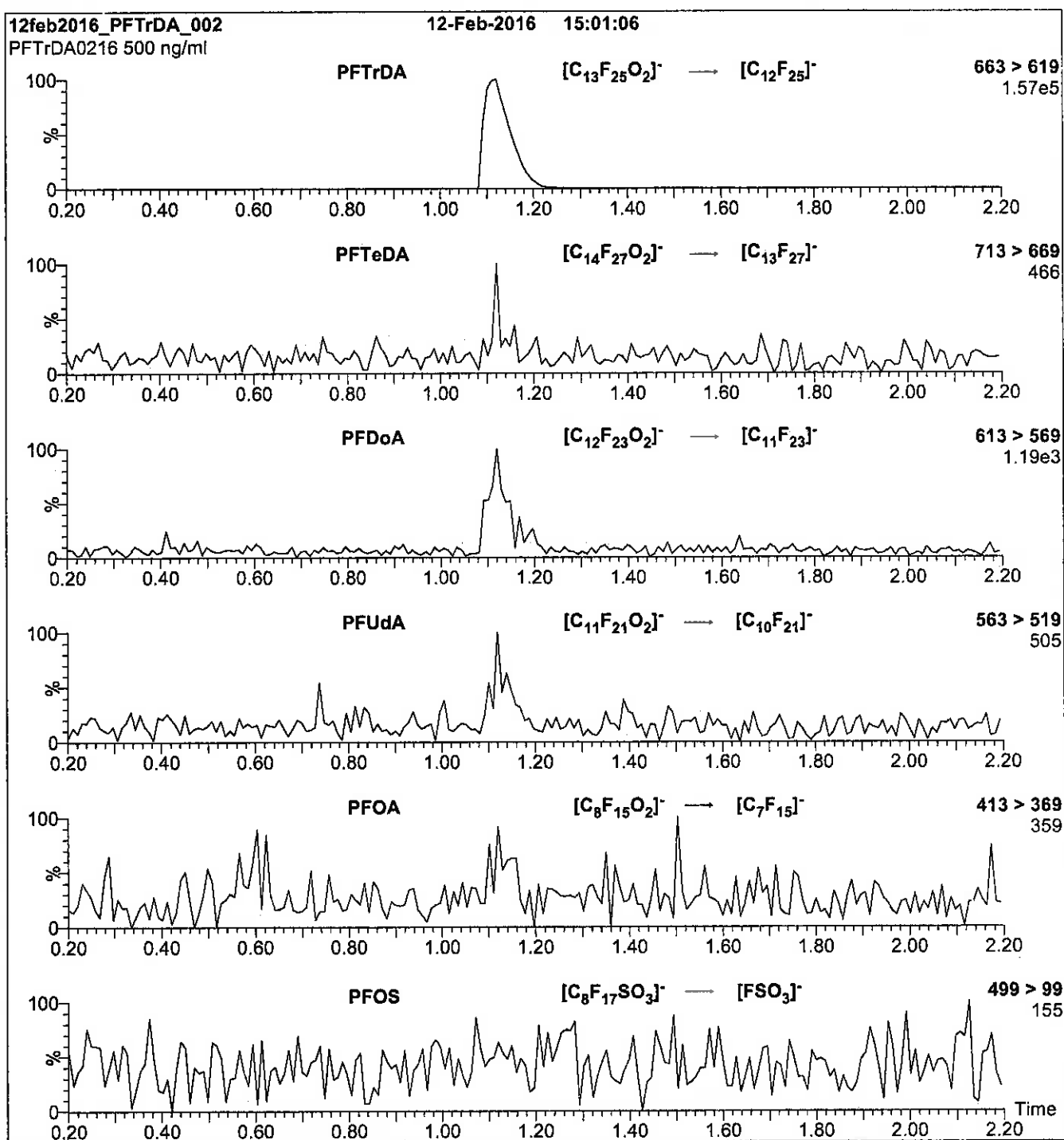
Flow: 300 μ l/min

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_00006

Scanned
10/14/16 R: SBC 9/13/16



730535
ID: LCPFUdA_00005
Exp: 08/19/20 Prpd: SBC
PF-n-undecanoic acid



730536
ID: LCPFUdA_00006
Exp: 08/19/20 Prpd: SBC
PF-n-undecanoic acid



WELLINGTON
LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFUdA

LOT NUMBER:

PFUdA0815

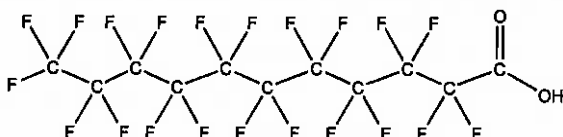
COMPOUND:

Perfluoro-n-undecanoic acid

STRUCTURE:

CAS #:

2058-94-8



MOLECULAR FORMULA:

$C_{11}H_2F_{20}O_2$

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)

08/19/2015

EXPIRY DATE: (mm/dd/yyyy)

08/19/2020

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 08/21/2015

(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:

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

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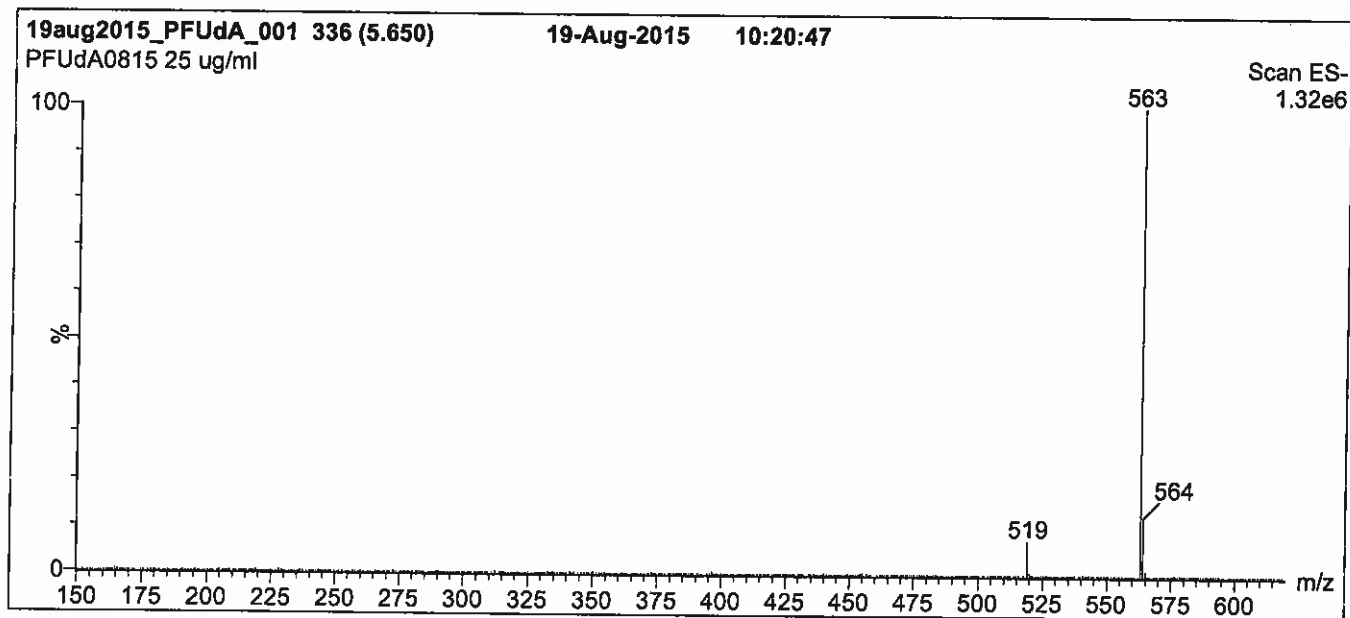
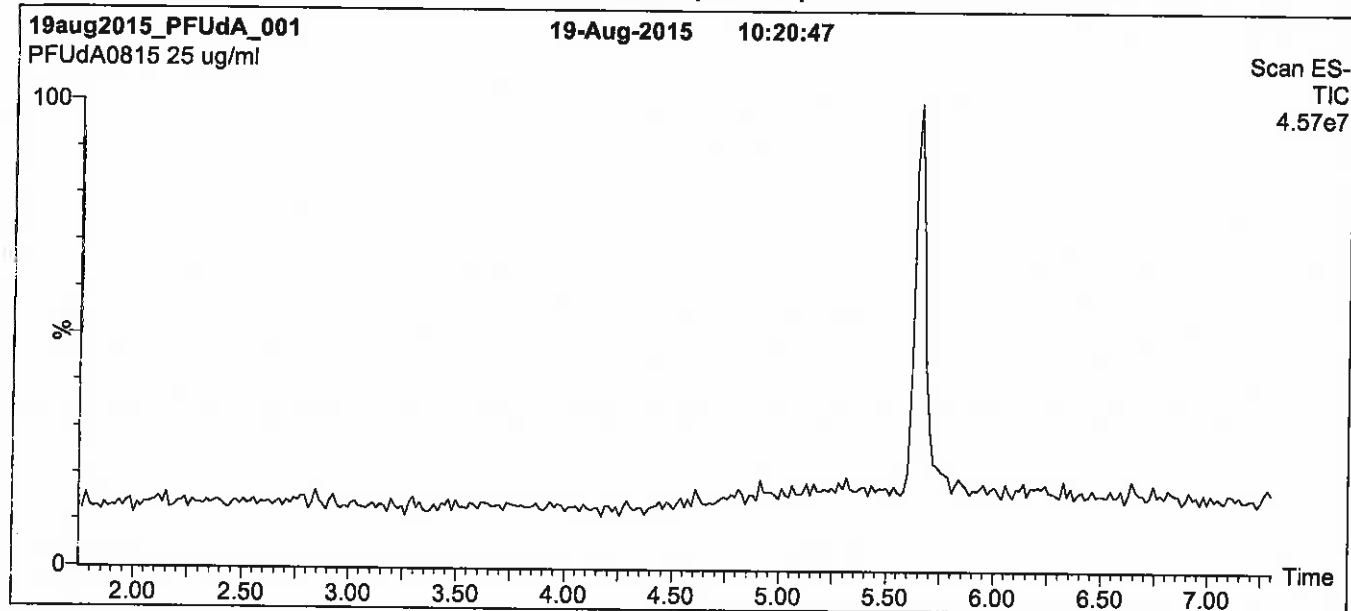
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****For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com****

Figure 1: 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: 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

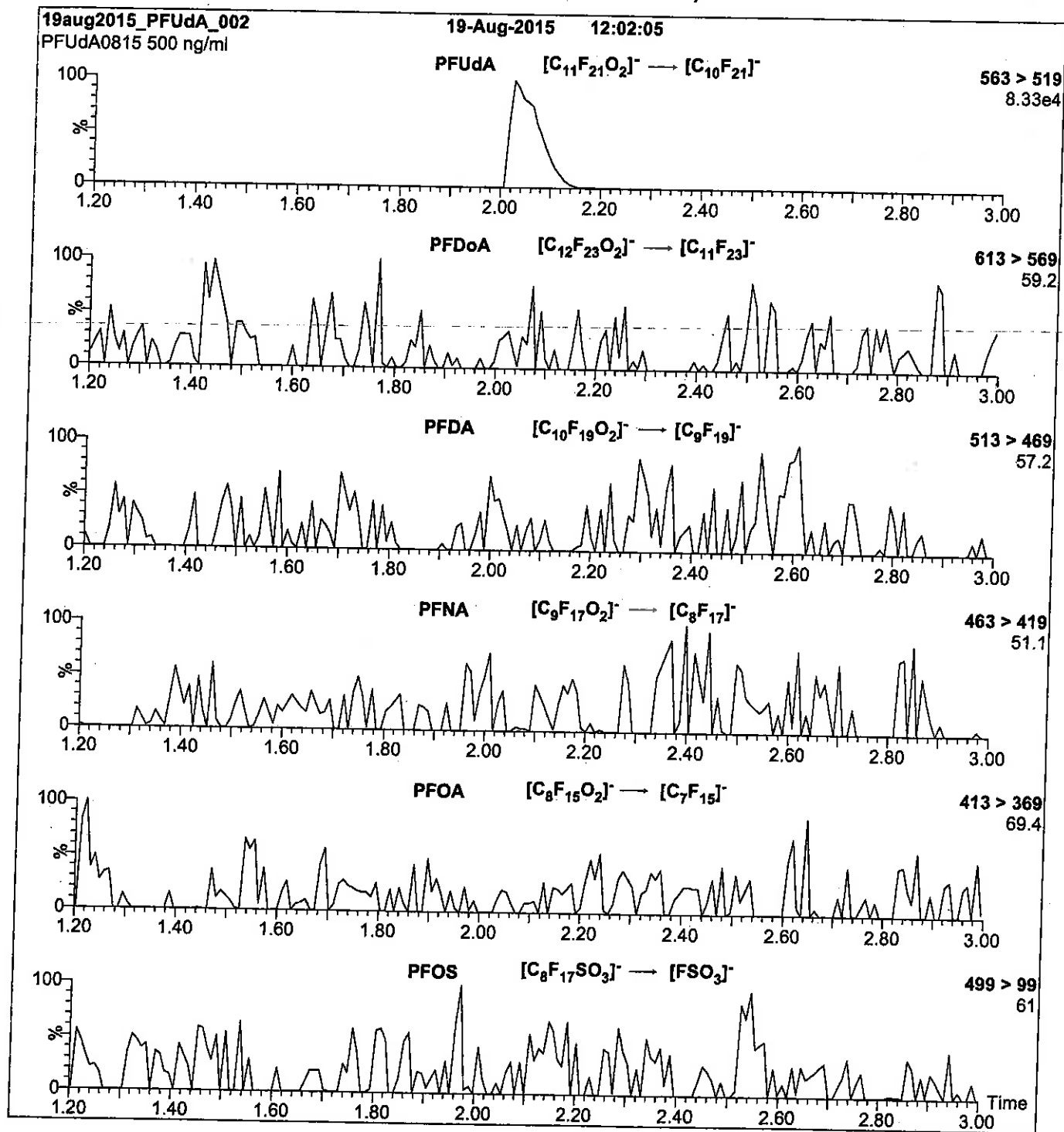
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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% 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) = 11

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS)
by Method PFC_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Matrix: Water Level: Low
 GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	3C3-PFB:#	PFHxA #	PFHpA #	PFHxS #	PFOA #	PFNA #
TP-PFC-021-TPI	320-31407-1	69	77	100	70	86	96	63	88
TP-PFC-021-TPI DL	320-31407-1 DL	90	89	96	93	103	101	90	97
TP-PFC-021-MID-CAR BON	320-31407-2	98	88	107	93	107	99	104	103
TP-PFC-021-TPE	320-31407-3	80	68	129	70	76	121	67	61
TP-PFC-021-TPE-D	320-31407-4	96	93	126	99	107	117	108	105
	MB 320-183917/1-A	120	116	125	116	136	111	127	124
	LCS 320-183917/2-A	103	94	107	99	111	103	104	103
	LCSD 320-183917/3-A	105	98	107	97	116	103	105	105

	<u>QC LIMITS</u>
PFBA = 13C4 PFBA	25-150
PFPeA = 13C5 PFPeA	25-150
13C3-PFBS = 13C3-PFBS	25-150
PFHxA = 13C2 PFHxA	25-150
PFHpA = 13C4-PFHpA	25-150
PFHxS = 1802 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

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-021-TPI	320-31407-1	101	30	104	100	100	108
TP-PFC-021-TPI DL	320-31407-1 DL	91	29	90	101	98	93
TP-PFC-021-MID-CAR BON	320-31407-2	107	19 Q	109	95	96	121
TP-PFC-021-TPE	320-31407-3	125	5 Q	70	73	89	119
TP-PFC-021-TPE-D	320-31407-4	118	36	115	101	99	117
	MB 320-183917/1-A	117	78	127	119	104	123
	LCS 320-183917/2-A	102	73	113	100	88	122
	LCSD 320-183917/3-A	100	70	109	91	83	109

	<u>QC LIMITS</u>
PFOS = 13C4 PFOS	25-150
PFOSA = 13C8 FOSA	25-150
PFDA = 13C2 PFDA	25-150
PFUnA = 13C2 PFUnA	25-150
PFDoA = 13C2 PFDoA	25-150
PFTDA = 13C2-PFTeDA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.09.15D_003.d
 Lab ID: LCS 320-183917/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	40.0	45.6	114	60-140	
Perfluoropentanoic acid (PFPeA)	40.0	41.9	105	60-140	
Perfluorohexanoic acid (PFHxA)	40.0	45.0	112	60-140	
Perfluoroheptanoic acid (PFHpA)	40.0	47.0	118	60-140	
Perfluorooctanoic acid (PFOA)	40.0	43.3	108	60-140	
Perfluorononanoic acid (PFNA)	40.0	46.4	116	60-140	
Perfluorodecanoic acid (PFDA)	40.0	44.5	111	60-140	
Perfluoroundecanoic acid (PFUnA)	40.0	41.8	105	60-140	
Perfluorododecanoic acid (PFDoA)	40.0	44.3	111	60-140	
Perfluorotridecanoic Acid (PFTriA)	40.0	48.2	120	50-150	
Perfluorotetradecanoic acid (PFTeA)	40.0	37.9	95	50-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	38.6	109	50-150	
Perfluorohexanesulfonic acid (PFHxS)	36.4	42.9	118	60-140	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	43.7	115	50-150	
Perfluorooctanesulfonic acid (PFOS)	37.1	39.8	107	60-140	
Perfluorodecanesulfonic acid (PFDS)	38.6	40.1	104	50-150	
Perfluorooctane Sulfonamide (FOSA)	40.0	49.7	124	60-140	
13C8 FOSA	100	73.3	73	25-150	
13C4 PFBA	100	103	103	25-150	
13C2 PFHxA	100	98.8	99	25-150	
13C4 PFOA	100	104	104	25-150	
13C5 PFNA	100	103	103	25-150	
13C2 PFDA	100	113	113	25-150	
13C2 PFUnA	100	100	100	25-150	
13C2 PFDoA	100	88.5	88	25-150	
18O2 PFHxS	94.6	97.0	103	25-150	
13C4 PFOS	95.6	97.7	102	25-150	
13C4-PFHpA	100	111	111	25-150	
13C5 PFPeA	100	94.3	94	25-150	
13C3-PFBS	93.0	99.4	107	25-150	
13C2-PFTeDA	100	122	122	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.09.15D_004.d
 Lab ID: LCSD 320-183917/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutanoic acid (PFBA)	40.0	45.3	113	1	30	60-140	
Perfluoropentanoic acid (PFPeA)	40.0	41.1	103	2	30	60-140	
Perfluorohexanoic acid (PFHxA)	40.0	44.1	110	2	30	60-140	
Perfluoroheptanoic acid (PFHpA)	40.0	45.2	113	4	30	60-140	
Perfluorooctanoic acid (PFOA)	40.0	42.5	106	2	30	60-140	
Perfluorononanoic acid (PFNA)	40.0	43.0	107	8	30	60-140	
Perfluorodecanoic acid (PFDA)	40.0	43.1	108	3	30	60-140	
Perfluoroundecanoic acid (PFUnA)	40.0	41.2	103	1	30	60-140	
Perfluorododecanoic acid (PFDoA)	40.0	42.1	105	5	30	60-140	
Perfluorotridecanoic Acid (PFTriA)	40.0	41.3	103	15	30	50-150	
Perfluorotetradecanoic acid (PFTeA)	40.0	36.0	90	5	30	50-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	38.8	110	1	30	50-150	
Perfluorohexanesulfonic acid (PFHxS)	36.4	41.9	115	2	30	60-140	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	44.4	117	2	30	50-150	
Perfluorooctanesulfonic acid (PFOS)	37.1	38.1	103	5	30	60-140	
Perfluorodecanesulfonic acid (PFDS)	38.6	36.4	94	10	30	50-150	
Perfluorooctane Sulfonamide (FOSA)	40.0	46.4	116	7	30	60-140	
13C8 FOSA	100	69.8	70			25-150	
13C4 PFBA	100	105	105			25-150	
13C2 PFHxA	100	97.3	97			25-150	
13C4 PFOA	100	105	105			25-150	
13C5 PFNA	100	105	105			25-150	
13C2 PFDA	100	109	109			25-150	
13C2 PFUnA	100	90.8	91			25-150	
13C2 PFDoA	100	83.0	83			25-150	
18O2 PFHxS	94.6	97.0	103			25-150	
13C4 PFOS	95.6	95.6	100			25-150	
13C4-PFHpA	100	116	116			25-150	
13C5 PFPeA	100	97.6	98			25-150	
13C3-PFBS	93.0	99.8	107			25-150	
13C2-PFTeDA	100	109	109			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab File ID: 2017.09.15D_002.d Lab Sample ID: MB 320-183917/1-A
 Matrix: Water Date Extracted: 09/12/2017 08:51
 Instrument ID: A8_N Date Analyzed: 09/15/2017 22:28
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-183917/2-A	2017.09.15D 003.d	09/15/2017 22:35
	LCSD 320-183917/3-A	2017.09.15D 004.d	09/15/2017 22:41
TP-PFC-021-TPI	320-31407-1	2017.09.15D 005.d	09/15/2017 22:48
TP-PFC-021-MID-CARBON	320-31407-2	2017.09.15D 006.d	09/15/2017 22:55
TP-PFC-021-TPE	320-31407-3	2017.09.15D 007.d	09/15/2017 23:02
TP-PFC-021-TPE-D	320-31407-4	2017.09.15D 008.d	09/15/2017 23:09
TP-PFC-021-TPI DL	320-31407-1 DL	2017.09.19B 014.d	09/19/2017 23:07

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPI</u>	Lab Sample ID: <u>320-31407-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_005.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>260.8 (mL)</u>	Date Analyzed: <u>09/15/2017 22:48</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	82		2.4	0.96	0.44
2706-90-3	Perfluoropentanoic acid (PFPeA)	190		2.4	1.9	0.95
307-24-4	Perfluorohexanoic acid (PFHxA)	340		2.4	1.9	0.75
375-85-9	Perfluoroheptanoic acid (PFHpA)	82		2.4	1.9	0.77
335-67-1	Perfluorooctanoic acid (PFOA)	1100	E M	2.4	1.9	0.72
375-95-1	Perfluorononanoic acid (PFNA)	2.7		2.4	1.9	0.63
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	J	2.4	0.96	0.42
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	1.9	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	1.9	0.56
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.4	1.9	0.53
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.96	U	2.4	0.96	0.38
375-73-5	Perfluorobutanesulfonic acid (PFBS)	55		2.4	1.9	0.88
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	330		2.4	1.9	0.83
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	8.0		2.4	1.9	0.68
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	310		3.8	2.9	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.8	2.9	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.8	J	38	1.9	0.61

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPI</u>	Lab Sample ID: <u>320-31407-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_005.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>260.8 (mL)</u>	Date Analyzed: <u>09/15/2017 22:48</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	30		25-150
STL00992	13C4 PFBA	69		25-150
STL00993	13C2 PFHxA	70		25-150
STL00990	13C4 PFOA	63		25-150
STL00995	13C5 PFNA	88		25-150
STL00996	13C2 PFDA	104		25-150
STL00997	13C2 PFUnA	100		25-150
STL00998	13C2 PFDoA	100		25-150
STL00994	18O2 PFHxS	96		25-150
STL00991	13C4 PFOS	101		25-150
STL01892	13C4-PFHpA	86		25-150
STL01893	13C5 PFPeA	77		25-150
STL02337	13C3-PFBS	100		25-150
STL02116	13C2-PFTeDA	108		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_005.d
 Lims ID: 320-31407-A-1-A
 Client ID: TP-PFC-021-TPI
 Sample Type: Client
 Inject. Date: 15-Sep-2017 22:48:48 ALS Bottle#: 4 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-31407-a-1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 14:23:04 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14ICALX_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK006

First Level Reviewer: westendorfc

Date: 19-Sep-2017 14:07:24

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	1.556	1.556	0.0		10808743	34.5		69.1	21202	
2 Perfluorobutyric acid										
212.90 > 169.00	1.556	1.556	0.0	1.000	8744942	42.7			795	
D 3 13C5-PFPeA										
267.90 > 223.00	1.757	1.756	0.001		7897260	38.5		77.0	25512	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.757	1.756	0.001	1.000	17838362	98.4			2881	
D 47 13C3-PFBS										
301.90 > 83.00	1.775	1.784	-0.009		231662	46.6		100	2562	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.784	1.784	0.0	1.000	10466461	28.8			3298	
298.90 > 99.00	1.784	1.784	0.0	1.000	4680866		2.24(0.00-0.00)		3900	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.009	2.020	-0.011	1.000	26411547	177.2			5111	
D 7 13C2 PFHxA										
315.00 > 270.00	2.009	2.020	-0.011		7712305	35.1		70.3	20049	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.328	2.337	-0.009	1.000	7309313	43.0			3127	
D 9 13C4-PFHpA										
367.00 > 322.00	2.328	2.337	-0.009		8674495	42.8		85.5	11714	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.347	2.347	0.0	1.000	49031315	172.3			5512	
D 11 18O2 PFHxS										
403.00 > 84.00	2.347	2.347	0.0		12851406	45.2		95.5	21419	
* 62 13C2-PFOA										
415.00 > 370.00	2.673	2.678	-0.005		95337	50.0			406	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.678	-0.005		6144966	31.5		63.0	12117	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.681	2.678	0.003	1.000	80252190	598.0			2575	EM
413.00 > 169.00	2.681	2.678	0.003	1.000	58786359		1.37(0.90-1.10)		3160	M
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.688	2.685	0.003	1.000	1028248	4.19			147	
D 18 13C4 PFOS										
503.00 > 80.00	3.046	3.043	0.003		9684245	48.3		101	18477	
20 Perfluorononanoic acid										
463.00 > 419.00	3.046	3.051	-0.005	1.000	179531	1.41			97.7	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.046	3.051	-0.005	1.000	35007472	161.0			4831	
499.00 > 99.00	3.046	3.051	-0.005	1.000	8489894		4.12(0.90-1.10)		8782	
D 19 13C5 PFNA										
468.00 > 423.00	3.046	3.051	-0.005		6591311	43.9		87.7	12086	
D 21 13C8 FOSA										
506.00 > 78.00	3.393	3.393	0.0		4737196	15.2		30.4	11559	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.402	3.402	0.0	1.000	69626	0.5327			133	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.393	3.402	-0.009	1.000	85106	0.9455			247	
D 23 13C2 PFDA										
515.00 > 470.00	3.402	3.402	0.0		6980004	52.0		104	12632	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.731	3.728	0.003	1.000	14955	0.1398			29.1	
D 30 13C2 PFUnA										
565.00 > 520.00	3.731	3.728	0.003		4800461	50.2		100	7846	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.022	4.022	0.0	1.000	5959	0.0679			13.6	
D 36 13C2 PFDaA										
615.00 > 570.00	4.022	4.022	0.0		4553006	49.9		99.9	13958	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.289	4.290	-0.001	1.000	8147	0.0787			2.3	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.514	4.516	-0.002	1.000	2710	0.1049			86.9	
713.00 > 219.00	4.523	4.516	0.007	1.002	2323		1.17(0.00-0.00)		66.1	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.523	4.525	-0.002		5082723	54.2		108	10421	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_005.d

Injection Date: 15-Sep-2017 22:48:48

Instrument ID: A8_N

Lims ID: 320-31407-A-1-A

Lab Sample ID: 320-31407-1

Client ID: TP-PFC-021-TPI

Operator ID: SACINSTLCMS01

ALS Bottle#: 4

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

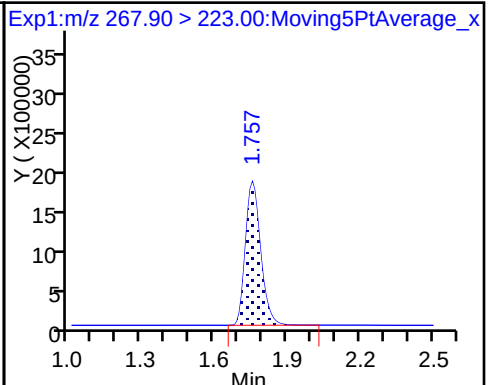
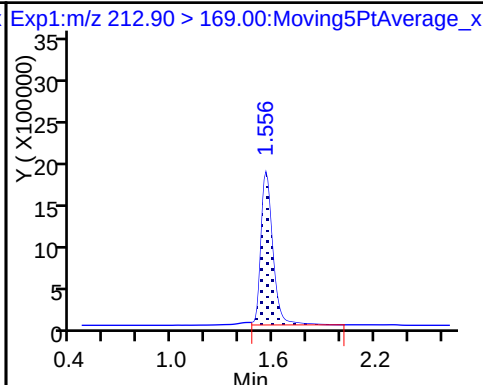
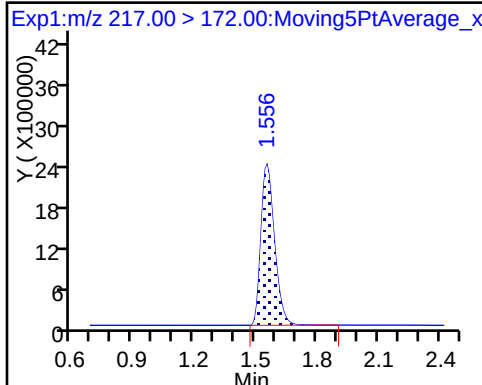
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

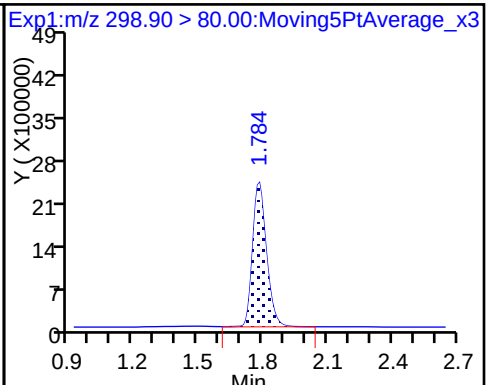
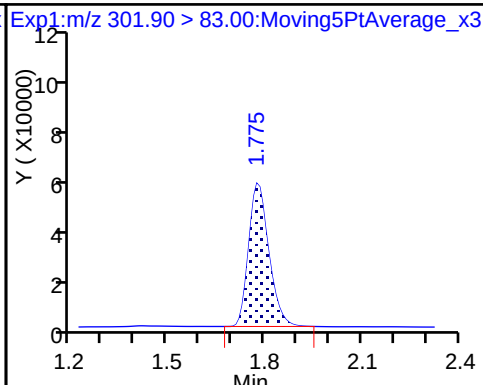
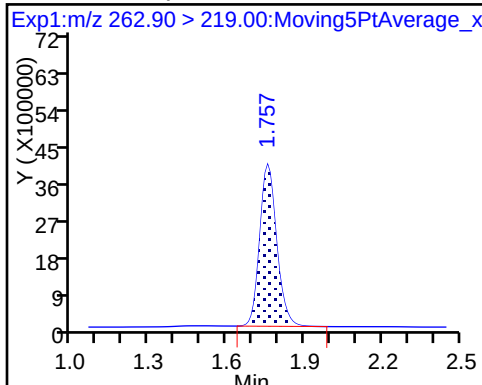
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

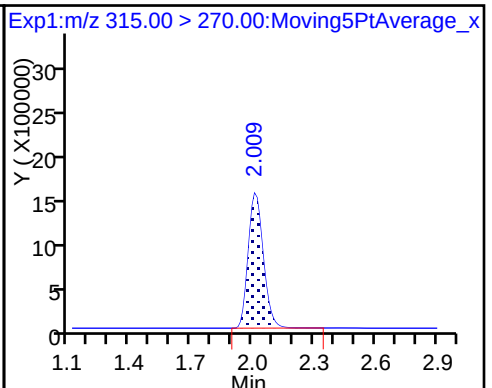
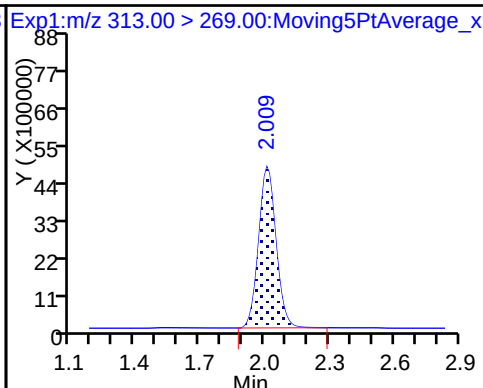
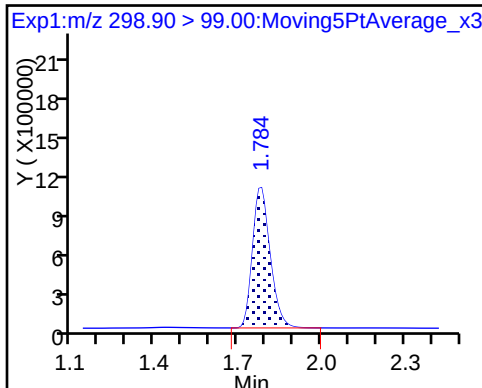
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

6 Perfluorohexanoic acid

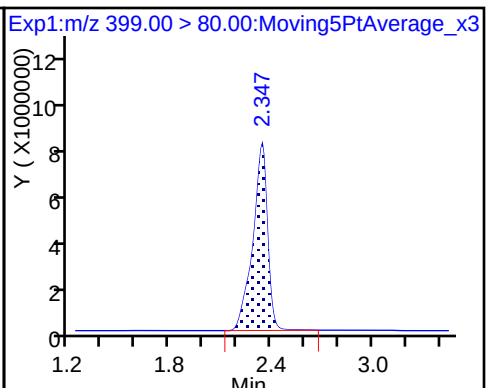
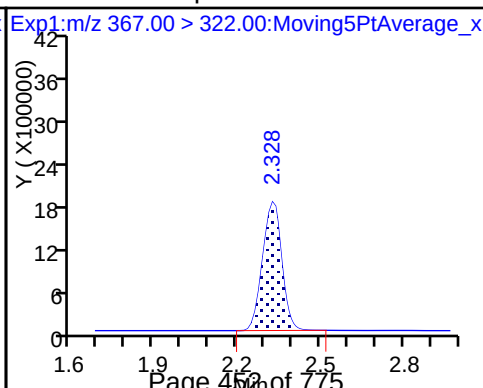
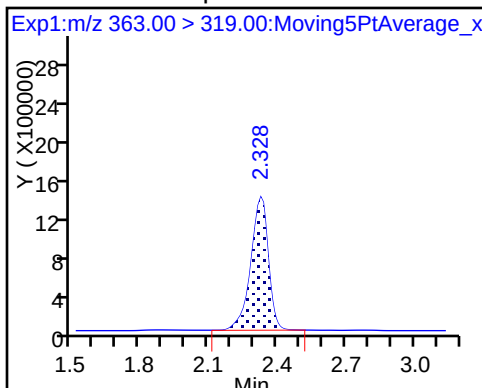
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

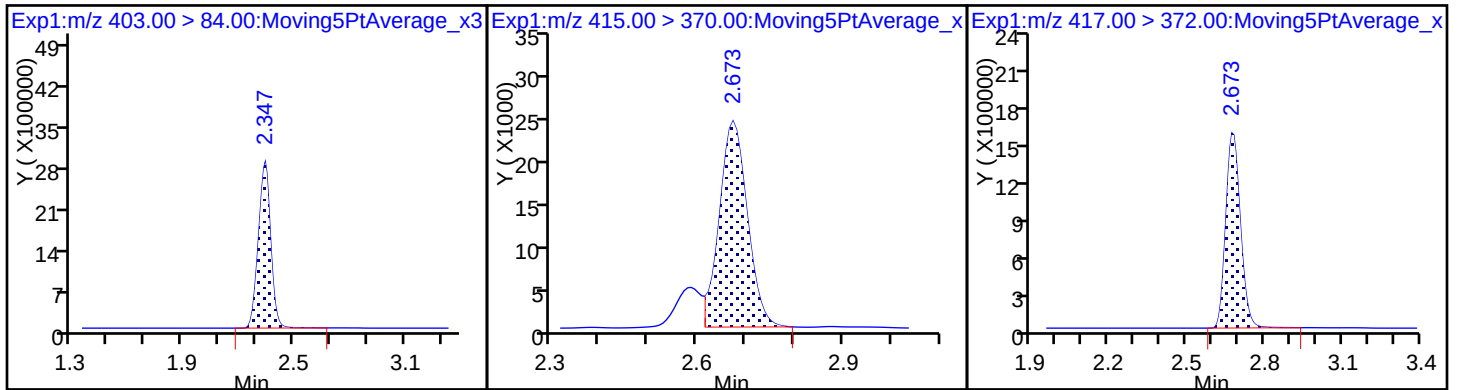
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

* 62 13C2-PFOA

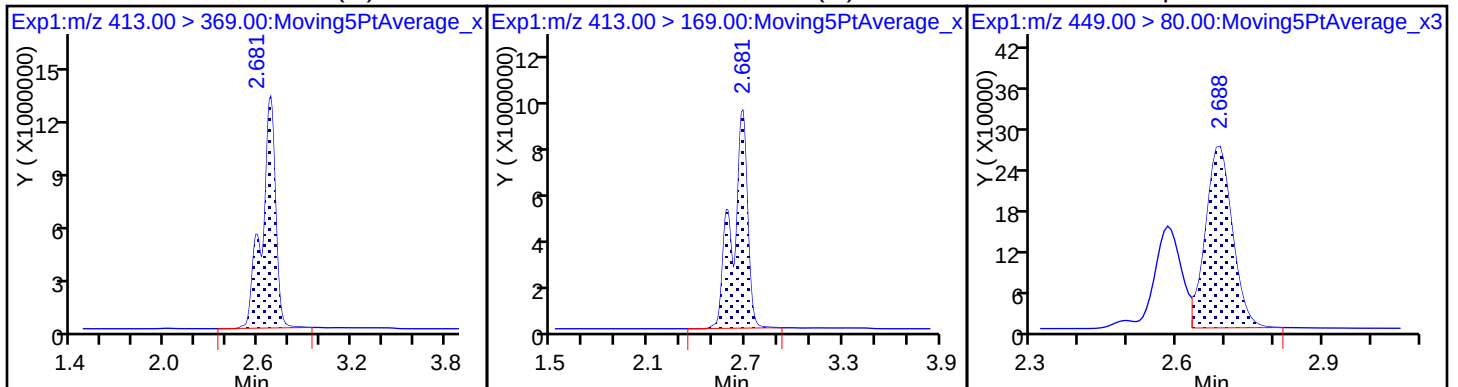
D 14 13C4 PFOA



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

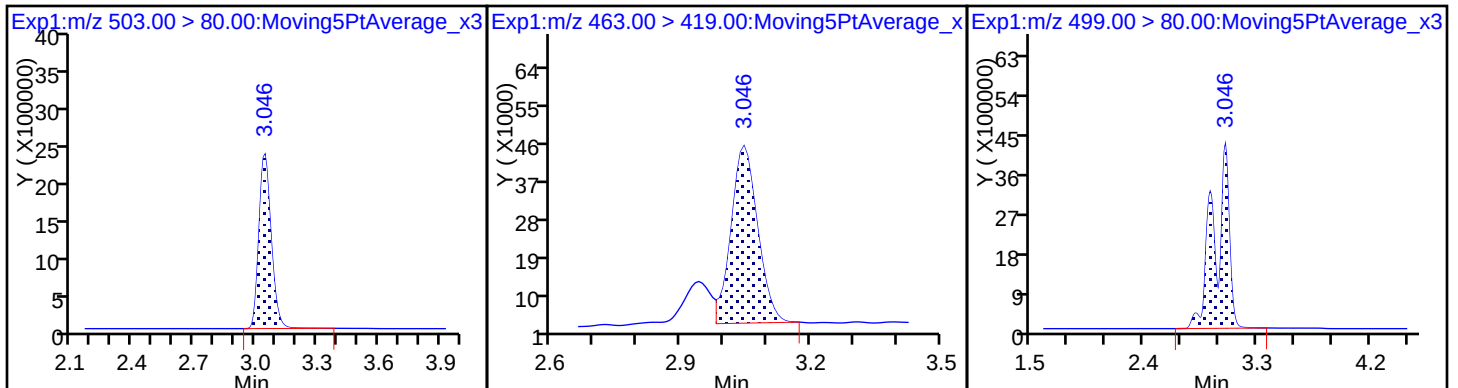
16 Perfluoroheptanesulfonic Acid



D 18 13C4 PFOS

20 Perfluorononanoic acid

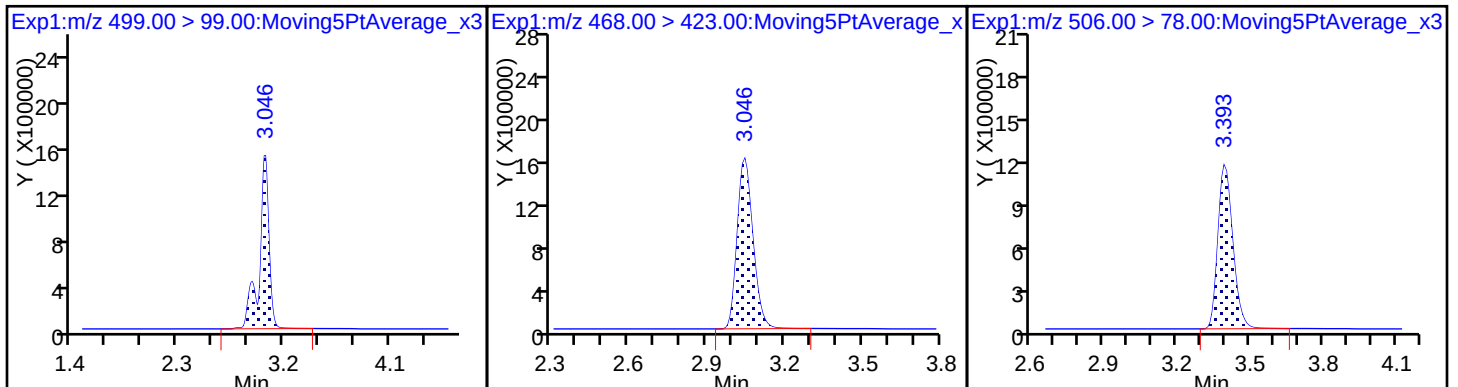
17 Perfluorooctane sulfonic acid



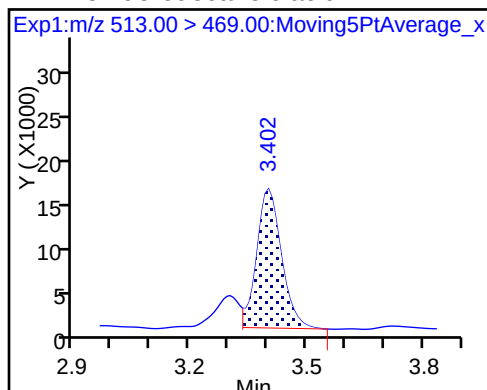
17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

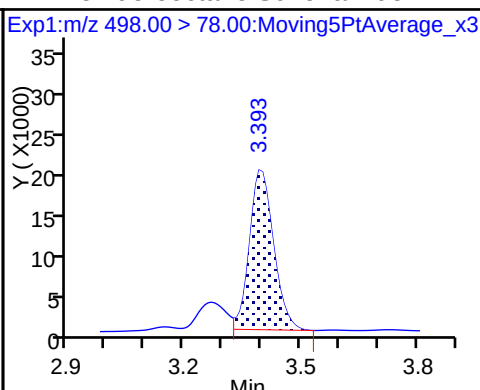
D 21 13C8 FOSA



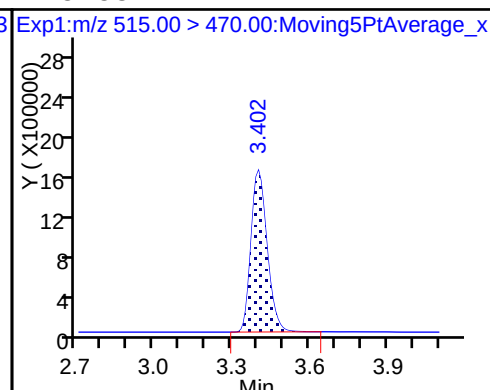
24 Perfluorodecanoic acid



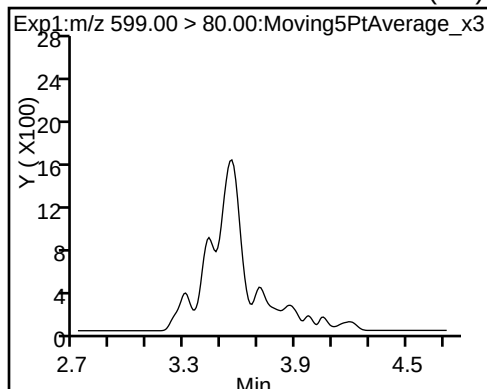
22 Perfluorooctane Sulfonamide



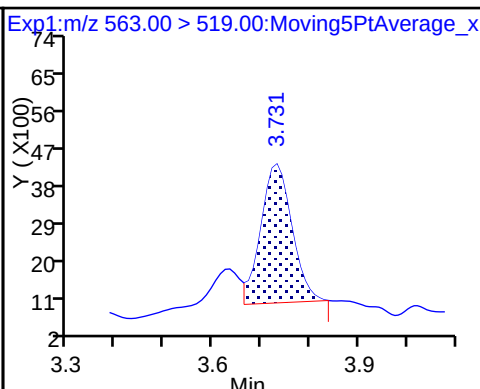
D 23 13C2 PFDA



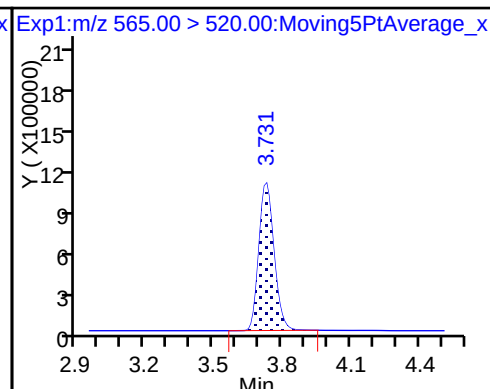
29 Perfluorodecane Sulfonic acid (ND)



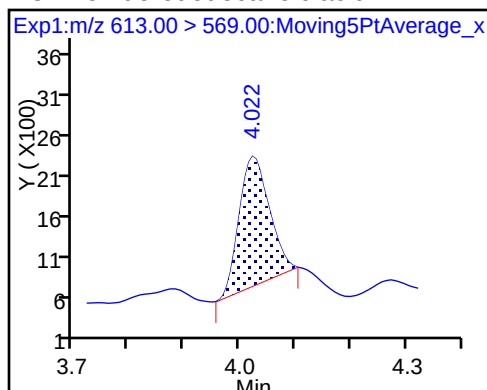
31 Perfluoroundecanoic acid



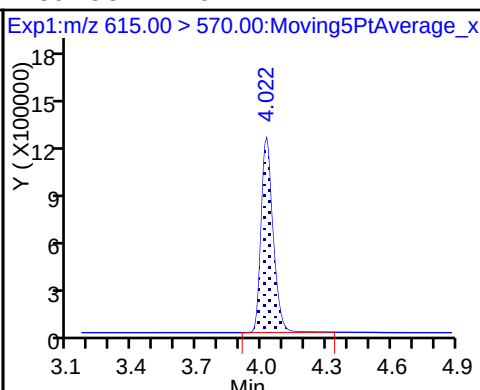
D 30 13C2 PFUnA



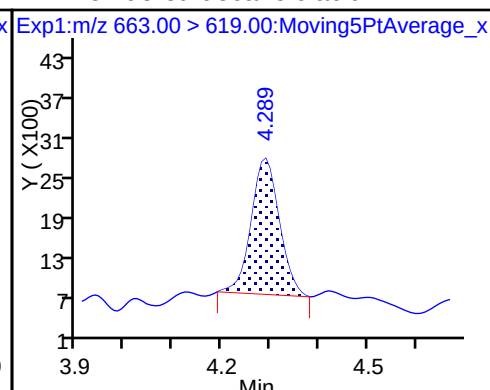
37 Perfluorododecanoic acid



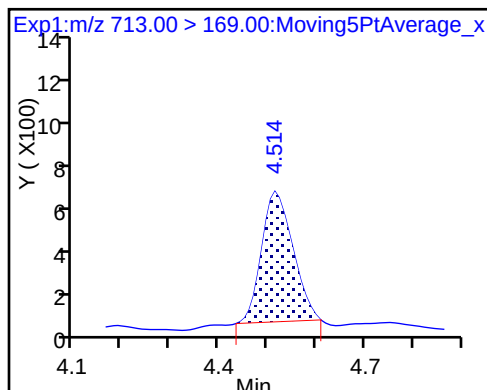
D 36 13C2 PFDoA



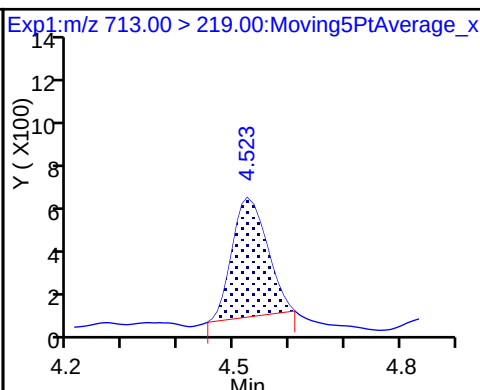
41 Perfluorotridecanoic acid



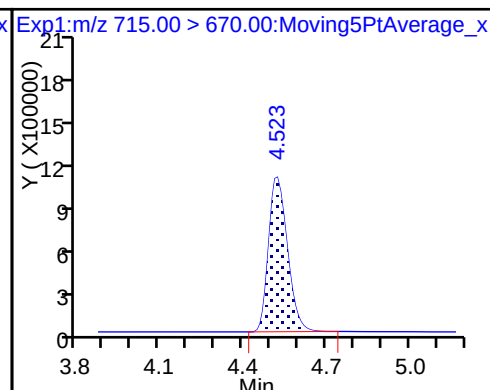
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



TestAmerica Sacramento

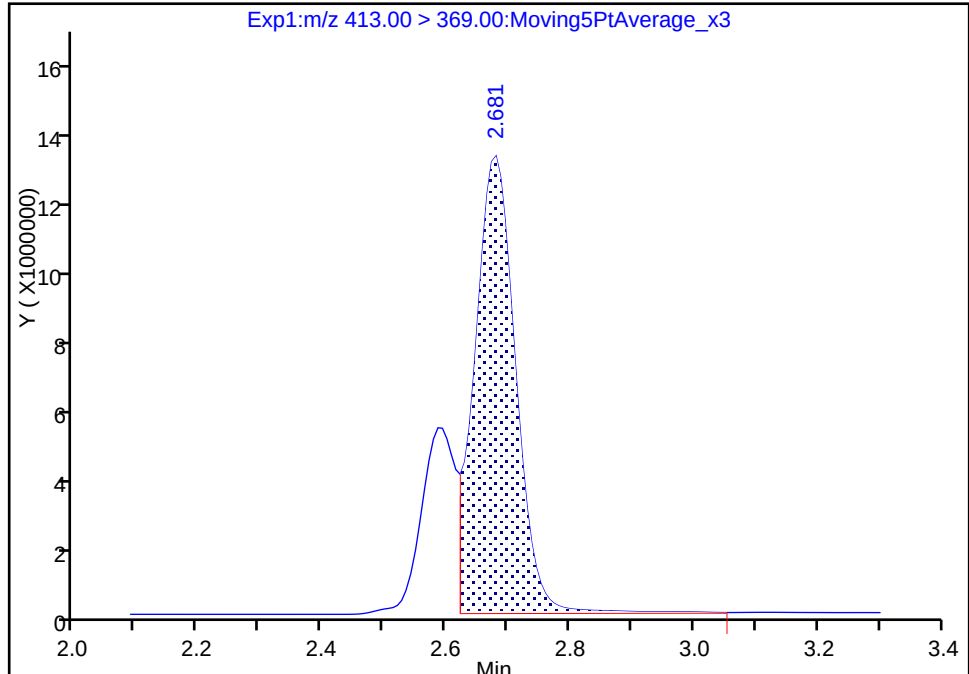
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Injection Date:	15-Sep-2017 22:48:48	Instrument ID:	A8_N		
Lims ID:	320-31407-A-1-A	Lab Sample ID:	320-31407-1		
Client ID:	TP-PFC-021-TPI				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

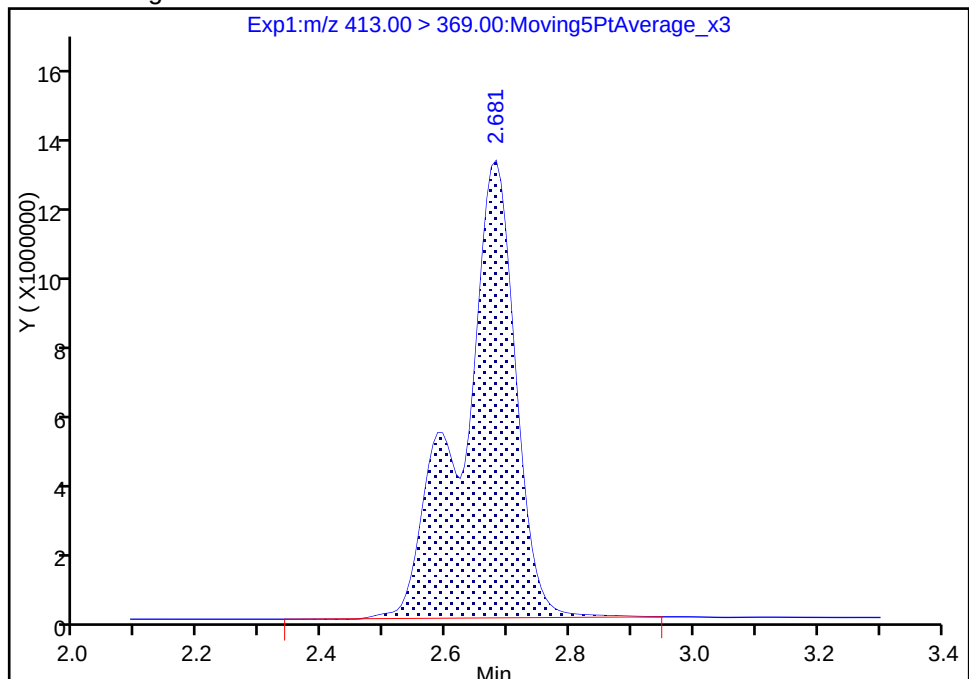
RT: 2.68
Area: 60424747
Amount: 450.2322
Amount Units: ng/ml

Processing Integration Results



RT: 2.68
Area: 80252190
Amount: 597.9689
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 14:07:08

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

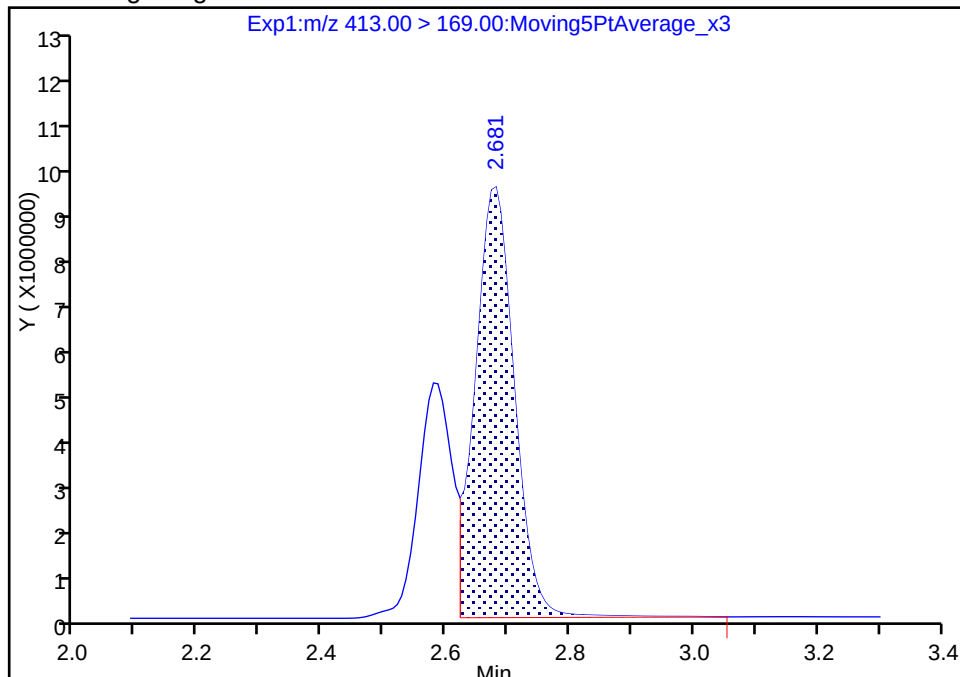
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Injection Date:	15-Sep-2017 22:48:48	Instrument ID:	A8_N		
Lims ID:	320-31407-A-1-A	Lab Sample ID:	320-31407-1		
Client ID:	TP-PFC-021-TPI				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	4	Worklist Smp#:	5
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

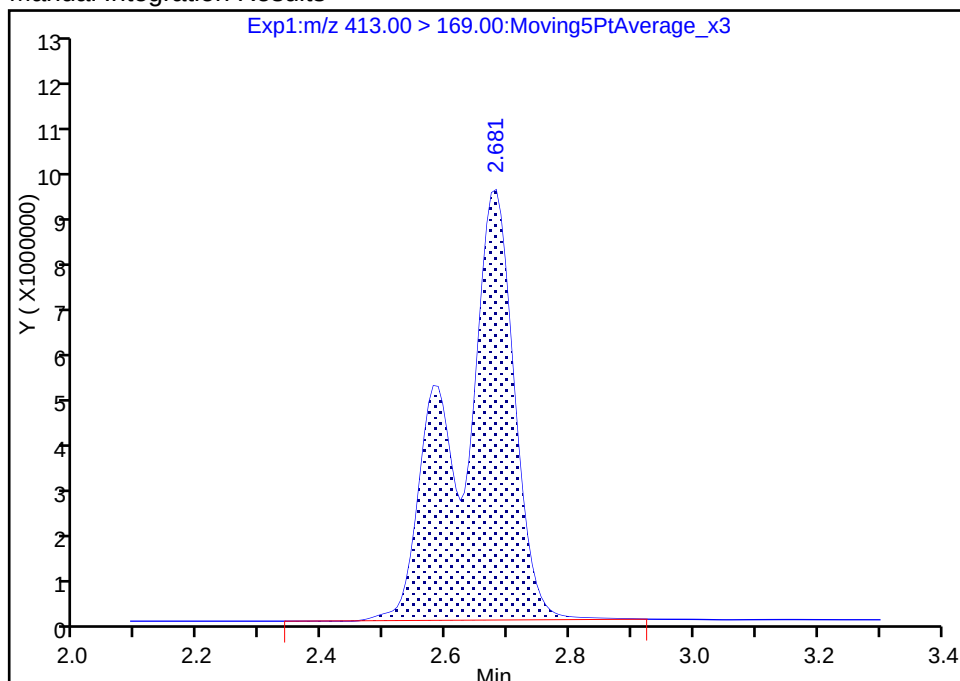
RT: 2.68
Area: 40129388
Amount: 450.2322
Amount Units: ng/ml

Processing Integration Results



RT: 2.68
Area: 58786359
Amount: 597.9689
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 14:07:10

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPI DL</u>	Lab Sample ID: <u>320-31407-1 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.19B_014.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>260.8 (mL)</u>	Date Analyzed: <u>09/19/2017 23:07</u>
Con. Extract Vol.: <u>0.50 (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>185322</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	77	D	24	9.6	4.4
2706-90-3	Perfluoropentanoic acid (PFPeA)	210	D	24	19	9.5
307-24-4	Perfluorohexanoic acid (PFHxA)	390	D	24	19	7.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	78	D	24	19	7.7
335-67-1	Perfluorooctanoic acid (PFOA)	1800	D M	24	19	7.2
375-95-1	Perfluorononanoic acid (PFNA)	19	U	24	19	6.3
335-76-2	Perfluorodecanoic acid (PFDA)	9.6	U	24	9.6	4.2
2058-94-8	Perfluoroundecanoic acid (PFUnA)	19	U	24	19	7.2
307-55-1	Perfluorododecanoic acid (PFDoA)	19	U	24	19	5.6
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	19	U	24	19	5.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	9.6	U	24	9.6	3.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	58	D	24	19	8.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	420	D	24	19	8.3
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	9.9	J D	24	19	6.8
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	330	D	38	29	12
335-77-3	Perfluorodecanesulfonic acid (PFDS)	29	U	38	29	12
754-91-6	Perfluorooctane Sulfonamide (FOSA)	19	U	380	19	6.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPI DL</u>	Lab Sample ID: <u>320-31407-1 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.19B_014.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>260.8 (mL)</u>	Date Analyzed: <u>09/19/2017 23:07</u>
Con. Extract Vol.: <u>0.50 (mL)</u>	Dilution Factor: <u>10</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>185322</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	29		25-150
STL00992	13C4 PFBA	90		25-150
STL00993	13C2 PFHxA	93		25-150
STL00990	13C4 PFOA	90		25-150
STL00995	13C5 PFNA	97		25-150
STL00996	13C2 PFDA	90		25-150
STL00997	13C2 PFUnA	101		25-150
STL00998	13C2 PFDoA	98		25-150
STL00994	18O2 PFHxS	101		25-150
STL00991	13C4 PFOS	91		25-150
STL01892	13C4-PFHpA	103		25-150
STL01893	13C5 PFPeA	89		25-150
STL02337	13C3-PFBS	96		25-150
STL02116	13C2-PFTeDA	93		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48149.b\2017.09.19B_014.d
 Lims ID: 320-31407-A-1-A
 Client ID: TP-PFC-021-TPI
 Sample Type: Client
 Inject. Date: 19-Sep-2017 23:07:06 ALS Bottle#: 9 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 10.0000
 Sample Info: 320-31407-a-1-a 10X
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48149.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 20-Sep-2017 14:16:59 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK029

First Level Reviewer: westendorfc

Date: 20-Sep-2017 14:14:56

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	1.530	1.528	0.002	1403585	4.52		9.0	5836	
2 Perfluorobutyric acid	212.90 > 169.00	1.530	1.528	0.002	1096631	4.03			163	
D 3 13C5-PFPeA	267.90 > 223.00	1.729	1.736	-0.007	834170	4.43		8.9	8208	
4 Perfluoropentanoic acid	262.90 > 219.00	1.738	1.736	0.002	2124473	11.1			1019	
D 47 13C3-PFBS	301.90 > 83.00	1.757	1.754	0.003	23129	4.47		9.6	614	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.757	1.754	0.003	1069758	3.00			2728	
	298.90 > 99.00	1.757	1.754	0.003	459762		2.33(0.00-0.00)		2377	
D 7 13C2 PFHxA	315.00 > 270.00	1.998	1.994	0.004	935333	4.65		9.3	9769	
6 Perfluorohexanoic acid	313.00 > 269.00	1.998	1.994	0.004	3671228	20.5			4405	
D 9 13C4-PFHpA	367.00 > 322.00	2.320	2.317	0.003	940674	5.13		10.3	9429	
10 Perfluoroheptanoic acid	363.00 > 319.00	2.320	2.317	0.003	745444	4.04			967	
D 11 18O2 PFHxS	403.00 > 84.00	2.328	2.333	-0.005	1370533	4.80		10.1	13161	
8 Perfluorohexanesulfonic acid	399.00 > 80.00	2.328	2.333	-0.005	6791827	22.1			10269	
* 62 13C2-PFOA	415.00 > 370.00	2.665	2.666	-0.001	12532	50.0			269	
D 14 13C4 PFOA	417.00 > 372.00	2.665	2.673	-0.008	765088	4.48		9.0	7874	

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	2.672	2.673	-0.001	1.000	15655183	95.1			6639	M
413.00 > 169.00	2.672	2.673	-0.001	1.000	9772570		1.60(0.90-1.10)		23537	M
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.679	2.680	-0.001	1.000	112819	0.5170			162	
D 19 13C5 PFNA										
468.00 > 423.00	3.039	3.042	-0.003		608480	4.86		9.7	7457	
D 18 13C4 PFOS										
503.00 > 80.00	3.039	3.042	-0.003		846000	4.35		9.1	7724	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.039	3.042	-0.003	1.000	3369311	17.4			6446	
499.00 > 99.00	3.039	3.042	-0.003	1.000	767429		4.39(0.90-1.10)		2900	
20 Perfluorononanoic acid										
463.00 > 419.00	3.039	3.042	-0.003	1.000	19924	0.1672			27.7	
D 21 13C8 FOSA										
506.00 > 78.00	3.380	3.380	0.0		422094	1.43		2.9	3879	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.380	3.388	-0.008	1.000	13104	0.1538			133	
D 23 13C2 PFDA										
515.00 > 470.00	3.397	3.397	0.0		464345	4.48		9.0	6459	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.397	3.397	0.0	1.000	6114	0.0701			25.9	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.721	3.712	0.009	1.000	2779	0.0265			49.2	
D 30 13C2 PFUnA										
565.00 > 520.00	3.730	3.731	-0.001		336172	5.03		10.1	5338	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.730	3.731	-0.001	1.000	2157	0.0289			3.4	
D 36 13C2 PFDaA										
615.00 > 570.00	4.024	4.021	0.003		294132	4.89		9.8	3750	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.525	4.524	0.001		345773	4.67		9.3	3885	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48149.b\2017.09.19B_014.d

Injection Date: 19-Sep-2017 23:07:06

Instrument ID: A8_N

Lims ID: 320-31407-A-1-A

Lab Sample ID: 320-31407-1

Client ID: TP-PFC-021-TPI

Operator ID: SACINSTLCMS01

ALS Bottle#: 9

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 10.0000

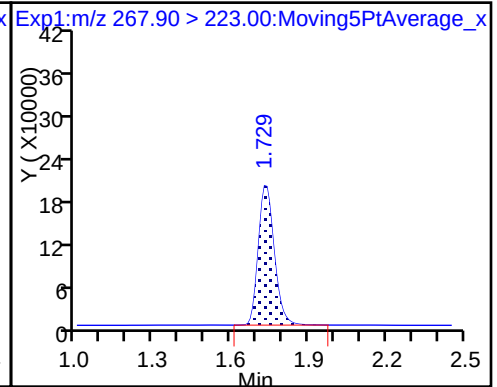
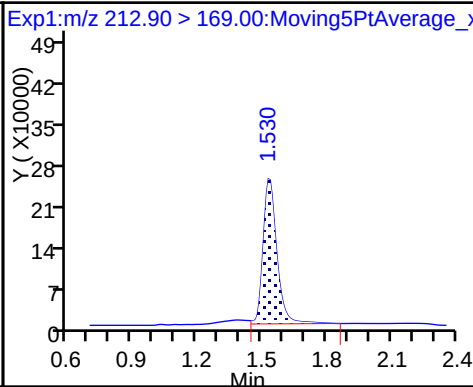
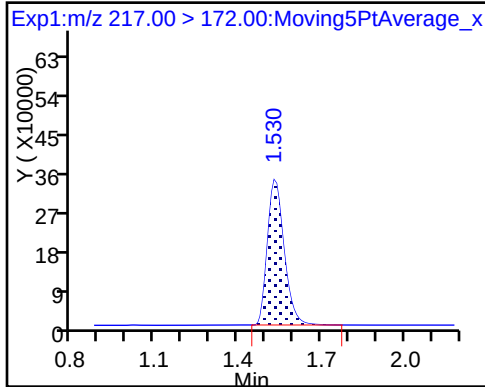
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

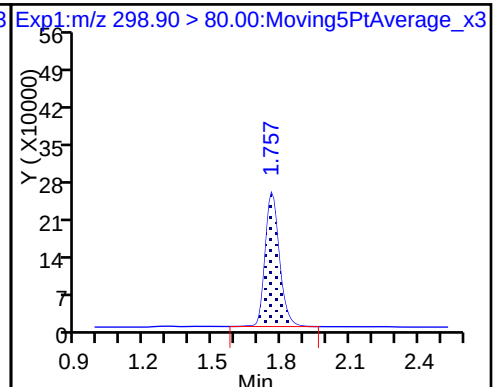
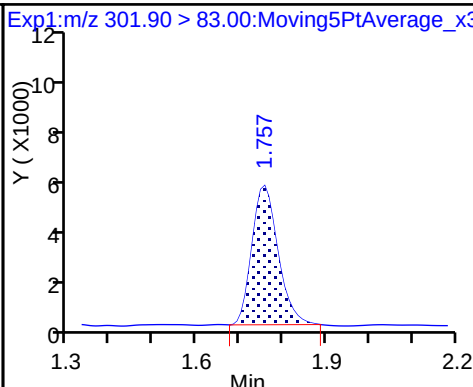
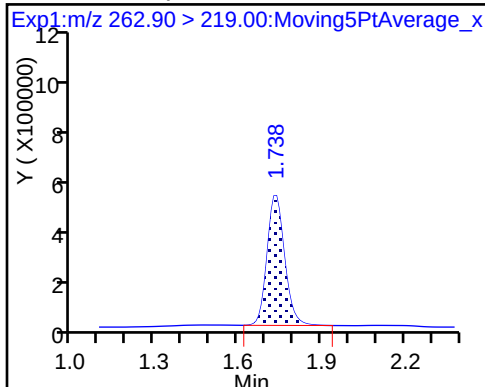
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

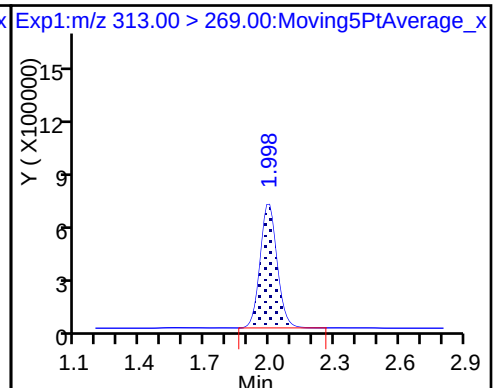
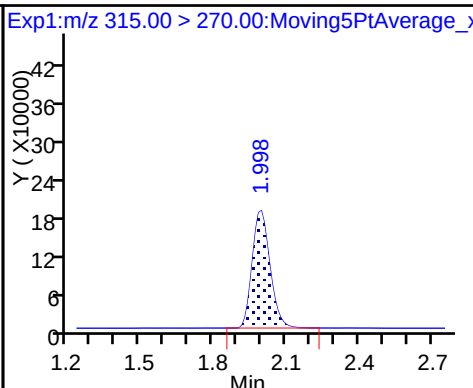
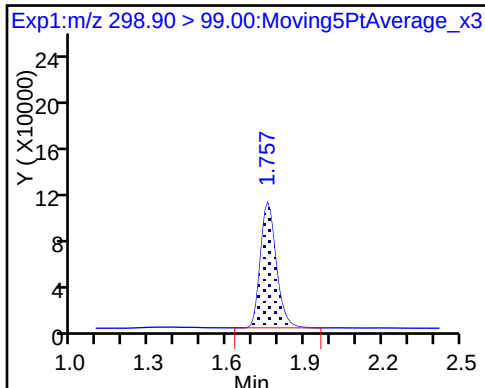
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

D 7 13C2 PFHxA

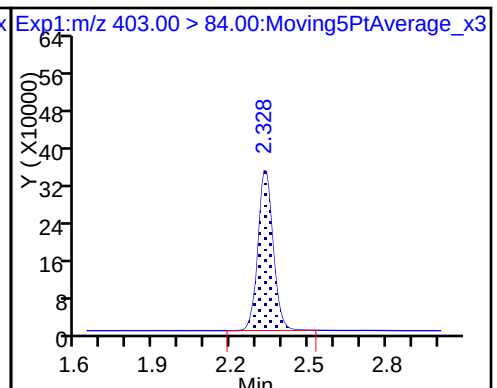
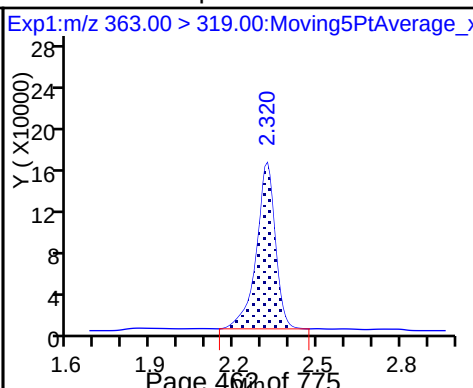
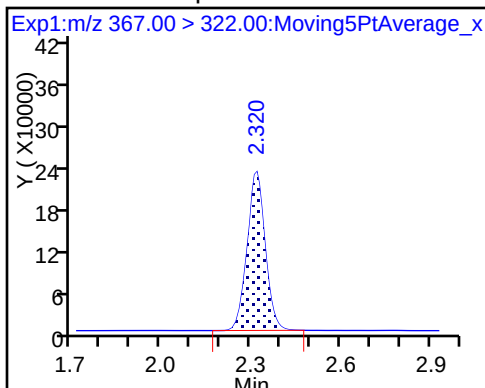
6 Perfluorohexanoic acid



D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

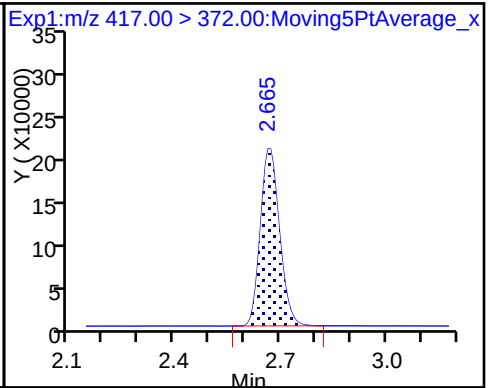
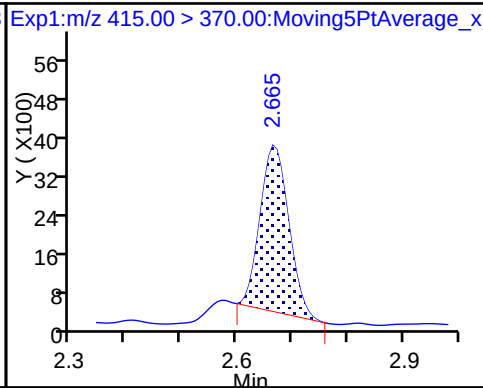
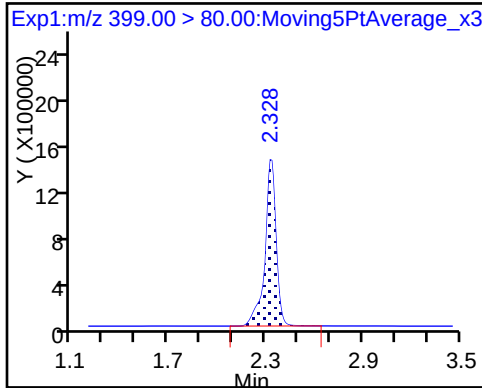
D 11 18O2 PFHxS



8 Perfluorohexanesulfonic acid

* 62 13C2-PFOA

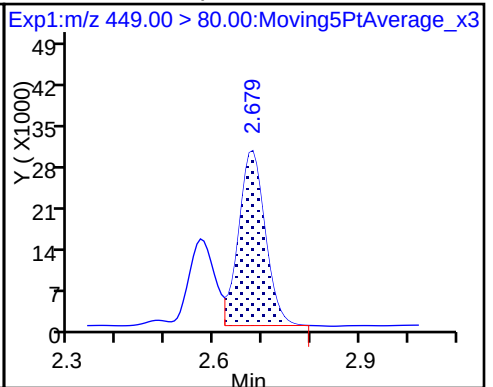
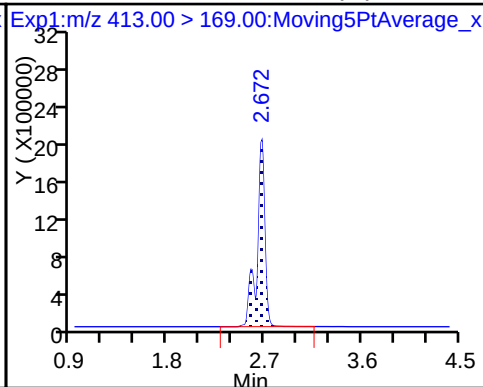
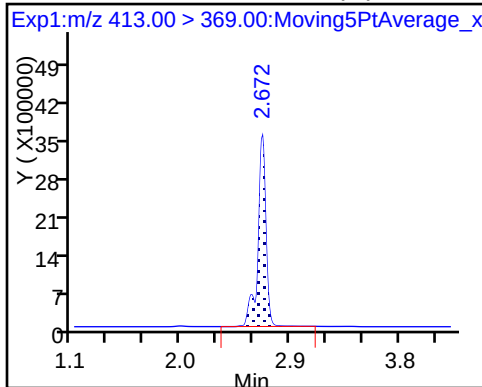
D 14 13C4 PFOA



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

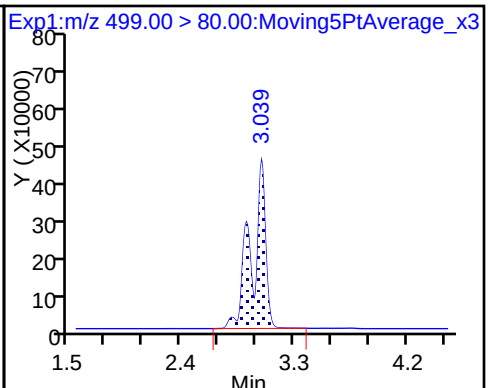
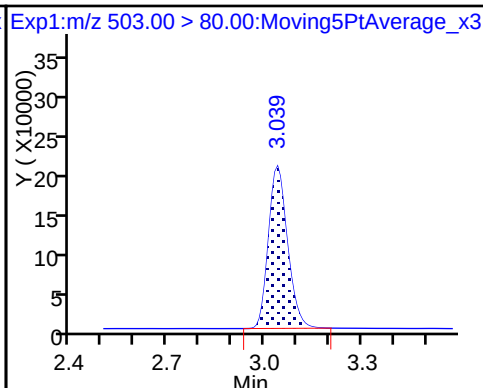
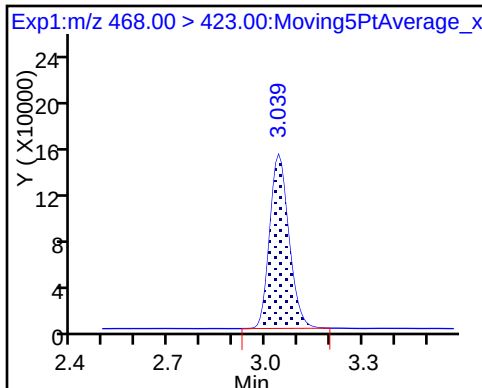
16 Perfluoroheptanesulfonic Acid



D 19 13C5 PFNA

D 18 13C4 PFOS

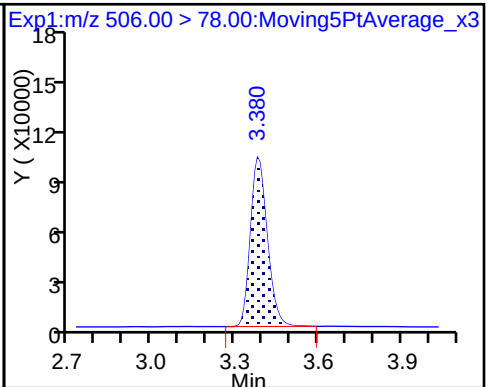
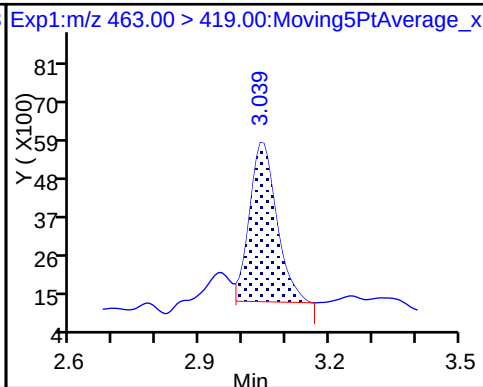
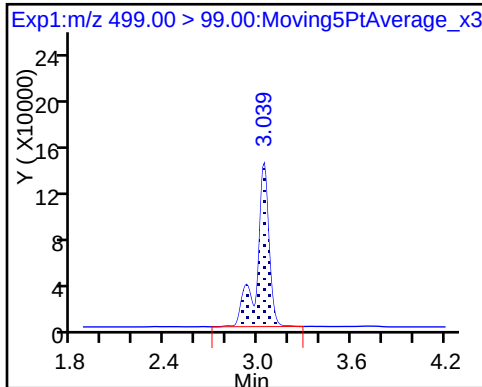
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

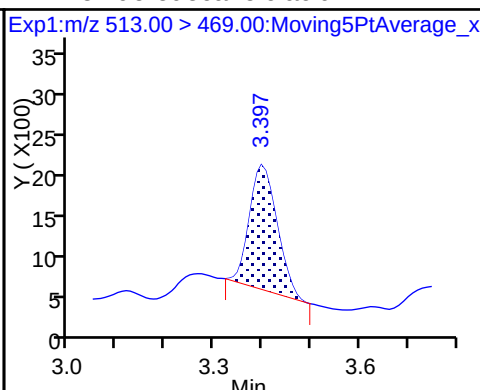
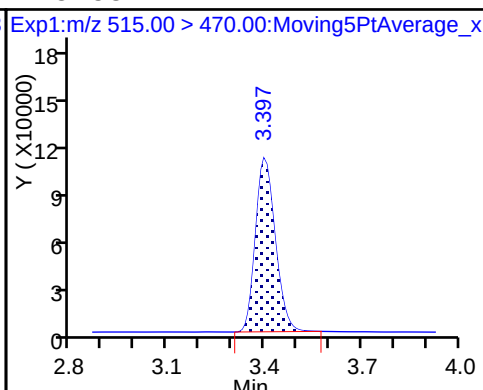
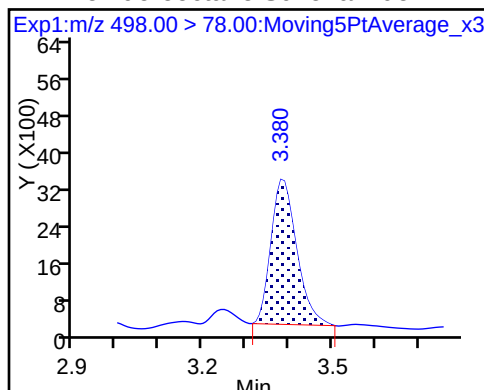
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 23 13C2 PFDA

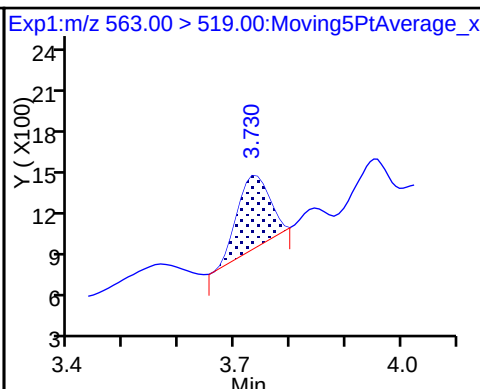
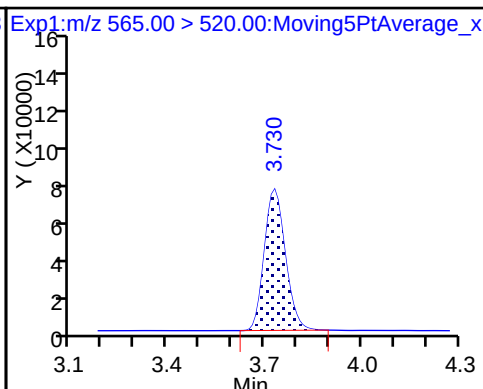
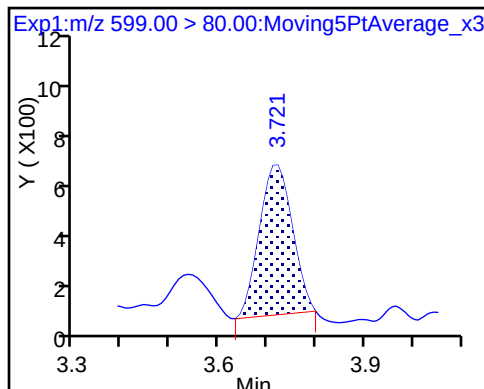
24 Perfluorodecanoic acid



29 Perfluorodecane Sulfonic acid

D 30 13C2 PFUnA

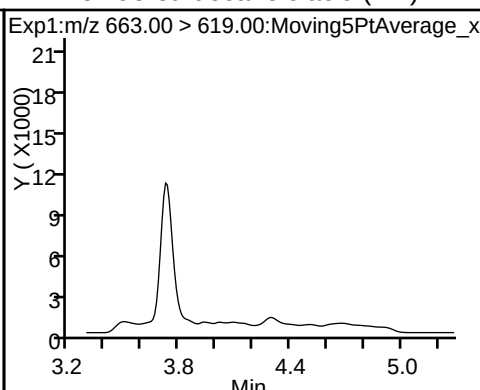
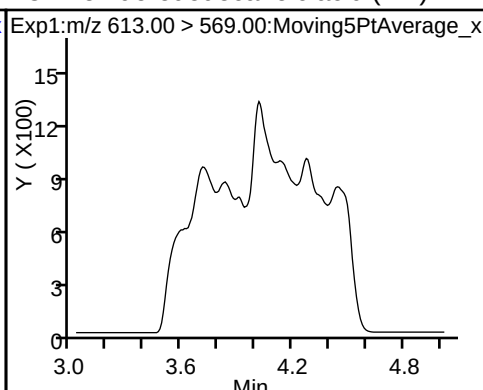
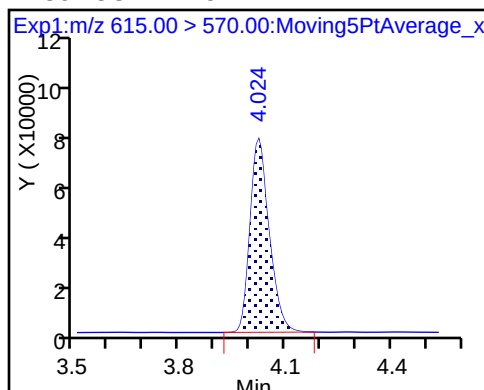
31 Perfluoroundecanoic acid



D 36 13C2 PFDaA

37 Perfluorododecanoic acid (ND)

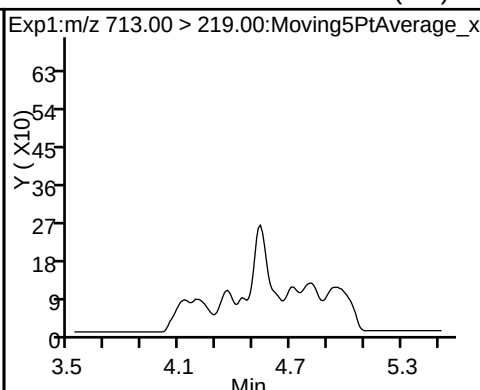
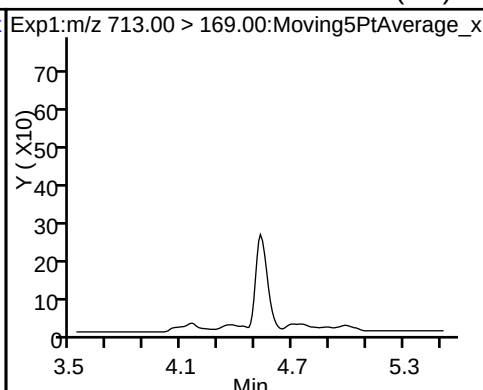
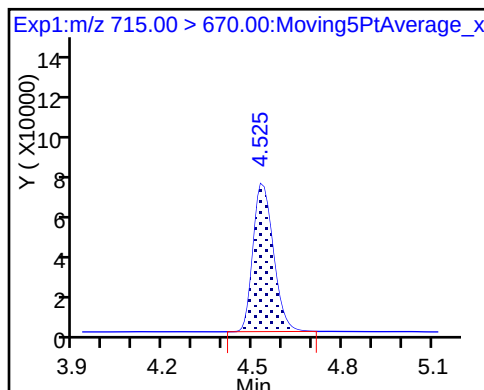
41 Perfluorotridecanoic acid (ND)



D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)



TestAmerica Sacramento

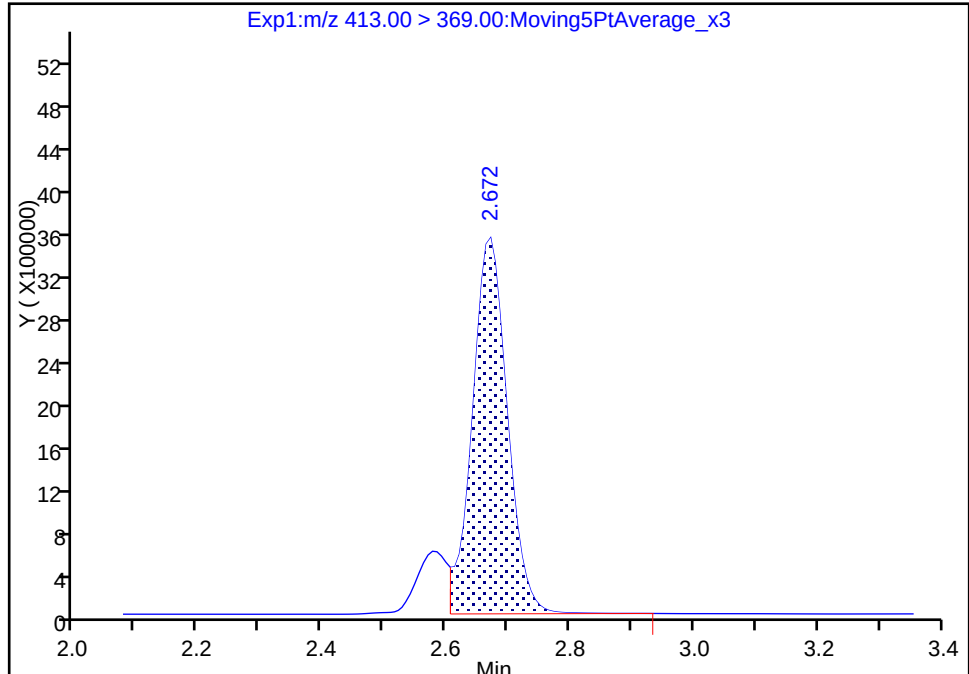
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Injection Date:	19-Sep-2017 23:07:06	Instrument ID:	A8_N
Lims ID:	320-31407-A-1-A	Lab Sample ID:	320-31407-1
Client ID:	TP-PFC-021-TPI		
Operator ID:	SACINSTLCMS01	ALS Bottle#:	9
Injection Vol:	2.0 ul	Dil. Factor:	10.0000
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	2

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

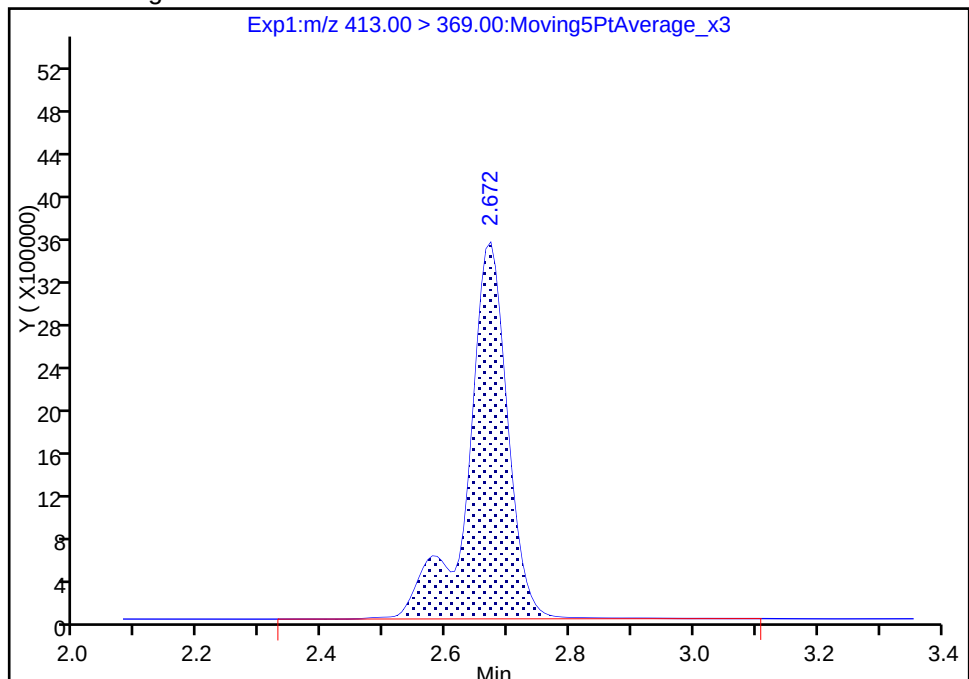
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Area: 13622017
Amount: 82.724122
Amount Units: ng/ml

Processing Integration Results



RT: 2.67
Area: 15655183
Amount: 95.071183
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 20-Sep-2017 14:14:44

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

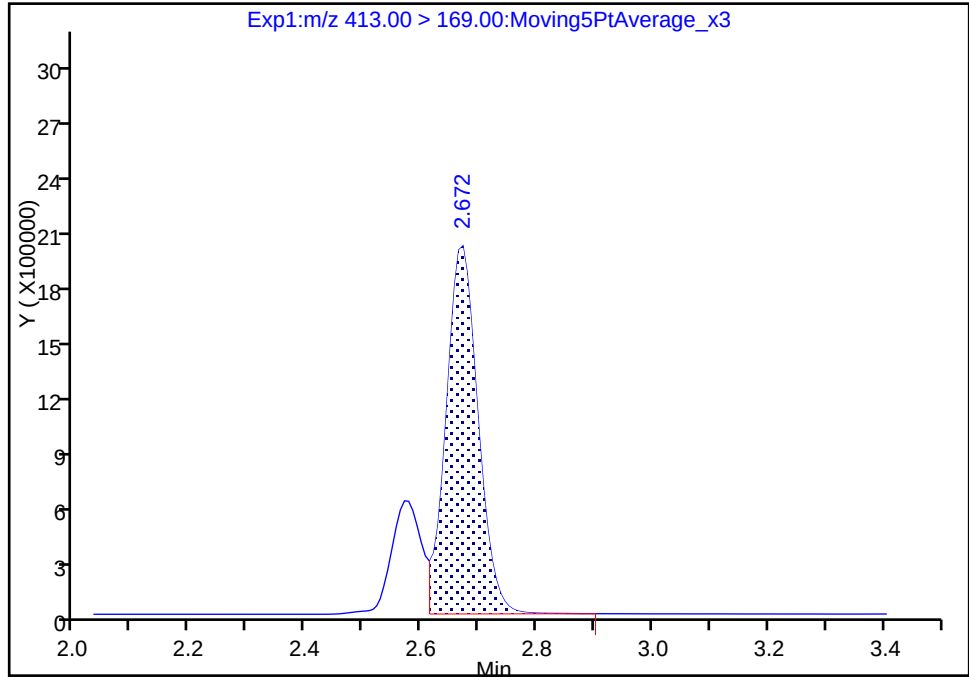
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Injection Date: 19-Sep-2017 23:07:06 Instrument ID: A8_N
Lims ID: 320-31407-A-1-A Lab Sample ID: 320-31407-1
Client ID: TP-PFC-021-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 9 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

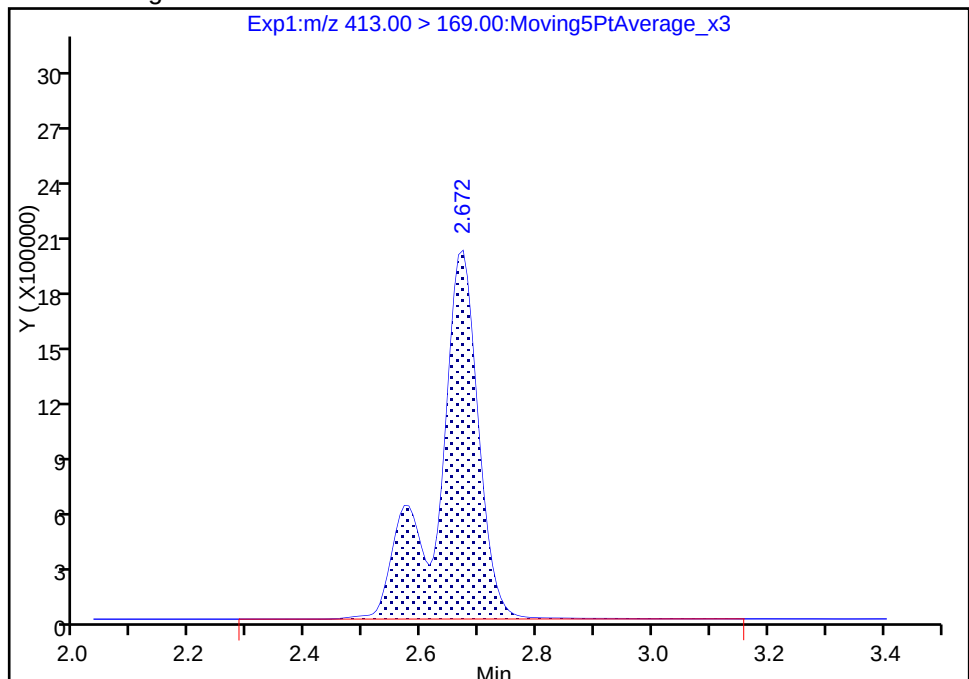
RT: 2.67
Area: 7540675
Amount: 82.724122
Amount Units: ng/ml

Processing Integration Results



RT: 2.67
Area: 9772570
Amount: 95.071183
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 20-Sep-2017 14:14:45

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-MID-CARBON</u>	Lab Sample ID: <u>320-31407-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_006.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:25</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>269.5 (mL)</u>	Date Analyzed: <u>09/15/2017 22:55</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	130		2.3	0.93	0.42
2706-90-3	Perfluoropentanoic acid (PFPeA)	50		2.3	1.9	0.92
307-24-4	Perfluorohexanoic acid (PFHxA)	5.6		2.3	1.9	0.73
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	U	2.3	1.9	0.74
335-67-1	Perfluorooctanoic acid (PFOA)	0.97	J M	2.3	1.9	0.69
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.3	1.9	0.61
335-76-2	Perfluorodecanoic acid (PFDA)	0.93	U	2.3	0.93	0.41
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	U	2.3	1.9	0.69
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	U	2.3	1.9	0.54
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.3	1.9	0.51
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.93	U	2.3	0.93	0.37
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	U M	2.3	1.9	0.85
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.3	1.9	0.81
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	2.3	1.9	0.66
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	2.8	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.8	U	3.7	2.8	1.1
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.68	J	37	1.9	0.59

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-MID-CARBON</u>	Lab Sample ID: <u>320-31407-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_006.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:25</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>269.5 (mL)</u>	Date Analyzed: <u>09/15/2017 22:55</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	19	Q	25-150
STL00992	13C4 PFBA	98		25-150
STL00993	13C2 PFHxA	93		25-150
STL00990	13C4 PFOA	104		25-150
STL00995	13C5 PFNA	103		25-150
STL00996	13C2 PFDA	109		25-150
STL00997	13C2 PFUnA	95		25-150
STL00998	13C2 PFDoA	96		25-150
STL00994	18O2 PFHxS	99		25-150
STL00991	13C4 PFOS	107		25-150
STL01892	13C4-PFHpA	107		25-150
STL01893	13C5 PFPeA	88		25-150
STL02337	13C3-PFBS	107		25-150
STL02116	13C2-PFTeDA	121		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_006.d
 Lims ID: 320-31407-A-2-A
 Client ID: TP-PFC-021-MID-CARBON
 Sample Type: Client
 Inject. Date: 15-Sep-2017 22:55:42 ALS Bottle#: 5 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-31407-a-2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 14:23:04 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14ICALX_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK006

First Level Reviewer: westendorfc

Date: 19-Sep-2017 14:08:06

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	1.554	1.556	-0.002		15269301	48.8		97.6	28354	
2 Perfluorobutyric acid										
212.90 > 169.00	1.563	1.556	0.007	1.000	20446215	70.6			2169	
D 3 13C5-PFPeA										
267.90 > 223.00	1.763	1.756	0.007		9059517	44.2		88.4	35010	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.745	1.756	-0.011	1.000	5635617	27.1			4134	
D 47 13C3-PFBS										
301.90 > 83.00	1.782	1.784	-0.002		248367	50.0		107	8351	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.782	1.784	-0.002	1.000	14742	0.0378			31.2	
298.90 > 99.00	1.773	1.784	-0.011	0.995	8218		1.79(0.00-0.00)		31.9	M
6 Perfluorohexanoic acid										
313.00 > 269.00	1.994	2.020	-0.026	1.000	594674	3.02			952	
D 7 13C2 PFHxA										
315.00 > 270.00	2.017	2.020	-0.003		10199229	46.5		93.0	21632	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.326	2.337	-0.011	1.000	20537	0.0967			31.1	
D 9 13C4-PFHpA										
367.00 > 322.00	2.326	2.337	-0.011		10834671	53.4		107	17697	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.349	2.347	0.002	1.000	74826	0.2525			522	
D 11 18O2 PFHxS										
403.00 > 84.00	2.349	2.347	0.002		13382372	47.0		99.4	15071	
* 62 13C2-PFOA										
415.00 > 370.00	2.674	2.678	-0.004		6038	50.0			278	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.678	0.003		10158639	52.1		104	22853	

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	2.681	2.678	0.003	1.000	115842	0.5221			32.0	M
413.00 > 169.00	2.681	2.678	0.003	1.000	68332		1.70(0.90-1.10)		300	
D 18 13C4 PFOS										
503.00 > 80.00	3.045	3.043	0.002		10252990	51.1		107	14189	
20 Perfluorononanoic acid										
463.00 > 419.00	3.045	3.051	-0.006	1.000	5500	0.0370			4.8	
D 19 13C5 PFNA										
468.00 > 423.00	3.045	3.051	-0.006		7715338	51.4		103	12272	
D 21 13C8 FOSA										
506.00 > 78.00	3.397	3.393	0.004		3005406	9.64		19.3	10755	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.397	3.402	-0.005	1.000	3461	0.0252			22.1	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.397	3.402	-0.005	1.000	21072	0.3690			354	
D 23 13C2 PFDA										
515.00 > 470.00	3.397	3.402	-0.005		7337989	54.7		109	41097	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.711	3.719	-0.008	1.000	1592	0.0118			23.7	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.731	3.728	0.003	1.000	14390	0.1426			36.0	
D 30 13C2 PFUnA										
565.00 > 520.00	3.731	3.728	0.003		4525754	47.3		94.7	7178	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.020	4.022	-0.002	1.000	2911	0.0344			7.7	
D 36 13C2 PFDoA										
615.00 > 570.00	4.020	4.022	-0.002		4394514	48.2		96.4	10510	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.286	4.290	-0.004	1.000	4607	0.0461			1.3	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.518	4.525	-0.007		5671192	60.4		121	23518	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_006.d

Injection Date: 15-Sep-2017 22:55:42

Instrument ID: A8_N

Lims ID: 320-31407-A-2-A

Lab Sample ID: 320-31407-2

Client ID: TP-PFC-021-MID-CARBON

Operator ID: SACINSTLCMS01

ALS Bottle#: 5

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

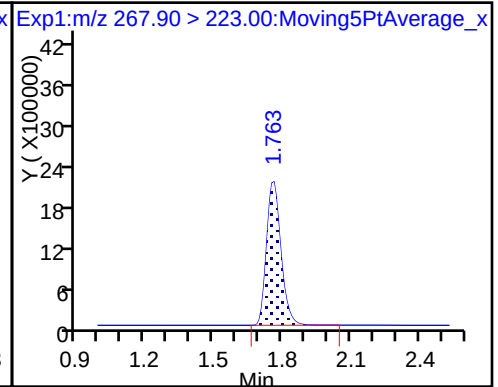
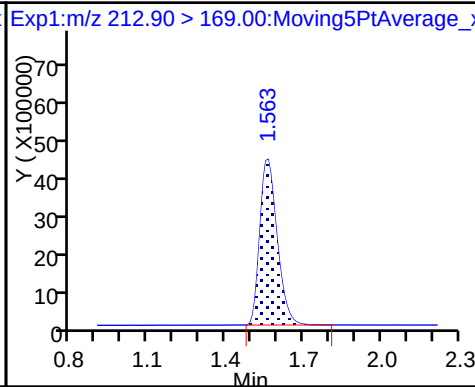
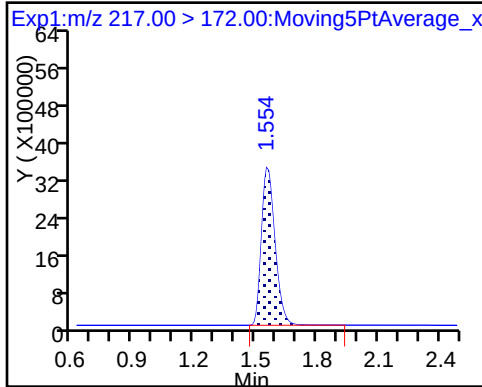
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

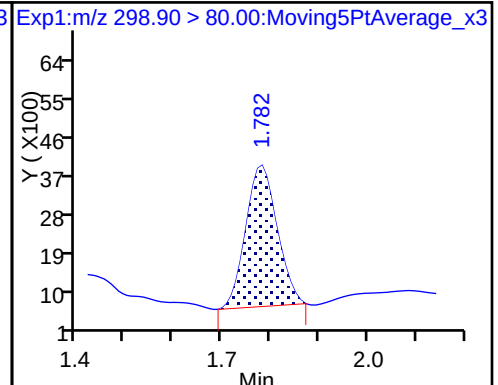
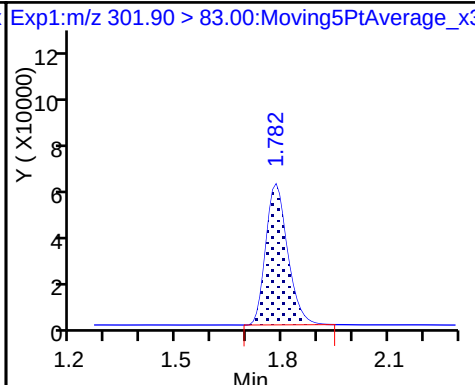
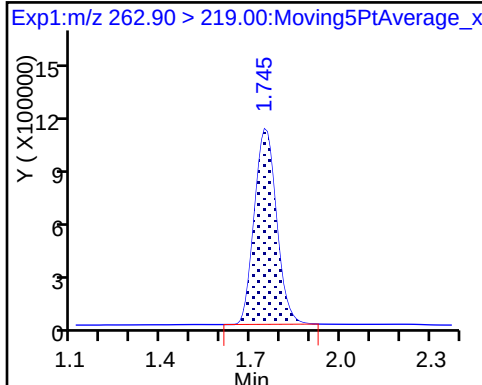
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

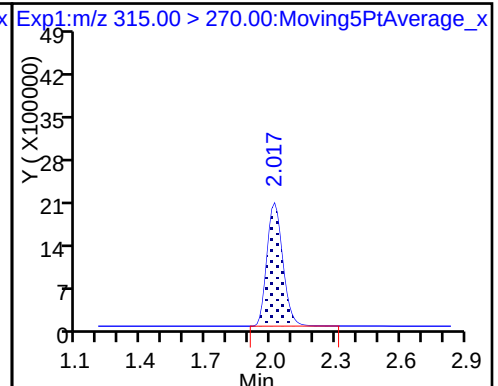
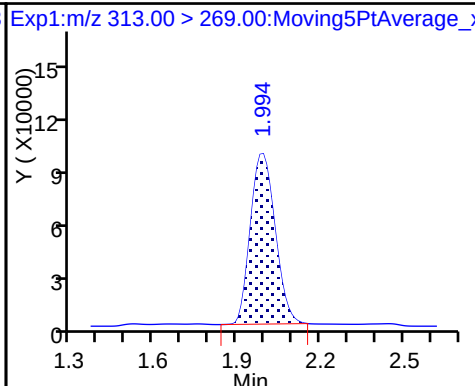
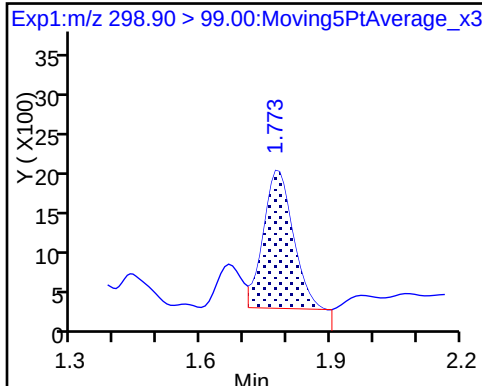
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid (M)

6 Perfluorohexanoic acid

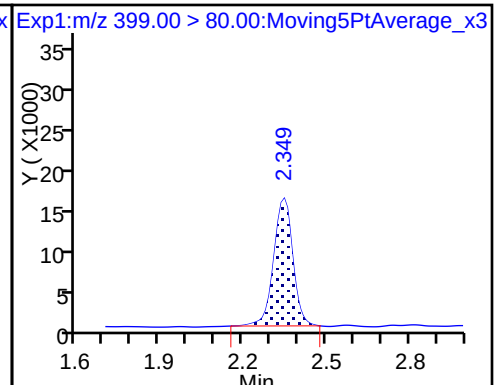
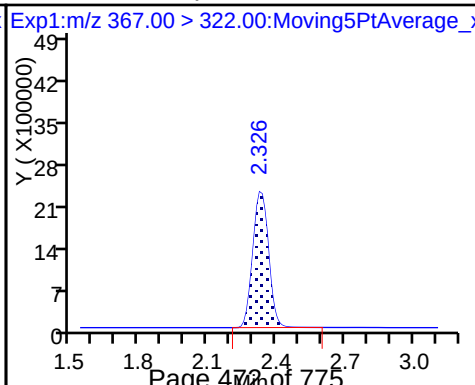
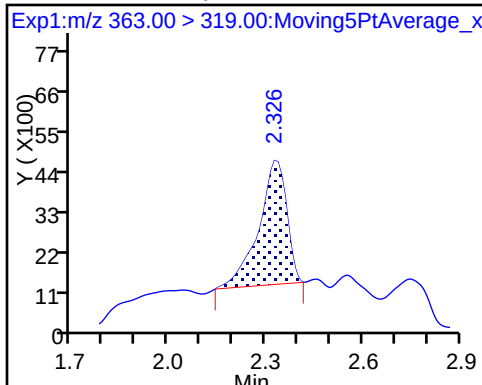
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

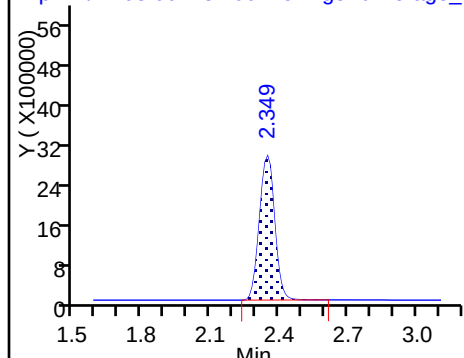


D 11 18O2 PFHxS

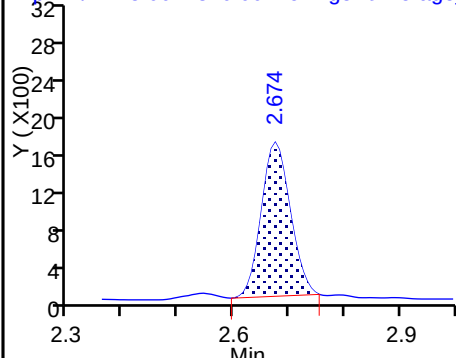
* 62 13C2-PFOA

D 14 13C4 PFOA

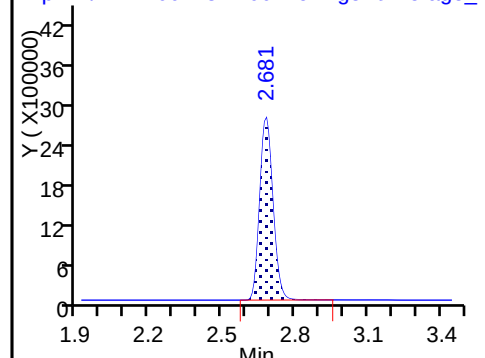
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Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

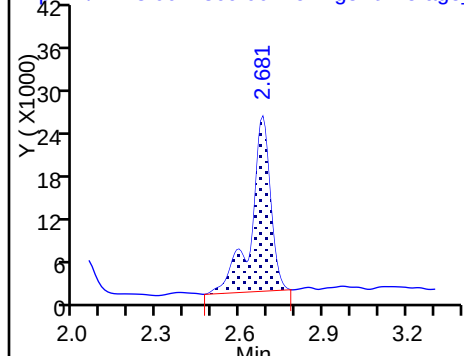


15 Perfluorooctanoic acid (M)

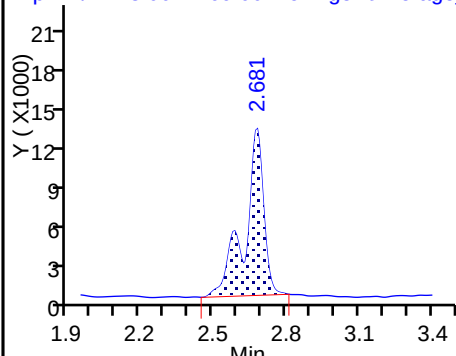
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid (ND)

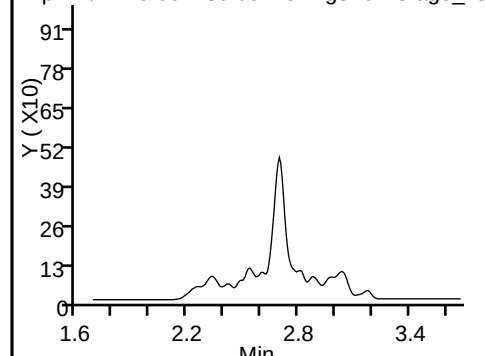
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Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

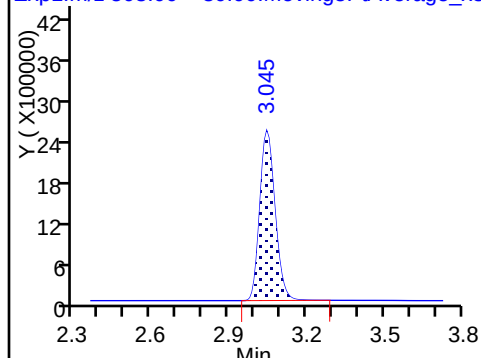


D 18 13C4 PFOS

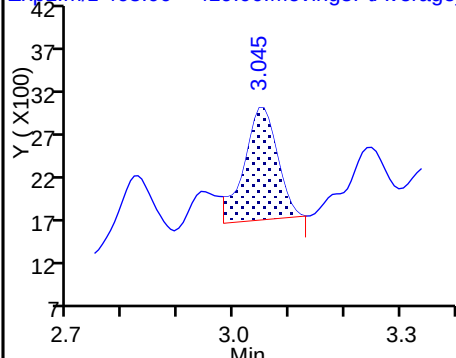
20 Perfluorononanoic acid

17 Perfluorooctane sulfonic acid (ND)

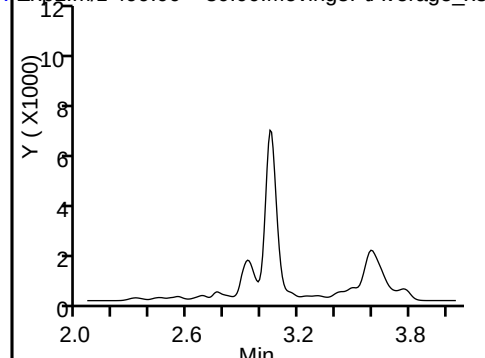
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x3



Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3

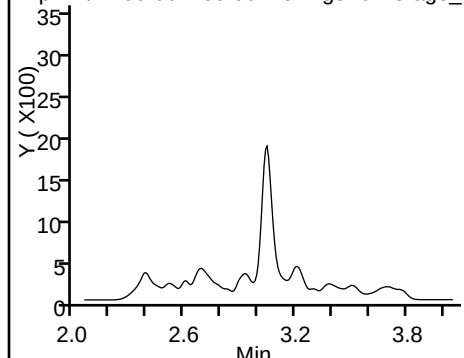


17 Perfluorooctane sulfonic acid (ND)

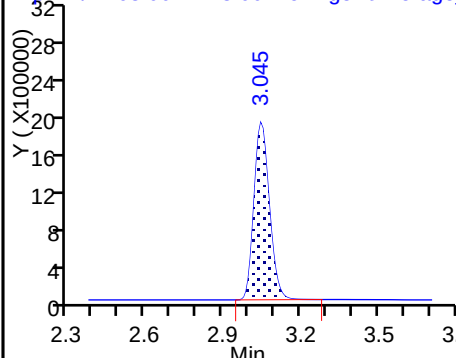
D 19 13C5 PFNA

D 21 13C8 FOSA

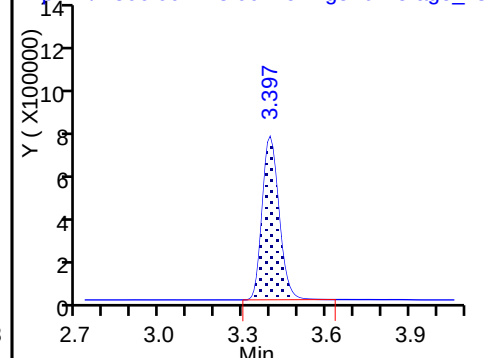
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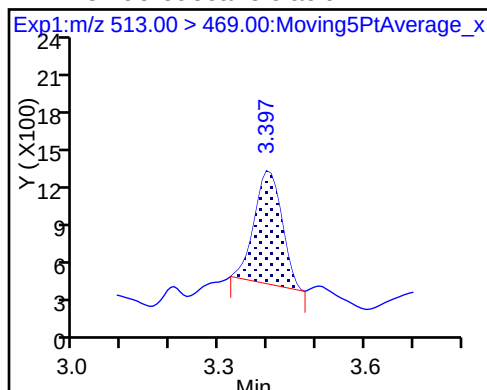
Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x3



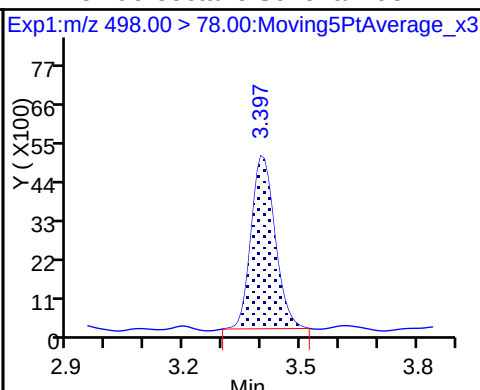
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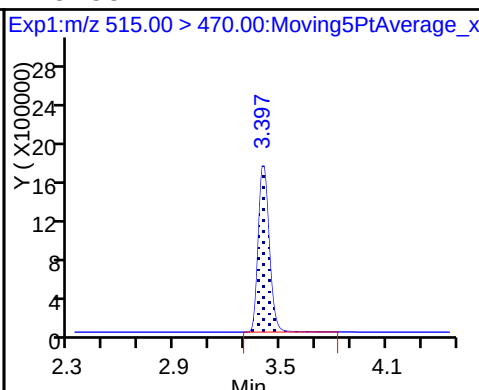
24 Perfluorodecanoic acid



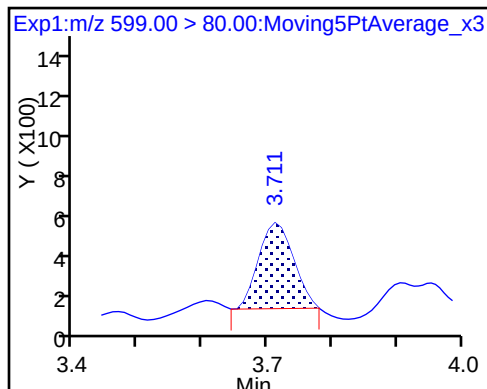
22 Perfluorooctane Sulfonamide



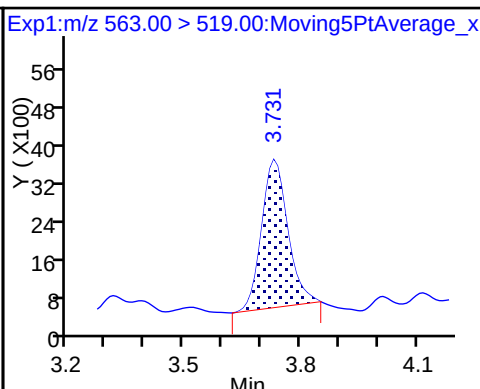
D 23 13C2 PFDA



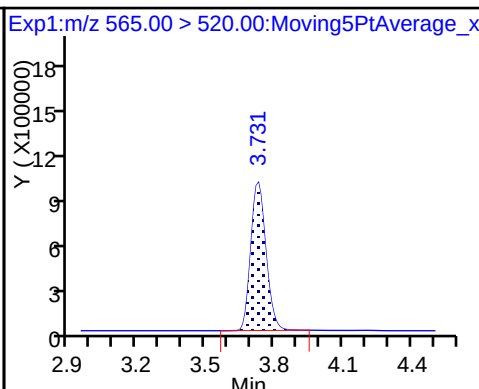
29 Perfluorodecane Sulfonic acid



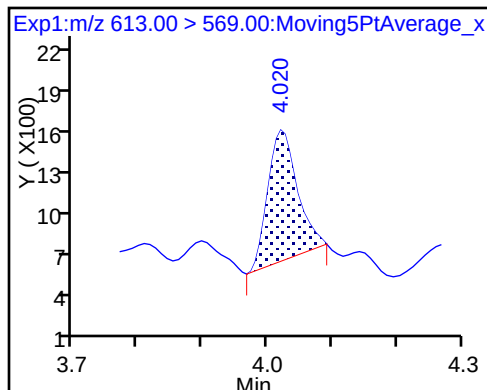
31 Perfluoroundecanoic acid



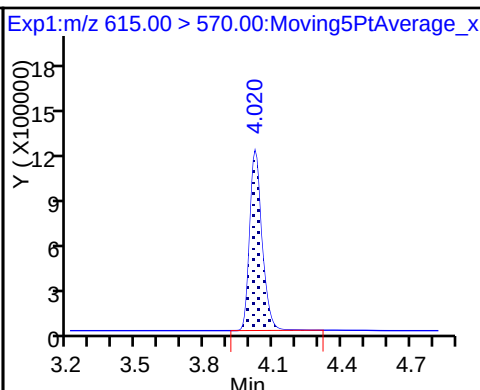
D 30 13C2 PFUnA



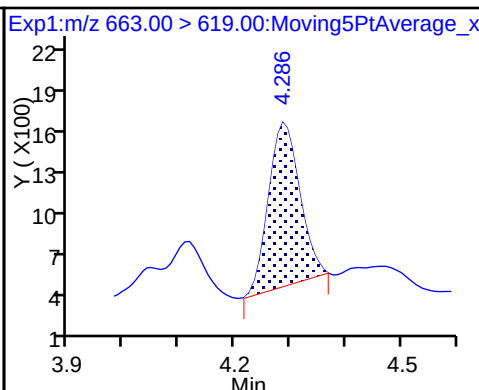
37 Perfluorododecanoic acid



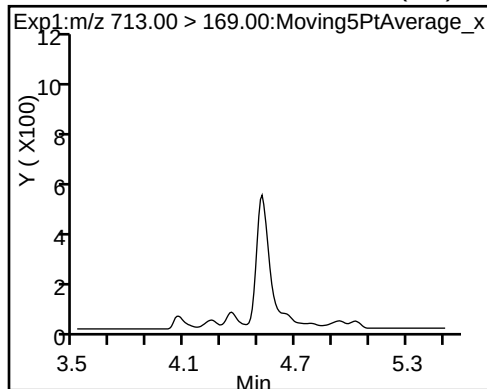
D 36 13C2 PFDoA



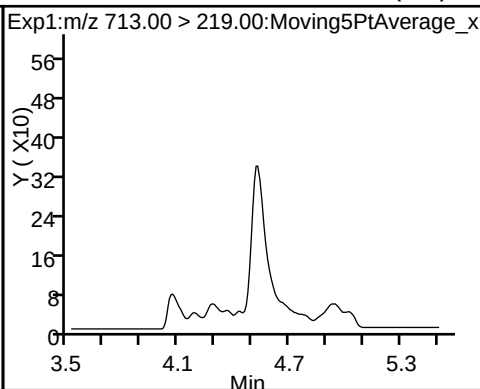
41 Perfluorotridecanoic acid



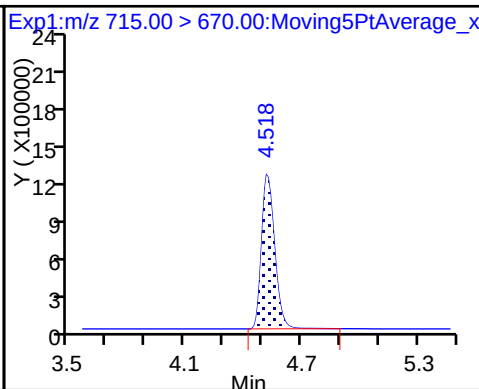
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



TestAmerica Sacramento

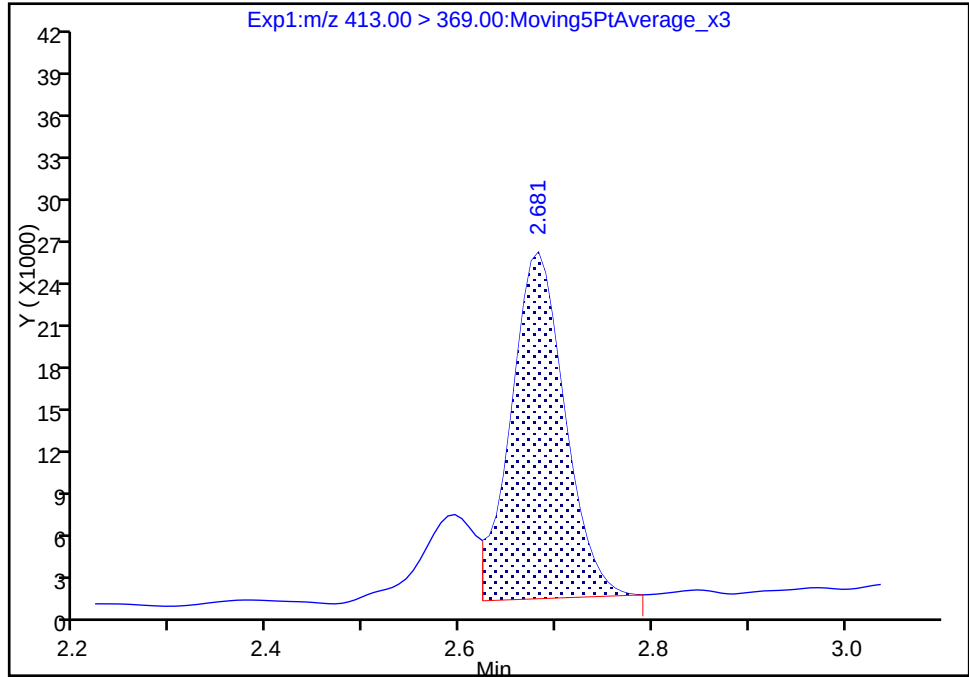
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Injection Date:	15-Sep-2017 22:55:42	Instrument ID:	A8_N		
Lims ID:	320-31407-A-2-A	Lab Sample ID:	320-31407-2		
Client ID:	TP-PFC-021-MID-CARBON				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

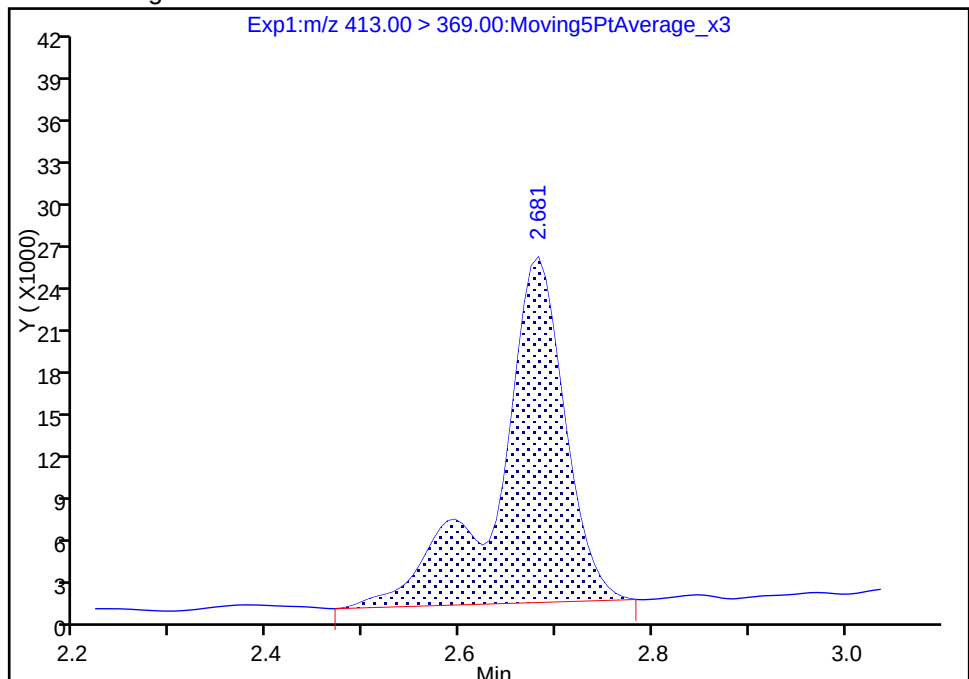
RT: 2.68
Area: 92686
Amount: 0.417753
Amount Units: ng/ml

Processing Integration Results



RT: 2.68
Area: 115842
Amount: 0.522122
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 14:07:40

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

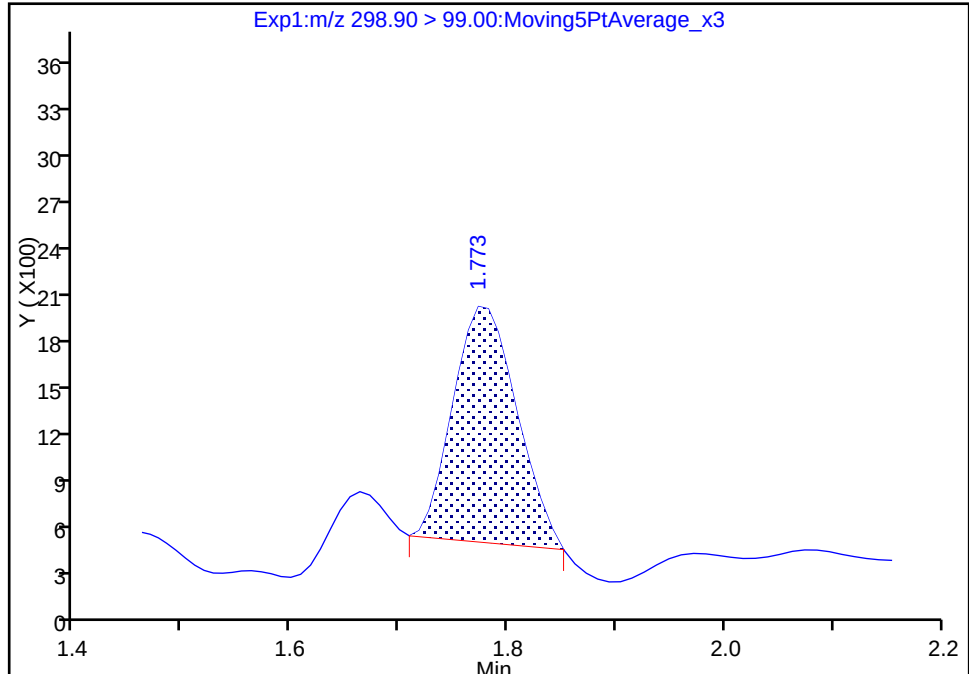
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Injection Date:	15-Sep-2017 22:55:42	Instrument ID:	A8_N		
Lims ID:	320-31407-A-2-A	Lab Sample ID:	320-31407-2		
Client ID:	TP-PFC-021-MID-CARBON				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	5	Worklist Smp#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

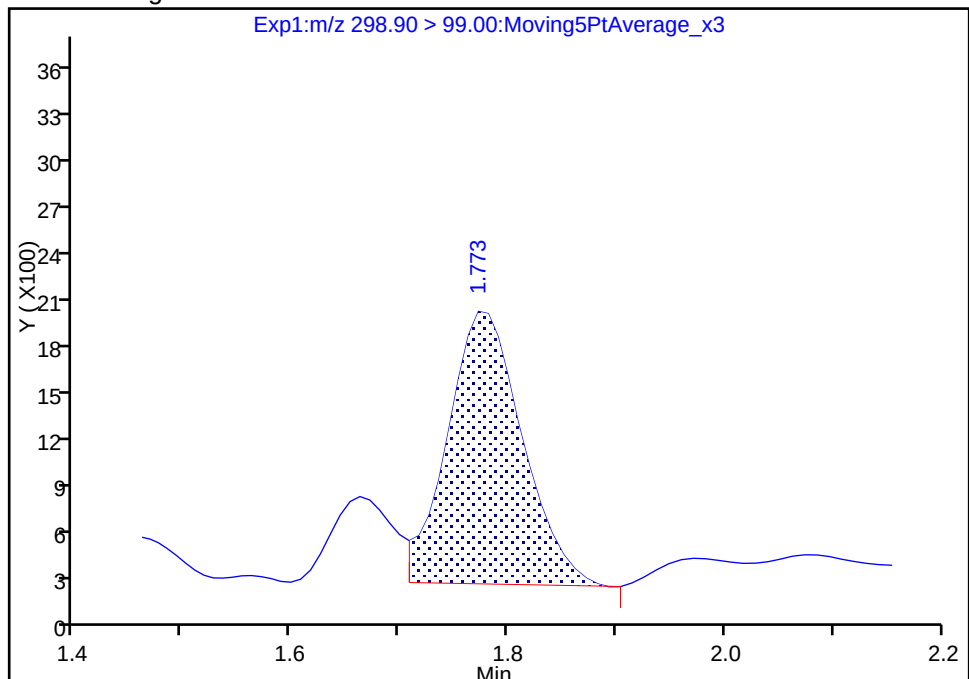
RT: 1.77
Area: 6090
Amount: 0
Amount Units: ng/ml

Processing Integration Results



RT: 1.77
Area: 8218
Amount: 0.037798
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 14:07:53

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPE</u>	Lab Sample ID: <u>320-31407-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_007.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:30</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>257.8 (mL)</u>	Date Analyzed: <u>09/15/2017 23:02</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	120		2.4	0.97	0.44
2706-90-3	Perfluoropentanoic acid (PFPeA)	37		2.4	1.9	0.96
307-24-4	Perfluorohexanoic acid (PFHxA)	7.7		2.4	1.9	0.76
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	1.9	0.78
335-67-1	Perfluorooctanoic acid (PFOA)	0.78	J M	2.4	1.9	0.73
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.4	1.9	0.63
335-76-2	Perfluorodecanoic acid (PFDA)	0.97	U	2.4	0.97	0.43
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	1.9	0.73
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	1.9	0.57
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.4	1.9	0.53
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.97	U	2.4	0.97	0.39
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.4	1.9	0.89
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.4	1.9	0.84
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	2.4	1.9	0.69
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	2.9	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.9	2.9	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.2	J	39	1.9	0.62

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPE</u>	Lab Sample ID: <u>320-31407-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_007.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:30</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>257.8 (mL)</u>	Date Analyzed: <u>09/15/2017 23:02</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	5	Q	25-150
STL00992	13C4 PFBA	80		25-150
STL00993	13C2 PFHxA	70		25-150
STL00990	13C4 PFOA	67		25-150
STL00995	13C5 PFNA	61		25-150
STL00996	13C2 PFDA	70		25-150
STL00997	13C2 PFUnA	73		25-150
STL00998	13C2 PFDoA	89		25-150
STL00994	18O2 PFHxS	121		25-150
STL00991	13C4 PFOS	125		25-150
STL01892	13C4-PFHpA	76		25-150
STL01893	13C5 PFPeA	68		25-150
STL02337	13C3-PFBS	129		25-150
STL02116	13C2-PFTeDA	119		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_007.d
 Lims ID: 320-31407-A-3-A
 Client ID: TP-PFC-021-TPE
 Sample Type: Client
 Inject. Date: 15-Sep-2017 23:02:36 ALS Bottle#: 6 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-31407-a-3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 14:23:04 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14ICALX_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK006

First Level Reviewer: westendorfc

Date: 19-Sep-2017 14:08:35

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	1.556	1.556	0.0		12560352	40.1		80.2	15903	
2 Perfluorobutyric acid										
212.90 > 169.00	1.556	1.556	0.0	1.000	14247633	59.8			1727	
D 3 13C5-PFPeA										
267.90 > 223.00	1.757	1.756	0.001		7000338	34.1		68.3	29113	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.747	1.756	-0.009	1.000	3092322	19.2			2345	
D 47 13C3-PFBS										
301.90 > 83.00	1.784	1.784	0.0		297727	59.9		129	7572	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.784	1.784	0.0	1.000	44444	0.0951			137	
298.90 > 99.00	1.775	1.784	-0.009	0.995	23058		1.93(0.00-0.00)		99.5	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.998	2.020	-0.022	1.000	588098	3.98			896	
D 7 13C2 PFHxA										
315.00 > 270.00	2.021	2.020	0.001		7654695	34.9		69.8	15528	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.327	2.337	-0.010	1.000	19635	0.1294			30.6	
D 9 13C4-PFHpA										
367.00 > 322.00	2.338	2.337	0.001		7742300	38.2		76.3	14543	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.348	2.347	0.001	1.000	76480	0.2123			557	
D 11 18O2 PFHxS										
403.00 > 84.00	2.348	2.347	0.001		16268890	57.2		121	19370	
* 62 13C2-PFOA										
415.00 > 370.00	2.671	2.678	-0.007		3508	50.0			202	
D 14 13C4 PFOA										
417.00 > 372.00	2.678	2.678	0.0		6524067	33.5		67.0	19449	

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	2.678	2.678	0.0	1.000	57235	0.4011			15.1	M
413.00 > 169.00	2.678	2.678	0.0	1.000	32587		1.76(0.90-1.10)		180	M
D 18 13C4 PFOS										
503.00 > 80.00	3.049	3.043	0.006		11935092	59.5		125	87590	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.049	3.051	-0.002	1.000	60039	0.2241			548	
499.00 > 99.00	3.049	3.051	-0.002	1.000	15313		3.92(0.90-1.10)		100	
D 19 13C5 PFNA										
468.00 > 423.00	3.049	3.051	-0.002		4544773	30.3		60.5	13515	
D 21 13C8 FOSA										
506.00 > 78.00	3.393	3.393	0.0		835273	2.68		5.4	6927	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.402	3.402	0.0	1.000	3310	0.0377			16.8	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.393	3.402	-0.009	1.000	9586	0.6040			166	
D 23 13C2 PFDA										
515.00 > 470.00	3.402	3.402	0.0		4694613	35.0		69.9	20685	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.734	3.728	0.006	1.000	6425	0.0822			16.7	
D 30 13C2 PFUnA										
565.00 > 520.00	3.724	3.728	-0.004		3505484	36.7		73.3	8115	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.021	4.022	-0.001	1.000	1706	0.0217			5.1	
D 36 13C2 PFDaA										
615.00 > 570.00	4.021	4.022	-0.001		4075059	44.7		89.4	12832	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.290	4.290	0.0	1.000	13030	0.1406			3.5	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.515	4.516	-0.001	1.000	5600	0.1974			211	
713.00 > 219.00	4.524	4.516	0.008	1.002	4875		1.15(0.00-0.00)		120	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.524	4.525	-0.001		5583593	59.5		119	20550	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_007.d

Injection Date: 15-Sep-2017 23:02:36

Instrument ID: A8_N

Lims ID: 320-31407-A-3-A

Lab Sample ID: 320-31407-3

Client ID: TP-PFC-021-TPE

Operator ID: SACINSTLCMS01

ALS Bottle#: 6

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

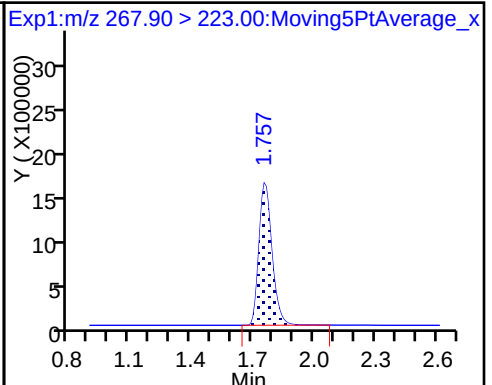
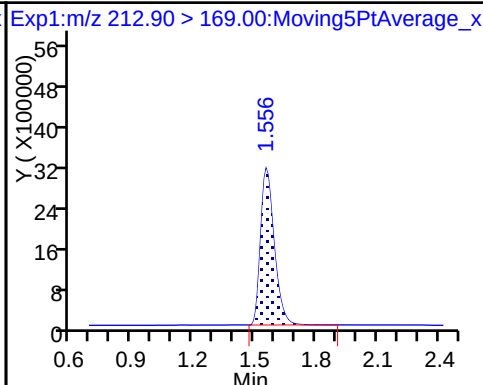
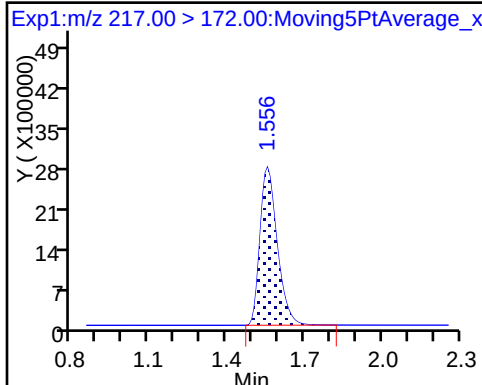
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

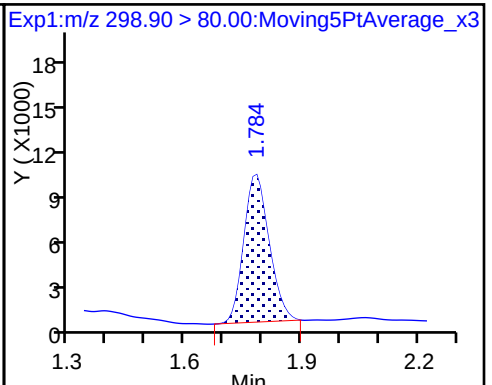
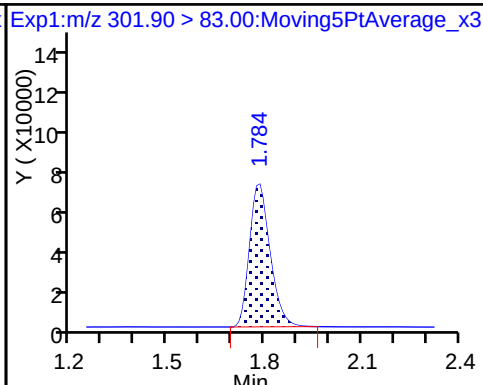
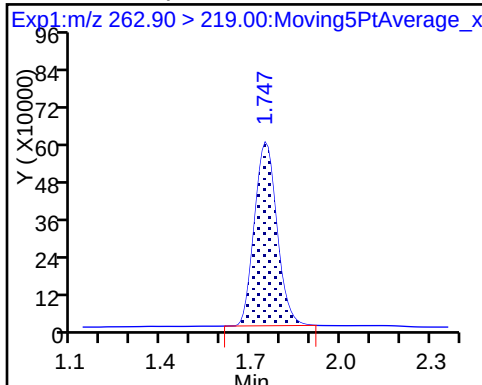
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

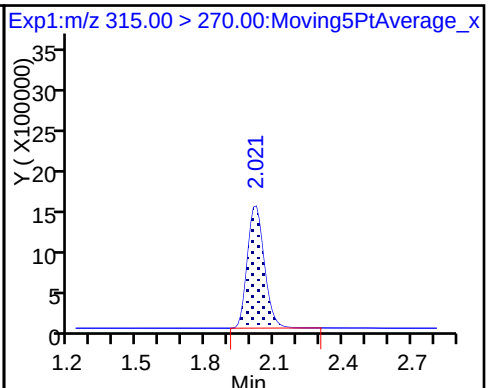
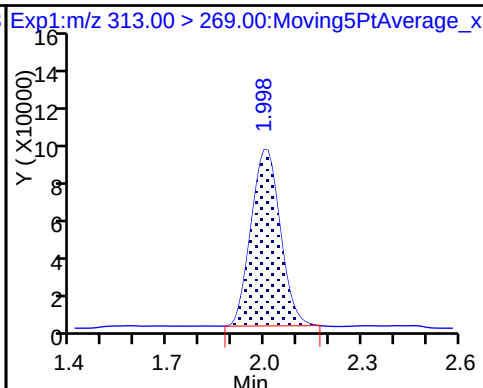
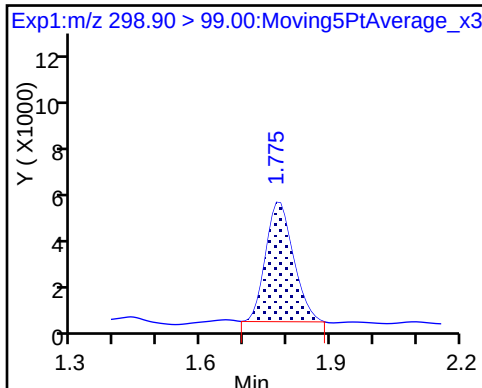
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

6 Perfluorohexanoic acid

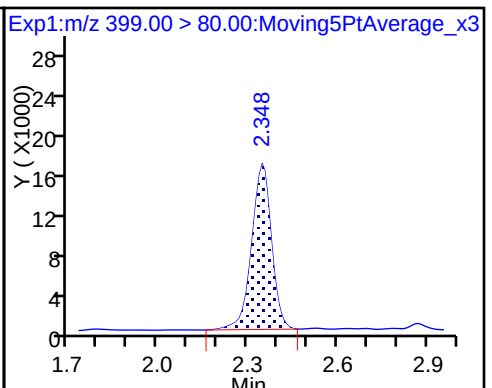
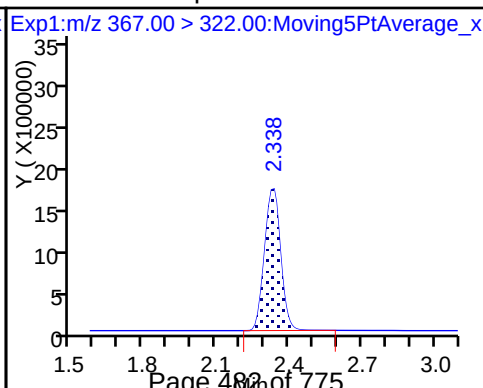
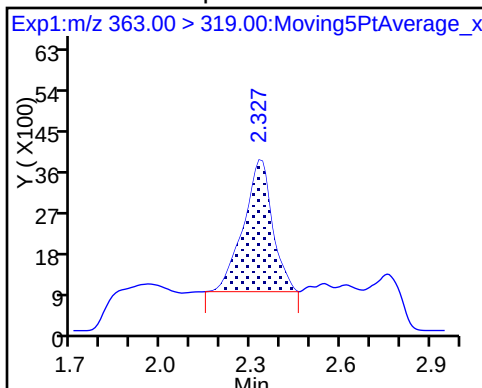
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

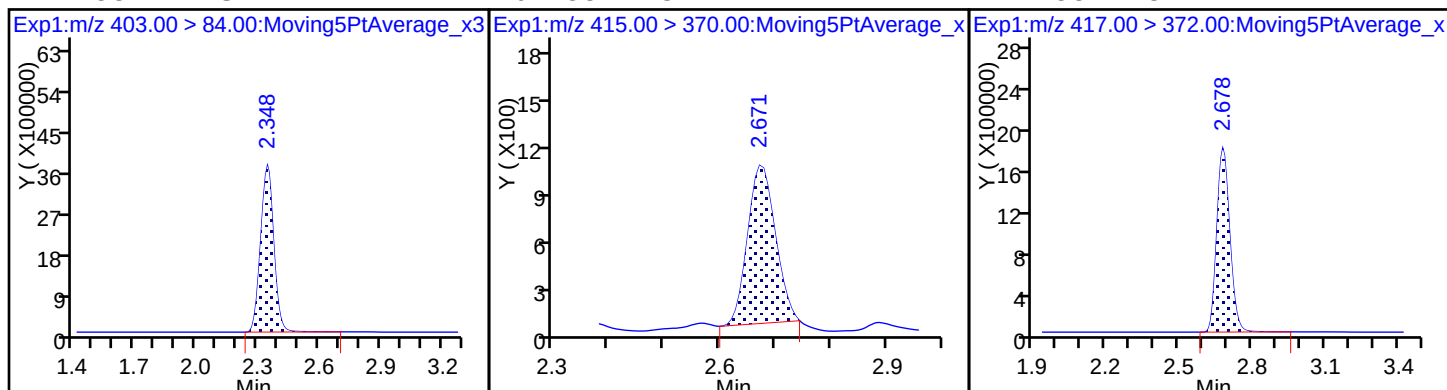
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

* 62 13C2-PFOA

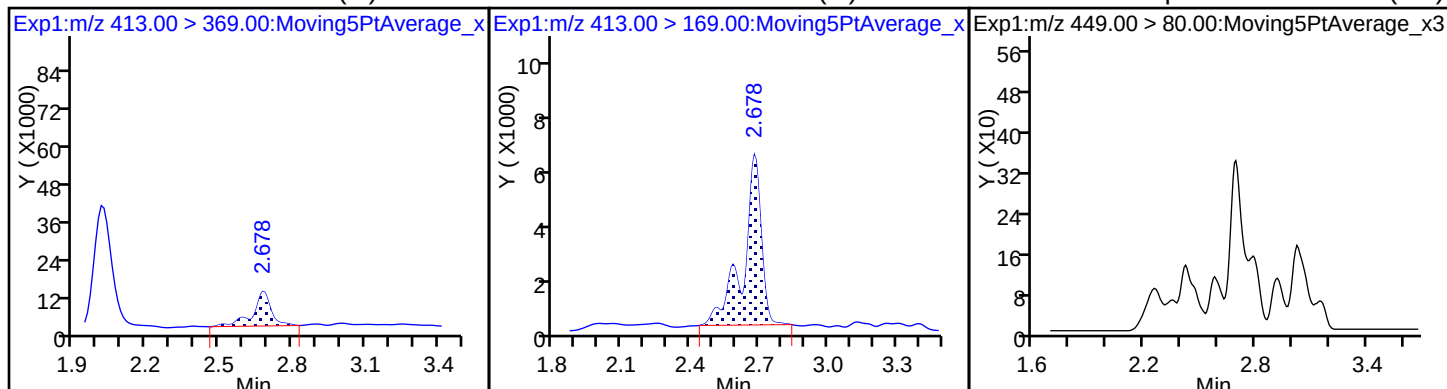
D 14 13C4 PFOA



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

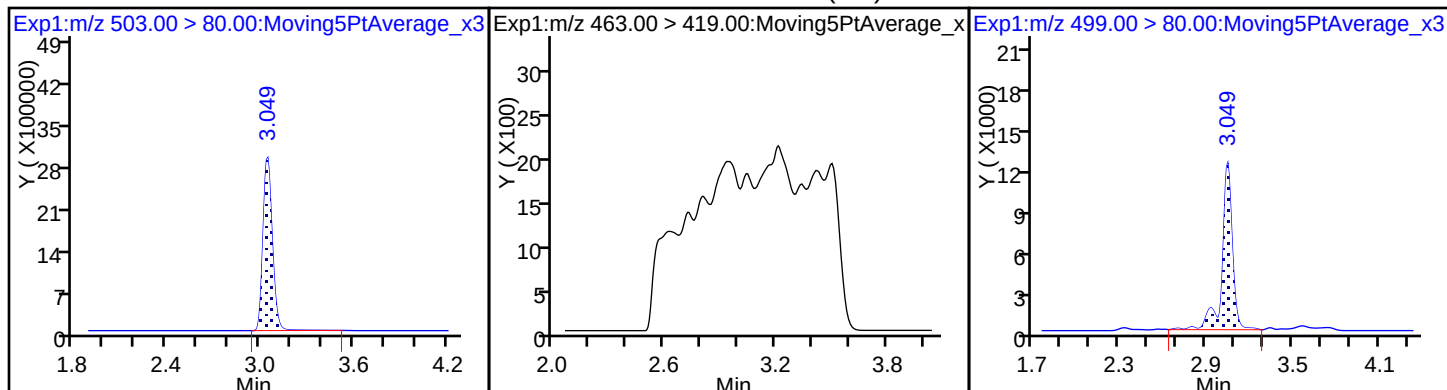
16 Perfluoroheptanesulfonic Acid (ND)



D 18 13C4 PFOS

20 Perfluorononanoic acid (ND)

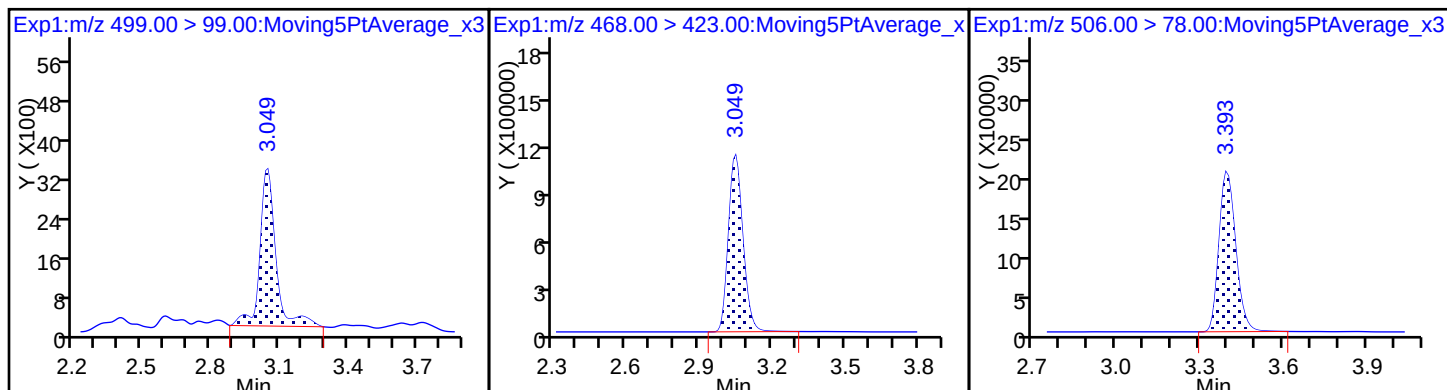
17 Perfluorooctane sulfonic acid



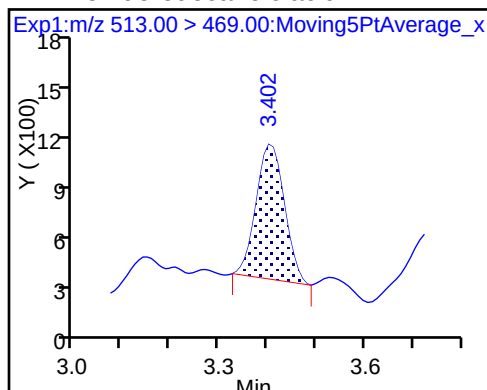
17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

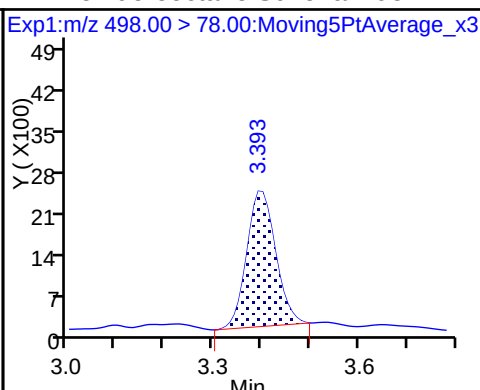
D 21 13C8 FOSA



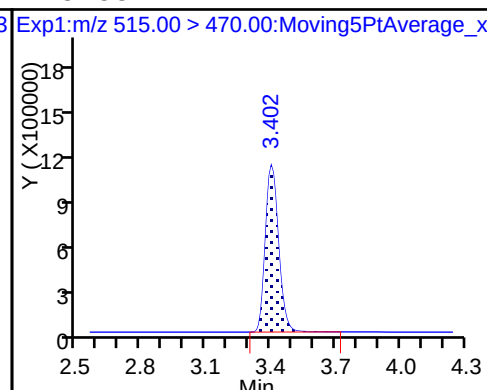
24 Perfluorodecanoic acid



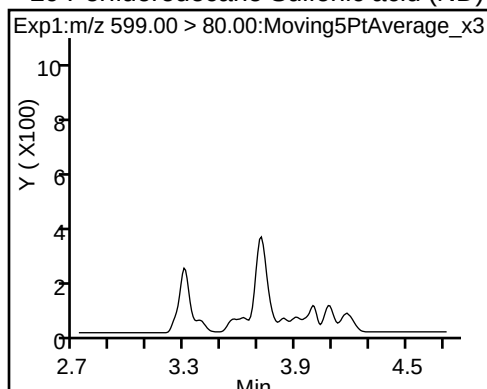
22 Perfluorooctane Sulfonamide



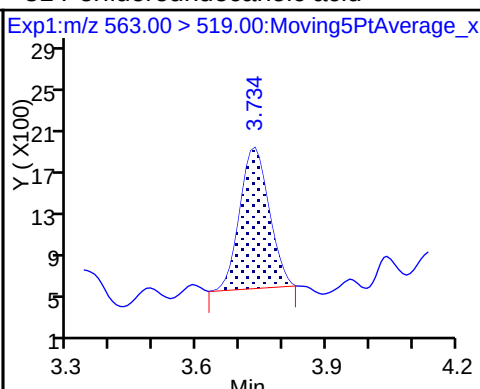
D 23 13C2 PFDA



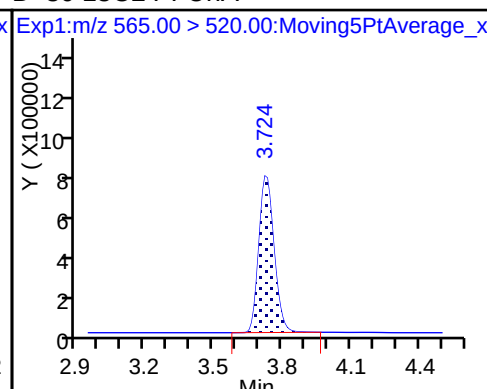
29 Perfluorodecane Sulfonic acid (ND)



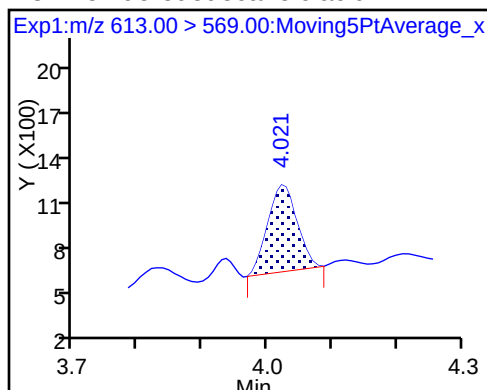
31 Perfluoroundecanoic acid



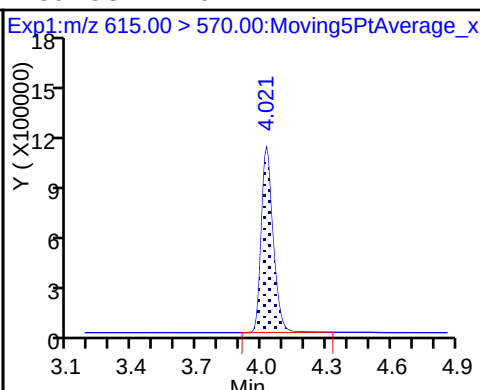
D 30 13C2 PFUnA



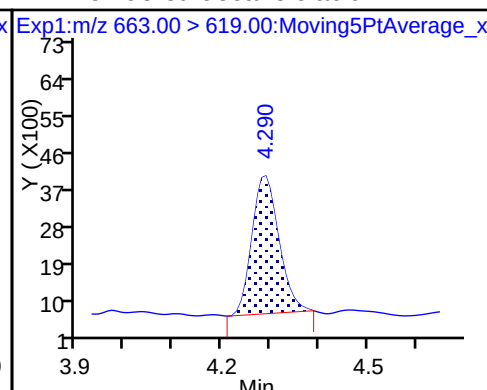
37 Perfluorododecanoic acid



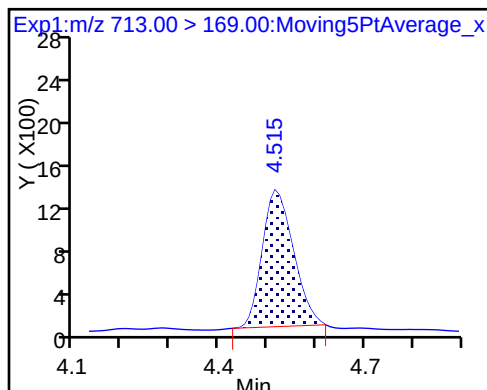
D 36 13C2 PFDaA



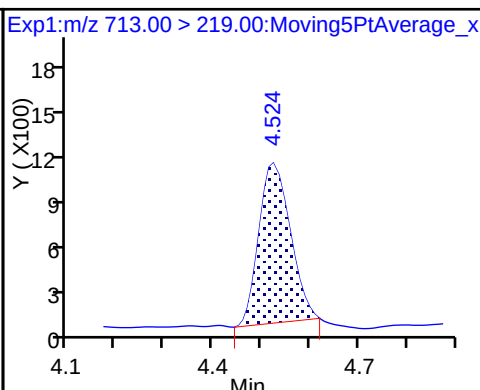
41 Perfluorotridecanoic acid



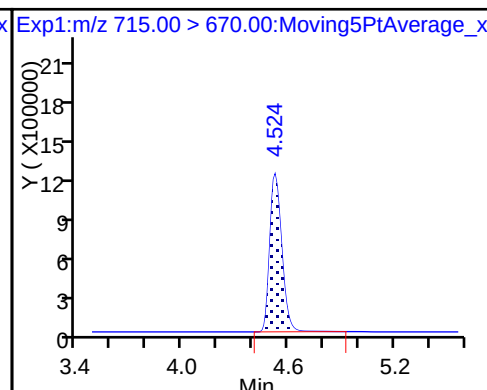
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA



TestAmerica Sacramento

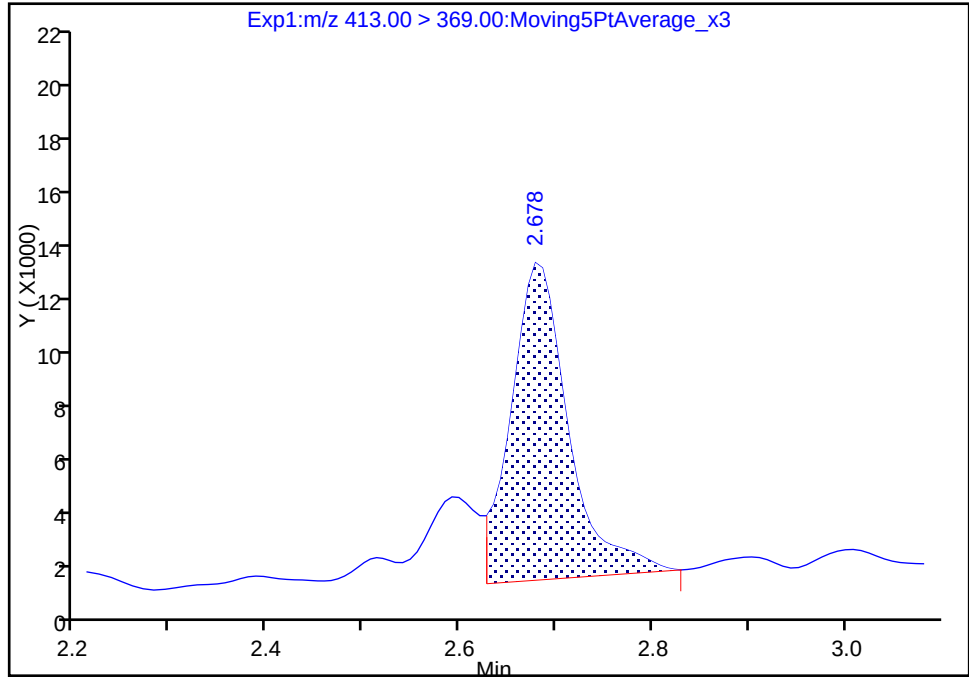
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Injection Date:	15-Sep-2017 23:02:36	Instrument ID:	A8_N		
Lims ID:	320-31407-A-3-A	Lab Sample ID:	320-31407-3		
Client ID:	TP-PFC-021-TPE				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

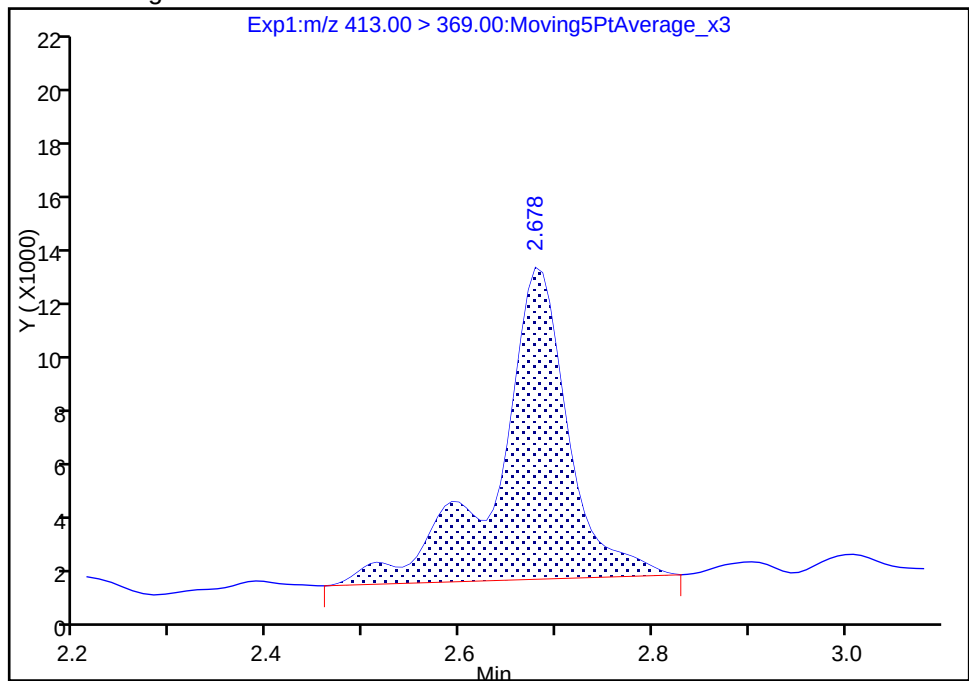
RT: 2.68
Area: 46368
Amount: 0.324920
Amount Units: ng/ml

Processing Integration Results



RT: 2.68
Area: 57235
Amount: 0.401069
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 14:08:22

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

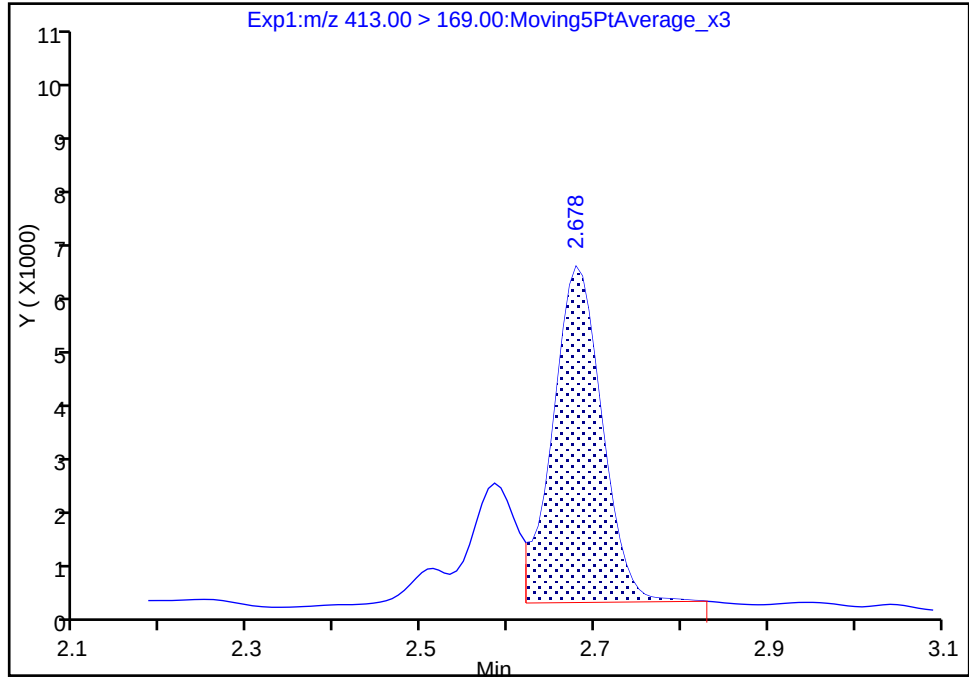
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_007.d		
Injection Date:	15-Sep-2017 23:02:36	Instrument ID:	A8_N
Lims ID:	320-31407-A-3-A	Lab Sample ID:	320-31407-3
Client ID:	TP-PFC-021-TPE		
Operator ID:	SACINSTLCMS01	ALS Bottle#:	6
Injection Vol:	2.0 ul	Dil. Factor:	1.0000
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL
Column:		Detector:	EXP1
		Worklist Smp#:	7

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

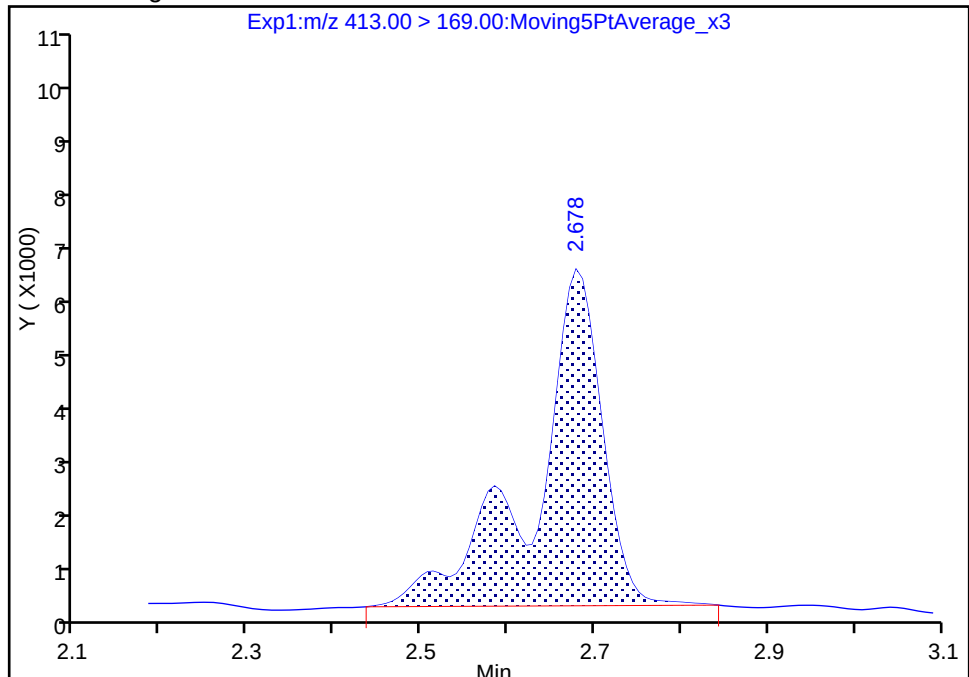
RT: 2.68
Area: 23221
Amount: 0.324920
Amount Units: ng/ml

Processing Integration Results



RT: 2.68
Area: 32587
Amount: 0.401069
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 14:08:24

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPE-D</u>	Lab Sample ID: <u>320-31407-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_008.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>265.6 (mL)</u>	Date Analyzed: <u>09/15/2017 23:09</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	120		2.4	0.94	0.43
2706-90-3	Perfluoropentanoic acid (PFPeA)	38		2.4	1.9	0.93
307-24-4	Perfluorohexanoic acid (PFHxA)	7.4		2.4	1.9	0.74
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	1.9	0.75
335-67-1	Perfluorooctanoic acid (PFOA)	0.71	J M	2.4	1.9	0.70
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.4	1.9	0.62
335-76-2	Perfluorodecanoic acid (PFDA)	0.94	U	2.4	0.94	0.41
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	1.9	0.70
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	1.9	0.55
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.4	1.9	0.52
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.94	U	2.4	0.94	0.38
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	U M	2.4	1.9	0.86
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.4	1.9	0.82
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	2.4	1.9	0.67
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.8	2.8	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.8	U	3.8	2.8	1.1
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.7	J	38	1.9	0.60

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPE-D</u>	Lab Sample ID: <u>320-31407-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_008.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>265.6 (mL)</u>	Date Analyzed: <u>09/15/2017 23:09</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	36		25-150
STL00992	13C4 PFBA	96		25-150
STL00993	13C2 PFHxA	99		25-150
STL00990	13C4 PFOA	108		25-150
STL00995	13C5 PFNA	105		25-150
STL00996	13C2 PFDA	115		25-150
STL00997	13C2 PFUnA	101		25-150
STL00998	13C2 PFDoA	99		25-150
STL00994	18O2 PFHxS	117		25-150
STL00991	13C4 PFOS	118		25-150
STL01892	13C4-PFHpA	107		25-150
STL01893	13C5 PFPeA	93		25-150
STL02337	13C3-PFBS	126		25-150
STL02116	13C2-PFTeDA	117		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_008.d
 Lims ID: 320-31407-A-4-A
 Client ID: TP-PFC-021-TPE-D
 Sample Type: Client
 Inject. Date: 15-Sep-2017 23:09:30 ALS Bottle#: 7 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-31407-a-4-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 14:23:04 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14ICALX_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK006

First Level Reviewer: westendorfc

Date: 19-Sep-2017 14:09:16

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	1.554	1.556	-0.002		15087301	48.2		96.4	33605	
2 Perfluorobutyric acid										
212.90 > 169.00	1.554	1.556	-0.002	1.000	17620200	61.6			1633	
D 3 13C5-PFPeA										
267.90 > 223.00	1.764	1.756	0.008		9550352	46.6		93.2	33020	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.745	1.756	-0.011	1.000	4372460	19.9			2429	
D 47 13C3-PFBS										
301.90 > 83.00	1.782	1.784	-0.002		290747	58.5		126	6774	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.782	1.784	-0.002	1.000	48195	0.1056			170	
298.90 > 99.00	1.782	1.784	-0.002	1.000	26629		1.81(0.00-0.00)		103	M
6 Perfluorohexanoic acid										
313.00 > 269.00	2.006	2.020	-0.014	1.000	827377	3.93			1152	
D 7 13C2 PFHxA										
315.00 > 270.00	2.017	2.020	-0.003		10907913	49.7		99.4	33820	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.325	2.337	-0.012	1.000	25723	0.1213			33.9	
D 9 13C4-PFHpA										
367.00 > 322.00	2.336	2.337	-0.001		10815175	53.3		107	41421	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.347	2.347	0.0	1.000	67248	0.1937			575	
D 11 18O2 PFHxS										
403.00 > 84.00	2.347	2.347	0.0		15678291	55.1		117	25815	
* 62 13C2-PFOA										
415.00 > 370.00	2.679	2.678	0.001		6255	50.0			288	
D 14 13C4 PFOA										
417.00 > 372.00	2.679	2.678	0.001		10533654	54.0		108	20860	

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	2.686	2.678	0.008	1.000	87273	0.3794			14.8	M
413.00 > 169.00	2.679	2.678	0.001	0.997	53840		1.62(0.90-1.10)		266	M
D 18 13C4 PFOS										
503.00 > 80.00	3.051	3.043	0.008		11272504	56.2		118	19799	
20 Perfluorononanoic acid										
463.00 > 419.00	3.059	3.051	0.008	1.000	1879	0.0124			3.0	
D 19 13C5 PFNA										
468.00 > 423.00	3.051	3.051	0.0		7879648	52.4		105	16409	
D 21 13C8 FOSA										
506.00 > 78.00	3.395	3.393	0.002		5682049	18.2		36.4	19930	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.404	3.402	0.002	1.000	3601	0.0249			17.0	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.404	3.402	0.002	1.000	100180	0.9279			1501	
D 23 13C2 PFDA										
515.00 > 470.00	3.404	3.402	0.002		7736293	57.6		115	31187	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.727	3.728	-0.001	1.000	12120	0.1125			33.2	
D 30 13C2 PFUnA										
565.00 > 520.00	3.727	3.728	-0.001		4832836	50.5		101	14921	
D 36 13C2 PFDoA										
615.00 > 570.00	4.024	4.022	0.002		4534632	49.7		99.5	9422	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.526	4.525	0.001		5494806	58.6		117	6983	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_008.d

Injection Date: 15-Sep-2017 23:09:30

Instrument ID: A8_N

Lims ID: 320-31407-A-4-A

Lab Sample ID: 320-31407-4

Client ID: TP-PFC-021-TPE-D

Operator ID: SACINSTLCMS01

ALS Bottle#: 7

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

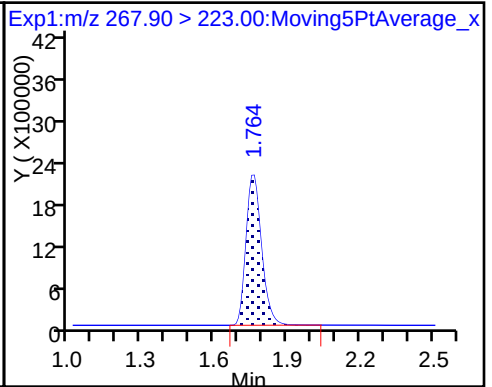
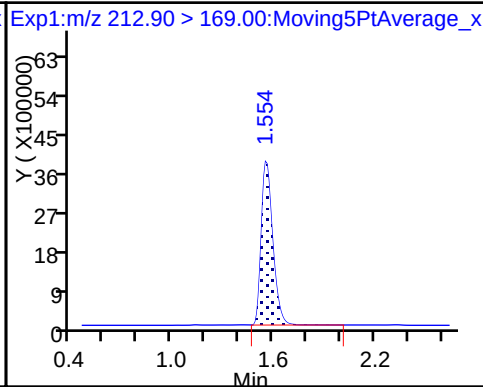
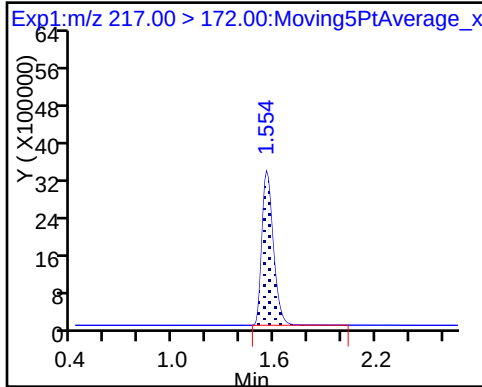
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

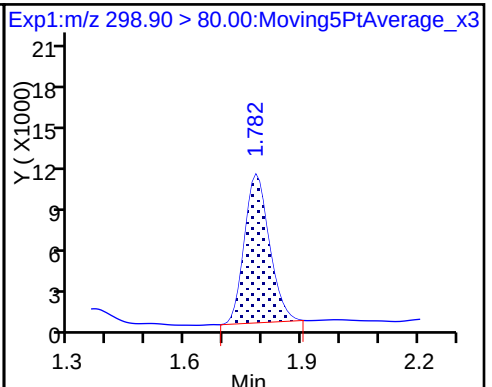
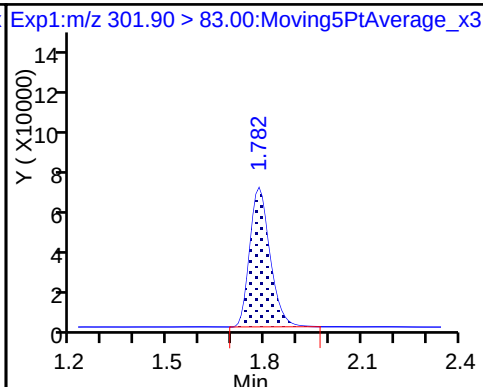
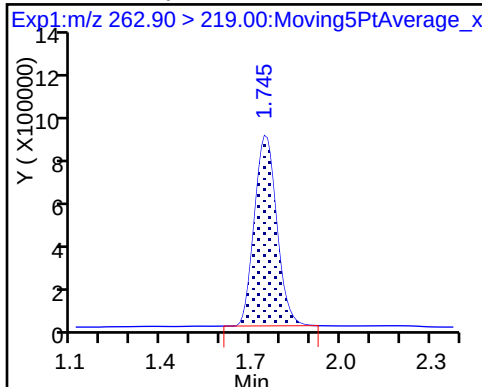
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

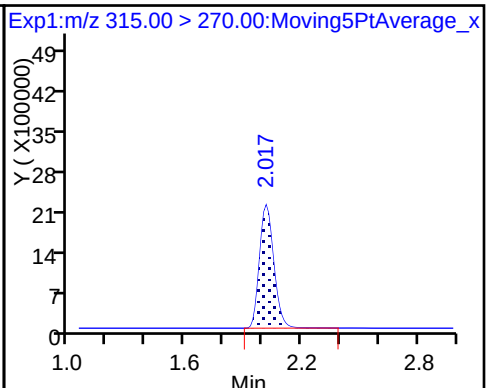
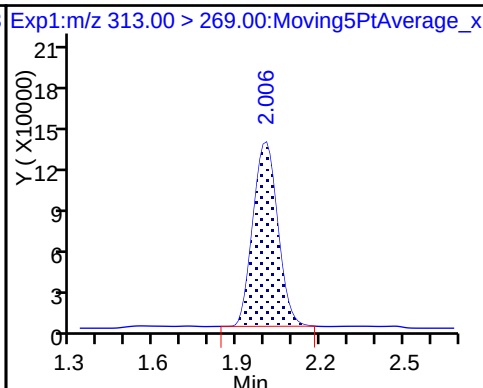
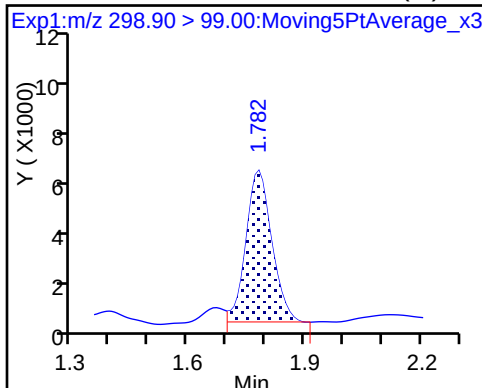
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid (M)

6 Perfluorohexanoic acid

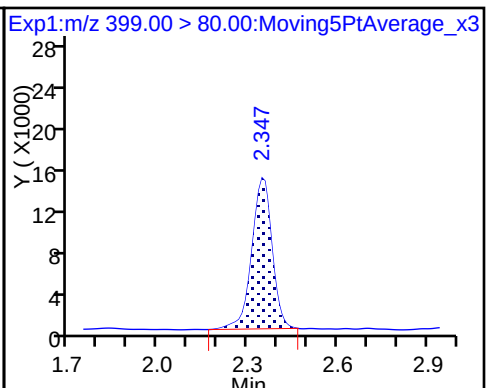
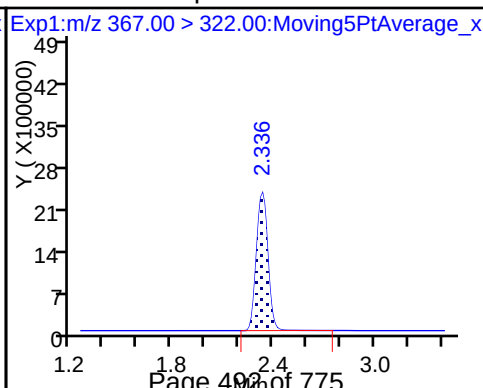
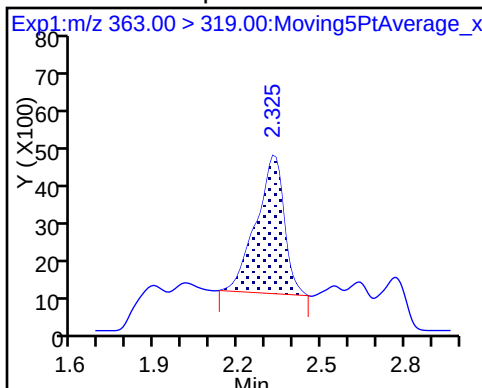
D 7 13C2 PFHxA



10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

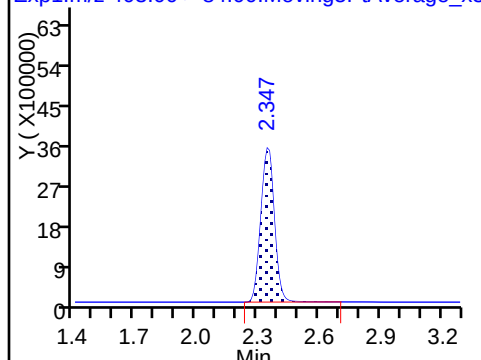


D 11 18O2 PFHxS

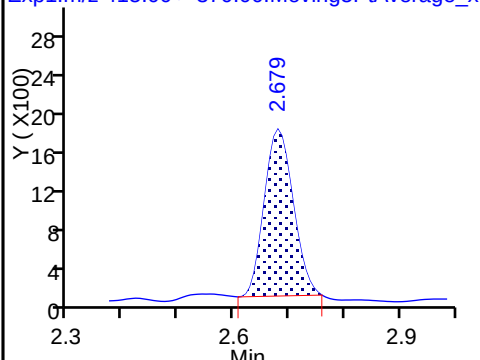
* 62 13C2-PFOA

D 14 13C4 PFOA

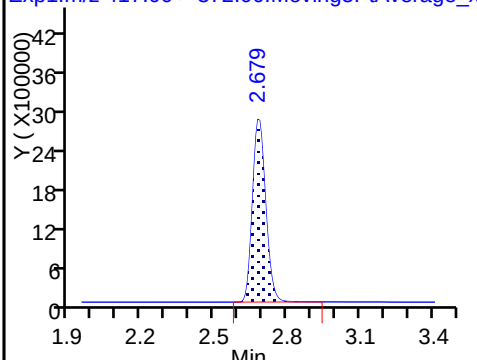
Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

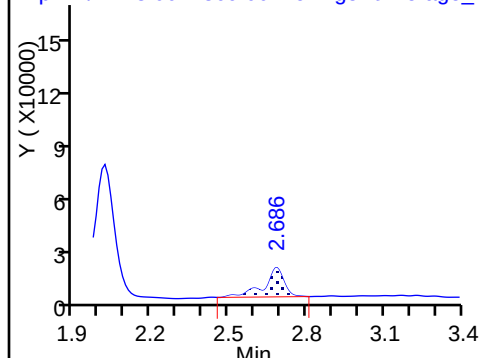


15 Perfluorooctanoic acid (M)

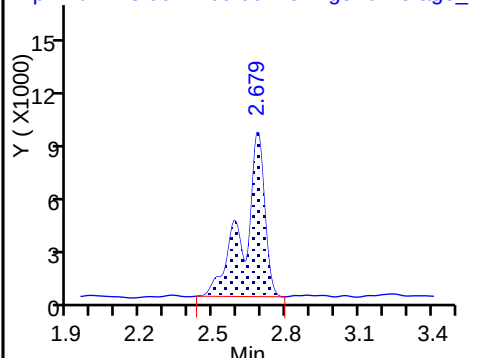
15 Perfluorooctanoic acid (M)

16 Perfluoroheptanesulfonic Acid (ND)

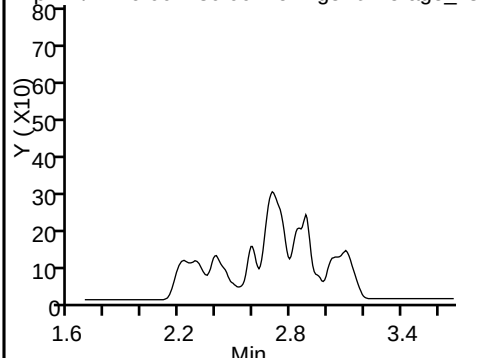
Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x



Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

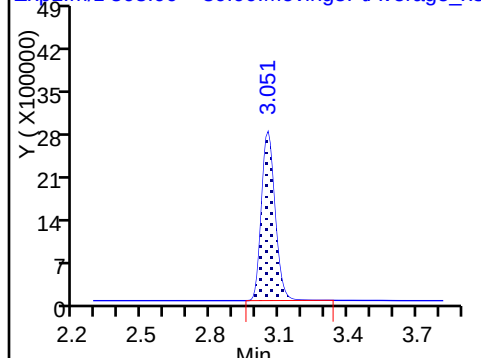


D 18 13C4 PFOS

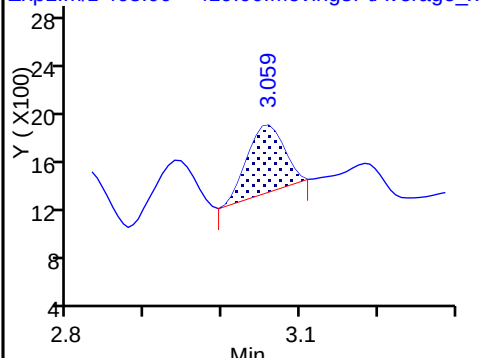
20 Perfluorononanoic acid

17 Perfluorooctane sulfonic acid (ND)

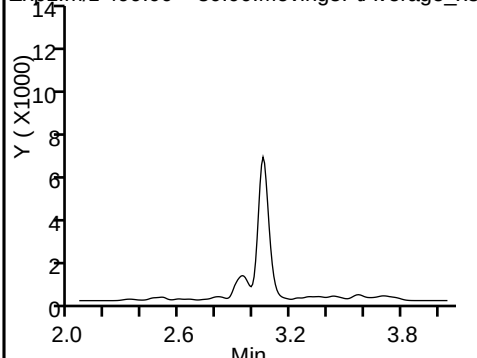
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Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x



Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3

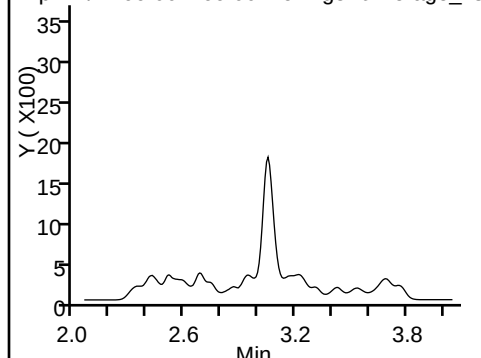


17 Perfluorooctane sulfonic acid (ND)

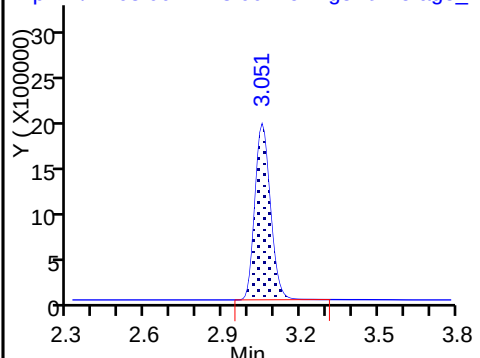
D 19 13C5 PFNA

D 21 13C8 FOSA

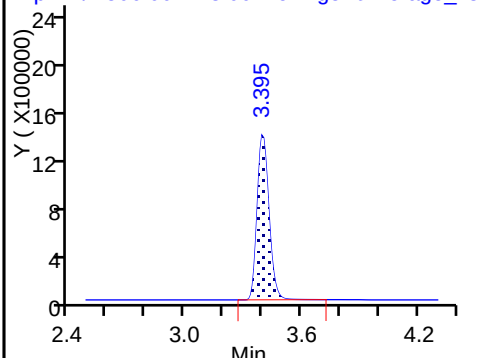
Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3



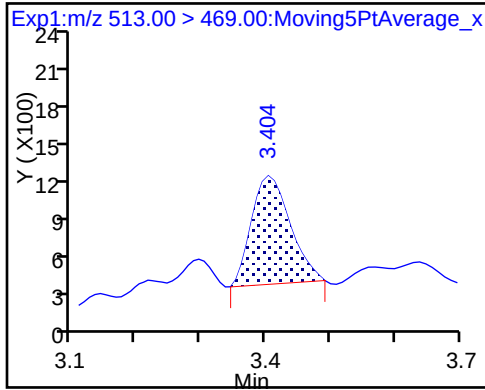
Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x



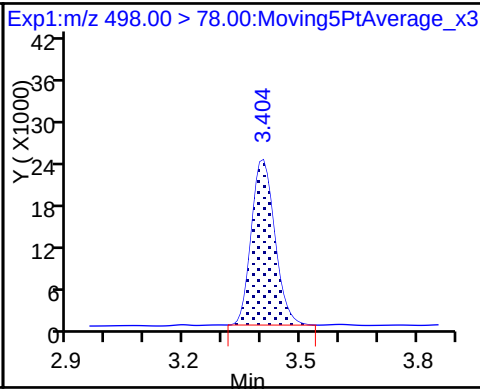
Exp1:m/z 506.00 > 78.00:Moving5PtAverage_x3



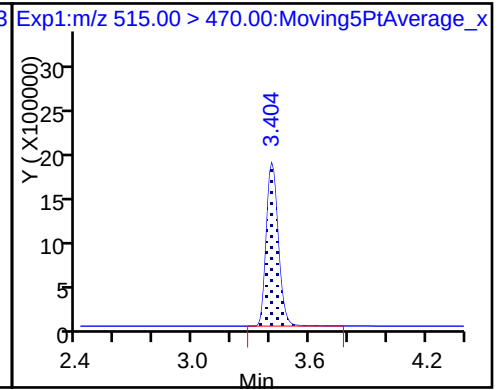
24 Perfluorodecanoic acid



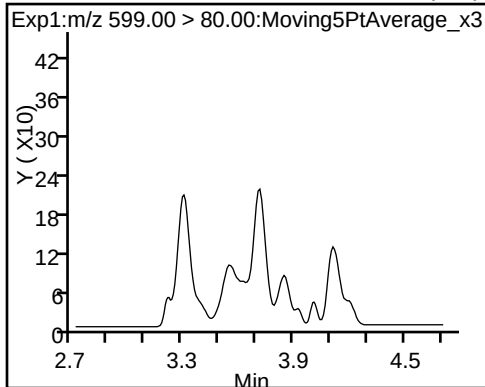
22 Perfluorooctane Sulfonamide



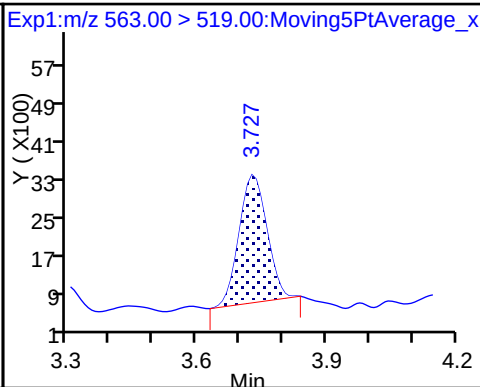
D 23 13C2 PFDA



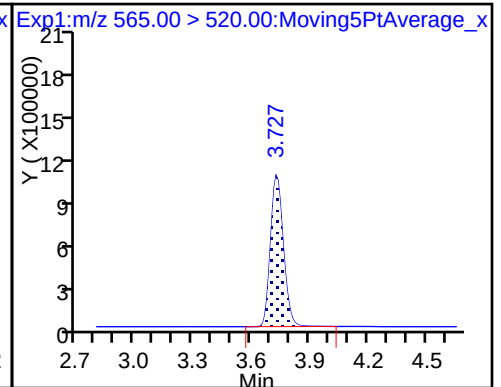
29 Perfluorodecane Sulfonic acid (ND)



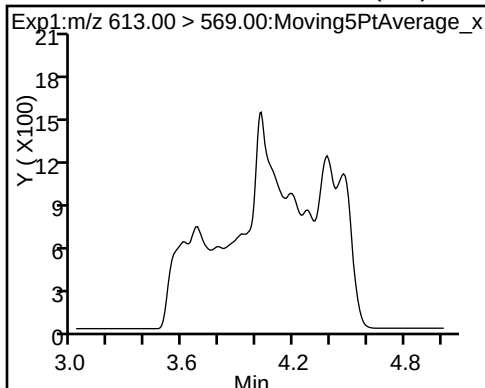
31 Perfluoroundecanoic acid



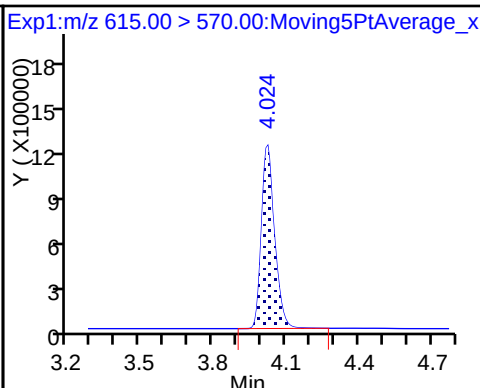
D 30 13C2 PFUnA



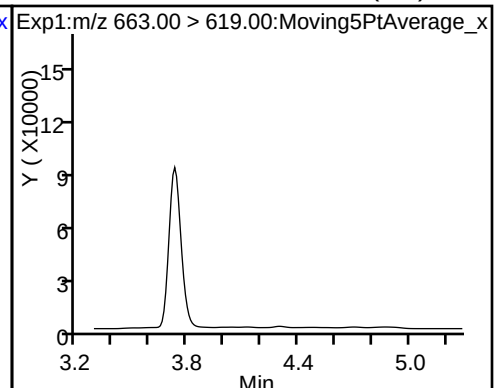
37 Perfluorododecanoic acid (ND)



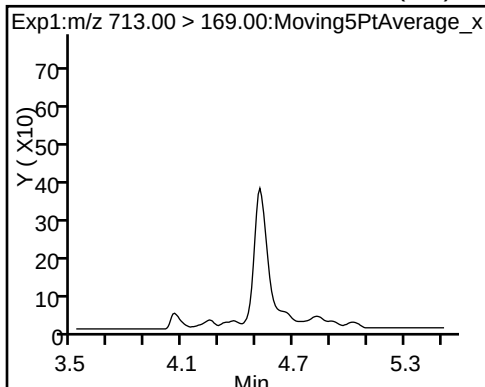
D 36 13C2 PFDaA



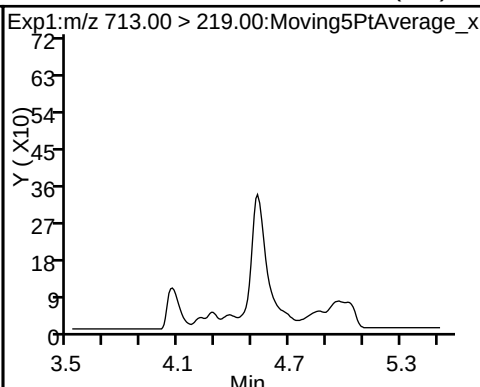
41 Perfluorotridecanoic acid (ND)



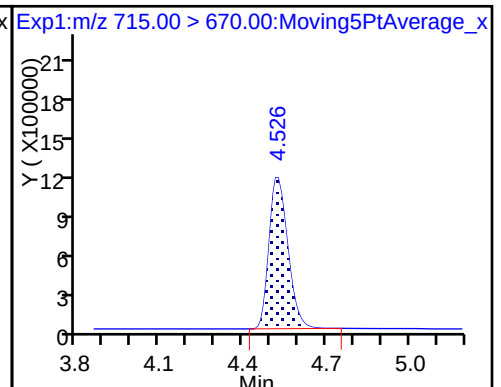
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



TestAmerica Sacramento

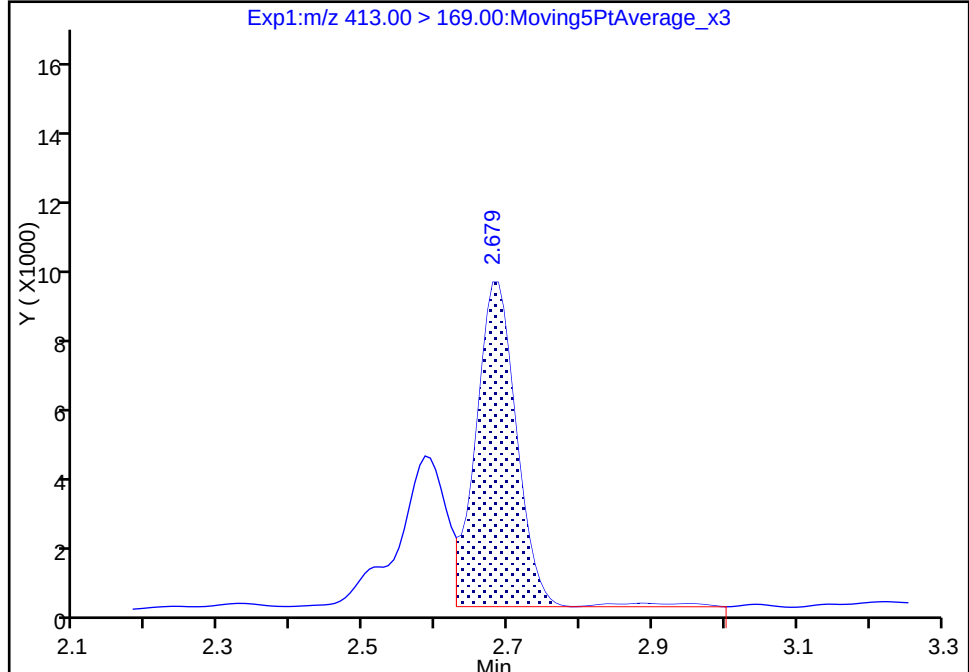
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Injection Date:	15-Sep-2017 23:09:30	Instrument ID:	A8_N		
Lims ID:	320-31407-A-4-A	Lab Sample ID:	320-31407-4		
Client ID:	TP-PFC-021-TPE-D				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector:	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

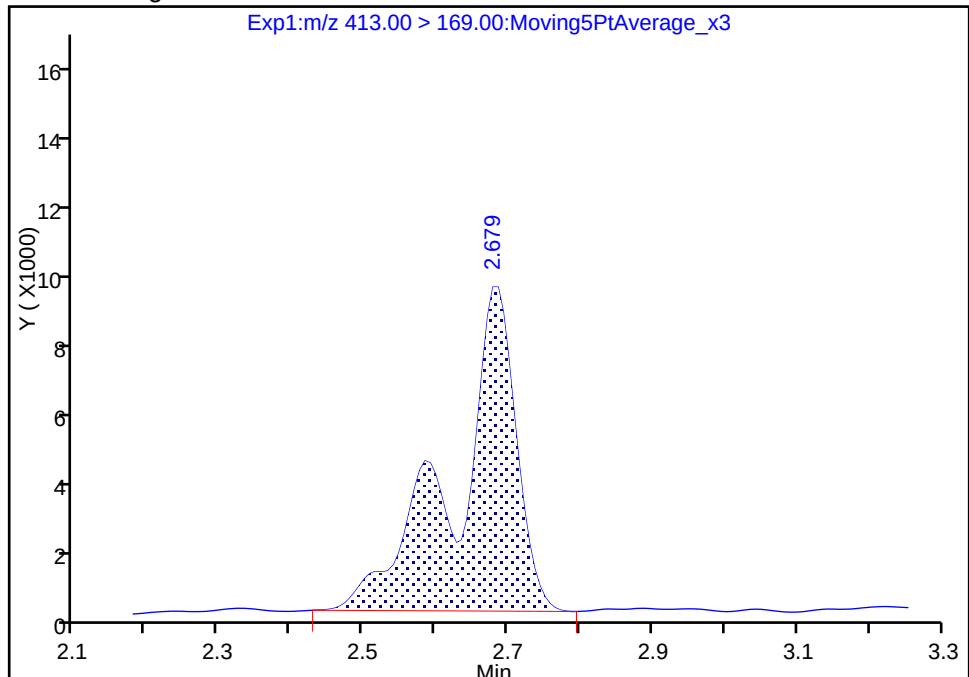
RT: 2.68
Area: 35516
Amount: 0.301145
Amount Units: ng/ml

Processing Integration Results



RT: 2.68
Area: 53840
Amount: 0.379352
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 14:08:57

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

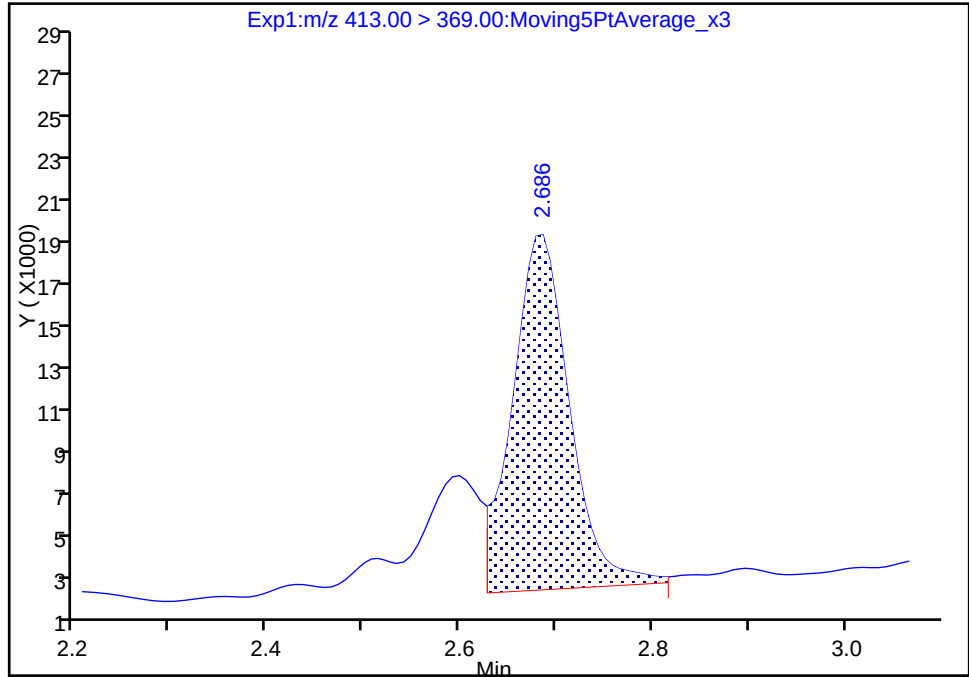
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Injection Date: 15-Sep-2017 23:09:30 Instrument ID: A8_N
Lims ID: 320-31407-A-4-A Lab Sample ID: 320-31407-4
Client ID: TP-PFC-021-TPE-D
Operator ID: SACINSTLCMS01 ALS Bottle#: 7 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

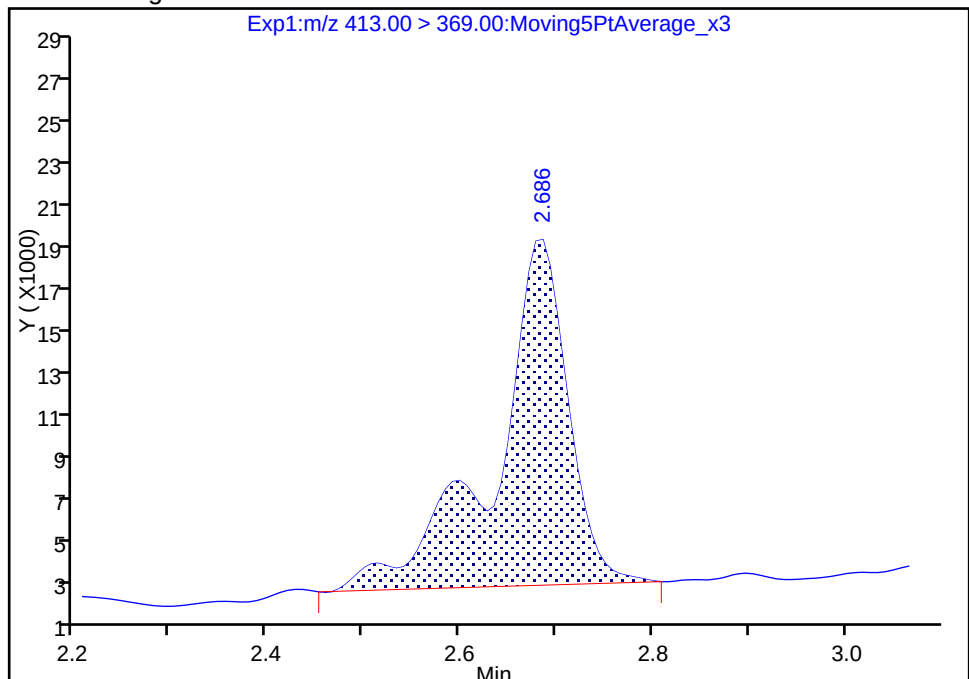
RT: 2.69
Area: 69281
Amount: 0.301145
Amount Units: ng/ml

Processing Integration Results



RT: 2.69
Area: 87273
Amount: 0.379352
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 14:09:01

Audit Action: Manually Integrated

Audit Reason: Isomers

TestAmerica Sacramento

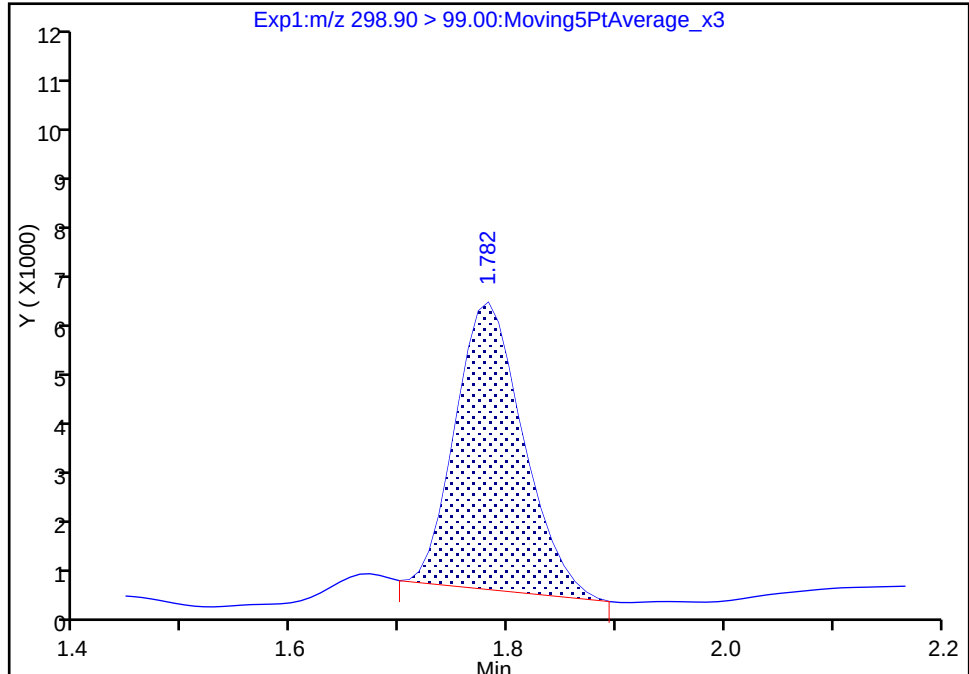
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Injection Date:	15-Sep-2017 23:09:30	Instrument ID:	A8_N		
Lims ID:	320-31407-A-4-A	Lab Sample ID:	320-31407-4		
Client ID:	TP-PFC-021-TPE-D				
Operator ID:	SACINSTLCMS01	ALS Bottle#:	7	Worklist Smp#:	8
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector:	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 2

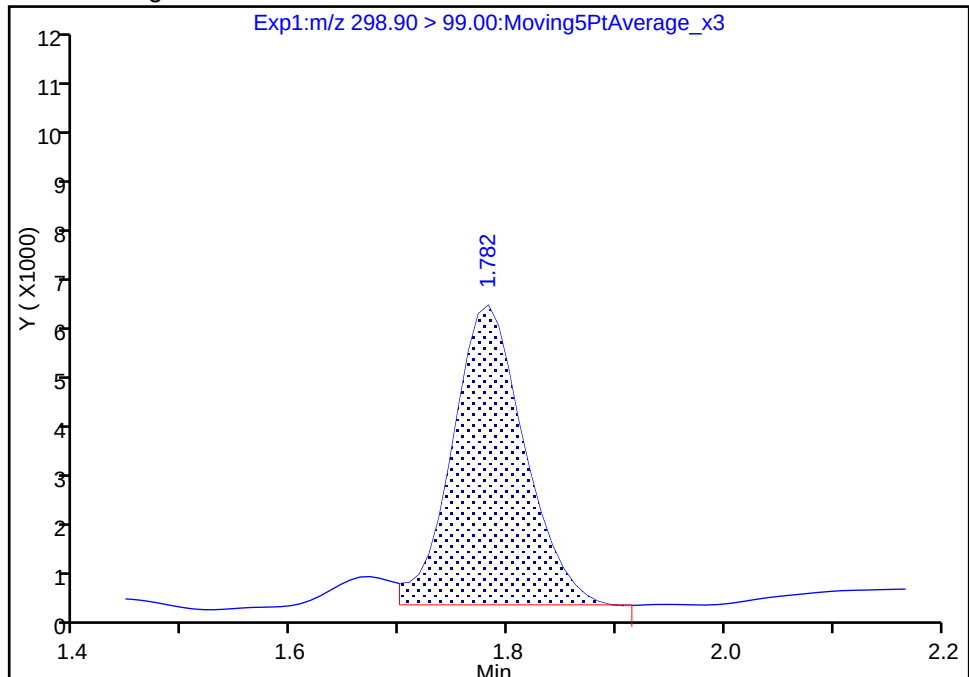
RT: 1.78
Area: 24191
Amount: 0
Amount Units: ng/ml

Processing Integration Results



RT: 1.78
Area: 26629
Amount: 0.105558
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 14:08:48

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-184448/3	2017.09.14ICALX_003.d
Level 2	IC 320-184448/4	2017.09.14ICALX_004.d
Level 3	IC 320-184448/5	2017.09.14ICALX_005.d
Level 4	IC 320-184448/6	2017.09.14ICALX_006.d
Level 5	IC 320-184448/7	2017.09.14ICALX_007.d
Level 6	IC 320-184448/8	2017.09.14ICALX_008.d
Level 7	IC 320-184448/9	2017.09.14ICALX_009.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	1.565	1.563	1.563	1.565	1.563	1.563	+++++				1.314 - 1.814	1.564
Perfluoropentanoic acid (PFPeA)	1.802	1.800	1.801	1.802	1.801	1.800	+++++				1.551 - 2.051	1.801
Perfluorobutanesulfonic acid (PFBS)	1.834	1.830	1.831	1.834	1.831	1.830	+++++				1.651 - 2.011	1.832
4:2 FTS	2.043	2.040	2.040	2.032	2.040	2.040	2.028				1.788 - 2.288	2.038
Perfluorohexanoic acid (PFHxA)	2.077	2.074	2.086	2.078	2.075	2.074	2.074				1.827 - 2.327	2.077
Perfluoroheptanoic acid (PFHpA)	2.398	2.396	2.403	2.397	2.395	2.395	2.397				2.147 - 2.647	2.397
Perfluorohexanesulfonic acid (PFHxS)	+++++	2.412	2.419	2.413	2.411	2.411	2.405				2.162 - 2.662	2.412
6:2 FTS	2.728	2.726	2.732	2.725	2.725	2.719	2.713				2.474 - 2.974	2.724
Perfluorooctanoic acid (PFOA)	2.757	2.755	2.754	2.754	2.746	2.748	2.742				2.501 - 3.001	2.751
Perfluoroheptanesulfonic Acid (PFHpS)	2.765	2.762	2.761	2.754	2.754	2.755	2.750				2.507 - 3.007	2.757
Perfluorooctanesulfonic acid (PFOS)	3.124	3.121	3.128	3.121	3.121	3.115	3.116				2.871 - 3.371	3.121
Perfluorononanoic acid (PFNA)	3.133	3.129	3.128	3.121	3.121	3.124	3.116				2.875 - 3.375	3.125
Perfluorooctane Sulfonamide (FOSA)	3.436	3.432	3.439	3.433	3.428	3.433	3.433				3.184 - 3.684	3.433
8:2 FTS	3.471	3.475	3.475	3.462	3.466	3.471	3.462				3.219 - 3.719	3.469
Perfluorodecanoic acid (PFDA)	3.489	3.484	3.484	3.481	3.476	3.481	3.472				3.231 - 3.731	3.481
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	3.642	3.645	3.645	3.639	3.635	3.641	3.632				3.390 - 3.890	3.640
Perfluorodecanesulfonic acid (PFDS)	3.798	3.792	3.792	3.786	3.783	3.789	3.780				3.539 - 4.039	3.789
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.816	3.810	3.810	3.805	3.802	3.808	3.800				3.557 - 4.057	3.807
Perfluoroundecanoic acid (PFUnA)	3.816	3.810	3.810	3.805	3.802	3.808	3.800				3.557 - 4.057	3.807
MeFOSA	3.928	3.931	3.931	3.931	3.931	3.932	3.924				3.680 - 4.180	3.930
Perfluorododecanoic acid (PFDoA)	4.114	4.107	4.107	4.099	4.097	4.101	4.092				3.852 - 4.352	4.102
N-EtFOSA-M	4.123	4.116	4.124	4.116	4.114	4.119	4.118				3.869 - 4.369	4.119
Perfluorotridecanoic Acid (PFTriA)	4.378	4.371	4.371	4.366	4.361	4.361	4.353				4.116 - 4.616	4.366
Perfluorotetradecanoic acid (PFTeA)	4.616	4.605	4.606	4.597	4.599	4.600	4.588				4.352 - 4.852	4.602
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++	5.032	5.033	5.025	5.024	5.016	5.014				4.777 - 5.277	5.024
Perfluoro-n-octadecanoic acid (PFODA)	5.408	5.400	5.400	5.394	5.387	5.384	5.380				5.143 - 5.643	5.393
13C4 PFBA	1.565	1.563	1.563	1.556	1.563	1.563	1.563				1.312 - 1.812	1.562
13C5 PFPeA	1.802	1.800	1.801	1.793	1.801	1.800	1.791				1.548 - 2.048	1.798
13C3-PFBS	1.823	1.830	1.831	1.823	1.820	1.830	1.820				1.725 - 1.925	1.825
13C2 PFHxA	2.077	2.074	2.074	2.078	2.075	2.074	2.074				1.825 - 2.325	2.075
13C4-PFHpA	2.398	2.396	2.403	2.397	2.395	2.395	2.397				2.147 - 2.647	2.397
18O2 PFHxS	2.414	2.412	2.419	2.413	2.411	2.411	2.405				2.162 - 2.662	2.412

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
M2-6:2FTS	2.728	2.726	2.732	2.725	2.718	2.719	2.713				2.473 - 2.973	2.723
13C4 PFOA	2.757	2.755	2.754	2.747	2.746	2.748	2.742				2.500 - 3.000	2.750
13C4 PFOS	3.124	3.121	3.128	3.121	3.121	3.115	3.116				2.871 - 3.371	3.121
13C5 PFNA	3.124	3.129	3.128	3.121	3.121	3.124	3.116				2.873 - 3.373	3.123
13C8 FOSA	3.436	3.432	3.439	3.433	3.428	3.433	3.424				3.182 - 3.682	3.432
M2-8:2FTS	3.471	3.466	3.475	3.462	3.466	3.462	3.462				3.216 - 3.716	3.466
13C2 PFDA	3.489	3.484	3.484	3.481	3.476	3.481	3.472				3.231 - 3.731	3.481
d3-NMeFOSAA	3.642	3.635	3.645	3.628	3.635	3.630	3.621				3.383 - 3.883	3.634
d5-NEtFOSAA	3.807	3.801	3.810	3.796	3.793	3.799	3.790				3.549 - 4.049	3.799
13C2 PFUnA	3.816	3.810	3.810	3.805	3.802	3.808	3.800				3.557 - 4.057	3.807
d-N-MeFOSA-M	3.928	3.923	3.931	3.923	3.922	3.932	3.924				3.676 - 4.176	3.926
13C2 PFDoA	4.114	4.107	4.107	4.099	4.097	4.101	4.092				3.852 - 4.352	4.102
d-N-EtFOSA-M	4.114	4.107	4.116	4.108	4.106	4.110	4.109				3.860 - 4.360	4.110
13C2-PFTeDA	4.616	4.617	4.617	4.608	4.599	4.600	4.600				4.358 - 4.858	4.608
13C2-PFHxDA	5.042	5.032	5.033	5.025	5.014	5.016	5.014				4.775 - 5.275	5.025

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-184448/3	2017.09.14ICALX_003.d
Level 2	IC 320-184448/4	2017.09.14ICALX_004.d
Level 3	IC 320-184448/5	2017.09.14ICALX_005.d
Level 4	IC 320-184448/6	2017.09.14ICALX_006.d
Level 5	IC 320-184448/7	2017.09.14ICALX_007.d
Level 6	IC 320-184448/8	2017.09.14ICALX_008.d
Level 7	IC 320-184448/9	2017.09.14ICALX_009.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	337693 311683	320183 302445	335946 274032	309234	Ave		313030.703				6.9		50.0			
13C5 PFPeA	228838 203523	214080 192887	227621 164458	203936	Ave		205049.240				10.8		50.0			
13C3-PFBS	5315.3 4966.0	5094.2 4773.8	5441.9 4340.6	4866.3	Ave		4971.17051				7.4		50.0			
13C2 PFHxA	244730 213322	228848 209855	242965 180804	215539	Ave		219437.546				10.1		50.0			
13C4-PFHpA	226061 199899	212137 190603	224301 157591	209238	Ave		202832.829				11.6		50.0			
18O2 PFHxS	294372 289323	277195 293718	295466 259589	281805	Ave		284495.461				4.6		50.0			
M2-6:2FTS	115668 105850	116651 102161	113721 94531	114399	Ave		108997.350				7.7		50.0			
13C4 PFOA	216366 194749	218717 170737	210718 146681	207403	Ave		195053.149				13.8		50.0			
13C4 PFOS	211989 199342	200942 196384	216792 179515	198662	Ave		200517.893				6.0		50.0			
13C5 PFNA	165204 146944	162137 134553	169215 118712	154880	Ave		150235.009				12.1		50.0			
13C8 FOSA	331560 306874	321591 304204	339399 270049	308750	Ave		311775.123				7.3		50.0			
M2-8:2FTS	80577 71085	72909 68188	81207 65960	70558	Ave		72926.4122				8.1		50.0			
13C2 PFDA	144314 136854	138981 129455	148126 111775	130256	Ave		134251.506				9.0		50.0			
d3-NMeFOSAA	42889 42772	41277 39822	44649 38921	42513	Ave		41834.8286				4.7		50.0			

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
d5-NEtFOSAA	44718 39453	44259 37454	47440 33001	40117	Ave		40920.1371				12.0		50.0			
13C2 PFUnA	107416 92520	106094 84121	109055 70946	99130	Ave		95611.7029				14.7		50.0			
d-N-MeFOSA-M	80303 80520	80463 81356	84849 77505	78404	Ave		80485.7886				2.9		50.0			
13C2 PFDoA	100770 92811	96395 82932	97741 76938	90698	Ave		91183.5743				9.3		50.0			
d-N-EtFOSA-M	74597 75769	75974 73665	79316 71667	73814	Ave		74971.6114				3.2		50.0			
13C2-PFTeDA	97872 95720	99010 90861	103906 74178	95251	Ave		93828.3800				10.2		50.0			
13C2-PFHxDA	146752 142518	153897 140245	153969 117318	149015	Ave		143387.751				8.8		50.0			

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

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)	1.0571 0.7903	0.9863 ++++	0.9959	0.9675	0.8934	AveID		0.9484				9.9		35.0			
Perfluoropentanoic acid (PFPeA)	1.2748 0.9766	1.2894 ++++	1.1501	1.1246	1.0736	AveID		1.1482				10.4		35.0			
Perfluorobutanesulfonic acid (PFBS)	80.787 58.223	76.386 ++++	78.633	77.669	66.428	AveID		73.021				12.1		50.0			
4:2 FTS	1.1293 0.9160	1.0055 0.7640	1.1064	0.8946	0.9377	AveID		0.9648				13.2		35.0			
Perfluorohexanoic acid (PFHxA)	1.0906 0.8903	1.0409 0.7558	0.9984	0.9988	0.9881	AveID		0.9661				11.5		35.0			
Perfluoroheptanoic acid (PFHpA)	1.0410 0.9187	1.0237 0.8207	1.0317	1.0229	1.0024	AveID		0.9802				8.3		35.0			
Perfluorohexanesulfonic acid (PFHxS)	++++ 0.9319	1.2859 0.8414	1.1119	1.0701	1.0432	AveID		1.0474				14.6		35.0			
6:2FTS	1.1036 0.8329	0.9837 0.7179	0.9507	0.8614	0.8615	AveID		0.9017				13.7		35.0			
Perfluorooctanoic acid (PFOA)	1.3618 0.9980	1.1297 0.8771	1.1192	1.0880	1.0703	AveID		1.0920				13.5		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.3496 1.0911	1.3020 0.8863	1.3217	1.2824	1.2483	AveID		1.2116				13.7		50.0			
Perfluorooctanesulfonic acid (PFOS)	1.1902 1.0406	1.1213 0.9612	1.0802	1.0367	1.0815	AveID		1.0731				6.7		35.0			
Perfluorononanoic acid (PFNA)	1.0167 0.9659	0.9746 0.8664	0.9754	0.9467	0.9988	AveID		0.9635				5.0		35.0			
Perfluorooctane Sulfonamide (FOSA)	1.0877 0.8073	1.0495 0.6751	1.0422	1.0242	0.9642	AveID		0.9500				16.0		35.0			
8:2FTS	0.9715 0.9242	1.0020 0.7879	0.9957	0.9326	0.9064	AveID		0.9315				7.8		35.0			
Perfluorodecanoic acid (PFDA)	1.0431 0.9183	0.9349 0.8785	0.9229	0.9390	0.9173	AveID		0.9363				5.5		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.9754 0.9982	1.0205 0.9306	0.9175	0.9267	0.8694	AveID		0.9483				5.5		35.0			
Perfluorodecanesulfonic acid (PFDS)	0.6496 0.6202	0.6194 0.5500	0.6641	0.6346	0.6560	AveID		0.6277				6.1		50.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.9427 0.8706	0.7838 0.9057	0.8579	0.8738	0.8595	AveID		0.8706				5.6		35.0			
Perfluoroundecanoic acid (PFUnA)	1.4065 1.0372	1.1984 0.9995	1.0618	1.0385	1.0599	AveID		1.1146				12.8		35.0			

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.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

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								
MeFOSA	0.8676 0.9127	0.9121 0.8737	0.8872	0.8900	0.8600	AveID		0.8862				2.3		35.0			
Perfluorododecanoic acid (PFDoA)	0.9837 0.9987	0.9921 0.9230	0.9596	0.9491	0.9379	AveID		0.9634				3.0		35.0			
N-EtFOSA-M	0.9413 0.9650	0.9434 0.8966	0.9384	0.9323	0.9352	AveID		0.9360				2.2		35.0			
Perfluorotridecanoic Acid (PFTriA)	1.1998 1.1350	1.1745 1.0546	1.1094	1.1600	1.1254	AveID		1.1370				4.2		50.0			
Perfluorotetradecanoic acid (PFTeA)	0.2876 0.2407	0.2756 0.2547	0.2603	0.2253	0.2342	AveID		0.2541				8.8		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 0.8484	1.2372 0.8483	0.9604	0.8609	0.8985	L2ID	0.3806	0.8608							0.9990		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	1.1328 0.9461	1.1224 1.0188	1.0390	1.0092	1.0533	AveID		1.0459				6.2		50.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-184448/3	2017.09.14ICALX_003.d
Level 2	IC 320-184448/4	2017.09.14ICALX_004.d
Level 3	IC 320-184448/5	2017.09.14ICALX_005.d
Level 4	IC 320-184448/6	2017.09.14ICALX_006.d
Level 5	IC 320-184448/7	2017.09.14ICALX_007.d
Level 6	IC 320-184448/8	2017.09.14ICALX_008.d
Level 7	IC 320-184448/9	2017.09.14ICALX_009.d

ANALYTE	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
13C4 PFBA	Ave	16884639 15122252	16009142 13701578	16797298	15461675	15584162	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5 PFPeA	Ave	11441908 9644368	10704024 8222924	11381034	10196816	10176160	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C3-PFBS	Ave	247163 221981	236879 201840	253049	226285	230919	46.5 46.5	46.5 46.5	46.5	46.5	46.5
13C2 PFHxA	Ave	12236514 10492742	11442396 9040188	12148263	10776938	10666100	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	11303049 9530159	10606841 7879536	11215044	10461895	9994966	50.0 50.0	50.0 50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	13923807 13892859	13111313 12278558	13975541	13329380	13684989	47.3 47.3	47.3 47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	5494223 4852645	5540939 4490246	5401770	5433939	5027857	47.5 47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	10818301 8536856	10935871 7334061	10535908	10370157	9737448	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	10133075 9387145	9605024 8580811	10362647	9496021	9528564	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	8260206 6727637	8106861 5935575	8460738	7744019	7347217	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	16577976 15210180	16079554 13502428	16969962	15437486	15343707	50.0 50.0	50.0 50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	3859656 3266216	3492335 3159485	3889825	3379723	3404986	47.9 47.9	47.9 47.9	47.9	47.9	47.9
13C2 PFDA	Ave	7215675 6472767	6949030 5588731	7406300	6512802	6842722	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d3-NMeFOSAA	Ave	2144446 1991094	2063873 1946042	2232468	2125656	2138611	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	2235886 1872708	2212929 1650027	2371990	2005851	1972657	50.0 50.0	50.0 50.0	50.0	50.0	50.0

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

ANALYTE	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
13C2 PFUnA	Ave	5370817 4206056	5304695 3547294	5452740	4956513	4625981	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d-N-MeFOSA-M	Ave	4015153 4067778	4023173 3875265	4242466	3920191	4026000	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	5038505 4146607	4819726 3846903	4887030	4534918	4640562	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	3729842 3683228	3798702 3583359	3965795	3690675	3788463	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	4893621 4543064	4950496 3708884	5195322	4762553	4785993	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	7337598 7012245	7694867 5865881	7698439	7450762	7125921	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-184448/3	2017.09.14ICALX_003.d
Level 2	IC 320-184448/4	2017.09.14ICALX_004.d
Level 3	IC 320-184448/5	2017.09.14ICALX_005.d
Level 4	IC 320-184448/6	2017.09.14ICALX_006.d
Level 5	IC 320-184448/7	2017.09.14ICALX_007.d
Level 6	IC 320-184448/8	2017.09.14ICALX_008.d
Level 7	IC 320-184448/9	2017.09.14ICALX_009.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	178486 23903531	315784 +++++	1672888	5983565	13922377	0.500 100	1.00 +++++	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	145863 18836917	276040 +++++	1308950	4586813	10925606	0.500 100	1.00 +++++	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		AveID	189799 24570139	343987 +++++	1891370	6682377	14580814	0.442 88.4	0.884 +++++	4.42	17.7	44.2
4:2 FTS		AveID	60999 8740452	109554 13491942	587579	1911666	4635265	0.467 93.4	0.934 187	4.67	18.7	46.7
Perfluorohexanoic acid (PFHxA)		AveID	133456 18684061	238203 27331005	1212903	4305467	10539124	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		AveID	117663 17511525	217170 25867159	1157099	4280576	10019048	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 24908308	324375 39749821	1494840	5488637	13733046	+++++ 91.0	0.910 182	4.55	18.2	45.5
6:2FTS		AveID	60508 8066712	108781 12867260	512470	1868310	4322401	0.474 94.8	0.948 190	4.74	19.0	47.4
Perfluorooctanoic acid (PFOA)		AveID	147323 17040355	247082 25729402	1179145	4513270	10422185	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	136180 20398786	249074 30293818	1363855	4850705	11844370	0.476 95.2	0.952 190	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)		AveID	117073 18963757	209095 32023837	1086604	3822535	10003377	0.464 92.8	0.928 186	4.64	18.6	46.4
Perfluorononanoic acid (PFNA)		AveID	83979 12997068	158020 20570374	825290	2932479	7338658	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	180314 24558971	337507 36463525	1768588	6324248	14794803	0.500 100	1.00 200	5.00	20.0	50.0
8:2FTS		AveID	37498 6037345	69984 9957438	387309	1260808	3086209	0.479 95.8	0.958 192	4.79	19.2	47.9
Perfluorodecanoic acid (PFDA)		AveID	75270 11887352	129935 19639099	683516	2446223	6277104	0.500 100	1.00 200	5.00	20.0	50.0

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

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	20916 3974890	42125 7243858	204826	787897	1859267	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	66378 11740467	119984 19036236	693909	2430799	6302803	0.482 96.4	0.964 193	4.82	19.3	48.2
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	21078 3260757	34692 5977711	203503	701123	1695413	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroundecanoic acid (PFUnA)		AveID	75542 8725284	127147 14182617	578998	2058951	4903035	0.500 100	1.00 200	5.00	20.0	50.0
MeFOSA		AveID	34837 7425602	73394 13543289	376389	1395663	3462298	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	49566 8282286	95629 14202541	468950	1721617	4352392	0.500 100	1.00 200	5.00	20.0	50.0
N-EtFOSA-M		AveID	35110 7108633	71675 12851935	372153	1376368	3543033	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotridecanoic Acid (PFTriA)		AveID	60452 9412918	113216 16228375	542189	2104135	5222524	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		AveID	14073 2187010	27290 3779270	135211	429175	1121083	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	+++++ 11897771	190408 19904231	739348	2565875	6402738	+++++ 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)		AveID	83120 13268543	172727 23905788	799896	3007660	7505658	0.500 100	1.00 200	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution
L2ID = Linear 1/conc^2 IsoDil

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-184448/3	2017.09.14ICALX_003.d
Level 2	IC 320-184448/4	2017.09.14ICALX_004.d
Level 3	IC 320-184448/5	2017.09.14ICALX_005.d
Level 4	IC 320-184448/6	2017.09.14ICALX_006.d
Level 5	IC 320-184448/7	2017.09.14ICALX_007.d
Level 6	IC 320-184448/8	2017.09.14ICALX_008.d
Level 7	IC 320-184448/9	2017.09.14ICALX_009.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)	+++++	4.0	5.0	2.0	-5.8	-16.7		25	25	25	25	25
Perfluoropentanoic acid (PFPeA)	+++++	12.3	0.2	-2.1	-6.5	-14.9		25	25	25	25	25
Perfluorobutanesulfonic acid (PFBS)	+++++	4.6	7.7	6.4	-9.0	-20.3		25	25	25	25	25
4:2 FTS	-20.8	4.2	14.7	-7.3	-2.8	-5.1	25	25	25	25	25	25
Perfluorohexanoic acid (PFHxA)	-21.8	7.7	3.3	3.4	2.3	-7.8	25	25	25	25	25	25
Perfluoroheptanoic acid (PFHpA)	-16.3	4.4	5.3	4.4	2.3	-6.3	25	25	25	25	25	25
Perfluorohexanesulfonic acid (PFHxS)	+++++ -19.7		6.2	2.2	-0.4	-11.0	25		25	25	25	25
6:2FTS	-20.4	9.1	5.4	-4.5	-4.5	-7.6	25	25	25	25	25	25
Perfluorooctanoic acid (PFOA)	-19.7	3.4	2.5	-0.4	-2.0	-8.6	25	25	25	25	25	25
Perfluoroheptanesulfonic Acid (PFHpS)	-26.8 *	7.5	9.1	5.8	3.0	-9.9	25	25	25	25	25	25
Perfluorooctanesulfonic acid (PFOS)	-10.4	4.5	0.7	-3.4	0.8	-3.0	25	25	25	25	25	25
Perfluorononanoic acid (PFNA)	-10.1	1.2	1.2	-1.7	3.7	0.3	25	25	25	25	25	25
Perfluorooctane Sulfonamide (FOSA)	-28.9 *	10.5	9.7	7.8	1.5	-15.0	25	25	25	25	25	25
8:2FTS	-15.4	7.6	6.9	0.1	-2.7	-0.8	25	25	25	25	25	25
Perfluorodecanoic acid (PFDA)	-6.2	-0.1	-1.4	0.3	-2.0	-1.9	25	25	25	25	25	25

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

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)	-1.9	7.6	-3.3	-2.3	-8.3	5.3	25	25	25	25	25	25
Perfluorodecanesulfonic acid (PFDS)	-12.4	-1.3	5.8	1.1	4.5	-1.2	25	25	25	25	25	25
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	4.0	-10.0	-1.5	0.4	-1.3	0.0	25	25	25	25	25	25
Perfluoroundecanoic acid (PFUnA)	-10.3	7.5	-4.7	-6.8	-4.9	-6.9	25	25	25	25	25	25
MeFOSA	-1.4	2.9	0.1	0.4	-3.0	3.0	25	25	25	25	25	25
Perfluorododecanoic acid (PFDoA)	-4.2	3.0	-0.4	-1.5	-2.7	3.7	25	25	25	25	25	25
N-EtFOSA-M	-4.2	0.8	0.3	-0.4	-0.1	3.1	25	25	25	25	25	25
Perfluorotridecanoic Acid (PFTriA)	-7.2	3.3	-2.4	2.0	-1.0	-0.2	25	25	25	25	25	25
Perfluorotetradecanoic acid (PFTeA)	0.3	8.5	2.4	-11.3	-7.8	-5.3	25	25	25	25	25	25
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ -1.7		2.7	-2.2	3.5	-1.9	25		25	25	25	25
Perfluoro-n-octadecanoic acid (PFODA)	-2.6	7.3	-0.7	-3.5	0.7	-9.5	25	25	25	25	25	25

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_003.d
 Lims ID: IC L1 Full
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 14-Sep-2017 14:25:52 ALS Bottle#: 28 Worklist Smp#: 3
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 15-Sep-2017 08:45:38 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK026

First Level Reviewer: westendorfc

Date: 14-Sep-2017 15:43:05

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	1.565	1.562	0.003		16884639	53.9		108	21412	
2 Perfluorobutyric acid										
212.90 > 169.00	1.565	1.564	0.001	1.000	178486	0.5573		111	43.2	
D 3 13C5-PFPeA										
267.90 > 223.00	1.802	1.798	0.004		11441908	55.8		112	48722	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.802	1.801	0.001	1.000	145863	0.5551		111	102	
D 47 13C3-PFBS										
301.90 > 83.00	1.823	1.825	-0.002		247163	49.7		107	7659	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.834	1.831	0.003	1.000	189799	0.4890		111	3745	
298.90 > 99.00	1.834	1.831	0.003	1.000	75747		2.51(0.00-0.00)	111	1509	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	2.043	2.038	0.005	1.000	60999	0.5466		117	3109	
D 7 13C2 PFHxA										
315.00 > 270.00	2.077	2.075	0.002		12236514	55.8		112	28434	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.077	2.077	0.0	1.000	133456	0.5644		113	374	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.398	2.397	0.001	1.000	117663	0.5310		106	341	
D 9 13C4-PFHpA										
367.00 > 322.00	2.398	2.397	0.001		11303049	55.7		111	21077	
D 11 18O2 PFHxS										
403.00 > 84.00	2.414	2.412	0.002		13923807	48.9		103	19863	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.414	2.412	0.002	1.000	210575	0.6830		150	2537	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.728	2.723	0.005		5494223	50.4		106	18413	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.728	2.724	0.004	1.000	60508	0.5802		122	2086	
* 62 13C2-PFOA										
415.00 > 370.00	2.750	2.746	0.004		10681769	50.0			19896	
D 14 13C4 PFOA										
417.00 > 372.00	2.757	2.750	0.007		10818301	55.5		111	29941	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.757	2.751	0.006	1.000	147323	0.6235		125	26.4	
413.00 > 169.00	2.757	2.751	0.006	1.000	74245		1.98(0.90-1.10)	125	739	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.765	2.757	0.008	1.000	136180	0.5302		111	3408	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.124	3.121	0.003	1.000	117073	0.5146		111	2537	
499.00 > 99.00	3.124	3.121	0.003	1.000	23936		4.89(0.90-1.10)	111	236	
D 18 13C4 PFOS										
503.00 > 80.00	3.124	3.121	0.003		10133075	50.5		106	21629	
D 19 13C5 PFNA										
468.00 > 423.00	3.124	3.123	0.001		8260206	55.0		110	13160	
20 Perfluorononanoic acid										
463.00 > 419.00	3.133	3.125	0.008	1.000	83979	0.5276		106	181	
D 21 13C8 FOSA										
506.00 > 78.00	3.436	3.432	0.004		16577976	53.2		106	20667	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.436	3.434	0.002	1.000	180314	0.5724		114	2253	
D 26 M2-8:2FTS										
529.00 > 509.00	3.471	3.466	0.005		3859656	52.9		110	12930	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.471	3.469	0.002	1.000	37498	0.4996		104	1223	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.489	3.481	0.008	1.000	75270	0.5571		111	217	
D 23 13C2 PFDA										
515.00 > 470.00	3.489	3.481	0.008		7215675	53.7		107	11570	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.642	3.633	0.009		2144446	51.3		103	6110	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.642	3.640	0.002	1.000	20916	0.5143		103	875	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.798	3.789	0.009	1.000	66378	0.4988		103	1265	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.807	3.799	0.008		2235886	54.6		109	4656	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.816	3.807	0.009	1.002	21078	0.5414		108	441	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.816	3.807	0.009	1.000	75542	0.6310		126	279	
D 30 13C2 PFUnA										
565.00 > 520.00	3.816	3.807	0.009		5370817	56.2		112	7181	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M	515.00 > 169.00	3.928	3.926	0.002	4015153	49.9		99.8	550	
35 MeFOSA	512.00 > 169.00	3.928	3.930	-0.002	1.000	34837	0.4895	97.9	1127	
37 Perfluorododecanoic acid	613.00 > 569.00	4.114	4.102	0.012	1.000	49566	0.5105	102	29.2	
D 36 13C2 PFDaA	615.00 > 570.00	4.114	4.102	0.012	5038505	55.3		111	7074	
D 38 d-N-EtFOSA-M	531.00 > 169.00	4.114	4.110	0.004	3729842	49.8		99.5	4009	
39 N-ethylperfluoro-1-octanesulfonami	526.00 > 169.00	4.123	4.119	0.004	1.000	35110	0.5028	101	1085	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.378	4.366	0.012	1.000	60452	0.5276	106	6.9	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.616	4.602	0.014	1.000	14073	0.5660	113	119	
713.00 > 219.00	4.627	4.602	0.025	1.002	10222		1.38(0.00-0.00)	113	92.6	
D 43 13C2-PFTeDA	715.00 > 670.00	4.616	4.608	0.008	4893621	52.2		104	18238	
D 44 13C2-PFHxDA	815.00 > 770.00	5.042	5.025	0.017	7337598	51.2		102	32421	
45 Perfluorohexadecanoic acid	813.00 > 769.00	5.042	5.027	0.015	1.000	131386	0.5980	120	12.0	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.408	5.393	0.015	1.000	83120	0.5415	108	7.9	

Reagents:

LCPFC_FULL-L1_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_003.d

Injection Date: 14-Sep-2017 14:25:52

Instrument ID: A8_N

Lims ID: IC L1 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 28

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

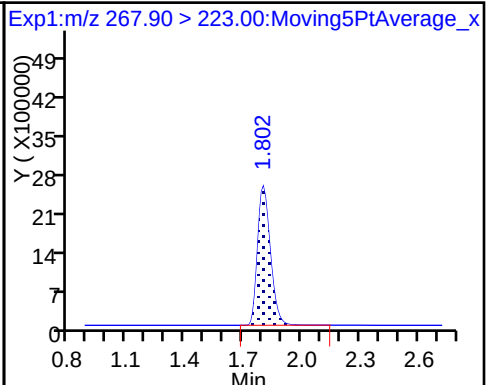
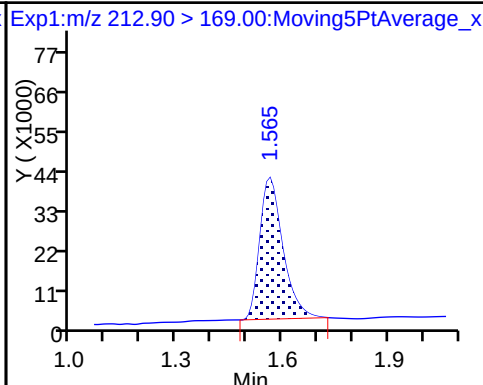
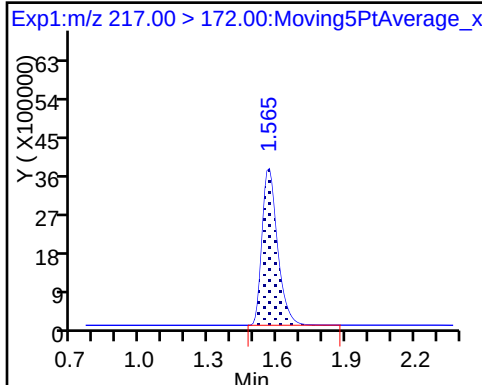
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

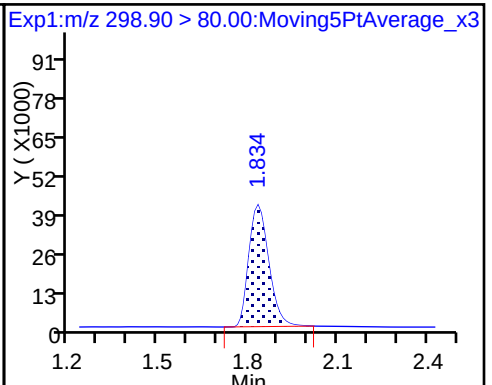
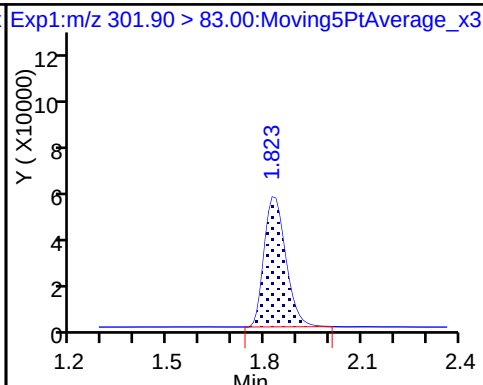
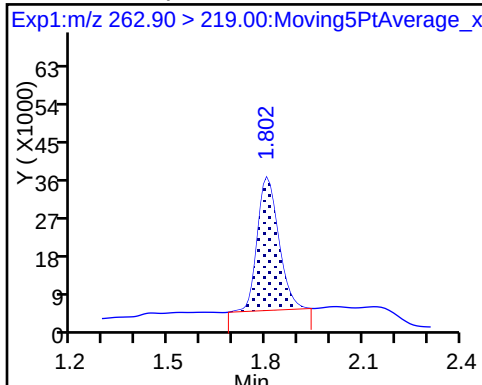
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

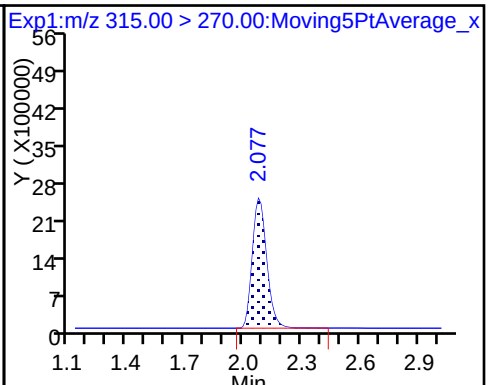
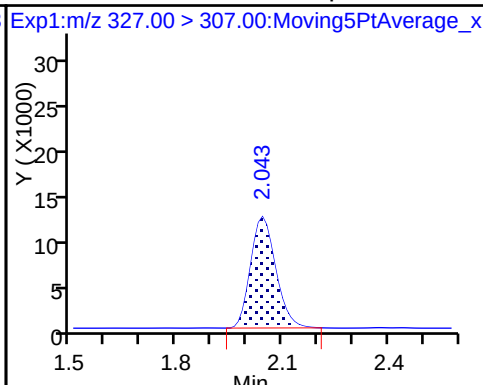
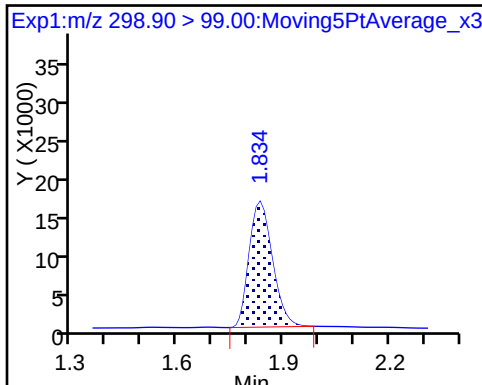
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

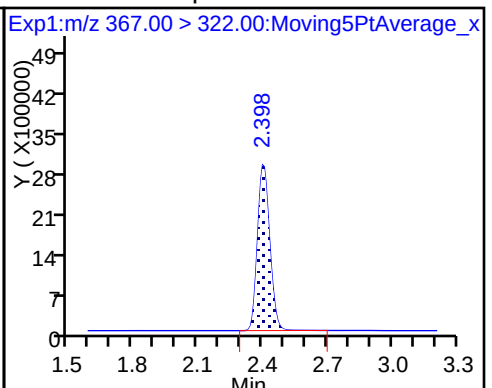
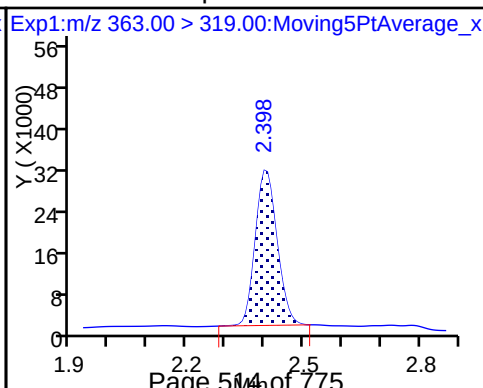
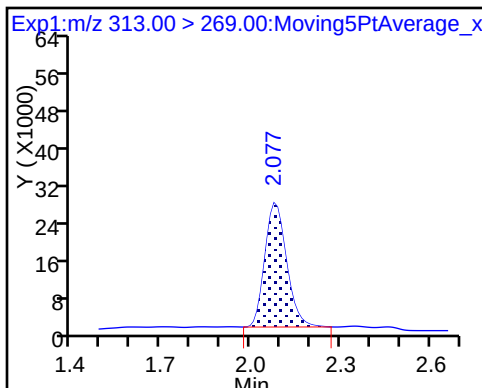
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

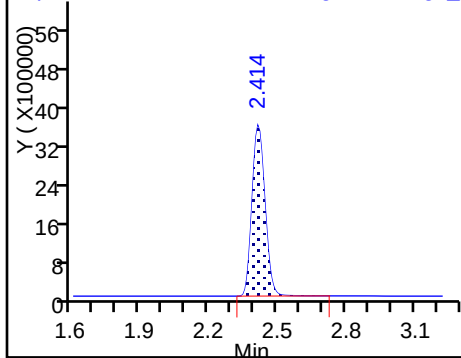


D 11 18O2 PFHxS

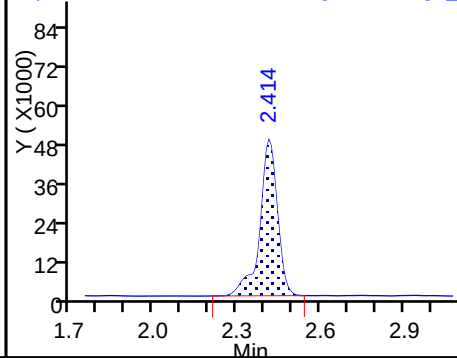
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

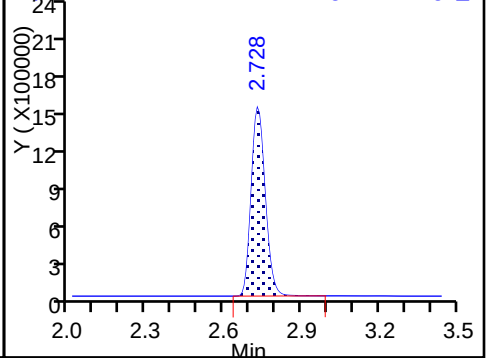
Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



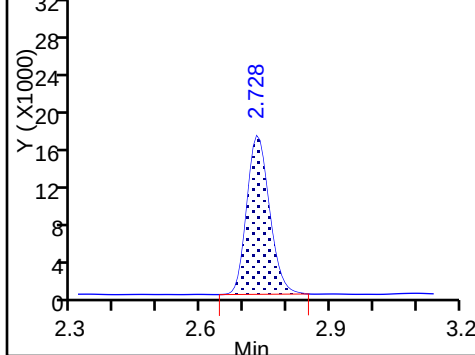
Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x3



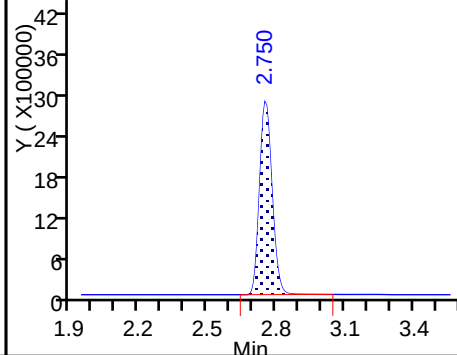
13 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 14 13C4 PFOA

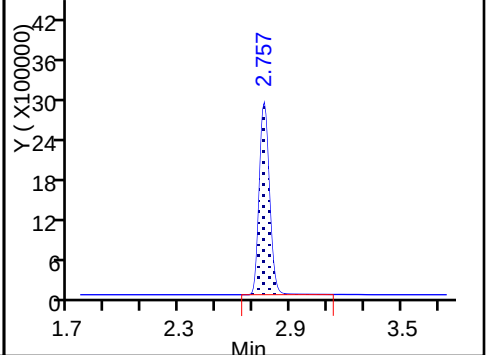
Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3



Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

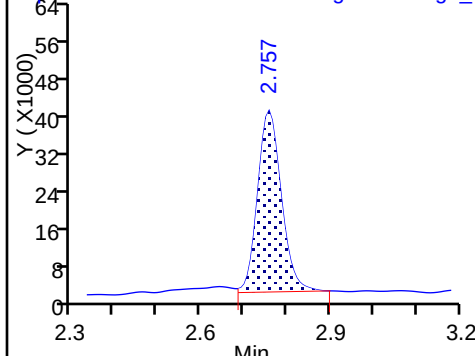


15 Perfluorooctanoic acid

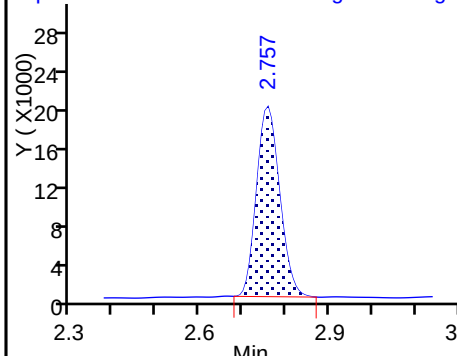
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

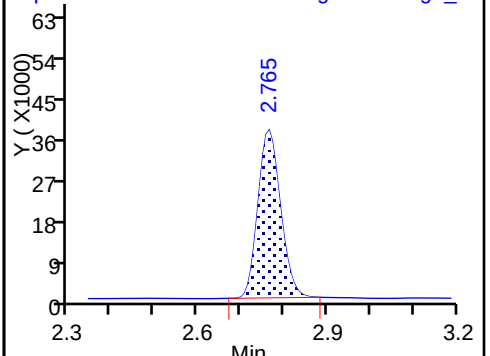
Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x3



Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

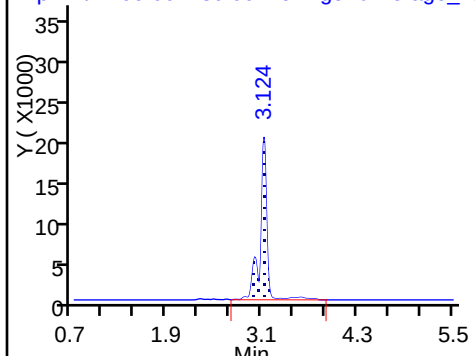


17 Perfluorooctane sulfonic acid

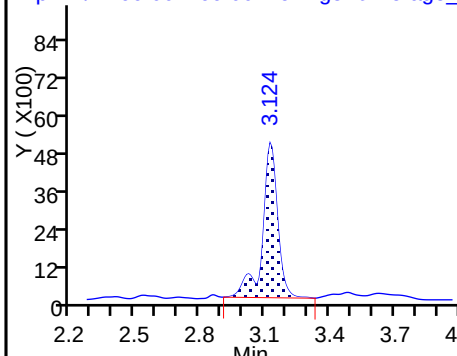
17 Perfluorooctane sulfonic acid

D 18 13C4 PFOS

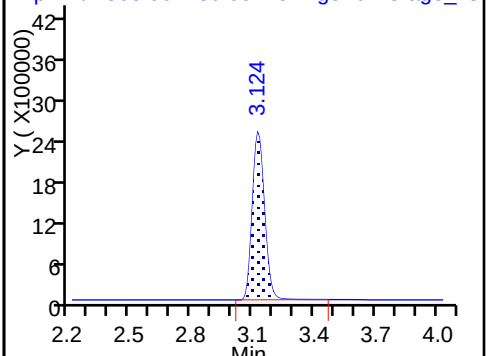
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Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3



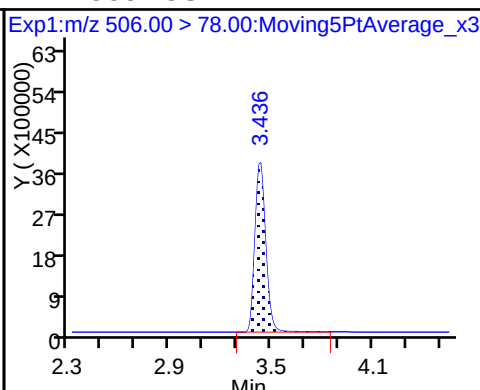
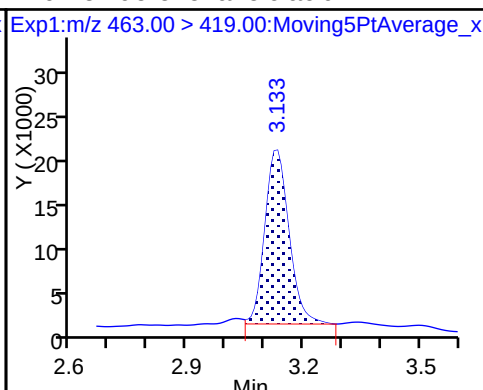
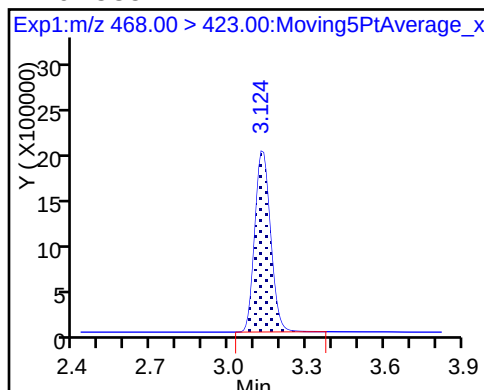
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



D 19 13C5 PFNA

20 Perfluorononanoic acid

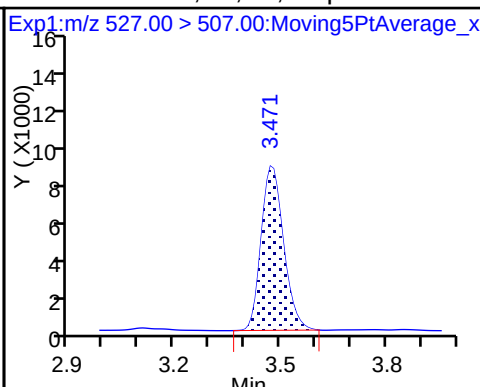
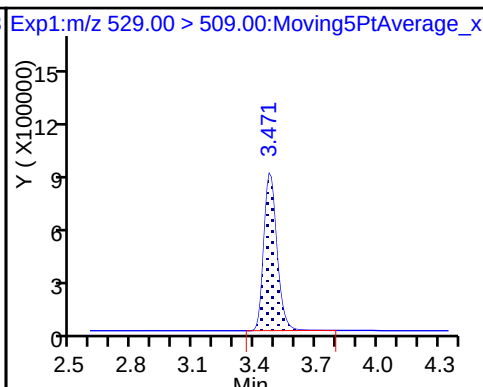
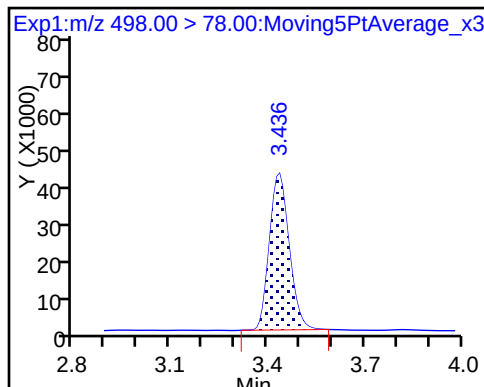
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 26 M2-8:2FTS

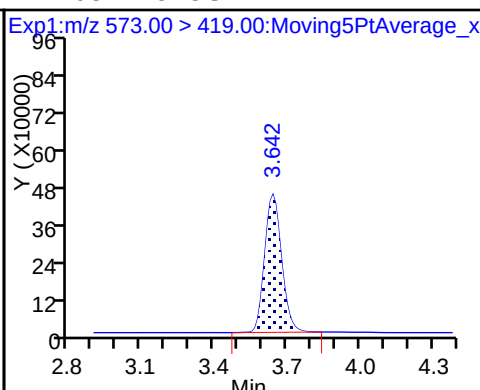
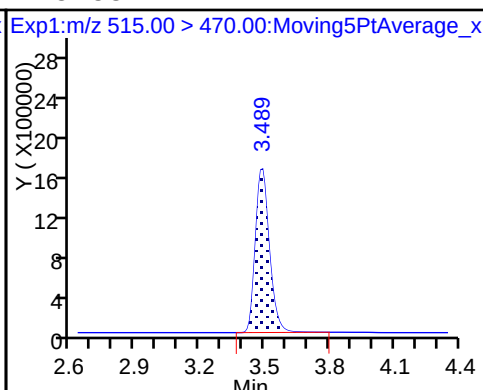
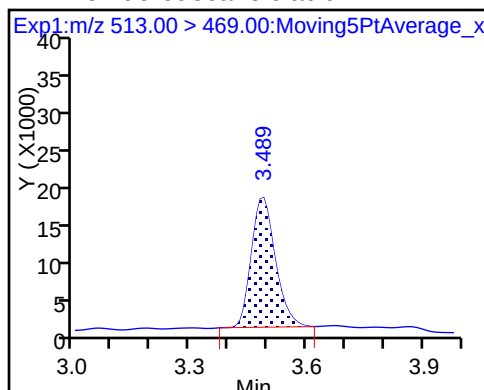
25 Sodium 1H,1H,2H,2H-perfluorodecane



24 Perfluorodecanoic acid

D 23 13C2 PFDA

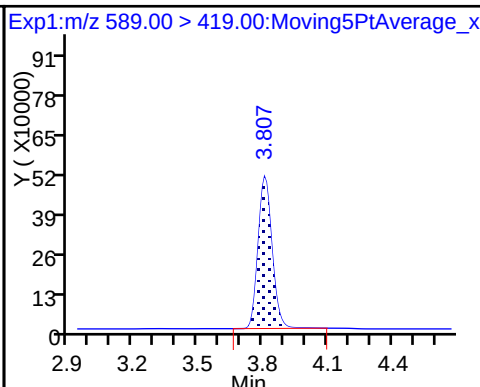
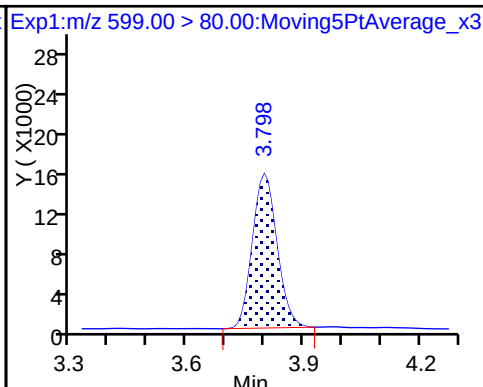
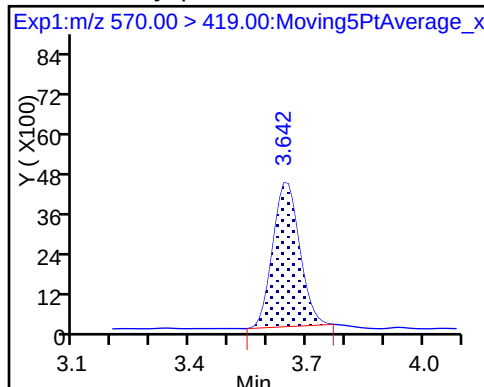
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

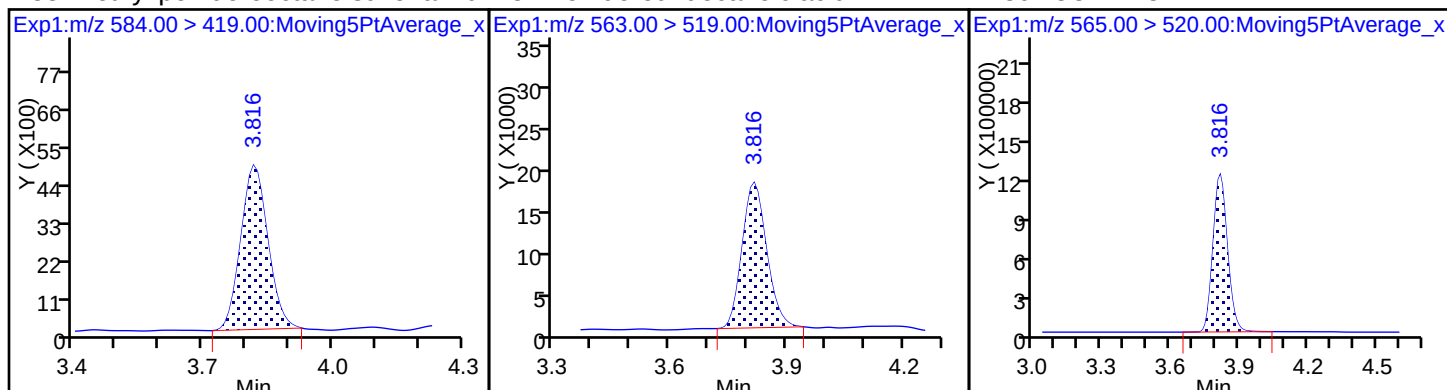
D 32 d5-NEtFOSAA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

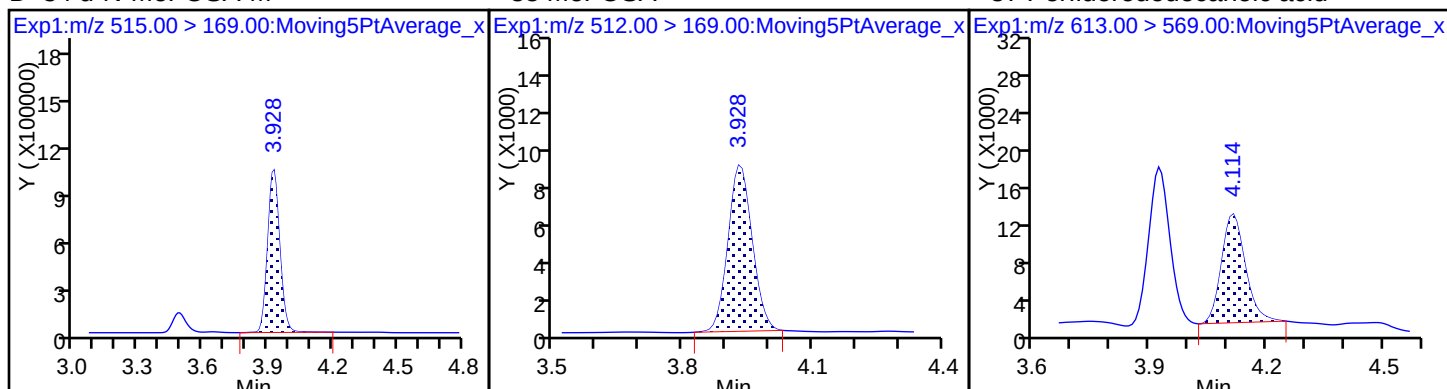
D 30 13C2 PFUnA



D 34 d-N-MeFOSA-M

35 MeFOSA

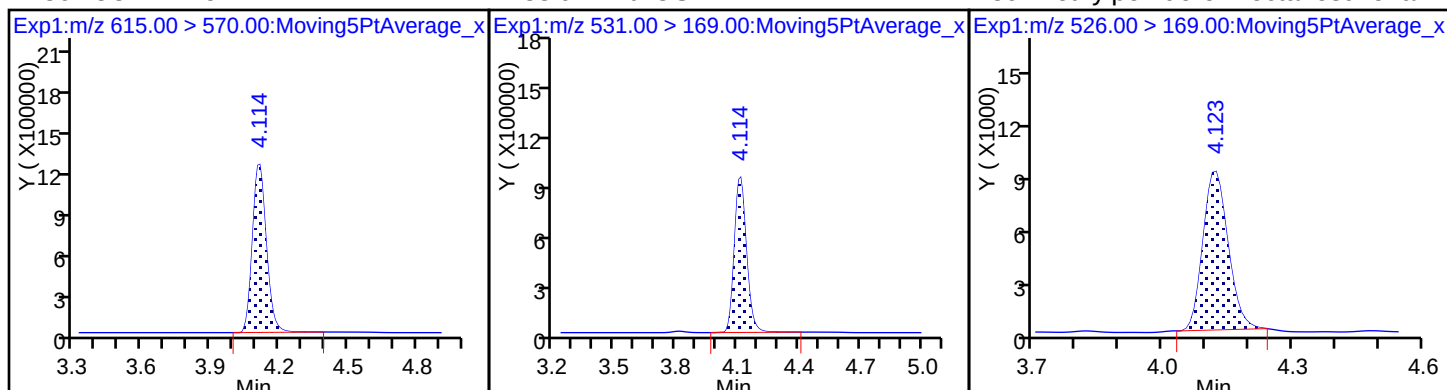
37 Perfluorododecanoic acid



D 36 13C2 PFDaA

D 38 d-N-EtFOSA-M

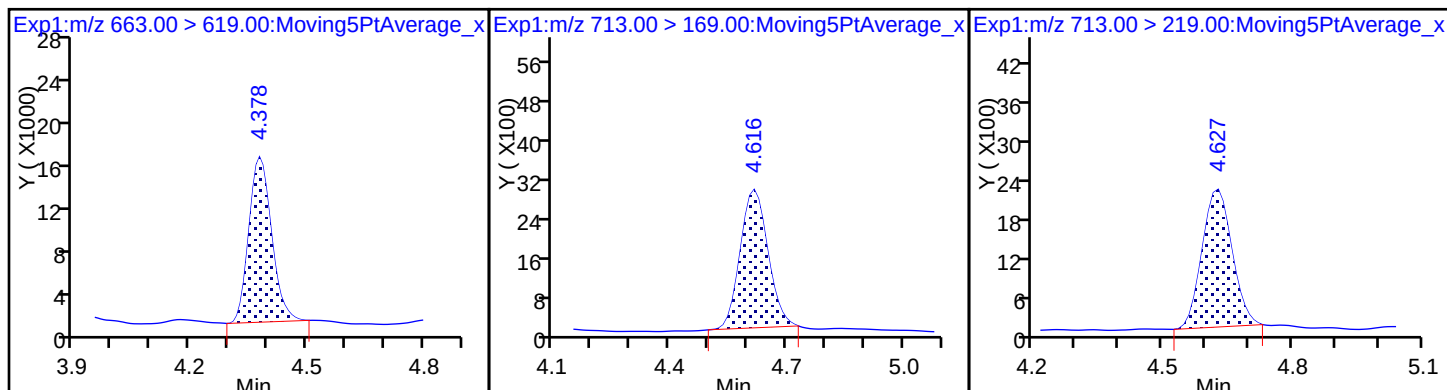
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA

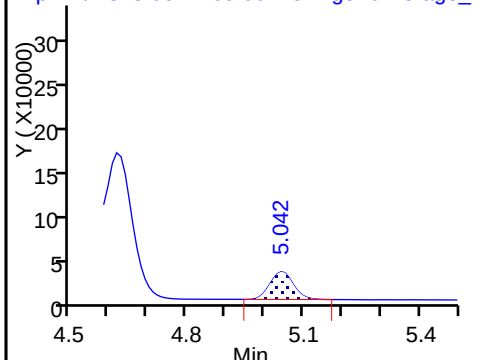
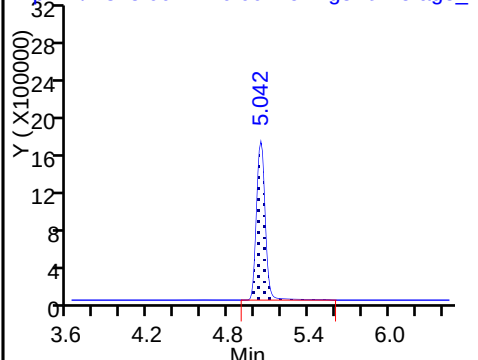
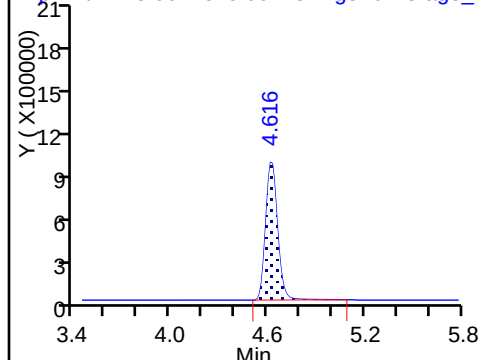
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x

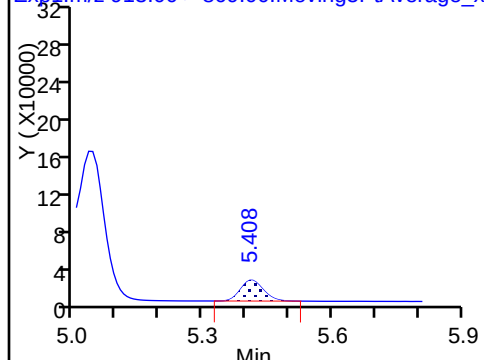
Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_004.d
 Lims ID: IC L2 Full
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 14-Sep-2017 14:32:48 ALS Bottle#: 29 Worklist Smp#: 4
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 15-Sep-2017 08:45:45 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK026

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	1.563	1.562	0.001		16009142	51.1		102	21793	
2 Perfluorobutyric acid										
212.90 > 169.00	1.563	1.564	-0.001	1.000	315784	1.04		104	75.4	
D 3 13C5-PFPeA										
267.90 > 223.00	1.800	1.798	0.002		10704024	52.2		104	74277	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.800	1.801	-0.001	1.000	276040	1.12		112	195	
D 47 13C3-PFBS										
301.90 > 83.00	1.830	1.825	0.005		236879	47.7		102	7361	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.830	1.831	-0.001	1.000	343987	0.9247		105	5358	
298.90 > 99.00	1.830	1.831	-0.001	1.000	143031		2.40(0.00-0.00)	105	2846	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	2.040	2.038	0.002	1.000	109554	0.9734		104	5500	
D 7 13C2 PFHxA										
315.00 > 270.00	2.074	2.075	-0.001		11442396	52.1		104	34663	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.074	2.077	-0.003	1.000	238203	1.08		108	740	
D 9 13C4-PFHpA										
367.00 > 322.00	2.396	2.397	-0.001		10606841	52.3		105	28319	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.396	2.397	-0.001	1.000	217170	1.04		104	616	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.412	2.412	0.0	1.000	324375	1.12		123	3051	
D 11 18O2 PFHxS										
403.00 > 84.00	2.412	2.412	0.0		13111313	46.1		97.4	37471	
D 12 M2-6:2FTS										
429.00 > 409.00	2.726	2.723	0.003		5540939	50.8		107	20295	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane	427.00 > 407.00	2.726	2.724	0.002	1.000	108781	1.03	109	3173	
* 62 13C2-PFOA	415.00 > 370.00	2.748	2.746	0.002		10715866	50.0		38727	
D 14 13C4 PFOA	417.00 > 372.00	2.755	2.750	0.005		10935871	56.1	112	21549	
15 Perfluorooctanoic acid	413.00 > 369.00	2.755	2.751	0.004	1.000	247082	1.03	103	49.8	
	413.00 > 169.00	2.755	2.751	0.004	1.000	135652	1.82(0.90-1.10)	103	1316	
16 Perfluoroheptanesulfonic Acid	449.00 > 80.00	2.762	2.757	0.005	1.000	249074	1.02	107	6169	
D 18 13C4 PFOS	503.00 > 80.00	3.121	3.121	0.0		9605024	47.9	100	39526	
17 Perfluorooctane sulfonic acid	499.00 > 80.00	3.121	3.121	0.0	1.000	209095	0.9697	104	5291	
	499.00 > 99.00	3.121	3.121	0.0	1.000	42951	4.87(0.90-1.10)	104	401	
D 19 13C5 PFNA	468.00 > 423.00	3.129	3.123	0.006		8106861	54.0	108	26223	
20 Perfluorononanoic acid	463.00 > 419.00	3.129	3.125	0.004	1.000	158020	1.01	101	350	
D 21 13C8 FOSA	506.00 > 78.00	3.432	3.432	0.0		16079554	51.6	103	18705	
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.432	3.434	-0.002	1.000	337507	1.10	110	4240	
D 26 M2-8:2FTS	529.00 > 509.00	3.466	3.466	0.0		3492335	47.9	100.0	16816	
25 Sodium 1H,1H,2H,2H-perfluorodecane	527.00 > 507.00	3.475	3.469	0.006	1.003	69984	1.03	108	2288	
D 23 13C2 PFDA	515.00 > 470.00	3.484	3.481	0.003		6949030	51.8	104	16462	
24 Perfluorodecanoic acid	513.00 > 469.00	3.484	3.481	0.003	1.000	129935	1.00	99.9	415	
D 27 d3-NMeFOSAA	573.00 > 419.00	3.635	3.633	0.002		2063873	49.3	98.7	10646	
28 N-methyl perfluorooctane sulfonami	570.00 > 419.00	3.645	3.640	0.005	1.003	42125	1.08	108	1460	
29 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.792	3.789	0.003	1.000	119984	0.9513	98.7	2496	
D 32 d5-NEtFOSAA	589.00 > 419.00	3.801	3.799	0.002		2212929	54.1	108	3150	
D 30 13C2 PFUnA	565.00 > 520.00	3.810	3.807	0.003		5304695	55.5	111	15295	
31 Perfluoroundecanoic acid	563.00 > 519.00	3.810	3.807	0.003	1.000	127147	1.08	108	445	
33 N-ethyl perfluorooctane sulfonamid	584.00 > 419.00	3.810	3.807	0.003	1.002	34692	0.9004	90.0	712	
D 34 d-N-MeFOSA-M	515.00 > 169.00	3.923	3.926	-0.003		4023173	50.0	100.0	588	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA										
512.00 > 169.00	3.931	3.930	0.001	1.000	73394	1.03		103	1931	
D 36 13C2 PFDaA										
615.00 > 570.00	4.107	4.102	0.005		4819726	52.9		106	6163	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.107	4.102	0.005	1.000	95629	1.03		103	62.8	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.107	4.110	-0.003		3798702	50.7		101	3469	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.116	4.119	-0.003	1.000	71675	1.01		101	1629	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.371	4.366	0.005	1.000	113216	1.03		103	12.8	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.605	4.602	0.003	1.000	27290	1.08		108	213	
713.00 > 219.00	4.617	4.602	0.015	1.002	18447		1.48(0.00-0.00)	108	157	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.617	4.608	0.009		4950496	52.8		106	5088	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.032	5.025	0.007		7694867	53.7		107	7465	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.032	5.027	0.005	1.000	190408	1.00		99.5	16.8	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.400	5.393	0.007	1.000	172727	1.07		107	14.8	

Reagents:

LCPFC_FULL-L2_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_004.d

Injection Date: 14-Sep-2017 14:32:48

Instrument ID: A8_N

Lims ID: IC L2 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

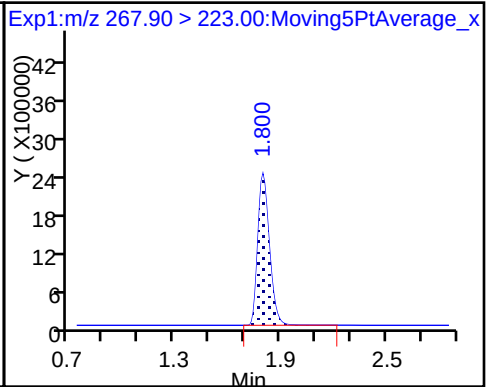
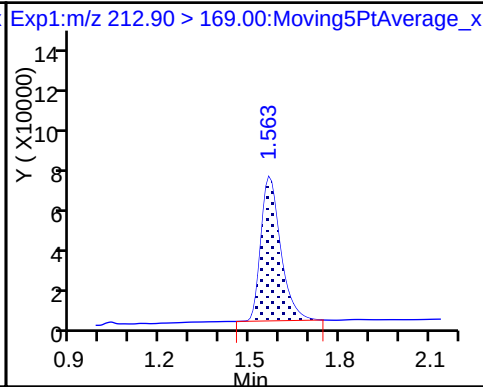
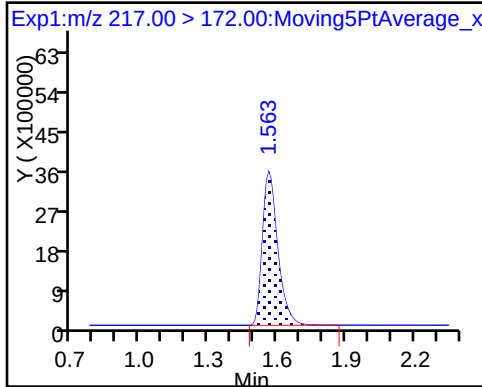
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

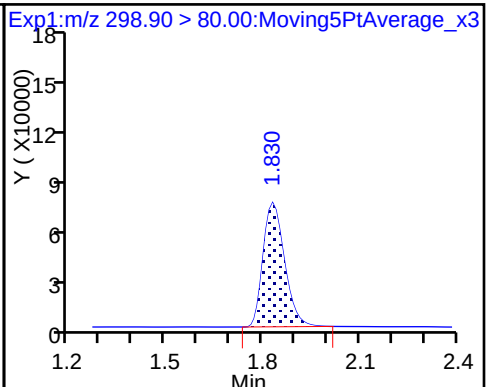
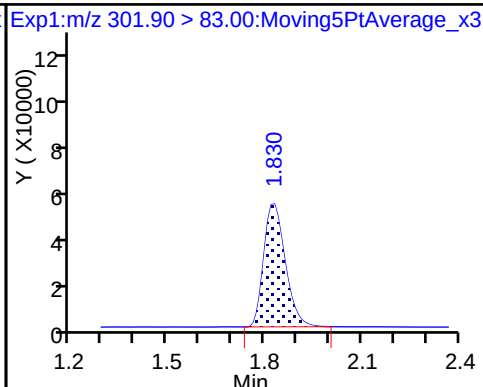
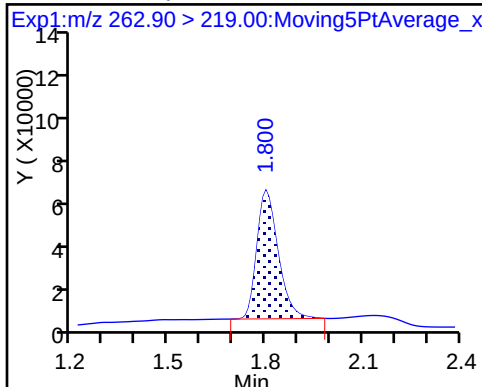
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

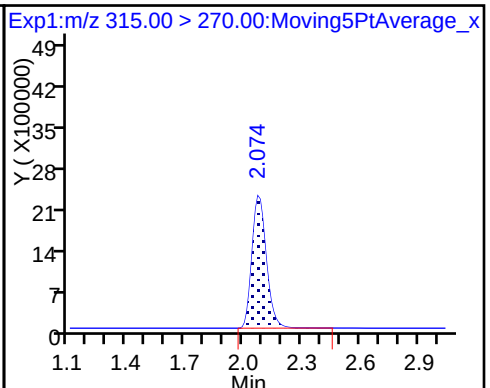
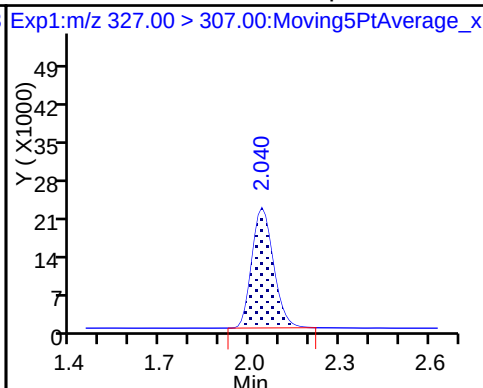
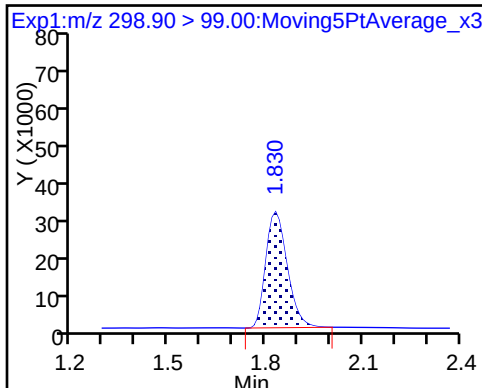
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

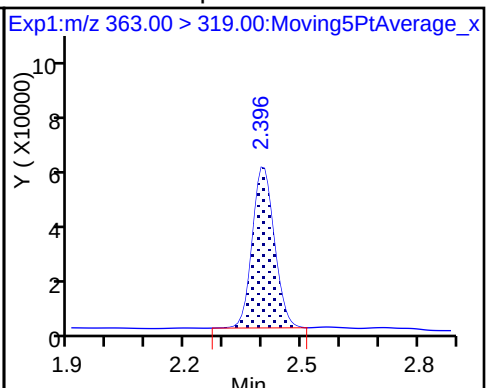
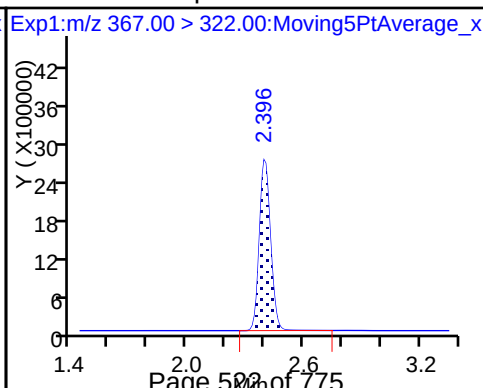
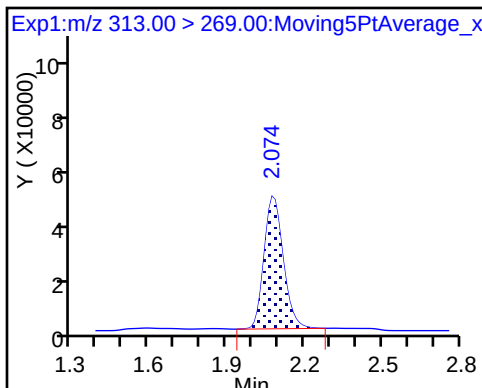
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

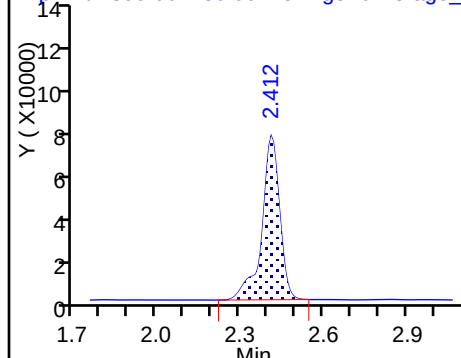


8 Perfluorohexanesulfonic acid

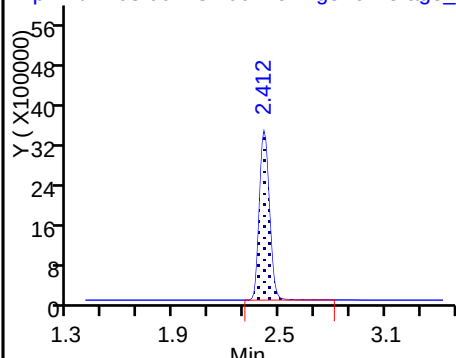
D 11 18O2 PFHxS

D 12 M2-6:2FTS

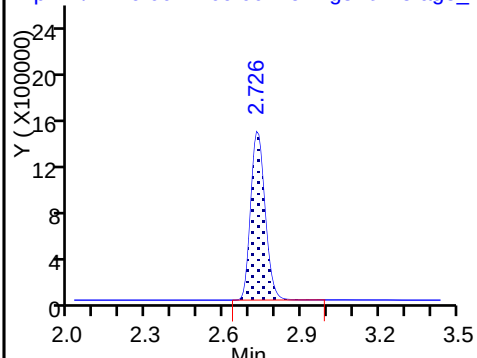
Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



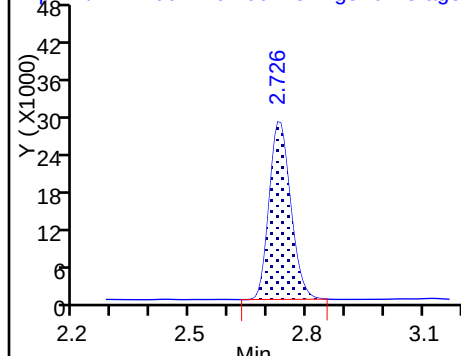
Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x3



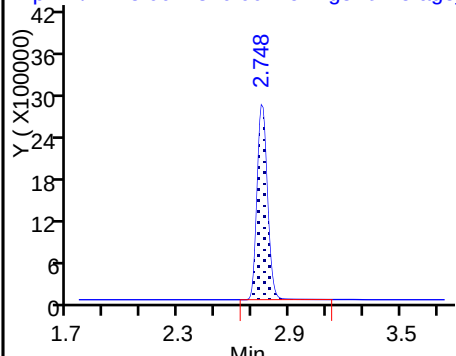
13 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 14 13C4 PFOA

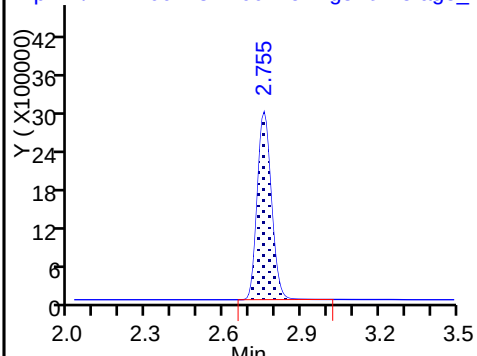
Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3



Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

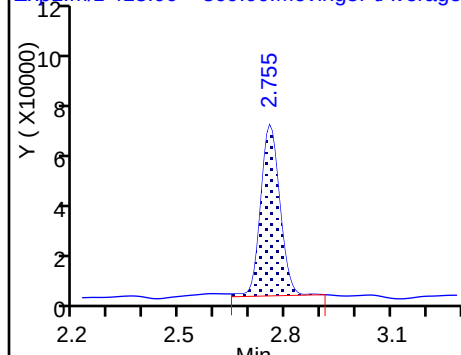


15 Perfluorooctanoic acid

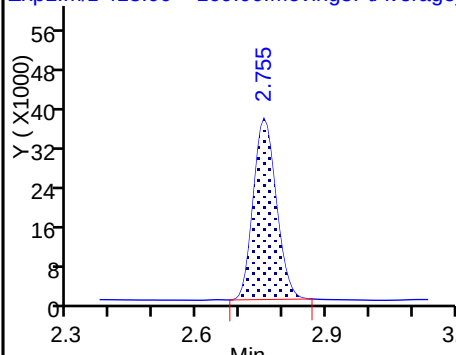
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

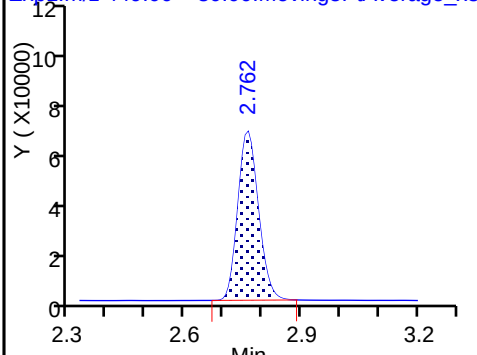
Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x3



Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

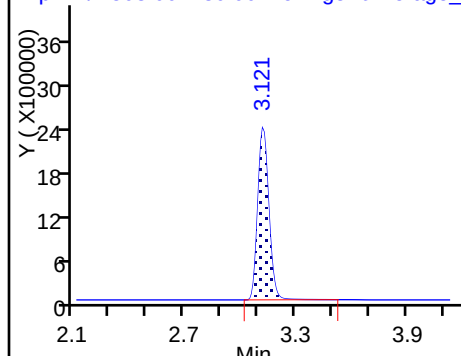


D 18 13C4 PFOS

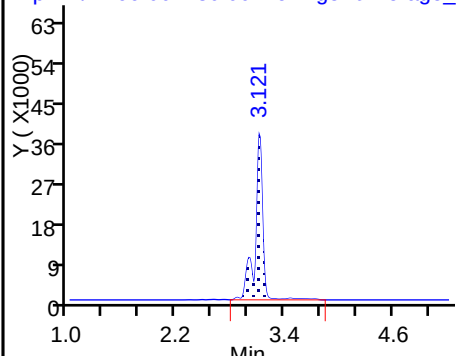
17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

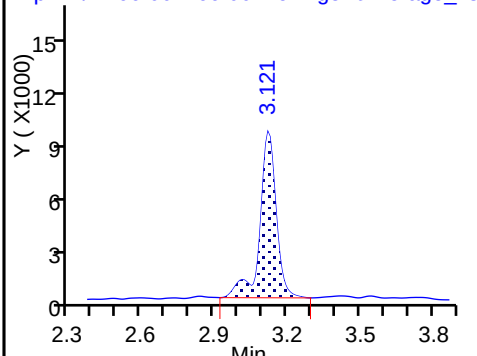
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3



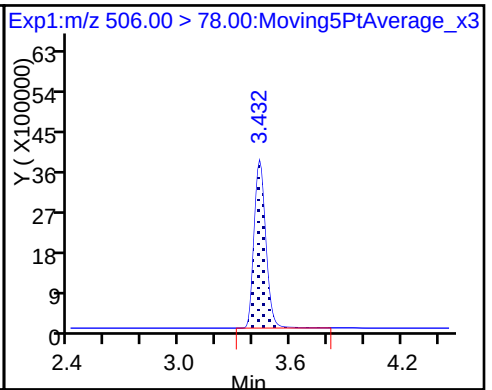
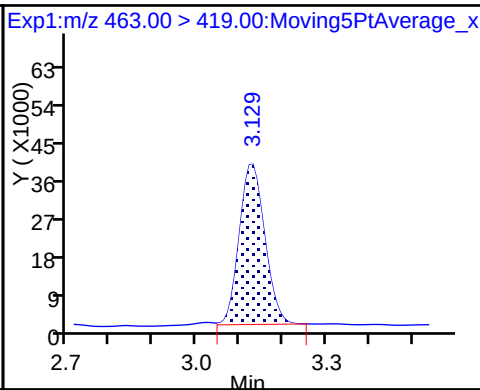
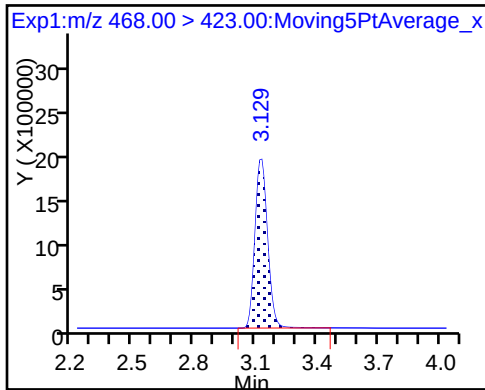
Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3



D 19 13C5 PFNA

20 Perfluorononanoic acid

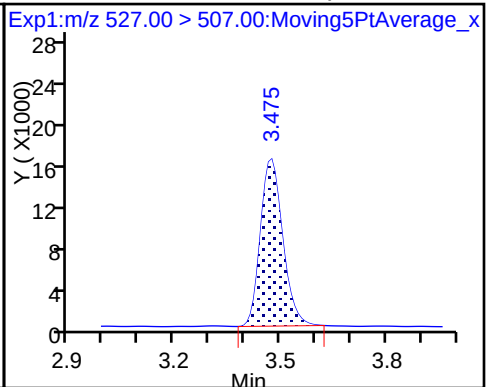
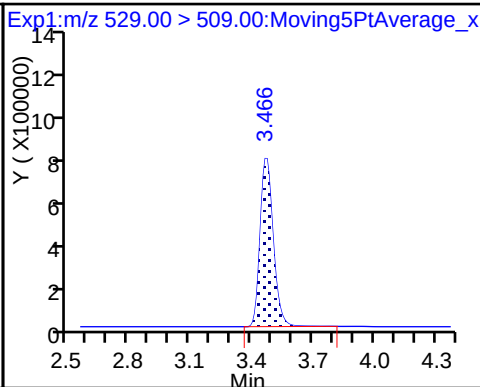
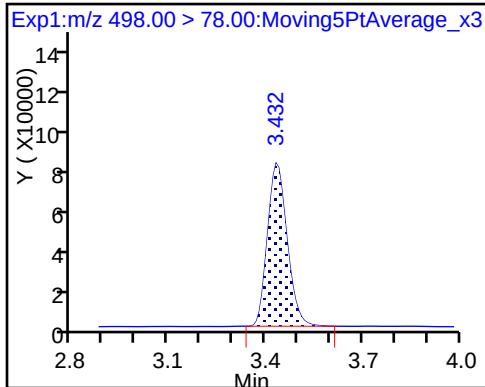
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 26 M2-8:2FTS

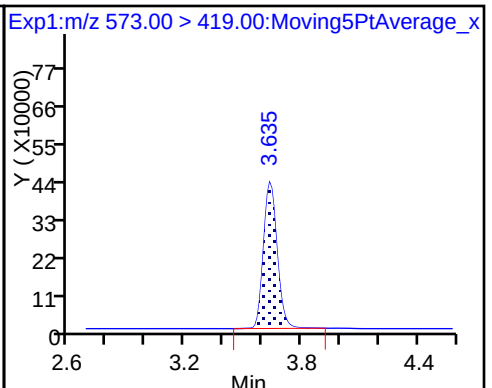
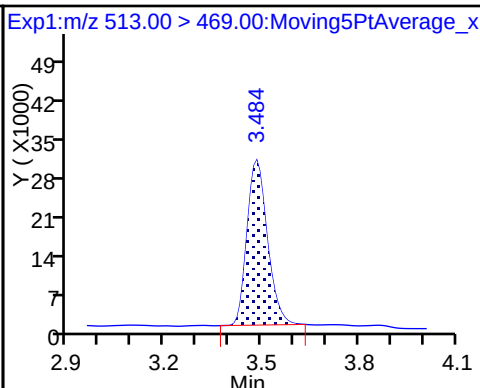
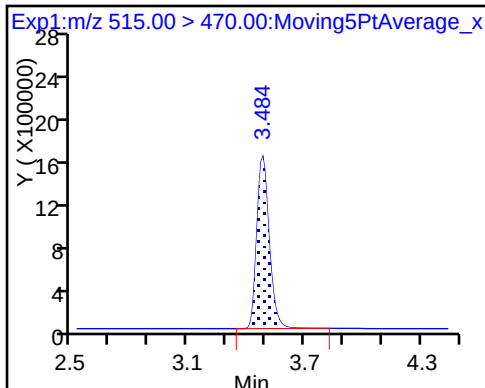
25 Sodium 1H,1H,2H,2H-perfluorodecane



D 23 13C2 PFDA

24 Perfluorodecanoic acid

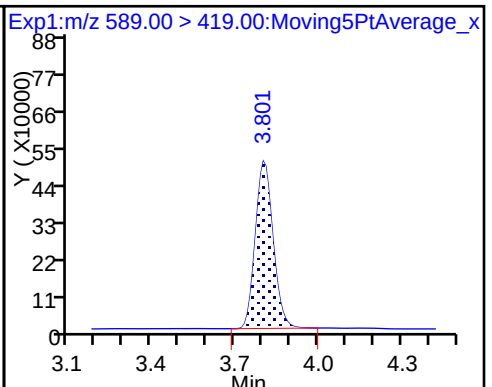
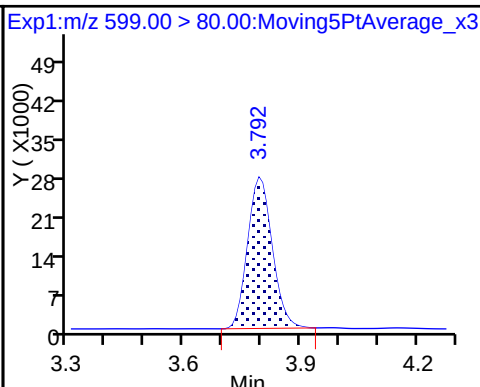
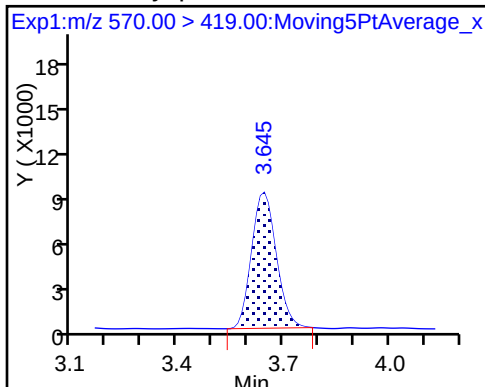
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

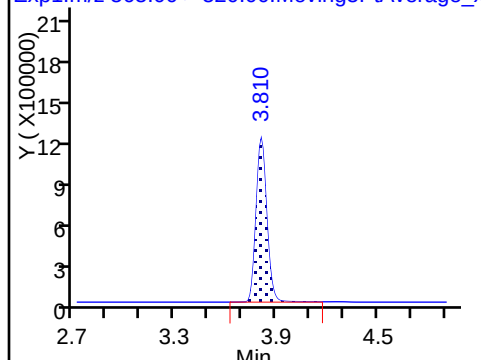


D 30 13C2 PFUnA

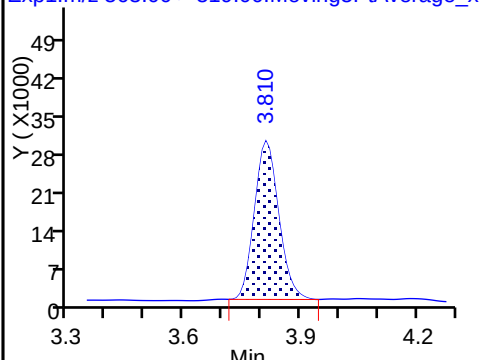
31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid

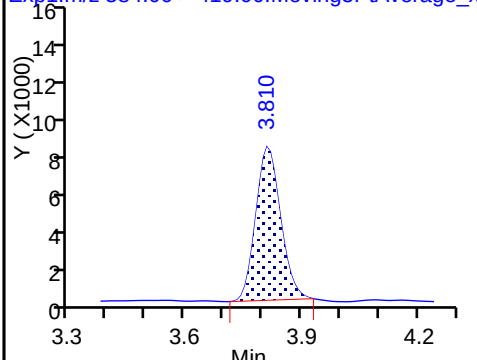
Exp1:m/z 565.00 > 520.00:Moving5PtAverage_x



Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x



Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x

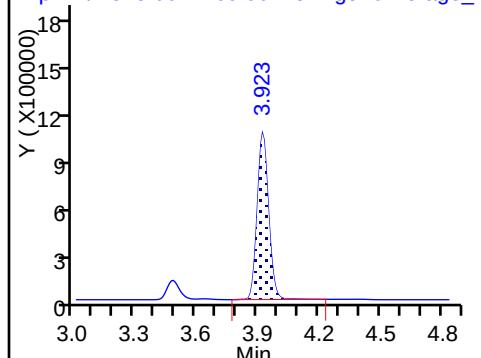


D 34 d-N-MeFOSA-M

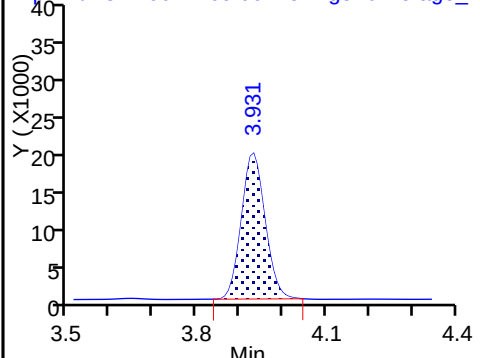
35 MeFOSA

D 36 13C2 PFDaA

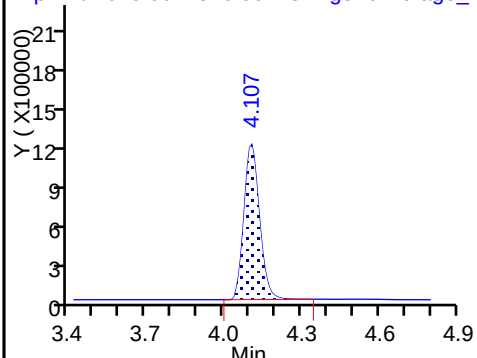
Exp1:m/z 515.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 512.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x

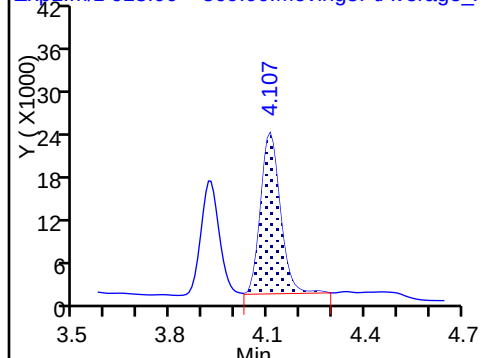


37 Perfluorododecanoic acid

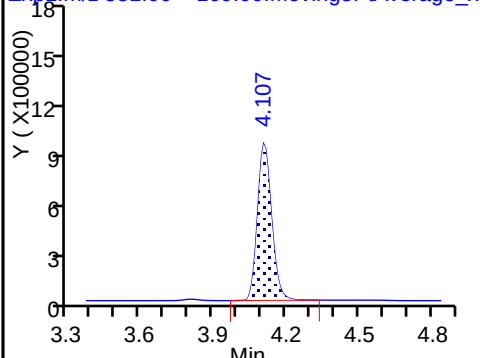
D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

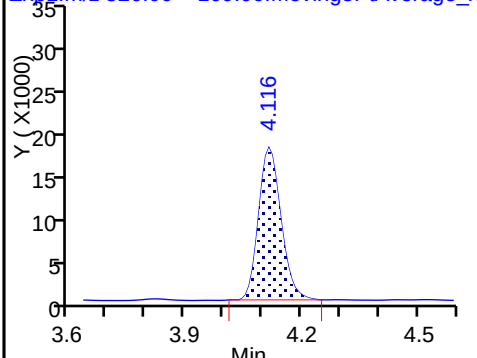
Exp1:m/z 613.00 > 569.00:Moving5PtAverage_x



Exp1:m/z 531.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 526.00 > 169.00:Moving5PtAverage_x

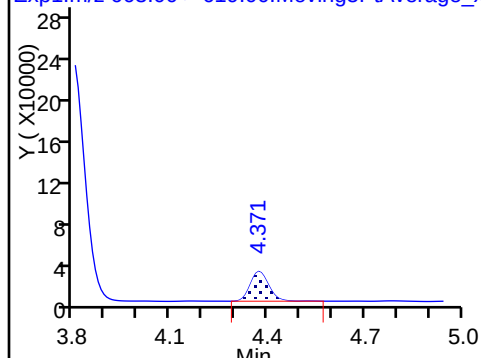


41 Perfluorotridecanoic acid

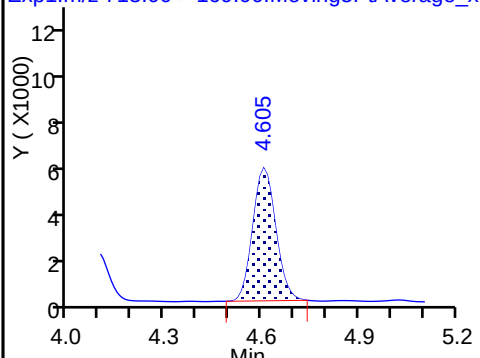
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

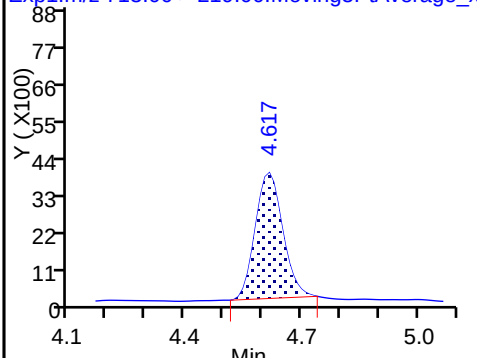
Exp1:m/z 663.00 > 619.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 219.00:Moving5PtAverage_x

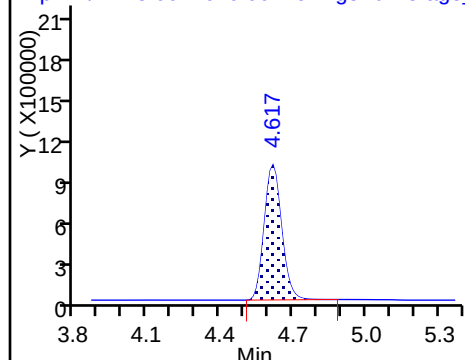


D 43 13C2-PFTeDA

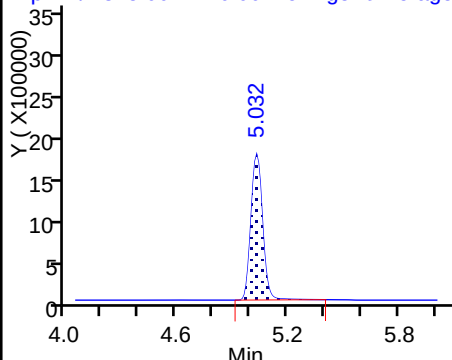
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

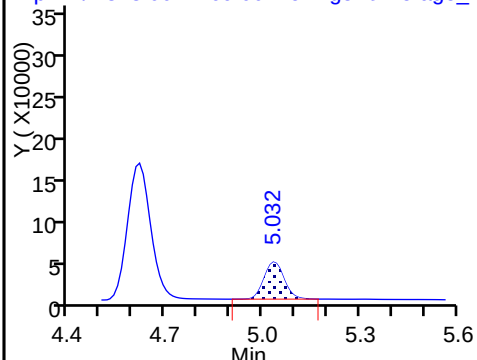
Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

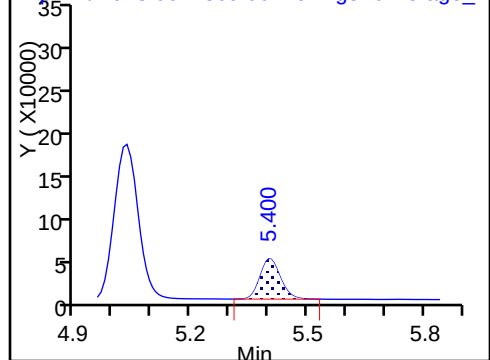


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_005.d
 Lims ID: IC L3 Full
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 14-Sep-2017 14:39:42 ALS Bottle#: 30 Worklist Smp#: 5
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 15-Sep-2017 08:45:50 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK026

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	1.563	1.562	0.001		16797298	53.7		107	21725	
2 Perfluorobutyric acid										
212.90 > 169.00	1.563	1.564	-0.001	1.000	1672888	5.25		105	390	
D 3 13C5-PFPeA										
267.90 > 223.00	1.801	1.798	0.003		11381034	55.5		111	66485	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.801	1.801	0.0	1.000	1308950	5.01		100	913	
D 47 13C3-PFBS										
301.90 > 83.00	1.831	1.825	0.006		253049	50.9		109	6958	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.831	1.831	0.0	1.000	1891370	4.76		108	16526	
298.90 > 99.00	1.831	1.831	0.0	1.000	741483		2.55(0.00-0.00)	108	8962	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	2.040	2.038	0.002	1.000	587579	5.36		115	19733	
D 7 13C2 PFHxA										
315.00 > 270.00	2.074	2.075	-0.001		12148263	55.4		111	22988	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.086	2.077	0.009	1.000	1212903	5.17		103	3485	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.403	2.397	0.006	1.000	1157099	5.26		105	3456	
D 9 13C4-PFHpA										
367.00 > 322.00	2.403	2.397	0.006		11215044	55.3		111	28197	
D 11 18O2 PFHxS										
403.00 > 84.00	2.419	2.412	0.007		13975541	49.1		104	15605	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.419	2.412	0.007	1.000	1494840	4.83		106	5831	
D 12 M2-6:2FTS										
429.00 > 409.00	2.732	2.723	0.009		5401770	49.6		104	15876	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.732	2.724	0.008	1.000	512470	5.00		105	7729	
* 62 13C2-PFOA										
415.00 > 370.00	2.754	2.746	0.008		10553312	50.0			18443	
D 14 13C4 PFOA										
417.00 > 372.00	2.754	2.750	0.004		10535908	54.0		108	24513	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.754	2.751	0.003	1.000	1179145	5.12		102	225	
413.00 > 169.00	2.754	2.751	0.003	1.000	640403		1.84(0.90-1.10)	102	4767	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.761	2.757	0.004	1.000	1363855	5.19		109	15422	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.128	3.121	0.007	1.000	1086604	4.67		101	19493	
499.00 > 99.00	3.128	3.121	0.007	1.000	223441		4.86(0.90-1.10)	101	1574	
D 18 13C4 PFOS										
503.00 > 80.00	3.128	3.121	0.007		10362647	51.7		108	15831	
D 19 13C5 PFNA										
468.00 > 423.00	3.128	3.123	0.005		8460738	56.3		113	11611	
20 Perfluorononanoic acid										
463.00 > 419.00	3.128	3.125	0.003	1.000	825290	5.06		101	1678	
D 21 13C8 FOSA										
506.00 > 78.00	3.439	3.432	0.007		16969962	54.4		109	15234	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.439	3.434	0.005	1.000	1768588	5.49		110	10501	
D 26 M2-8:2FTS										
529.00 > 509.00	3.475	3.466	0.009		3889825	53.3		111	8781	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.475	3.469	0.006	1.000	387309	5.12		107	5956	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.484	3.481	0.003	1.000	683516	4.93		98.6	1722	
D 23 13C2 PFDA										
515.00 > 470.00	3.484	3.481	0.003		7406300	55.2		110	11773	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.645	3.633	0.012		2232468	53.4		107	8294	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.645	3.640	0.005	1.000	204826	4.84		96.7	3886	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.792	3.789	0.003	1.000	693909	5.10		106	6587	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.810	3.799	0.011		2371990	58.0		116	4776	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.810	3.807	0.003	1.000	203503	4.93		98.5	2890	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.810	3.807	0.003	1.000	578998	4.76		95.3	1856	
D 30 13C2 PFUnA										
565.00 > 520.00	3.810	3.807	0.003		5452740	57.0		114	11790	
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.931	3.926	0.005		4242466	52.7		105	566	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA										
512.00 > 169.00	3.931	3.930	0.001	1.000	376389	5.01		100	3330	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.107	4.102	0.005	1.000	468950	4.98		99.6	269	
D 36 13C2 PFDaA										
615.00 > 570.00	4.107	4.102	0.005		4887030	53.6		107	8354	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.116	4.110	0.006		3965795	52.9		106	3599	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.124	4.119	0.005	1.000	372153	5.01		100	2610	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.371	4.366	0.005	1.000	542189	4.88		97.6	60.0	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.606	4.602	0.004	1.000	135211	5.12		102	877	
713.00 > 219.00	4.617	4.602	0.015	1.002	93226		1.45(0.00-0.00)	102	729	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.617	4.608	0.009		5195322	55.4		111	11648	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.033	5.025	0.008		7698439	53.7		107	11367	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.033	5.027	0.006	1.000	739348	5.14		103	60.5	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.400	5.393	0.007	1.000	799896	4.97		99.3	63.2	

Reagents:

LCPFC_FULL-L3_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_005.d

Injection Date: 14-Sep-2017 14:39:42

Instrument ID: A8_N

Lims ID: IC L3 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 30

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

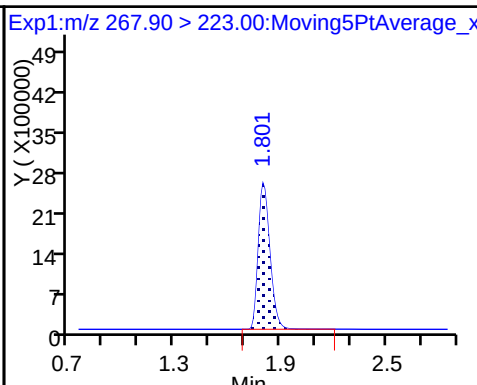
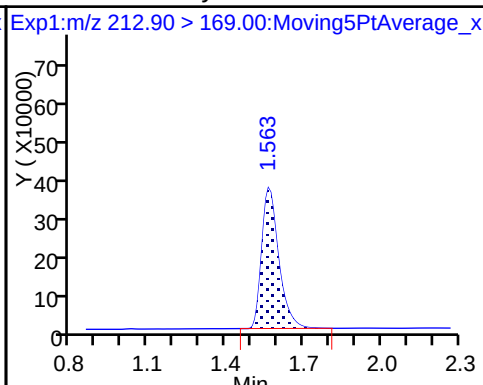
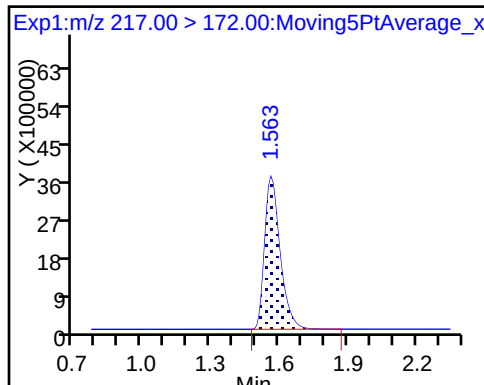
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

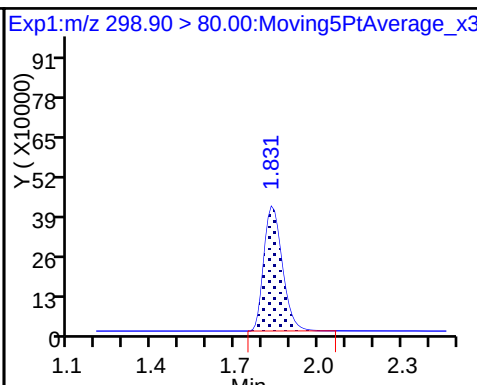
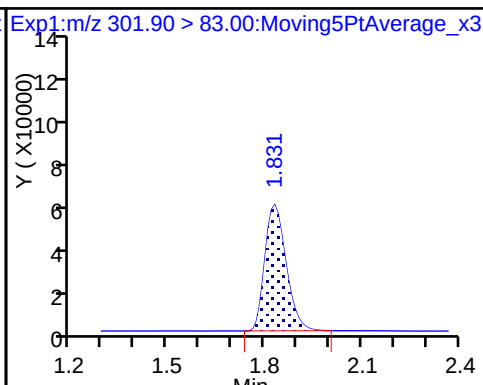
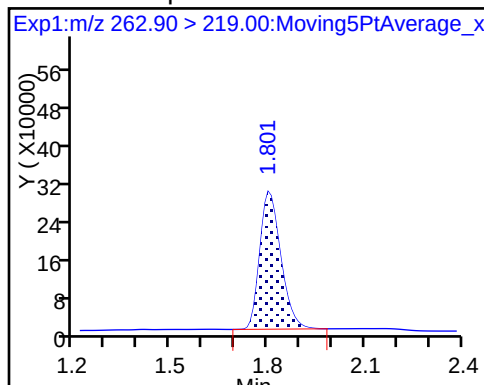
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

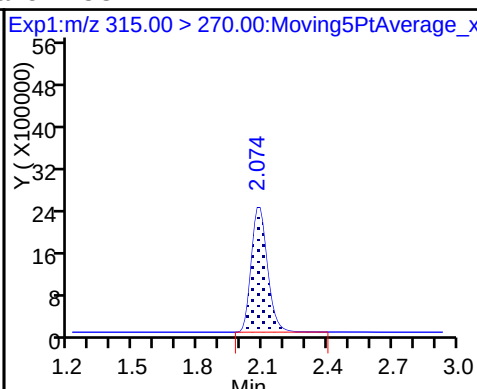
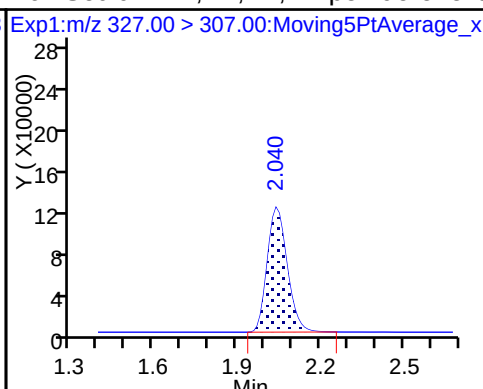
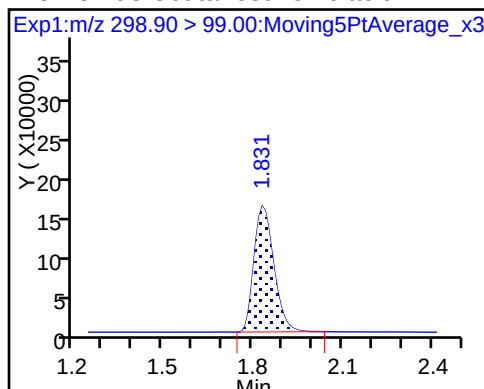
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

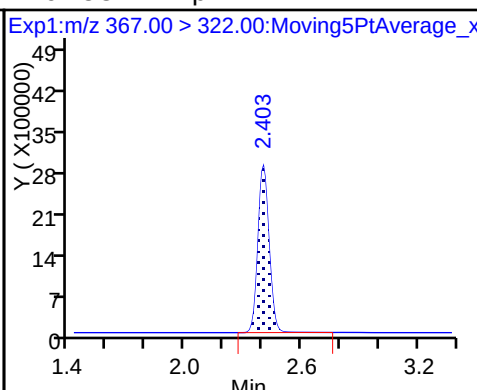
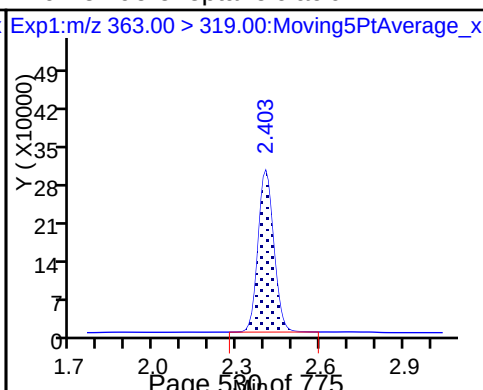
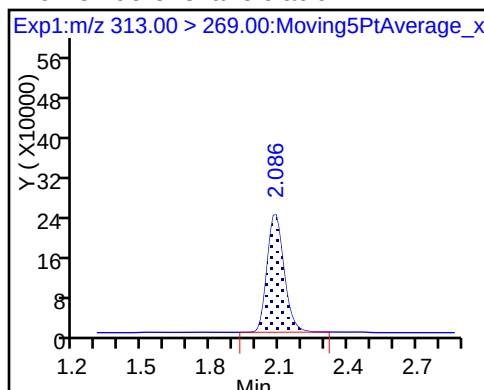
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

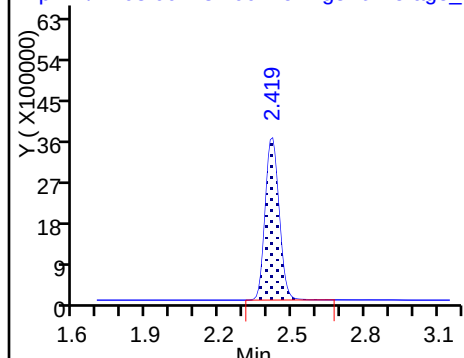


D 11 18O2 PFHxS

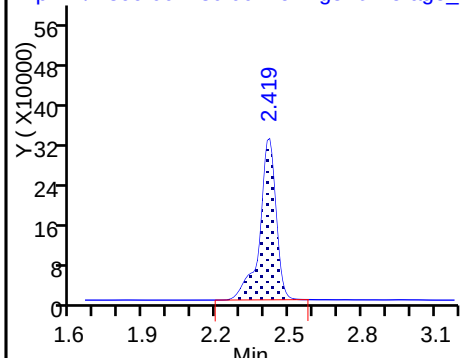
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

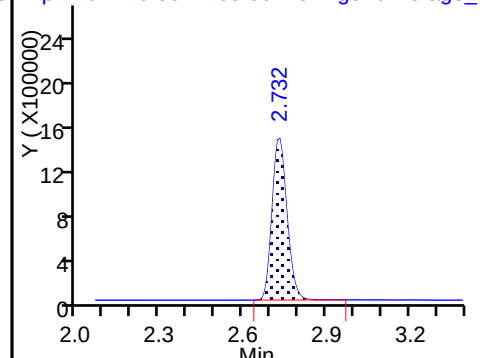
Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



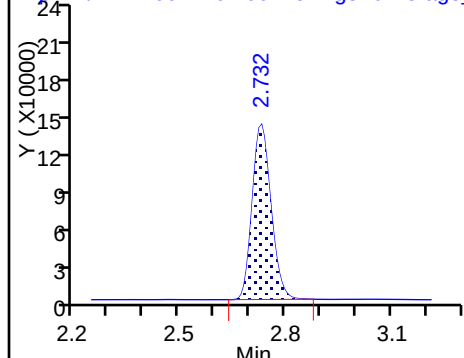
Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x3



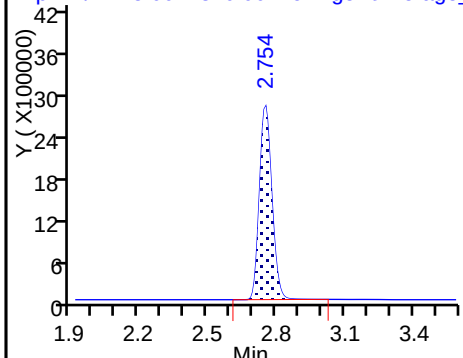
13 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 14 13C4 PFOA

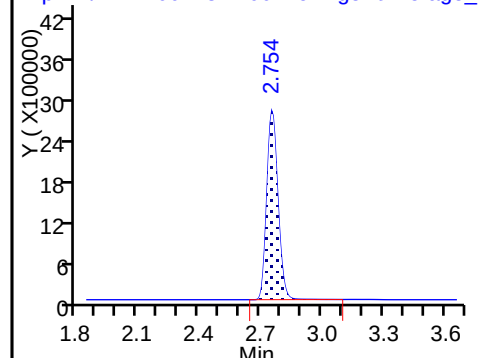
Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3



Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

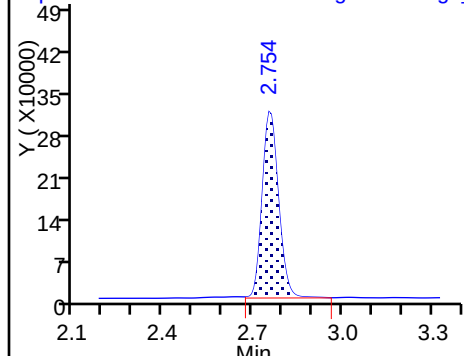


15 Perfluorooctanoic acid

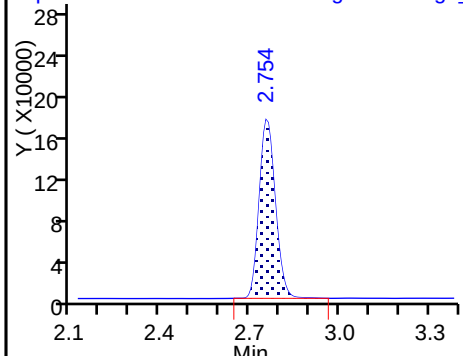
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

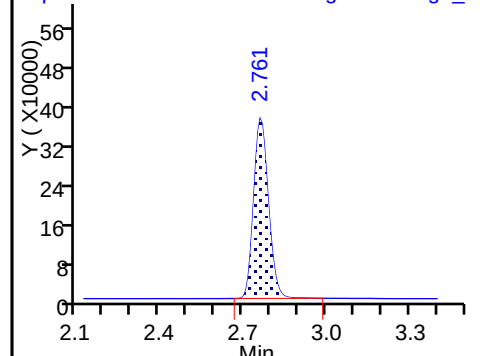
Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x3



Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

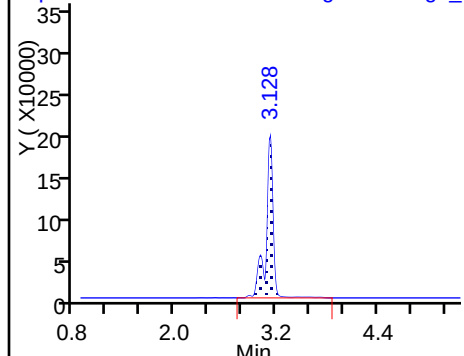


17 Perfluorooctane sulfonic acid

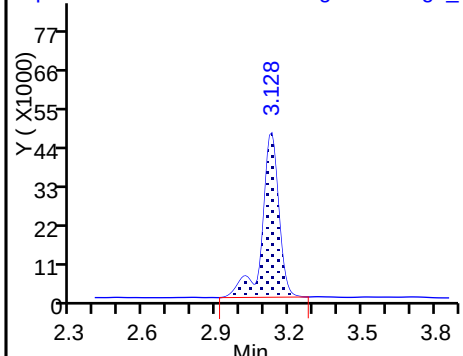
17 Perfluorooctane sulfonic acid

D 18 13C4 PFOS

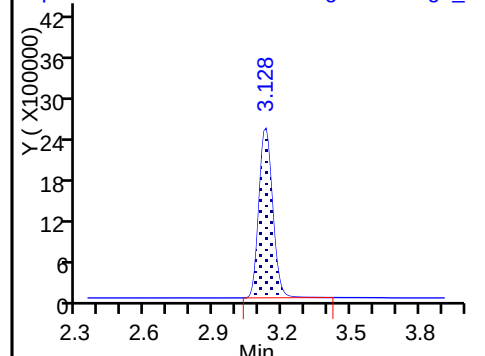
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Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3



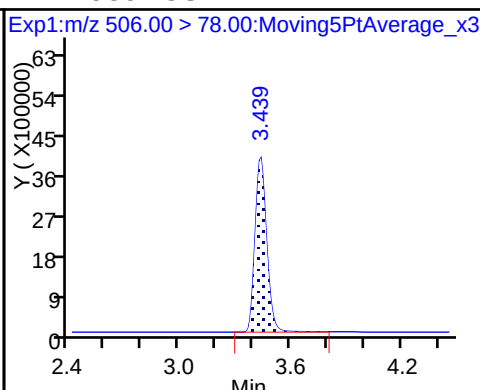
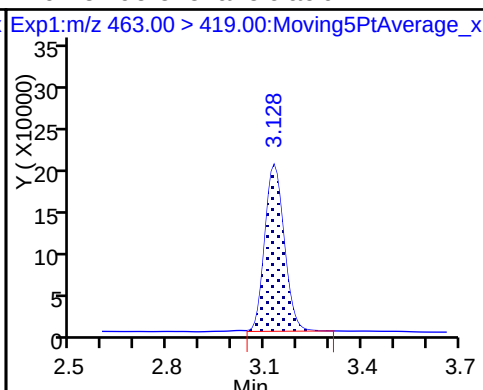
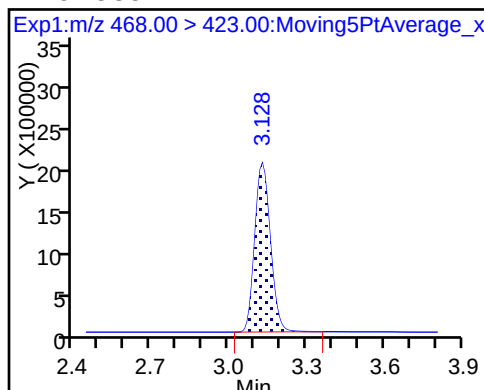
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



D 19 13C5 PFNA

20 Perfluorononanoic acid

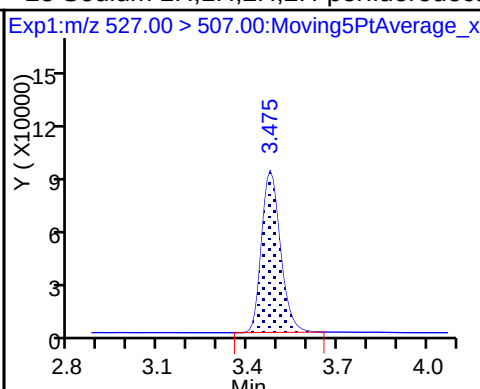
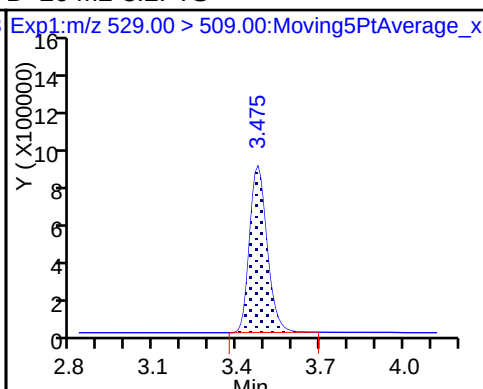
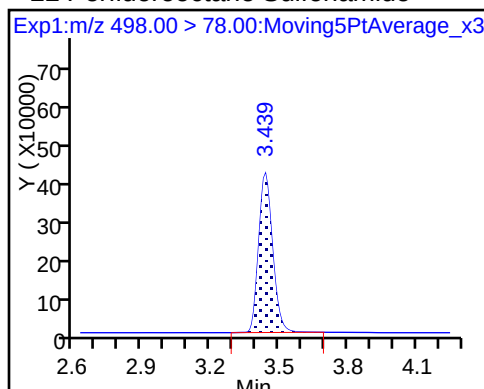
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 26 M2-8:2FTS

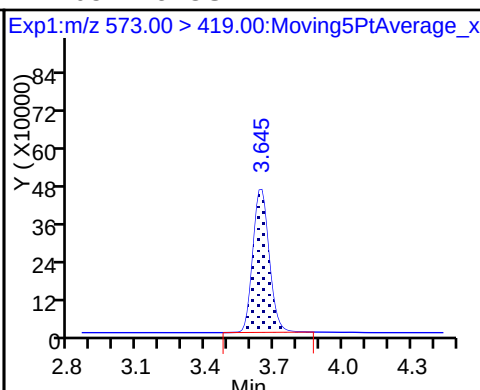
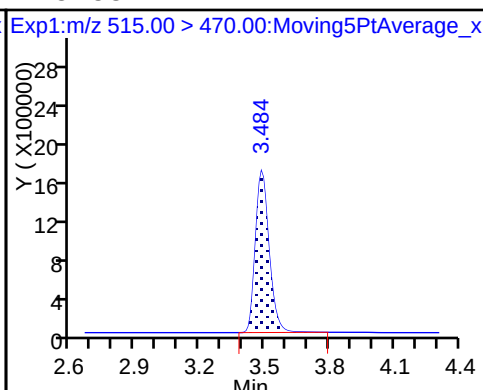
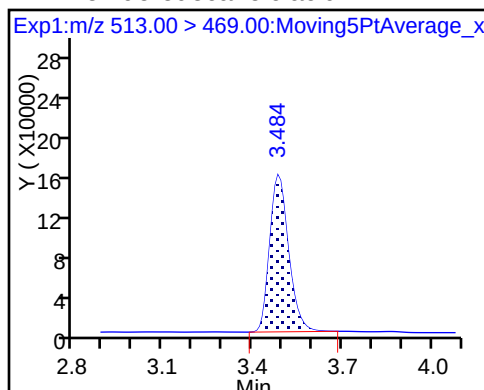
25 Sodium 1H,1H,2H,2H-perfluorodecane



24 Perfluorodecanoic acid

D 23 13C2 PFDA

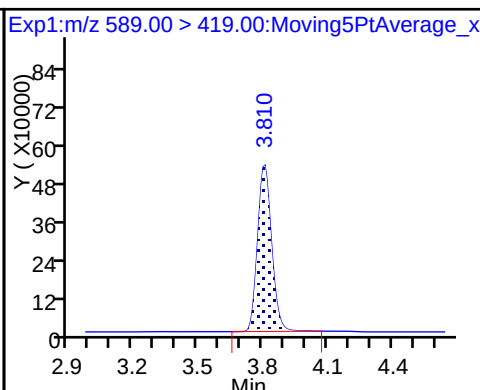
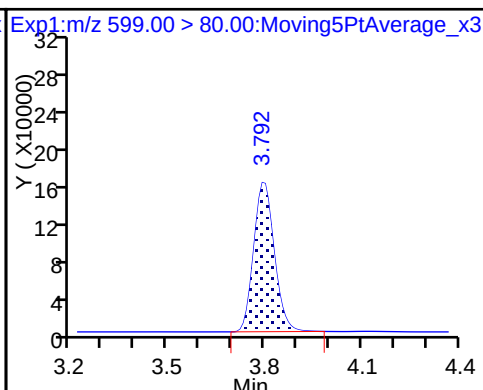
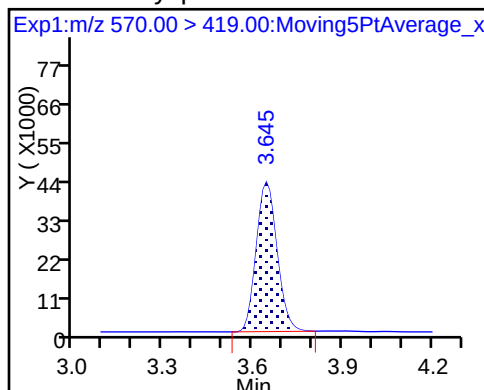
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

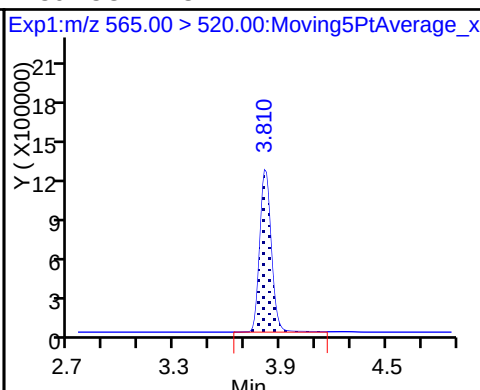
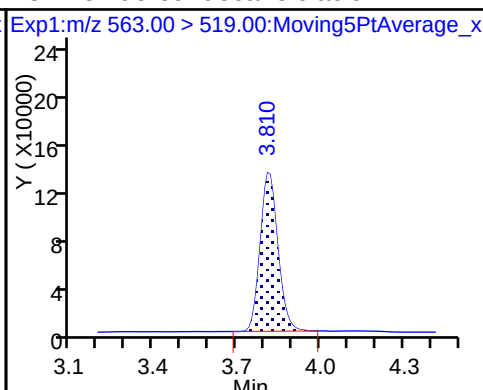
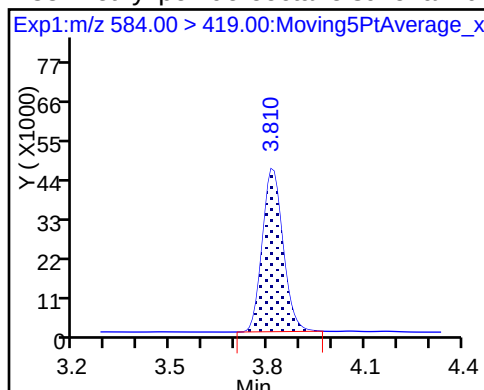
D 32 d5-NEtFOSAA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

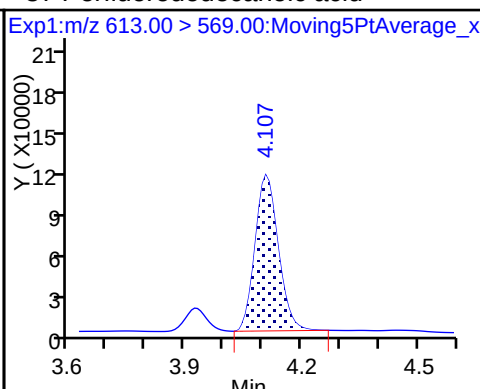
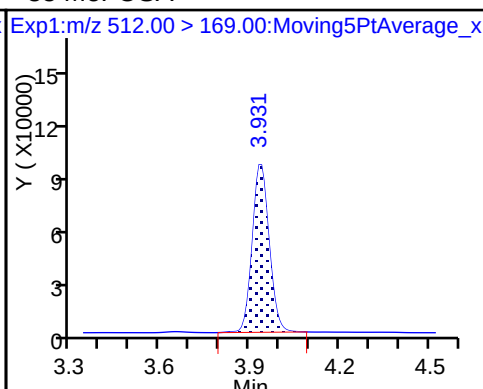
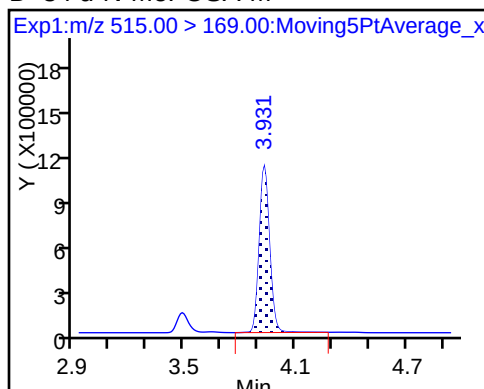
D 30 13C2 PFUnA



D 34 d-N-MeFOSA-M

35 MeFOSA

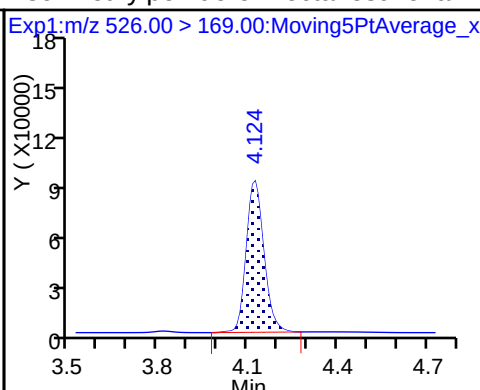
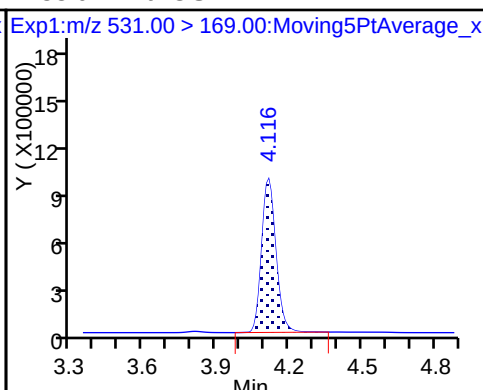
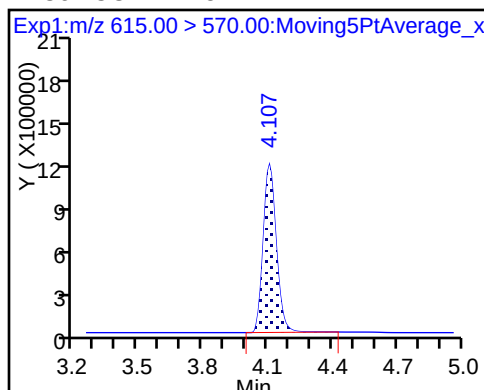
37 Perfluorododecanoic acid



D 36 13C2 PFDaA

D 38 d-N-EtFOSA-M

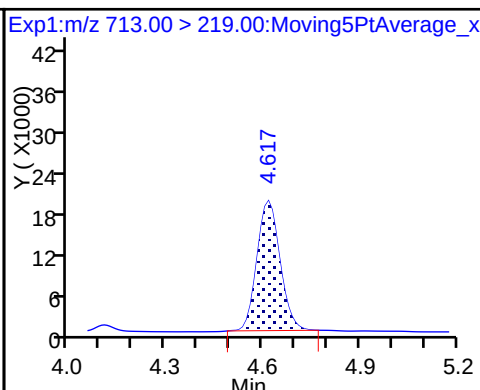
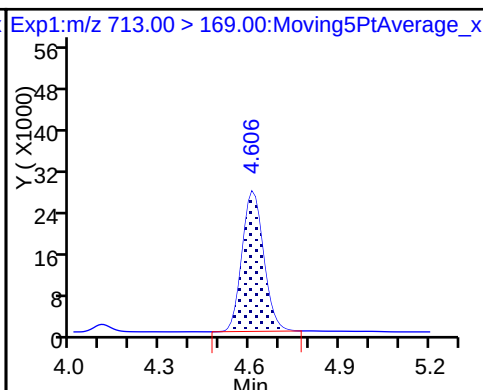
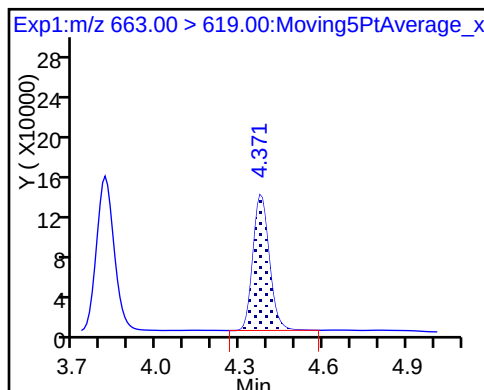
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid



D 43 13C2-PFTeDA

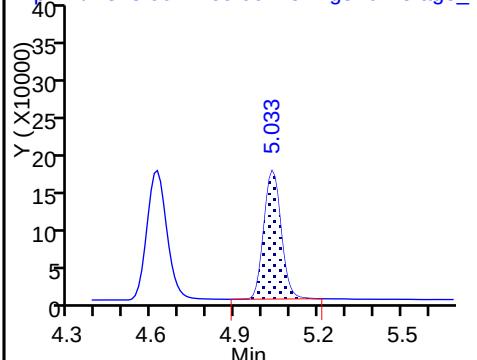
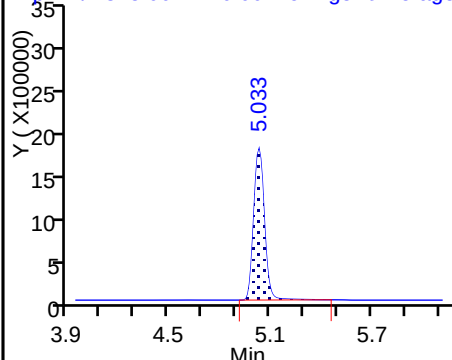
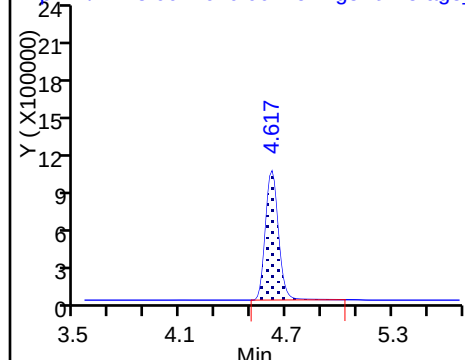
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x

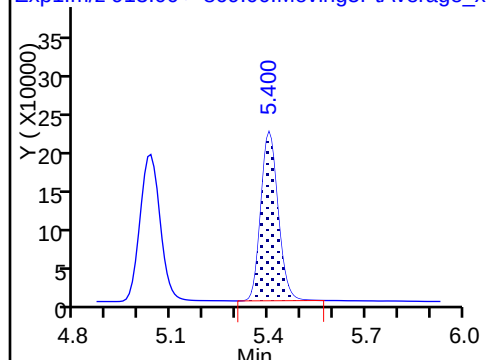
Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_006.d
 Lims ID: IC L4 Full
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 14-Sep-2017 14:46:36 ALS Bottle#: 31 Worklist Smp#: 6
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 15-Sep-2017 08:46:00 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK026

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	1.556	1.562	-0.006		15461675	49.4		98.8	21585	
2 Perfluorobutyric acid										
212.90 > 169.00	1.565	1.564	0.001	1.000	5983565	20.4		102	970	
D 3 13C5-PFPeA										
267.90 > 223.00	1.793	1.798	-0.005		10196816	49.7		99.5	37890	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.802	1.801	0.001	1.000	4586813	19.6		97.9	2514	
D 47 13C3-PFBS										
301.90 > 83.00	1.823	1.825	-0.002		226285	45.5		97.9	7034	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.834	1.831	0.003	1.000	6682377	18.8		106	39814	
298.90 > 99.00	1.834	1.831	0.003	1.000	2734722		2.44(0.00-0.00)	106	20936	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	2.032	2.038	-0.006	1.000	1911666	17.3		92.7	34301	
D 7 13C2 PFHxA										
315.00 > 270.00	2.078	2.075	0.003		10776938	49.1		98.2	25545	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.078	2.077	0.001	1.000	4305467	20.7		103	7804	
D 9 13C4-PFHpA										
367.00 > 322.00	2.397	2.397	-0.001		10461895	51.6		103	16627	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.397	2.397	-0.001	1.000	4280576	20.9		104	6413	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.413	2.412	0.001	1.000	5488637	18.6		102	7688	
D 11 18O2 PFHxS										
403.00 > 84.00	2.413	2.412	0.001		13329380	46.9		99.1	16119	
D 12 M2-6:2FTS										
429.00 > 409.00	2.725	2.723	0.002		5433939	49.9		105	18756	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.725	2.724	0.001	1.000	1868310	18.1		95.5	17971	
* 62 13C2-PFOA										
415.00 > 370.00	2.747	2.746	0.001		10353198	50.0			33915	
D 14 13C4 PFOA										
417.00 > 372.00	2.747	2.750	-0.003		10370157	53.2		106	16253	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.754	2.751	0.003	1.000	4513270	19.9		99.6	754	
413.00 > 169.00	2.754	2.751	0.003	1.000	2395788		1.88(0.90-1.10)	99.6	6489	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.754	2.757	-0.003	1.000	4850705	20.2		106	16369	
D 18 13C4 PFOS										
503.00 > 80.00	3.121	3.121	0.0		9496021	47.4		99.1	21504	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.121	3.121	0.0	1.000	3822535	17.9		96.6	7256	
499.00 > 99.00	3.121	3.121	0.0	1.000	816679		4.68(0.90-1.10)	96.6	4020	
D 19 13C5 PFNA										
468.00 > 423.00	3.121	3.123	-0.002		7744019	51.5		103	15796	
20 Perfluorononanoic acid										
463.00 > 419.00	3.121	3.125	-0.004	1.000	2932479	19.7		98.3	4436	
D 21 13C8 FOSA										
506.00 > 78.00	3.433	3.432	0.001		15437486	49.5		99.0	22041	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.433	3.434	-0.001	1.000	6324248	21.6		108	17984	
D 26 M2-8:2FTS										
529.00 > 509.00	3.462	3.466	-0.004		3379723	46.3		96.8	10454	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.462	3.469	-0.007	1.000	1260808	19.2		100	10383	
D 23 13C2 PFDA										
515.00 > 470.00	3.481	3.481	0.0		6512802	48.5		97.0	10299	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.481	3.481	0.0	1.000	2446223	20.1		100	6502	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.628	3.633	-0.005		2125656	50.8		102	7771	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.639	3.640	-0.001	1.003	787897	19.5		97.7	6210	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.786	3.789	-0.003	1.000	2430799	19.5		101	5478	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.796	3.799	-0.003		2005851	49.0		98.0	3490	
D 30 13C2 PFUnA										
565.00 > 520.00	3.805	3.807	-0.002		4956513	51.8		104	10737	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.805	3.807	-0.002	1.000	2058951	18.6		93.2	3672	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.805	3.807	-0.002	1.002	701123	20.1		100	5549	
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.923	3.926	-0.003		3920191	48.7		97.4	553	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA										
512.00 > 169.00	3.931	3.930	0.001	1.000	1395663	20.1		100	4034	
D 36 13C2 PFDaA										
615.00 > 570.00	4.099	4.102	-0.003		4534918	49.7		99.5	6696	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.099	4.102	-0.003	1.000	1721617	19.7		98.5	954	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.108	4.110	-0.002		3690675	49.2		98.5	2917	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.116	4.119	-0.003	1.000	1376368	19.9		99.6	3199	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.366	4.366	0.0	1.000	2104135	20.4		102	258	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.597	4.602	-0.005	1.000	429175	17.7		88.7	1939	
713.00 > 219.00	4.608	4.602	0.006	1.002	336165		1.28(0.00-0.00)	88.7	1545	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.608	4.608	0.0		4762553	50.8		102	6506	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.025	5.025	0.0		7450762	52.0		104	8612	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.025	5.027	-0.002	1.000	2565875	19.6		97.8	185	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.394	5.393	0.001	1.000	3007660	19.3		96.5	209	

Reagents:

LCPFC_FULL-L4_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_006.d

Injection Date: 14-Sep-2017 14:46:36

Instrument ID: A8_N

Lims ID: IC L4 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

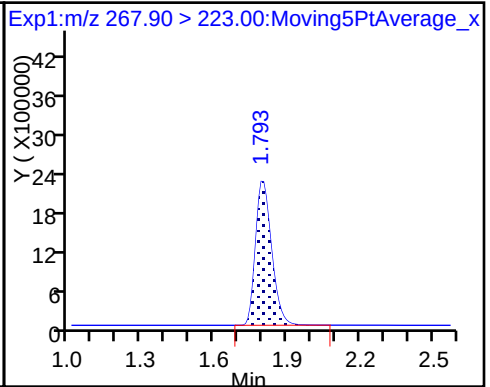
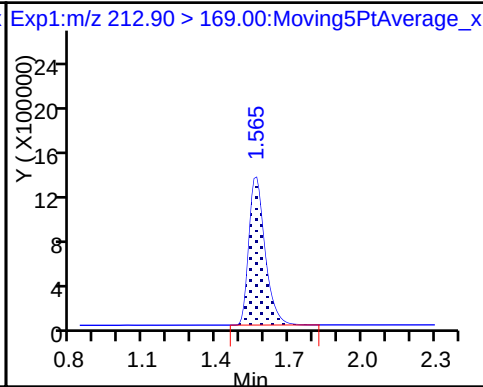
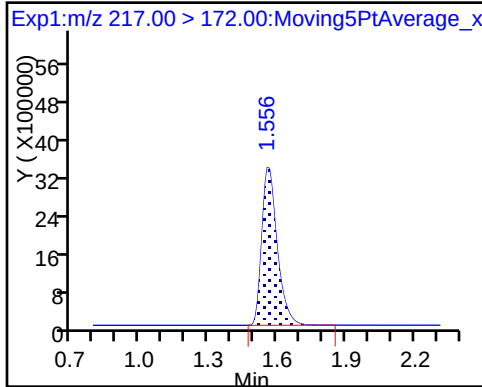
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

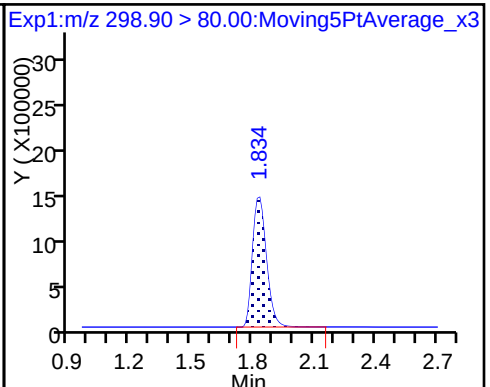
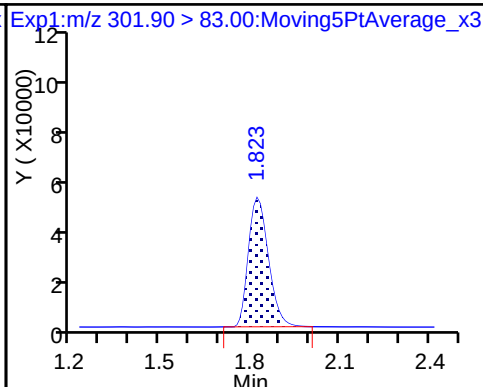
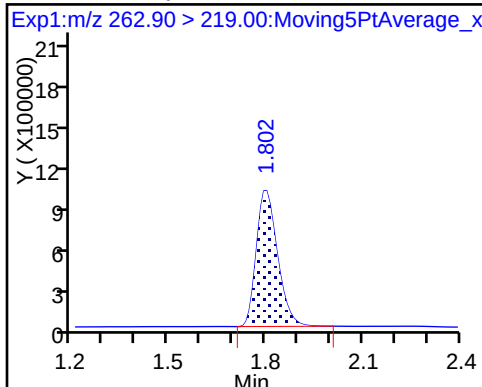
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

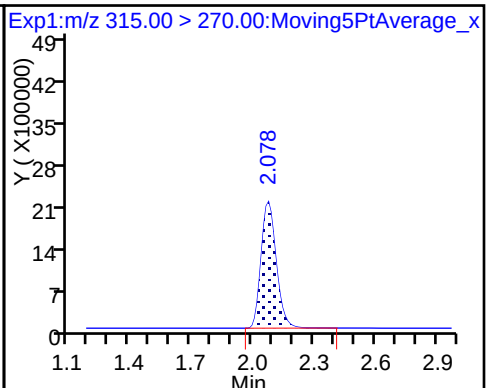
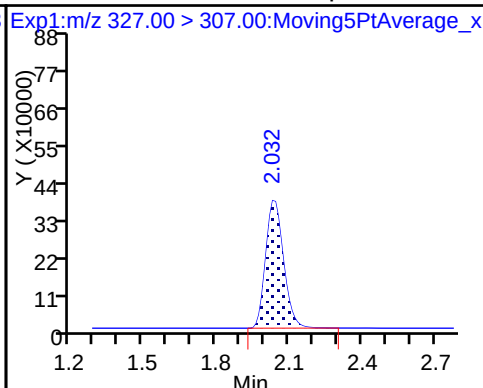
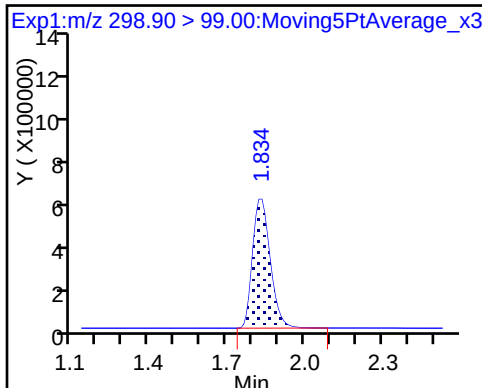
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

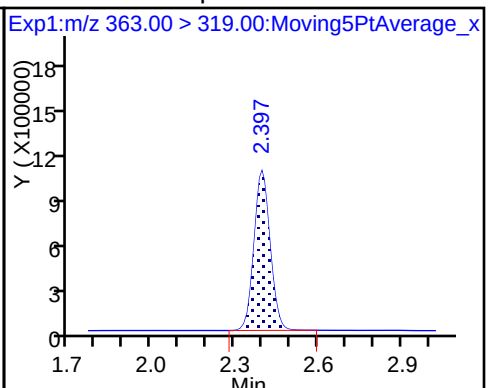
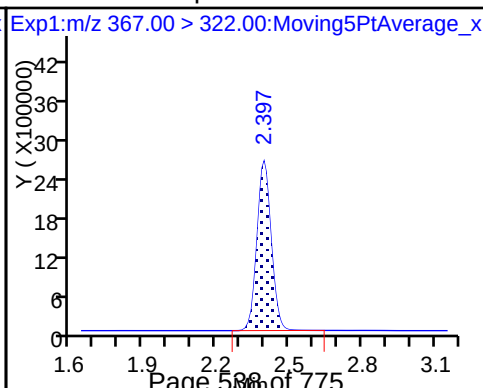
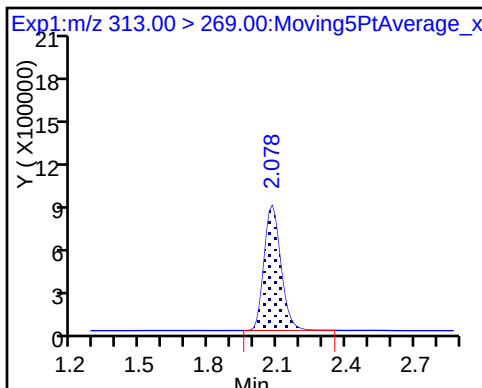
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

D 9 13C4-PFHpA

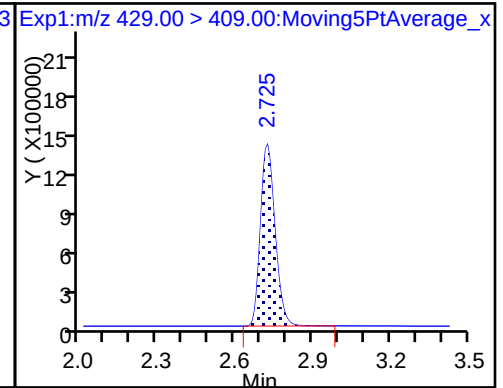
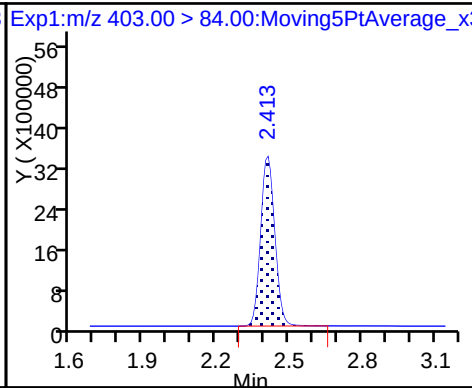
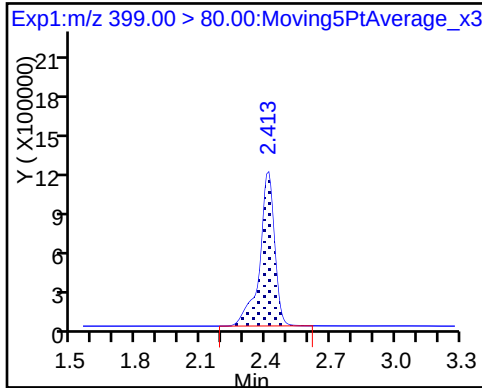
10 Perfluoroheptanoic acid



8 Perfluorohexanesulfonic acid

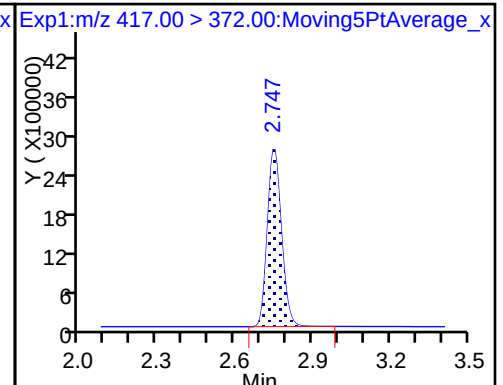
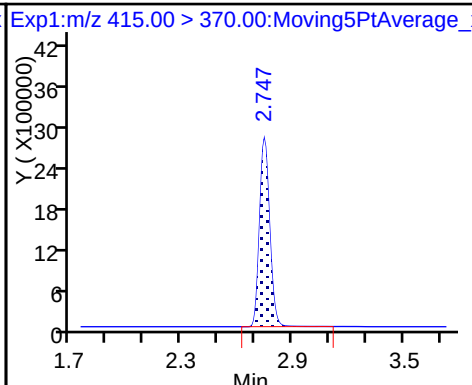
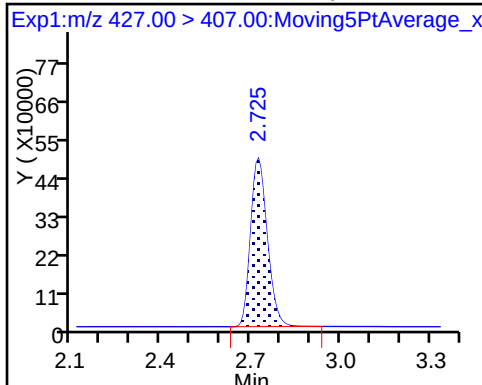
D 11 18O2 PFHxS

D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctanoate

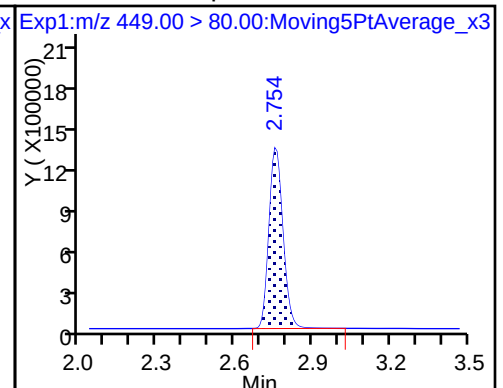
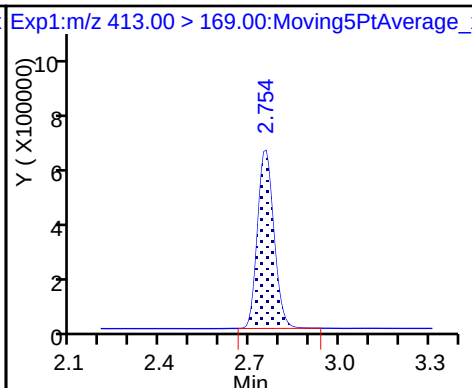
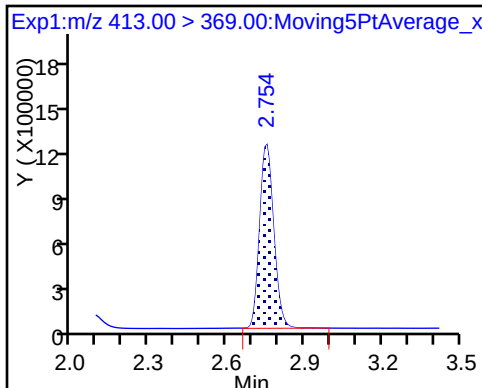
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

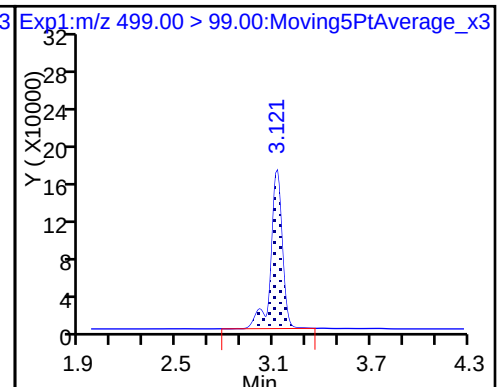
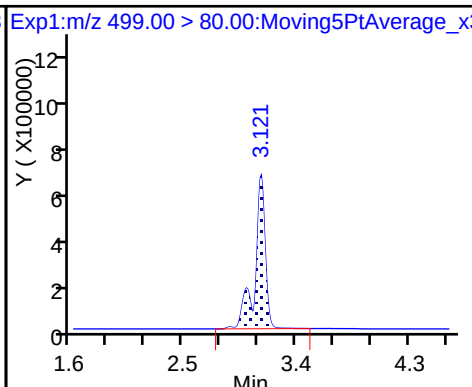
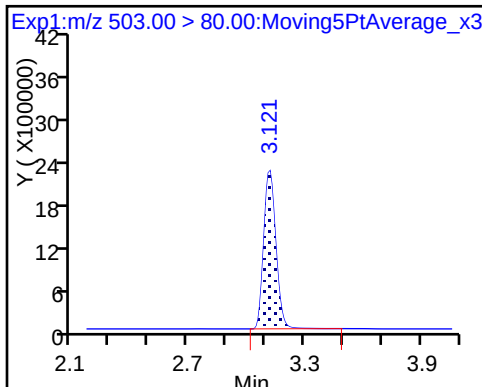
16 Perfluoroheptanesulfonic Acid



D 18 13C4 PFOS

17 Perfluorooctane sulfonic acid

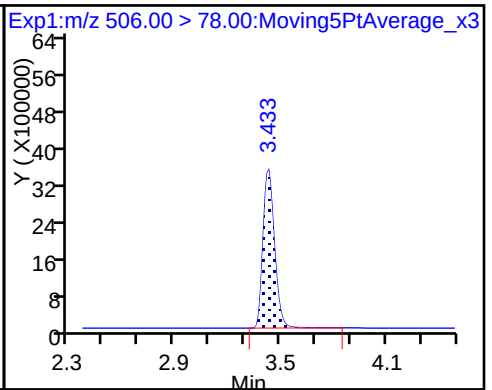
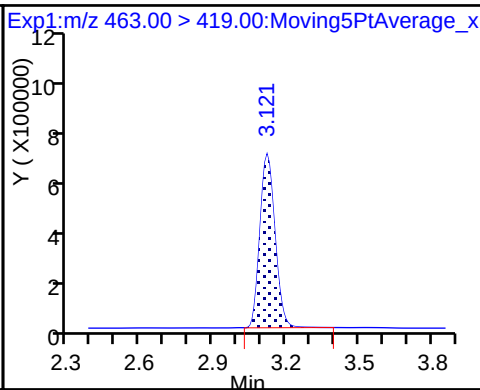
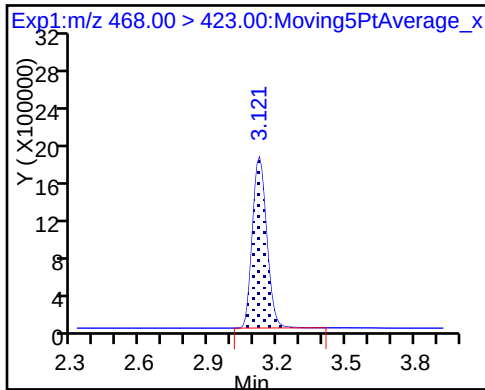
17 Perfluorooctane sulfonic acid



D 19 13C5 PFNA

20 Perfluorononanoic acid

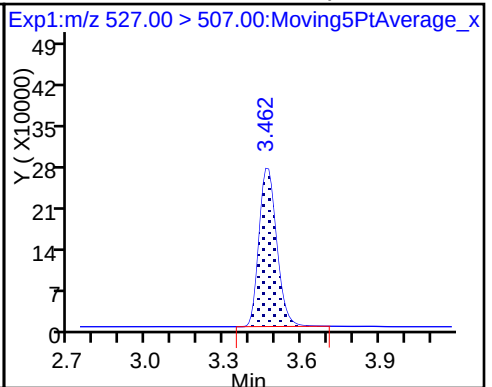
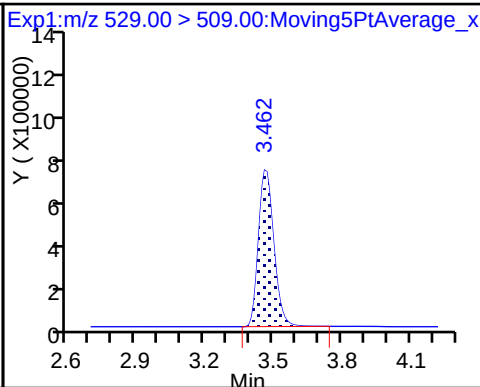
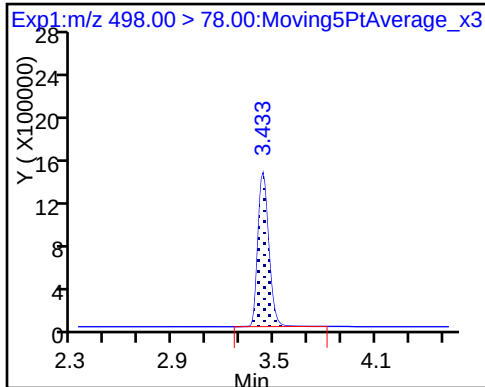
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 26 M2-8:2FTS

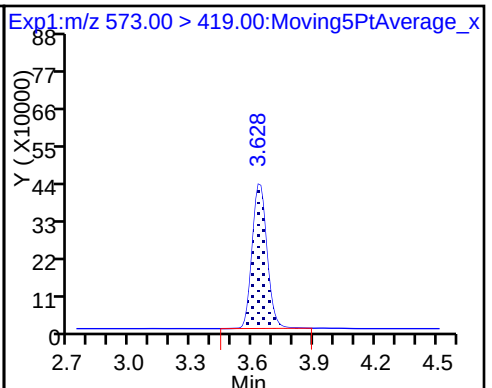
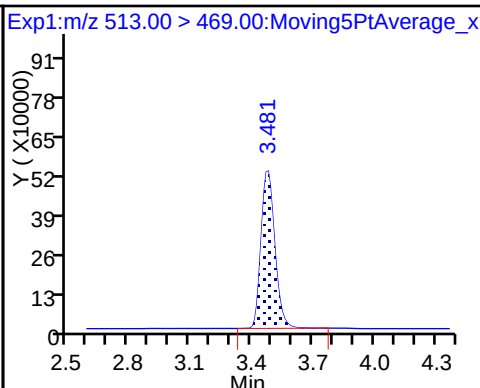
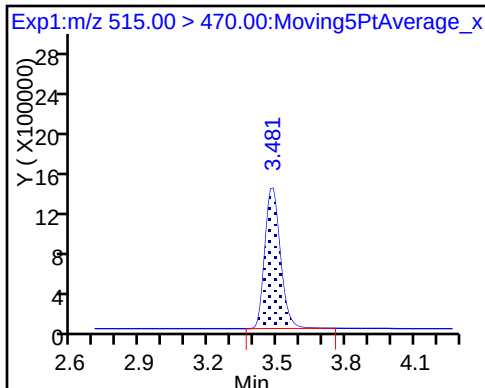
25 Sodium 1H,1H,2H,2H-perfluorodecane



D 23 13C2 PFDA

24 Perfluorodecanoic acid

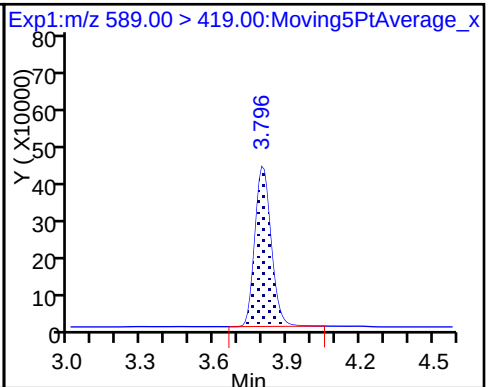
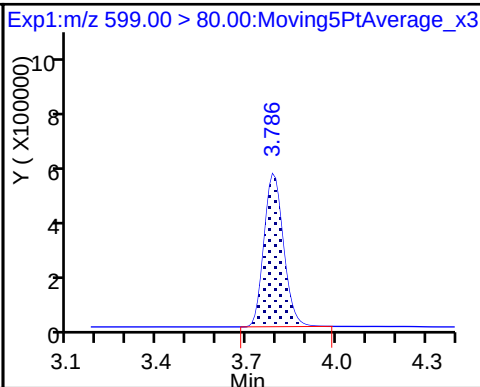
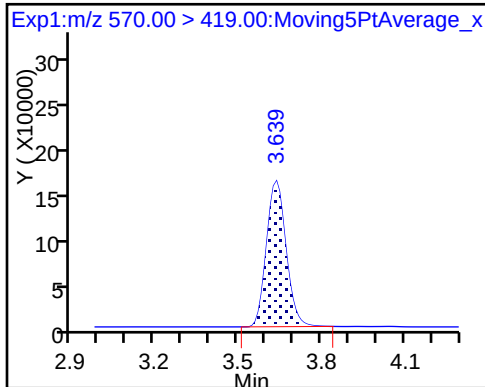
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

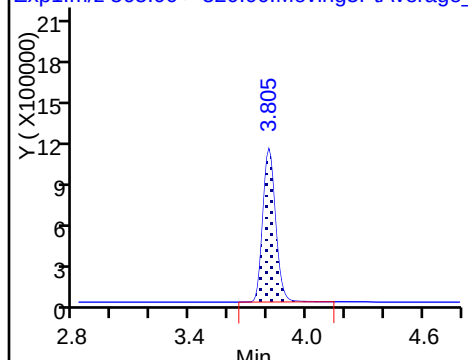


D 30 13C2 PFUnA

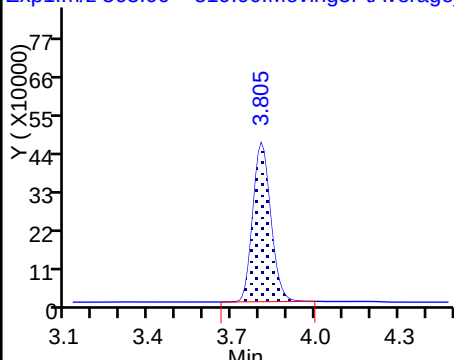
31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid

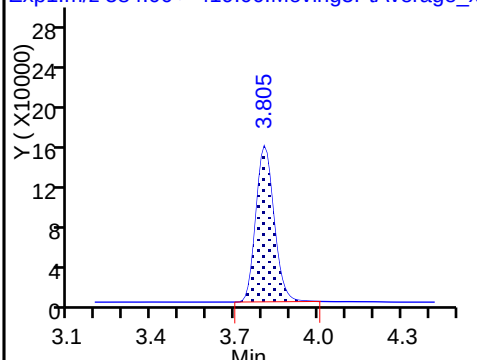
Exp1:m/z 565.00 > 520.00:Moving5PtAverage_x



Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x



Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x

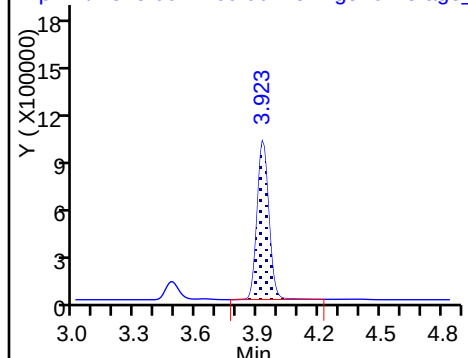


D 34 d-N-MeFOSA-M

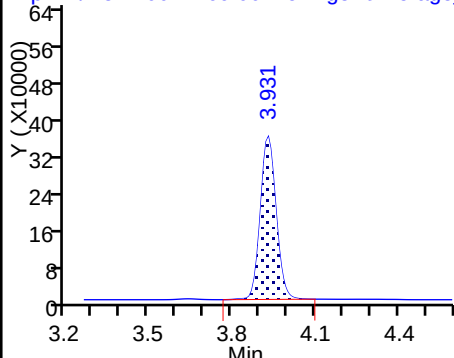
35 MeFOSA

D 36 13C2 PFDaA

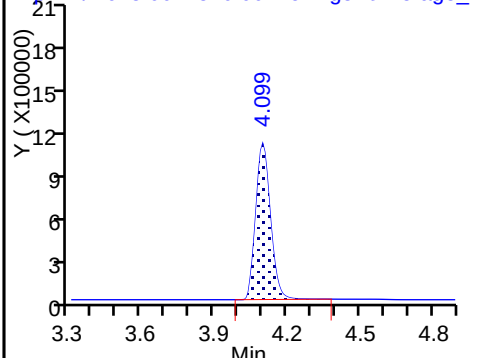
Exp1:m/z 515.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 512.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x

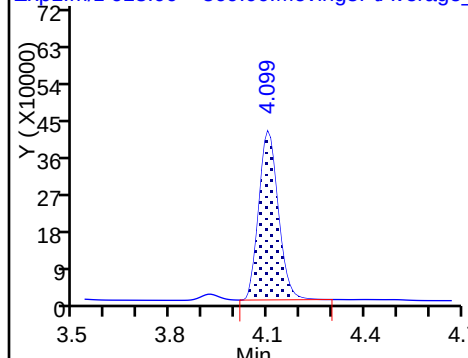


37 Perfluorododecanoic acid

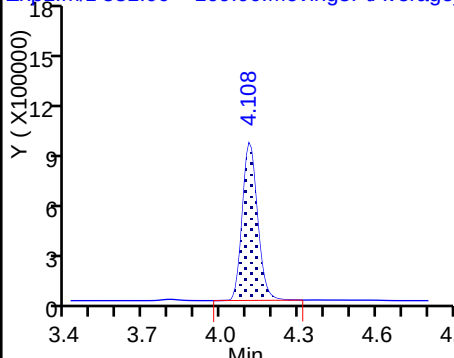
D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

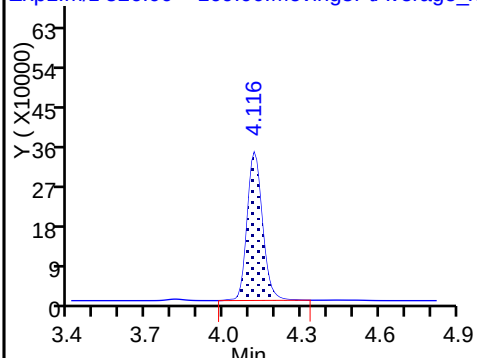
Exp1:m/z 613.00 > 569.00:Moving5PtAverage_x



Exp1:m/z 531.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 526.00 > 169.00:Moving5PtAverage_x

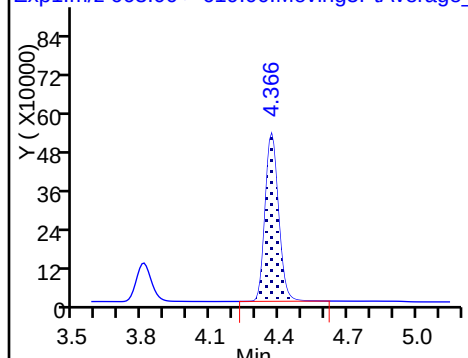


41 Perfluorotridecanoic acid

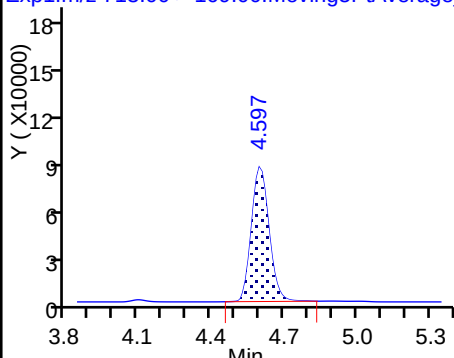
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

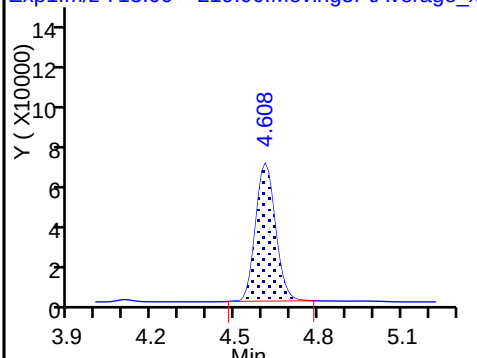
Exp1:m/z 663.00 > 619.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 219.00:Moving5PtAverage_x

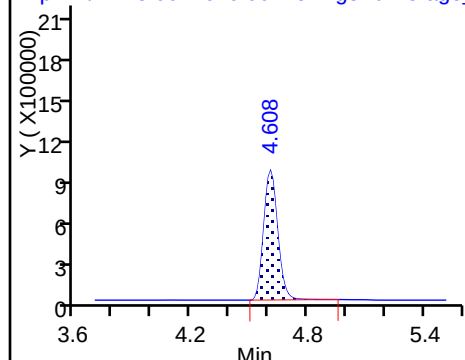


D 43 13C2-PFTeDA

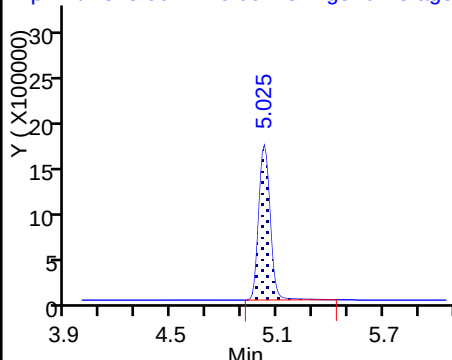
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

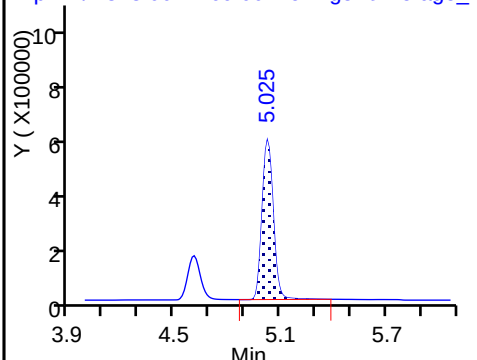
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Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

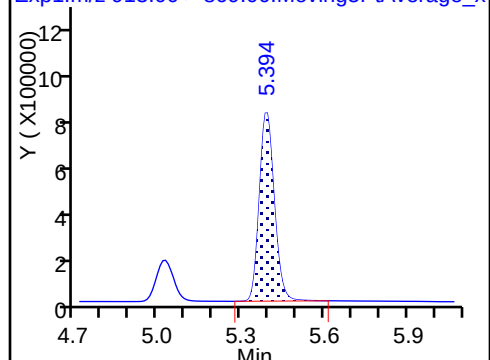


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_007.d
 Lims ID: IC L5 Full
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 14-Sep-2017 14:53:30 ALS Bottle#: 32 Worklist Smp#: 7
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 15-Sep-2017 08:46:06 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK026

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	1.563	1.562	0.001		15584162	49.8		99.6	21086	
2 2 Perfluorobutyric acid										
212.90 > 169.00	1.563	1.564	-0.001	1.000	13922377	47.1		94.2	1728	
D 3 13C5-PFPeA										
267.90 > 223.00	1.801	1.798	0.003		10176160	49.6		99.3	44994	
4 4 Perfluoropentanoic acid										
262.90 > 219.00	1.801	1.801	0.0	1.000	10925606	46.8		93.5	6401	
D 47 13C3-PFBS										
301.90 > 83.00	1.820	1.825	-0.005		230919	46.5		99.9	5688	
5 5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.831	1.831	0.0	1.000	14580814	40.2		91.0	37604	
298.90 > 99.00	1.831	1.831	0.0	1.000	6921846		2.11(0.00-0.00)	91.0	55409	
61 61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	2.040	2.038	0.002	1.000	4635265	45.4		97.2	20143	
D 7 13C2 PFHxA										
315.00 > 270.00	2.075	2.075	0.0		10666100	48.6		97.2	20859	
6 6 Perfluorohexanoic acid										
313.00 > 269.00	2.075	2.077	-0.002	1.000	10539124	51.1		102	14412	
10 10 Perfluoroheptanoic acid										
363.00 > 319.00	2.395	2.397	-0.002	1.000	10019048	51.1		102	10373	
D 9 13C4-PFHpA										
367.00 > 322.00	2.395	2.397	-0.002		9994966	49.3		98.6	15514	
D 11 18O2 PFHxS										
403.00 > 84.00	2.411	2.412	-0.001		13684989	48.1		102	23549	
8 8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.411	2.412	-0.001	1.000	13733046	45.3		99.6	9323	
D 12 M2-6:2FTS										
429.00 > 409.00	2.718	2.723	-0.005		5027857	46.1		97.1	18608	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane	427.00 > 407.00	2.725	2.724	0.001	1.000	4322401	45.3	95.5	14139	
* 62 13C2-PFOA	415.00 > 370.00	2.746	2.746	0.0		9626189	50.0		33589	
D 14 13C4 PFOA	417.00 > 372.00	2.746	2.750	-0.004		9737448	49.9	99.8	14946	
15 Perfluorooctanoic acid	413.00 > 369.00	2.746	2.751	-0.005	1.000	10422185	49.0	98.0	1748	
	413.00 > 169.00	2.746	2.751	-0.005	1.000	5778985	1.80(0.90-1.10)	98.0	9017	
16 Perfluoroheptanesulfonic Acid	449.00 > 80.00	2.754	2.757	-0.003	1.000	11844370	49.0	103	29285	
17 Perfluorooctane sulfonic acid	499.00 > 80.00	3.121	3.121	0.0	1.000	10003377	46.8	101	245174	
	499.00 > 99.00	3.121	3.121	0.0	1.000	2088691	4.79(0.90-1.10)	101	7058	
D 18 13C4 PFOS	503.00 > 80.00	3.121	3.121	0.0		9528564	47.5	99.4	13290	
D 19 13C5 PFNA	468.00 > 423.00	3.121	3.123	-0.002		7347217	48.9	97.8	18073	
20 Perfluorononanoic acid	463.00 > 419.00	3.121	3.125	-0.004	1.000	7338658	51.8	104	11218	
D 21 13C8 FOSA	506.00 > 78.00	3.428	3.432	-0.004		15343707	49.2	98.4	16431	
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.428	3.434	-0.006	1.000	14794803	50.7	101	20514	
D 26 M2-8:2FTS	529.00 > 509.00	3.466	3.466	0.0		3404986	46.7	97.5	10651	
25 Sodium 1H,1H,2H,2H-perfluorodecane	527.00 > 507.00	3.466	3.469	-0.003	1.000	3086209	46.6	97.3	8404	
24 Perfluorodecanoic acid	513.00 > 469.00	3.476	3.481	-0.005	1.000	6277104	49.0	98.0	8205	
D 23 13C2 PFDA	515.00 > 470.00	3.476	3.481	-0.005		6842722	51.0	102	13909	
D 27 d3-NMeFOSAA	573.00 > 419.00	3.635	3.633	0.002		2138611	51.1	102	6418	
28 N-methyl perfluorooctane sulfonami	570.00 > 419.00	3.635	3.640	-0.005	1.000	1859267	45.8	91.7	6660	
29 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.783	3.789	-0.006	1.000	6302803	50.4	105	9923	
D 32 d5-NEtFOSAA	589.00 > 419.00	3.793	3.799	-0.006		1972657	48.2	96.4	3912	
33 N-ethyl perfluorooctane sulfonamid	584.00 > 419.00	3.802	3.807	-0.005	1.002	1695413	49.4	98.7	5412	
31 Perfluoroundecanoic acid	563.00 > 519.00	3.802	3.807	-0.005	1.000	4903035	47.5	95.1	5109	
D 30 13C2 PFUnA	565.00 > 520.00	3.802	3.807	-0.005		4625981	48.4	96.8	5877	
D 34 d-N-MeFOSA-M	515.00 > 169.00	3.922	3.926	-0.004		4026000	50.0	100	536	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA										
512.00 > 169.00	3.931	3.930	0.001	1.000	3462298	48.5		97.0	4683	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.097	4.102	-0.005	1.000	4352392	48.7		97.3	1942	
D 36 13C2 PFDaA										
615.00 > 570.00	4.097	4.102	-0.005		4640562	50.9		102	6033	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.106	4.110	-0.004		3788463	50.5		101	2724	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.114	4.119	-0.005	1.000	3543033	50.0		99.9	3313	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.361	4.366	-0.005	1.000	5222524	49.5		99.0	566	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.599	4.602	-0.003	1.000	1121083	46.1		92.2	2822	
713.00 > 219.00	4.599	4.602	-0.003	1.000	832118		1.35(0.00-0.00)	92.2	2318	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.599	4.608	-0.009		4785993	51.0		102	17372	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.014	5.025	-0.011		7125921	49.7		99.4	9462	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.024	5.027	-0.003	1.000	6402738	51.7		103	431	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.387	5.393	-0.006	1.000	7505658	50.4		101	506	

Reagents:

LCPFC_FULL-L5_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14ICALX_007.d

Injection Date: 14-Sep-2017 14:53:30

Instrument ID: A8_N

Lims ID: IC L5 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

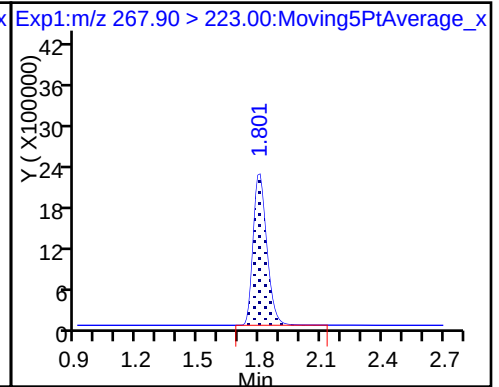
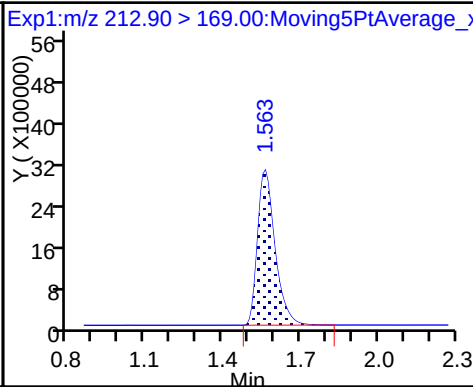
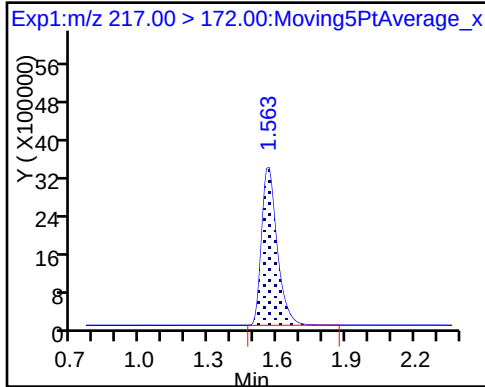
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

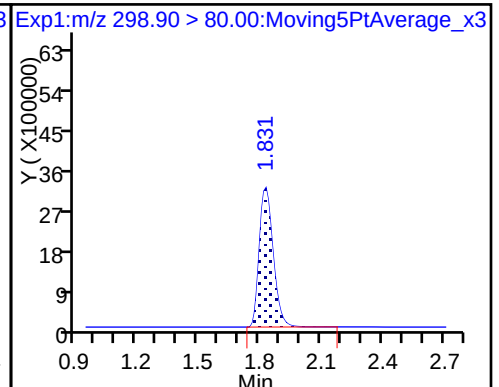
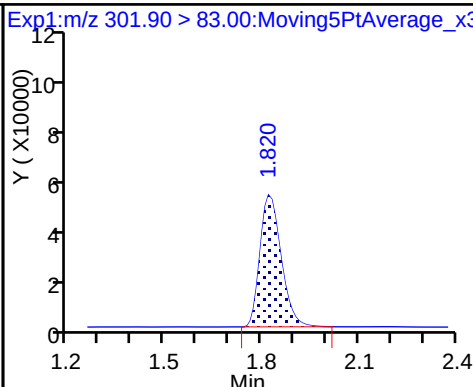
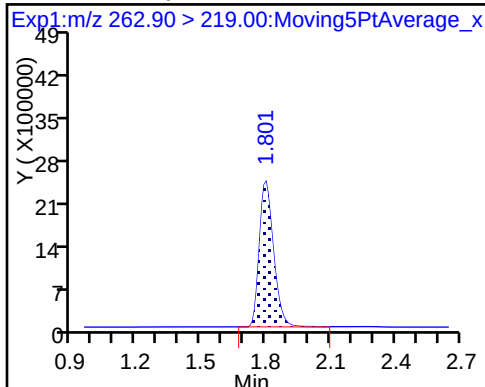
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

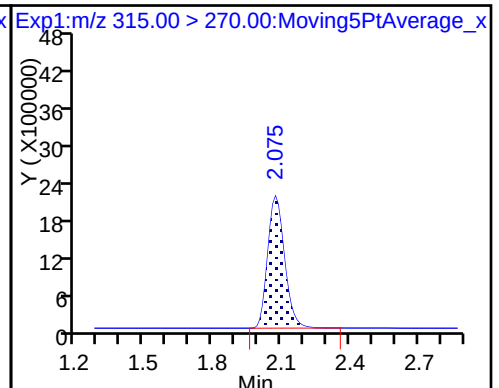
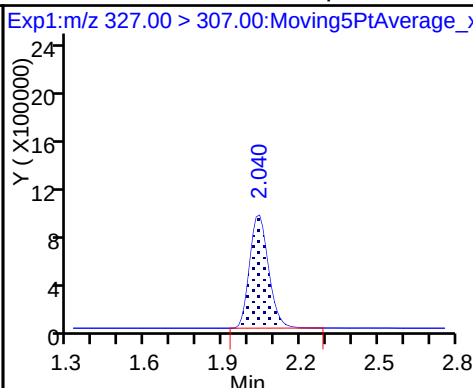
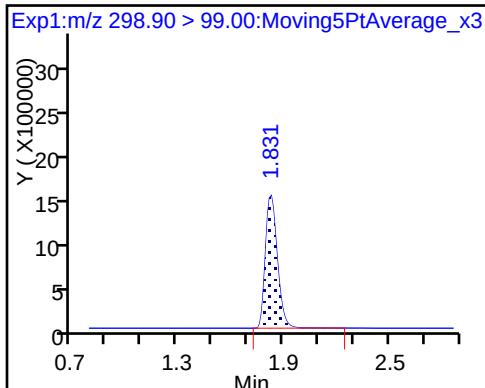
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

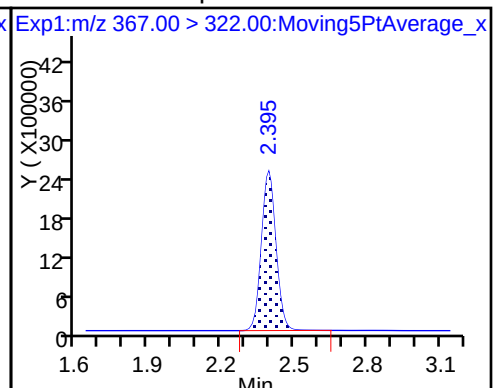
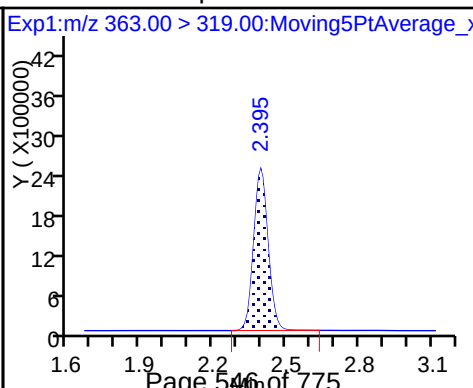
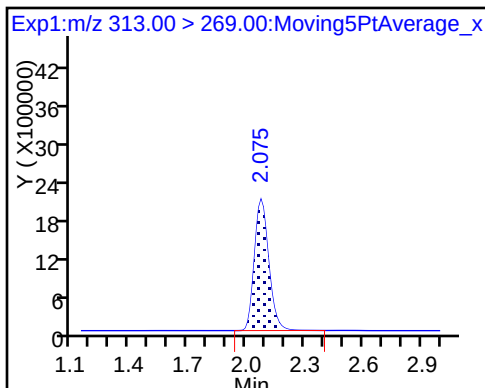
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid

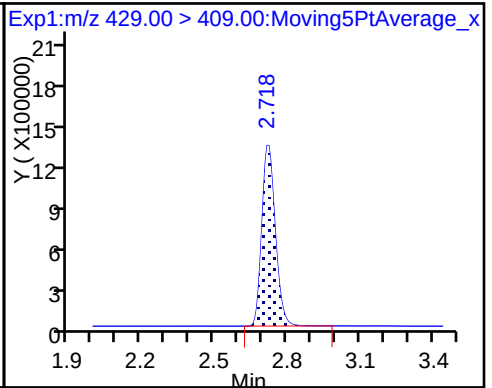
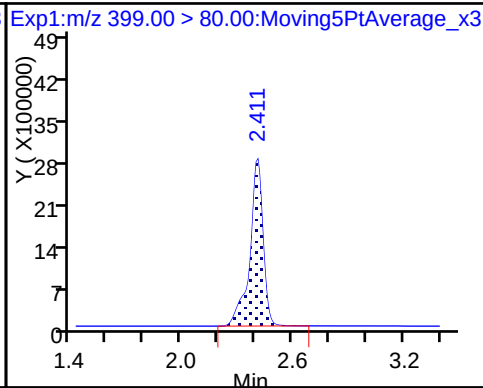
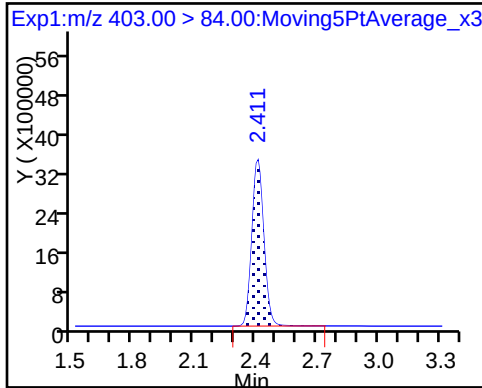
D 9 13C4-PFHpA



D 11 18O2 PFHxS

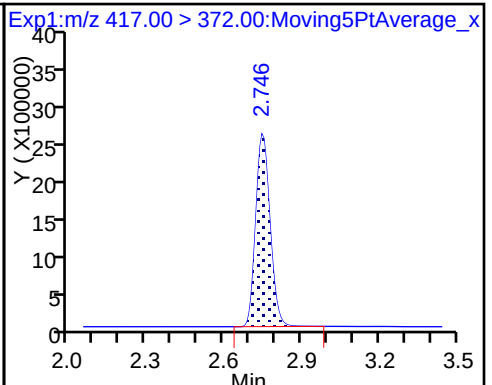
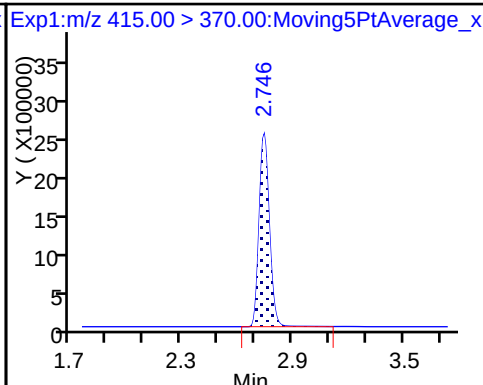
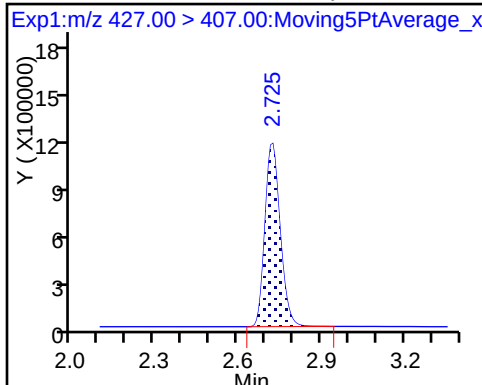
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctanoate

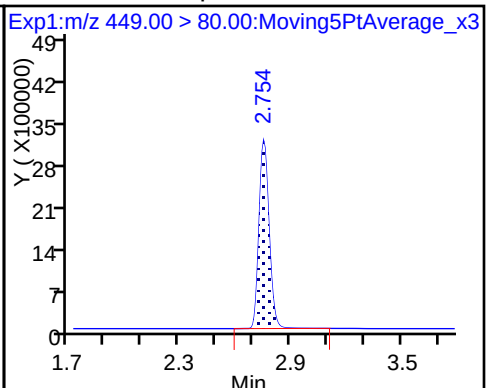
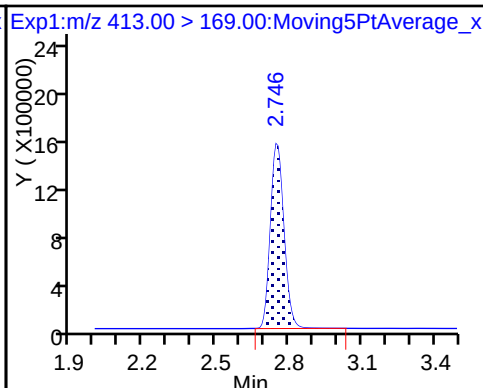
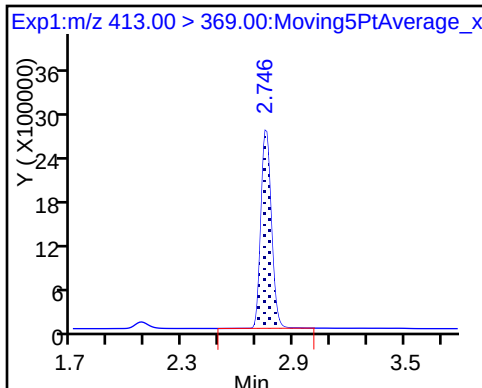
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

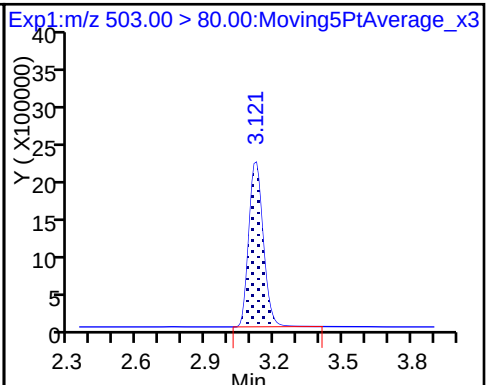
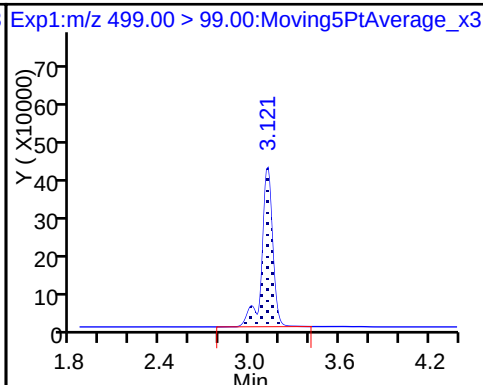
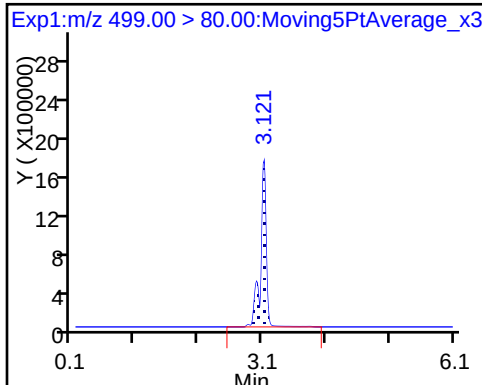
16 Perfluoroheptanesulfonic Acid



17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

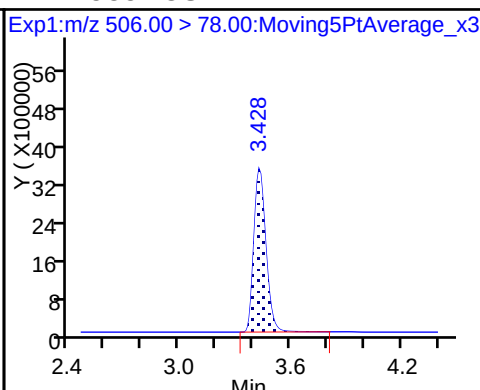
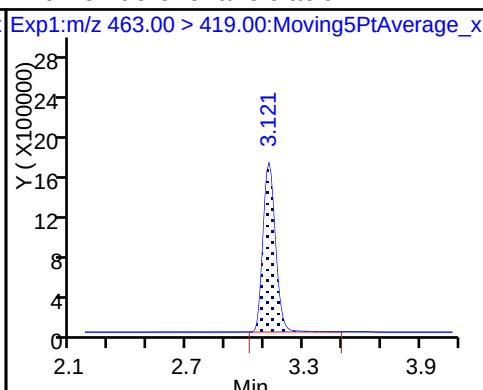
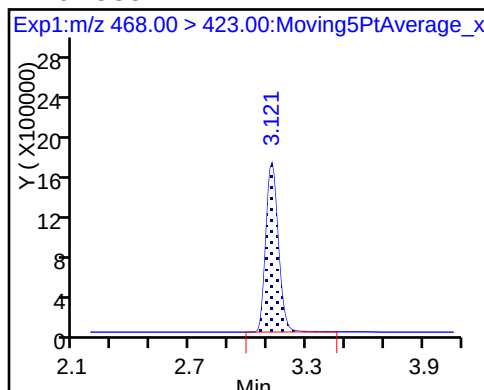
D 18 13C4 PFOS



D 19 13C5 PFNA

20 Perfluorononanoic acid

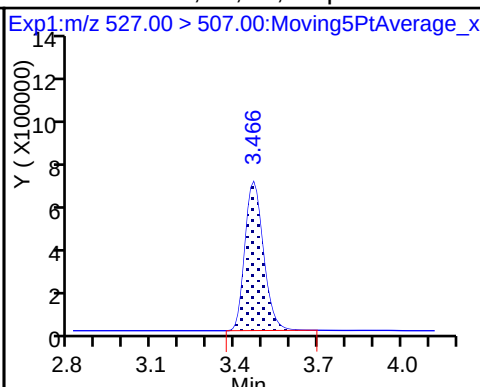
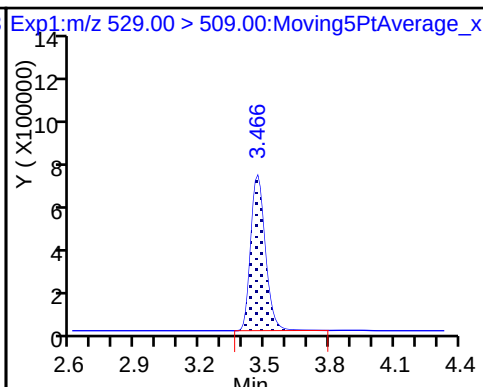
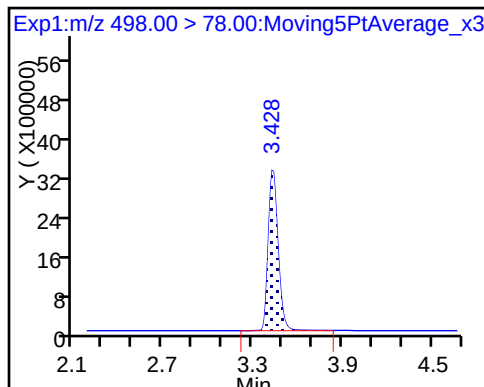
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 26 M2-8:2FTS

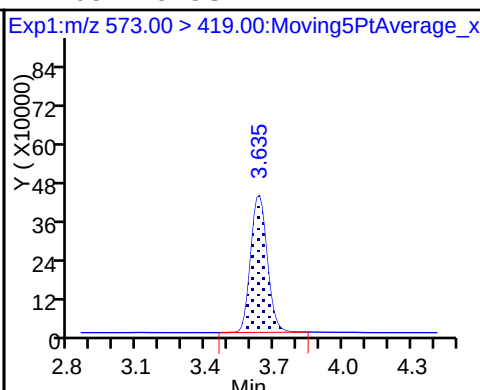
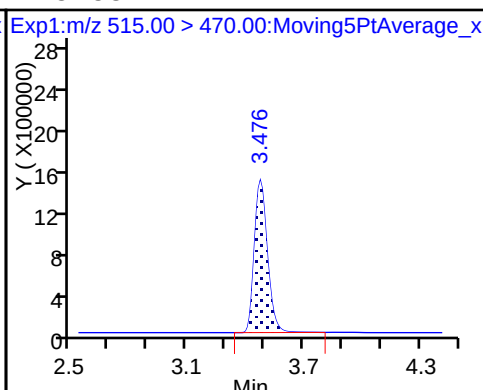
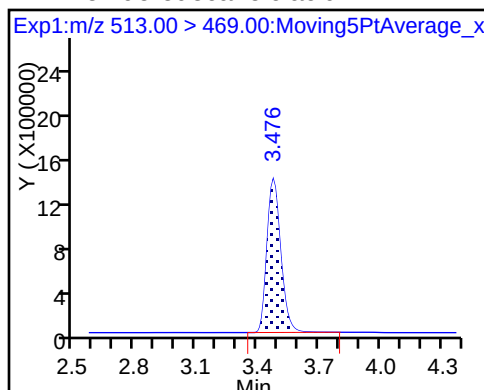
25 Sodium 1H,1H,2H,2H-perfluorodecane



24 Perfluorodecanoic acid

D 23 13C2 PFDA

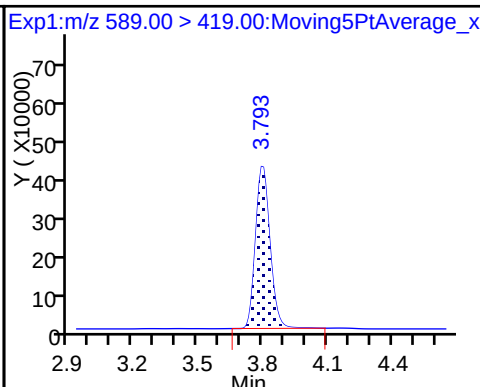
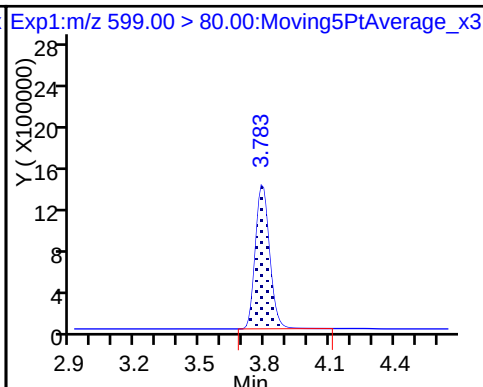
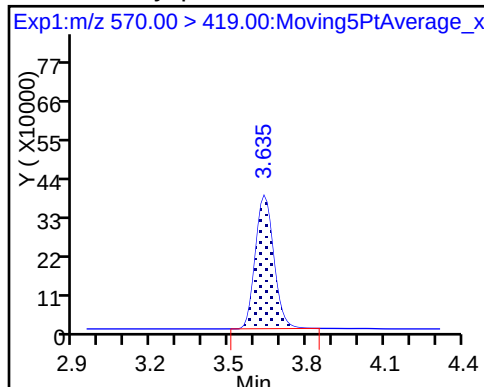
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

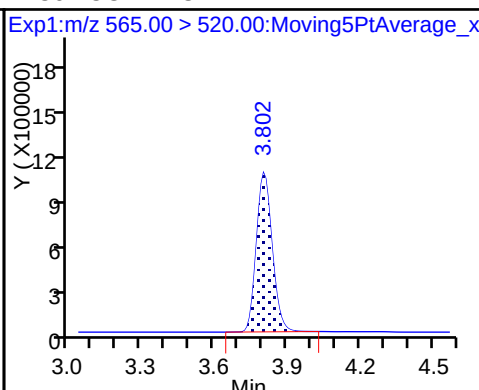
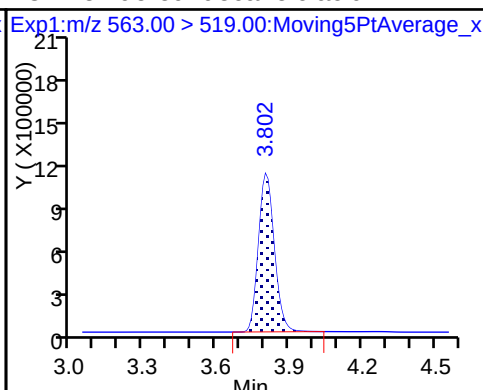
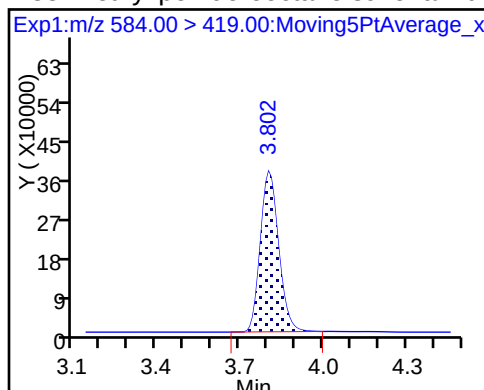
D 32 d5-NEtFOSAA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

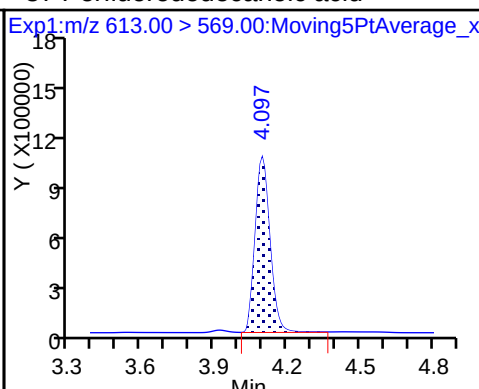
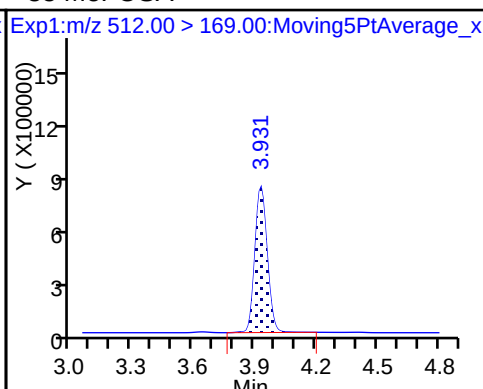
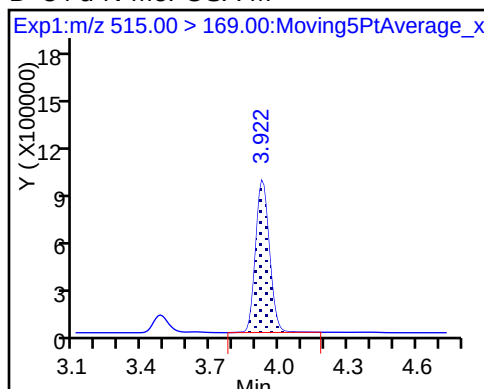
D 30 13C2 PFUnA



D 34 d-N-MeFOSA-M

35 MeFOSA

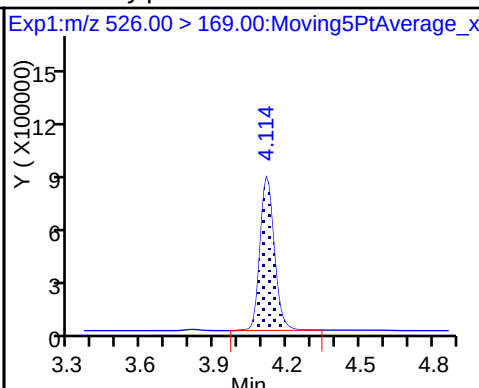
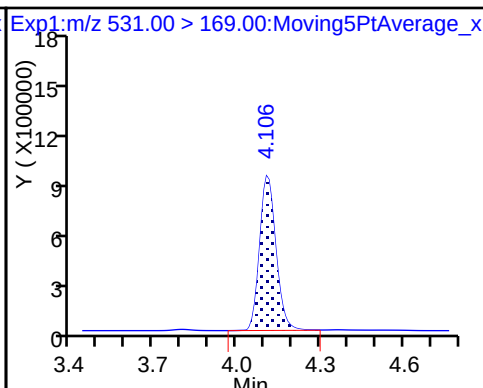
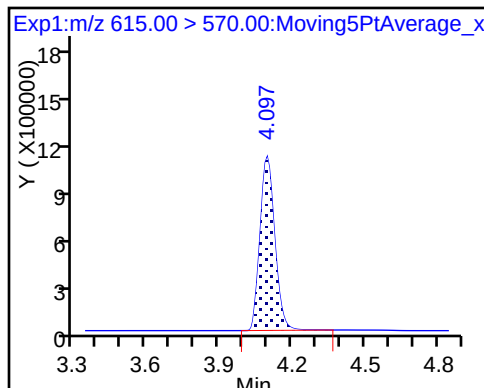
37 Perfluorododecanoic acid



D 36 13C2 PFDaA

D 38 d-N-EtFOSA-M

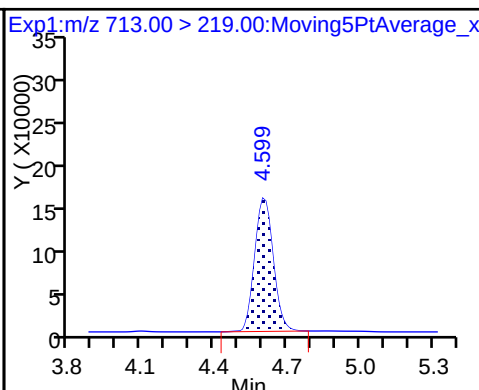
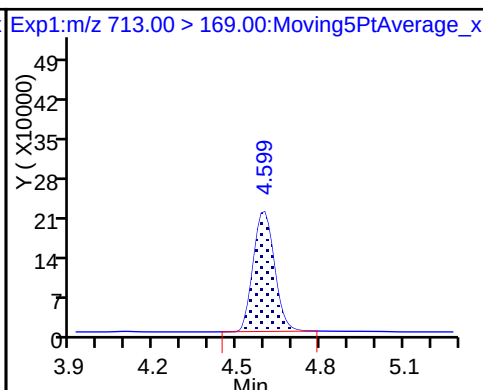
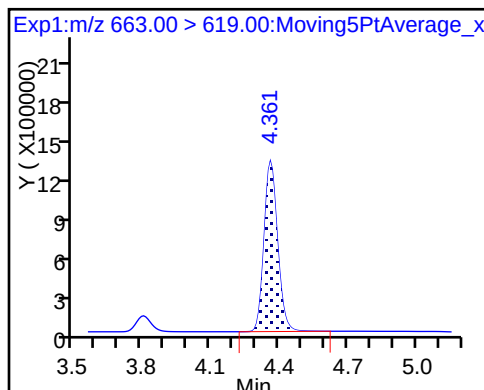
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

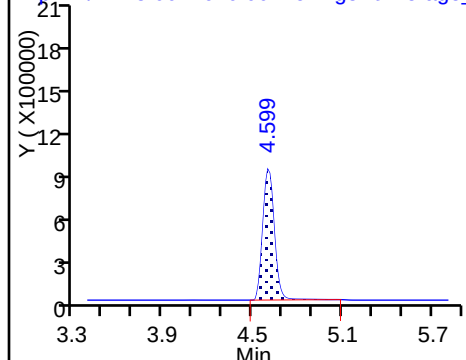


D 43 13C2-PFTeDA

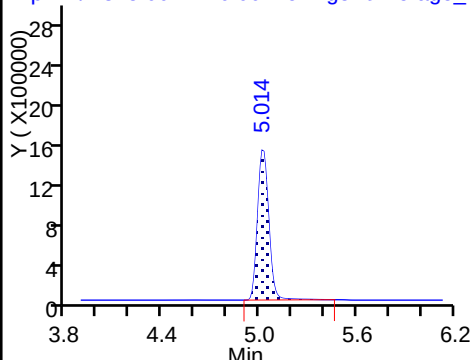
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

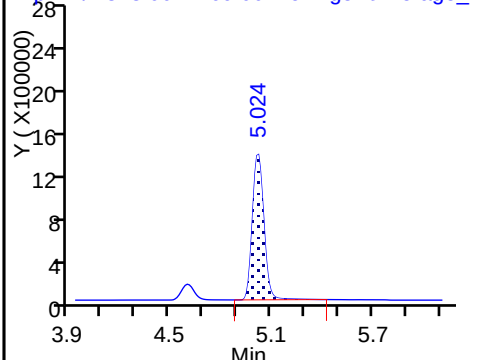
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Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

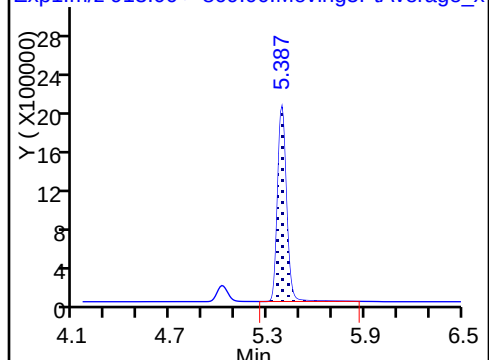


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46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_008.d
 Lims ID: IC L6 Full
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 14-Sep-2017 15:00:24 ALS Bottle#: 33 Worklist Smp#: 8
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 15-Sep-2017 08:46:11 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK026

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	1.563	1.562	0.001		15122252	48.3		96.6	18755	
2 Perfluorobutyric acid										
212.90 > 169.00	1.563	1.564	-0.001	1.000	23903531	83.3		83.3	2505	
D 3 13C5-PFPeA										
267.90 > 223.00	1.800	1.798	0.002		9644368	47.0		94.1	34204	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.800	1.801	-0.001	1.000	18836917	85.1		85.1	9353	
D 47 13C3-PFBS										
301.90 > 83.00	1.830	1.825	0.005		221981	44.7		96.0	6891	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.830	1.831	-0.001	1.000	24570139	70.5		79.7	47998	
298.90 > 99.00	1.830	1.831	-0.001	1.000	13075781		1.88(0.00-0.00)	79.7	32500	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	2.040	2.038	0.002	1.000	8740452	88.7		94.9	30750	
D 7 13C2 PFHxA										
315.00 > 270.00	2.074	2.075	-0.001		10492742	47.8		95.6	22313	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.074	2.077	-0.003	1.000	18684061	92.2		92.2	16620	
D 9 13C4-PFHpA										
367.00 > 322.00	2.395	2.397	-0.002		9530159	47.0		94.0	21877	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.395	2.397	-0.002	1.000	17511525	93.7		93.7	15819	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.411	2.412	-0.001	1.000	24908308	81.0		89.0	8626	
D 11 18O2 PFHxS										
403.00 > 84.00	2.411	2.412	-0.001		13892859	48.8		103	19850	
D 12 M2-6:2FTS										
429.00 > 409.00	2.719	2.723	-0.004		4852645	44.5		93.7	15431	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.719	2.724	-0.005	1.000	8066712	87.6		92.4	18634	
* 62 13C2-PFOA										
415.00 > 370.00	2.748	2.746	0.002		8459319	50.0			14965	
D 14 13C4 PFOA										
417.00 > 372.00	2.748	2.750	-0.002		8536856	43.8		87.5	14525	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.748	2.751	-0.003	1.000	17040355	91.4		91.4	2756	
413.00 > 169.00	2.748	2.751	-0.003	1.000	9889763		1.72(0.90-1.10)	91.4	11353	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.755	2.757	-0.002	1.000	20398786	85.7		90.1	27932	
D 18 13C4 PFOS										
503.00 > 80.00	3.115	3.121	-0.006		9387145	46.8		97.9	9237	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.115	3.121	-0.006	1.000	18963757	90.0		97.0	385826	
499.00 > 99.00	3.115	3.121	-0.006	1.000	4146598		4.57(0.90-1.10)	97.0	5603	
D 19 13C5 PFNA										
468.00 > 423.00	3.124	3.123	0.001		6727637	44.8		89.6	16345	
20 Perfluorononanoic acid										
463.00 > 419.00	3.124	3.125	-0.001	1.000	12997068	100.3		100	19863	
D 21 13C8 FOSA										
506.00 > 78.00	3.433	3.432	0.001		15210180	48.8		97.6	14013	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.433	3.434	-0.001	1.000	24558971	85.0		85.0	12943	
D 26 M2-8:2FTS										
529.00 > 509.00	3.462	3.466	-0.004		3266216	44.8		93.5	12353	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.471	3.469	0.002	1.003	6037345	95.1		99.2	8539	
D 23 13C2 PFDA										
515.00 > 470.00	3.481	3.481	0.0		6472767	48.2		96.4	11948	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.481	3.481	0.0	1.000	11887352	98.1		98.1	8687	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.630	3.633	-0.003		1991094	47.6		95.2	6469	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.641	3.640	0.001	1.003	3974890	105.3		105	6181	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.789	3.789	0.0	1.000	11740467	95.2		98.8	6433	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.799	3.799	0.0		1872708	45.8		91.5	2452	
D 30 13C2 PFUnA										
565.00 > 520.00	3.808	3.807	0.001		4206056	44.0		88.0	7664	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.808	3.807	0.001	1.000	8725284	93.1		93.1	5802	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.808	3.807	0.001	1.003	3260757	100.0		100	6837	
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.932	3.926	0.006		4067778	50.5		101	558	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA										
512.00 > 169.00	3.932	3.930	0.002	1.000	7425602	103.0		103	5534	
D 36 13C2 PFDaA										
615.00 > 570.00	4.101	4.102	-0.001		4146607	45.5		91.0	4828	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.101	4.102	-0.001	1.000	8282286	103.7		104	2465	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.110	4.110	0.0		3683228	49.1		98.3	2334	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.119	4.119	0.0	1.000	7108633	103.1		103	3739	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.361	4.366	-0.005	1.000	9412918	99.8		99.8	1025	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.600	4.602	-0.002	1.000	2187010	94.7		94.7	3717	
713.00 > 219.00	4.600	4.602	-0.002	1.000	1594913		1.37(0.00-0.00)	94.7	3270	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.600	4.608	-0.008		4543064	48.4		96.8	4257	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.016	5.025	-0.009		7012245	48.9		97.8	6642	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.016	5.027	-0.011	1.000	11897771	98.1		98.1	711	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.384	5.393	-0.009	1.000	13268543	90.5		90.5	816	

Reagents:

LCPFC_FULL-L6_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_008.d

Injection Date: 14-Sep-2017 15:00:24

Instrument ID: A8_N

Lims ID: IC L6 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 33

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

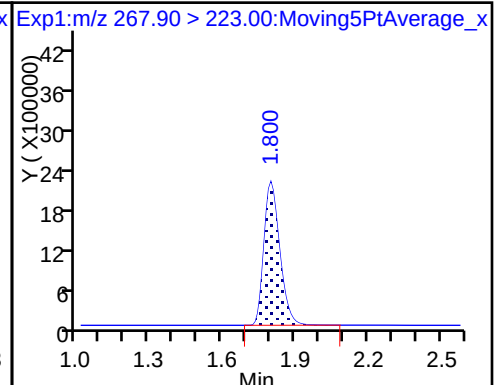
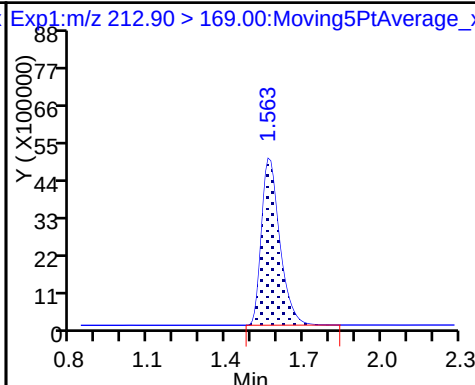
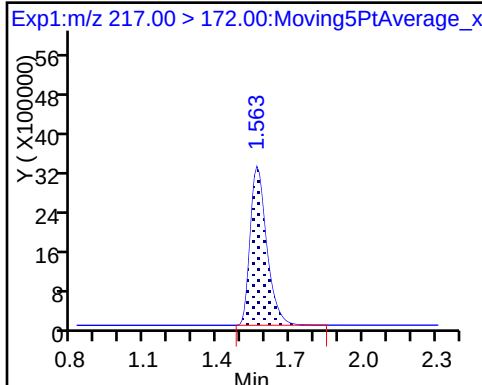
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

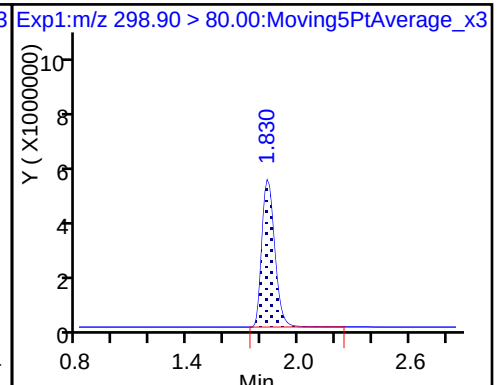
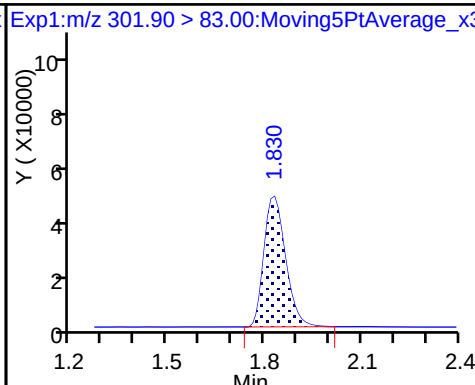
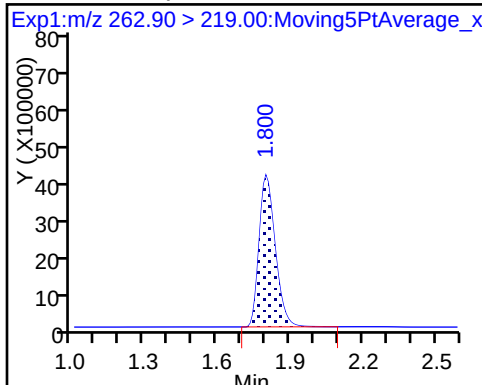
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

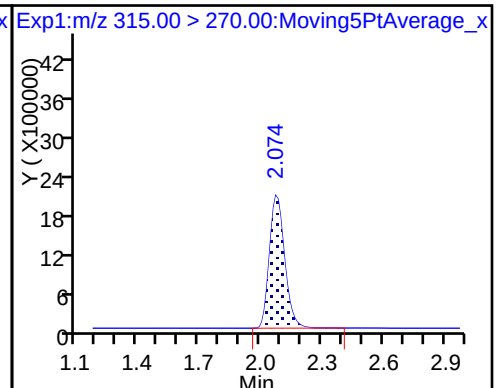
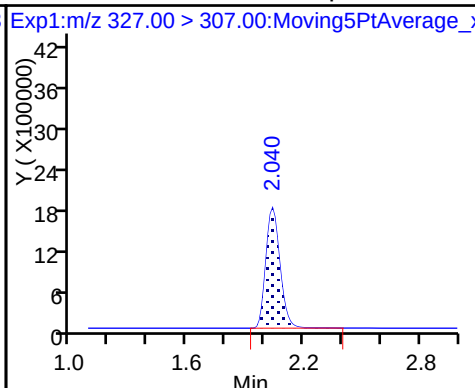
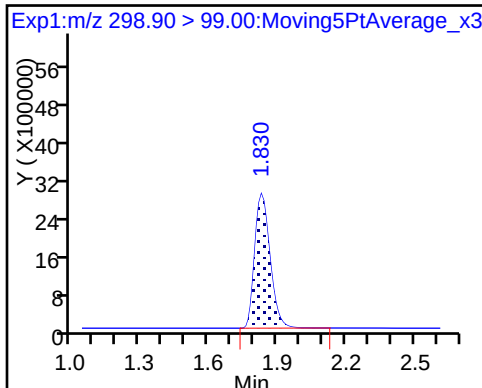
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

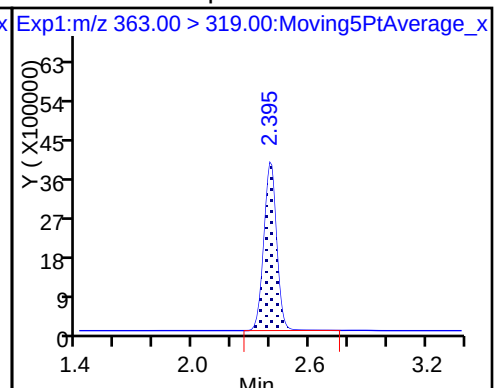
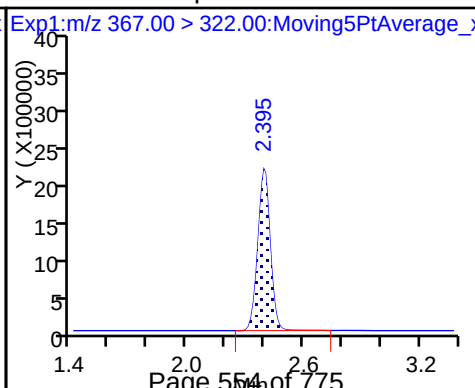
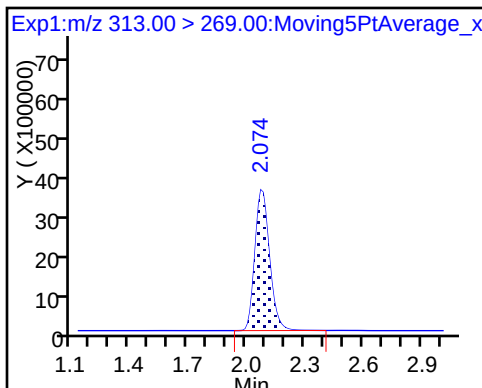
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

D 9 13C4-PFHpA

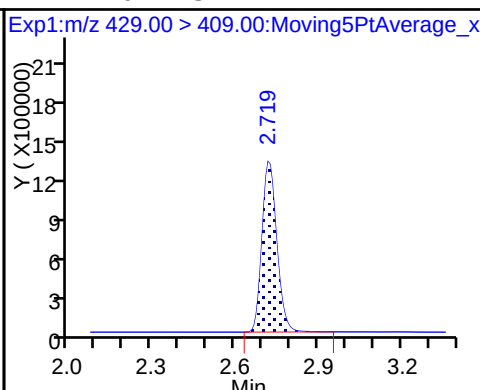
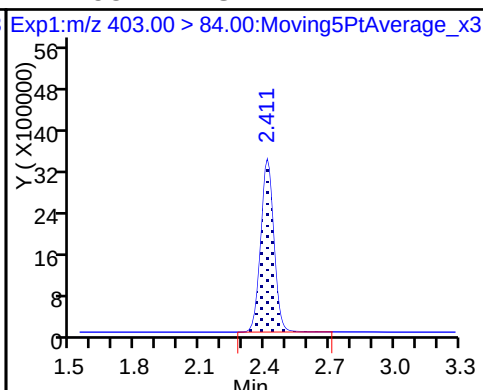
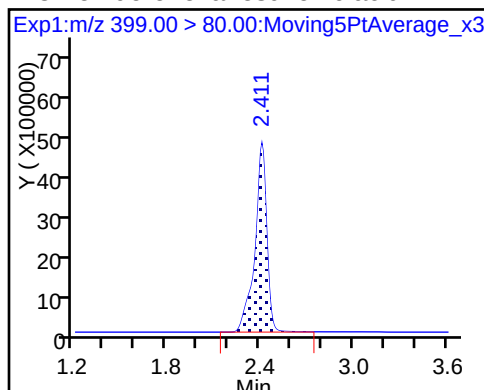
10 Perfluoroheptanoic acid



8 Perfluorohexanesulfonic acid

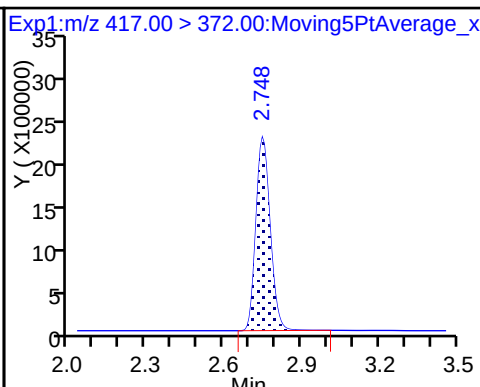
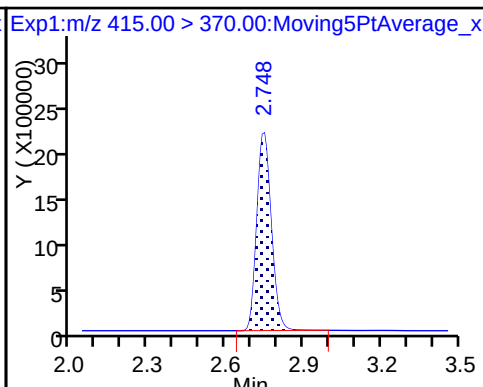
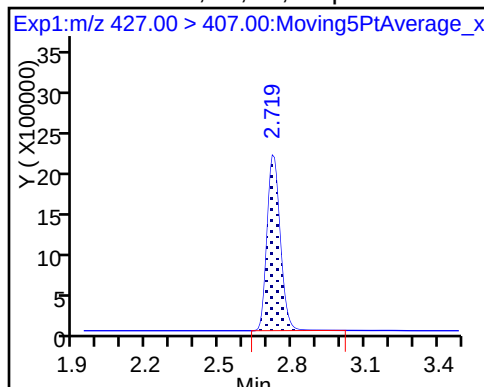
D 11 18O2 PFHxS

D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctanoate

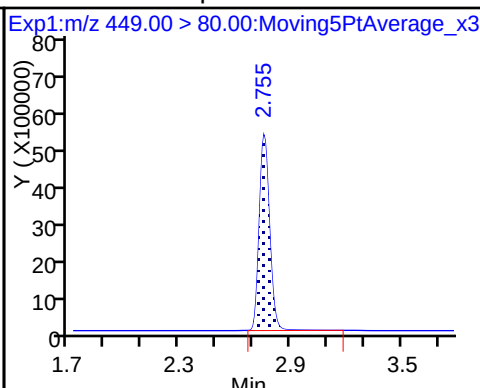
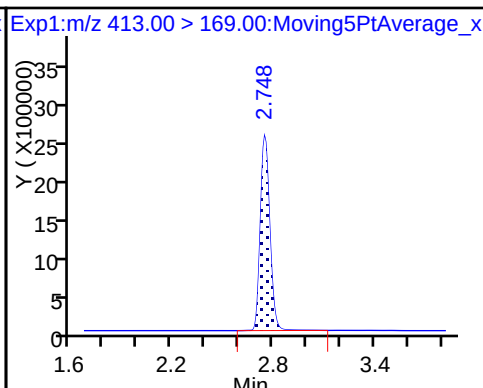
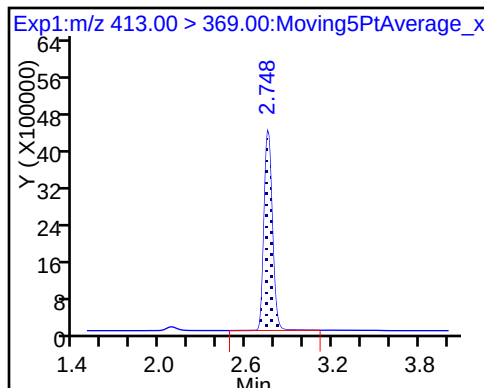
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

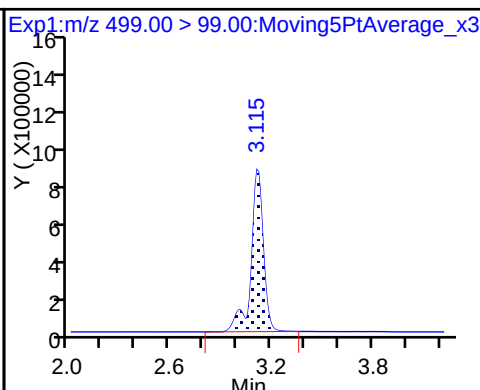
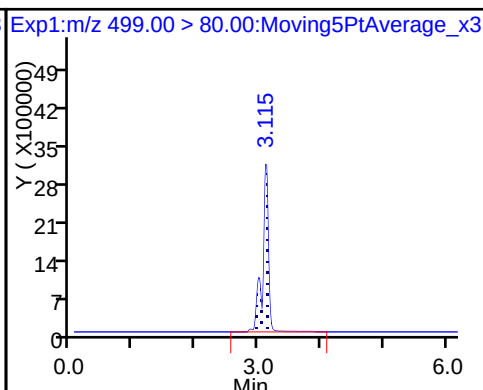
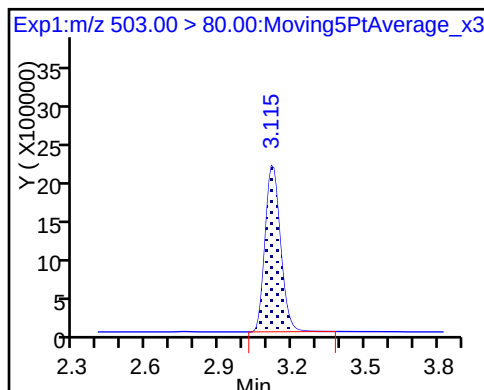
16 Perfluoroheptanesulfonic Acid



D 18 13C4 PFOS

17 Perfluorooctane sulfonic acid

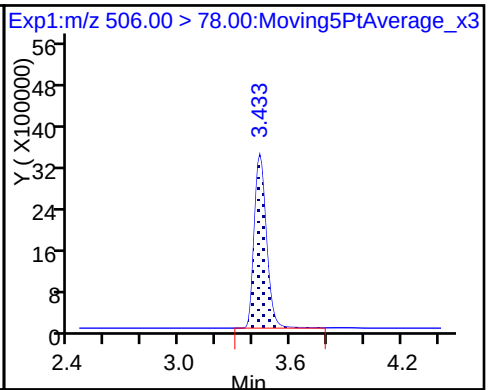
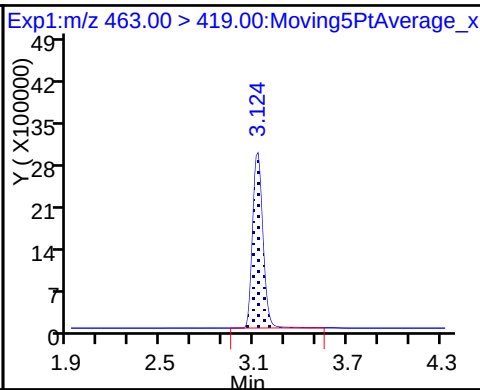
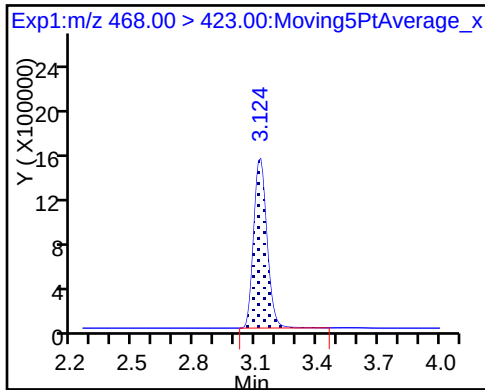
17 Perfluorooctane sulfonic acid



D 19 13C5 PFNA

20 Perfluorononanoic acid

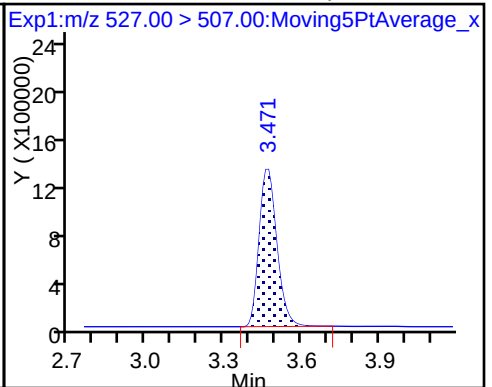
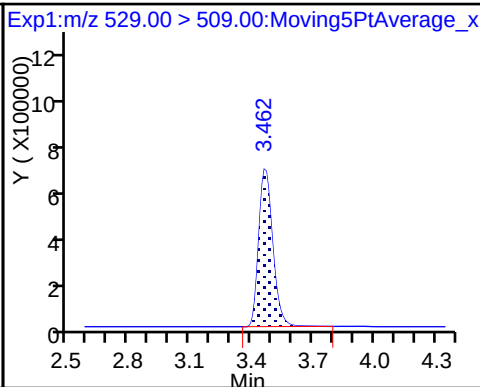
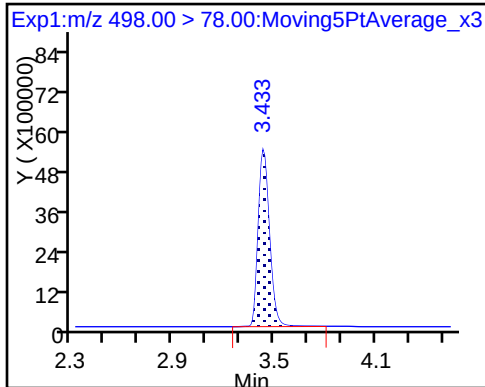
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 26 M2-8:2FTS

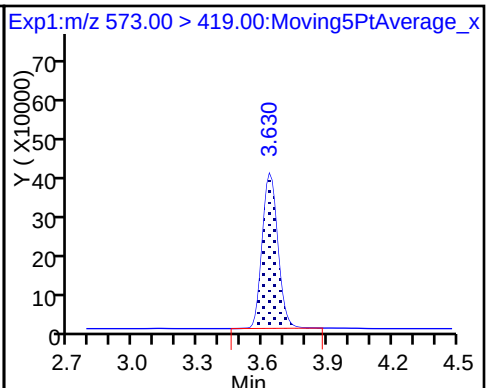
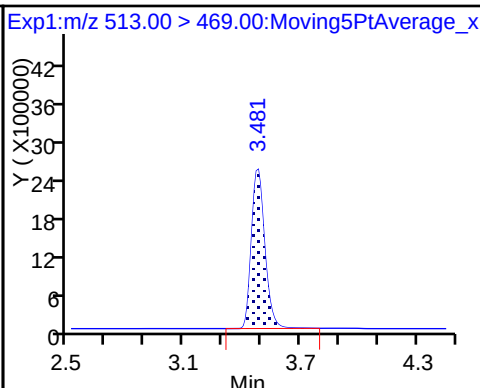
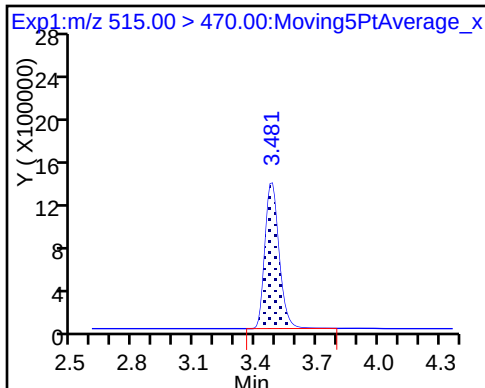
25 Sodium 1H,1H,2H,2H-perfluorodecane



D 23 13C2 PFDA

24 Perfluorodecanoic acid

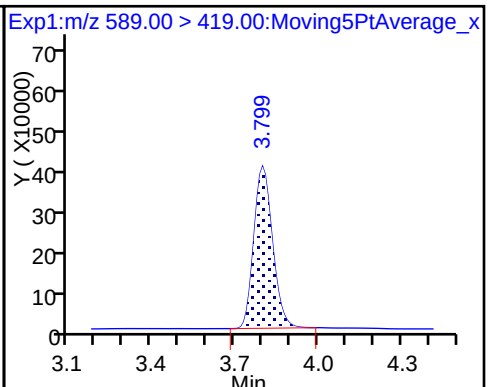
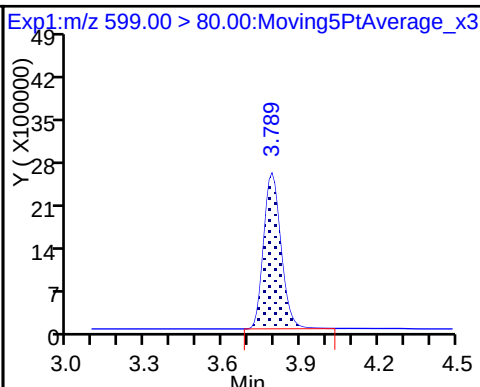
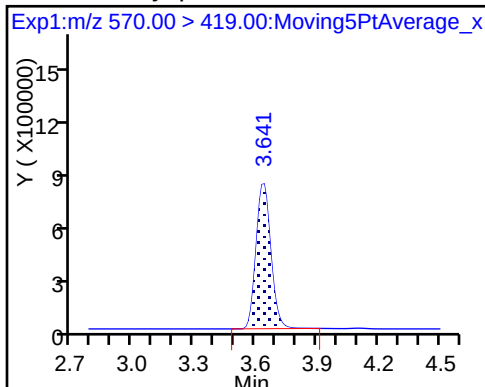
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

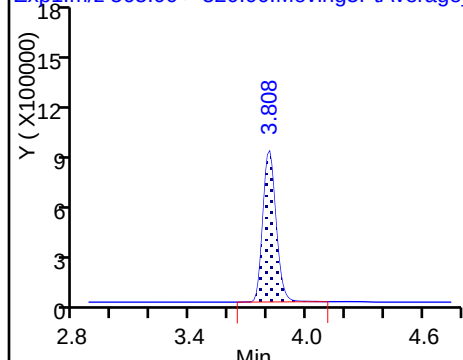


D 30 13C2 PFUnA

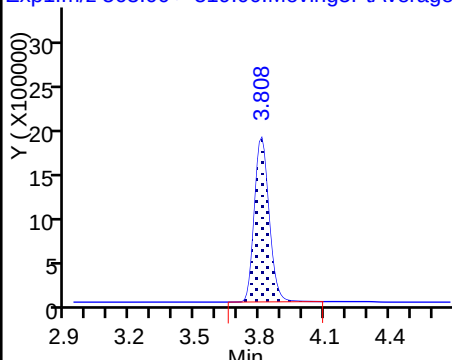
31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid

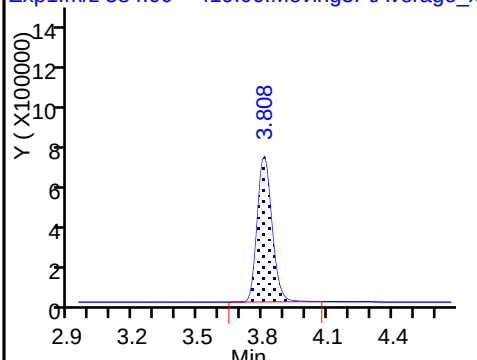
Exp1:m/z 565.00 > 520.00:Moving5PtAverage_x



Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x



Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x

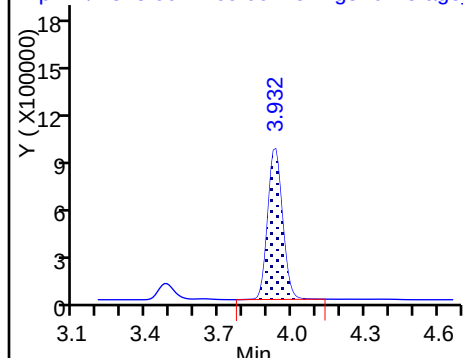


D 34 d-N-MeFOSA-M

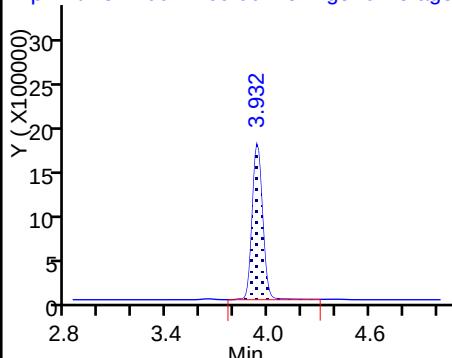
35 MeFOSA

D 36 13C2 PFDaA

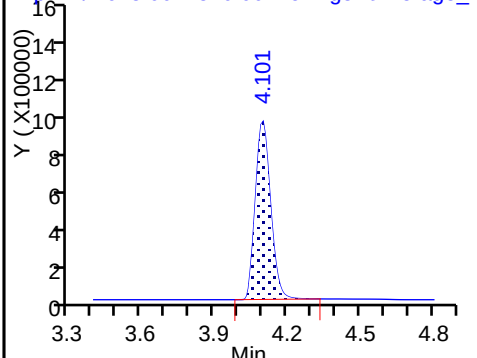
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Exp1:m/z 512.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x

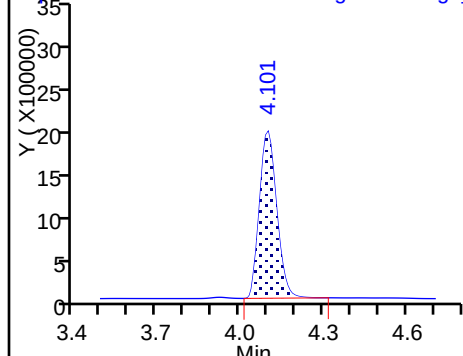


37 Perfluorododecanoic acid

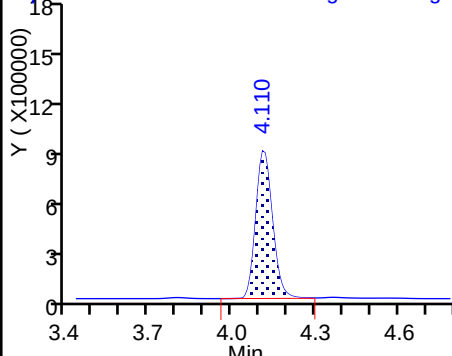
D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

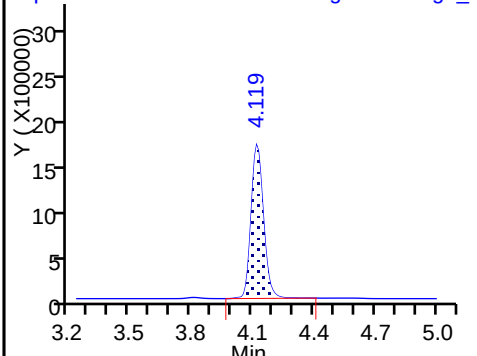
Exp1:m/z 613.00 > 569.00:Moving5PtAverage_x



Exp1:m/z 531.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 526.00 > 169.00:Moving5PtAverage_x

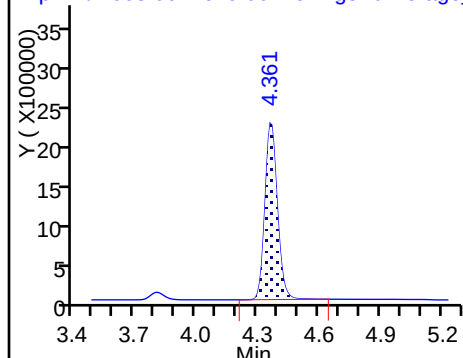


41 Perfluorotridecanoic acid

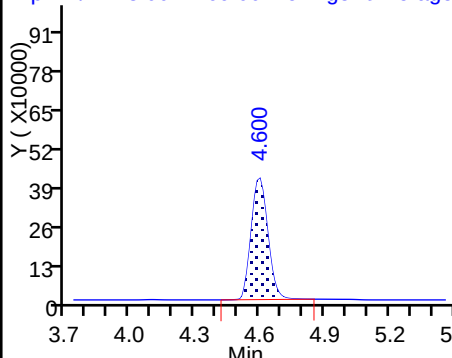
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

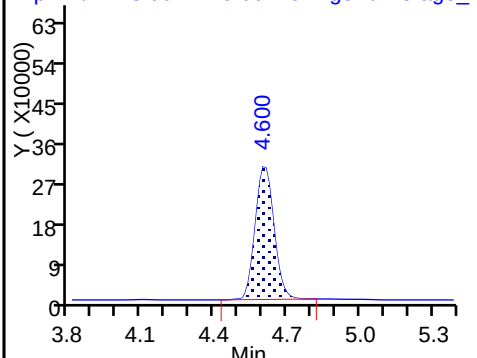
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Exp1:m/z 713.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 219.00:Moving5PtAverage_x

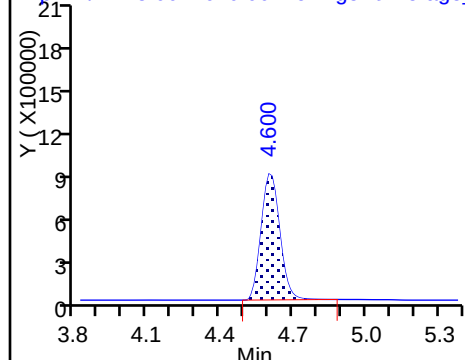


D 43 13C2-PFTeDA

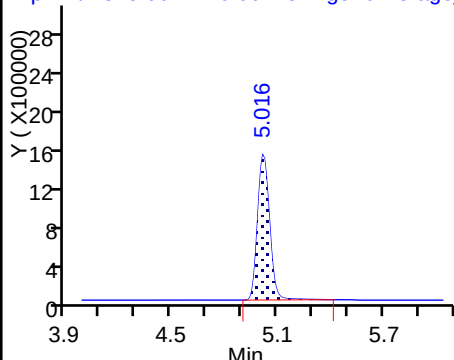
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

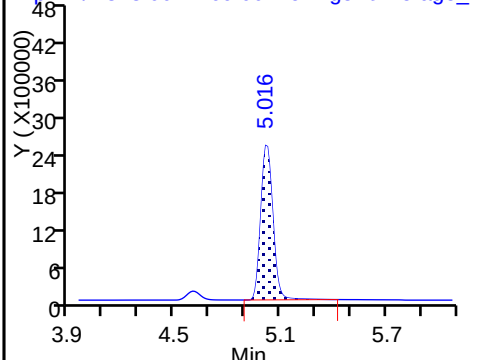
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Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

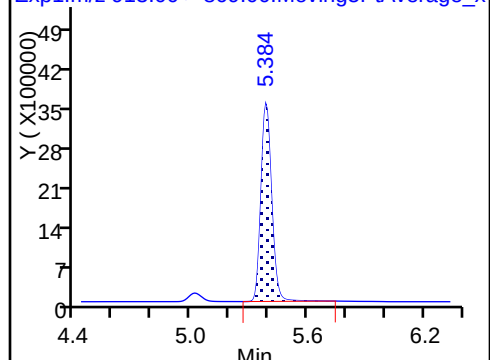


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_009.d
 Lims ID: IC L7 Full
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 14-Sep-2017 15:07:18 ALS Bottle#: 34 Worklist Smp#: 9
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 15-Sep-2017 08:46:18 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK026

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	1.563	1.562	0.001		13701578	43.8		87.5	17516	
2 Perfluorobutyric acid										
212.90 > 169.00	1.563	1.564	-0.001	1.000	36378876	140.0		70.0	2194	
D 3 13C5-PFPeA										
267.90 > 223.00	1.791	1.798	-0.007		8222924	40.1		80.2	30702	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.800	1.801	-0.001	1.000	27178191	143.9		72.0	10451	
D 47 13C3-PFBS										
301.90 > 83.00	1.820	1.825	-0.005		201840	40.6		87.3	6291	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.830	1.831	-0.001	1.000	36842406	116.2		65.7	40190	
298.90 > 99.00	1.830	1.831	-0.001	1.000	20265378		1.82(0.00-0.00)	65.7	41298	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	2.028	2.038	-0.010	1.000	13491942	147.9		79.2	24707	
D 7 13C2 PFHxA										
315.00 > 270.00	2.074	2.075	-0.001		9040188	41.2		82.4	21876	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.074	2.077	-0.003	1.000	27331005	156.5		78.2	14787	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.397	2.397	0.0	1.000	25867159	167.5		83.7	13404	
D 9 13C4-PFHpA										
367.00 > 322.00	2.397	2.397	0.0		7879536	38.8		77.7	12066	
D 11 18O2 PFHxS										
403.00 > 84.00	2.405	2.412	-0.007		12278558	43.2		91.2	21204	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.405	2.412	-0.007	1.000	39749821	146.2		80.3	7055	
D 12 M2-6:2FTS										
429.00 > 409.00	2.713	2.723	-0.010		4490246	41.2		86.7	31943	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.713	2.724	-0.011	1.000	12867260	151.0		79.6	14643	
* 62 13C2-PFOA										
415.00 > 370.00	2.742	2.746	-0.004		7000169	50.0			11409	
D 14 13C4 PFOA										
417.00 > 372.00	2.742	2.750	-0.008		7334061	37.6		75.2	21096	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.742	2.751	-0.009	1.000	25729402	160.6		80.3	3525	
413.00 > 169.00	2.742	2.751	-0.009	1.000	15748841		1.63(0.90-1.10)	80.3	8026	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.750	2.757	-0.007	1.000	30293818	139.3		73.2	17499	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.116	3.121	-0.005	1.000	32023837	166.2		89.6	444715	
499.00 > 99.00	3.116	3.121	-0.005	1.000	7513654		4.26(0.90-1.10)	89.6	5850	
D 18 13C4 PFOS										
503.00 > 80.00	3.116	3.121	-0.005		8580811	42.8		89.5	7008	
D 19 13C5 PFNA										
468.00 > 423.00	3.116	3.123	-0.007		5935575	39.5		79.0	17561	
20 Perfluorononanoic acid										
463.00 > 419.00	3.116	3.125	-0.009	1.000	20570374	179.8		89.9	11652	
D 21 13C8 FOSA										
506.00 > 78.00	3.424	3.432	-0.008		13502428	43.3		86.6	13895	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.433	3.434	-0.001	1.000	36463525	142.1		71.1	8986	
D 26 M2-8:2FTS										
529.00 > 509.00	3.462	3.466	-0.004		3159485	43.3		90.4	6844	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.462	3.469	-0.007	1.000	9957438	162.1		84.6	7549	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.472	3.481	-0.009	1.000	19639099	187.7		93.8	8742	
D 23 13C2 PFDA										
515.00 > 470.00	3.472	3.481	-0.009		5588731	41.6		83.3	10087	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.621	3.633	-0.012		1946042	46.5		93.0	5011	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.632	3.640	-0.008	1.003	7243858	196.3		98.1	4526	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.780	3.789	-0.009	1.000	19036236	168.9		87.6	19817	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.790	3.799	-0.009		1650027	40.3		80.6	2509	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.800	3.807	-0.007	1.003	5977711	208.1		104	10830	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.800	3.807	-0.007	1.000	14182617	179.4		89.7	5454	
D 30 13C2 PFUnA										
565.00 > 520.00	3.800	3.807	-0.007		3547294	37.1		74.2	4678	
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.924	3.926	-0.002		3875265	48.1		96.3	576	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA										
512.00 > 169.00	3.924	3.930	-0.006	1.000	13543289	197.2		98.6	4809	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.092	4.102	-0.010	1.000	14202541	191.6		95.8	3089	
D 36 13C2 PFDaA										
615.00 > 570.00	4.092	4.102	-0.010		3846903	42.2		84.4	4982	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.109	4.110	-0.001		3583359	47.8		95.6	2088	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.118	4.119	-0.001	1.000	12851935	191.6		95.8	3086	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.353	4.366	-0.013	1.000	16228375	185.5		92.8	1618	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.588	4.602	-0.014	1.000	3779270	200.5		100	4420	
713.00 > 219.00	4.600	4.602	-0.002	1.003	2912599		1.30(0.00-0.00)	100	18492	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.600	4.608	-0.008		3708884	39.5		79.1	2979	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.014	5.025	-0.011		5865881	40.9		81.8	5142	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.014	5.027	-0.013	1.000	19904231	196.7		98.3	997	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.380	5.393	-0.013	1.000	23905788	194.8		97.4	1469	

Reagents:

LCPFC_FULL-L7_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_009.d

Injection Date: 14-Sep-2017 15:07:18

Instrument ID: A8_N

Lims ID: IC L7 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 34

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

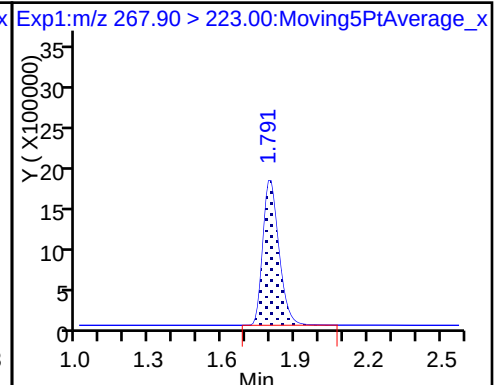
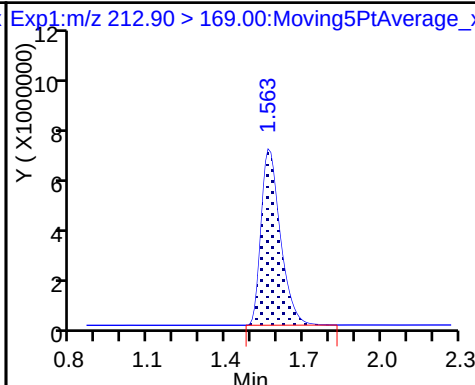
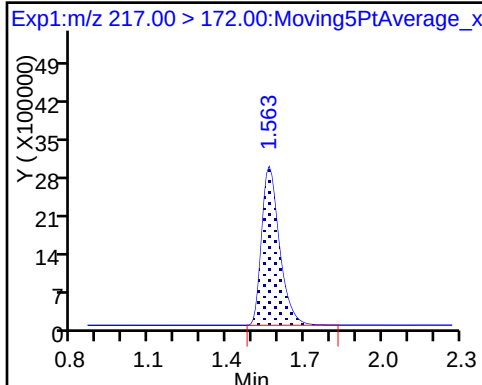
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

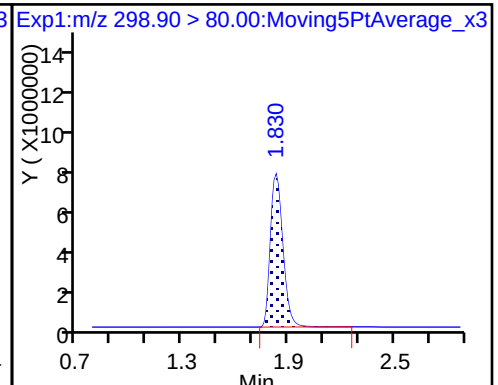
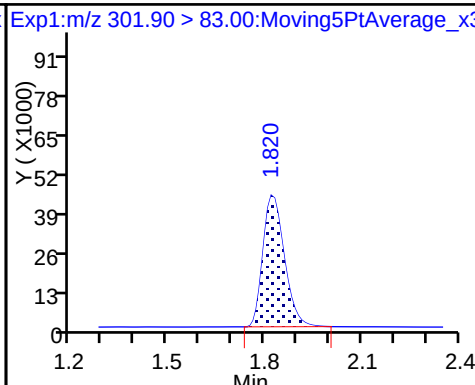
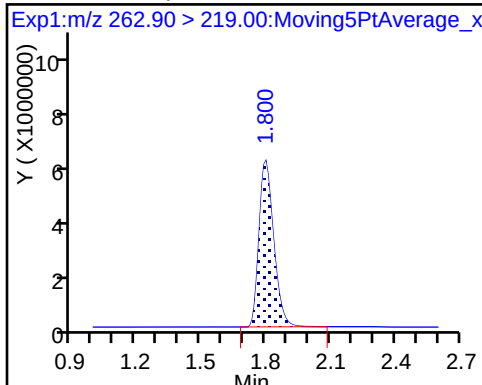
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

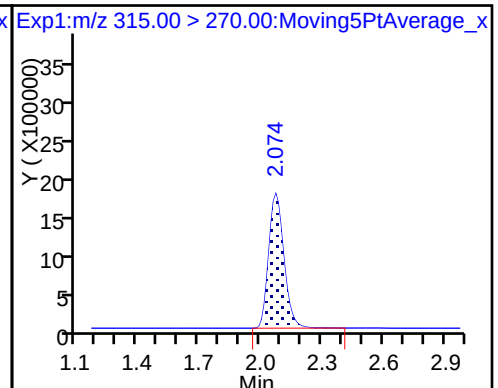
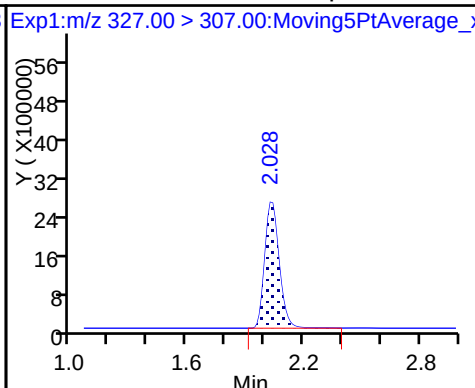
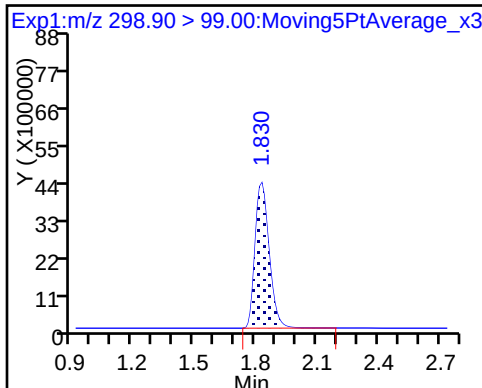
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

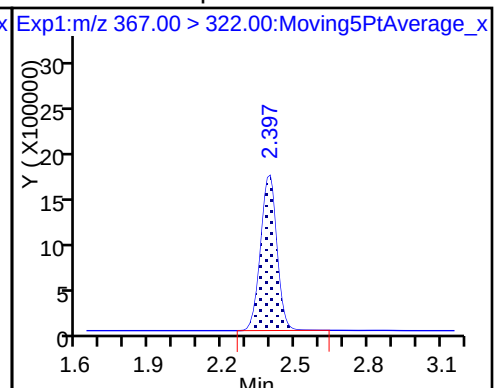
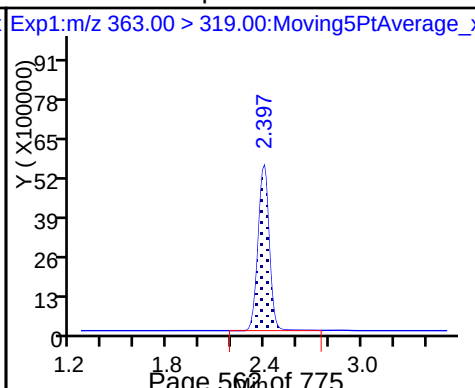
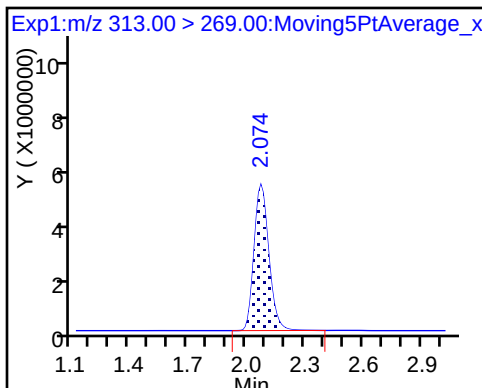
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid

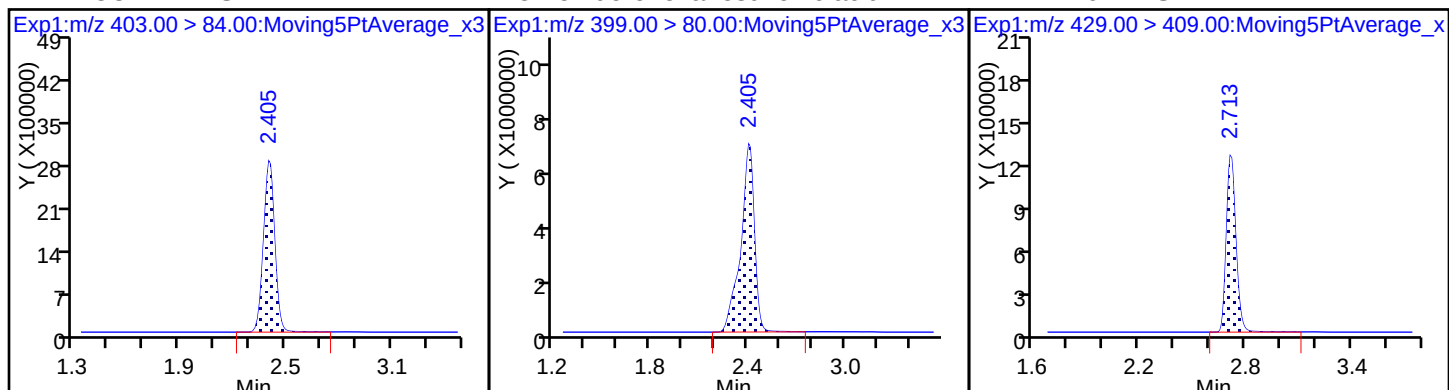
D 9 13C4-PFHpA



D 11 18O2 PFHxS

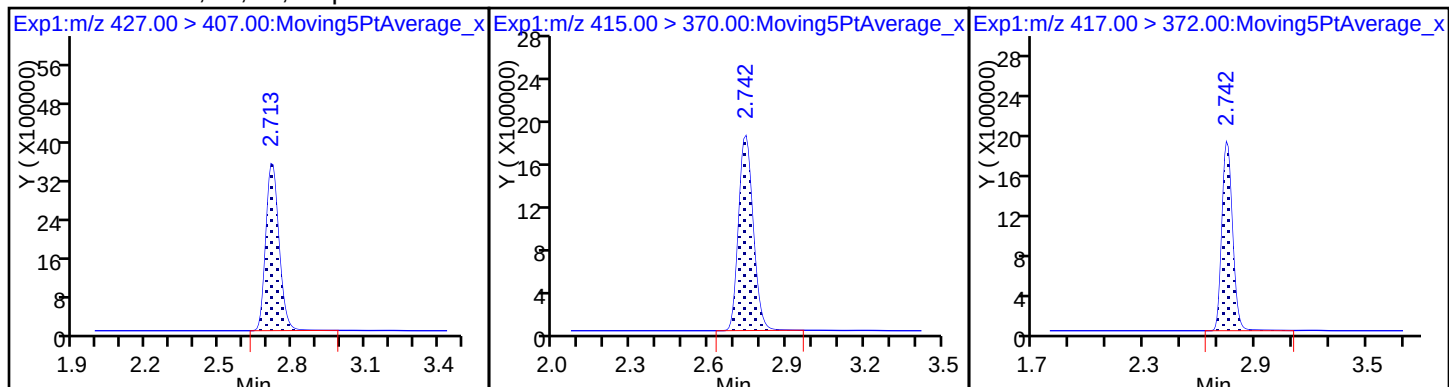
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctane

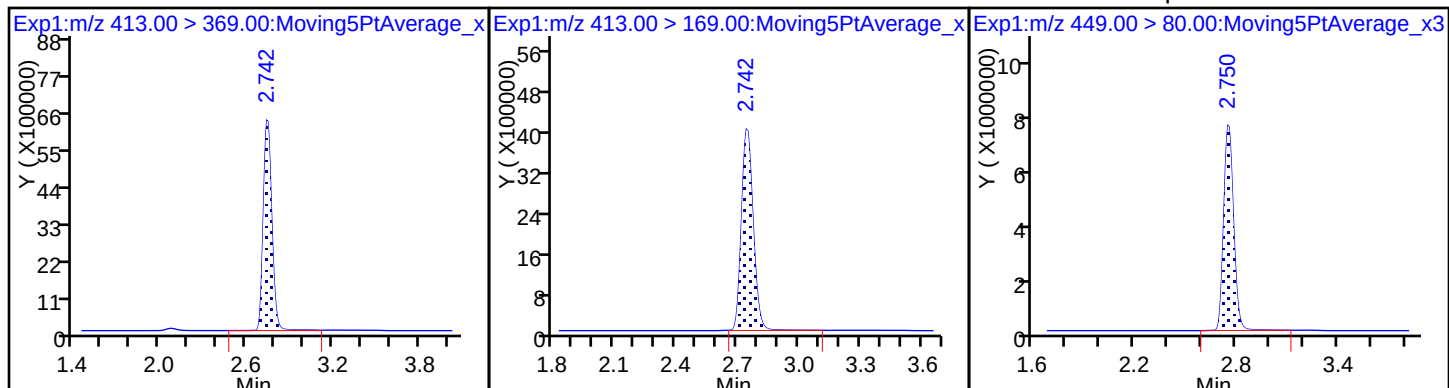
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

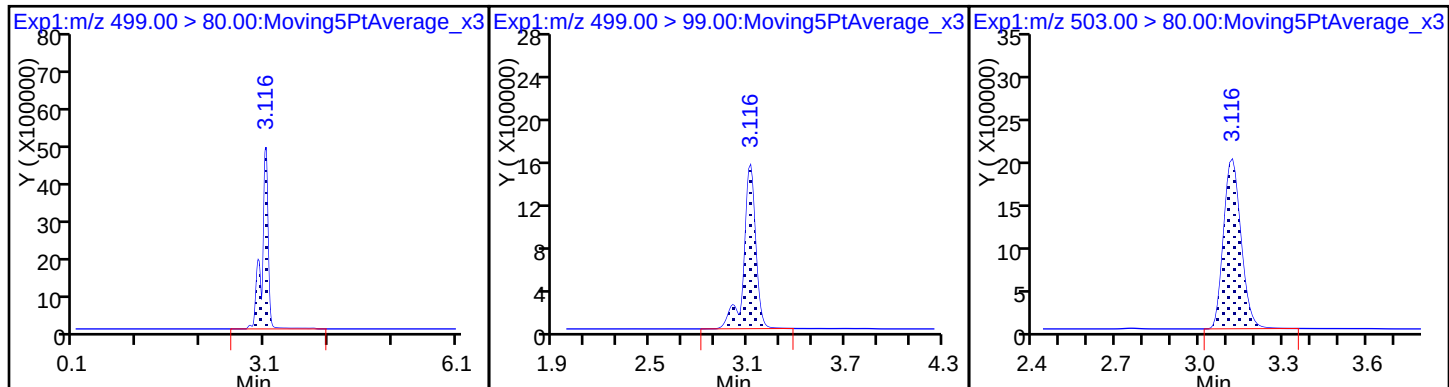
16 Perfluoroheptanesulfonic Acid



17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

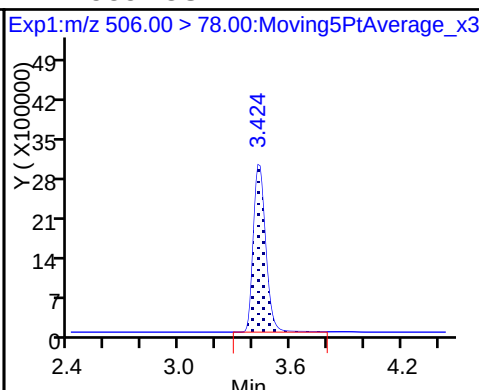
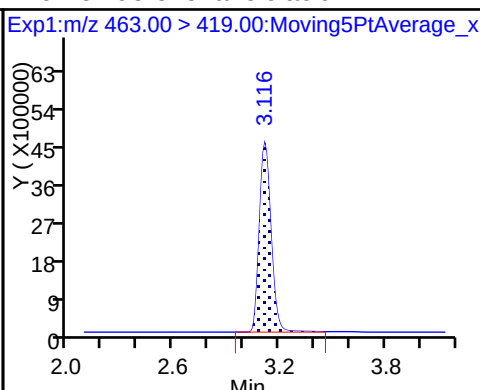
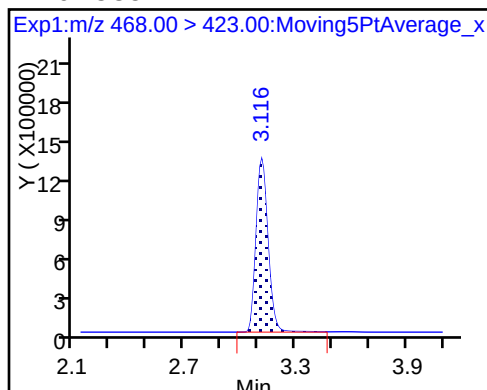
D 18 13C4 PFOS



D 19 13C5 PFNA

20 Perfluorononanoic acid

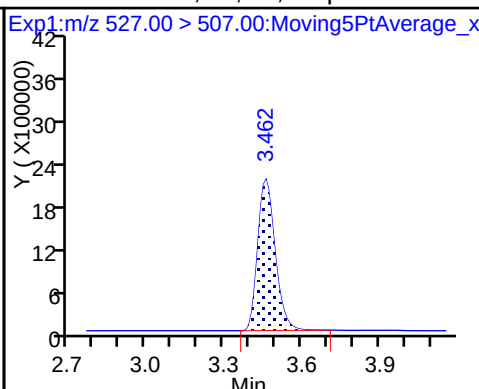
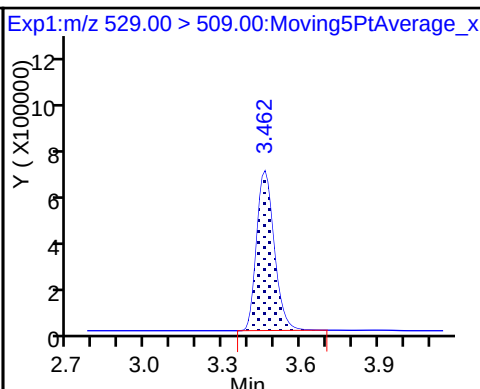
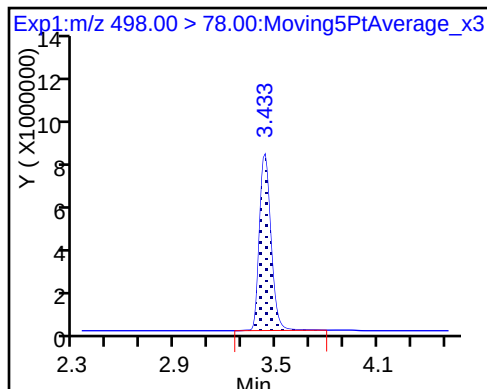
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 26 M2-8:2FTS

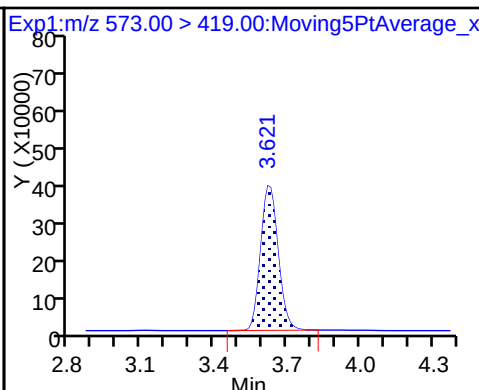
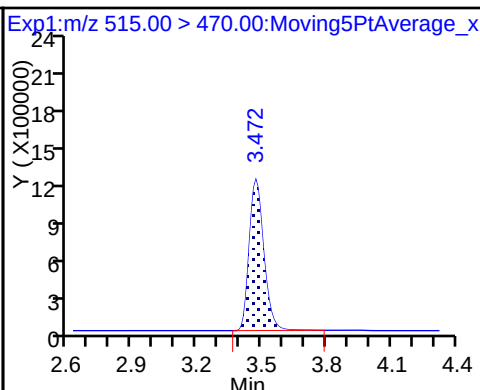
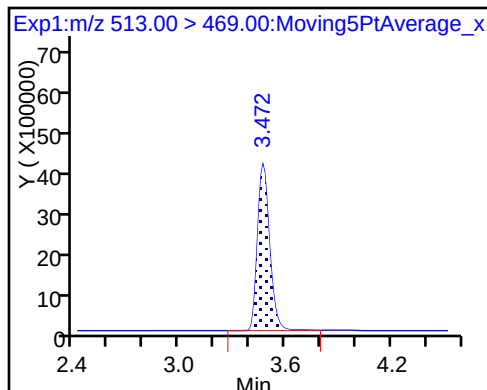
25 Sodium 1H,1H,2H,2H-perfluorodecane



24 Perfluorodecanoic acid

D 23 13C2 PFDA

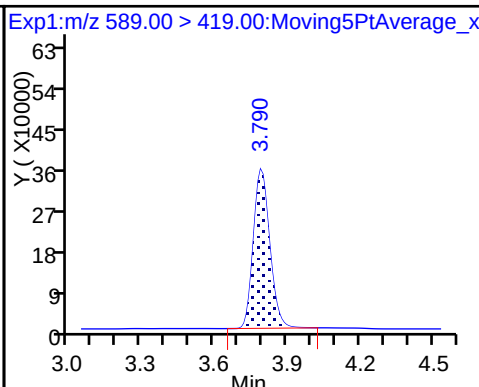
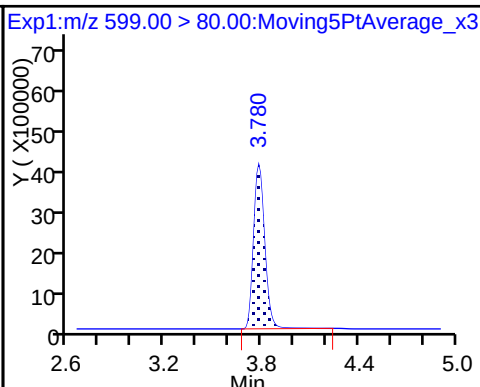
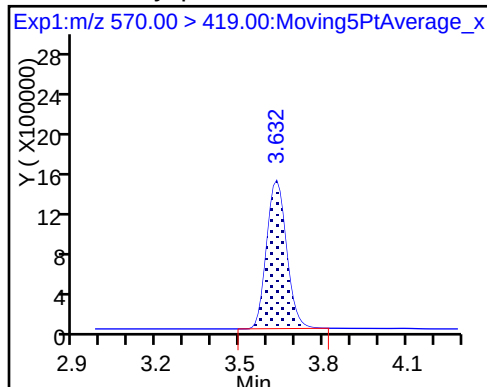
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

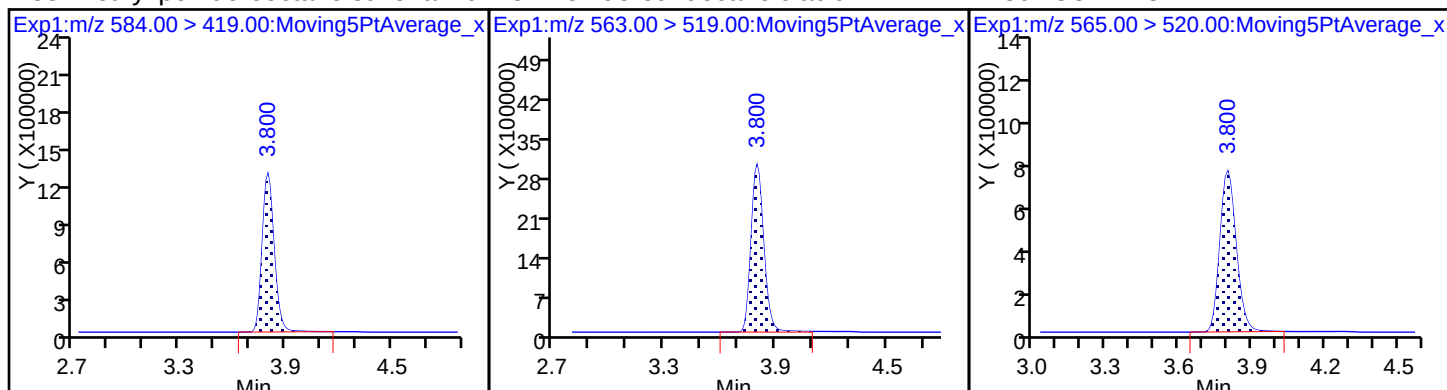
D 32 d5-NEtFOSAA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

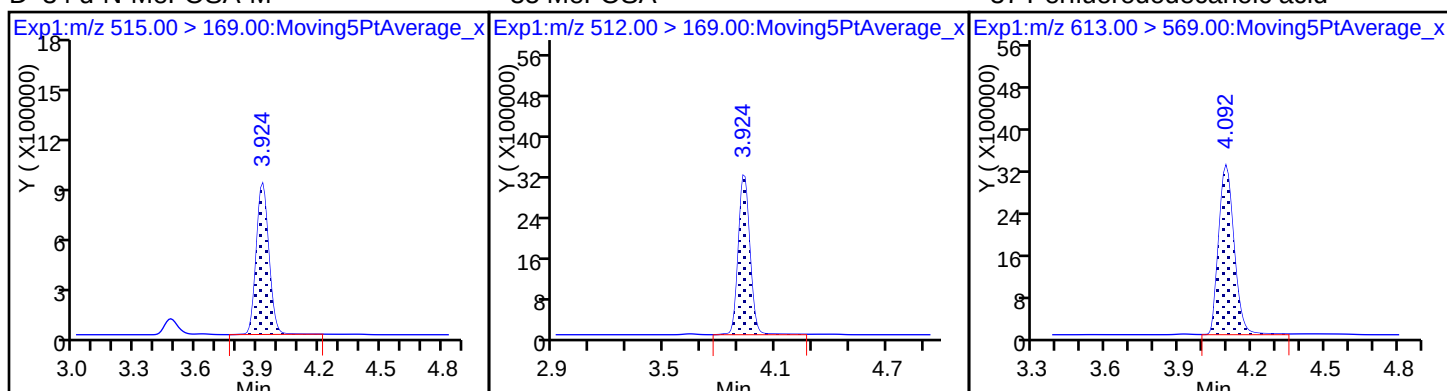
D 30 13C2 PFUnA



D 34 d-N-MeFOSA-M

35 MeFOSA

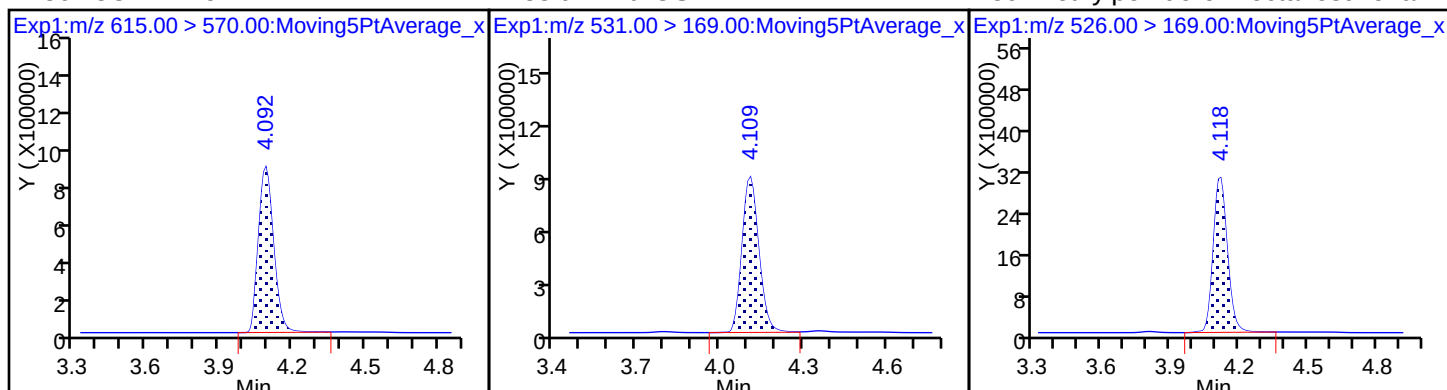
37 Perfluorododecanoic acid



D 36 13C2 PFDaA

D 38 d-N-EtFOSA-M

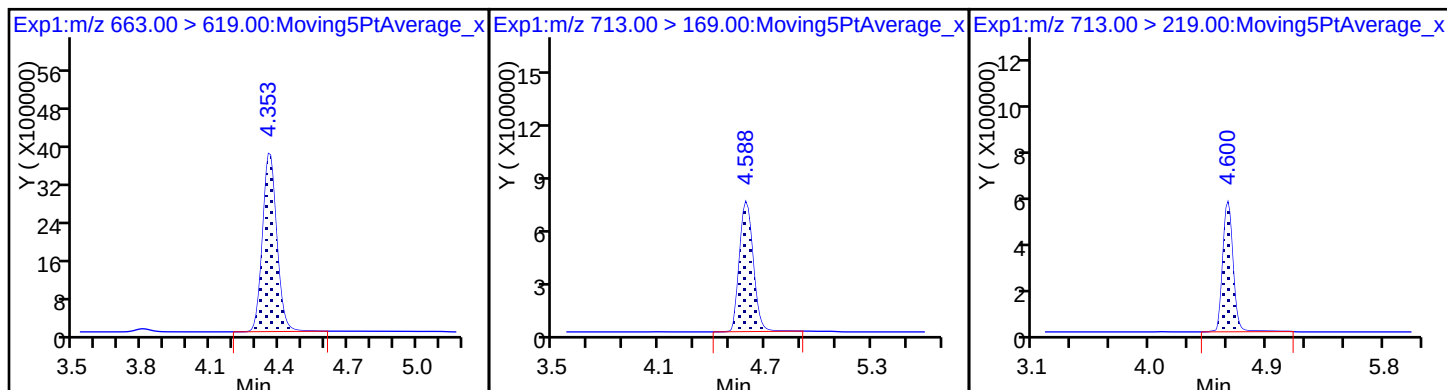
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

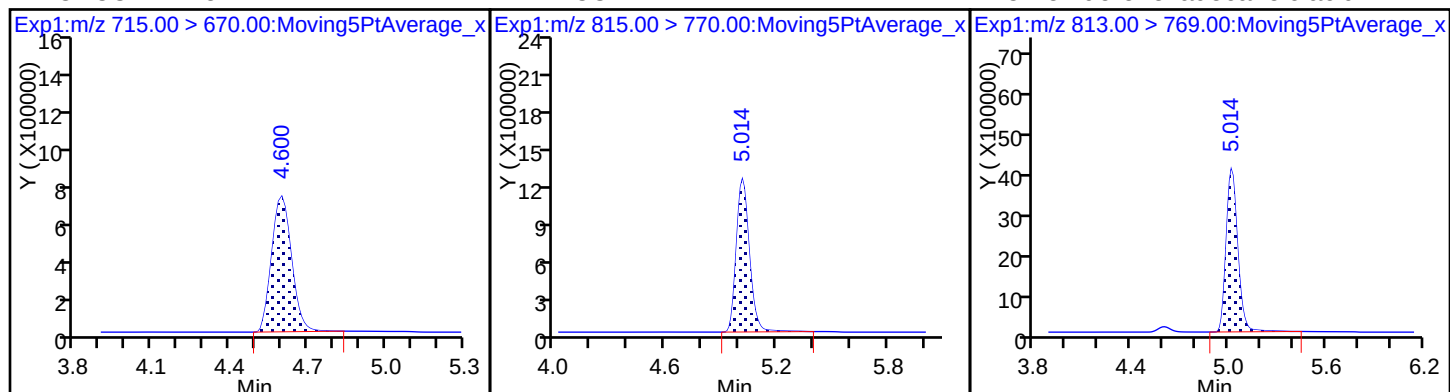
42 Perfluorotetradecanoic acid



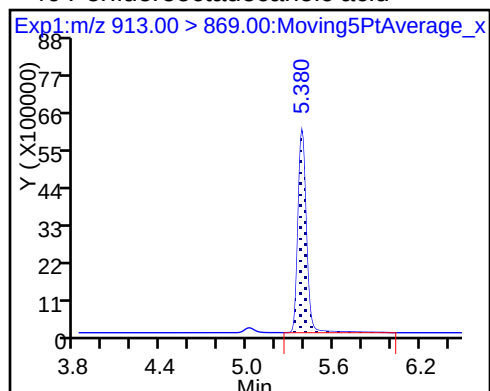
D 43 13C2-PFTeDA

D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_010.d
 Lims ID: IC M2-4:2FTS
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 14-Sep-2017 15:14:13 ALS Bottle#: 37 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: M2:4-2FTS Calibration Std
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 15-Sep-2017 08:46:24 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK026

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 60 M2-4:2FTS

329.00 > 309.00 2.040 2.040 0.0 5378349 NC 19455

* 62 13C2-PFOA

415.00 > 370.00 2.737 2.746 -0.009 10283677 50.0 16195

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCM2-4:2FTSIC_00003

Amount Added: 1.00

Units: mL

Report Date: 15-Sep-2017 08:46:25

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_010.d

Injection Date: 14-Sep-2017 15:14:13

Instrument ID: A8_N

Lims ID: IC M2-4:2FTS

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 37 Worklist Smp#: 10

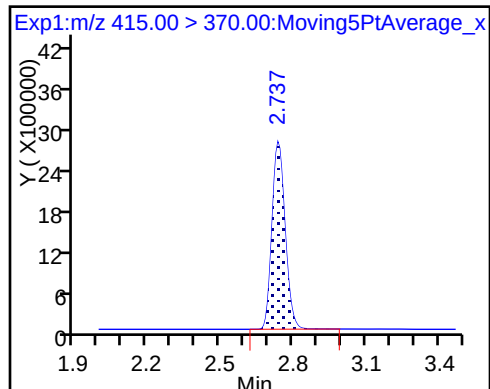
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

* 62 13C2-PFOA



FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185079/3	2017.09.18ICAL_003.d
Level 2	IC 320-185079/4	2017.09.18ICAL_004.d
Level 3	IC 320-185079/5	2017.09.18ICAL_005.d
Level 4	IC 320-185079/6	2017.09.18ICAL_006.d
Level 5	IC 320-185079/7	2017.09.18ICAL_007.d
Level 6	IC 320-185079/8	2017.09.18ICAL_008.d
Level 7	IC 320-185079/9	2017.09.18ICAL_009.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	1.528	1.537	1.537	1.537	1.537	1.530	++++				1.283 - 1.783	1.534
Perfluoropentanoic acid (PFPeA)	1.736	1.746	1.746	1.737	1.746	1.729	++++				1.489 - 1.989	1.740
Perfluorobutanesulfonic acid (PFBS)	1.763	1.773	1.773	1.764	1.764	1.757	++++				1.584 - 1.944	1.766
4:2 FTS	1.971	1.983	1.972	1.972	1.972	1.964	1.961				1.721 - 2.221	1.971
Perfluorohexanoic acid (PFHxA)	2.006	2.018	2.017	2.006	2.006	1.998	2.006				1.758 - 2.258	2.008
Perfluoroheptanoic acid (PFHpA)	2.344	2.352	2.349	2.344	2.339	2.332	2.331				2.092 - 2.592	2.342
Perfluorohexanesulfonic acid (PFHxS)	++++	2.360	2.357	2.360	2.355	2.348	2.350				2.105 - 2.605	2.355
6:2 FTS	++++	2.689	2.679	2.685	2.674	2.671	2.667				2.428 - 2.928	2.678
Perfluorooctanoic acid (PFOA)	2.709	2.711	2.708	2.706	2.703	2.700	2.696				2.455 - 2.955	2.705
Perfluoroheptanesulfonic Acid (PFHpS)	2.709	2.718	2.715	2.714	2.710	2.707	2.703				2.461 - 2.961	2.711
Perfluorooctanesulfonic acid (PFOS)	3.087	3.097	3.093	3.088	3.084	3.079	3.073				2.836 - 3.336	3.086
Perfluorononanoic acid (PFNA)	3.087	3.097	3.093	3.088	3.084	3.079	3.082				2.837 - 3.337	3.087
Perfluorooctane Sulfonamide (FOSA)	3.406	3.409	3.413	3.414	3.402	3.404	++++				3.157 - 3.657	3.408
8:2 FTS	3.441	3.453	3.447	3.440	3.439	3.432	3.435				3.191 - 3.691	3.441
Perfluorodecanoic acid (PFDA)	3.450	3.462	3.456	3.449	3.448	3.441	3.444				3.200 - 3.700	3.450
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	3.616	3.620	3.622	3.617	3.610	3.601	3.604				3.363 - 3.863	3.613
Perfluorodecanesulfonic acid (PFDS)	3.773	3.777	3.768	3.763	3.766	3.758	3.751				3.515 - 4.015	3.765
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.792	3.796	3.787	3.783	3.786	3.778	3.771				3.535 - 4.035	3.785
Perfluoroundecanoic acid (PFUnA)	3.792	3.796	3.787	3.783	3.786	3.778	3.771				3.535 - 4.035	3.785
MeFOSA	3.890	3.903	3.904	3.901	3.896	3.891	3.894				3.647 - 4.147	3.897
Perfluorododecanoic acid (PFDoA)	4.084	4.089	4.089	4.079	4.079	4.075	4.070				3.831 - 4.331	4.081
N-EtFOSA-M	4.084	4.089	4.089	4.088	4.087	4.084	4.079				3.836 - 4.336	4.086
Perfluorotridecanoic Acid (PFTriA)	4.355	4.361	4.353	4.353	4.354	4.338	4.335				4.100 - 4.600	4.350
Perfluorotetradecanoic acid (PFTeA)	4.593	4.591	4.591	4.591	4.585	4.572	4.571				4.335 - 4.835	4.585
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++	5.027	5.017	5.017	5.007	5.006	4.996				4.763 - 5.263	5.012
Perfluoro-n-octadecanoic acid (PFODA)	5.390	5.396	5.388	5.379	5.372	5.370	5.361				5.129 - 5.629	5.379
13C4 PFBA	1.528	1.537	1.537	1.528	1.537	1.521	1.529				1.281 - 1.781	1.531
13C5 PFPeA	1.736	1.746	1.746	1.737	1.737	1.729	1.728				1.487 - 1.987	1.737
13C3-PFBS	1.754	1.764	1.764	1.764	1.764	1.757	1.755				1.660 - 1.860	1.760
13C2 PFHxA	2.006	2.018	2.017	2.006	2.006	1.998	2.006				1.758 - 2.258	2.008
13C4-PFHpA	2.344	2.344	2.349	2.344	2.339	2.332	2.331				2.090 - 2.590	2.340
18O2 PFHxS	2.352	2.360	2.357	2.360	2.355	2.348	2.350				2.105 - 2.605	2.355

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
M2-6:2FTS	2.680	2.689	2.679	2.685	2.674	2.671	2.667				2.428 - 2.928	2.678
13C4 PFOA	2.702	2.711	2.708	2.706	2.703	2.700	2.696				2.454 - 2.954	2.704
13C4 PFOS	3.087	3.097	3.085	3.088	3.084	3.079	3.073				2.835 - 3.335	3.085
13C5 PFNA	3.087	3.097	3.093	3.088	3.084	3.079	3.073				2.836 - 3.336	3.086
13C8 FOSA	3.406	3.409	3.413	3.404	3.402	3.395	3.398				3.154 - 3.654	3.404
M2-8:2FTS	3.441	3.453	3.447	3.440	3.439	3.432	3.426				3.190 - 3.690	3.440
13C2 PFDA	3.450	3.462	3.456	3.449	3.448	3.441	3.444				3.200 - 3.700	3.450
d3-NMeFOSAA	3.606	3.620	3.612	3.607	3.610	3.601	3.593				3.357 - 3.857	3.607
d5-NEtFOSAA	3.782	3.787	3.778	3.783	3.776	3.768	3.771				3.528 - 4.028	3.778
13C2 PFUnA	3.782	3.796	3.787	3.783	3.786	3.778	3.771				3.533 - 4.033	3.783
d-N-MeFOSA-M	3.890	3.894	3.895	3.893	3.896	3.882	3.886				3.641 - 4.141	3.891
d-N-EtFOSA-M	4.075	4.081	4.081	4.079	4.079	4.075	4.079				3.828 - 4.328	4.078
13C2 PFDoA	4.084	4.089	4.089	4.079	4.079	4.075	4.070				3.831 - 4.331	4.081
13C2-PFTeDA	4.593	4.603	4.602	4.591	4.597	4.584	4.583				4.343 - 4.843	4.593
13C2-PFHxDA	5.019	5.027	5.017	5.008	5.007	5.006	4.996				4.761 - 5.261	5.011

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185079/3	2017.09.18ICAL_003.d
Level 2	IC 320-185079/4	2017.09.18ICAL_004.d
Level 3	IC 320-185079/5	2017.09.18ICAL_005.d
Level 4	IC 320-185079/6	2017.09.18ICAL_006.d
Level 5	IC 320-185079/7	2017.09.18ICAL_007.d
Level 6	IC 320-185079/8	2017.09.18ICAL_008.d
Level 7	IC 320-185079/9	2017.09.18ICAL_009.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	345224 297762	318552 299985	341163 273002	298915	Ave		310657.303				8.3		50.0			
13C5 PFPeA	217698 181736	198465 174099	208813 150476	186917	Ave		188315.037				12.0		50.0			
13C3-PFBS	6018.5 4922.8	5083.1 5122.2	5780.4 4432.4	4875.5	Ave		5176.39631				10.6		50.0			
13C2 PFHxA	230130 193871	209166 191160	220039 175101	189201	Ave		201238.320				9.6		50.0			
13C4-PFHpA	209252 179654	188608 179682	203978 145262	178335	Ave		183538.623				11.4		50.0			
18O2 PFHxS	313059 276426	284835 286263	308751 261988	268587	Ave		285701.268				6.7		50.0			
M2-6:2FTS	96833 88196	97887 87089	92957 85014	92916	Ave		91555.9338				5.4		50.0			
13C4 PFOA	189972 170221	192725 148497	184277 127872	183206	Ave		170967.151				14.2		50.0			
13C4 PFOS	213016 187146	196950 193313	212146 177752	181708	Ave		194576.007				7.1		50.0			
13C5 PFNA	143934 121194	134715 116259	141306 100726	117522	Ave		125093.597				12.4		50.0			
13C8 FOSA	323362 283045	288815 293924	314419 275456	280571	Ave		294227.486				6.1		50.0			
M2-8:2FTS	68658 59497	61088 61730	65684 57974	57969	Ave		61800.0626				6.5		50.0			
13C2 PFDA	115580 98456	107219 100228	113677 90596	99747	Ave		103643.274				8.6		50.0			
d3-NMeFOSAA	30769 26389	28124 28546	31002 27064	26430	Ave		28331.9429				6.8		50.0			

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
d5-NEtFOSAA	31056 26135	29475 27556	30362 24657	26129	Ave		27909.9571				8.7		50.0			
13C2 PFUnA	76726 61502	72089 64618	72330 55834	64907	Ave		66857.8143				10.8		50.0			
d-N-MeFOSA-M	74073 69411	71858 76140	76393 75792	65596	Ave		72751.8286				5.6		50.0			
d-N-EtFOSA-M	65091 62408	66010 66065	69752 64751	62111	Ave		65169.6886				3.9		50.0			
13C2 PFDoA	65379 57826	63912 57007	65521 52999	57989	Ave		60090.5571				8.1		50.0			
13C2-PFTeDA	85655 68517	77319 72410	79638 61942	72311	Ave		73970.3000				10.5		50.0			
13C2-PFHxDA	91998 86039	91216 89886	103349 81231	85080	Ave		89828.5429				7.9		50.0			

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

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)	1.0880 0.7791	1.0238 ++++	1.0264	0.9982	0.9023	AveID		0.9696				11.5		35.0			
Perfluoropentanoic acid (PFPeA)	1.3924 0.9809	1.1612 ++++	1.1500	1.0942	1.0746	AveID		1.1422				12.1		35.0			
Perfluorobutanesulfonic acid (PFBS)	75.415 55.340	80.546 ++++	74.917	75.525	68.300	AveID		71.674				12.4		50.0			
4:2 FTS	1.2479 1.0354	1.0169 0.8595	1.1933	1.0162	0.9637	AveID		1.0476				12.7		35.0			
Perfluorohexanoic acid (PFHxA)	1.1172 0.8859	1.0172 0.7523	0.9924	0.9967	0.9502	AveID		0.9588				12.0		35.0			
Perfluoroheptanoic acid (PFHpA)	1.0782 0.9088	1.0308 0.8391	1.0236	0.9862	0.9944	AveID		0.9802				8.3		35.0			
Perfluorohexanesulfonic acid (PFHxS)	++++ 0.9776	1.2638 0.8381	1.1271	1.0884	1.0781	AveID		1.0622				13.5		35.0			
6:2FTS	++++ 0.8586	1.0138 0.7146	0.9157	0.8836	0.8302	AveID		0.8694				11.4		35.0			
Perfluorooctanoic acid (PFOA)	1.2679 1.0232	1.1411 0.9127	1.0791	1.0588	1.0503	AveID		1.0761				10.1		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.3685 1.0989	1.3242 0.9125	1.3049	1.3676	1.2548	AveID		1.2331				13.7		50.0			
Perfluorooctanesulfonic acid (PFOS)	1.3570 1.0174	1.2017 0.9499	1.0575	1.0238	1.0325	AveID		1.0914				12.8		35.0			
Perfluorononanoic acid (PFNA)	1.0126 0.9514	1.0109 0.9312	0.9703	1.0041	0.9756	AveID		0.9795				3.2		35.0			
Perfluorooctane Sulfonamide (FOSA)	1.0958 0.8236	1.1105 ++++	1.0581	1.0127	0.9537	AveID		1.0091				10.6		35.0			
8:2FTS	0.9392 0.8944	1.0585 0.7882	0.9914	0.9260	0.8714	AveID		0.9241				9.4		35.0			
Perfluorodecanoic acid (PFDA)	1.0066 0.9304	0.9542 0.8935	0.9196	0.9431	0.9227	AveID		0.9386				3.8		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	1.0093 0.9475	0.9863 0.9759	0.9425	0.9212	0.9144	AveID		0.9567				3.7		35.0			
Perfluorodecanesulfonic acid (PFDS)	0.6213 0.5921	0.5893 0.5282	0.5913	0.6220	0.6079	AveID		0.5931				5.4		50.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.8733 0.9222	0.8701 0.9102	0.9120	0.8772	0.8122	AveID		0.8825				4.2		35.0			
Perfluoroundecanoic acid (PFUnA)	1.4040 1.0285	1.1143 0.9932	1.1312	1.0355	1.0613	AveID		1.1097				12.5		35.0			

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.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

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								
MeFOSA	0.9753 0.8945	0.9325 0.8366	0.8938	0.8823	0.8684	AveID		0.8977				5.0		35.0			
Perfluorododecanoic acid (PFDoA)	1.1030 0.9139	0.9846 0.9331	0.9672	0.9316	0.9432	AveID		0.9681				6.6		35.0			
N-EtFOSA-M	0.9481 0.9454	0.9716 0.9099	0.9687	0.9114	0.9426	AveID		0.9425				2.6		35.0			
Perfluorotridecanoic Acid (PFTriA)	1.0629 0.9503	0.8693 0.9601	0.9595	0.8835	0.9234	AveID		0.9441				6.7		50.0			
Perfluorotetradecanoic acid (PFTeA)	0.2469 0.2299	0.2357 0.2457	0.2585	0.2243	0.2458	AveID		0.2410				4.8		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 0.8916	1.3177 0.8829	0.9867	0.9095	0.8595	L2ID	0.4410	0.8802							1.0000		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	1.1582 1.0197	1.1280 1.0962	1.0574	1.1157	1.1636	AveID		1.1055				4.7		50.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185079/3	2017.09.18ICAL_003.d
Level 2	IC 320-185079/4	2017.09.18ICAL_004.d
Level 3	IC 320-185079/5	2017.09.18ICAL_005.d
Level 4	IC 320-185079/6	2017.09.18ICAL_006.d
Level 5	IC 320-185079/7	2017.09.18ICAL_007.d
Level 6	IC 320-185079/8	2017.09.18ICAL_008.d
Level 7	IC 320-185079/9	2017.09.18ICAL_009.d

ANALYTE	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
13C4 PFBA	Ave	17261178 14999243	15927582 13650075	17058155	14945728	14888095	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5 PFPeA	Ave	10884909 8704961	9923274 7523800	10440651	9345866	9086802	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C3-PFBS	Ave	279859 238183	236363 206106	268788	226709	228909	46.5 46.5	46.5 46.5	46.5	46.5	46.5
13C2 PFHxA	Ave	11506508 9557992	10458293 8755064	11001951	9460062	9693542	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	10462584 8984083	9430421 7263102	10198911	8916742	8982675	50.0 50.0	50.0 50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	14807673 13540255	13472685 12392029	14603935	12704160	13074953	47.3 47.3	47.3 47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	4599569 4136709	4649610 4038178	4415439	4413527	4189316	47.5 47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	9498588 7424834	9636269 6393600	9213859	9160282	8511071	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	10182169 9240381	9414213 8496564	10140596	8685623	8945586	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	7196704 5812937	6735737 5036279	7065300	5876099	6059703	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	16168075 14696214	14440752 13772811	15720954	14028574	14152240	50.0 50.0	50.0 50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	3288731 2956873	2926129 2776975	3146242	2776720	2849891	47.9 47.9	47.9 47.9	47.9	47.9	47.9
13C2 PFDA	Ave	5778978 5011421	5360962 4529795	5683839	4987363	4922788	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d3-NMeFOSAA	Ave	1538445 1427289	1406222 1353186	1550098	1321475	1319465	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	1552788 1377816	1473725 1232855	1518121	1306443	1306737	50.0 50.0	50.0 50.0	50.0	50.0	50.0

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

ANALYTE	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
13C2 PFUnA	Ave	3836277 3230898	3604455 2791697	3616481	3245328	3075099	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d-N-MeFOSA-M	Ave	3703669 3807001	3592885 3789607	3819649	3279789	3470540	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	3254550 3303241	3300493 3237549	3487605	3105530	3120423	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	3268959 2850339	3195613 2649968	3276050	2899468	2891298	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	4282739 3620486	3865967 3097097	3981903	3615562	3425851	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	4599905 4494320	4560794 4061560	5167464	4254000	4301947	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185079/3	2017.09.18ICAL_003.d
Level 2	IC 320-185079/4	2017.09.18ICAL_004.d
Level 3	IC 320-185079/5	2017.09.18ICAL_005.d
Level 4	IC 320-185079/6	2017.09.18ICAL_006.d
Level 5	IC 320-185079/7	2017.09.18ICAL_007.d
Level 6	IC 320-185079/8	2017.09.18ICAL_008.d
Level 7	IC 320-185079/9	2017.09.18ICAL_009.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	187794 23371257	326145 +++++	1750815	5967551	13433463	0.500 100	1.00 +++++	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	151559 17076720	230462 +++++	1200663	4090533	9764897	0.500 100	1.00 +++++	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		AveID	200616 25058068	361930 +++++	1914068	6510101	14861207	0.442 88.4	0.884 +++++	4.42	17.7	44.2
4:2 FTS		AveID	56433 8421949	92971 13649183	518018	1763737	3969200	0.467 93.4	0.934 187	4.67	18.7	46.7
Perfluorohexanoic acid (PFHxA)		AveID	128551 16934914	212754 26345592	1091784	3771369	9210798	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		AveID	112811 16330329	194421 24377138	1043975	3517572	8932267	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 25466661	327583 39960360	1583325	5320624	13559684	+++++ 91.0	0.910 182	4.55	18.2	45.5
6:2FTS		AveID	+++++ 7088731	94075 11518890	403490	1556700	3470702	+++++ 94.8	0.948 190	4.74	19.0	47.4
Perfluorooctanoic acid (PFOA)		AveID	120429 15194855	219913 23340778	994231	3879401	8939258	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	138755 20224079	248281 30883986	1317745	4731458	11177687	0.476 95.2	0.952 190	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)		AveID	134123 18251893	219634 31337906	1040951	3452894	8965528	0.464 92.8	0.928 186	4.64	18.6	46.4
Perfluorononanoic acid (PFNA)		AveID	72877 11060749	136184 18759616	685566	2360122	5911714	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	177166 24208958	320721 +++++	1663473	5682591	13496285	0.500 100	1.00 +++++	5.00	20.0	50.0
8:2FTS		AveID	30887 5289360	61945 8755172	311927	1028449	2483310	0.479 95.8	0.958 192	4.79	19.2	47.9
Perfluorodecanoic acid (PFDA)		AveID	58169 9325117	102307 16189228	522675	1881348	4542217	0.500 100	1.00 200	5.00	20.0	50.0

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

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	15528 2704667	27740 5282521	146090	486947	1206485	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	63787 11033673	111875 18101824	604653	2179120	5483257	0.482 96.4	0.964 193	4.82	19.3	48.2
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	13561 2541378	25647 4488594	138460	458411	1061364	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroundecanoic acid (PFUnA)		AveID	53860 6645978	80331 11090476	409105	1344215	3263666	0.500 100	1.00 200	5.00	20.0	50.0
MeFOSA		AveID	36123 6811022	67007 12682035	341407	1157544	3013970	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	36057 5209804	62928 9890327	316862	1080420	2727117	0.500 100	1.00 200	5.00	20.0	50.0
N-EtFOSA-M		AveID	30856 6245831	64134 11783227	337861	1132180	2941312	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotridecanoic Acid (PFTriA)		AveID	34746 5417121	55557 10176541	314322	1024716	2669871	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		AveID	10575 1664790	18224 3044185	102922	324372	842159	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	+++++ 8013992	120192 14343578	509854	1547680	3697336	+++++ 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)		AveID	53276 9165989	102891 17808831	546405	1898462	5005922	0.500 100	1.00 200	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution
L2ID = Linear 1/conc^2 IsoDil

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185079/3	2017.09.18ICAL_003.d
Level 2	IC 320-185079/4	2017.09.18ICAL_004.d
Level 3	IC 320-185079/5	2017.09.18ICAL_005.d
Level 4	IC 320-185079/6	2017.09.18ICAL_006.d
Level 5	IC 320-185079/7	2017.09.18ICAL_007.d
Level 6	IC 320-185079/8	2017.09.18ICAL_008.d
Level 7	IC 320-185079/9	2017.09.18ICAL_009.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)	+++++	5.6	5.9	2.9	-6.9	-19.7		25	25	25	25	25
Perfluoropentanoic acid (PFPeA)	+++++	1.7	0.7	-4.2	-5.9	-14.1		25	25	25	25	25
Perfluorobutanesulfonic acid (PFBS)	+++++	12.4	4.5	5.4	-4.7	-22.8		25	25	25	25	25
4:2 FTS	-18.0	-2.9	13.9	-3.0	-8.0	-1.2	25	25	25	25	25	25
Perfluorohexanoic acid (PFHxA)	-21.5	6.1	3.5	3.9	-0.9	-7.6	25	25	25	25	25	25
Perfluoroheptanoic acid (PFHpA)	-14.4	5.2	4.4	0.6	1.5	-7.3	25	25	25	25	25	25
Perfluorohexanesulfonic acid (PFHxS)	+++++ -21.1		6.1	2.5	1.5	-8.0	25		25	25	25	25
6:2FTS	+++++ -17.8		5.3	1.6	-4.5	-1.2	25		25	25	25	25
Perfluorooctanoic acid (PFOA)	-15.2	6.0	0.3	-1.6	-2.4	-4.9	25	25	25	25	25	25
Perfluoroheptanesulfonic Acid (PFHpS)	-26.0 *	7.4	5.8	10.9	1.8	-10.9	25	25	25	25	25	25
Perfluorooctanesulfonic acid (PFOS)	-13.0	10.1	-3.1	-6.2	-5.4	-6.8	25	25	25	25	25	25
Perfluorononanoic acid (PFNA)	-4.9	3.2	-0.9	2.5	-0.4	-2.9	25	25	25	25	25	25
Perfluorooctane Sulfonamide (FOSA)	+++++	10.1	4.9	0.4	-5.5	-18.4		25	25	25	25	25
8:2FTS	-14.7	14.5	7.3	0.2	-5.7	-3.2	25	25	25	25	25	25
Perfluorodecanoic acid (PFDA)	-4.8	1.7	-2.0	0.5	-1.7	-0.9	25	25	25	25	25	25

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

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)	2.0	3.1	-1.5	-3.7	-4.4	-1.0	25	25	25	25	25	25
Perfluorodecanesulfonic acid (PFDS)	-10.9	-0.7	-0.3	4.9	2.5	-0.2	25	25	25	25	25	25
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.1	-1.4	3.3	-0.6	-8.0	4.5	25	25	25	25	25	25
Perfluoroundecanoic acid (PFUnA)	-10.5	0.4	1.9	-6.7	-4.4	-7.3	25	25	25	25	25	25
MeFOSA	-6.8	3.9	-0.4	-1.7	-3.3	-0.3	25	25	25	25	25	25
Perfluorododecanoic acid (PFDoA)	-3.6	1.7	-0.1	-3.8	-2.6	-5.6	25	25	25	25	25	25
N-EtFOSA-M	-3.5	3.1	2.8	-3.3	0.0	0.3	25	25	25	25	25	25
Perfluorotridecanoic Acid (PFTriA)	1.7	-7.9	1.6	-6.4	-2.2	0.6	25	25	25	25	25	25
Perfluorotetradecanoic acid (PFTeA)	2.0	-2.2	7.3	-6.9	2.0	-4.6	25	25	25	25	25	25
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 0.1		2.1	0.8	-3.4	0.8	25		25	25	25	25
Perfluoro-n-octadecanoic acid (PFODA)	-0.8	2.0	-4.4	0.9	5.3	-7.8	25	25	25	25	25	25

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_003.d
 Lims ID: IC L1 Full
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 18-Sep-2017 15:45:55 ALS Bottle#: 28 Worklist Smp#: 3
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 08:23:54 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: phomsophat

Date: 18-Sep-2017 19:34:43

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	1.528	1.531	-0.003		17261178	55.6		111	37391	
2 Perfluorobutyric acid										
212.90 > 169.00	1.528	1.533	-0.005	1.000	187794	0.5610		112	30.2	
D 3 13C5-PFPeA										
267.90 > 223.00	1.736	1.737	-0.001		10884909	57.8		116	73334	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.736	1.739	-0.003	1.000	151559	0.6095		122	56.5	
D 47 13C3-PFBS										
301.90 > 83.00	1.754	1.760	-0.006		279859	54.1		116	7356	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.763	1.764	-0.001	1.000	200616	0.4651		105	3650	
298.90 > 99.00	1.763	1.764	-0.001	1.000	80426		2.49(0.00-0.00)	105	1590	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.971	1.971	0.0	1.000	56433	0.5563		119	2852	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.006	2.008	-0.002	1.000	128551	0.5826		117	294	
D 7 13C2 PFHxA										
315.00 > 270.00	2.006	2.008	-0.002		11506508	57.2		114	26531	
D 9 13C4-PFHpA										
367.00 > 322.00	2.344	2.340	0.004		10462584	57.0		114	23422	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.344	2.342	0.002	1.000	112811	0.5500		110	208	
D 11 18O2 PFHxS										
403.00 > 84.00	2.352	2.355	-0.003		14807673	51.8		110	26565	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.352	2.355	-0.003	1.000	215475	0.6480		142	2509	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.680	2.678	0.002		4599569	50.2		106	15289	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.680	2.678	0.002	1.000	54160	0.6433		136	1838	
* 62 13C2-PFOA										
415.00 > 370.00	2.702	2.701	0.001		9387301	50.0			42461	
D 14 13C4 PFOA										
417.00 > 372.00	2.702	2.704	-0.002		9498588	55.6		111	67890	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.709	2.705	0.004	1.000	120429	0.5891		118	10.9	
413.00 > 169.00	2.702	2.705	-0.003	0.997	66005		1.82(0.90-1.10)	118	682	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.709	2.711	-0.002	1.000	138755	0.5283		111	4161	
D 18 13C4 PFOS										
503.00 > 80.00	3.087	3.085	0.002		10182169	52.3		109	20605	
D 19 13C5 PFNA										
468.00 > 423.00	3.087	3.086	0.001		7196704	57.5		115	28430	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.087	3.086	0.001	1.000	134123	0.5769		124	2376	
499.00 > 99.00	3.087	3.086	0.001	1.000	29976		4.47(0.90-1.10)	124	148	
20 Perfluorononanoic acid										
463.00 > 419.00	3.087	3.087	0.0	1.000	72877	0.5169		103	93.0	
D 21 13C8 FOSA										
506.00 > 78.00	3.406	3.404	0.002		16168075	55.0		110	50362	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.406	3.407	-0.001	1.000	177166	0.5430		109	2354	
D 26 M2-8:2FTS										
529.00 > 509.00	3.441	3.440	0.001		3288731	53.2		111	21997	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.441	3.441	0.0	1.000	30887	0.4868		102	1457	
D 23 13C2 PFDA										
515.00 > 470.00	3.450	3.450	0.0		5778978	55.8		112	18233	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.450	3.450	0.0	1.000	58169	0.5362		107	143	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.606	3.607	-0.001		1538445	54.3		109	9401	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.616	3.613	0.003	1.003	15528	0.5275		105	368	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.773	3.765	0.008	1.000	63787	0.5048		105	2891	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.782	3.778	0.004		1552788	55.6		111	2445	
D 30 13C2 PFUnA										
565.00 > 520.00	3.782	3.783	-0.001		3836277	57.4		115	13387	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.792	3.785	0.007	1.003	13561	0.4948		99.0	185	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.792	3.785	0.007	1.000	53860	0.6326		127	79.5	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M	515.00 > 169.00	3.890	3.891	-0.001	3703669	50.9		102	610	
35 MeFOSA	512.00 > 169.00	3.890	3.897	-0.007	1.000	36123	0.5433	109	1145	
D 38 d-N-EtFOSA-M	531.00 > 169.00	4.075	4.078	-0.003	3254550	49.9		99.9	4520	
37 Perfluorododecanoic acid	613.00 > 569.00	4.084	4.081	0.003	1.000	36057	0.5697	114	22.3	
D 36 13C2 PFDaA	615.00 > 570.00	4.084	4.081	0.003	3268959	54.4		109	12853	
39 N-ethylperfluoro-1-octanesulfonami	526.00 > 169.00	4.084	4.086	-0.002	1.000	30856	0.5029	101	976	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.355	4.350	0.005	1.000	34746	0.5629	113	5.1	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.593	4.585	0.008	1.000	10575	0.5123	102	123	
	713.00 > 219.00	4.604	4.585	0.019	1.002	8506	1.24(0.00-0.00)	102	61.1	
D 43 13C2-PFTeDA	715.00 > 670.00	4.593	4.593	0.0	4282739	57.9		116	18385	
D 44 13C2-PFHxDA	815.00 > 770.00	5.019	5.011	0.008	4599905	51.2		102	5224	
45 Perfluorohexadecanoic acid	813.00 > 769.00	5.019	5.013	0.006	1.000	82734	0.5207	104	8.5	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.390	5.379	0.011	1.000	53276	0.5238	105	10.2	

Reagents:

LCPFC_FULL-L1_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_003.d

Injection Date: 18-Sep-2017 15:45:55

Instrument ID: A8_N

Lims ID: IC L1 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 28

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

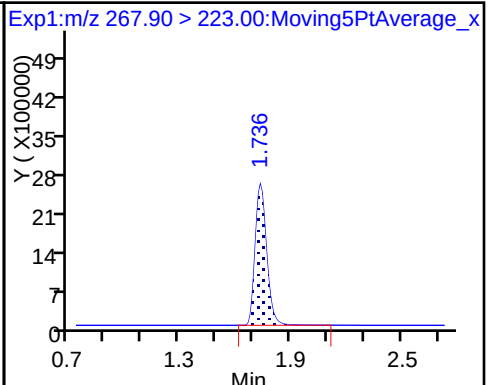
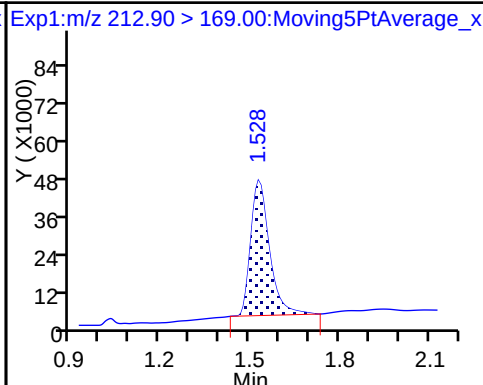
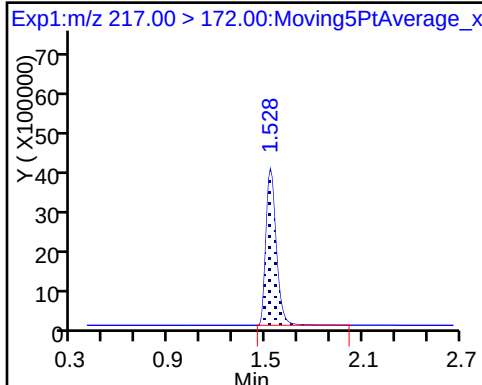
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

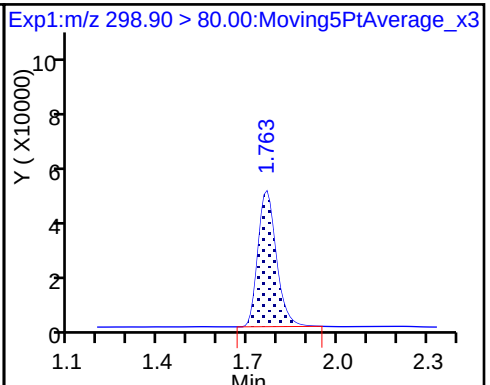
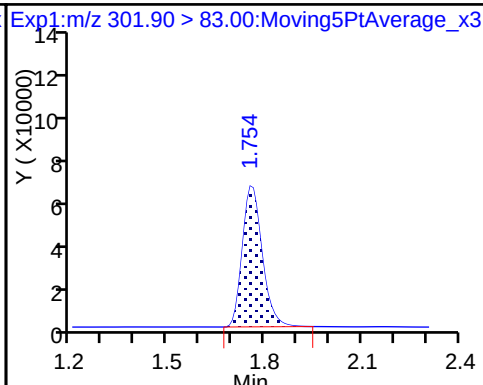
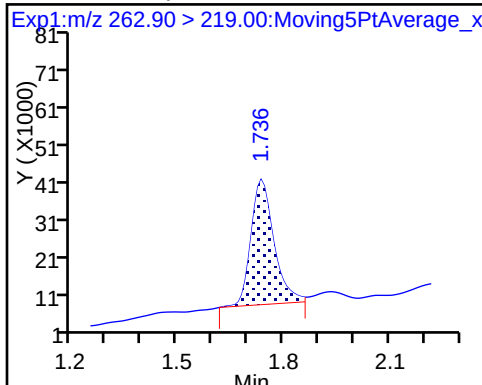
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

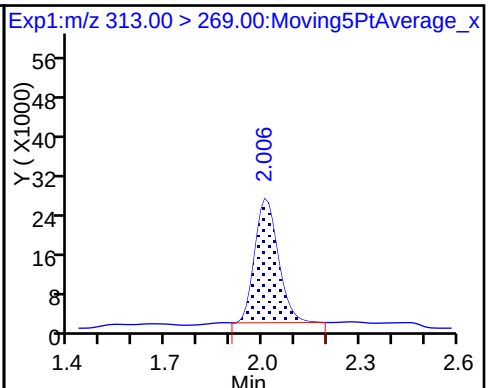
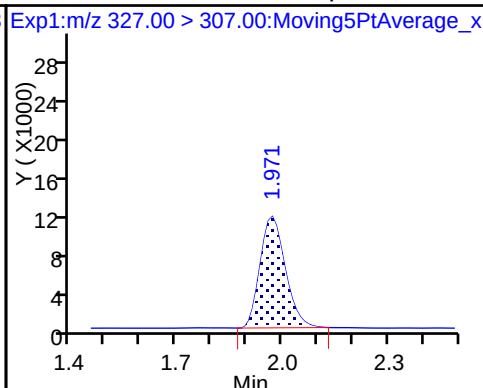
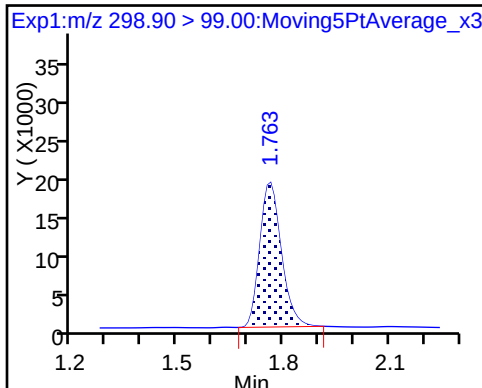
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoate

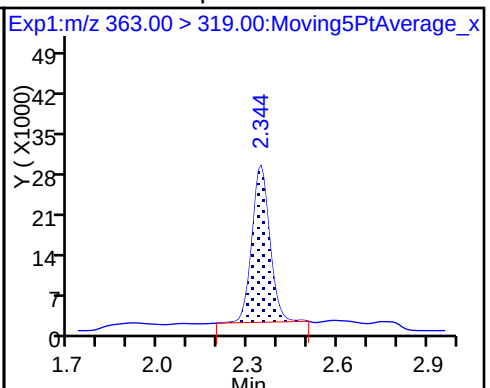
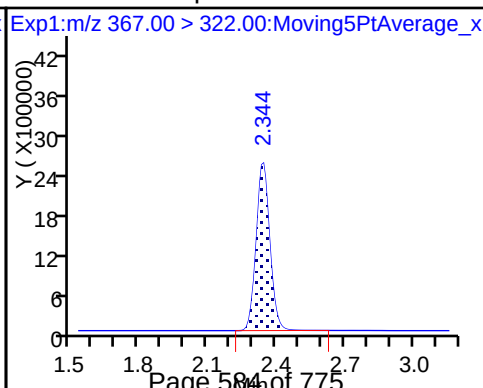
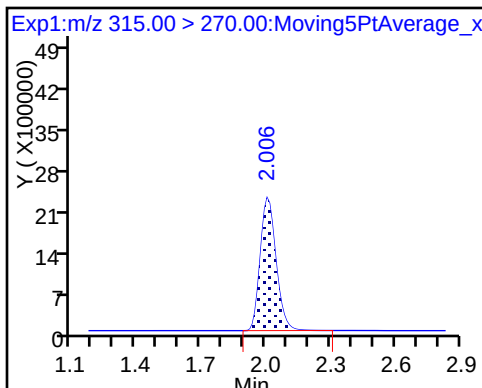
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

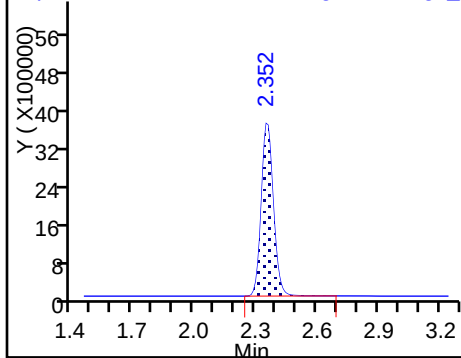


D 11 18O2 PFHxS

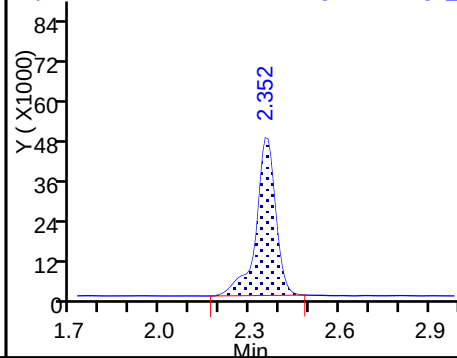
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

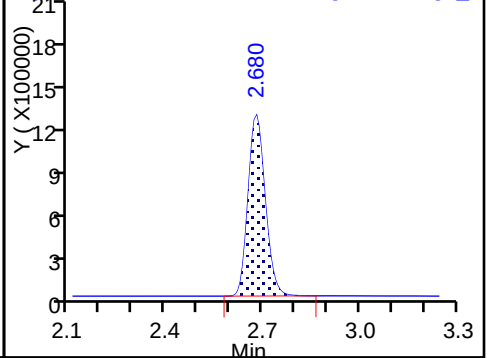
Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



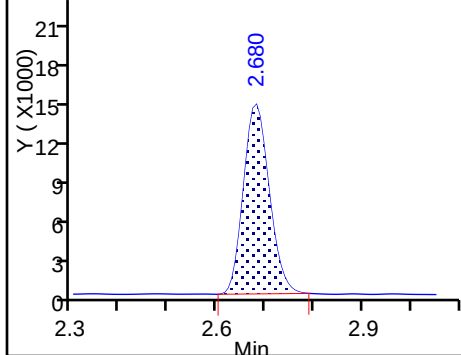
Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x3



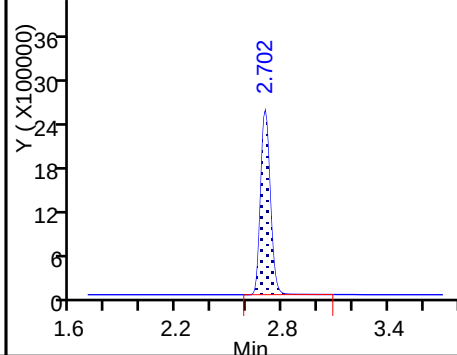
13 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 14 13C4 PFOA

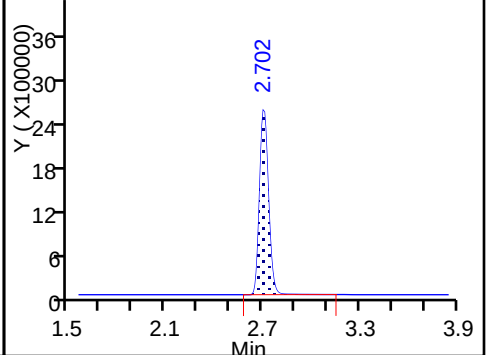
Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3



Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

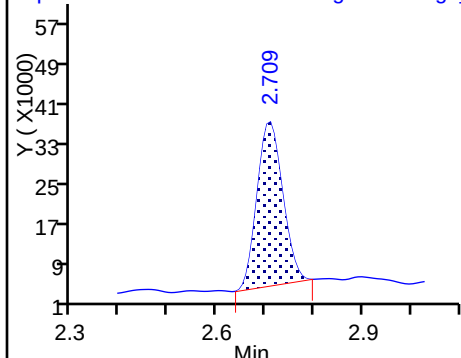


15 Perfluorooctanoic acid

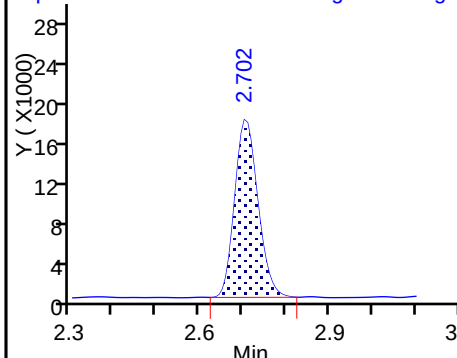
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

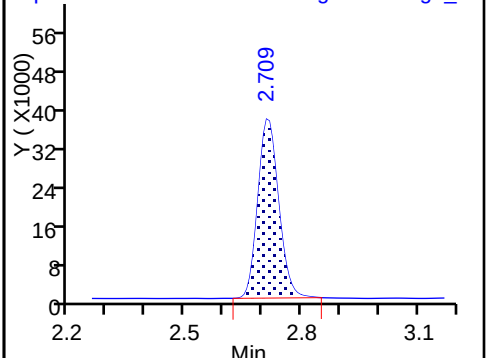
Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x3



Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

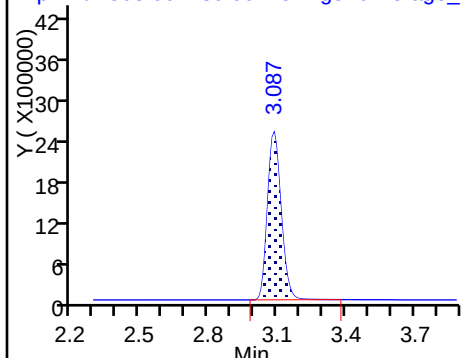


D 18 13C4 PFOS

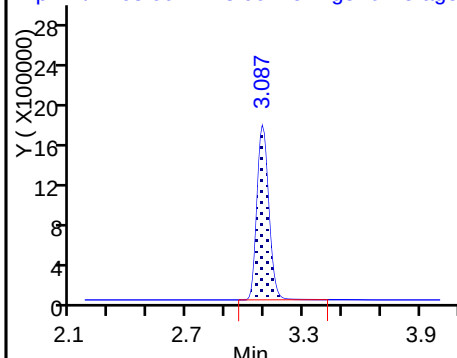
D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid

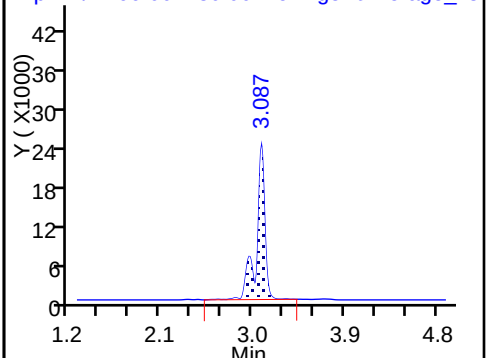
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



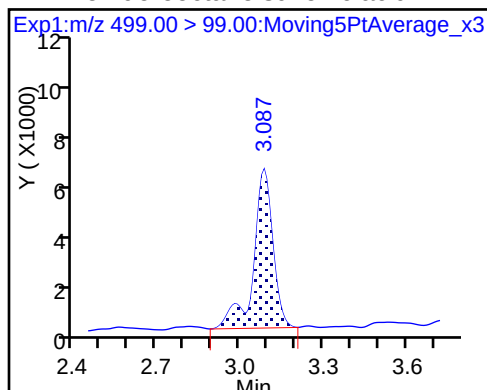
Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x3



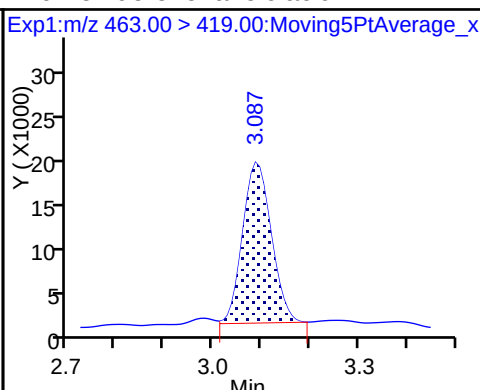
Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3



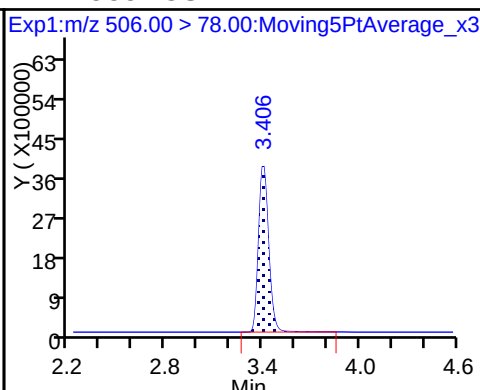
17 Perfluorooctane sulfonic acid



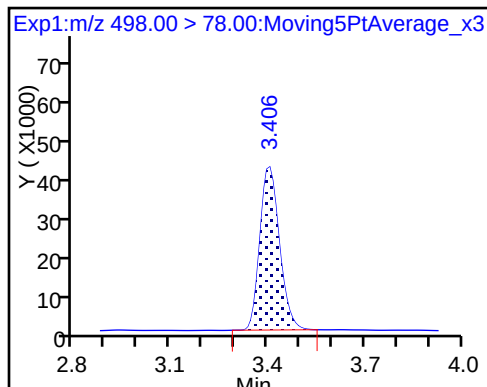
20 Perfluorononanoic acid



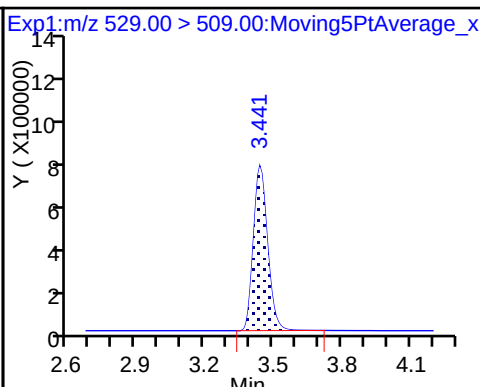
D 21 13C8 FOSA



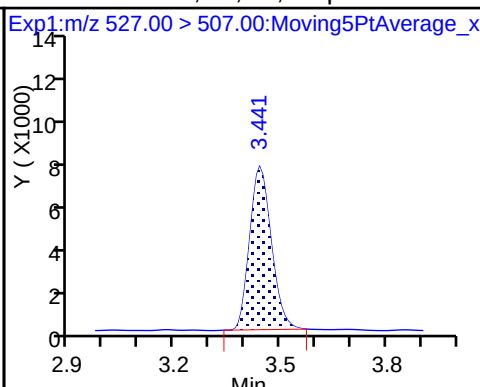
22 Perfluorooctane Sulfonamide



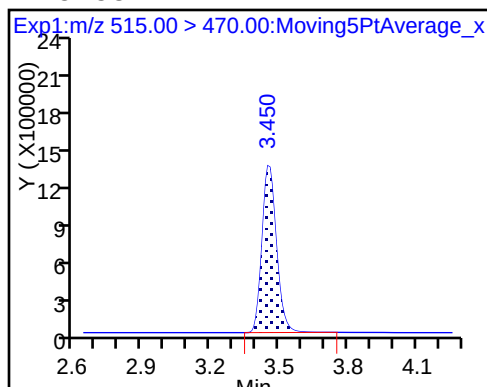
D 26 M2-8:2FTS



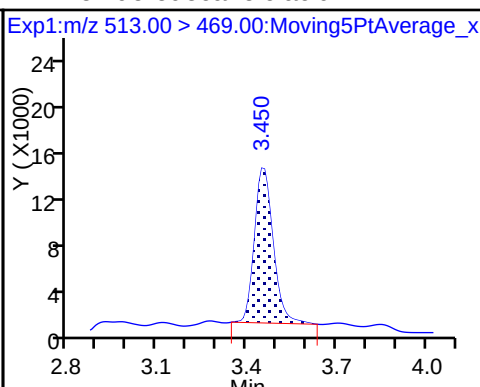
25 Sodium 1H,1H,2H,2H-perfluorodecane



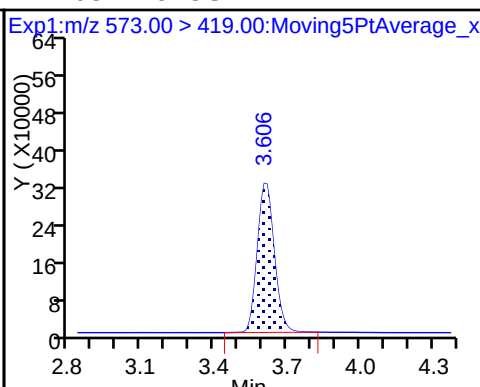
D 23 13C2 PFDA



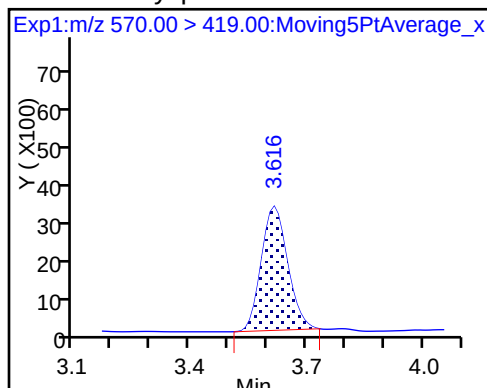
24 Perfluorodecanoic acid



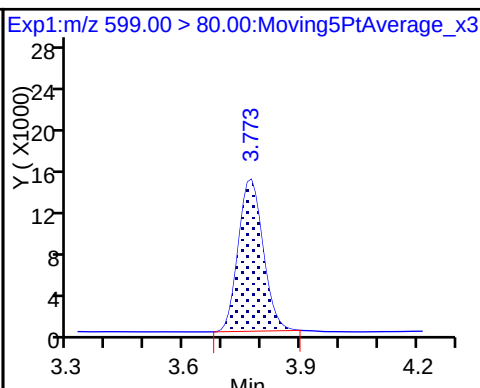
D 27 d3-NMeFOSAA



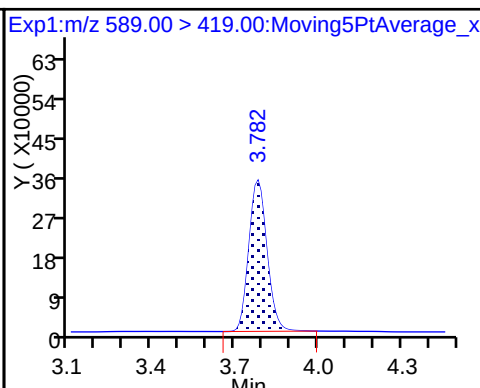
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid



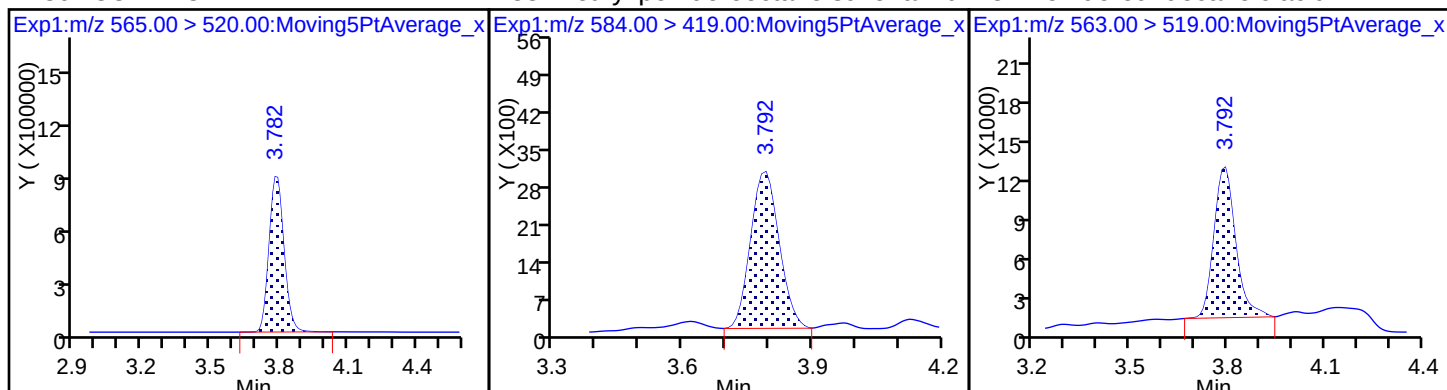
D 32 d5-NEtFOSAA



D 30 13C2 PFUnA

33 N-ethyl perfluorooctane sulfonamid

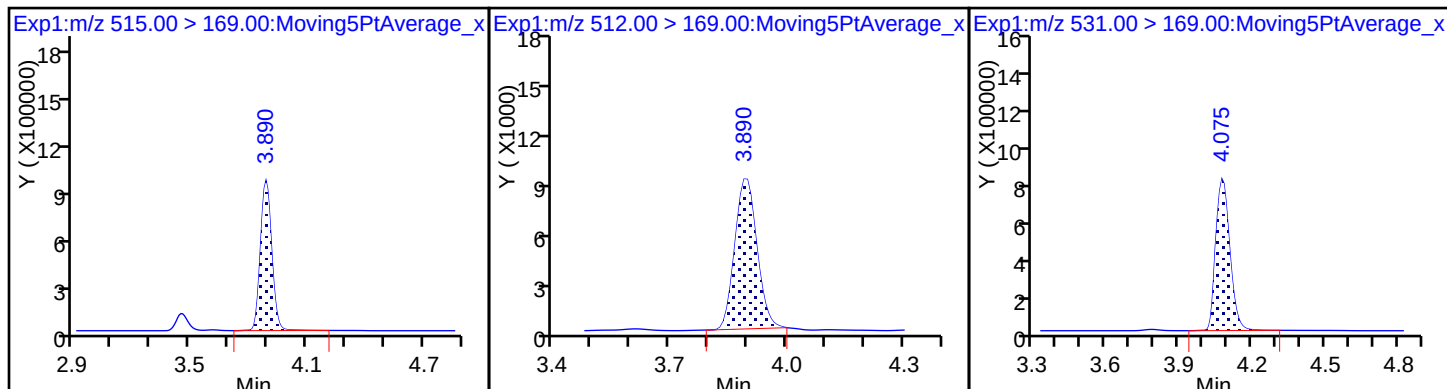
31 Perfluoroundecanoic acid



D 34 d-N-MeFOSA-M

35 MeFOSA

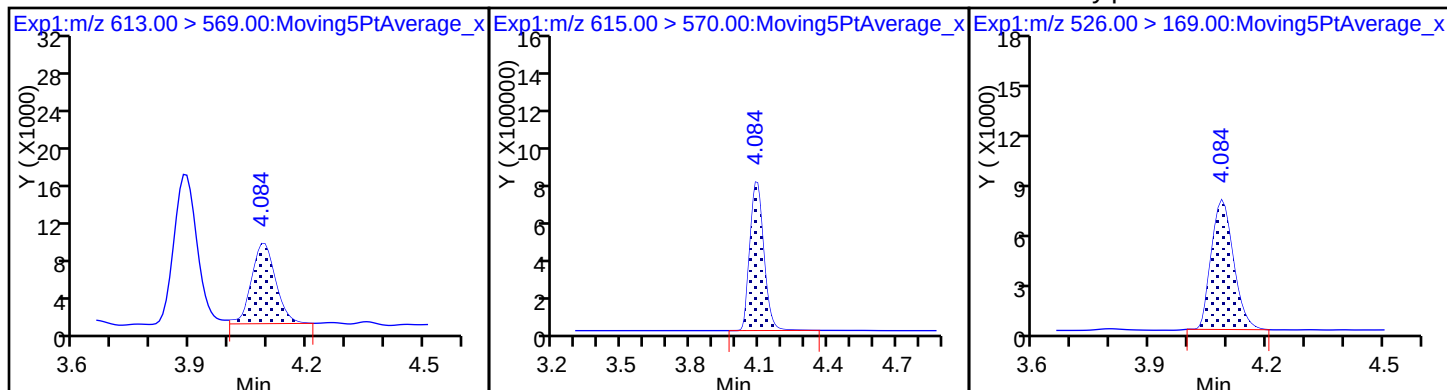
D 38 d-N-EtFOSA-M



37 Perfluorododecanoic acid

D 36 13C2 PFDaA

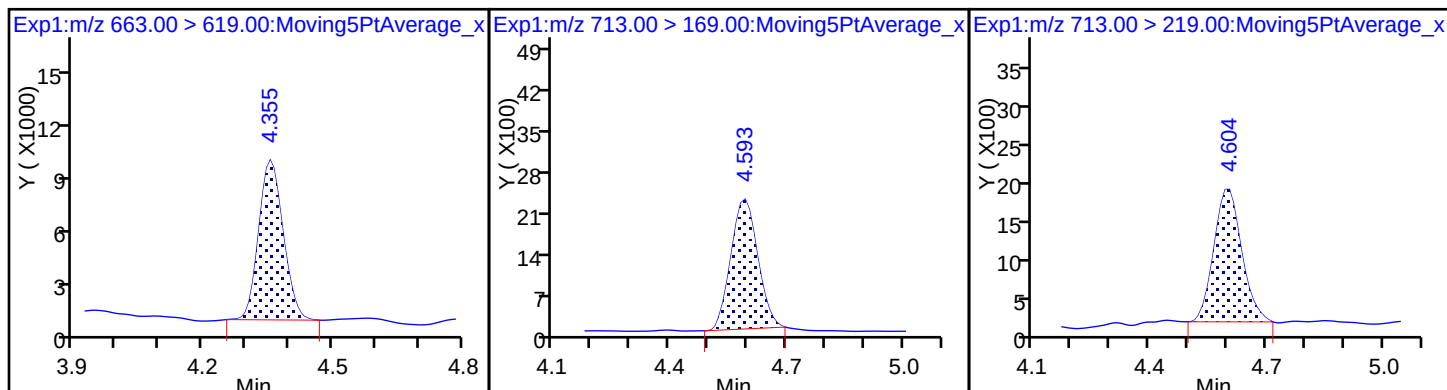
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

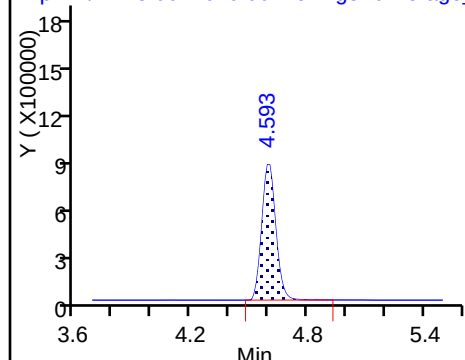


D 43 13C2-PFTeDA

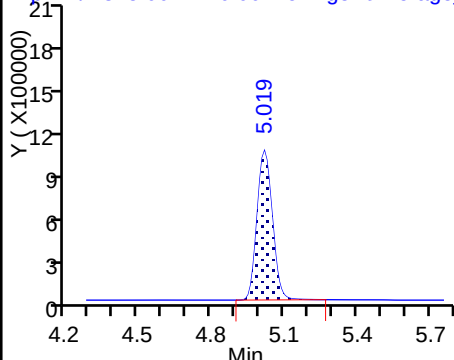
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

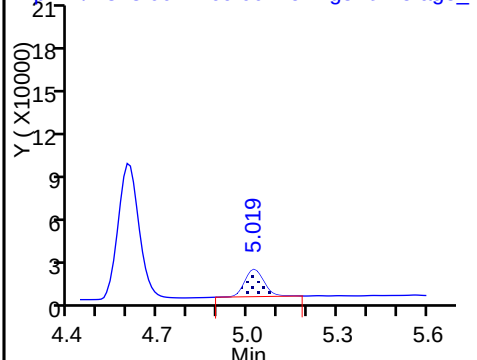
Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

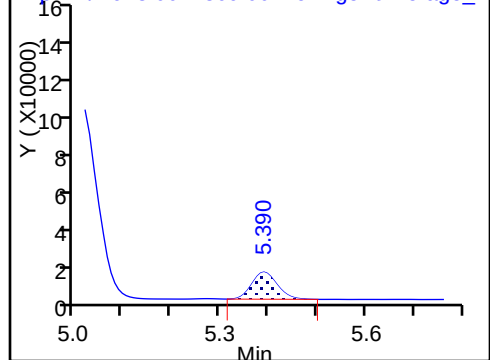


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_004.d
 Lims ID: IC L2 Full
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 18-Sep-2017 15:52:49 ALS Bottle#: 29 Worklist Smp#: 4
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 08:23:57 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: phomsophat

Date: 18-Sep-2017 19:35:40

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	1.537	1.531	0.006		15927582	51.3		103	41411	
2 Perfluorobutyric acid										
212.90 > 169.00	1.537	1.533	0.004	1.000	326145	1.06		106	56.0	
D 3 13C5-PFPeA										
267.90 > 223.00	1.746	1.737	0.009		9923274	52.7		105	58869	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.746	1.739	0.007	1.000	230462	1.02		102	90.9	M
D 47 13C3-PFBS										
301.90 > 83.00	1.764	1.760	0.004		236363	45.7		98.2	6988	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.773	1.764	0.009	1.000	361930	0.99		112	6590	
298.90 > 99.00	1.773	1.764	0.009	1.000	147516		2.45(0.00-0.00)	112	2887	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.983	1.971	0.012	1.000	92971	0.9067		97.1	6147	
D 7 13C2 PFHxA										
315.00 > 270.00	2.018	2.008	0.010		10458293	52.0		104	28830	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.018	2.008	0.010	1.000	212754	1.06		106	507	
D 9 13C4-PFHpA										
367.00 > 322.00	2.344	2.340	0.004		9430421	51.4		103	26884	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.352	2.342	0.010	1.000	194421	1.05		105	313	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.360	2.355	0.005	1.000	327583	1.08		119	3433	
D 11 18O2 PFHxS										
403.00 > 84.00	2.360	2.355	0.005		13472685	47.2		99.7	29061	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.689	2.678	0.011	1.000	94075	1.11		117	3132	
D 12 M2-6:2FTS										
429.00 > 409.00	2.689	2.678	0.011		4649610	50.8		107	20193	
* 62 13C2-PFOA										
415.00 > 370.00	2.711	2.701	0.010		9390602	50.0			52068	
D 14 13C4 PFOA										
417.00 > 372.00	2.711	2.704	0.007		9636269	56.4		113	32295	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.711	2.705	0.006	1.000	219913	1.06		106	21.8	
413.00 > 169.00	2.711	2.705	0.006	1.000	127604		1.72(0.90-1.10)	106	1196	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.718	2.711	0.007	1.000	248281	1.02		107	6111	
D 18 13C4 PFOS										
503.00 > 80.00	3.097	3.085	0.012		9414213	48.4		101	17485	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.097	3.086	0.011	1.000	219634	1.02		110	2468	
499.00 > 99.00	3.097	3.086	0.011	1.000	45845		4.79(0.90-1.10)	110	247	
D 19 13C5 PFNA										
468.00 > 423.00	3.097	3.086	0.011		6735737	53.8		108	23941	
20 Perfluorononanoic acid										
463.00 > 419.00	3.097	3.087	0.010	1.000	136184	1.03		103	197	
D 21 13C8 FOSA										
506.00 > 78.00	3.409	3.404	0.005		14440752	49.1		98.2	14457	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.409	3.407	0.002	1.000	320721	1.10		110	4022	
D 26 M2-8:2FTS										
529.00 > 509.00	3.453	3.440	0.013		2926129	47.3		98.8	16909	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.453	3.441	0.012	1.000	61945	1.10		115	2872	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.462	3.450	0.012	1.000	102307	1.02		102	242	
D 23 13C2 PFDA										
515.00 > 470.00	3.462	3.450	0.012		5360962	51.7		103	34712	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.620	3.607	0.013		1406222	49.6		99.3	8612	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.620	3.613	0.007	1.000	27740	1.03		103	980	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.777	3.765	0.012	1.000	111875	0.9577		99.3	3154	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.787	3.778	0.009		1473725	52.8		106	2575	
D 30 13C2 PFUnA										
565.00 > 520.00	3.796	3.783	0.013		3604455	53.9		108	15937	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.796	3.785	0.011	1.000	80331	1.00		100	127	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.796	3.785	0.011	1.003	25647	0.9860		98.6	472	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.894	3.891	0.003		3592885	49.4		98.8	642	
35 MeFOSA										
512.00 > 169.00	3.903	3.897	0.006	1.000	67007	1.04		104	1921	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.081	4.078	0.003		3300493	50.6		101	5273	
D 36 13C2 PFDaA										
615.00 > 570.00	4.089	4.081	0.008		3195613	53.2		106	10607	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.089	4.081	0.008	1.000	62928	1.02		102	39.9	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.089	4.086	0.003	1.000	64134	1.03		103	2001	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.361	4.350	0.011	1.000	55557	0.9207		92.1	8.8	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.591	4.585	0.006	1.000	18224	0.9781		97.8	206	
713.00 > 219.00	4.603	4.585	0.018	1.002	14992		1.22(0.00-0.00)	97.8	124	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.603	4.593	0.010		3865967	52.3		105	11298	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.027	5.011	0.016		4560794	50.8		102	4370	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.027	5.013	0.014	1.000	120192	1.00		99.6	12.5	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.396	5.379	0.017	1.000	102891	1.02		102	18.7	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L2_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_004.d

Injection Date: 18-Sep-2017 15:52:49

Instrument ID: A8_N

Lims ID: IC L2 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

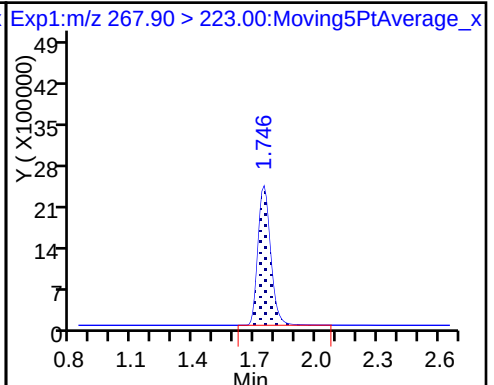
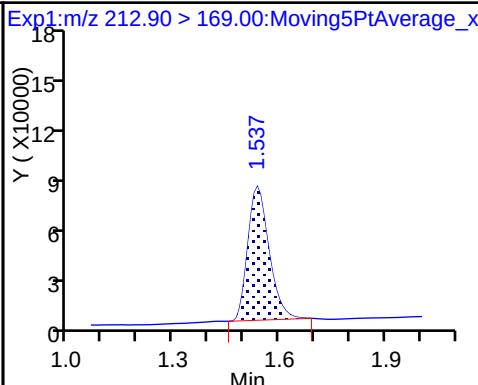
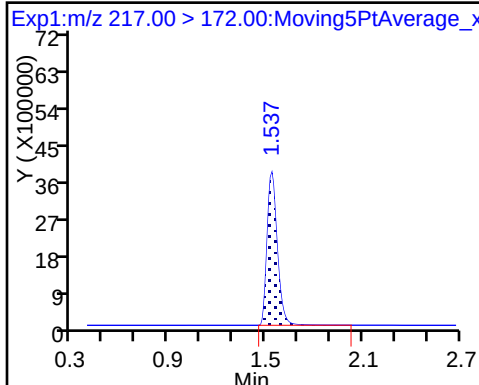
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

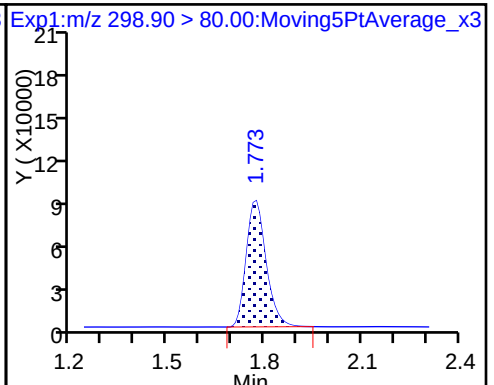
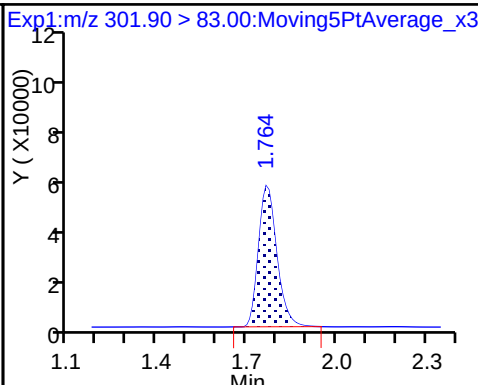
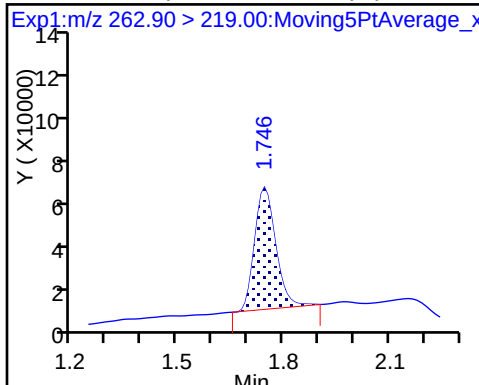
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (M)

D 47 13C3-PFBS

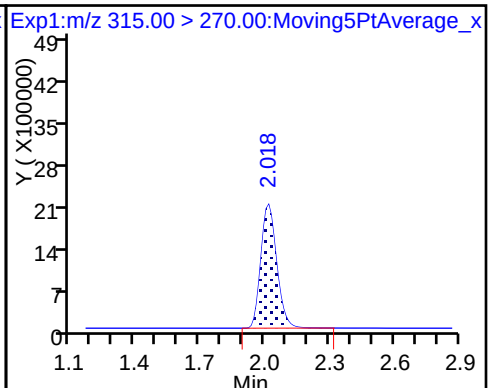
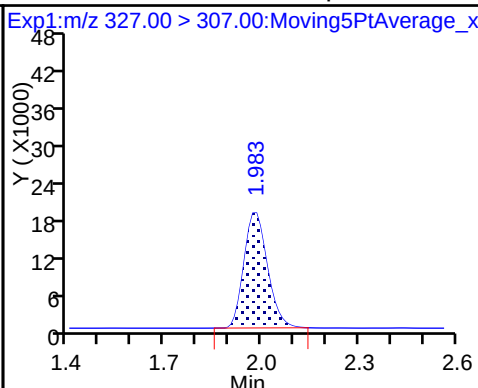
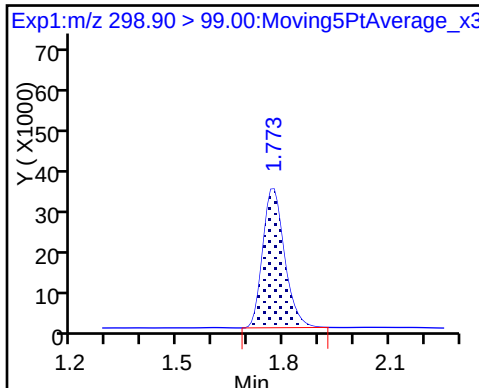
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

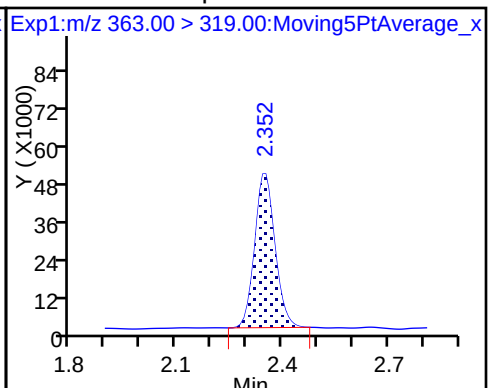
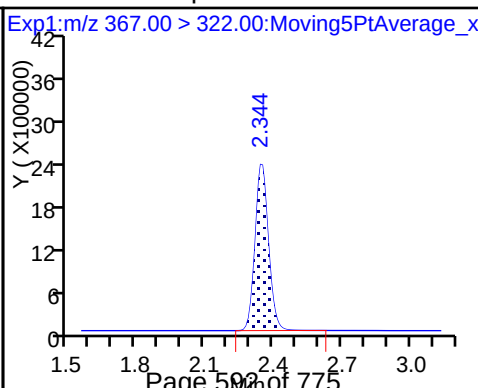
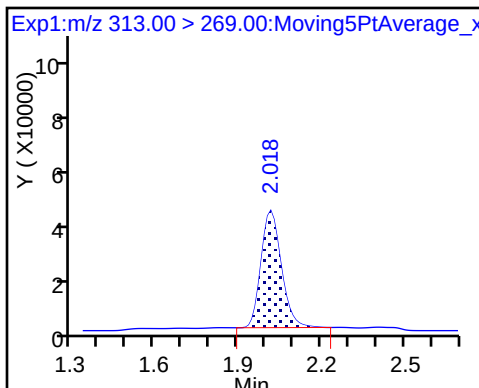
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

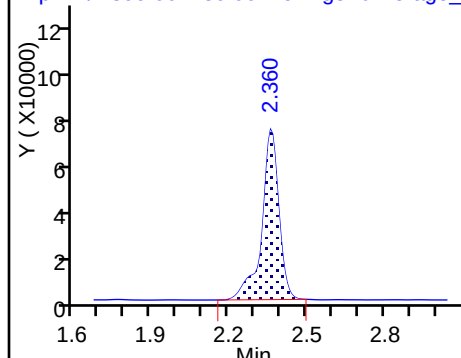


8 Perfluorohexanesulfonic acid

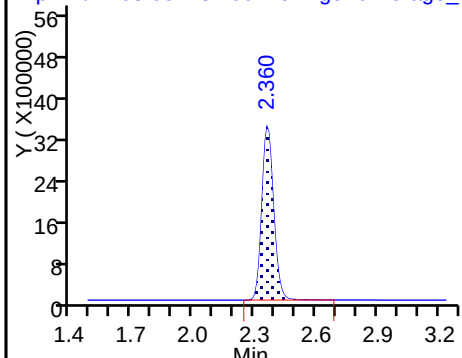
D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctane

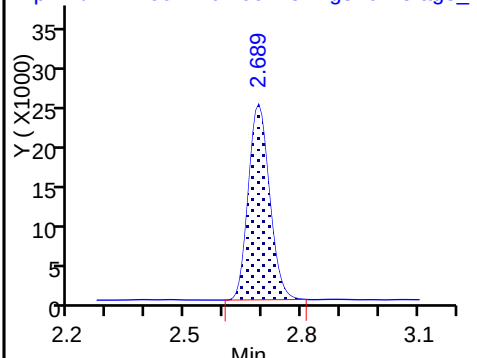
Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3

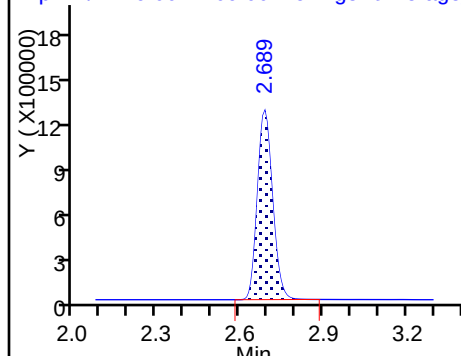


D 12 M2-6:2FTS

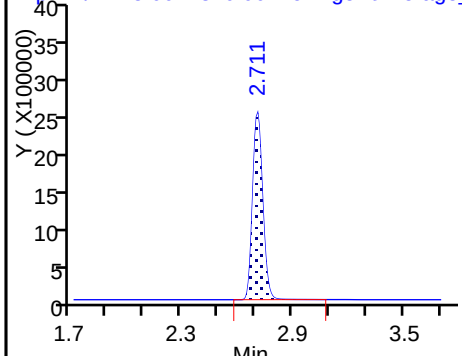
* 62 13C2-PFOA

D 14 13C4 PFOA

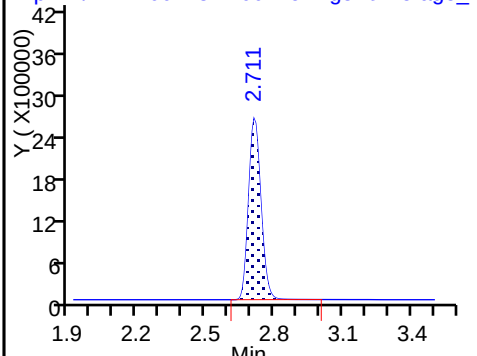
Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x3



Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

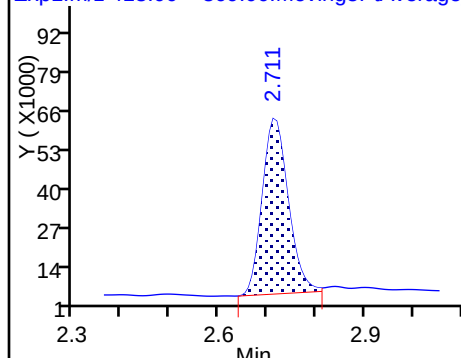


15 Perfluorooctanoic acid

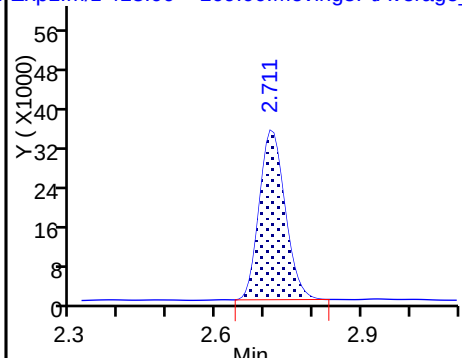
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

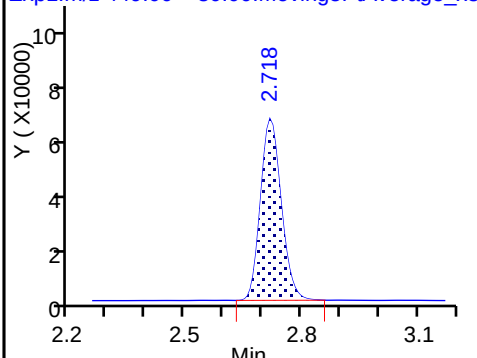
Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x3



Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

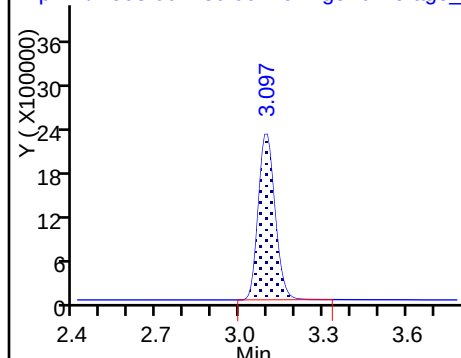


D 18 13C4 PFOS

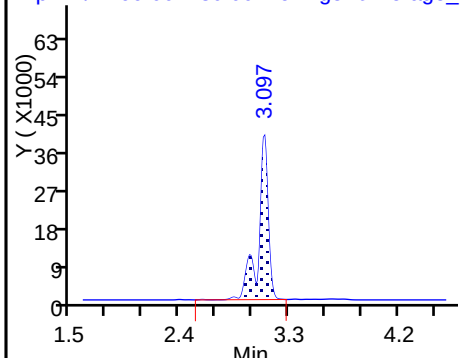
17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

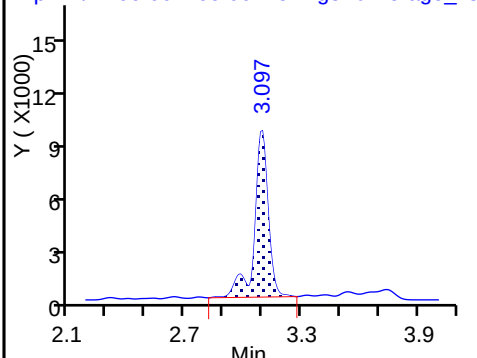
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3



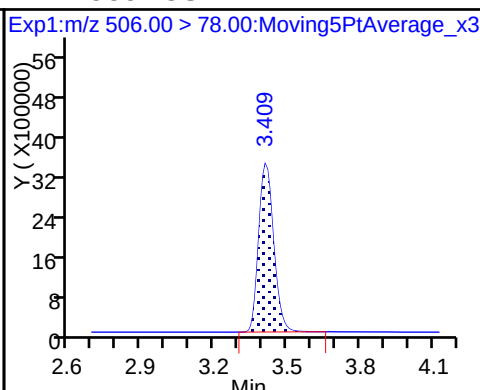
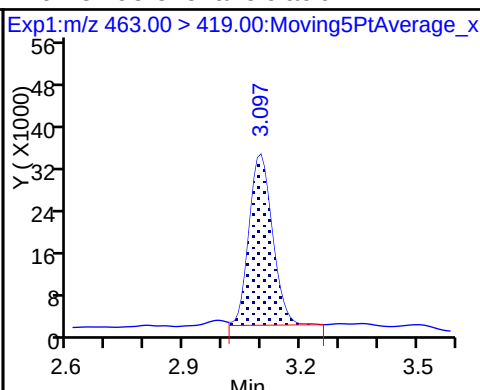
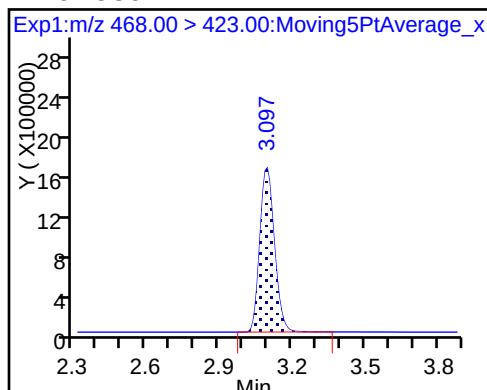
Exp1:m/z 499.00 > 99.00:Moving5PtAverage_x3



D 19 13C5 PFNA

20 Perfluorononanoic acid

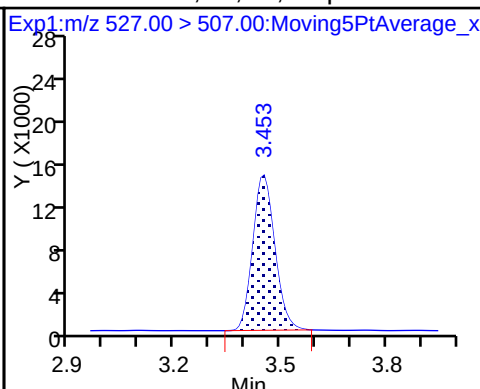
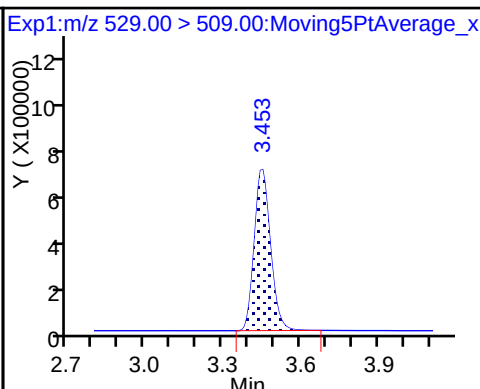
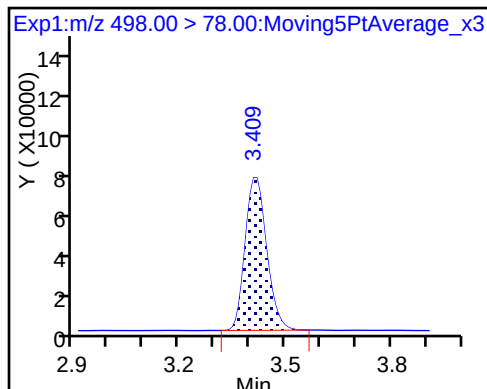
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 26 M2-8:2FTS

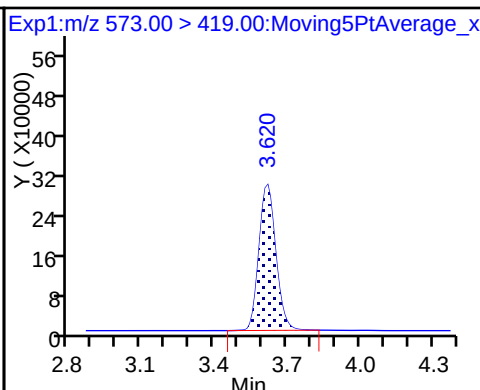
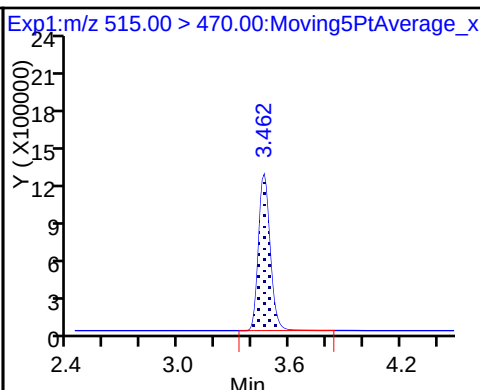
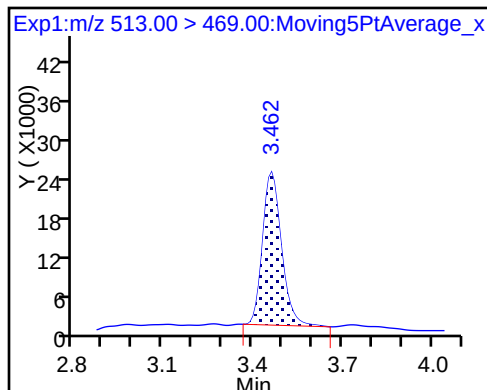
25 Sodium 1H,1H,2H,2H-perfluorodecane



24 Perfluorodecanoic acid

D 23 13C2 PFDA

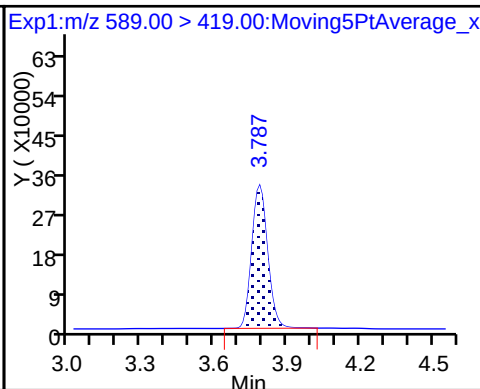
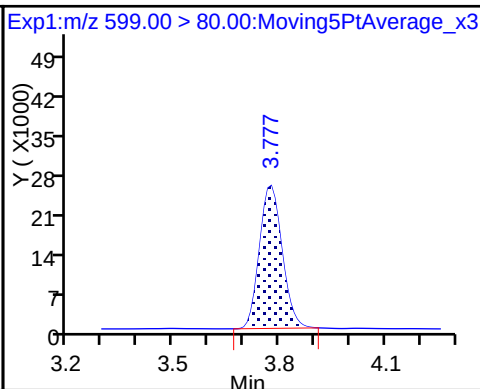
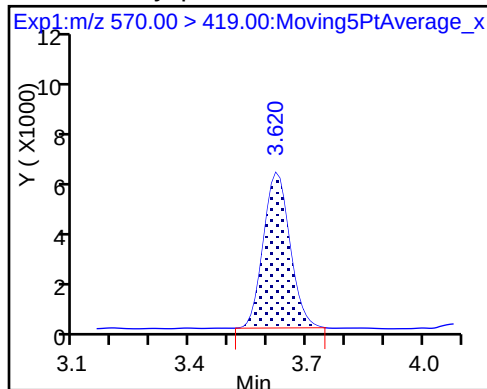
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

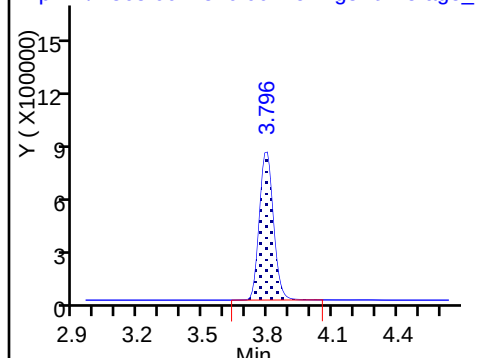


D 30 13C2 PFUnA

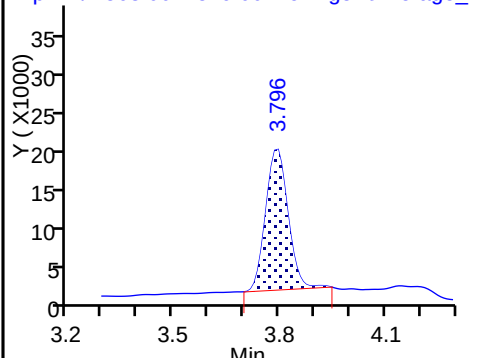
31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid

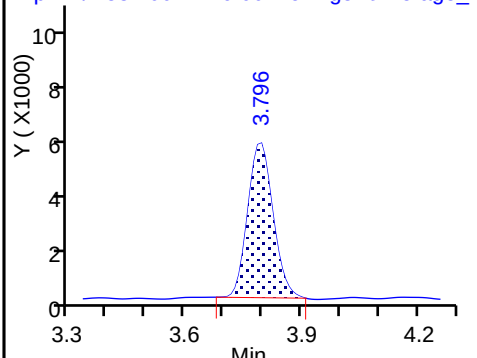
Exp1:m/z 565.00 > 520.00:Moving5PtAverage_x



Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x



Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x

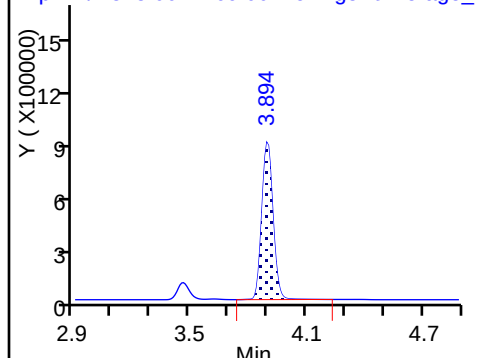


D 34 d-N-MeFOSA-M

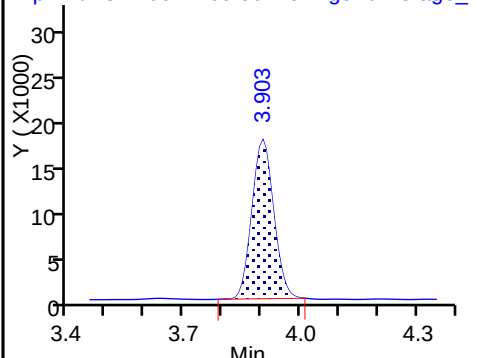
35 MeFOSA

D 38 d-N-EtFOSA-M

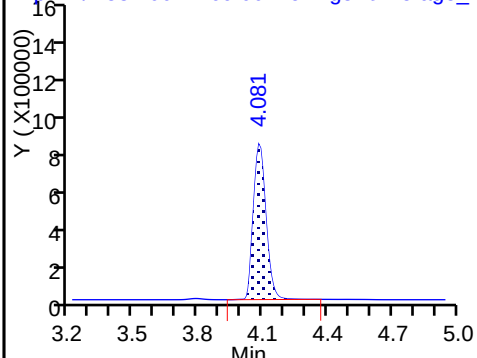
Exp1:m/z 515.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 512.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 531.00 > 169.00:Moving5PtAverage_x

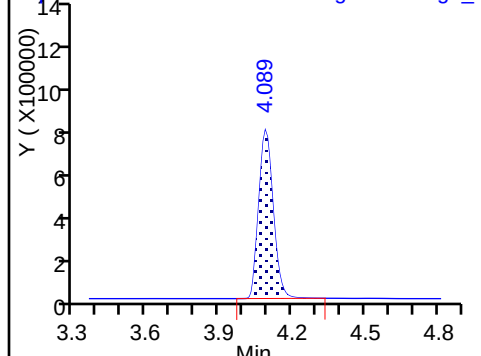


D 36 13C2 PFDaA

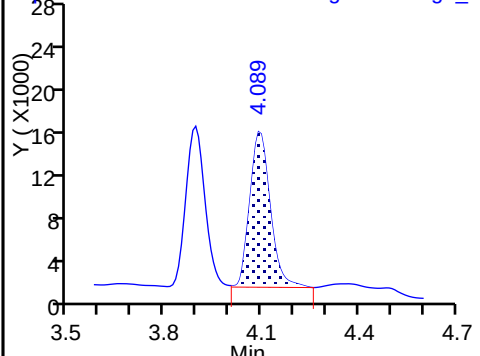
37 Perfluorododecanoic acid

39 N-ethylperfluoro-1-octanesulfonami

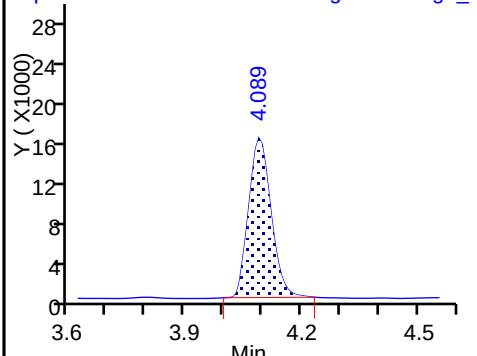
Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x



Exp1:m/z 613.00 > 569.00:Moving5PtAverage_x



Exp1:m/z 526.00 > 169.00:Moving5PtAverage_x

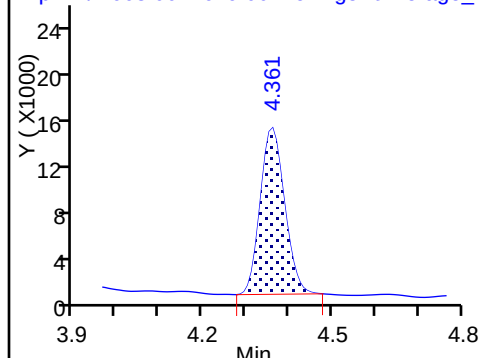


41 Perfluorotridecanoic acid

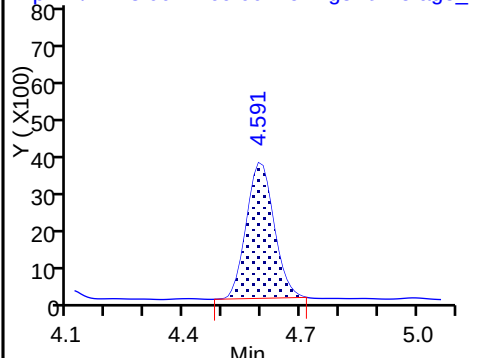
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

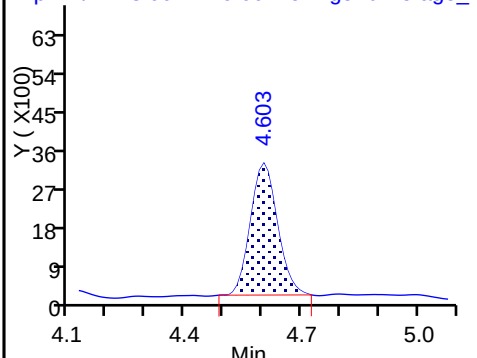
Exp1:m/z 663.00 > 619.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 219.00:Moving5PtAverage_x

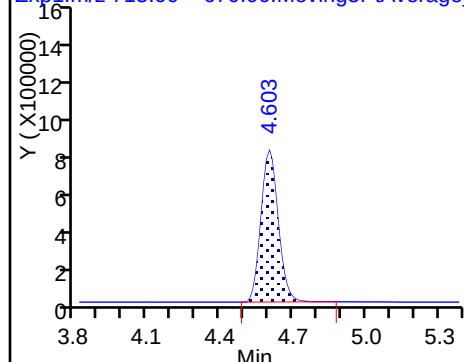


D 43 13C2-PFTeDA

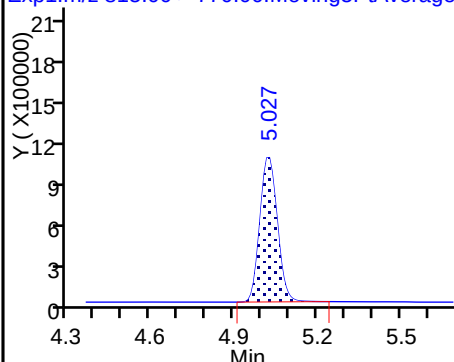
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

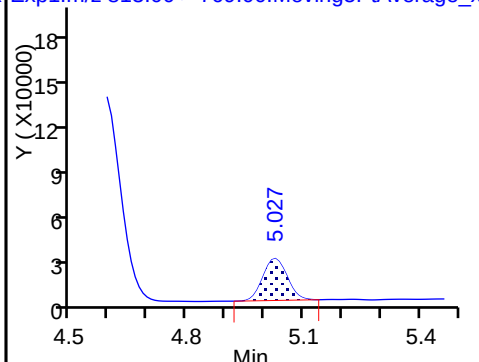
Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

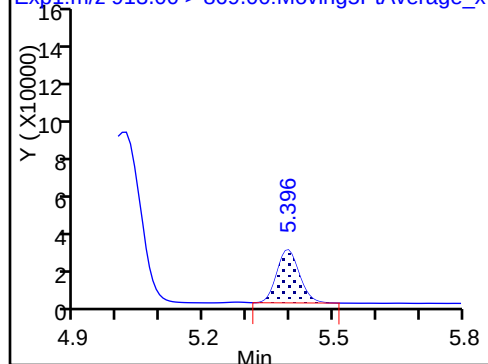


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



TestAmerica Sacramento

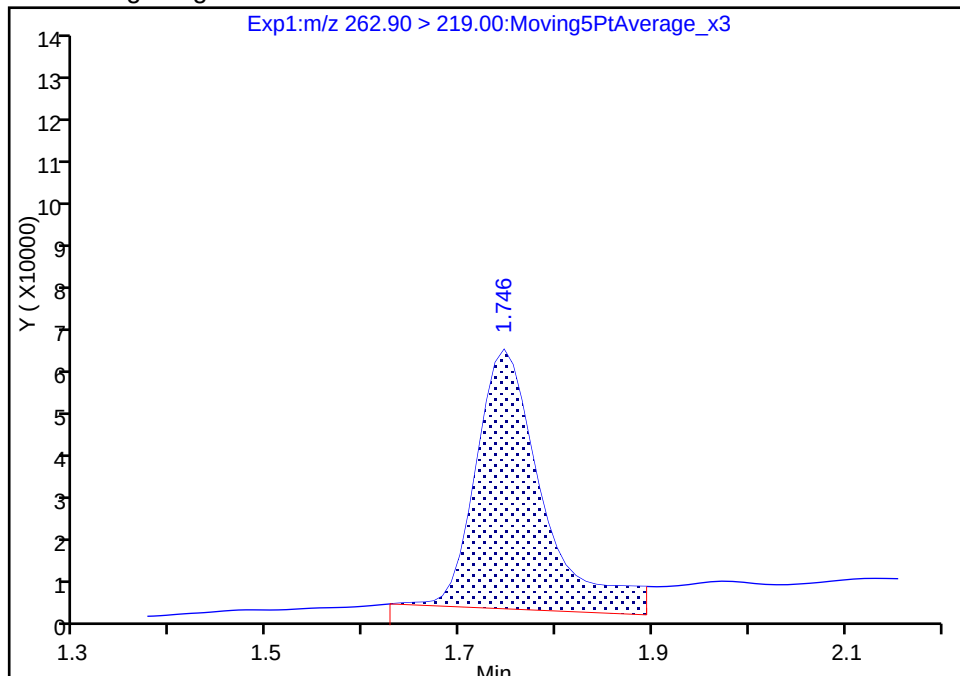
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_004.d
Injection Date: 18-Sep-2017 15:52:49 Instrument ID: A8_N
Lims ID: IC L2 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 29 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

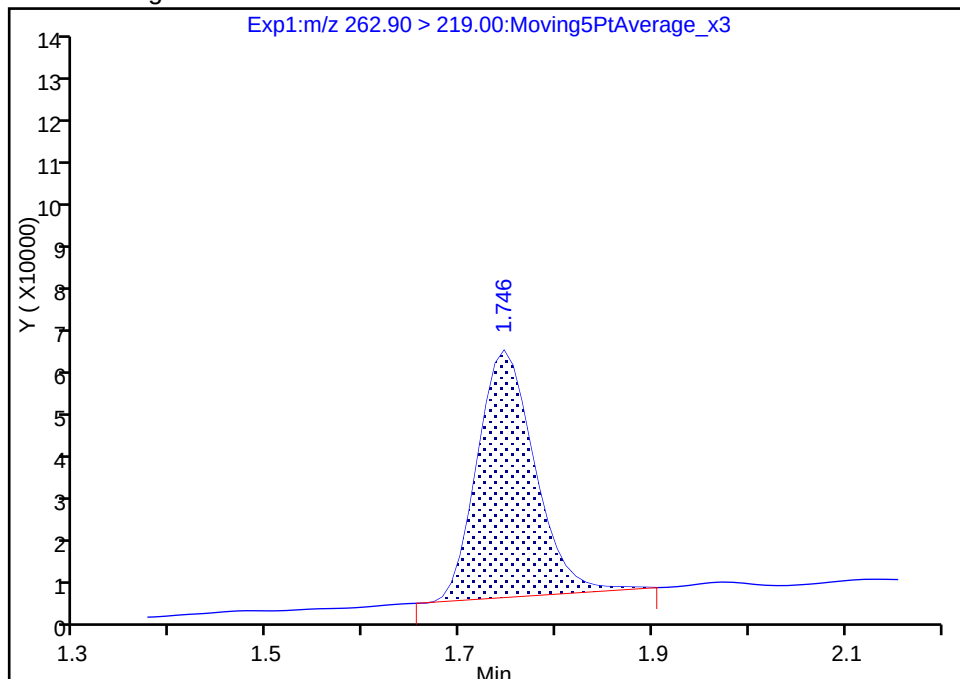
RT: 1.75
Area: 279676
Amount: 1.187132
Amount Units: ng/ml

Processing Integration Results



RT: 1.75
Area: 230462
Amount: 1.016640
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 08:20:10

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_005.d
 Lims ID: IC L3 Full
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 18-Sep-2017 15:59:43 ALS Bottle#: 30 Worklist Smp#: 5
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 08:23:59 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: phomsophat

Date: 18-Sep-2017 19:36:19

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	1.537	1.531	0.006		17058155	54.9		110	44329	
2 Perfluorobutyric acid										
212.90 > 169.00	1.537	1.533	0.004	1.000	1750815	5.29		106	299	
D 3 13C5-PFPeA										
267.90 > 223.00	1.746	1.737	0.009		10440651	55.4		111	106738	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.746	1.739	0.007	1.000	1200663	5.03		101	483	
D 47 13C3-PFBS										
301.90 > 83.00	1.764	1.760	0.004		268788	51.9		112	6422	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.773	1.764	0.009	1.000	1914068	4.62		105	21300	
298.90 > 99.00	1.764	1.764	0.0	0.995	790345		2.42(0.00-0.00)	105	14224	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.972	1.971	0.001	1.000	518018	5.32		114	17350	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.017	2.008	0.009	1.000	1091784	5.17		103	2538	
D 7 13C2 PFHxA										
315.00 > 270.00	2.017	2.008	0.009		11001951	54.7		109	34891	
D 9 13C4-PFHpA										
367.00 > 322.00	2.349	2.340	0.009		10198911	55.6		111	31799	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.349	2.342	0.007	1.000	1043975	5.22		104	1802	
D 11 18O2 PFHxS										
403.00 > 84.00	2.357	2.355	0.002		14603935	51.1		108	36990	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.357	2.355	0.002	1.000	1583325	4.83		106	8245	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.679	2.678	0.001		4415439	48.2		102	19152	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.679	2.678	0.001	1.000	403490	4.99		105	9836	
* 62 13C2-PFOA										
415.00 > 370.00	2.701	2.701	0.0		9203072	50.0			24721	
D 14 13C4 PFOA										
417.00 > 372.00	2.708	2.704	0.004		9213859	53.9		108	29726	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.708	2.705	0.003	1.000	994231	5.01		100	98.1	
413.00 > 169.00	2.708	2.705	0.003	1.000	566697		1.75(0.90-1.10)	100	4342	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.715	2.711	0.004	1.000	1317745	5.04		106	16288	
D 18 13C4 PFOS										
503.00 > 80.00	3.085	3.085	0.0		10140596	52.1		109	42389	
D 19 13C5 PFNA										
468.00 > 423.00	3.093	3.086	0.007		7065300	56.5		113	49929	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.093	3.086	0.007	1.000	1040951	4.50		96.9	7574	
499.00 > 99.00	3.085	3.086	-0.001	0.997	231501		4.50(0.90-1.10)	96.9	1349	
20 Perfluorononanoic acid										
463.00 > 419.00	3.093	3.087	0.006	1.000	685566	4.95		99.1	911	
D 21 13C8 FOSA										
506.00 > 78.00	3.413	3.404	0.009		15720954	53.4		107	53231	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.413	3.407	0.006	1.000	1663473	5.24		105	10818	
D 26 M2-8:2FTS										
529.00 > 509.00	3.447	3.440	0.007		3146242	50.9		106	17494	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.447	3.441	0.006	1.000	311927	5.14		107	9074	
D 23 13C2 PFDA										
515.00 > 470.00	3.456	3.450	0.006		5683839	54.8		110	28483	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.456	3.450	0.006	1.000	522675	4.90		98.0	1220	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.612	3.607	0.005		1550098	54.7		109	11275	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.622	3.613	0.009	1.003	146090	4.93		98.5	2586	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.768	3.765	0.003	1.000	604653	4.81		99.7	8014	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.778	3.778	0.0		1518121	54.4		109	2280	
D 30 13C2 PFUnA										
565.00 > 520.00	3.787	3.783	0.004		3616481	54.1		108	17281	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.787	3.785	0.002	1.003	138460	5.17		103	2406	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.787	3.785	0.002	1.000	409105	5.10		102	645	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.895	3.891	0.004		3819649	52.5		105	660	
35 MeFOSA										
512.00 > 169.00	3.904	3.897	0.007	1.000	341407	4.98		99.6	4117	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.081	4.078	0.003		3487605	53.5		107	5116	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.089	4.081	0.008	1.000	316862	5.00		99.9	201	
D 36 13C2 PFDaA										
615.00 > 570.00	4.089	4.081	0.008		3276050	54.5		109	10120	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.089	4.086	0.003	1.000	337861	5.14		103	3992	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.353	4.350	0.003	1.000	314322	5.08		102	45.8	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.591	4.585	0.006	1.000	102922	5.36		107	1234	
713.00 > 219.00	4.602	4.585	0.017	1.002	77325		1.33(0.00-0.00)	107	586	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.602	4.593	0.009		3981903	53.8		108	14093	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.017	5.011	0.006		5167464	57.5		115	6601	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.017	5.013	0.004	1.000	509854	5.10		102	53.0	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.388	5.379	0.009	1.000	546405	4.78		95.6	90.6	

Reagents:

LCPFC_FULL-L3_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_005.d

Injection Date: 18-Sep-2017 15:59:43

Instrument ID: A8_N

Lims ID: IC L3 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 30

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

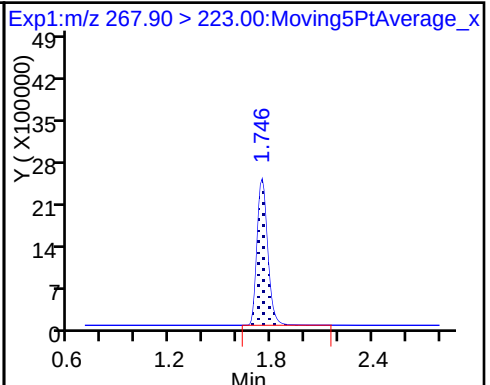
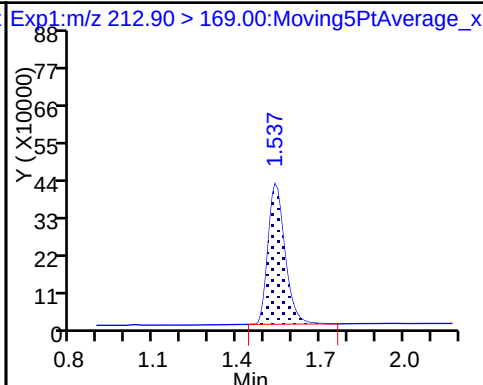
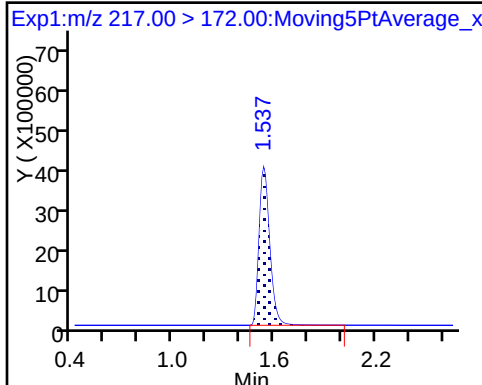
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

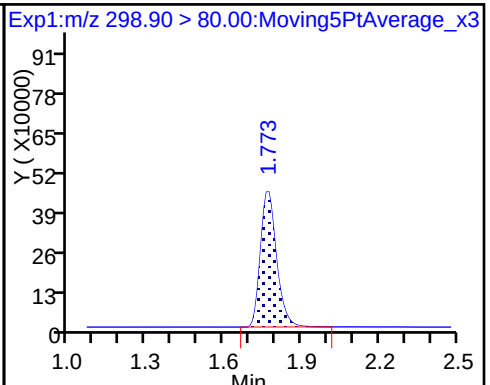
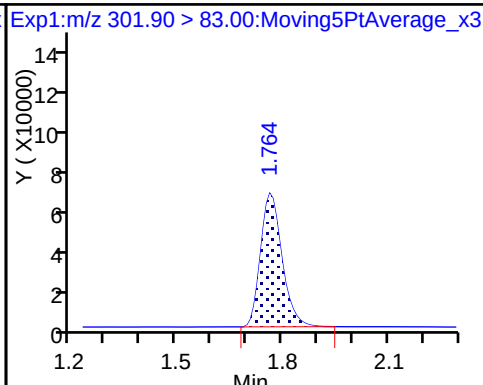
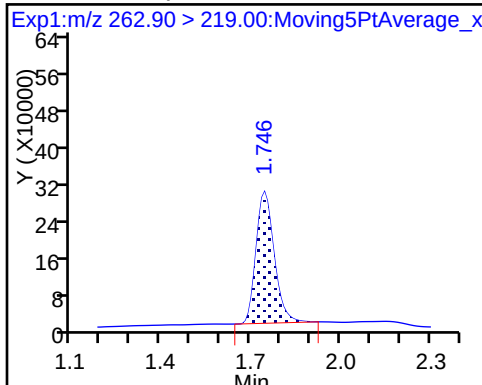
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

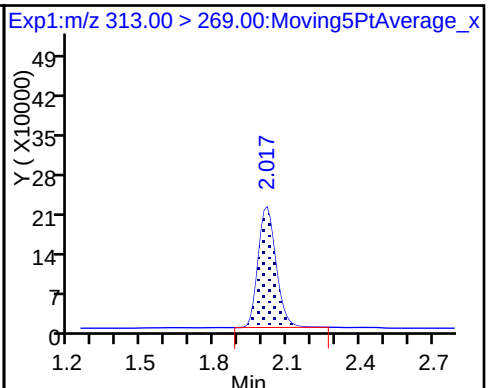
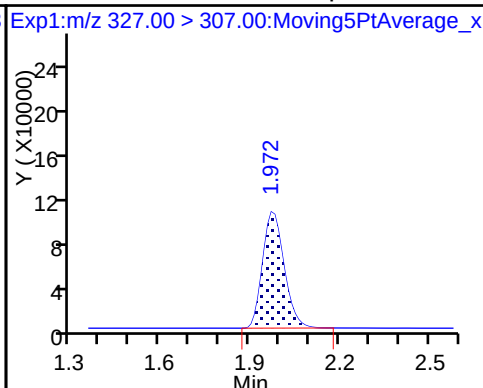
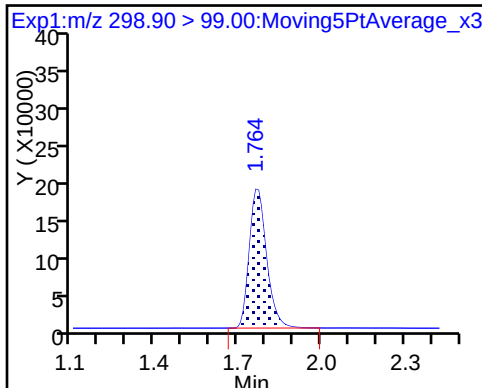
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoate

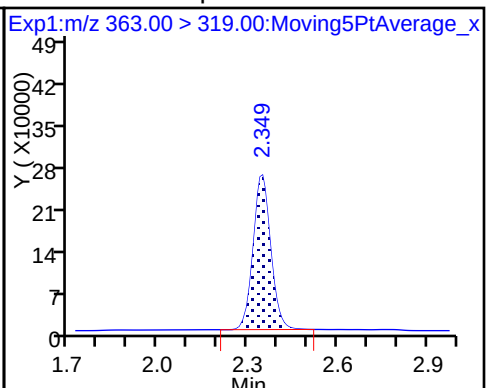
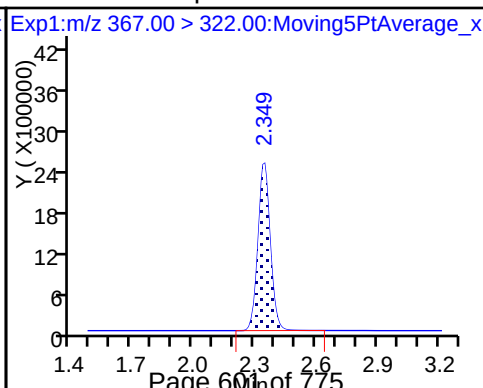
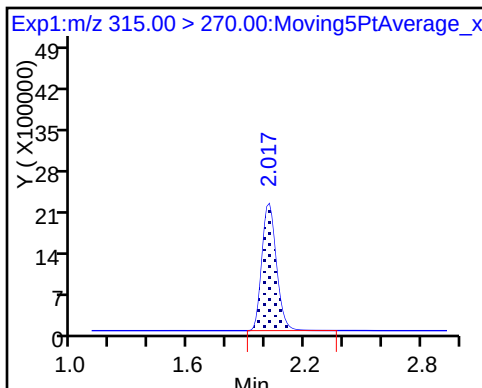
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

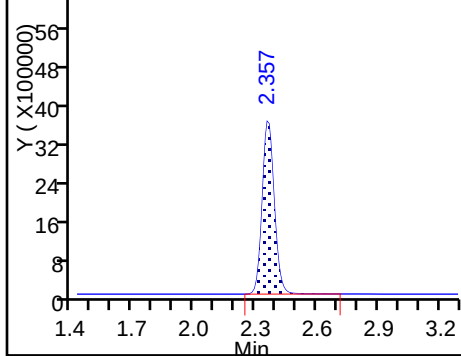


D 11 18O2 PFHxS

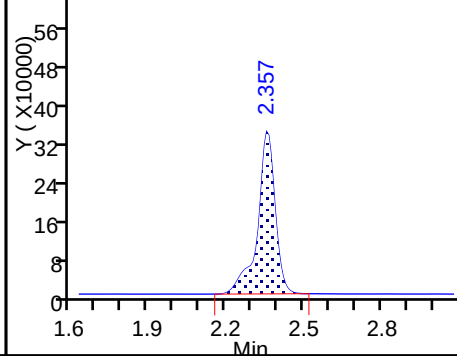
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

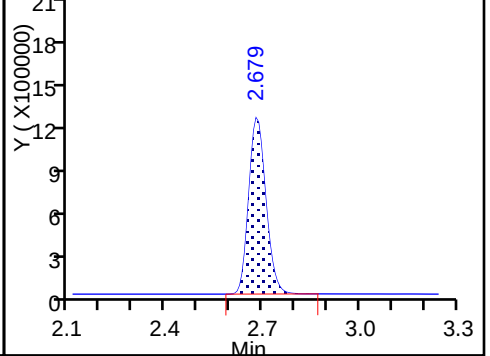
Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



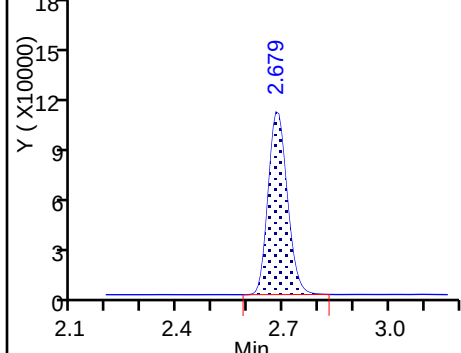
Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x3



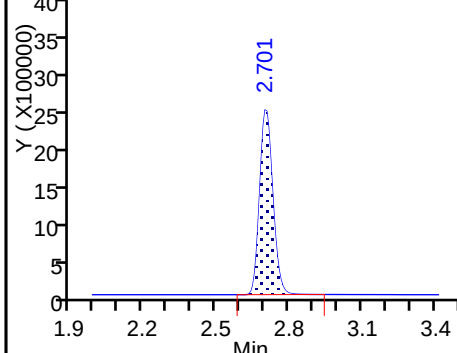
13 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 14 13C4 PFOA

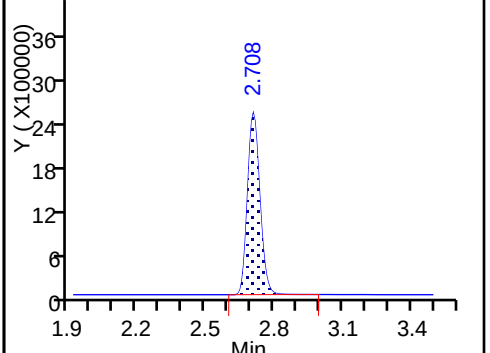
Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3



Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

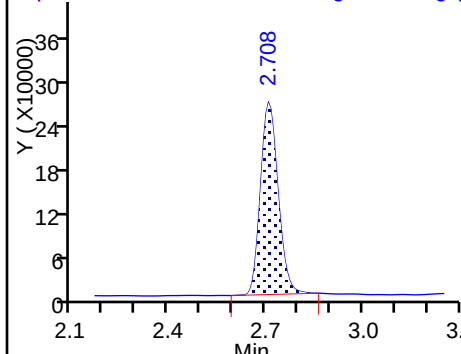


15 Perfluorooctanoic acid

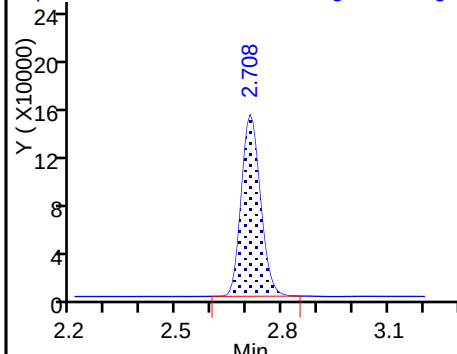
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

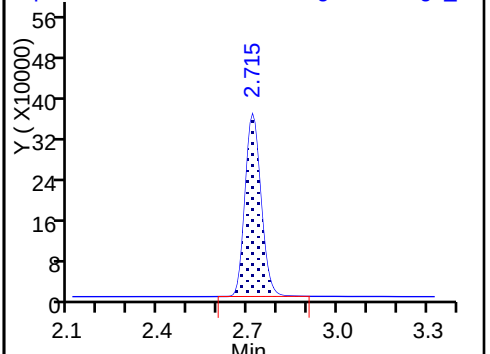
Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x3



Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

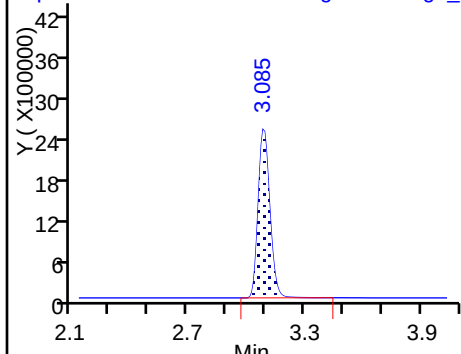


D 18 13C4 PFOS

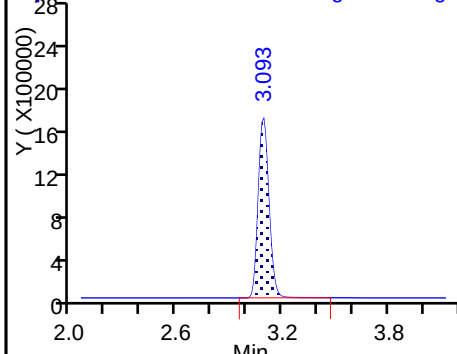
D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid

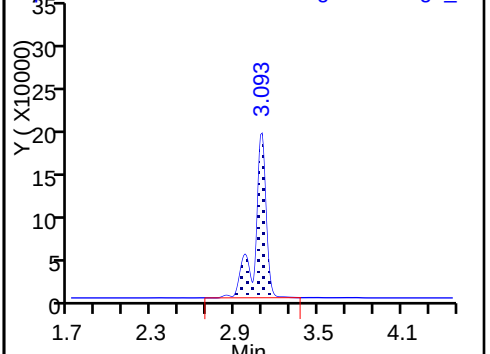
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



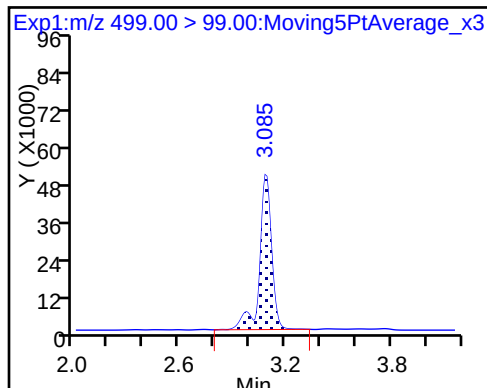
Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x3



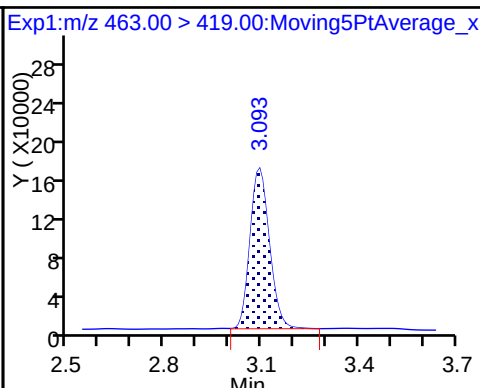
Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3



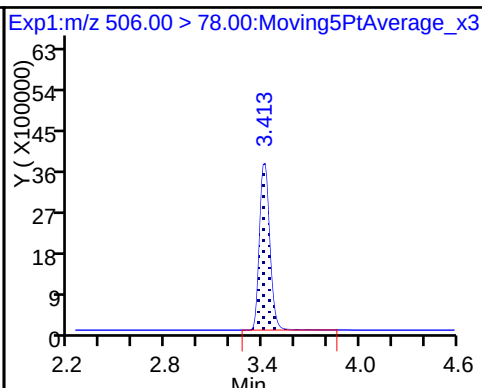
17 Perfluorooctane sulfonic acid



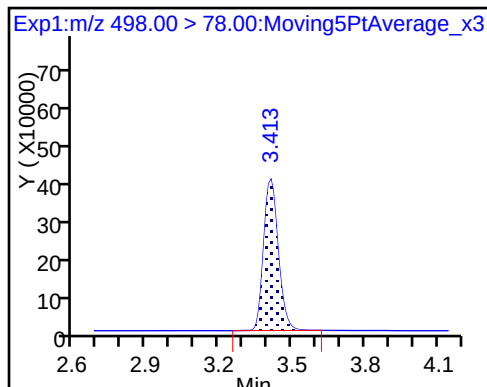
20 Perfluorononanoic acid



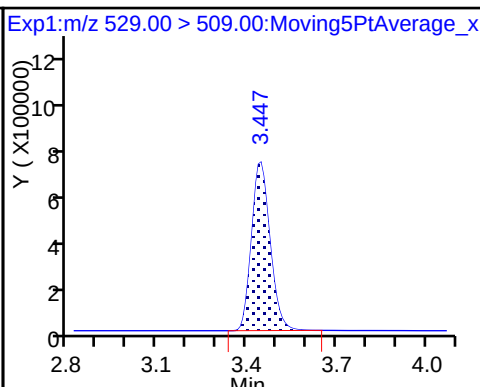
D 21 13C8 FOSA



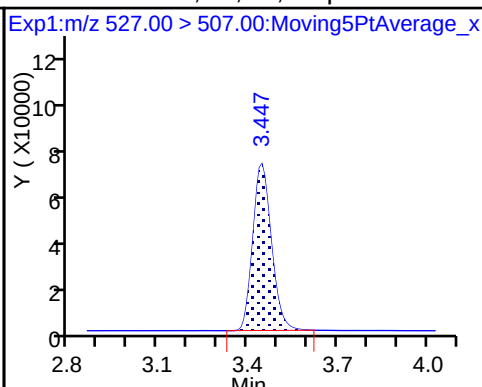
22 Perfluorooctane Sulfonamide



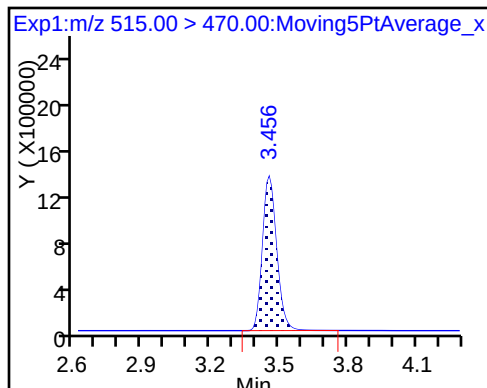
D 26 M2-8:2FTS



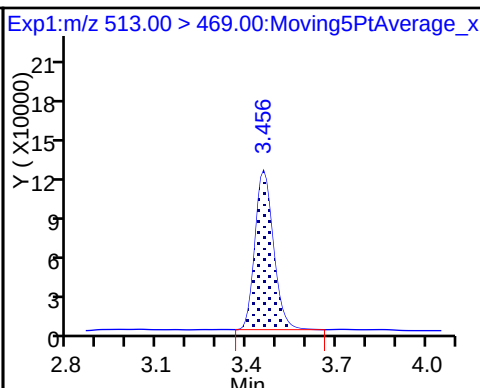
25 Sodium 1H,1H,2H,2H-perfluorodecane



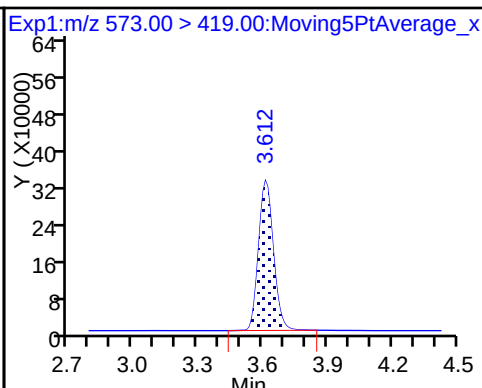
D 23 13C2 PFDA



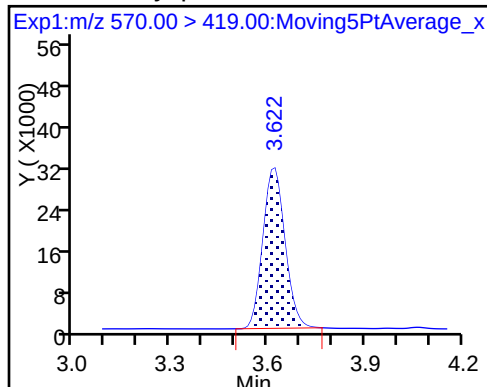
24 Perfluorodecanoic acid



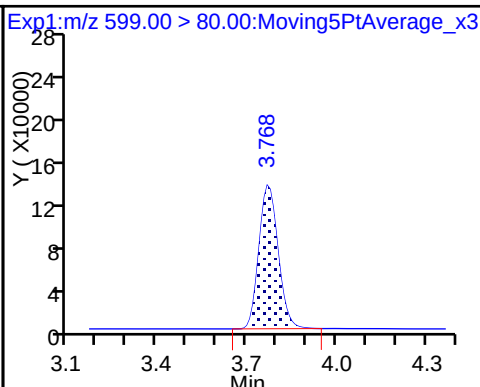
D 27 d3-NMeFOSAA



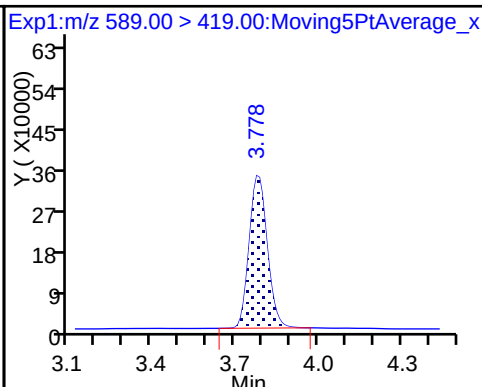
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

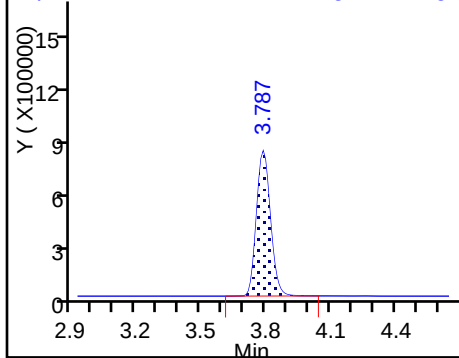


D 30 13C2 PFUnA

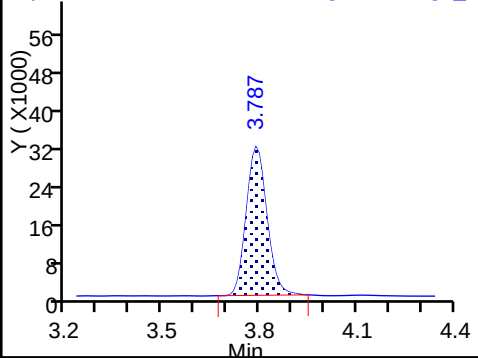
33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

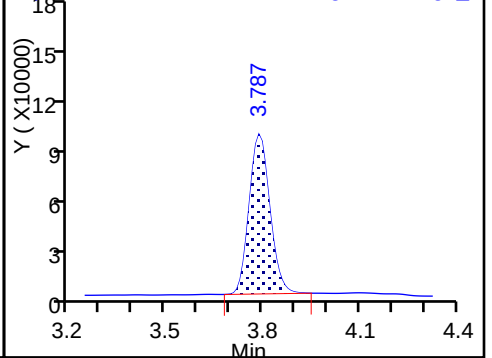
Exp1:m/z 565.00 > 520.00:Moving5PtAverage_x



Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x



Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x

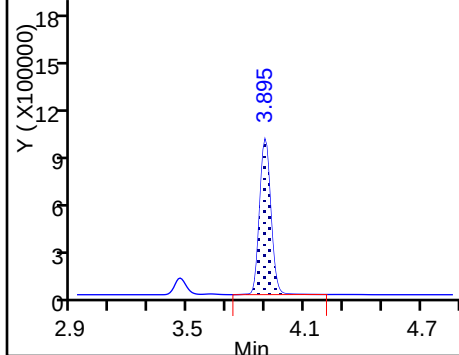


D 34 d-N-MeFOSA-M

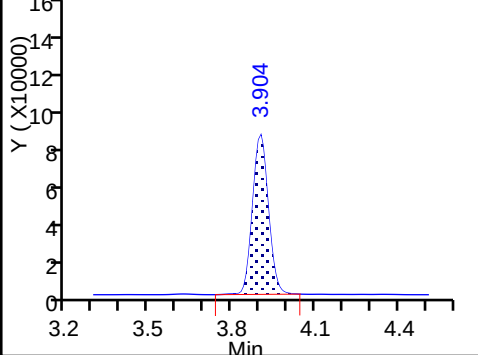
35 MeFOSA

D 38 d-N-EtFOSA-M

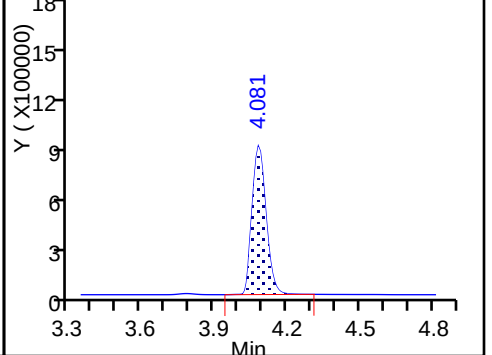
Exp1:m/z 515.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 512.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 531.00 > 169.00:Moving5PtAverage_x

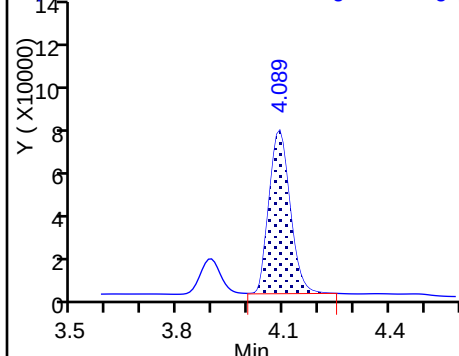


37 Perfluorododecanoic acid

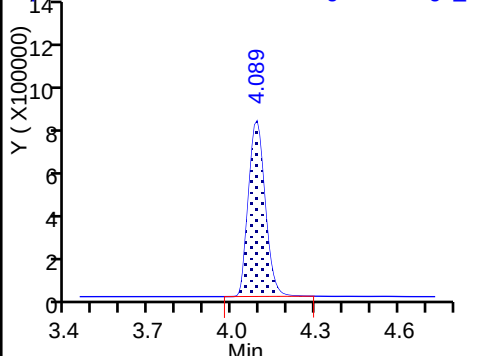
D 36 13C2 PFDoA

39 N-ethylperfluoro-1-octanesulfonami

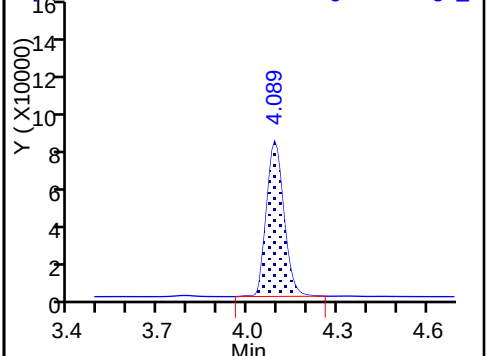
Exp1:m/z 613.00 > 569.00:Moving5PtAverage_x



Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x



Exp1:m/z 526.00 > 169.00:Moving5PtAverage_x

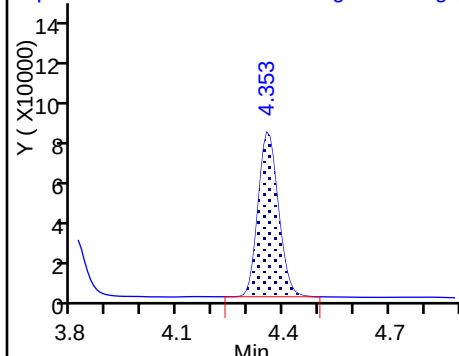


41 Perfluorotridecanoic acid

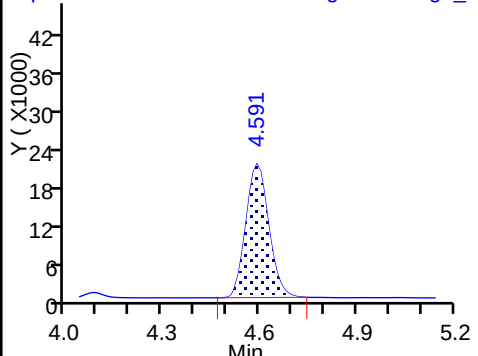
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

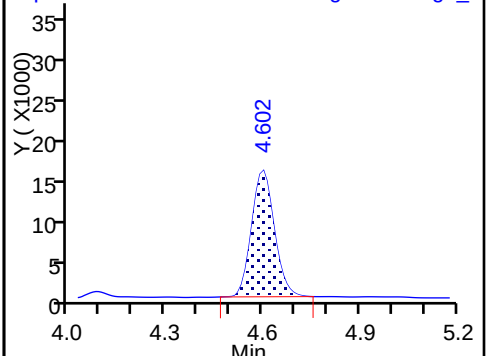
Exp1:m/z 663.00 > 619.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 169.00:Moving5PtAverage_x



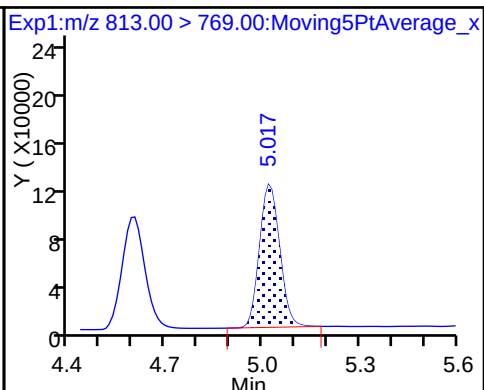
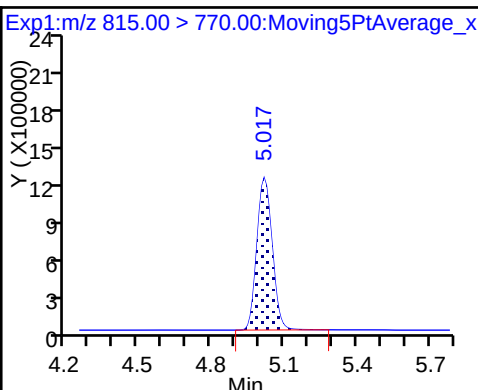
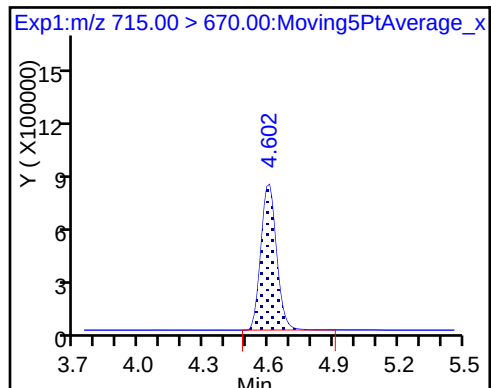
Exp1:m/z 713.00 > 219.00:Moving5PtAverage_x



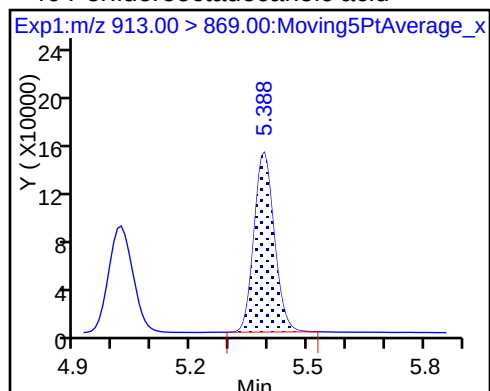
D 43 13C2-PFTeDA

D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_006.d
 Lims ID: IC L4 Full
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 18-Sep-2017 16:06:37 ALS Bottle#: 31 Worklist Smp#: 6
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 08:24:02 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: phomsophat

Date: 18-Sep-2017 19:36:58

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	1.528	1.531	-0.003		14945728	48.1		96.2	37726	
2 Perfluorobutyric acid										
212.90 > 169.00	1.537	1.533	0.004	1.000	5967551	20.6		103	905	
D 3 13C5-PFPeA										
267.90 > 223.00	1.737	1.737	0.0		9345866	49.6		99.3	79176	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.737	1.739	-0.002	1.000	4090533	19.2		95.8	1594	
D 47 13C3-PFBS										
301.90 > 83.00	1.764	1.760	0.004		226709	43.8		94.2	6809	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.764	1.764	0.0	1.000	6510101	18.6		105	67244	
298.90 > 99.00	1.764	1.764	0.0	1.000	2685890		2.42(0.00-0.00)	105	31943	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.972	1.971	0.001	1.000	1763737	18.1		97.0	44611	
D 7 13C2 PFHxA										
315.00 > 270.00	2.006	2.008	-0.002		9460062	47.0		94.0	47860	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.006	2.008	-0.002	1.000	3771369	20.8		104	7214	
D 9 13C4-PFHpA										
367.00 > 322.00	2.344	2.340	0.004		8916742	48.6		97.2	30445	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.344	2.342	0.002	1.000	3517572	20.1		101	5771	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.360	2.355	0.005	1.000	5320624	18.6		102	13193	
D 11 18O2 PFHxS										
403.00 > 84.00	2.360	2.355	0.005		12704160	44.5		94.0	34537	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.685	2.678	0.007	1.000	1556700	19.3		102	19483	
D 12 M2-6:2FTS										
429.00 > 409.00	2.685	2.678	0.007		4413527	48.2		101	27011	
* 62 13C2-PFOA										
415.00 > 370.00	2.706	2.701	0.005		8823458	50.0			24418	
D 14 13C4 PFOA										
417.00 > 372.00	2.706	2.704	0.002		9160282	53.6		107	41334	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.706	2.705	0.001	1.000	3879401	19.7		98.4	432	
413.00 > 169.00	2.706	2.705	0.001	1.000	2206843		1.76(0.90-1.10)	98.4	11840	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.714	2.711	0.003	1.000	4731458	21.1		111	24910	
D 18 13C4 PFOS										
503.00 > 80.00	3.088	3.085	0.003		8685623	44.6		93.4	28289	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.088	3.086	0.002	1.000	3452894	17.4		93.8	14073	
499.00 > 99.00	3.088	3.086	0.002	1.000	723647		4.77(0.90-1.10)	93.8	3239	
D 19 13C5 PFNA										
468.00 > 423.00	3.088	3.086	0.002		5876099	47.0		93.9	25150	
20 Perfluorononanoic acid										
463.00 > 419.00	3.088	3.087	0.001	1.000	2360122	20.5		103	3785	
D 21 13C8 FOSA										
506.00 > 78.00	3.404	3.404	0.0		14028574	47.7		95.4	45020	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.414	3.407	0.007	1.000	5682591	20.1		100	29088	
D 26 M2-8:2FTS										
529.00 > 509.00	3.440	3.440	0.0		2776720	44.9		93.8	21443	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.440	3.441	-0.001	1.000	1028449	19.2		100	29566	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.449	3.450	-0.001	1.000	1881348	20.1		100	4804	
D 23 13C2 PFDA										
515.00 > 470.00	3.449	3.450	-0.001		4987363	48.1		96.2	30010	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.607	3.607	0.0		1321475	46.6		93.3	12007	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.617	3.613	0.004	1.003	486947	19.3		96.3	7941	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.763	3.765	-0.002	1.000	2179120	20.2		105	12792	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.783	3.778	0.005		1306443	46.8		93.6	2031	
D 30 13C2 PFUnA										
565.00 > 520.00	3.783	3.783	0.0		3245328	48.5		97.1	15104	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.783	3.785	-0.002	1.000	1344215	18.7		93.3	2374	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.783	3.785	-0.002	1.000	458411	19.9		99.4	5305	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M	515.00 > 169.00	3.893	3.891	0.002	3279789	45.1		90.2	638	
35 MeFOSA	512.00 > 169.00	3.901	3.897	0.004	1.000	1157544	19.7	98.3	6205	
D 38 d-N-EtFOSA-M	531.00 > 169.00	4.079	4.078	0.001	3105530	47.7		95.3	5195	
D 36 13C2 PFDaA	615.00 > 570.00	4.079	4.081	-0.002	2899468	48.3		96.5	14581	
37 Perfluorododecanoic acid	613.00 > 569.00	4.079	4.081	-0.002	1.000	1080420	19.2	96.2	717	
39 N-ethylperfluoro-1-octanesulfonami	526.00 > 169.00	4.088	4.086	0.002	1.000	1132180	19.3	96.7	4749	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.353	4.350	0.003	1.000	1024716	18.7	93.6	183	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.591	4.585	0.006	1.000	324372	18.6	93.1	3648	
	713.00 > 219.00	4.591	4.585	0.006	1.000	243667	1.33(0.00-0.00)	93.1	1661	
D 43 13C2-PFTeDA	715.00 > 670.00	4.591	4.593	-0.002	3615562	48.9		97.8	16514	
D 44 13C2-PFHxDA	815.00 > 770.00	5.008	5.011	-0.003	4254000	47.4		94.7	5920	
45 Perfluorohexadecanoic acid	813.00 > 769.00	5.017	5.013	0.004	1.000	1547680	20.2	101	164	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.379	5.379	0.0	1.000	1898462	20.2	101	330	

Reagents:

LCPFC_FULL-L4_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_006.d

Injection Date: 18-Sep-2017 16:06:37

Instrument ID: A8_N

Lims ID: IC L4 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

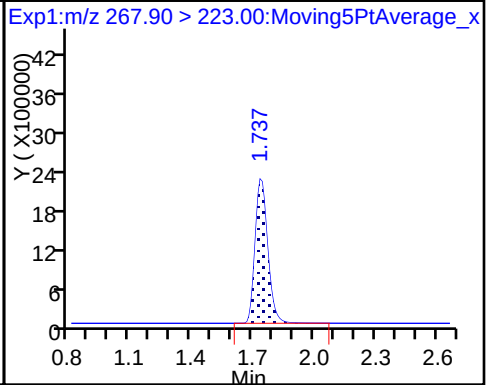
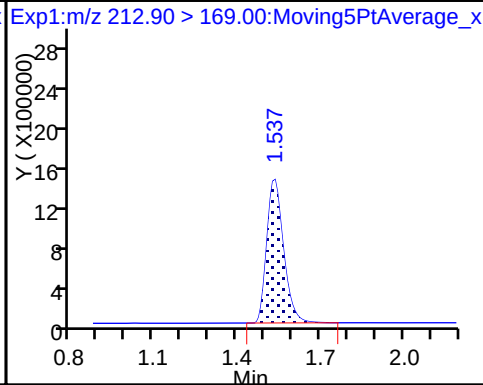
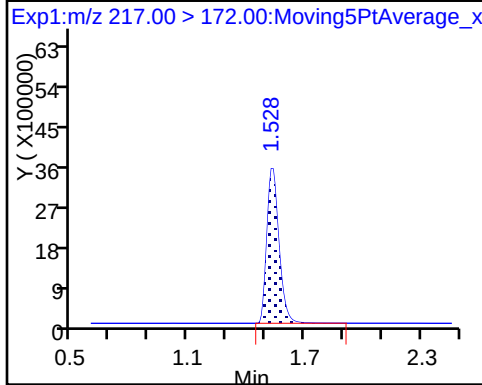
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

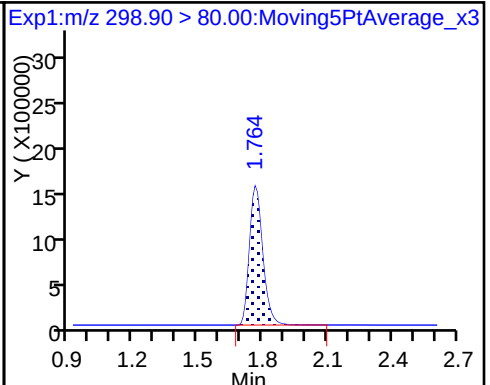
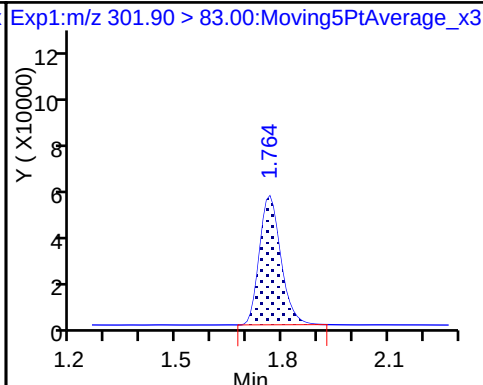
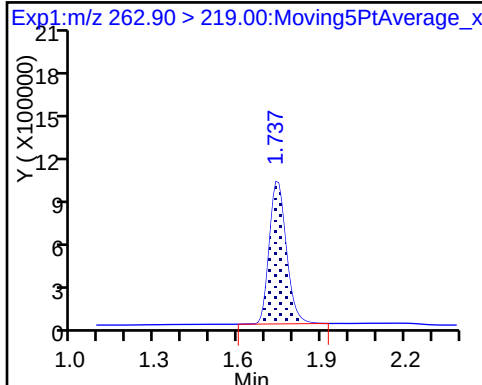
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

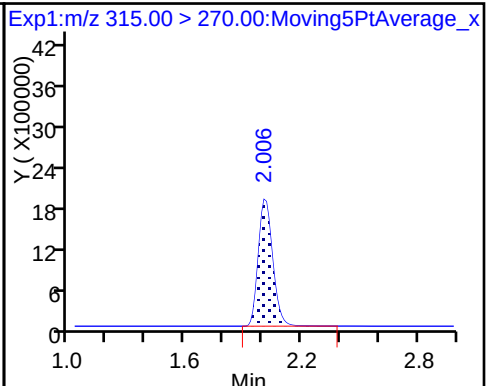
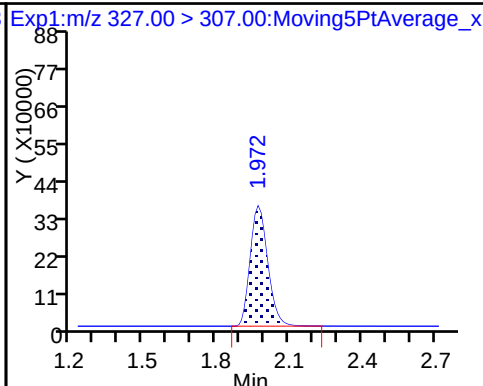
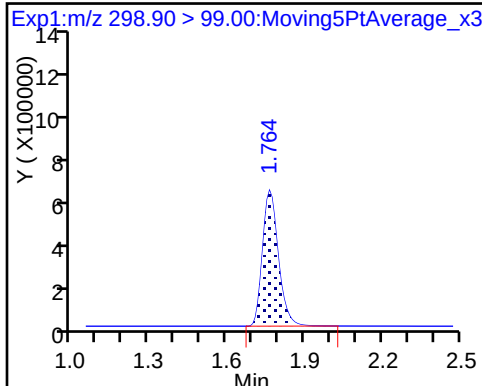
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

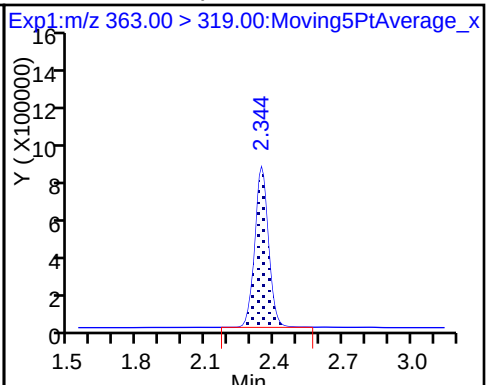
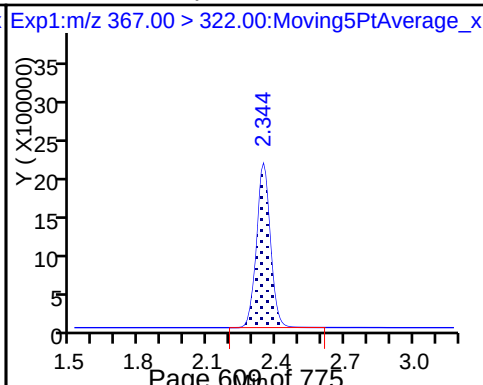
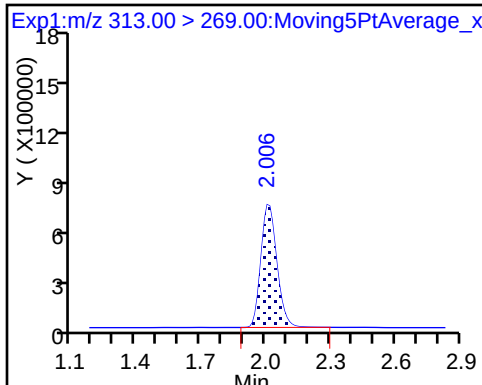
De 7 13C2 PFHxA

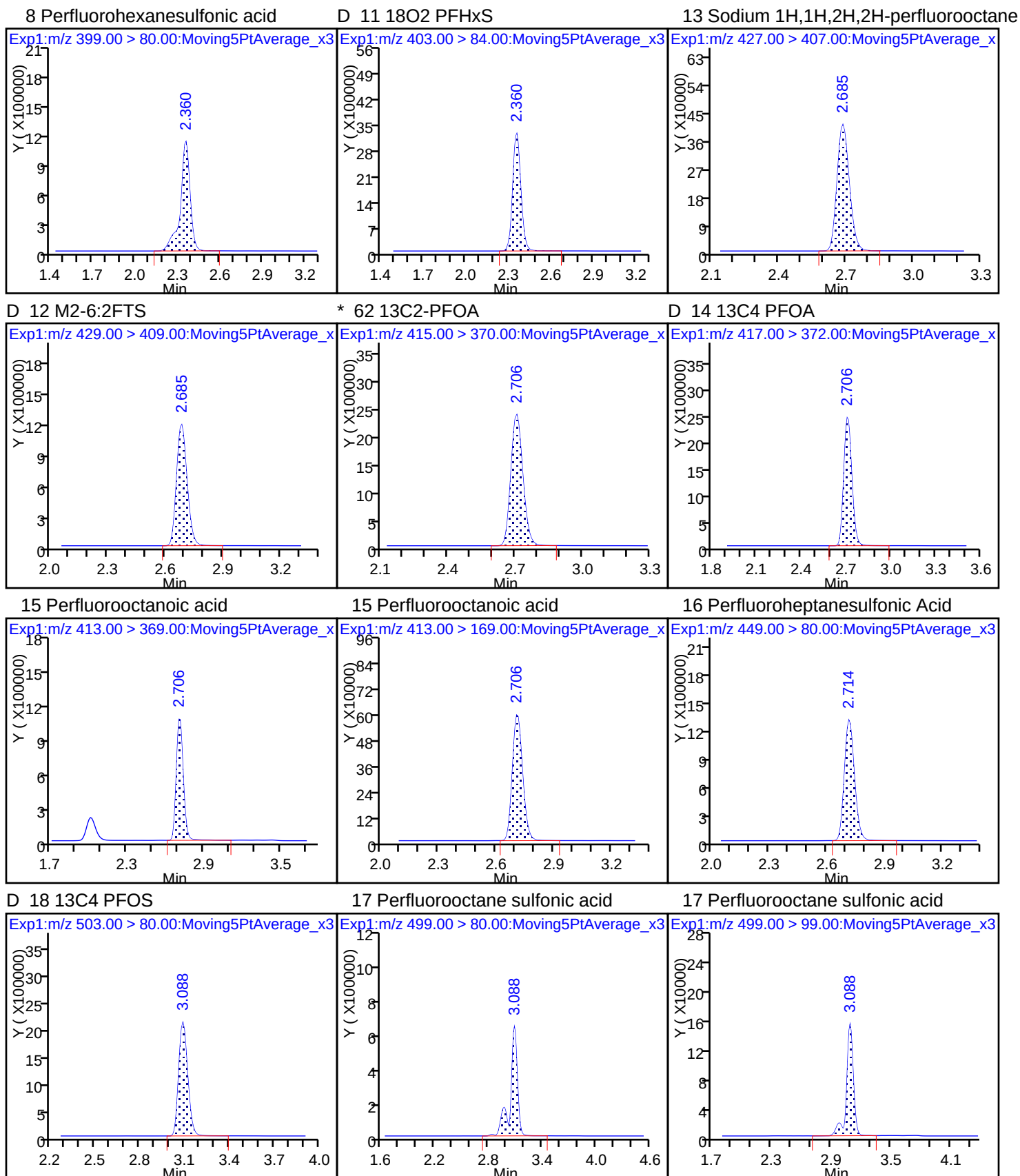


6 Perfluorohexanoic acid

D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

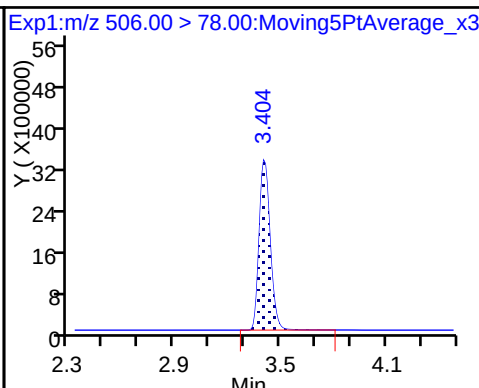
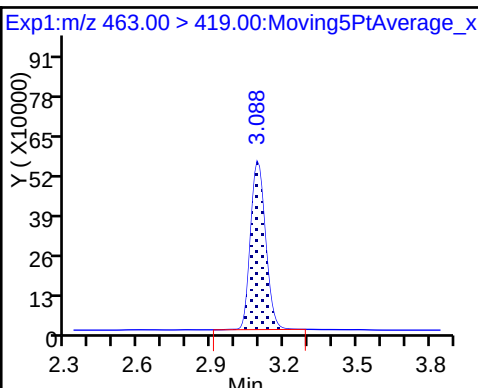
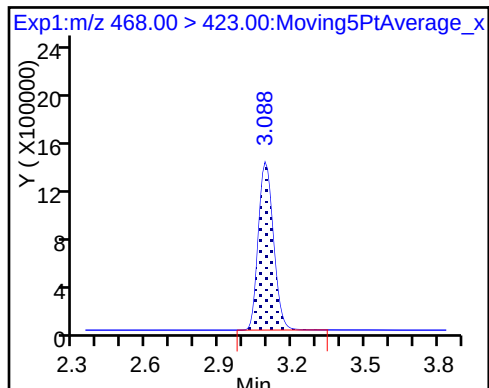




D 19 13C5 PFNA

20 Perfluorononanoic acid

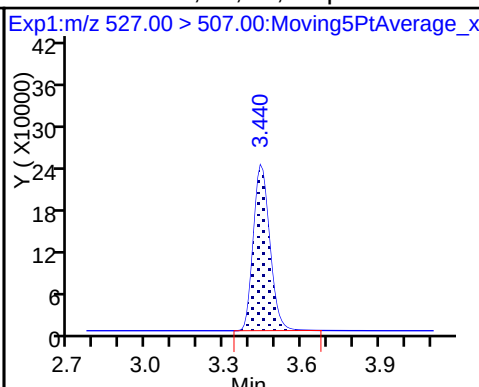
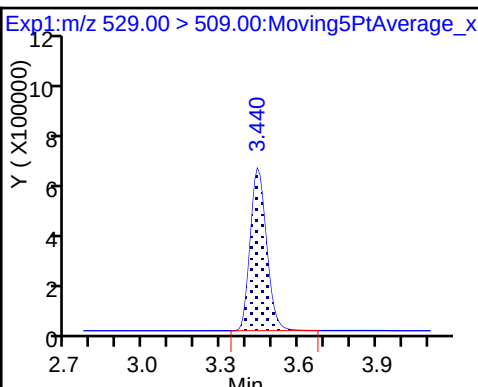
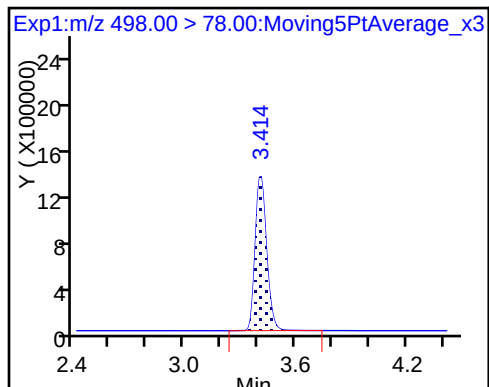
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 26 M2-8:2FTS

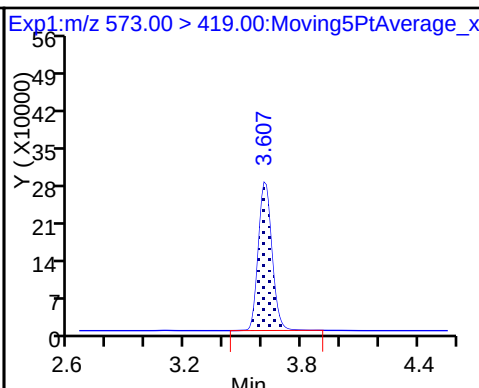
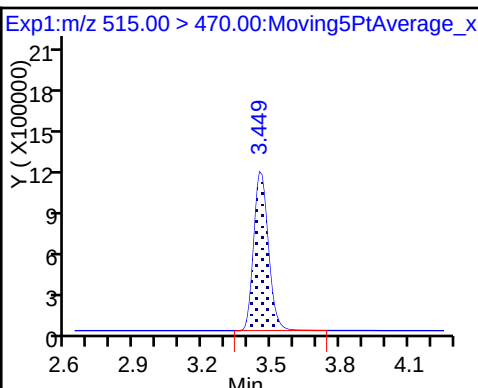
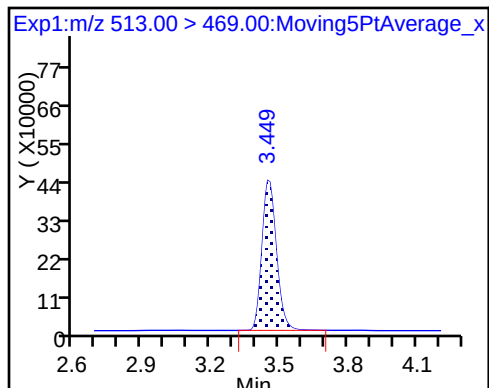
25 Sodium 1H,1H,2H,2H-perfluorodecane



24 Perfluorodecanoic acid

D 23 13C2 PFDA

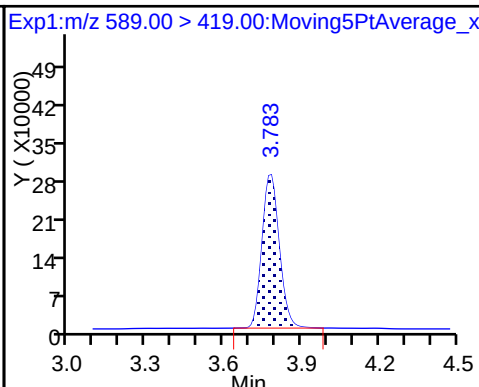
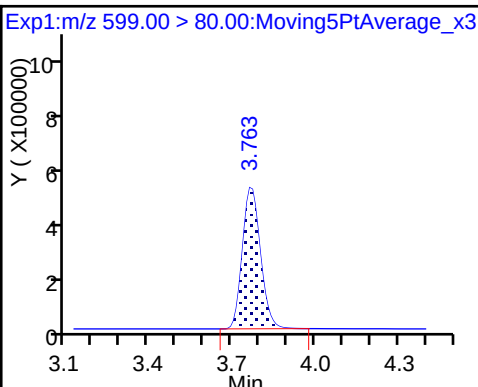
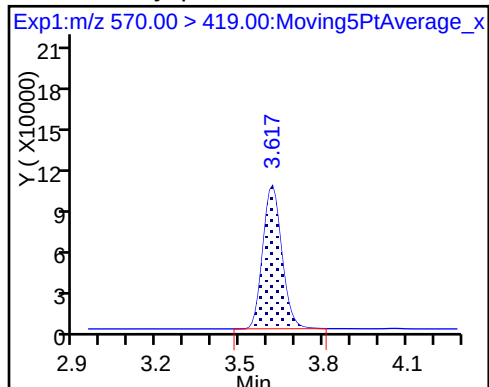
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

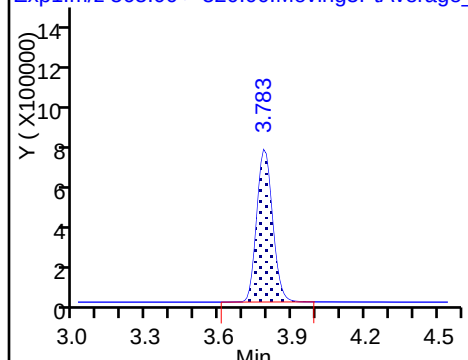


D 30 13C2 PFUnA

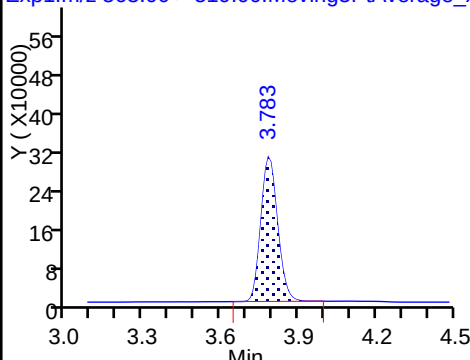
31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid

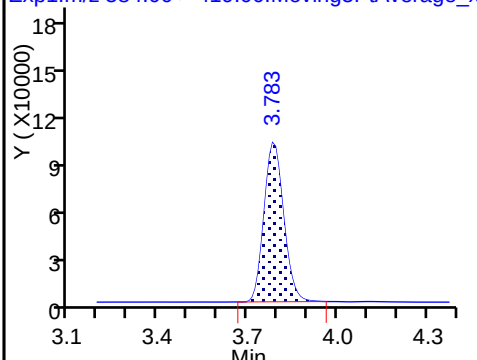
Exp1:m/z 565.00 > 520.00:Moving5PtAverage_x



Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x



Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x

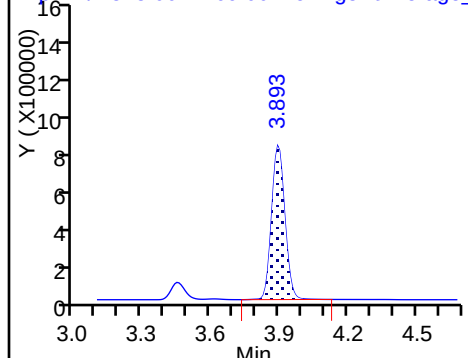


D 34 d-N-MeFOSA-M

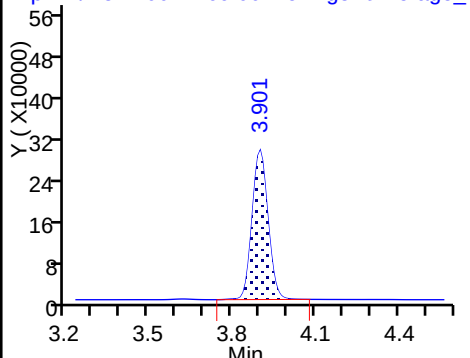
35 MeFOSA

D 38 d-N-EtFOSA-M

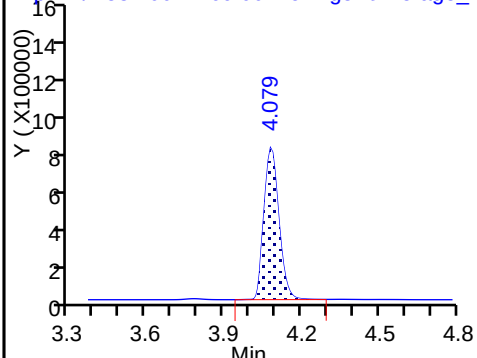
Exp1:m/z 515.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 512.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 531.00 > 169.00:Moving5PtAverage_x

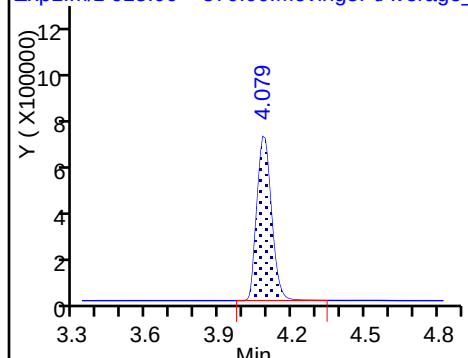


D 36 13C2 PFDaA

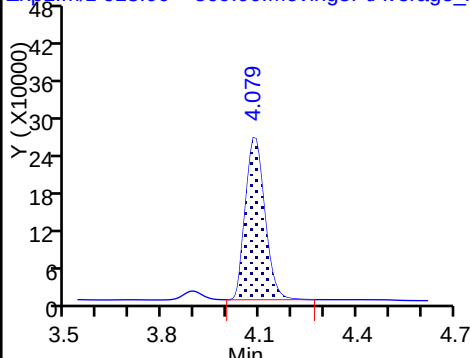
37 Perfluorododecanoic acid

39 N-ethylperfluoro-1-octanesulfonami

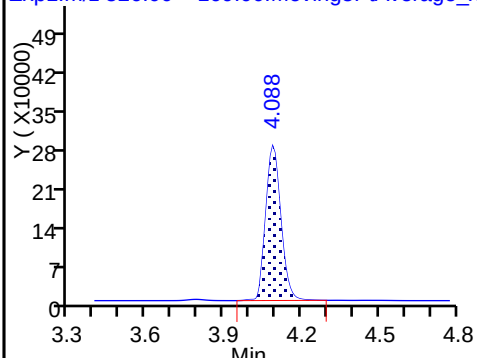
Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x



Exp1:m/z 613.00 > 569.00:Moving5PtAverage_x



Exp1:m/z 526.00 > 169.00:Moving5PtAverage_x

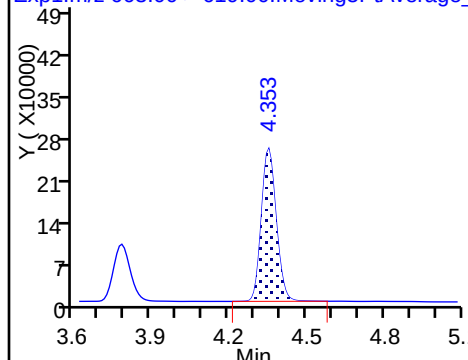


41 Perfluorotridecanoic acid

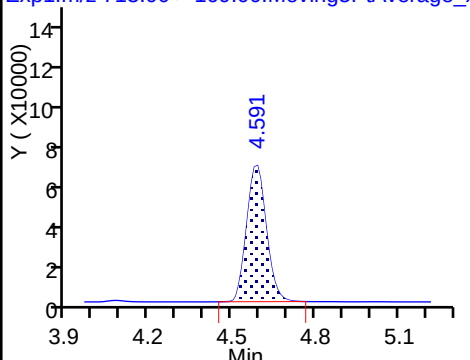
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

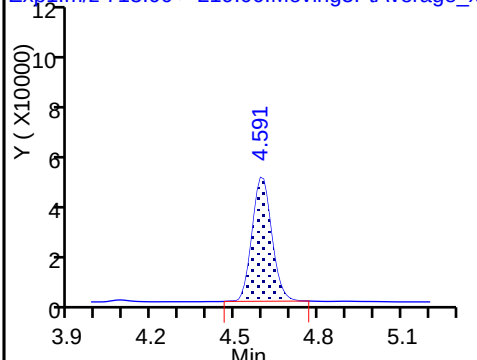
Exp1:m/z 663.00 > 619.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 169.00:Moving5PtAverage_x



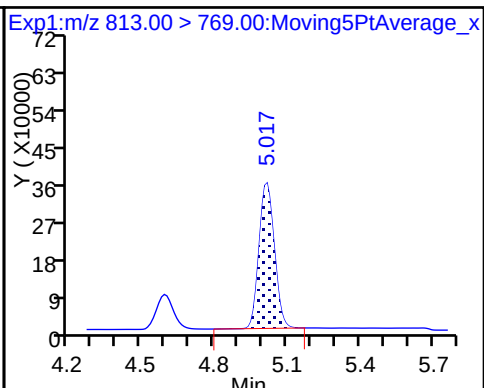
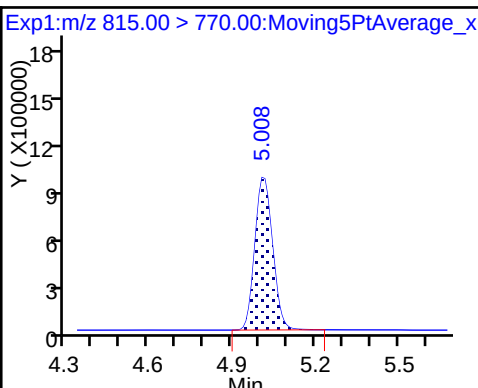
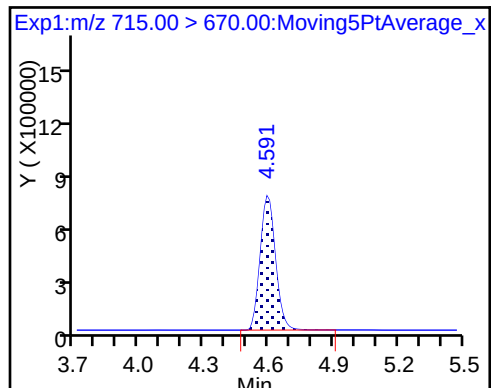
Exp1:m/z 713.00 > 219.00:Moving5PtAverage_x



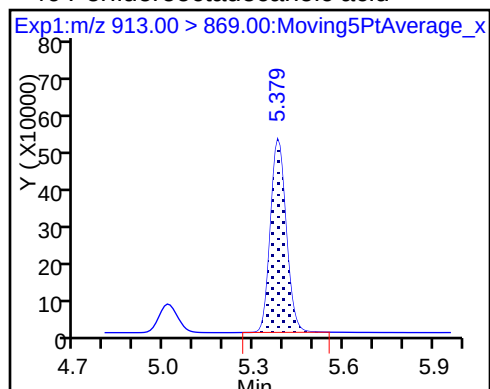
D 43 13C2-PFTeDA

D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_007.d
 Lims ID: IC L5 Full
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 18-Sep-2017 16:13:31 ALS Bottle#: 32 Worklist Smp#: 7
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 08:24:05 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: phomsophat

Date: 18-Sep-2017 19:39:54

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	1.537	1.531	0.006		14888095	47.9		95.8	45331	
2 Perfluorobutyric acid										
212.90 > 169.00	1.537	1.533	0.004	1.000	13433463	46.5		93.1	1335	
D 3 13C5-PFPeA										
267.90 > 223.00	1.737	1.737	0.0		9086802	48.3		96.5	51125	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.746	1.739	0.007	1.000	9764897	47.0		94.1	3729	M
D 47 13C3-PFBS										
301.90 > 83.00	1.764	1.760	0.004		228909	44.2		95.1	5421	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.764	1.764	0.0	1.000	14861207	42.1		95.3	73827	
298.90 > 99.00	1.764	1.764	0.0	1.000	6853434		2.17(0.00-0.00)	95.3	77101	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.972	1.971	0.001	1.000	3969200	43.0		92.0	44589	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.006	2.008	-0.002	1.000	9210798	49.6		99.1	14700	
D 7 13C2 PFHxA										
315.00 > 270.00	2.006	2.008	-0.002		9693542	48.2		96.3	42482	
D 9 13C4-PFHpA										
367.00 > 322.00	2.339	2.340	-0.001		8982675	48.9		97.9	25575	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.339	2.342	-0.003	1.000	8932267	50.7		101	10743	
D 11 18O2 PFHxS										
403.00 > 84.00	2.355	2.355	0.0		13074953	45.8		96.8	18694	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.355	2.355	0.0	1.000	13559684	46.2		101	17105	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.674	2.678	-0.004		4189316	45.8		96.3	27831	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.674	2.678	-0.004	1.000	3470702	45.3		95.5	22491	
* 62 13C2-PFOA										
415.00 > 370.00	2.703	2.701	0.002		8363389	50.0			52966	
D 14 13C4 PFOA										
417.00 > 372.00	2.703	2.704	-0.001		8511071	49.8		99.6	31521	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.703	2.705	-0.002	1.000	8939258	48.8		97.6	904	
413.00 > 169.00	2.703	2.705	-0.002	1.000	5111942		1.75(0.90-1.10)	97.6	14827	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.710	2.711	-0.001	1.000	11177687	48.4		102	37658	
D 18 13C4 PFOS										
503.00 > 80.00	3.084	3.085	-0.001		8945586	46.0		96.2	26178	
D 19 13C5 PFNA										
468.00 > 423.00	3.084	3.086	-0.002		6059703	48.4		96.9	25497	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.084	3.086	-0.002	1.000	8965528	43.9		94.6	11266	M
499.00 > 99.00	3.084	3.086	-0.002	1.000	1891397		4.74(0.90-1.10)	94.6	7966	
20 Perfluorononanoic acid										
463.00 > 419.00	3.084	3.087	-0.003	1.000	5911714	49.8		99.6	8044	
D 21 13C8 FOSA										
506.00 > 78.00	3.402	3.404	-0.002		14152240	48.1		96.2	205070	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.402	3.407	-0.005	1.000	13496285	47.3		94.5	52966	
D 26 M2-8:2FTS										
529.00 > 509.00	3.439	3.440	-0.001		2849891	46.1		96.3	22218	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.439	3.441	-0.002	1.000	2483310	45.2		94.3	20087	
D 23 13C2 PFDA										
515.00 > 470.00	3.448	3.450	-0.002		4922788	47.5		95.0	34665	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.448	3.450	-0.002	1.000	4542217	49.2		98.3	9136	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.610	3.607	0.003		1319465	46.6		93.1	7736	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.610	3.613	-0.003	1.000	1206485	47.8		95.6	10073	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.766	3.765	0.001	1.000	5483257	49.4		102	19307	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.776	3.778	-0.002		1306737	46.8		93.6	1970	
D 30 13C2 PFUnA										
565.00 > 520.00	3.786	3.783	0.003		3075099	46.0		92.0	13591	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.786	3.785	0.001	1.003	1061364	46.0		92.0	6639	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.786	3.785	0.001	1.000	3263666	47.8		95.6	4049	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.896	3.891	0.005		3470540	47.7		95.4	626	
35 MeFOSA										
512.00 > 169.00	3.896	3.897	-0.001	1.000	3013970	48.4		96.7	6949	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.079	4.078	0.001		3120423	47.9		95.8	4197	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.079	4.081	-0.002	1.000	2727117	48.7		97.4	1532	
D 36 13C2 PFDaA										
615.00 > 570.00	4.079	4.081	-0.002		2891298	48.1		96.2	15246	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.087	4.086	0.001	1.000	2941312	50.0		100	5500	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.354	4.350	0.004	1.000	2669871	48.9		97.8	449	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.585	4.585	0.0	1.000	842159	51.0		102	5500	
713.00 > 219.00	4.597	4.585	0.012	1.003	638842		1.32(0.00-0.00)	102	3232	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.597	4.593	0.004		3425851	46.3		92.6	11240	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.007	5.011	-0.004		4301947	47.9		95.8	5641	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.007	5.013	-0.006	1.000	3697336	48.3		96.6	310	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.372	5.379	-0.007	1.000	5005922	52.6		105	733	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L5_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_007.d

Injection Date: 18-Sep-2017 16:13:31

Instrument ID: A8_N

Lims ID: IC L5 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

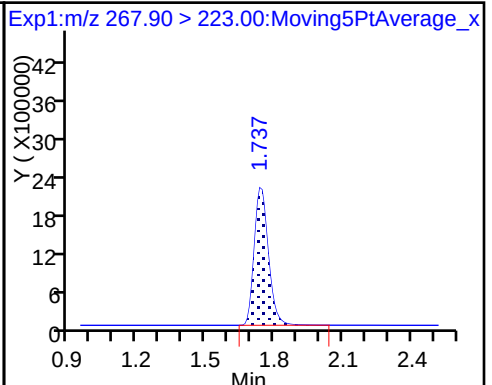
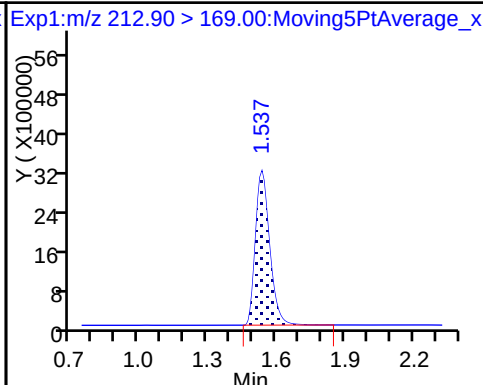
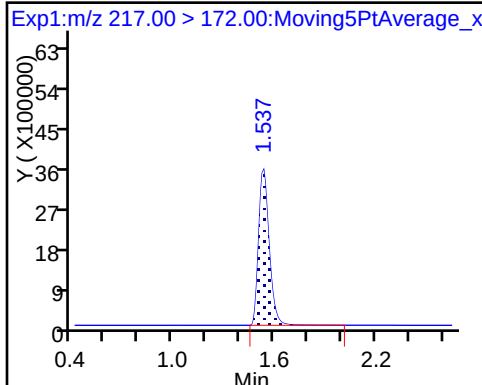
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

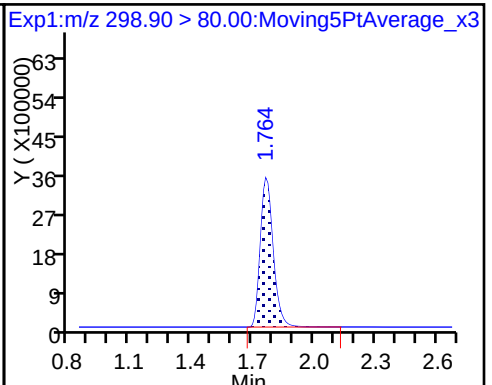
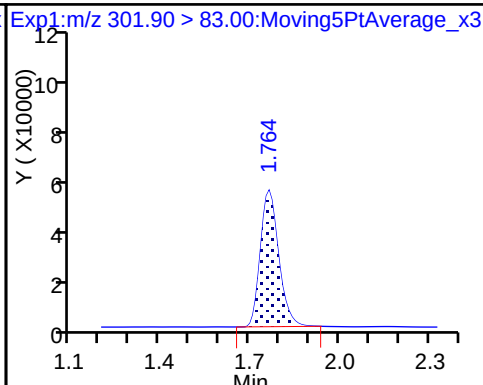
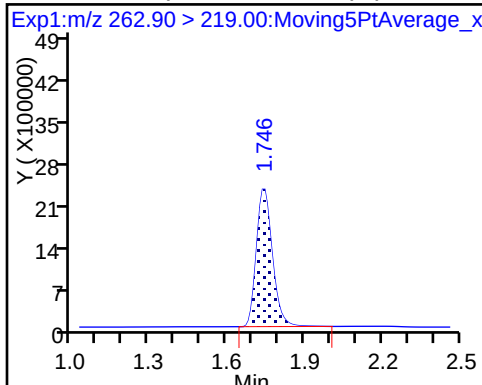
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (M)

D 47 13C3-PFBS

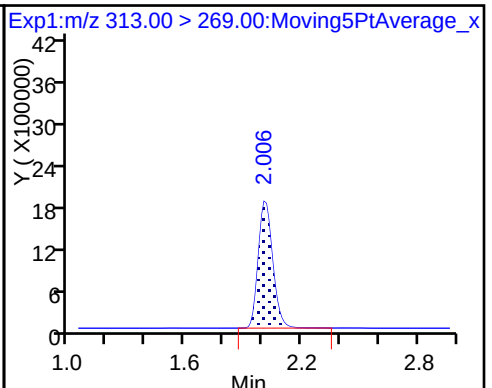
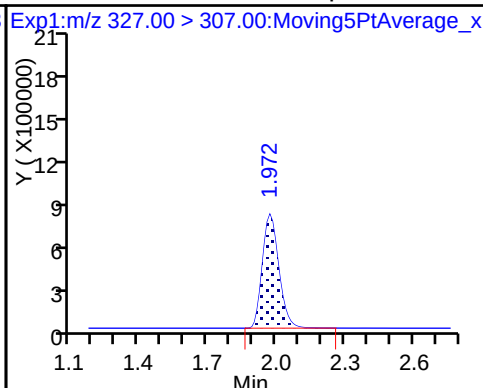
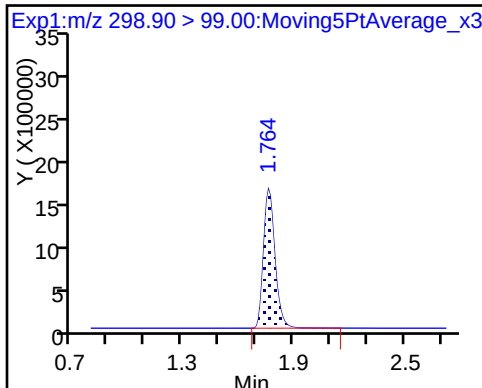
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

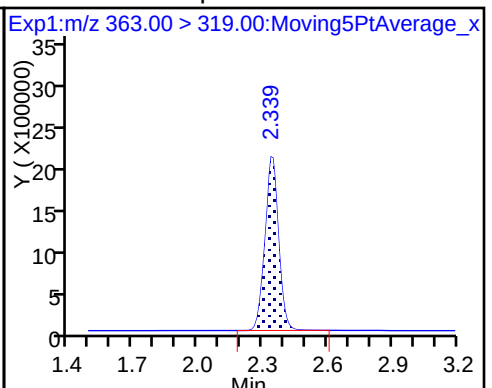
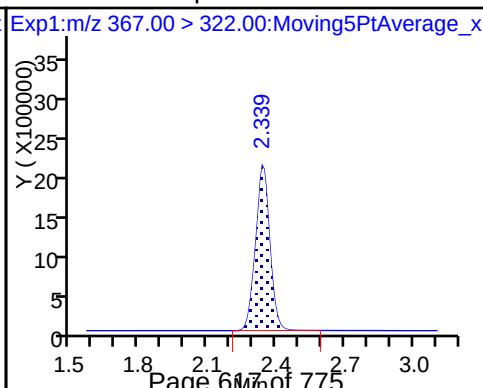
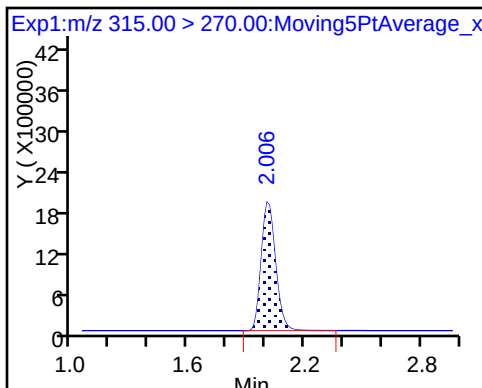
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

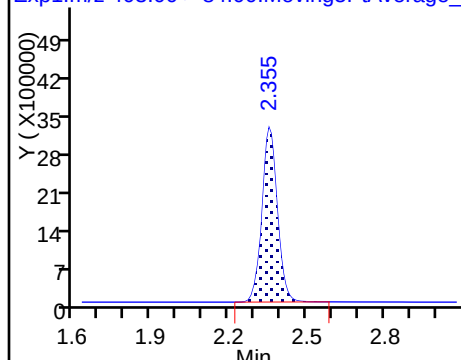


D 11 18O2 PFHxS

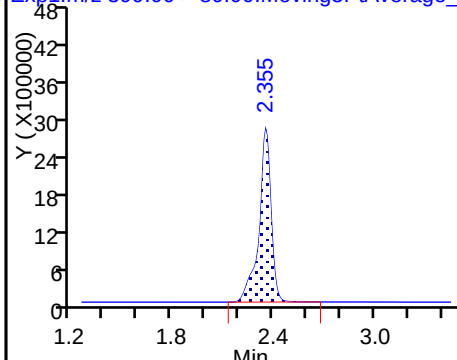
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

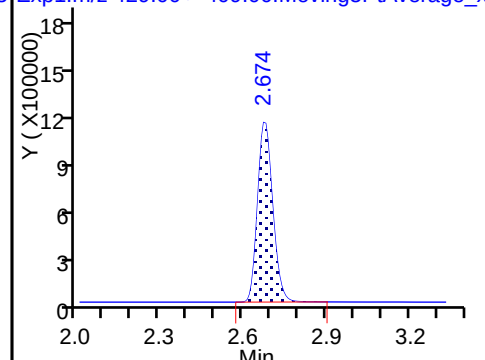
Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



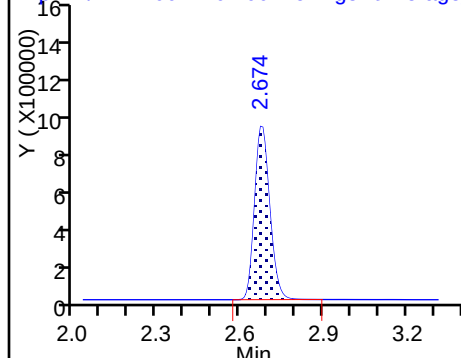
Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x3



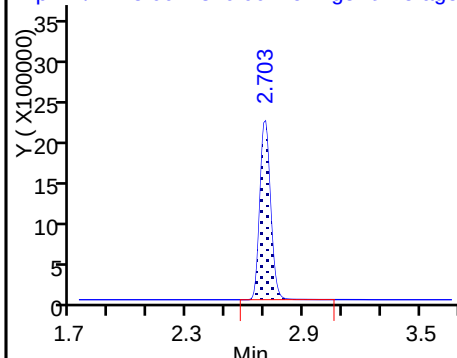
13 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 14 13C4 PFOA

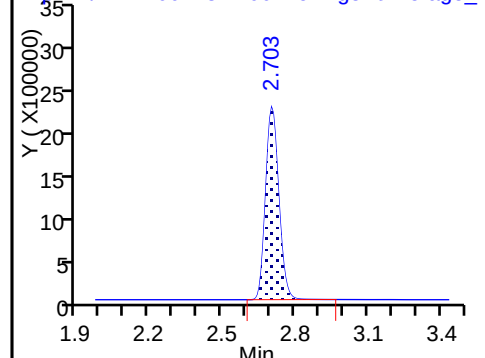
Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3



Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

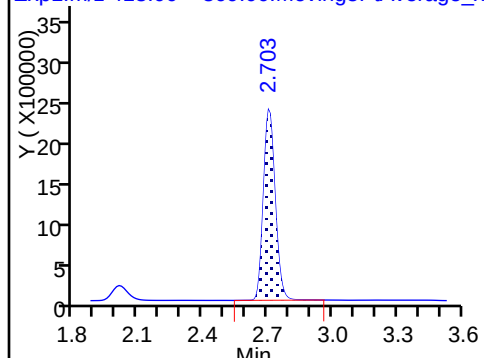


15 Perfluorooctanoic acid

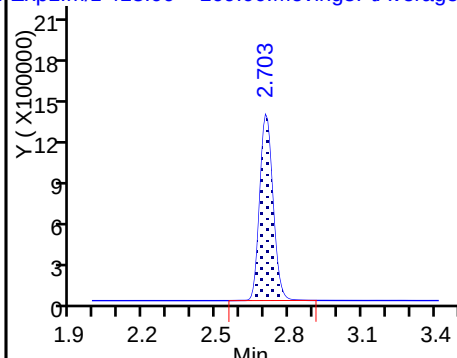
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

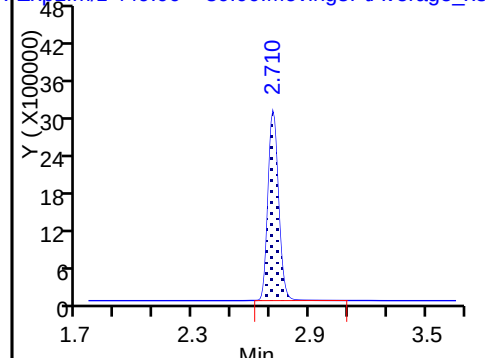
Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x3



Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

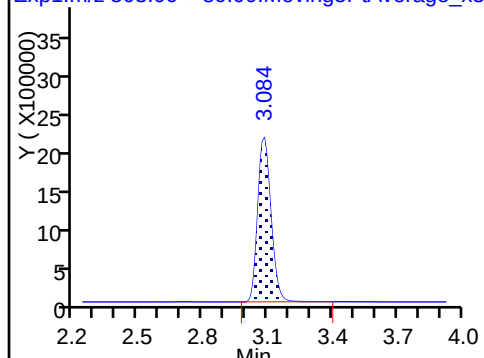


D 18 13C4 PFOS

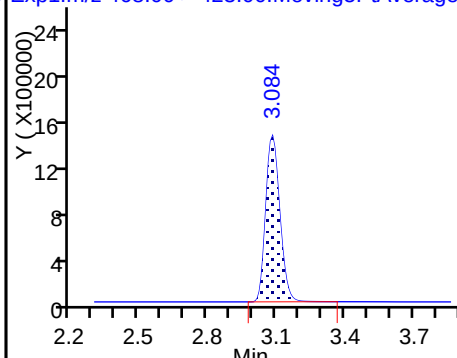
D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid (M)

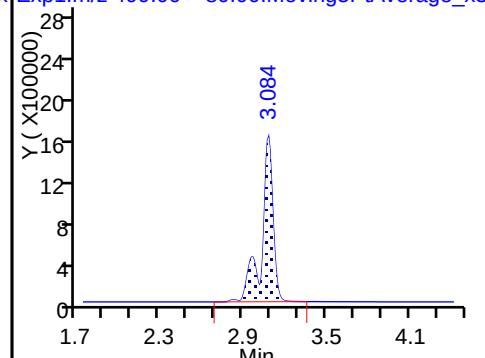
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



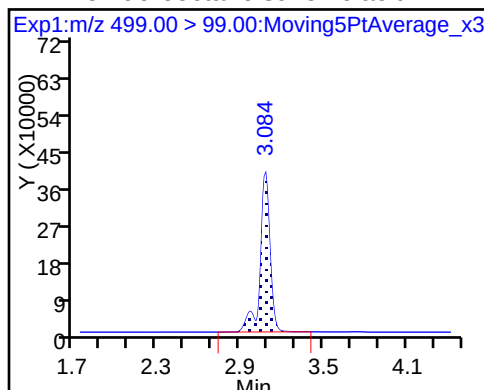
Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x3



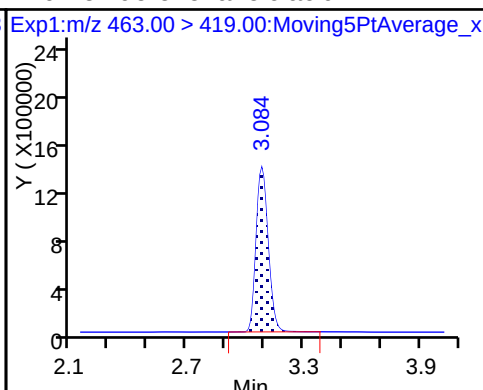
Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3



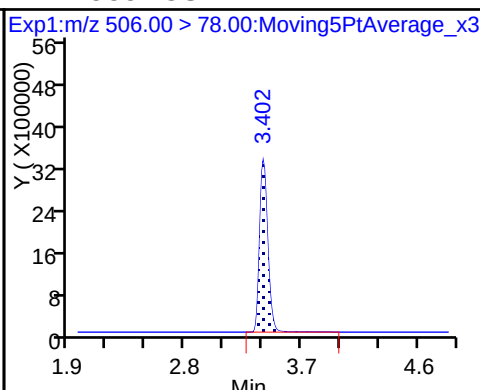
17 Perfluorooctane sulfonic acid



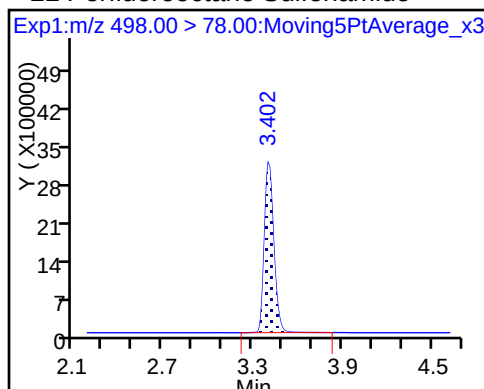
20 Perfluorononanoic acid



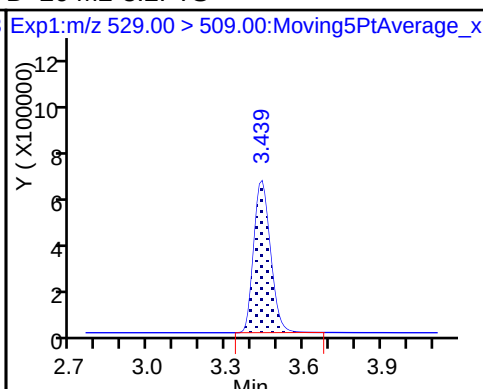
D 21 13C8 FOSA



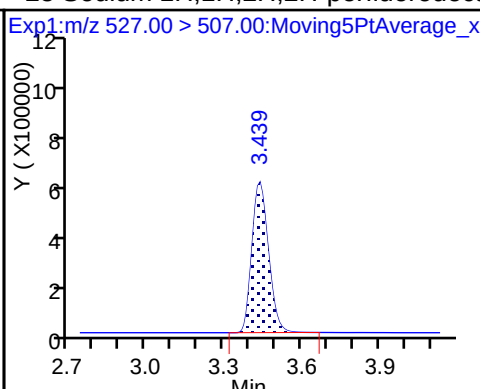
22 Perfluorooctane Sulfonamide



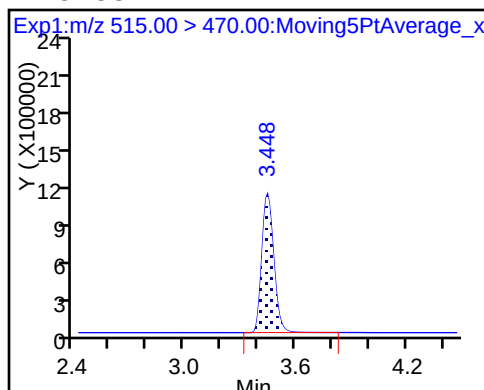
D 26 M2-8:2FTS



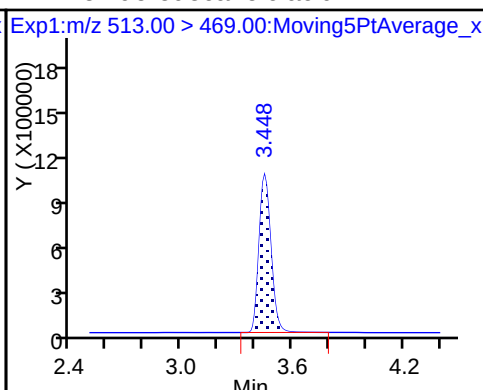
25 Sodium 1H,1H,2H,2H-perfluorodecane



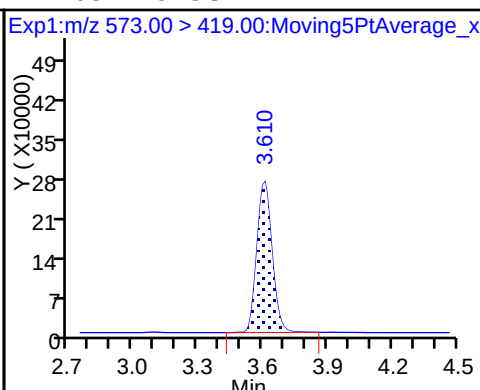
D 23 13C2 PFDA



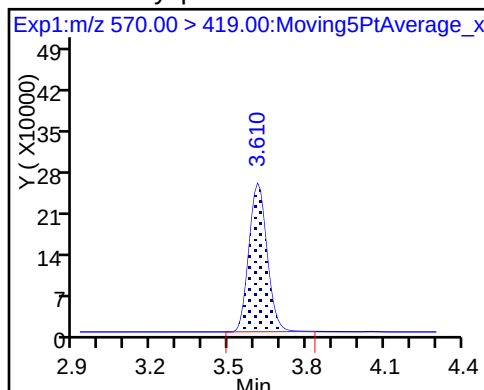
24 Perfluorodecanoic acid



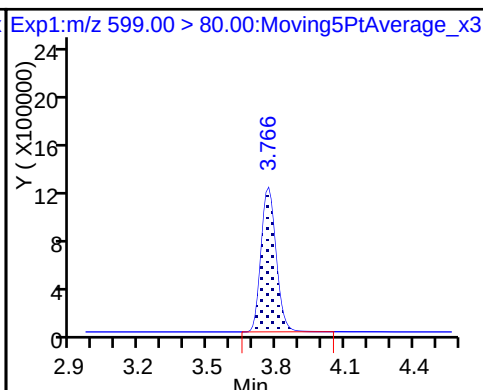
D 27 d3-NMeFOSAA



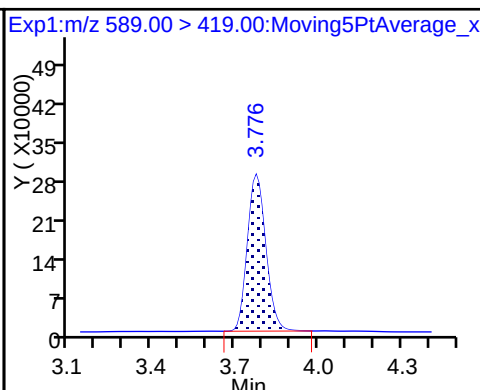
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

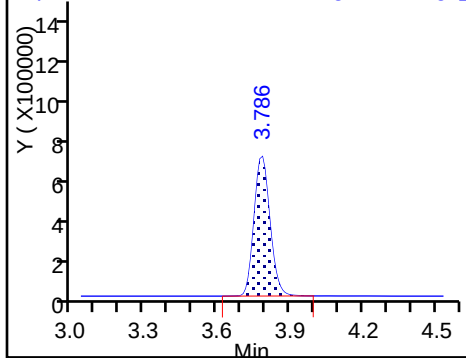


D 30 13C2 PFUnA

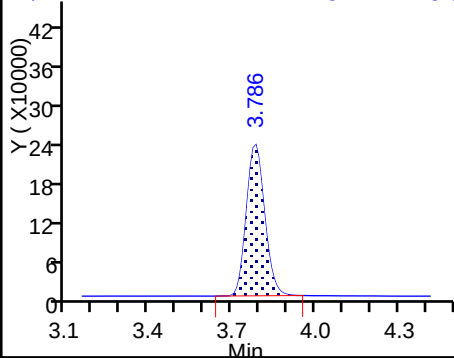
33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

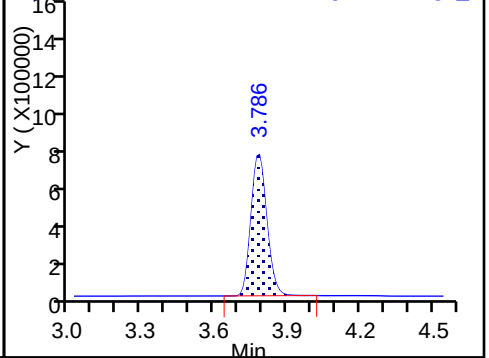
Exp1:m/z 565.00 > 520.00:Moving5PtAverage_x



Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x



Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x

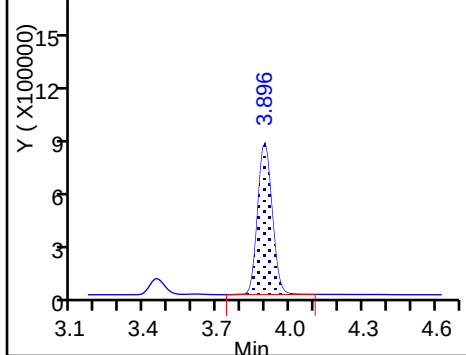


D 34 d-N-MeFOSA-M

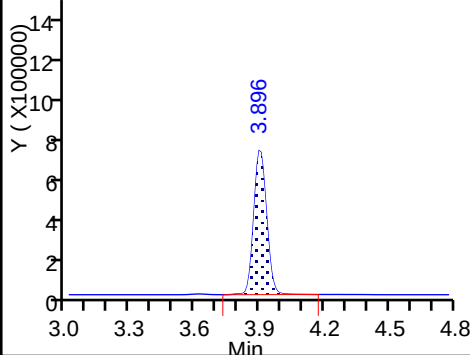
35 MeFOSA

D 38 d-N-EtFOSA-M

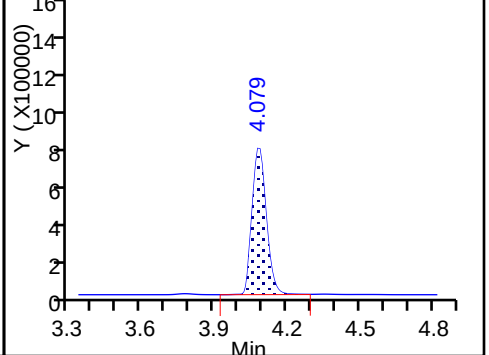
Exp1:m/z 515.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 512.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 531.00 > 169.00:Moving5PtAverage_x

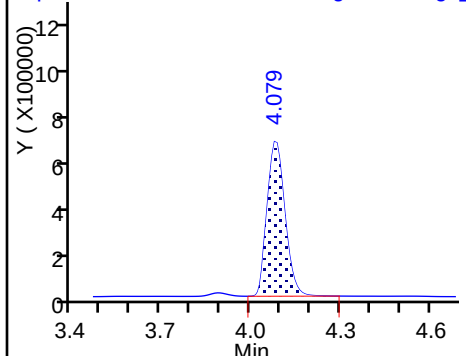


37 Perfluorododecanoic acid

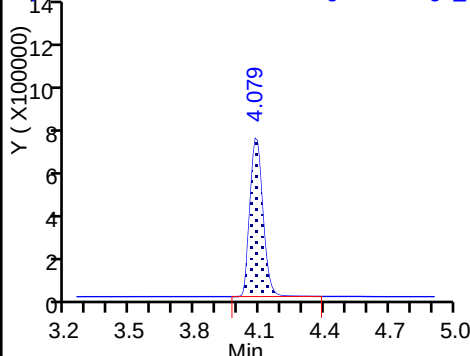
D 36 13C2 PFDaA

39 N-ethylperfluoro-1-octanesulfonami

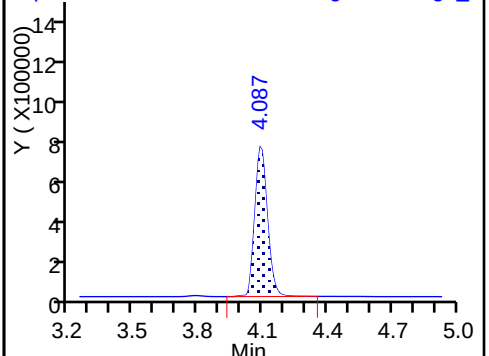
Exp1:m/z 613.00 > 569.00:Moving5PtAverage_x



Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x



Exp1:m/z 526.00 > 169.00:Moving5PtAverage_x

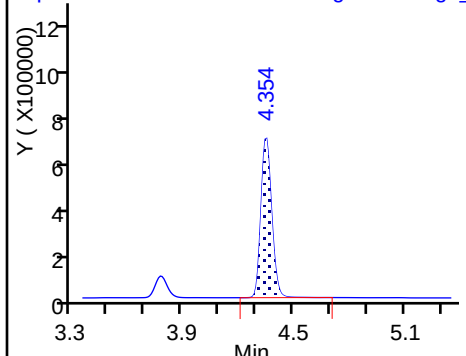


41 Perfluorotridecanoic acid

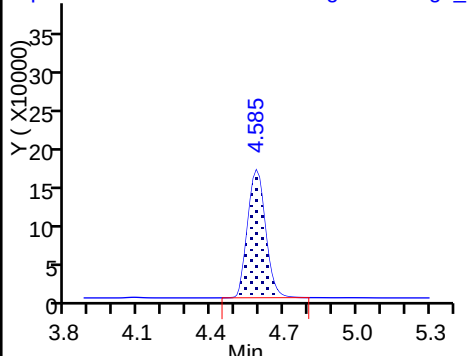
42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

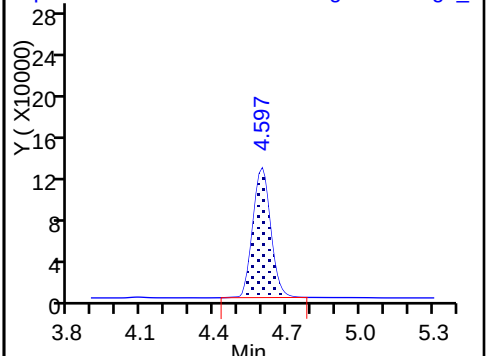
Exp1:m/z 663.00 > 619.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 219.00:Moving5PtAverage_x

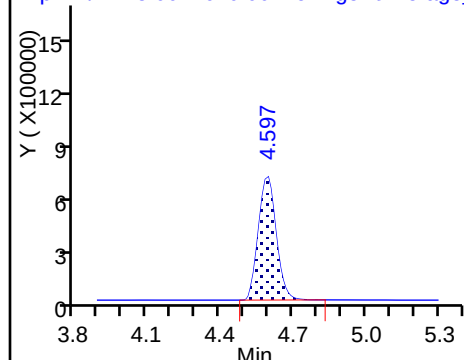


D 43 13C2-PFTeDA

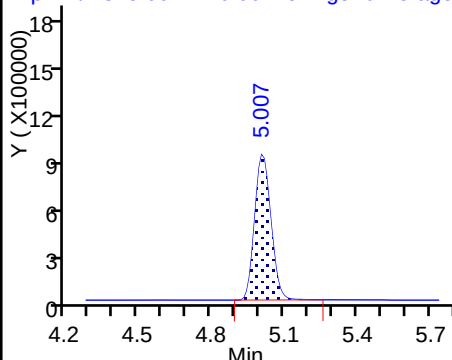
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

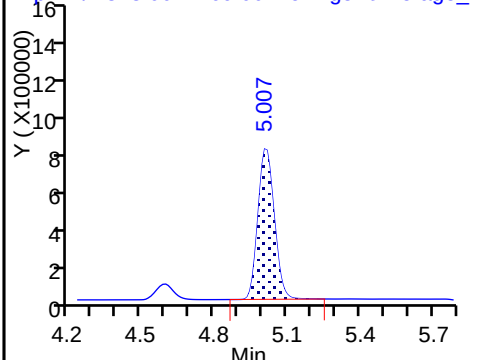
Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

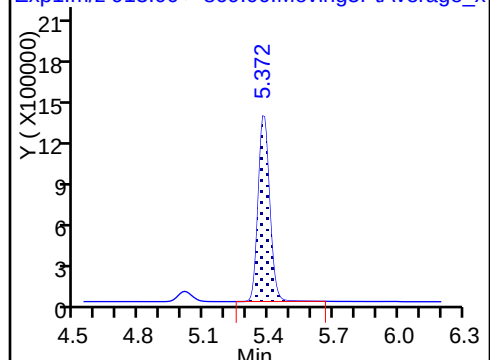


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



TestAmerica Sacramento

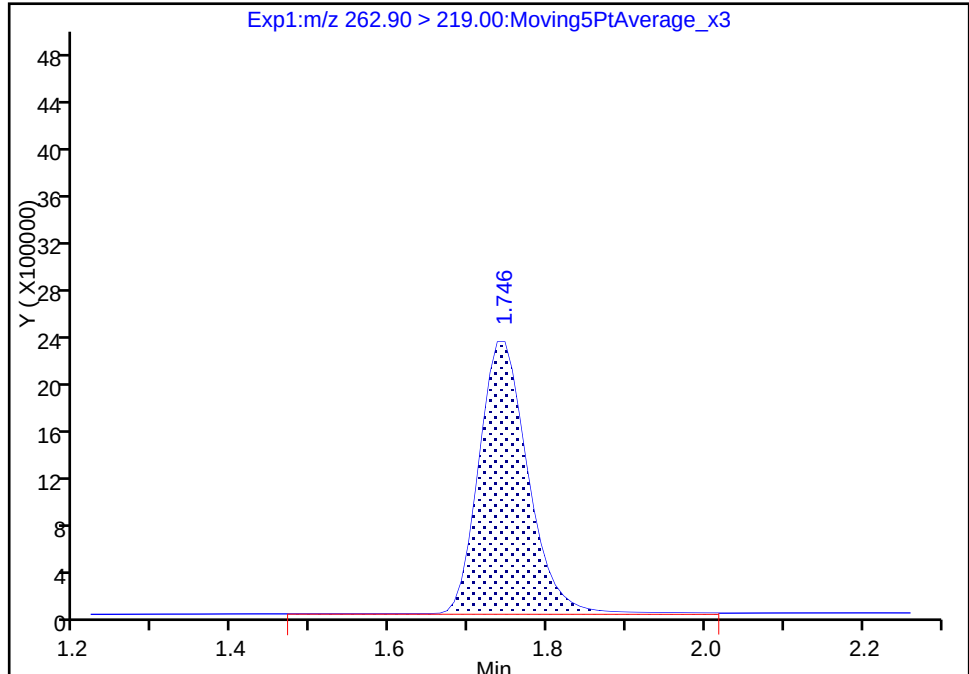
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_007.d
Injection Date: 18-Sep-2017 16:13:31 Instrument ID: A8_N
Lims ID: IC L5 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

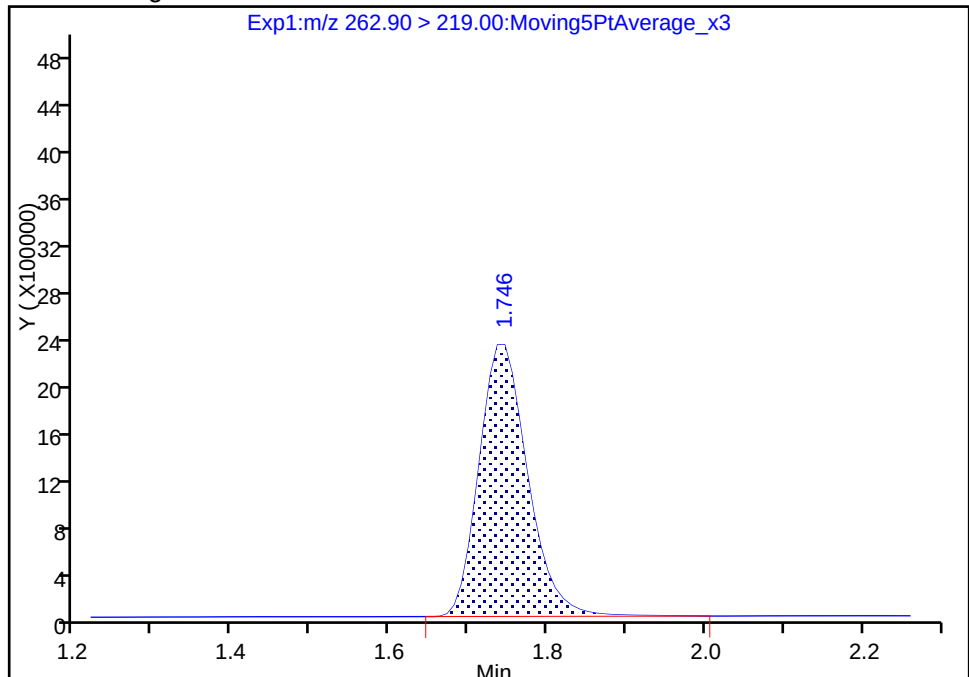
RT: 1.75
Area: 9956449
Amount: 47.817004
Amount Units: ng/ml

Processing Integration Results



RT: 1.75
Area: 9764897
Amount: 47.041306
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 08:20:59

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

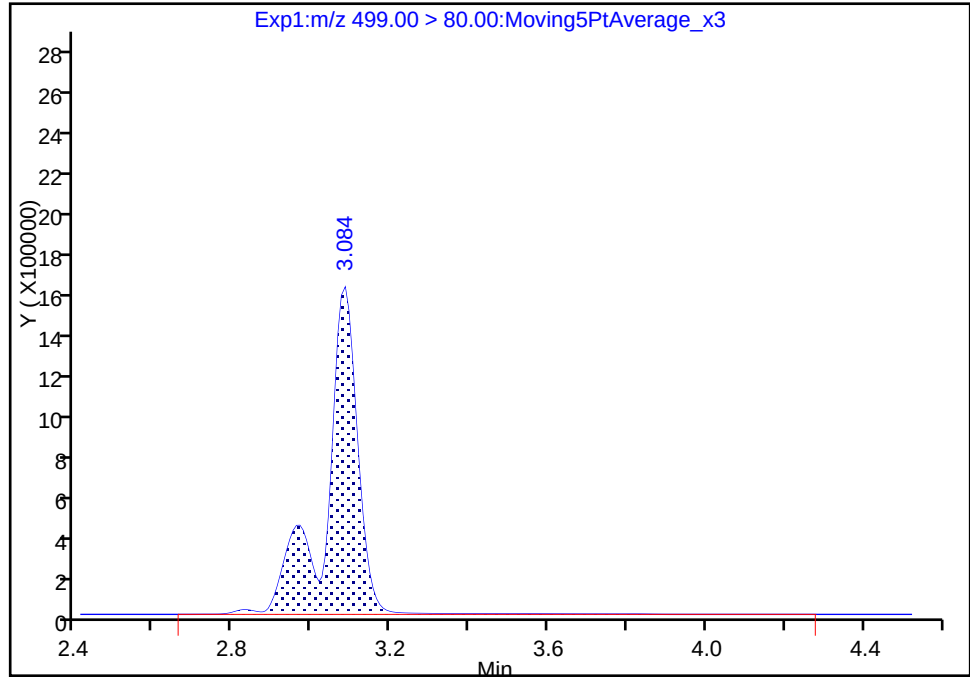
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_007.d
Injection Date: 18-Sep-2017 16:13:31 Instrument ID: A8_N
Lims ID: IC L5 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 32 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

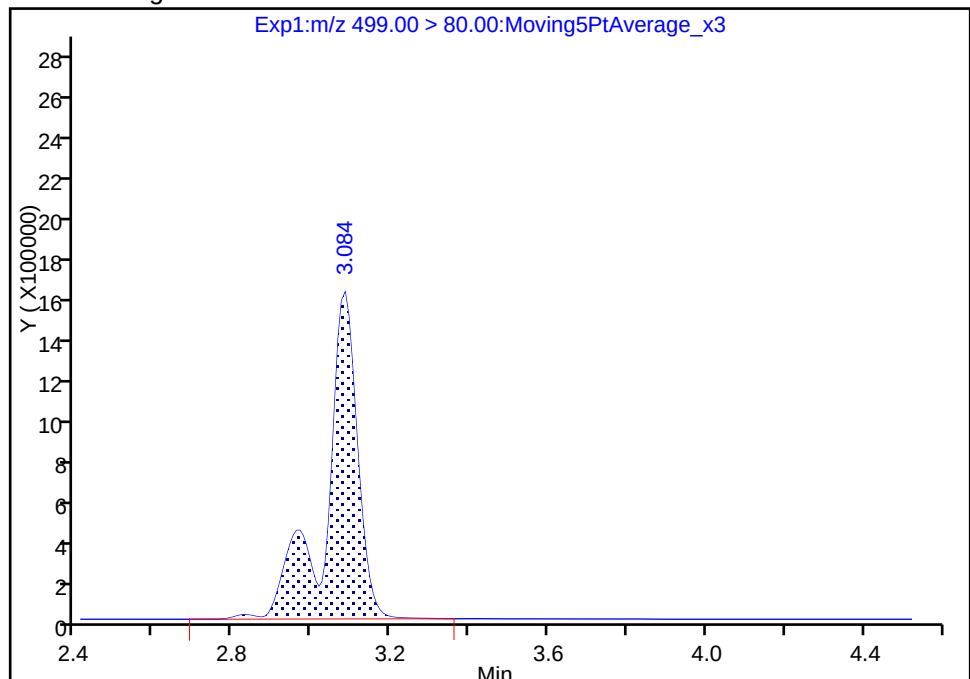
RT: 3.08
Area: 9069752
Amount: 44.335280
Amount Units: ng/ml

Processing Integration Results



RT: 3.08
Area: 8965528
Amount: 43.894659
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 08:21:48

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_008.d
 Lims ID: IC L6 Full
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 18-Sep-2017 16:20:25 ALS Bottle#: 33 Worklist Smp#: 8
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 08:24:09 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: phomsophat

Date: 18-Sep-2017 19:40:26

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	1.521	1.531	-0.010		14999243	48.3		96.6	36151	
2 Perfluorobutyric acid										
212.90 > 169.00	1.530	1.533	-0.003	1.000	23371257	80.3		80.3	2997	
D 3 13C5-PFPeA										
267.90 > 223.00	1.729	1.737	-0.008		8704961	46.2		92.5	58514	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.729	1.739	-0.010	1.000	17076720	85.9		85.9	6452	
D 47 13C3-PFBS										
301.90 > 83.00	1.757	1.760	-0.003		238183	46.0		99.0	8054	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.757	1.764	-0.007	1.000	25058068	68.3		77.2	189886	
298.90 > 99.00	1.757	1.764	-0.007	1.000	13148986		1.91(0.00-0.00)	77.2	54143	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.964	1.971	-0.007	1.000	8421949	92.3		98.8	51308	
D 7 13C2 PFHxA										
315.00 > 270.00	1.998	2.008	-0.010		9557992	47.5		95.0	31698	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.998	2.008	-0.010	1.000	16934914	92.4		92.4	18407	
D 9 13C4-PFHpA										
367.00 > 322.00	2.332	2.340	-0.008		8984083	48.9		97.9	26122	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.332	2.342	-0.010	1.000	16330329	92.7		92.7	13175	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.348	2.355	-0.007	1.000	25466661	83.8		92.0	14717	
D 11 18O2 PFHxS										
403.00 > 84.00	2.348	2.355	-0.007		13540255	47.4		100	33425	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.671	2.678	-0.007	1.000	7088731	93.6		98.8	25616	
D 12 M2-6:2FTS										
429.00 > 409.00	2.671	2.678	-0.007		4136709	45.2		95.1	15483	
* 62 13C2-PFOA										
415.00 > 370.00	2.692	2.701	-0.009		7424337	50.0			25690	
D 14 13C4 PFOA										
417.00 > 372.00	2.700	2.704	-0.004		7424834	43.4		86.9	26914	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.700	2.705	-0.005	1.000	15194855	95.1		95.1	1459	
413.00 > 169.00	2.700	2.705	-0.005	1.000	8784089		1.73(0.90-1.10)	95.1	16070	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.707	2.711	-0.004	1.000	20224079	84.8		89.1	24055	
D 18 13C4 PFOS										
503.00 > 80.00	3.079	3.085	-0.006		9240381	47.5		99.4	13774	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.079	3.086	-0.007	1.000	18251893	86.5		93.2	14022	M
499.00 > 99.00	3.079	3.086	-0.007	1.000	4074941		4.48(0.90-1.10)	93.2	8334	
D 19 13C5 PFNA										
468.00 > 423.00	3.079	3.086	-0.007		5812937	46.5		92.9	30503	
20 Perfluorononanoic acid										
463.00 > 419.00	3.079	3.087	-0.008	1.000	11060749	97.1		97.1	14203	
D 21 13C8 FOSA										
506.00 > 78.00	3.395	3.404	-0.009		14696214	49.9		99.9	35492	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.404	3.407	-0.003	1.000	24208958	81.6		81.6	69422	
D 26 M2-8:2FTS										
529.00 > 509.00	3.432	3.440	-0.008		2956873	47.8		99.9	30424	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.432	3.441	-0.009	1.000	5289360	92.7		96.8	44126	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.441	3.450	-0.009	1.000	9325117	99.1		99.1	16100	
D 23 13C2 PFDA										
515.00 > 470.00	3.441	3.450	-0.009		5011421	48.4		96.7	29706	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.601	3.607	-0.006		1427289	50.4		101	6560	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.601	3.613	-0.012	1.000	2704667	99.0		99.0	7254	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.758	3.765	-0.007	1.000	11033673	96.2		99.8	44497	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.768	3.778	-0.010		1377816	49.4		98.7	2174	
D 30 13C2 PFUnA										
565.00 > 520.00	3.778	3.783	-0.005		3230898	48.3		96.6	16385	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.778	3.785	-0.007	1.000	6645978	92.7		92.7	6786	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.778	3.785	-0.007	1.003	2541378	104.5		105	12775	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.882	3.891	-0.009		3807001	52.3		105	720	
35 MeFOSA										
512.00 > 169.00	3.891	3.897	-0.006	1.000	6811022	99.7		99.7	8244	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.075	4.078	-0.003		3303241	50.7		101	3812	
D 36 13C2 PFDaA										
615.00 > 570.00	4.075	4.081	-0.006		2850339	47.4		94.9	12797	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.075	4.081	-0.006	1.000	5209804	94.4		94.4	2823	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.084	4.086	-0.002	1.000	6245831	100.3		100	5912	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.338	4.350	-0.012	1.000	5417121	100.6		101	918	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.572	4.585	-0.013	1.000	1664790	95.4		95.4	7901	
713.00 > 219.00	4.584	4.585	-0.001	1.003	1252676		1.33(0.00-0.00)	95.4	5839	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.584	4.593	-0.009		3620486	48.9		97.9	13233	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.006	5.011	-0.005		4494320	50.0		100	4387	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.006	5.013	-0.007	1.000	8013992	100.8		101	643	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.370	5.379	-0.009	1.000	9165989	92.2		92.2	1138	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L6_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_008.d

Injection Date: 18-Sep-2017 16:20:25

Instrument ID: A8_N

Lims ID: IC L6 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 33

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

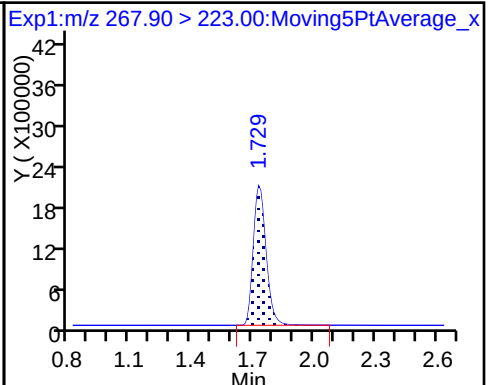
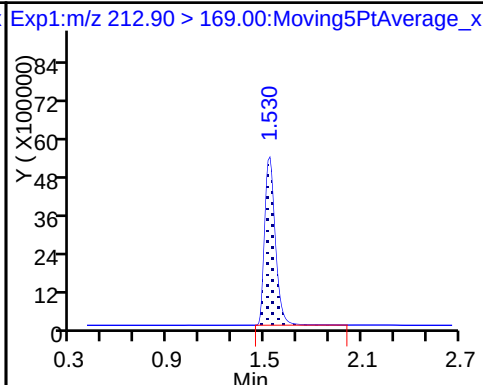
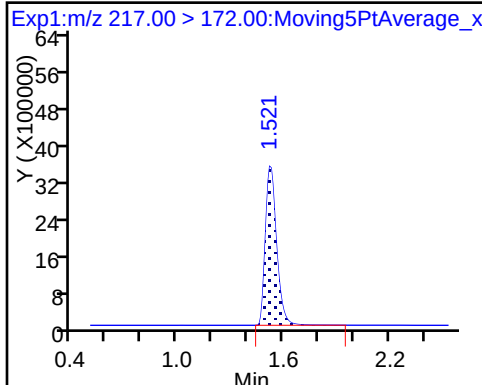
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

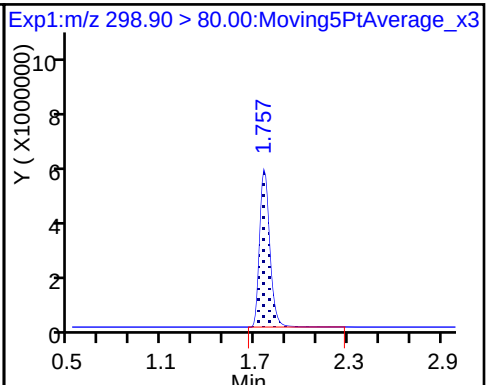
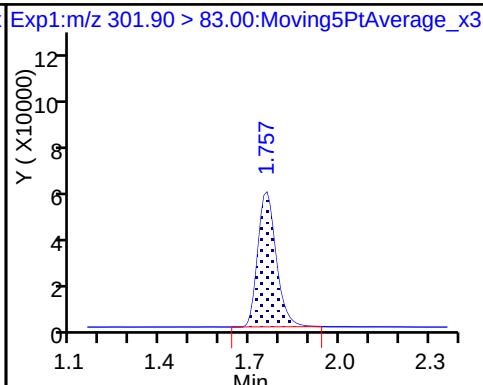
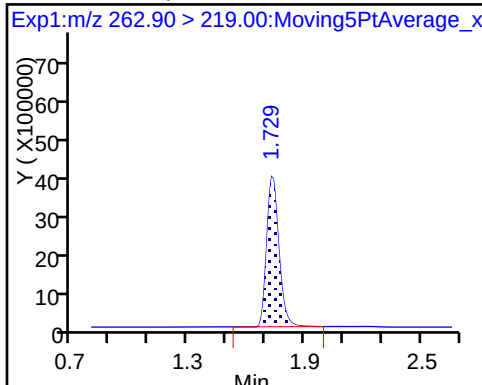
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

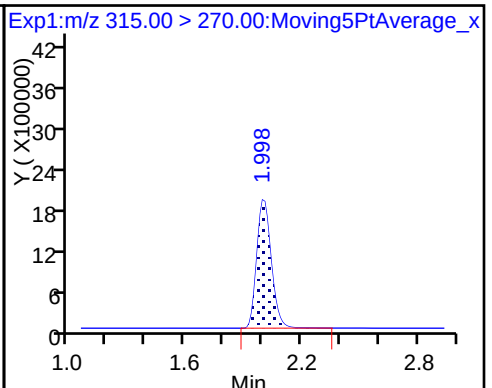
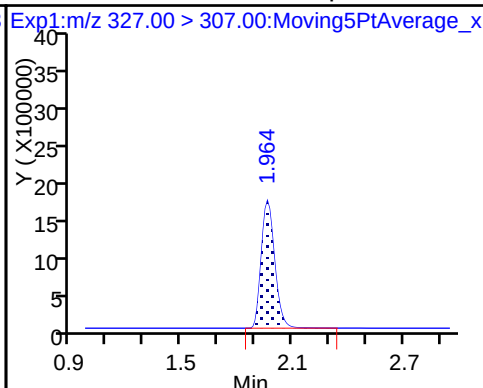
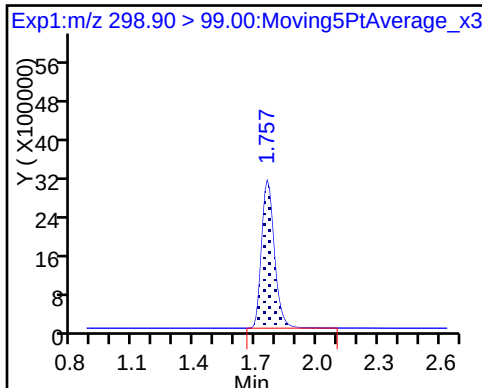
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

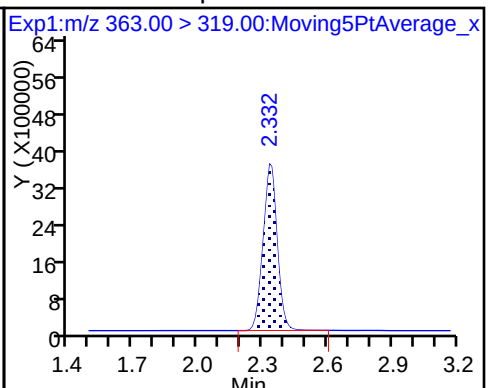
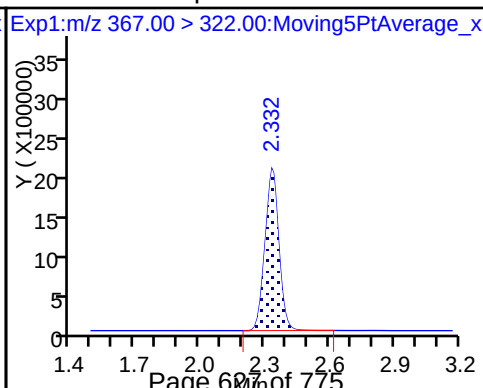
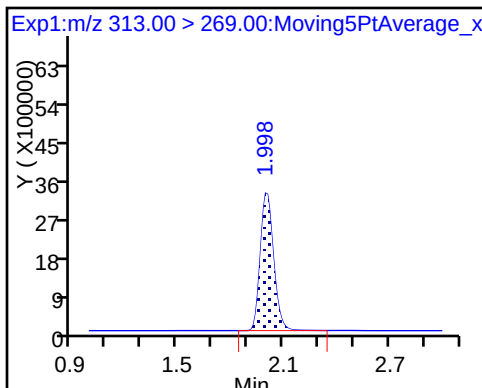
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

D 9 13C4-PFHpA

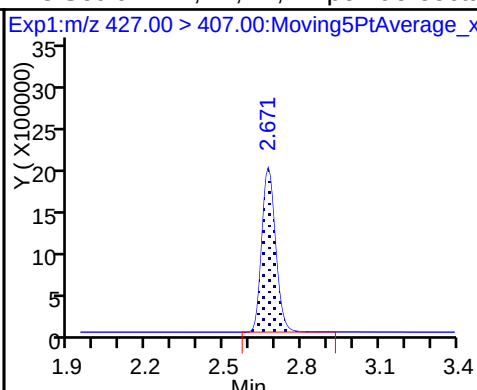
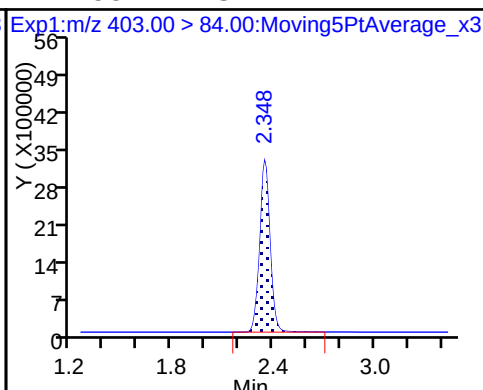
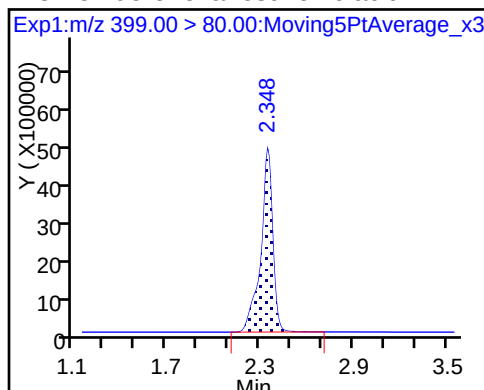
10 Perfluoroheptanoic acid



8 Perfluorohexanesulfonic acid

D 11 18O2 PFHxS

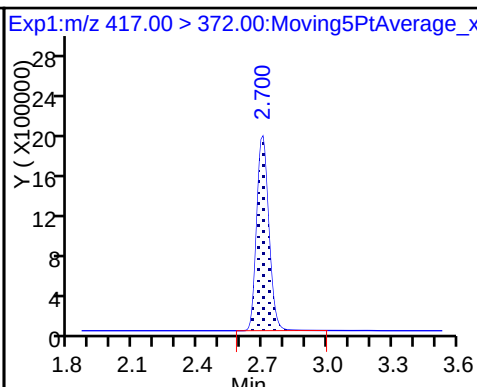
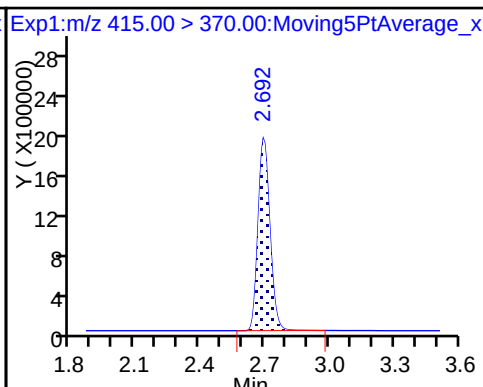
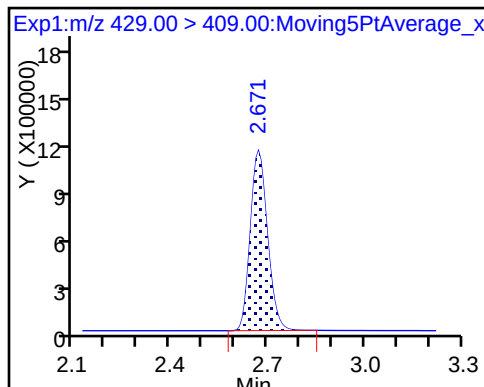
13 Sodium 1H,1H,2H,2H-perfluorooctane



D 12 M2-6:2FTS

* 62 13C2-PFOA

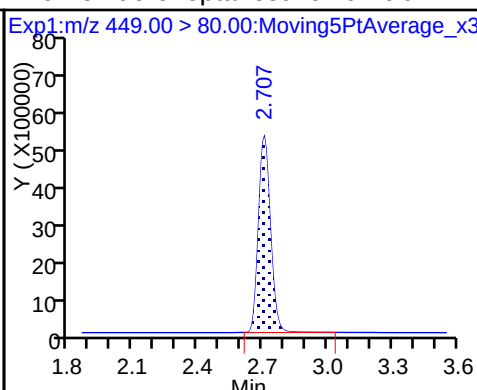
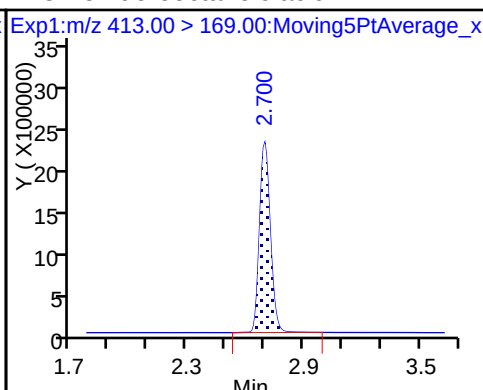
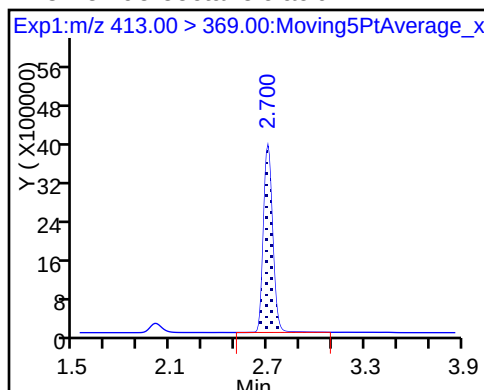
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

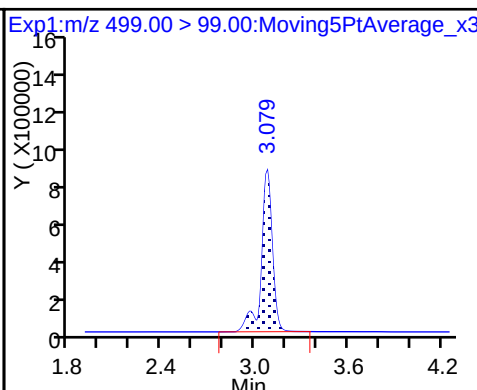
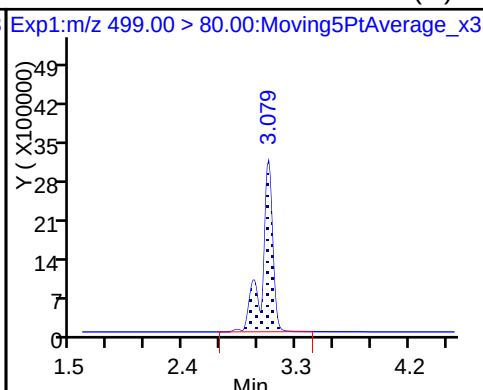
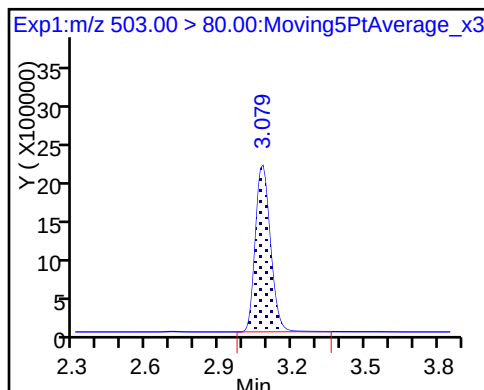
16 Perfluoroheptanesulfonic Acid



D 18 13C4 PFOS

17 Perfluorooctane sulfonic acid (M)

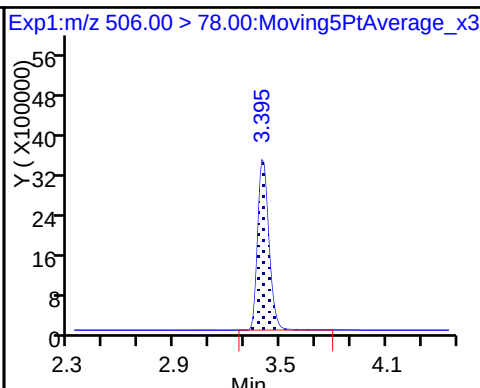
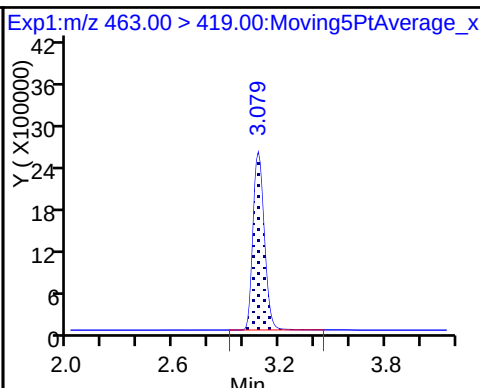
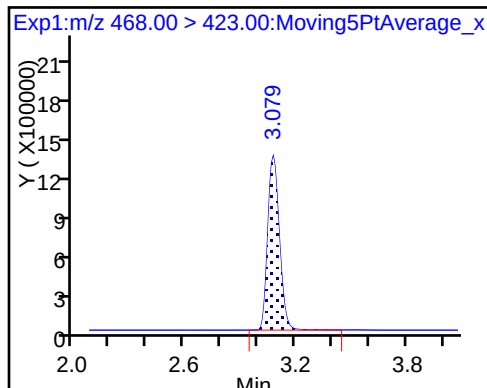
17 Perfluorooctane sulfonic acid



D 19 13C5 PFNA

20 Perfluorononanoic acid

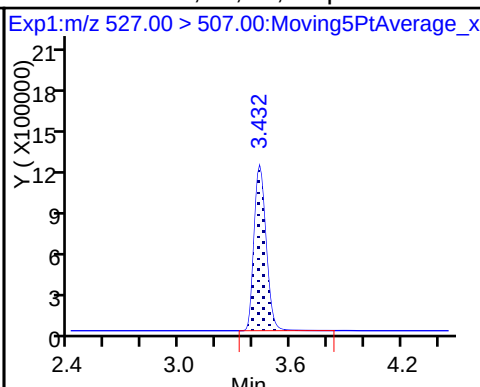
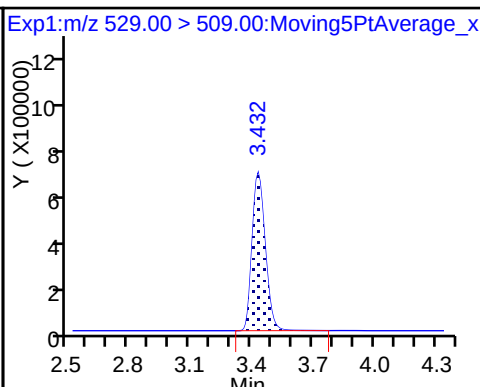
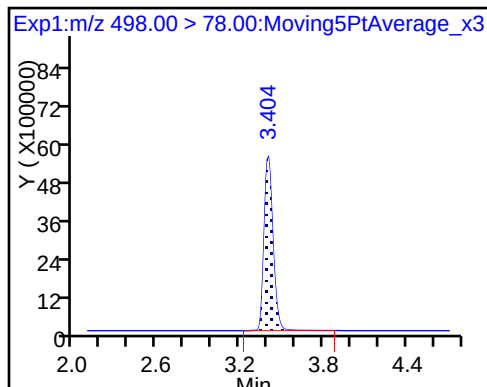
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 26 M2-8:2FTS

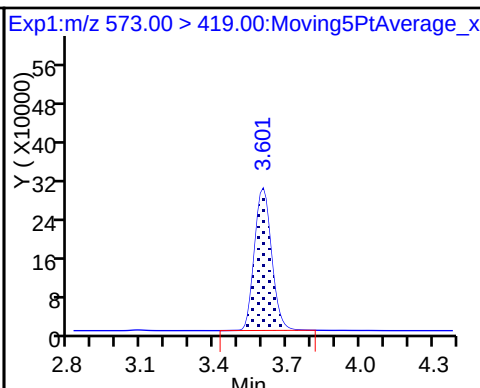
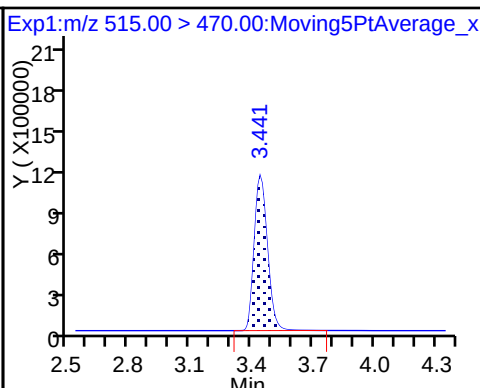
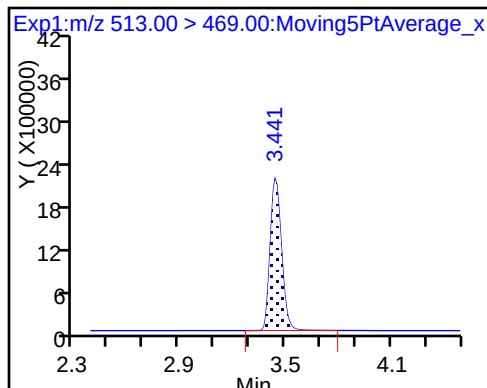
25 Sodium 1H,1H,2H,2H-perfluorodecane



24 Perfluorodecanoic acid

D 23 13C2 PFDA

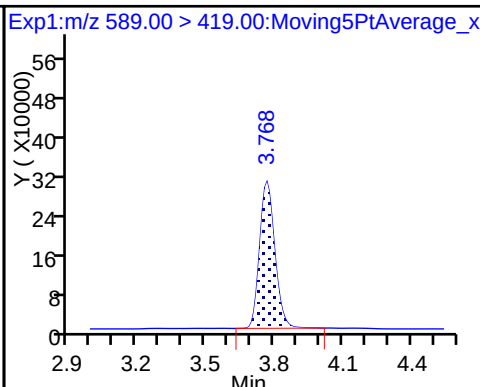
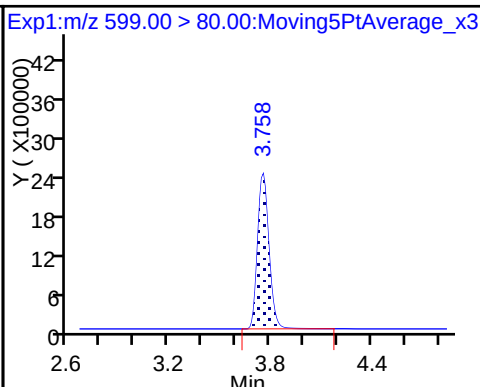
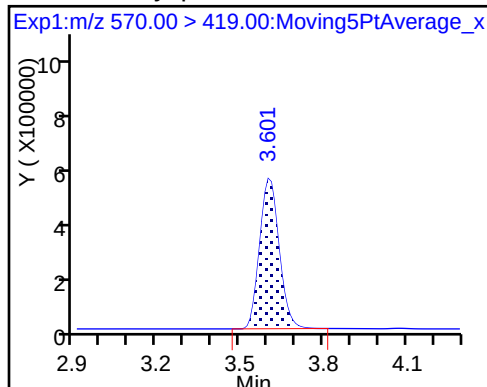
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

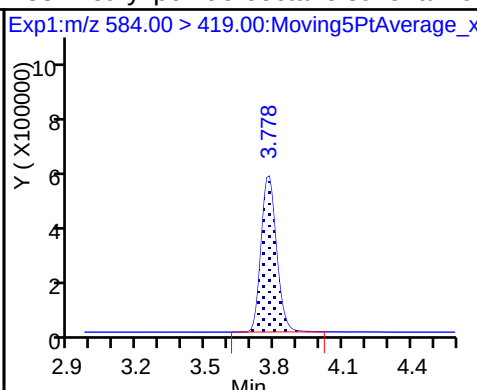
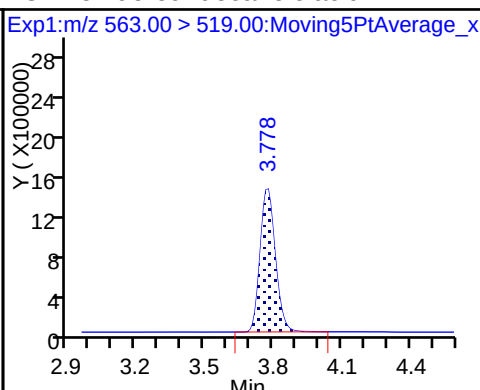
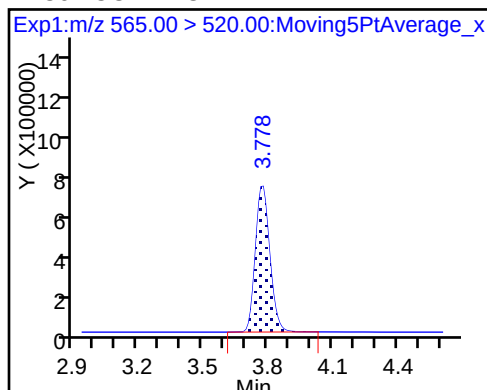
D 32 d5-NEtFOSAA



D 30 13C2 PFUnA

31 Perfluoroundecanoic acid

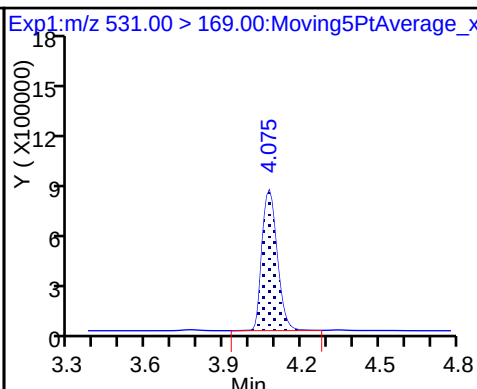
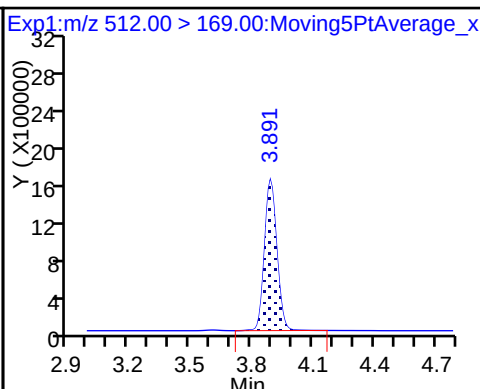
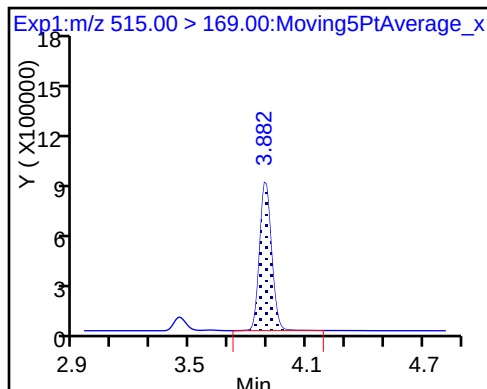
33 N-ethyl perfluorooctane sulfonamid



D 34 d-N-MeFOSA-M

35 MeFOSA

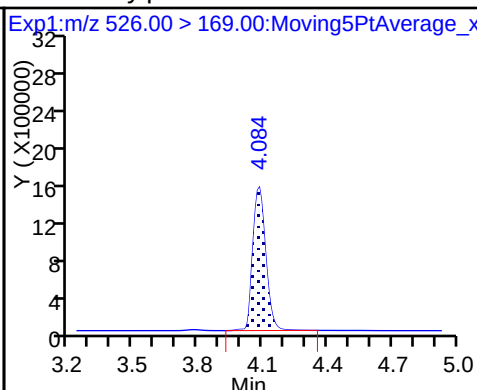
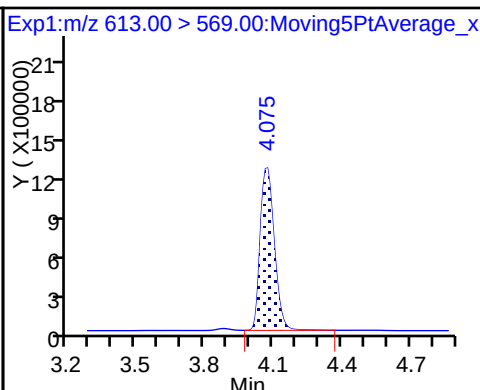
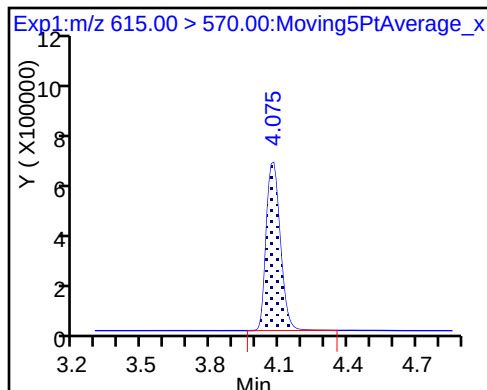
D 38 d-N-EtFOSA-M



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

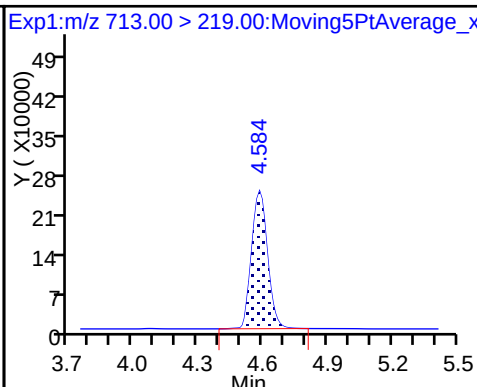
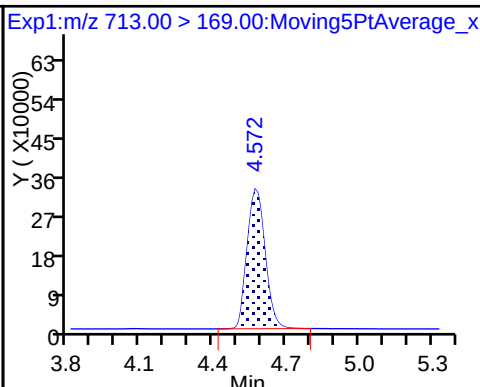
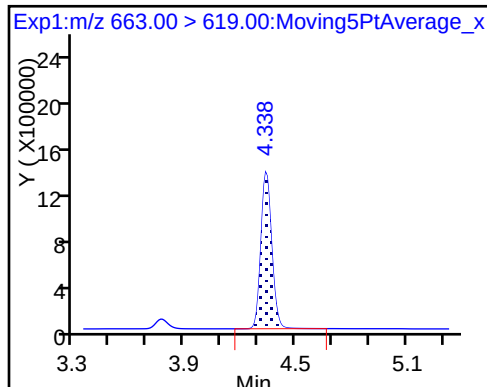
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

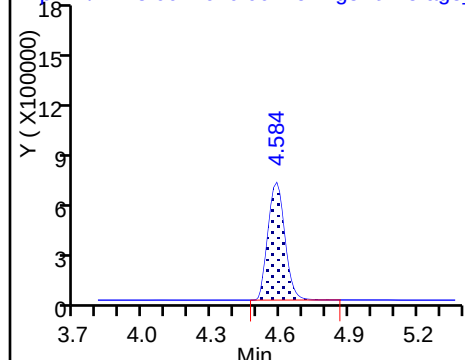


D 43 13C2-PFTeDA

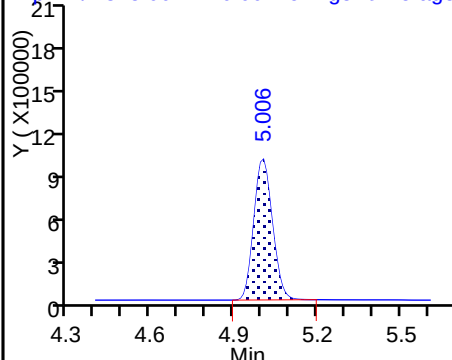
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

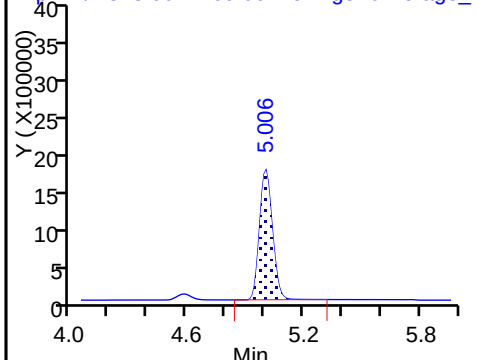
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Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

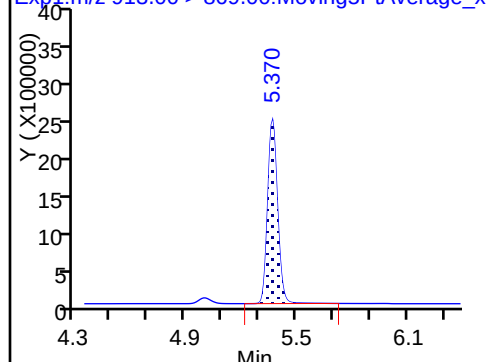


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



TestAmerica Sacramento

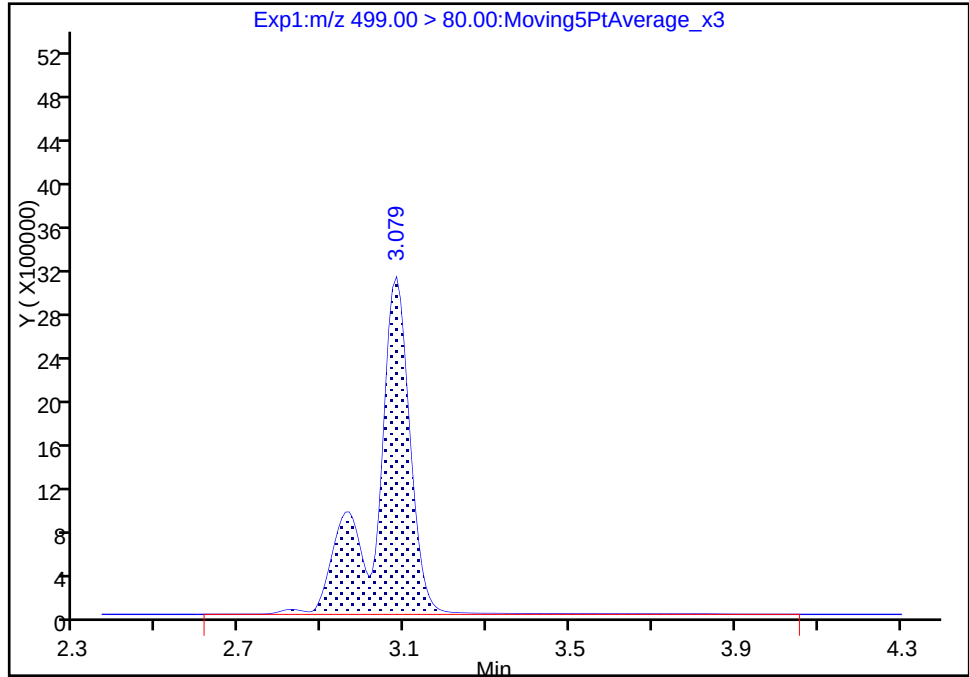
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Injection Date: 18-Sep-2017 16:20:25 Instrument ID: A8_N
Lims ID: IC L6 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 33 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

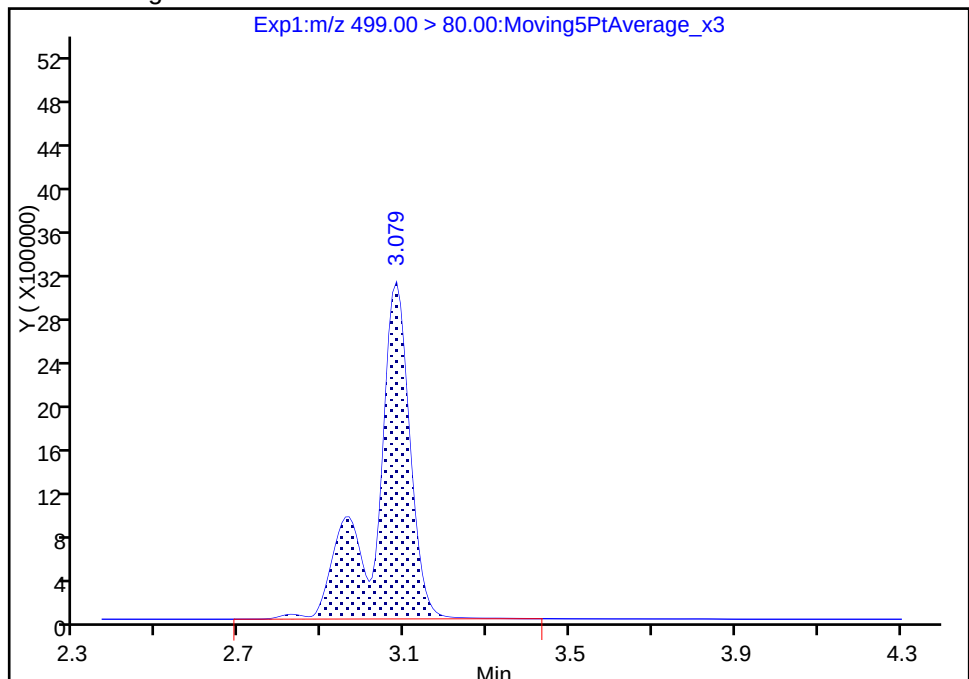
RT: 3.08
Area: 18458689
Amount: 87.220795
Amount Units: ng/ml

Processing Integration Results



RT: 3.08
Area: 18251893
Amount: 86.509267
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 08:21:38

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_009.d
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 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 18-Sep-2017 16:27:19 ALS Bottle#: 34 Worklist Smp#: 9
 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*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 08:24:12 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: phomsophat

Date: 18-Sep-2017 19:51:46

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	1.529	1.531	-0.003		13650075	43.9		87.9	35044	
2 Perfluorobutyric acid										
212.90 > 169.00	1.529	1.533	-0.005	1.000	35239176	133.1		66.6	3171	
D 3 13C5-PFPeA										
267.90 > 223.00	1.728	1.737	-0.009		7523800	40.0		79.9	40713	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.737	1.739	-0.002	1.000	25621793	149.1		74.5	7495	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.760	-0.005		206106	39.8		85.6	5391	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.755	1.764	-0.009	1.000	37699105	118.7		67.1	51862	
298.90 > 99.00	1.755	1.764	-0.009	1.000	21161227		1.78(0.00-0.00)	67.1	53119	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.961	1.971	-0.010	1.000	13649183	153.3		82.0	37090	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.006	2.008	-0.002	1.000	26345592	156.9		78.5	16234	
D 7 13C2 PFHxA										
315.00 > 270.00	2.006	2.008	-0.002		8755064	43.5		87.0	24435	
D 9 13C4-PFHpA										
367.00 > 322.00	2.331	2.340	-0.009		7263102	39.6		79.1	14894	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.331	2.342	-0.011	1.000	24377138	171.2		85.6	17944	
D 11 18O2 PFHxS										
403.00 > 84.00	2.350	2.355	-0.005		12392029	43.4		91.7	19525	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.350	2.355	-0.005	1.000	39960360	143.6		78.9	8899	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.667	2.678	-0.011		4038178	44.1		92.9	17440	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.667	2.678	-0.011	1.000	11518890	155.8		82.2	30043	
* 62 13C2-PFOA										
415.00 > 370.00	2.696	2.701	-0.005		6310826	50.0			27635	
D 14 13C4 PFOA										
417.00 > 372.00	2.696	2.704	-0.008		6393600	37.4		74.8	16430	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.696	2.705	-0.009	1.000	23340778	169.6		84.8	2344	
413.00 > 169.00	2.696	2.705	-0.009	1.000	14654233		1.59(0.90-1.10)	84.8	13824	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.703	2.711	-0.008	1.000	30883986	140.9		74.0	22172	
D 18 13C4 PFOS										
503.00 > 80.00	3.073	3.085	-0.012		8496564	43.7		91.4	9419	
D 19 13C5 PFNA										
468.00 > 423.00	3.073	3.086	-0.013		5036279	40.3		80.5	18989	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.073	3.086	-0.013	1.000	31337906	161.5		87.0	8130	M
499.00 > 99.00	3.073	3.086	-0.013	1.000	7562559		4.14(0.90-1.10)	87.0	11474	
20 Perfluorononanoic acid										
463.00 > 419.00	3.082	3.087	-0.005	1.000	18759616	190.2		95.1	19520	
D 21 13C8 FOSA										
506.00 > 78.00	3.398	3.404	-0.006		13772811	46.8		93.6	30966	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.398	3.407	-0.009	1.000	37390749	134.5		67.3	18885	
D 26 M2-8:2FTS										
529.00 > 509.00	3.426	3.440	-0.014		2776975	44.9		93.8	14762	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.435	3.441	-0.006	1.003	8755172	163.4		85.3	24042	
D 23 13C2 PFDA										
515.00 > 470.00	3.444	3.450	-0.006		4529795	43.7		87.4	22585	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.444	3.450	-0.006	1.000	16189228	190.4		95.2	14286	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.593	3.607	-0.014		1353186	47.8		95.5	5041	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.604	3.613	-0.009	1.003	5282521	204.0		102	10634	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.751	3.765	-0.014	1.000	18101824	171.7		89.1	10973	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.771	3.778	-0.007		1232855	44.2		88.3	1734	
D 30 13C2 PFUnA										
565.00 > 520.00	3.771	3.783	-0.012		2791697	41.8		83.5	9047	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.771	3.785	-0.014	1.000	4488594	206.3		103	10809	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.771	3.785	-0.014	1.000	11090476	179.0		89.5	8332	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M	515.00 > 169.00	3.886	3.891	-0.005	3789607	52.1		104	709	
35 MeFOSA	512.00 > 169.00	3.894	3.897	-0.003	1.000	12682035	186.4	93.2	11089	
D 38 d-N-EtFOSA-M	531.00 > 169.00	4.079	4.078	0.001	3237549	49.7		99.4	2719	
37 Perfluorododecanoic acid	613.00 > 569.00	4.070	4.081	-0.011	1.000	9890327	192.8	96.4	4887	
D 36 13C2 PFDaA	615.00 > 570.00	4.070	4.081	-0.011	2649968	44.1		88.2	9989	
39 N-ethylperfluoro-1-octanesulfonami	526.00 > 169.00	4.079	4.086	-0.007	1.000	11783227	193.1	96.5	3884	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.335	4.350	-0.015	1.000	10176541	203.4	102	1724	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.571	4.585	-0.014	1.000	3044185	203.9	102	11684	
	713.00 > 219.00	4.583	4.585	-0.002	1.003	2299711	1.32(0.00-0.00)	102	8659	
D 43 13C2-PFTeDA	715.00 > 670.00	4.583	4.593	-0.010	3097097	41.9		83.7	9604	
D 44 13C2-PFHxDA	815.00 > 770.00	4.996	5.011	-0.015	4061560	45.2		90.4	8105	
45 Perfluorohexadecanoic acid	813.00 > 769.00	4.996	5.013	-0.017	1.000	14343578	200.1	100	1058	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.361	5.379	-0.018	1.000	17808831	198.3	99.2	1916	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC_FULL-L7_00004

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_009.d

Injection Date: 18-Sep-2017 16:27:19

Instrument ID: A8_N

Lims ID: IC L7 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 34

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

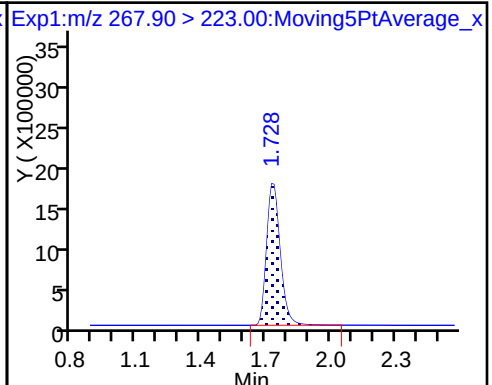
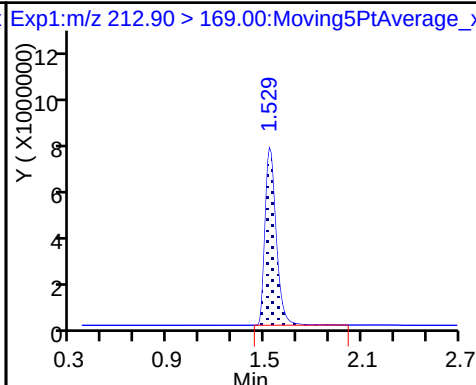
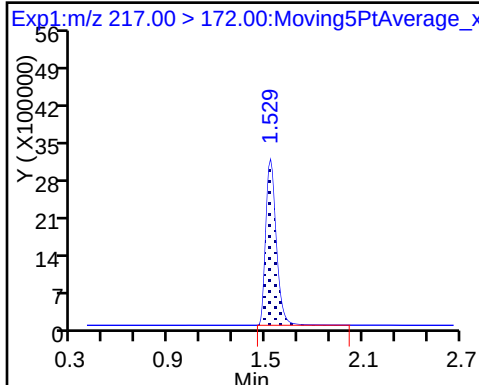
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

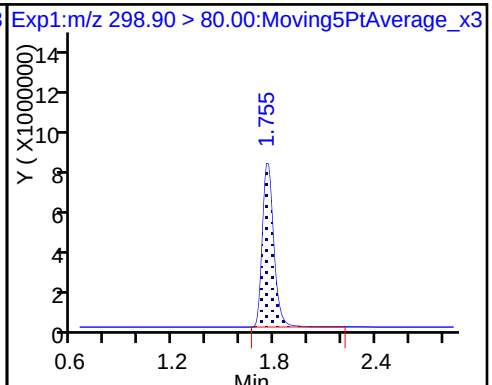
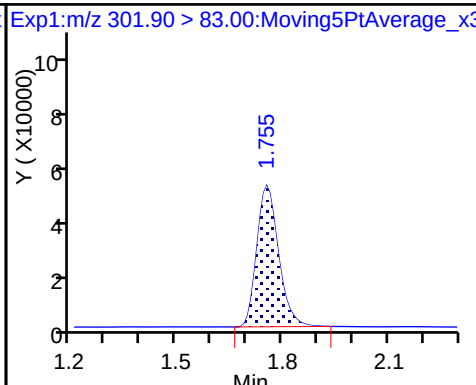
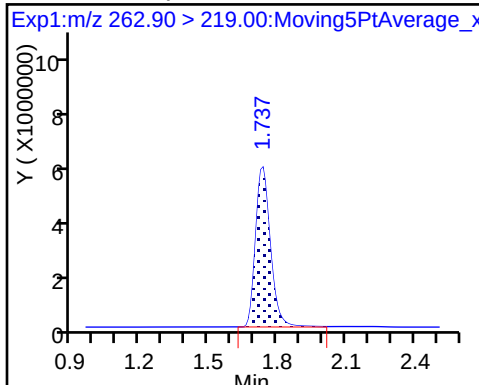
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

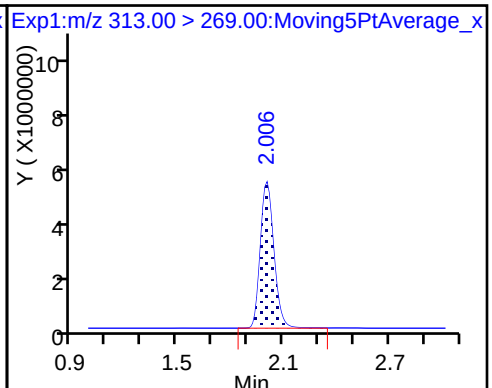
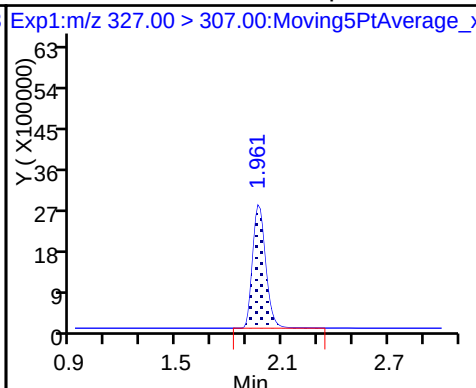
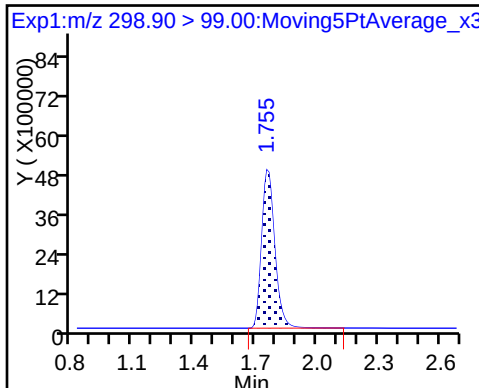
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoate

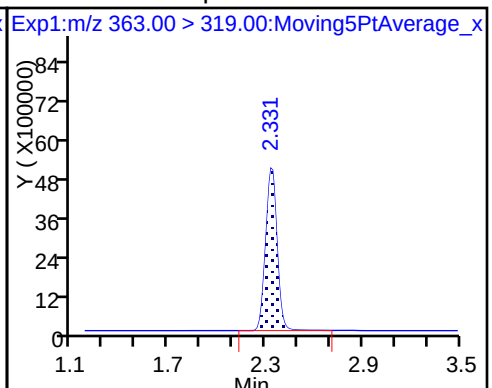
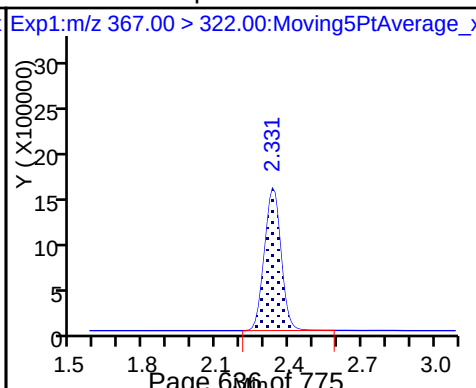
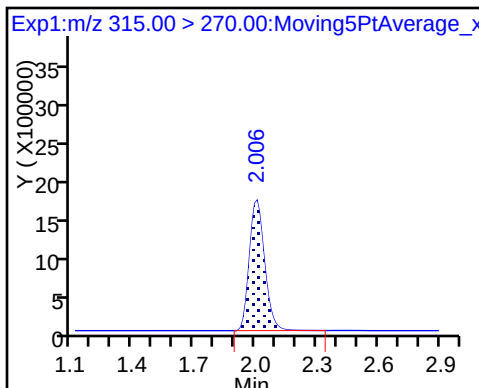
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

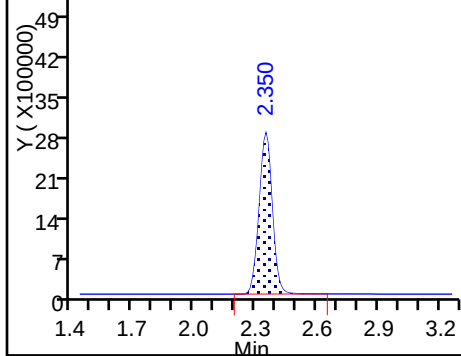


D 11 18O2 PFHxS

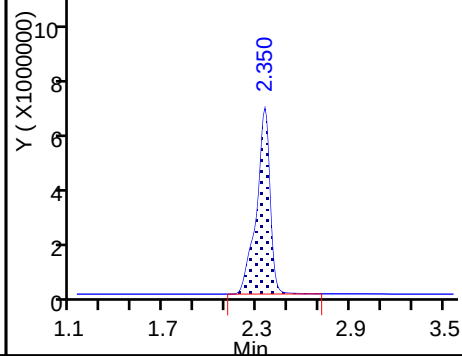
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

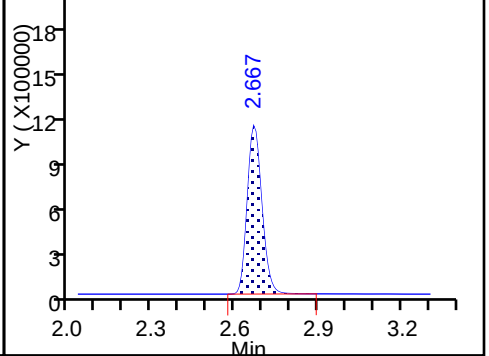
Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



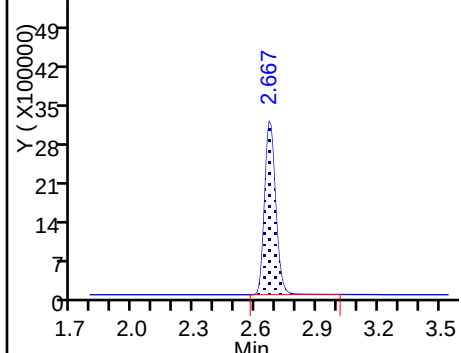
Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x3



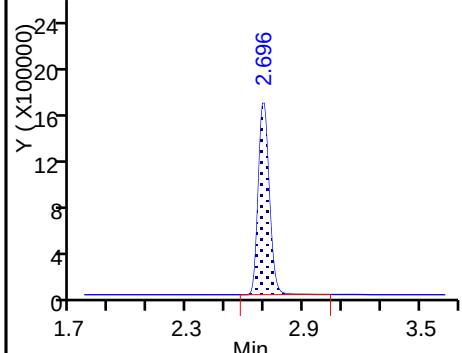
13 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 14 13C4 PFOA

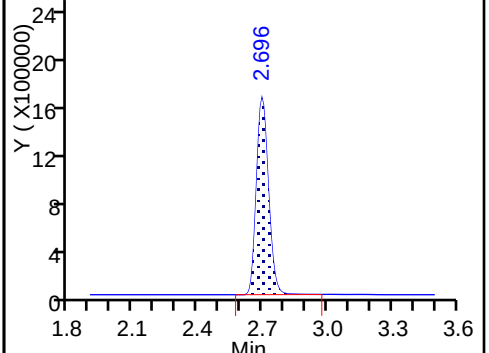
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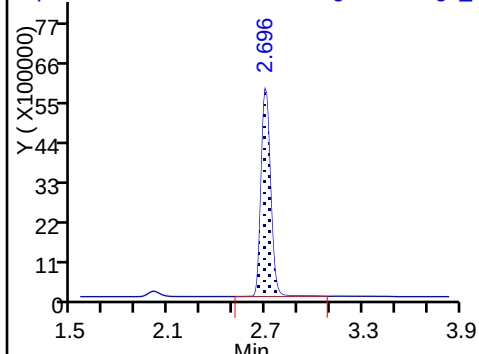


15 Perfluorooctanoic acid

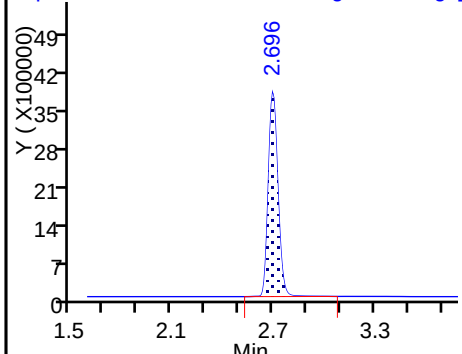
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

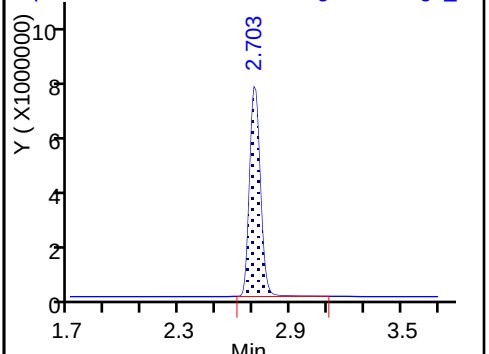
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Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

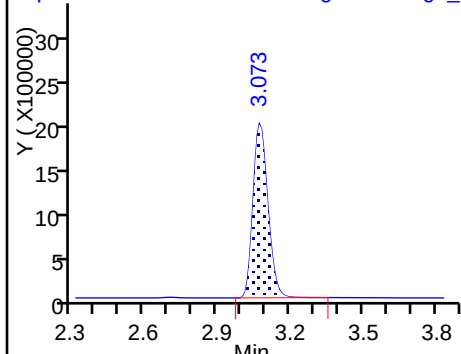


D 18 13C4 PFOS

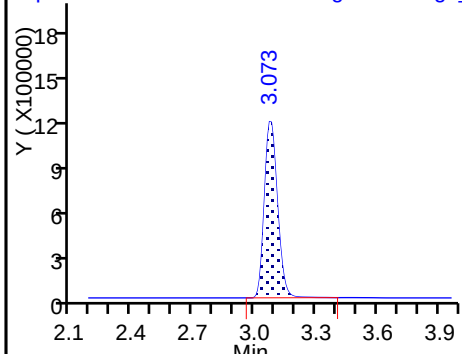
D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid (M)

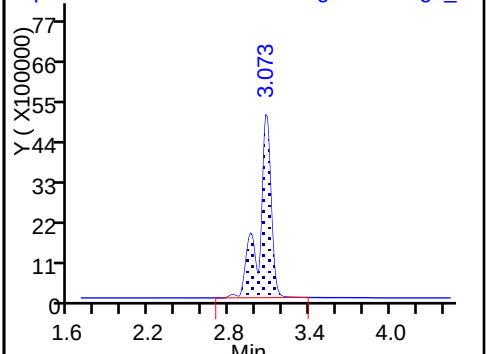
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



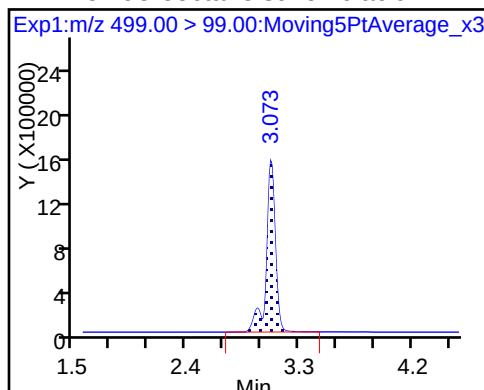
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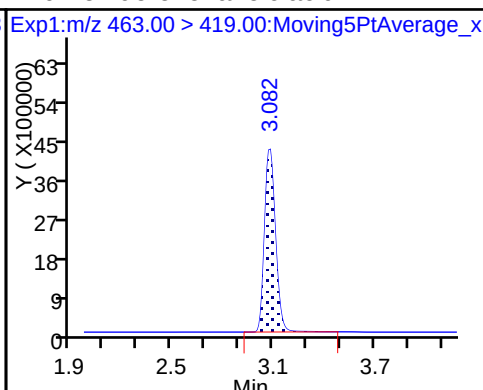
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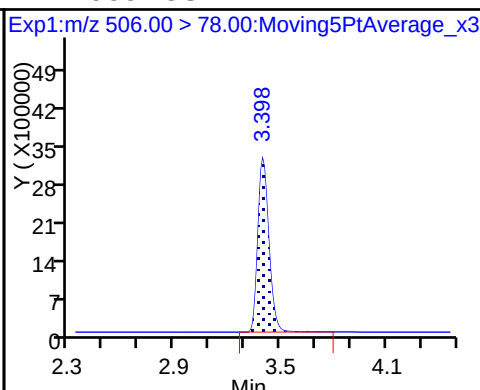
17 Perfluorooctane sulfonic acid



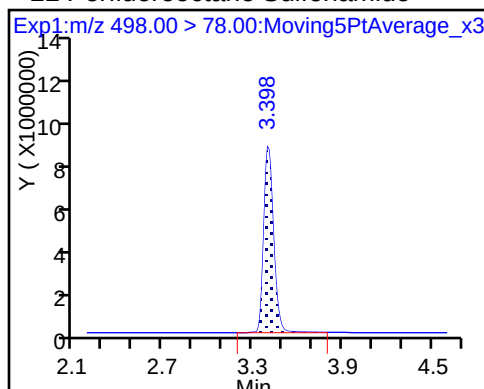
20 Perfluorononanoic acid



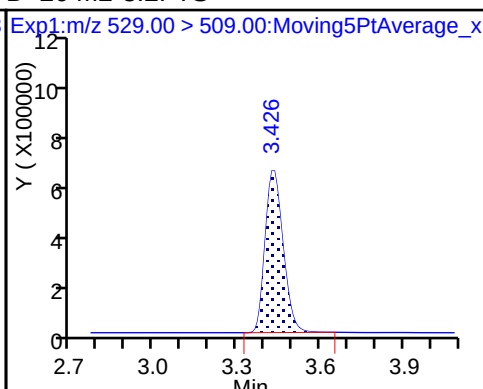
D 21 13C8 FOSA



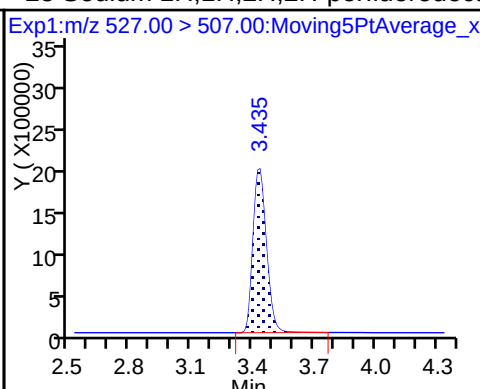
22 Perfluorooctane Sulfonamide



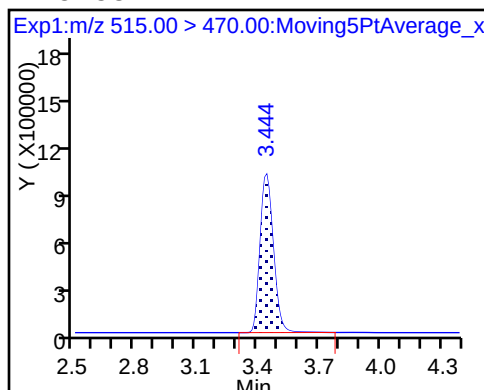
D 26 M2-8:2FTS



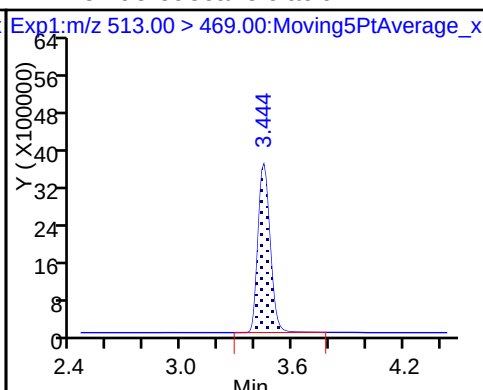
25 Sodium 1H,1H,2H,2H-perfluorodecane



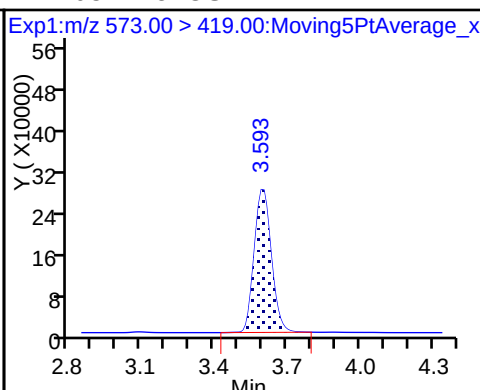
D 23 13C2 PFDA



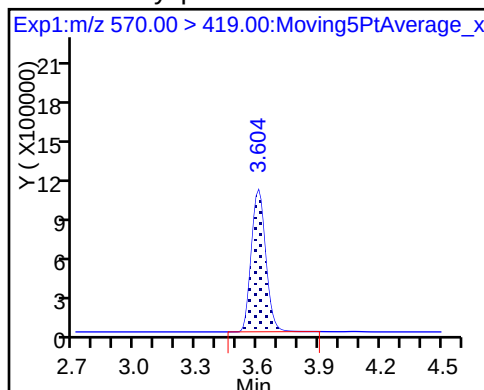
24 Perfluorodecanoic acid



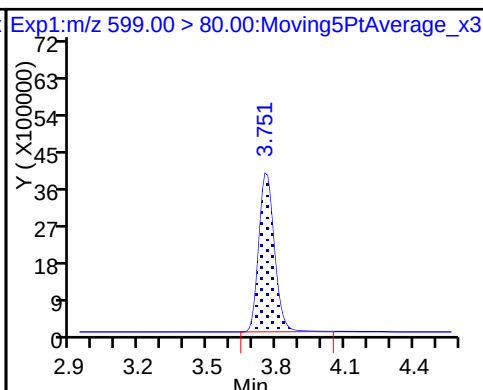
D 27 d3-NMeFOSAA



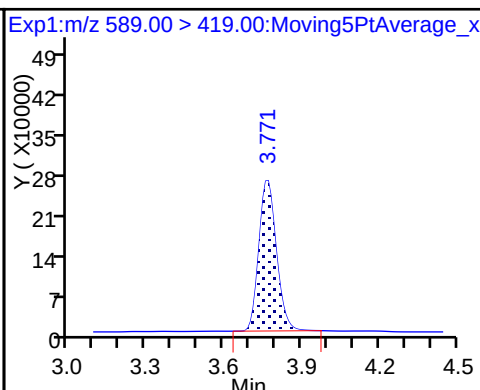
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid



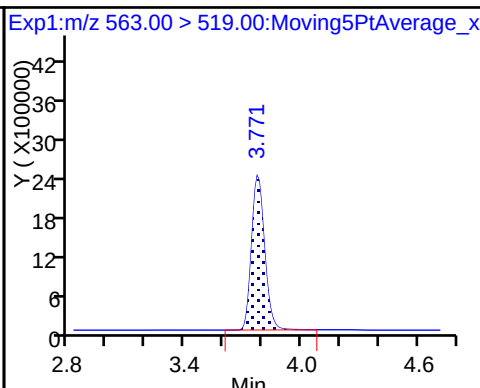
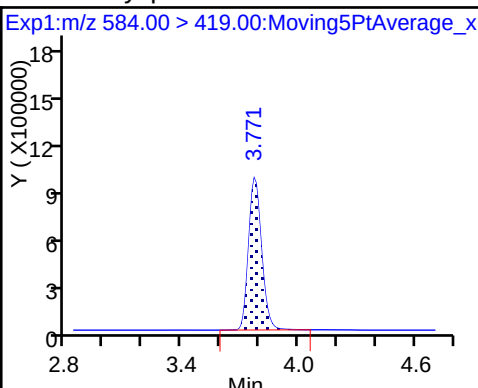
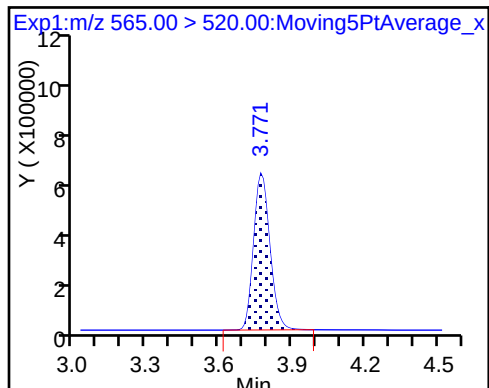
D 32 d5-NEtFOSAA



D 30 13C2 PFUnA

33 N-ethyl perfluorooctane sulfonamid

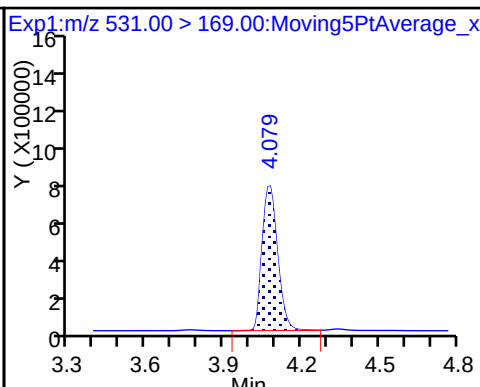
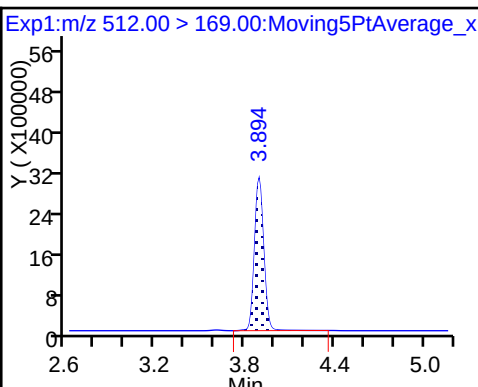
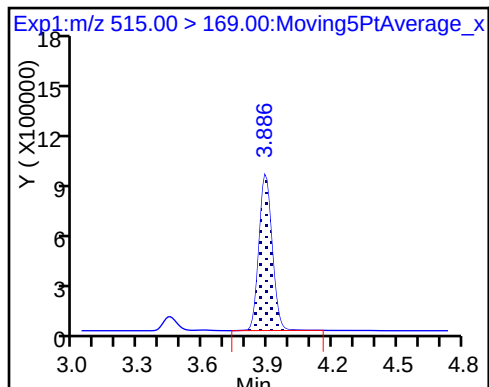
31 Perfluoroundecanoic acid



D 34 d-N-MeFOSA-M

35 MeFOSA

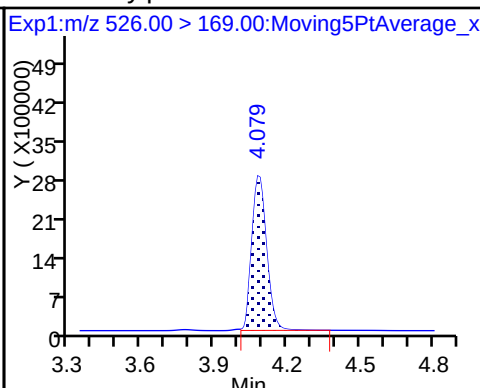
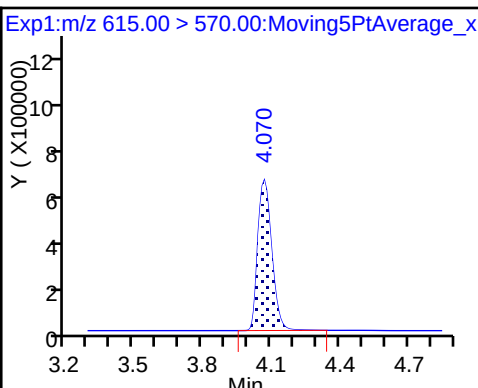
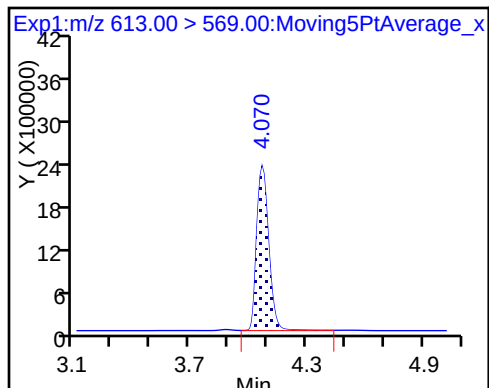
D 38 d-N-EtFOSA-M



37 Perfluorododecanoic acid

D 36 13C2 PFDaA

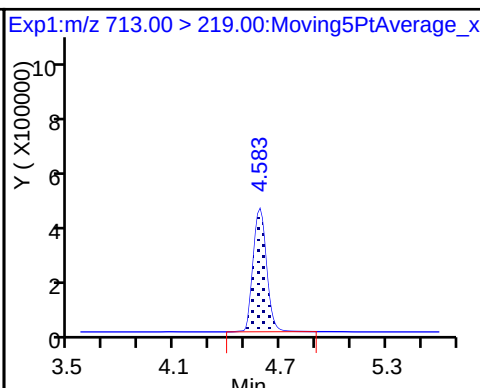
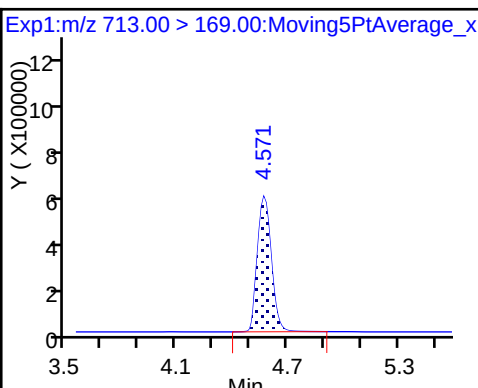
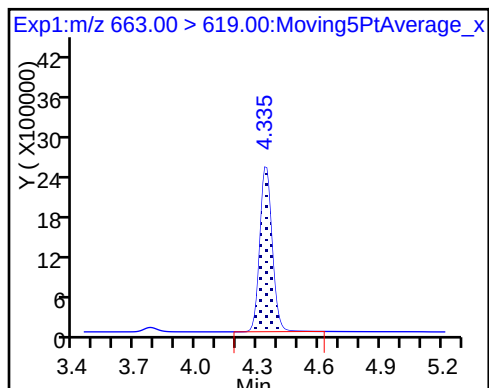
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

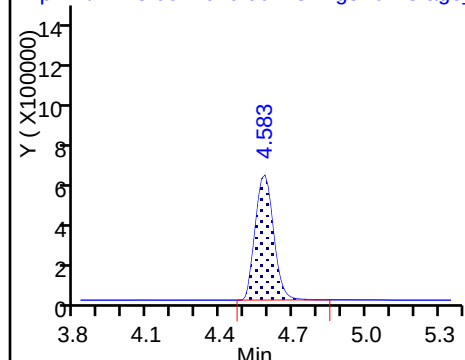


D 43 13C2-PFTeDA

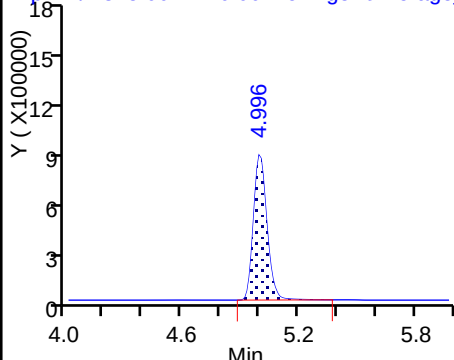
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

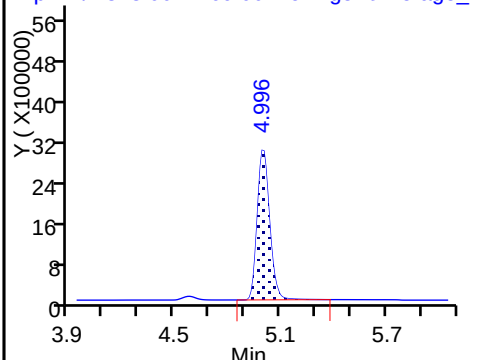
Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

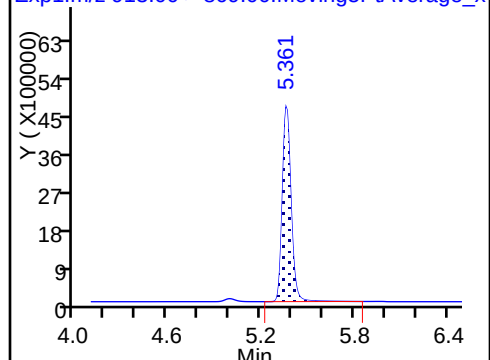


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_009.d

Injection Date: 18-Sep-2017 16:27:19

Instrument ID: A8_N

Lims ID: IC L7 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 34 Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

Column:

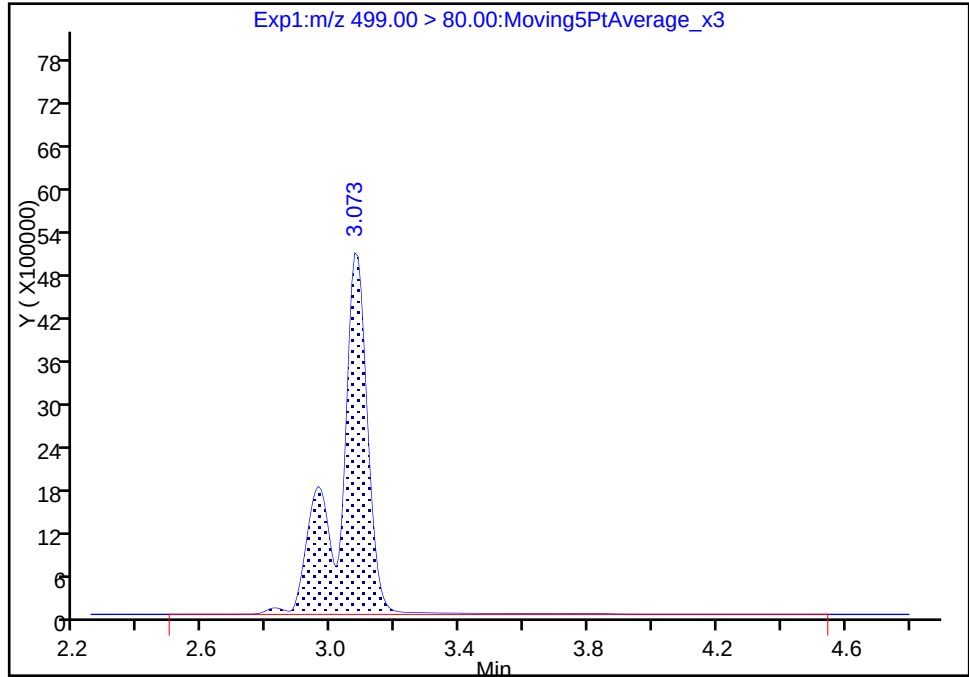
Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

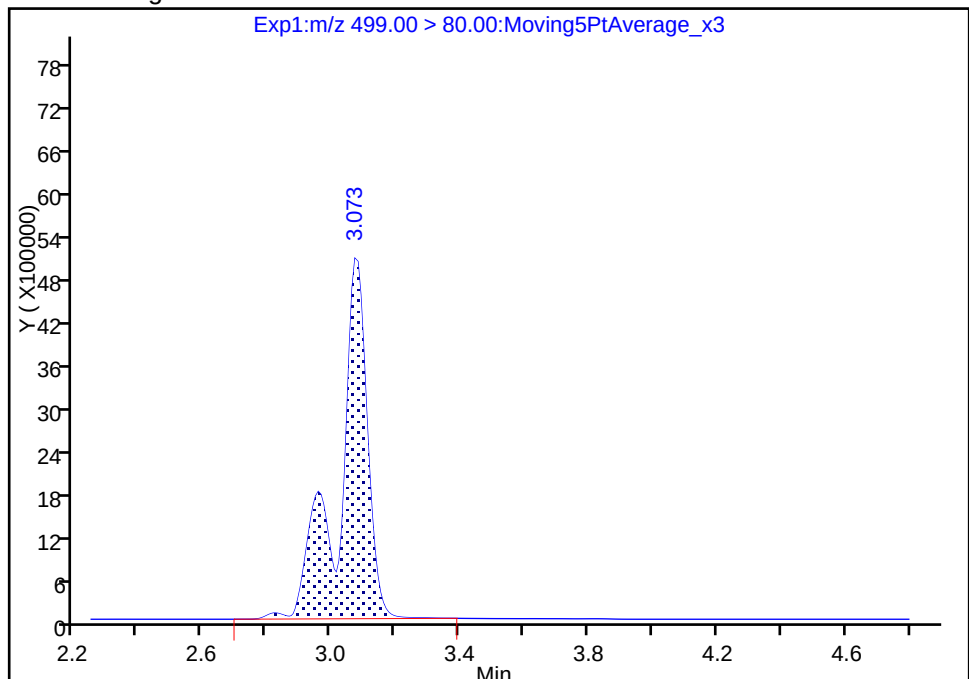
RT: 3.07
Area: 31856952
Amount: 163.3726
Amount Units: ng/ml

Processing Integration Results



RT: 3.07
Area: 31337906
Amount: 161.5367
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 08:21:26

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d
 Lims ID: IC M2-4:2FTS
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 18-Sep-2017 16:34:14 ALS Bottle#: 37 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: M2:4-2FTS Calibration Std
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub19
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 08:24:36 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: phomsophat

Date: 18-Sep-2017 19:52:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags

D 60 M2-4:2FTS

329.00 > 309.00 1.975 1.975 0.0 5386403 NC 29847

* 62 13C2-PFOA

415.00 > 370.00 2.695 2.701 -0.006 9307481 50.0 20377

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCM2-4:2FTSIC_00003

Amount Added: 1.00

Units: mL

Report Date: 19-Sep-2017 08:24:37

Chrom Revision: 2.2 16-Aug-2017 16:24:46

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_010.d

Injection Date: 18-Sep-2017 16:34:14

Instrument ID: A8_N

Lims ID: IC M2-4:2FTS

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 37 Worklist Smp#: 10

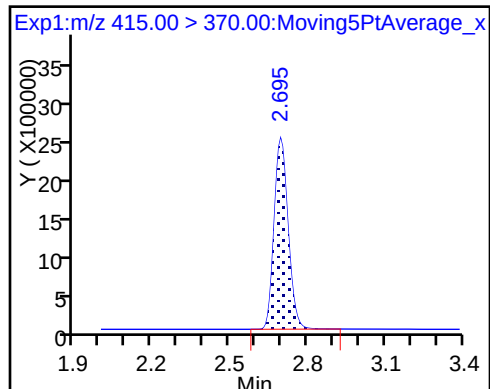
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_DOD ICAL

* 62 13C2-PFOA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: ICV 320-184448/12 Calibration Date: 09/14/2017 15:28

Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14

Lab File ID: 2017.09.14ICALX_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9484	0.8593		45.3	50.0	-9.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.148	1.044		45.5	50.0	-9.0	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	73.02	68.12		41.3	44.3	-6.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9661	0.9343		48.4	50.0	-3.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	0.9428		48.1	50.0	-3.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.047	0.9662		43.6	47.3	-7.8	25.0
6:2FTS	AveID	0.9017	0.9037		47.5	47.4	0.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.092	1.009		46.2	50.0	-7.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.212	1.154		45.3	47.6	-4.7	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9635	0.9211		47.8	50.0	-4.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.073	0.9158		40.8	47.8	-14.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9500	0.9406		49.5	50.0	-1.0	25.0
8:2FTS	AveID	0.9315	0.9722		50.0	47.9	4.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9363	0.9300		49.7	50.0	-0.7	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9483	0.9823		51.8	50.0	3.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6277	0.5965		45.8	48.3	-5.0	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8706	0.9051		52.0	50.0	4.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.115	1.008		45.2	50.0	-9.5	25.0
MeFOSA	AveID	0.8862	0.9331		52.6	50.0	5.3	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9634	0.9128		47.4	50.0	-5.3	25.0
N-EtFOSA-M	AveID	0.9360	1.002		53.5	50.0	7.1	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.137	1.063		46.8	50.0	-6.5	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2541	0.2237		44.0	50.0	-12.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9335		53.8	50.0	7.6	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.046	0.9710		46.4	50.0	-7.2	25.0
13C4 PFBA	Ave	313031	269298		43.0	50.0	-14.0	50.0
13C5 PFPeA	Ave	205049	171138		41.7	50.0	-16.5	50.0
13C3-PFBS	Ave	4971	4163		38.9	46.5	-16.3	50.0
13C2 PFHxA	Ave	219438	185874		42.4	50.0	-15.3	50.0
13C4-PFHpA	Ave	202833	175067		43.2	50.0	-13.7	50.0
18O2 PFHxS	Ave	284495	250346		41.6	47.3	-12.0	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: ICV 320-184448/12 Calibration Date: 09/14/2017 15:28
 Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14
 Lab File ID: 2017.09.14ICALX_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	108997	92306		40.2	47.5	-15.3	50.0
13C4 PFOA	Ave	195053	163586		41.9	50.0	-16.1	50.0
13C4 PFOS	Ave	200518	177903		42.4	47.8	-11.3	50.0
13C5 PFNA	Ave	150235	125562		41.8	50.0	-16.4	50.0
13C8 FOSA	Ave	311775	264837		42.5	50.0	-15.1	50.0
M2-8:2FTS	Ave	72926	60998		40.1	47.9	-16.4	50.0
13C2 PFDA	Ave	134252	112172		41.8	50.0	-16.4	50.0
d3-NMeFOSAA	Ave	41835	33452		40.0	50.0	-20.0	50.0
d5-NEtFOSAA	Ave	40920	32045		39.2	50.0	-21.7	50.0
13C2 PFUnA	Ave	95612	80214		41.9	50.0	-16.1	50.0
d-N-MeFOSA-M	Ave	80486	66827		41.5	50.0	-17.0	50.0
13C2 PFDoA	Ave	91184	79416		43.5	50.0	-12.9	50.0
d-N-EtFOSA-M	Ave	74972	63528		42.4	50.0	-15.3	50.0
13C2-PFTeDA	Ave	93828	78148		41.6	50.0	-16.7	50.0
13C2-PFHxDA	Ave	143388	120499		42.0	50.0	-16.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_012.d
 Lims ID: ICV Full
 Client ID:
 Sample Type: ICV
 Inject. Date: 14-Sep-2017 15:28:00 ALS Bottle#: 36 Worklist Smp#: 12
 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\20170914-47938.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 15-Sep-2017 08:46:37 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK026

First Level Reviewer: barnettj

Date: 14-Sep-2017 16:37:07

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	1.563	1.562	0.001		13464875	43.0		86.0	26703	
2 Perfluorobutyric acid										
212.90 > 169.00	1.563	1.564	-0.001	1.000	11570794	45.3			2028	
D 3 13C5-PFPeA										
267.90 > 223.00	1.800	1.798	0.002		8556903	41.7		83.5	29997	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.800	1.801	-0.001	1.000	8937366	45.5			4877	
D 47 13C3-PFBS										
301.90 > 83.00	1.820	1.825	-0.005		193557	38.9		83.7	6125	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.831	1.831	0.0	1.000	12547956	41.3			40701	
298.90 > 99.00	1.820	1.831	-0.011	0.994	5720076		2.19(0.00-0.00)		28675	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	2.029	2.038	-0.009	1.000	4128290	46.4			24613	
D 7 13C2 PFHxA										
315.00 > 270.00	2.074	2.075	-0.001		9293703	42.4		84.7	20476	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.074	2.077	-0.003	1.000	8682773	48.4			15332	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.395	2.397	-0.002	1.000	8252961	48.1			10527	
D 9 13C4-PFHpA										
367.00 > 322.00	2.395	2.397	-0.002		8753330	43.2		86.3	11489	
D 11 18O2 PFHxS										
403.00 > 84.00	2.403	2.412	-0.009		11841377	41.6		88.0	39348	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.403	2.412	-0.009	1.000	11428753	43.6			14225	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.717	2.723	-0.006		4384517	40.2		84.7	14539	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.717	2.724	-0.007	1.000	3953861	47.5			13037	
* 62 13C2-PFOA										
415.00 > 370.00	2.738	2.746	-0.008		8465223	50.0			27909	
D 14 13C4 PFOA										
417.00 > 372.00	2.746	2.750	-0.004		8179296	41.9		83.9	15874	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.746	2.751	-0.005	1.000	8251436	46.2			1592	
413.00 > 169.00	2.746	2.751	-0.005	1.000	4638074		1.78(0.90-1.10)		7360	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.753	2.757	-0.004	1.000	9774766	45.3			26998	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.111	3.121	-0.010	1.000	7779857	40.8			255653	
499.00 > 99.00	3.111	3.121	-0.010	1.000	1813921		4.29(0.90-1.10)		6764	
D 18 13C4 PFOS										
503.00 > 80.00	3.111	3.121	-0.010		8503777	42.4		88.7	14181	
D 19 13C5 PFNA										
468.00 > 423.00	3.111	3.123	-0.012		6278121	41.8		83.6	9949	
20 Perfluorononanoic acid										
463.00 > 419.00	3.111	3.125	-0.014	1.000	5782568	47.8			8407	
D 21 13C8 FOSA										
506.00 > 78.00	3.426	3.432	-0.006		13241858	42.5		84.9	15537	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.435	3.434	0.001	1.000	12455727	49.5			17353	
D 26 M2-8:2FTS										
529.00 > 509.00	3.454	3.466	-0.012		2921801	40.1		83.6	8718	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.454	3.469	-0.015	1.000	2840493	50.0			8805	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.464	3.481	-0.017	1.000	5215775	49.7			6949	
D 23 13C2 PFDA										
515.00 > 470.00	3.464	3.481	-0.017		5608622	41.8		83.6	12906	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.621	3.633	-0.012		1672606	40.0		80.0	5377	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.632	3.640	-0.008	1.003	1643063	51.8			5510	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.780	3.789	-0.009	1.000	5120007	45.8			8361	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.789	3.799	-0.010		1602225	39.2		78.3	2281	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.799	3.807	-0.008	1.003	1450160	52.0			5677	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.799	3.807	-0.008	1.000	4044562	45.2			5194	
D 30 13C2 PFUnA										
565.00 > 520.00	3.799	3.807	-0.008		4010717	41.9		83.9	11942	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M	515.00 > 169.00	3.928	3.926	0.002	3341350	41.5		83.0	515	
35 MeFOSA	512.00 > 169.00	3.928	3.930	-0.002	1.000	3117874	52.6		4686	
37 Perfluorododecanoic acid	613.00 > 569.00	4.090	4.102	-0.012	1.000	3624678	47.4		2091	
D 36 13C2 PFDaA	615.00 > 570.00	4.090	4.102	-0.012	3970776	43.5		87.1	5204	
D 38 d-N-EtFOSA-M	531.00 > 169.00	4.107	4.110	-0.003	3176385	42.4		84.7	2901	
39 N-ethylperfluoro-1-octanesulfonami	526.00 > 169.00	4.116	4.119	-0.003	1.000	3183628	53.5		3318	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.352	4.366	-0.014	1.000	4221376	46.8		575	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.587	4.602	-0.015	1.000	873916	44.0		2810	
713.00 > 219.00	4.599	4.602	-0.003	1.003	674069		1.30(0.00-0.00)		2693	
D 43 13C2-PFTeDA	715.00 > 670.00	4.599	4.608	-0.009	3907418	41.6		83.3	13979	
D 44 13C2-PFHxDA	815.00 > 770.00	5.012	5.025	-0.013	6024950	42.0		84.0	6292	
45 Perfluorohexadecanoic acid	813.00 > 769.00	5.012	5.027	-0.015	1.000	5624016	53.8		434	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.376	5.393	-0.017	1.000	5850453	46.4		476	

Reagents:

LCPFCIC_FULL_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14\ICALX_012.d

Injection Date: 14-Sep-2017 15:28:00

Instrument ID: A8_N

Lims ID: ICV Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 36

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

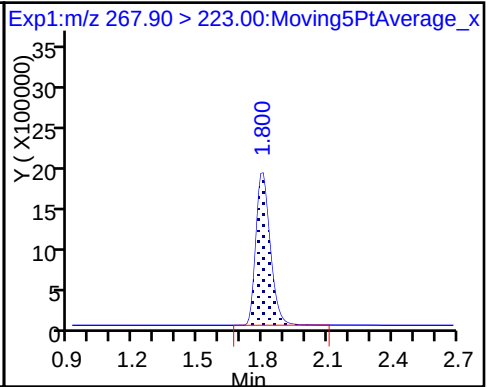
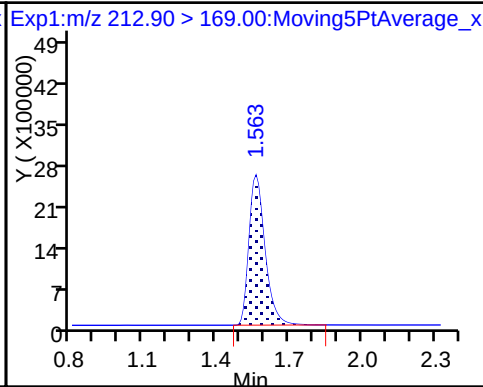
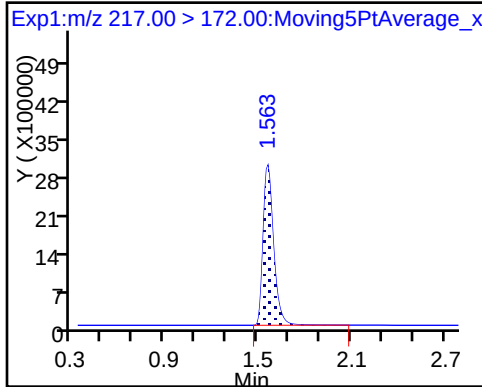
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

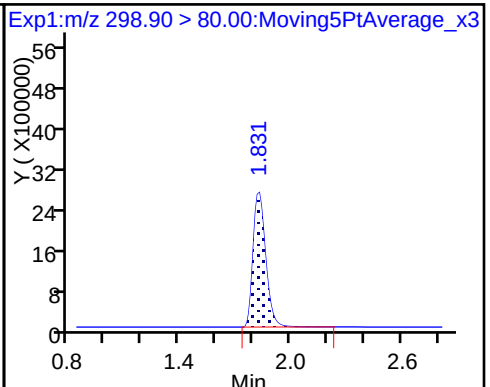
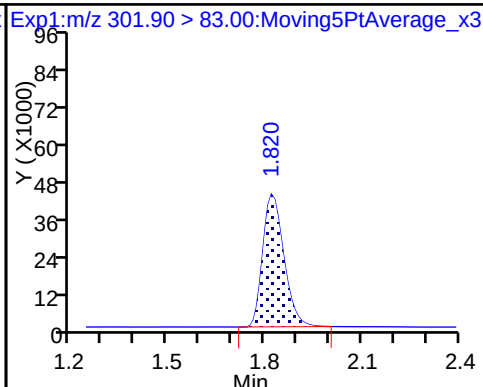
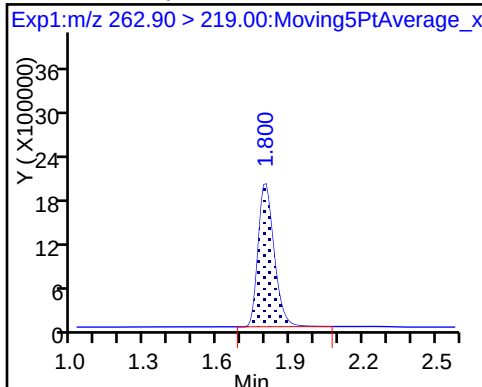
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

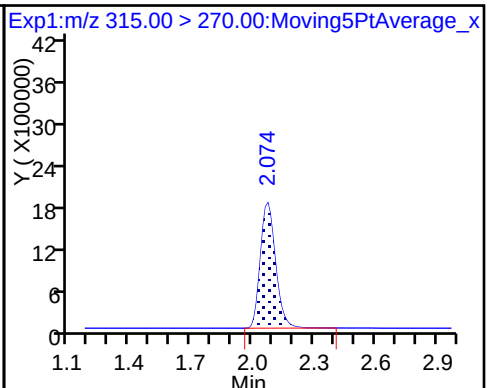
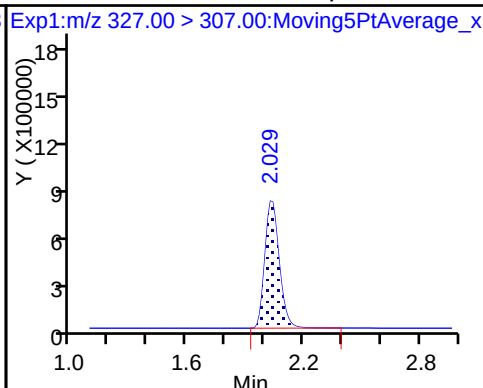
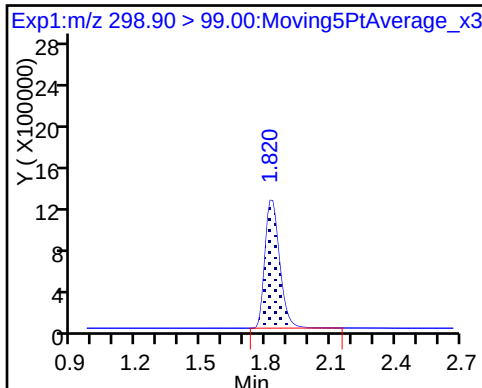
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

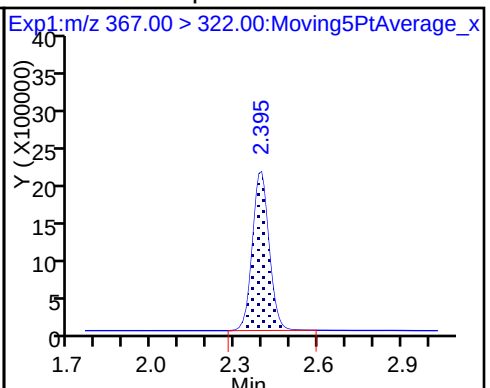
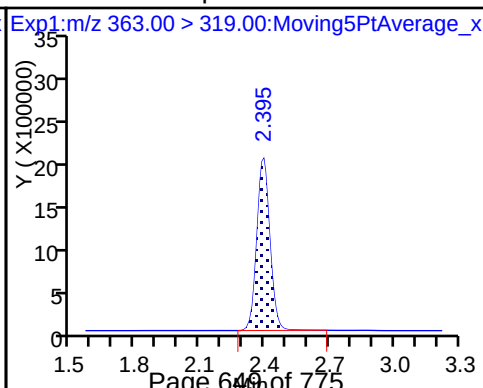
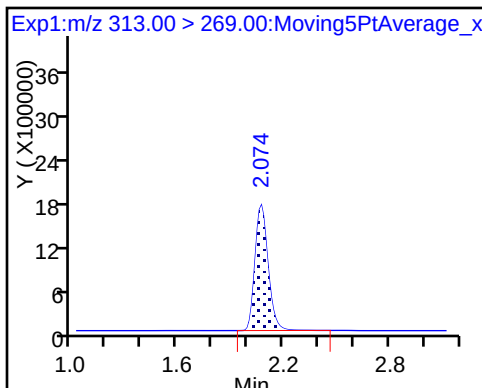
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

10 Perfluoroheptanoic acid

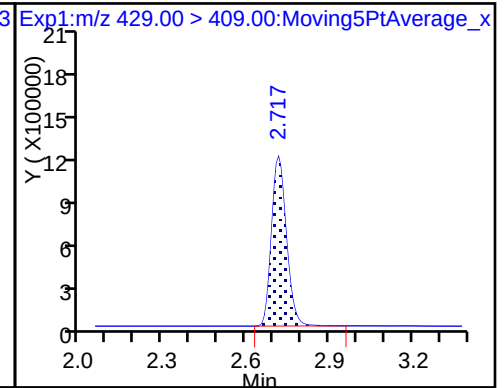
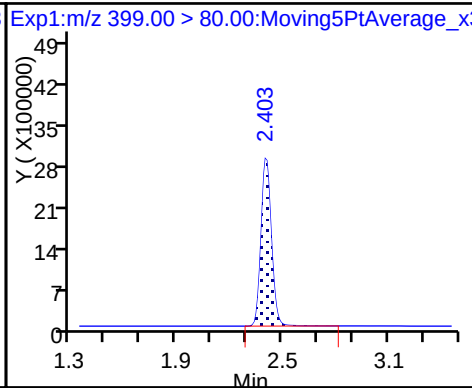
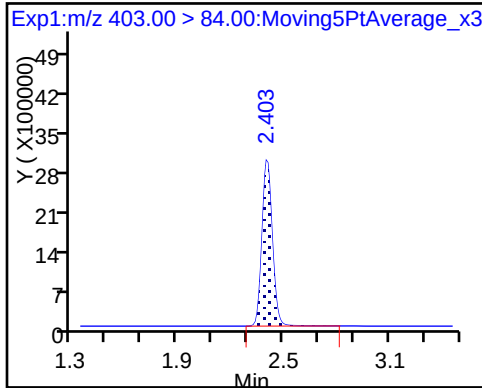
D 9 13C4-PFHpA



D 11 18O2 PFHxS

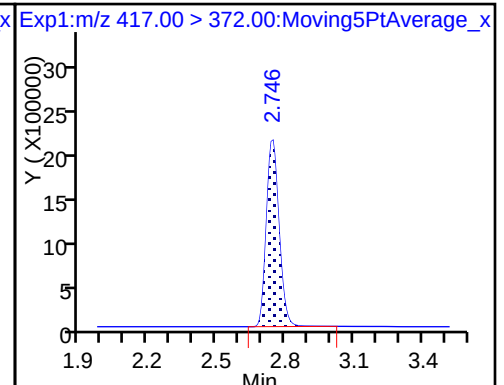
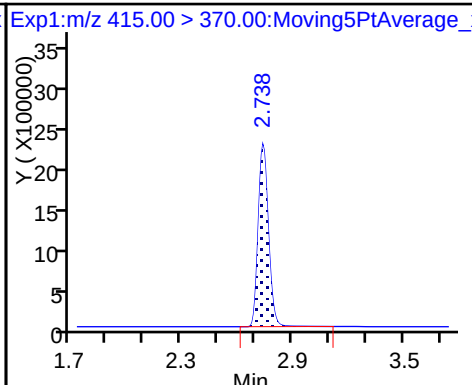
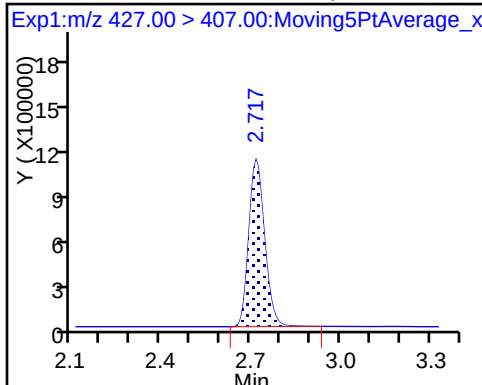
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctanoate

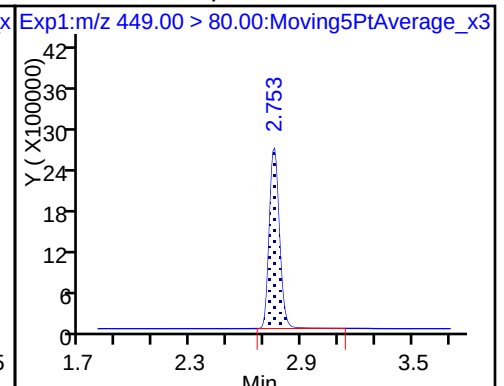
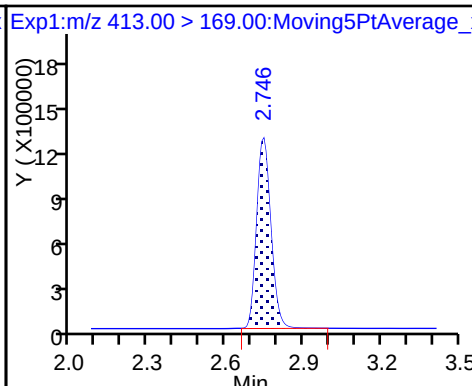
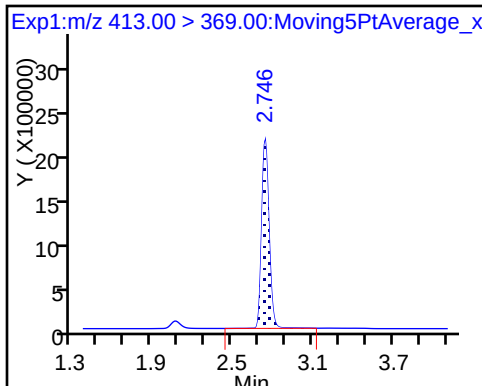
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

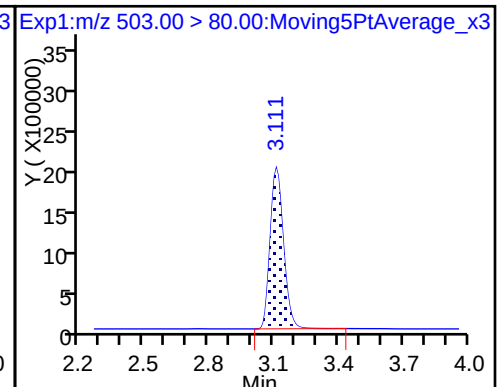
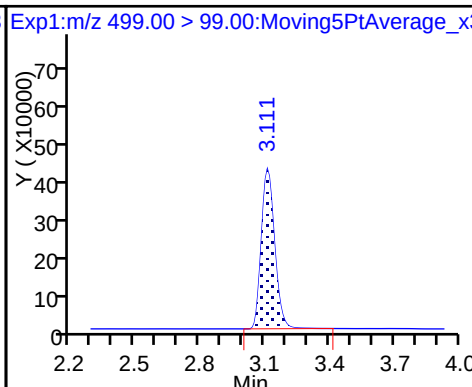
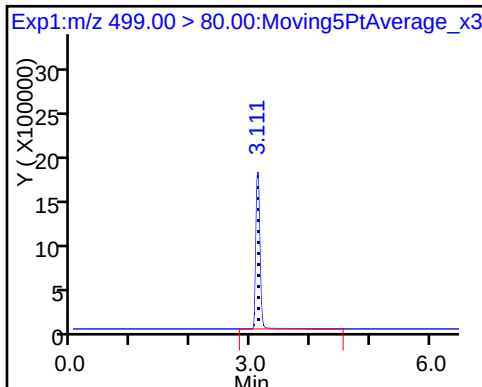
16 Perfluoroheptanesulfonic Acid



17 Perfluorooctane sulfonic acid

17 Perfluorooctane sulfonic acid

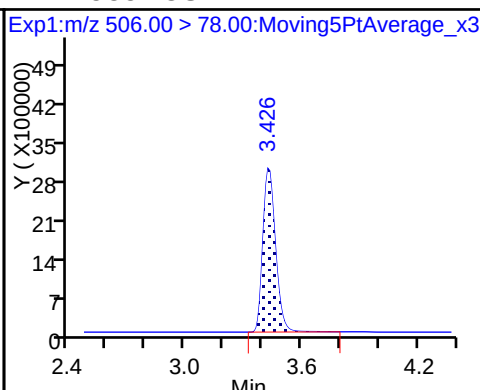
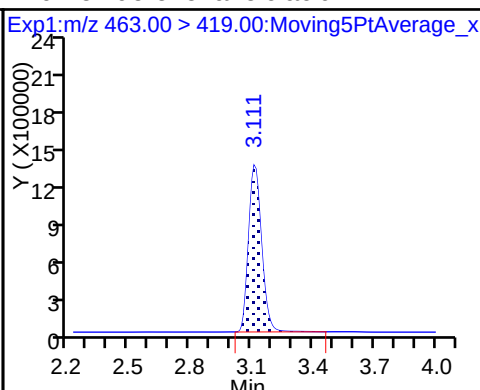
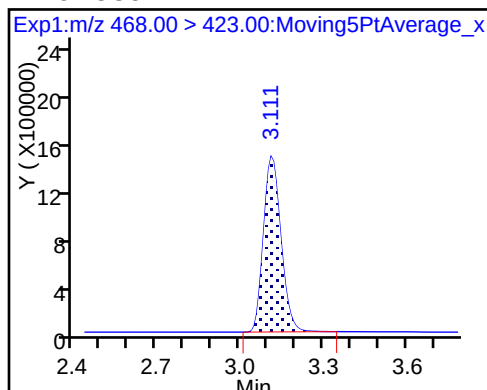
D 18 13C4 PFOS



D 19 13C5 PFNA

20 Perfluorononanoic acid

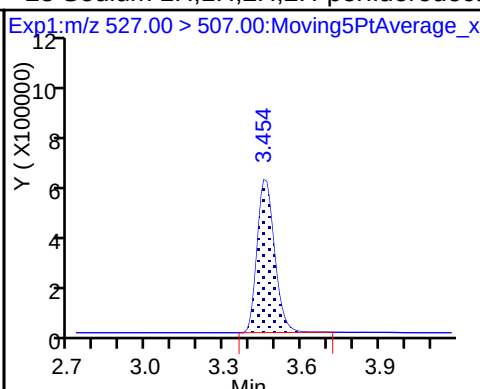
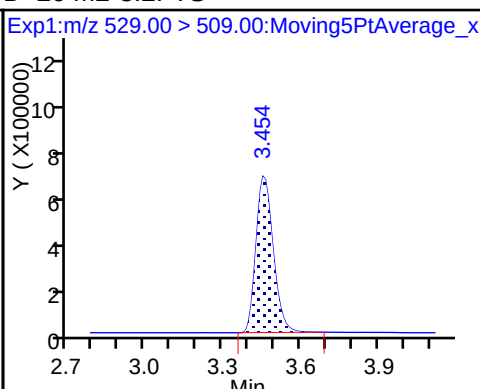
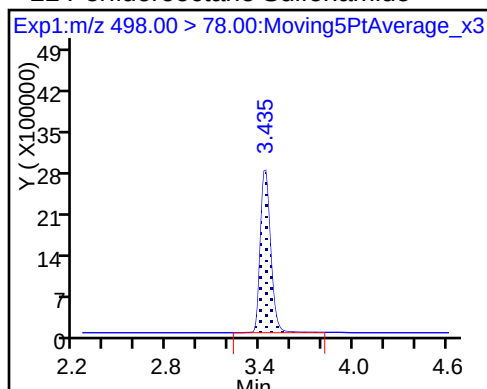
D 21 13C8 FOSA



22 Perfluorooctane Sulfonamide

D 26 M2-8:2FTS

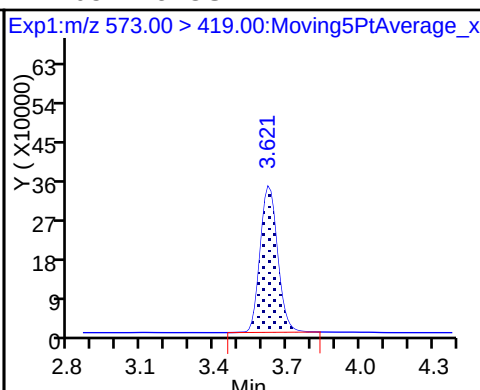
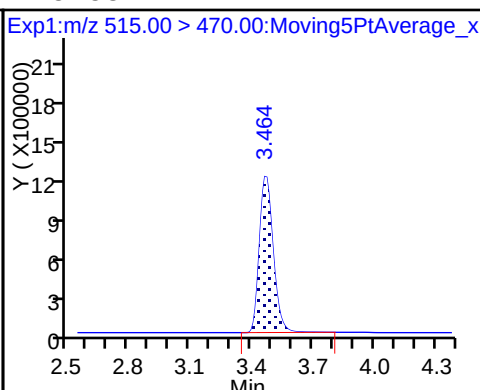
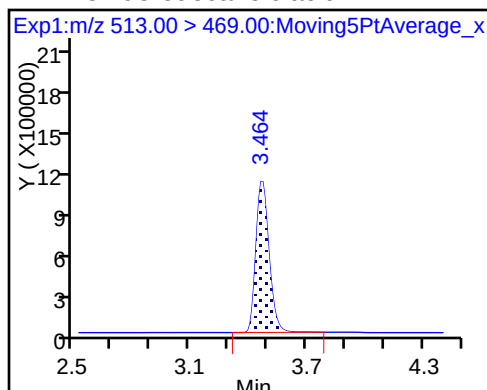
25 Sodium 1H,1H,2H,2H-perfluorodecane



24 Perfluorodecanoic acid

D 23 13C2 PFDA

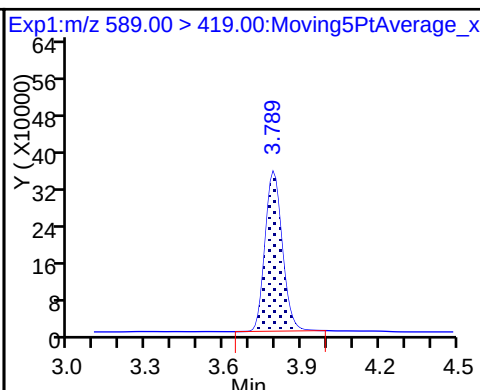
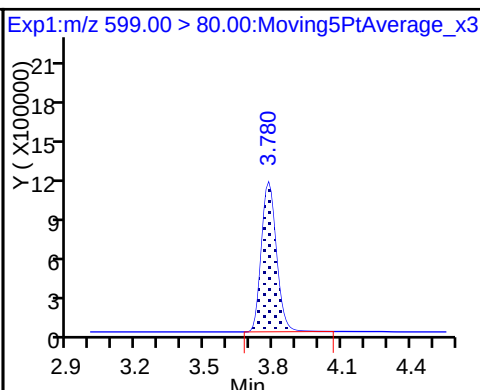
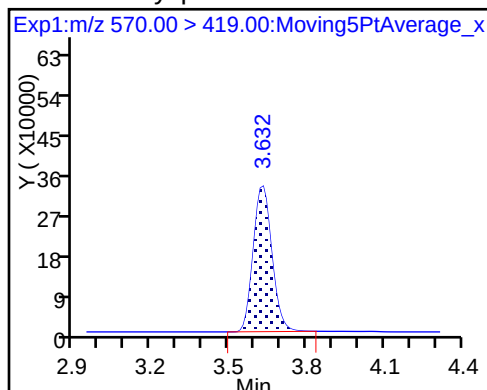
D 27 d3-NMeFOSAA



28 N-methyl perfluorooctane sulfonami

29 Perfluorodecane Sulfonic acid

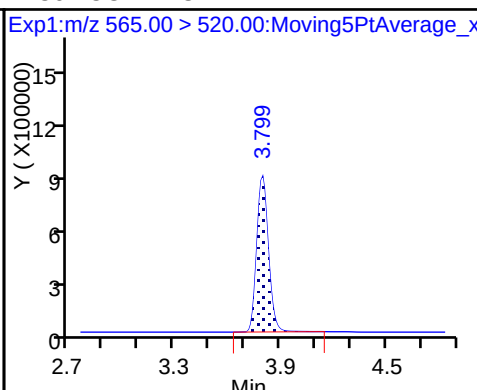
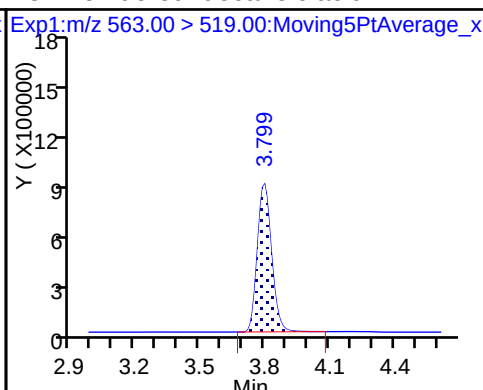
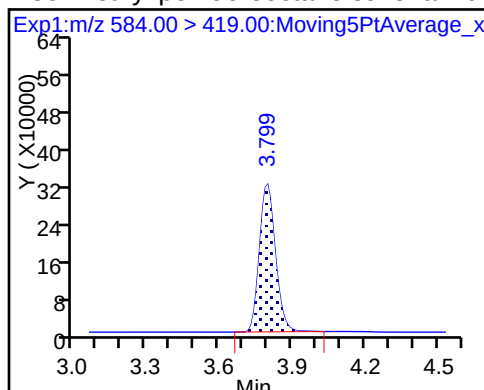
D 32 d5-NEtFOSAA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

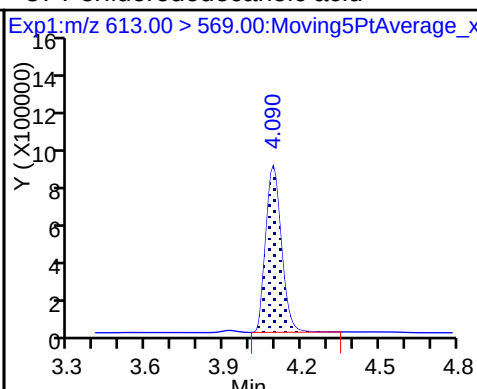
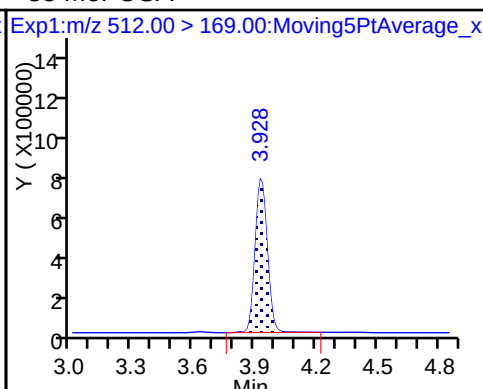
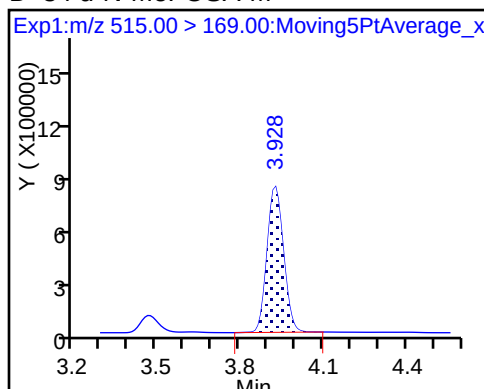
D 30 13C2 PFUnA



D 34 d-N-MeFOSA-M

35 MeFOSA

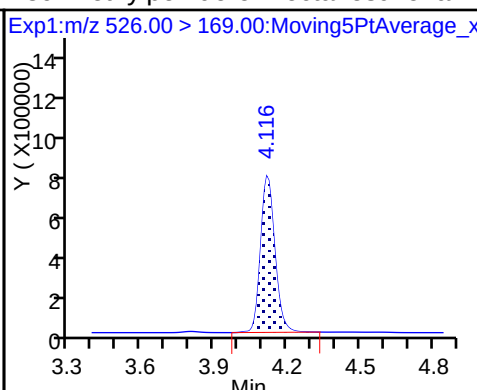
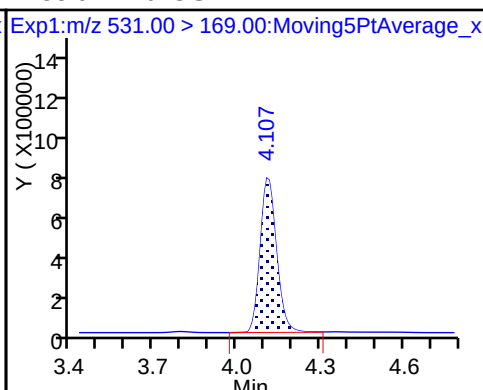
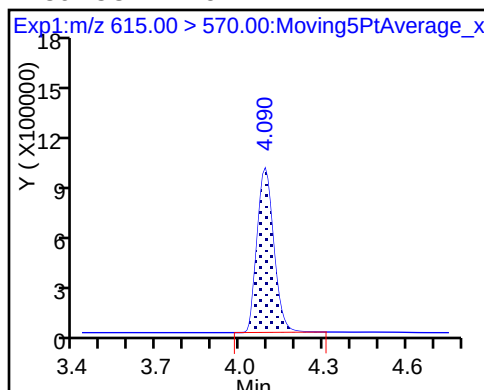
37 Perfluorododecanoic acid



D 36 13C2 PFDaA

D 38 d-N-EtFOSA-M

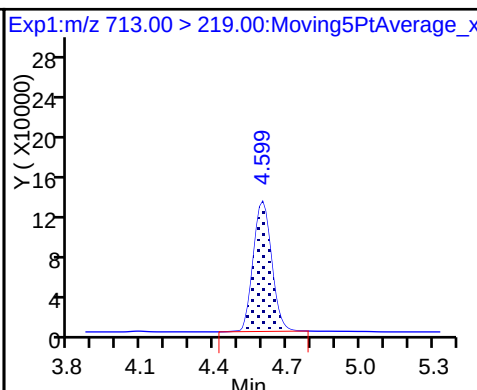
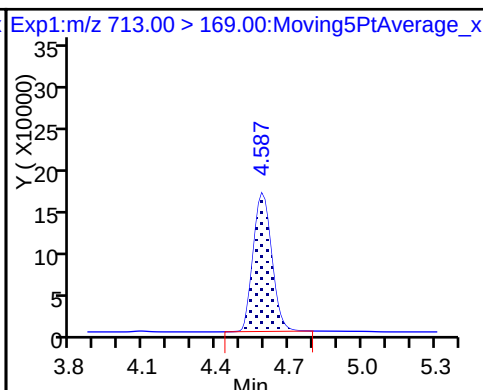
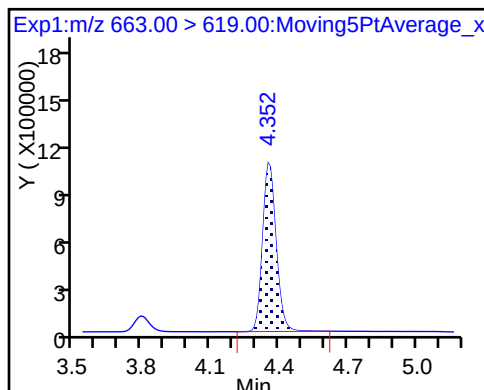
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

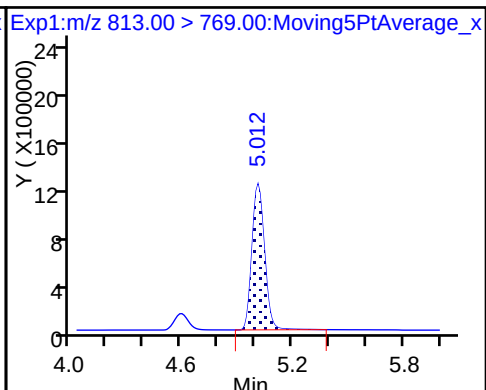
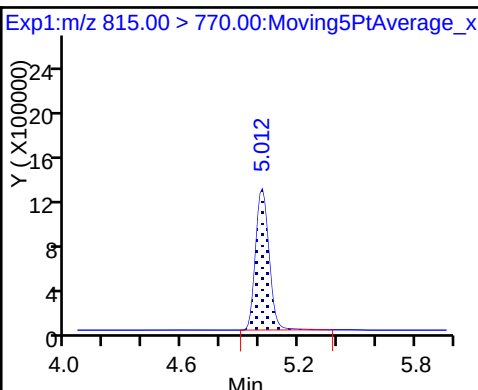
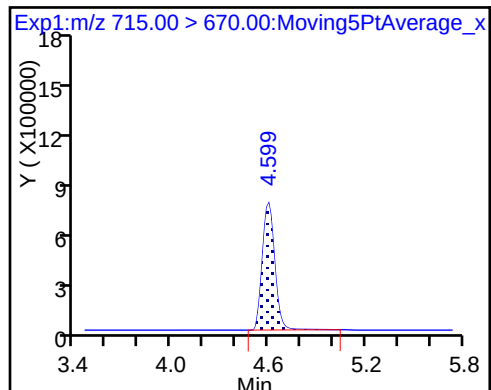
42 Perfluorotetradecanoic acid



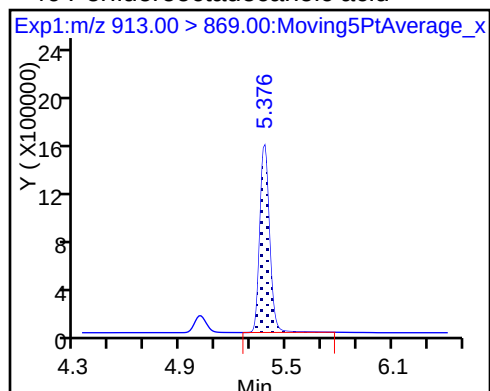
D 43 13C2-PFTeDA

D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid



46 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCVL 320-184715/3 Calibration Date: 09/15/2017 11:34

Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14

Lab File ID: 2017.09.15B_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9484	0.9774		1.03	1.00	3.1	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.148	1.161		1.01	1.00	1.1	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	73.02	78.18		0.947	0.884	7.1	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9661	1.023		1.06	1.00	5.8	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	1.031		1.05	1.00	5.2	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.047	1.316		1.14	0.910	25.6	50.0
6:2FTS	AveID	0.9017	0.9560		1.01	0.948	6.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.212	1.229		0.966	0.952	1.4	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.092	1.155		1.06	1.00	5.7	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9635	1.050		1.09	1.00	9.0	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.073	1.070		0.925	0.928	-0.3	50.0
8:2FTS	AveID	0.9315	1.045		1.07	0.958	12.2	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9500	1.047		1.10	1.00	10.2	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9363	0.9126		0.975	1.00	-2.5	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9483	0.9694		1.02	1.00	2.2	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6277	0.6326		0.971	0.964	0.8	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8706	0.8893		1.02	1.00	2.1	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.115	1.126		1.01	1.00	1.0	50.0
MeFOSA	AveID	0.8862	0.8388		0.947	1.00	-5.3	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9634	0.9458		0.982	1.00	-1.8	50.0
N-EtFOSA-M	AveID	0.9360	0.8947		0.956	1.00	-4.4	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.137	1.014		0.892	1.00	-10.8	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2541	0.2306		0.908	1.00	-9.2	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.326		1.10	1.00	9.9	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.046	1.107		1.06	1.00	5.9	50.0
13C4 PFBA	Ave	313031	308231		49.2	50.0	-1.5	50.0
13C5 PFPeA	Ave	205049	206153		50.3	50.0	0.5	50.0
13C3-PFBS	Ave	4971	5113		47.8	46.5	2.8	50.0
13C2 PFHxA	Ave	219438	222927		50.8	50.0	1.6	50.0
13C4-PFHpA	Ave	202833	221061		54.5	50.0	9.0	50.0
18O2 PFHxS	Ave	284495	284419		47.3	47.3	-0.0	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-184715/3 Calibration Date: 09/15/2017 11:34
 Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14
 Lab File ID: 2017.09.15B_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	108997	109881		47.9	47.5	0.8	50.0
13C4 PFOA	Ave	195053	219617		56.3	50.0	12.6	50.0
13C4 PFOS	Ave	200518	210665		50.2	47.8	5.1	50.0
13C5 PFNA	Ave	150235	180835		60.2	50.0	20.4	50.0
13C8 FOSA	Ave	311775	312610		50.1	50.0	0.3	50.0
M2-8:2FTS	Ave	72926	84239		55.3	47.9	15.5	50.0
13C2 PFDA	Ave	134252	155754		58.0	50.0	16.0	50.0
d3-NMeFOSAA	Ave	41835	56318		67.3	50.0	34.6	50.0
d5-NEtFOSAA	Ave	40920	56283		68.8	50.0	37.5	50.0
13C2 PFUnA	Ave	95612	117120		61.2	50.0	22.5	50.0
d-N-MeFOSA-M	Ave	80486	79581		49.4	50.0	-1.1	50.0
13C2 PFDoA	Ave	91184	115910		63.6	50.0	27.1	50.0
d-N-EtFOSA-M	Ave	74972	76426		51.0	50.0	1.9	50.0
13C2-PFTeDA	Ave	93828	115036		61.3	50.0	22.6	50.0
13C2-PFHxDA	Ave	143388	166435		58.0	50.0	16.1	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-47998.b\2017.09.15B_003.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 15-Sep-2017 11:34:30 ALS Bottle#: 29 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L2
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170915-47998.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 18-Sep-2017 12:44:18 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK015

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	1.545	1.547	-0.002		15411561	49.2		98.5	54264	
2 Perfluorobutyric acid										
212.90 > 169.00	1.545	1.547	-0.002	1.000	301270	1.03		103	52.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.782	1.784	-0.002		10307654	50.3		101	207532	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.791	1.784	0.007	1.000	239355	1.01		101	158	
D 47 13C3-PFBS										
301.90 > 83.00	1.809	1.813	-0.004		237738	47.8		103	6616	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.820	1.813	0.007	1.000	353359	0.9465		107	5524	
298.90 > 99.00	1.820	1.813	0.007	1.000	141971		2.49(0.00-0.00)		2587	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	2.028	2.020	0.008	1.000	79389	0.7489		80.2	3940	
D 7 13C2 PFHxA										
315.00 > 270.00	2.062	2.066	-0.004		11146333	50.8		102	27218	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.062	2.066	-0.004	1.000	227946	1.06		106	624	
D 9 13C4-PFHpA										
367.00 > 322.00	2.374	2.374	0.0		11053034	54.5		109	22082	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.374	2.374	0.0	1.000	227944	1.05		105	499	
D 11 18O2 PFHxS										
403.00 > 84.00	2.391	2.390	0.001		13453000	47.3		100.0	18943	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.391	2.390	0.001	1.000	340530	1.14		126	3789	
D 12 M2-6:2FTS										
429.00 > 409.00	2.691	2.690	0.001		5219331	47.9		101	16072	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane	427.00	2.691	2.690	0.001	1.000	99585	1.01	106	2435	
D 14 13C4 PFOA	417.00	2.713	2.712	0.001		10980835	56.3	113	21452	
* 62 13C2-PFOA	415.00	2.713	2.712	0.001		10762580	50.0	100	30672	
15 Perfluorooctanoic acid	413.00	2.720	2.719	0.001	1.000	253601	1.06	106	66.2	
	413.00	2.713	2.719	-0.006	0.997	137759	1.84(0.90-1.10)		742	
16 Perfluoroheptanesulfonic Acid	449.00	2.720	2.719	0.001	1.000	246448	0.9655	101	5117	
D 18 13C4 PFOS	503.00	3.077	3.075	0.002		10069768	50.2	105	35139	
D 19 13C5 PFNA	468.00	3.077	3.075	0.002		9041741	60.2	120	25647	
17 Perfluorooctane sulfonic acid	499.00	3.077	3.075	0.002	1.000	209177	0.9253	99.7	2956	
	499.00	3.077	3.075	0.002	1.000	47400	4.41(0.90-1.10)		544	
20 Perfluorononanoic acid	463.00	3.077	3.075	0.002	1.000	189958	1.09	109	305	
25 Sodium 1H,1H,2H,2H-perfluorodecane	527.00	3.415	3.413	0.002	1.000	84351	1.07	112	1631	
22 Perfluorooctane Sulfonamide	498.00	3.415	3.413	0.002	1.000	327427	1.10	110	4141	
D 21 13C8 FOSA	506.00	3.415	3.413	0.002		15630497	50.1	100	15795	
D 26 M2-8:2FTS	529.00	3.415	3.413	0.002		4035028	55.3	116	13314	
D 23 13C2 PFDA	515.00	3.424	3.422	0.002		7787719	58.0	116	18978	
24 Perfluorodecanoic acid	513.00	3.424	3.431	-0.007	1.000	142141	0.9747	97.5	359	
D 27 d3-NMeFOSAA	573.00	3.573	3.576	-0.003		2815908	67.3	135	8958	
28 N-methyl perfluorooctane sulfonami	570.00	3.584	3.587	-0.003	1.003	54593	1.02	102	292	
29 Perfluorodecane Sulfonic acid	599.00	3.732	3.735	-0.003	1.000	128460	0.9715	101	2885	
D 32 d5-NEtFOSAA	589.00	3.742	3.745	-0.003		2814154	68.8	138	3482	
D 30 13C2 PFUnA	565.00	3.751	3.745	0.006		5856004	61.2	122	9737	
31 Perfluoroundecanoic acid	563.00	3.751	3.745	0.006	1.000	131887	1.01	101	462	
33 N-ethyl perfluorooctane sulfonamid	584.00	3.751	3.755	-0.004	1.003	50051	1.02	102	1017	
D 34 d-N-MeFOSA-M	515.00	3.921	3.920	0.001		3979026	49.4	98.9	518	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 MeFOSA										
512.00 > 169.00	3.921	3.920	0.001	1.000	66752	0.9465		94.7	1995	
D 36 13C2 PFDaA										
615.00 > 570.00	4.038	4.038	0.0		5795479	63.6		127	7080	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.038	4.038	0.0	1.000	109627	0.9817		98.2	70.0	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.107	4.099	0.008		3821321	51.0		102	4332	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.115	4.107	0.008	1.000	68382	0.9559		95.6	1523	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.303	4.305	-0.002	1.000	117495	0.8916		89.2	13.8	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.534	4.524	0.010	1.000	26527	0.9076		90.8	517	
713.00 > 219.00	4.534	4.524	0.010	1.000	20279		1.31(0.00-0.00)		380	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.534	4.536	-0.002		5751801	61.3		123	9509	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.941	4.942	-0.001		8321755	58.0		116	5277	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.951	4.942	0.009	1.000	220749	1.10		110	13.4	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.293	5.292	0.001	1.000	184322	1.06		106	11.3	

Reagents:

LCPFC_FULL-L2_00009

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-47998.b\2017.09.15B_003.d

Injection Date: 15-Sep-2017 11:34:30

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

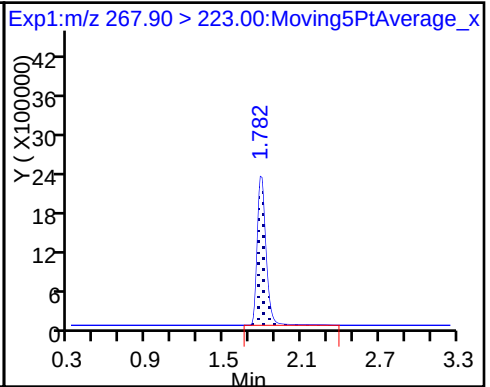
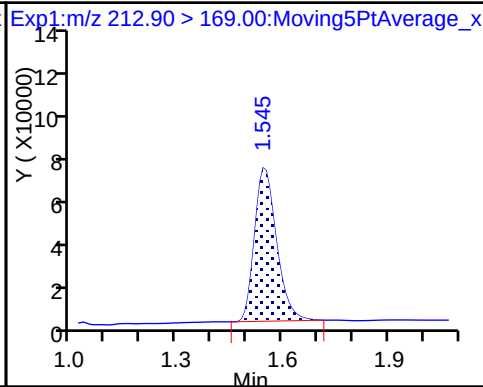
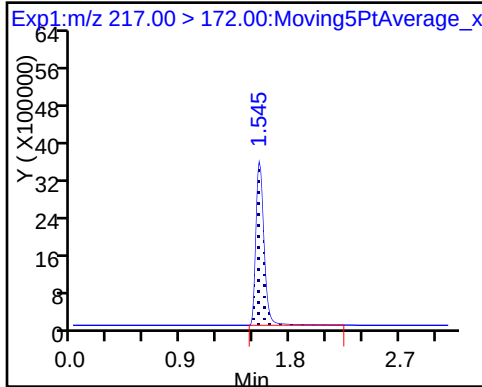
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

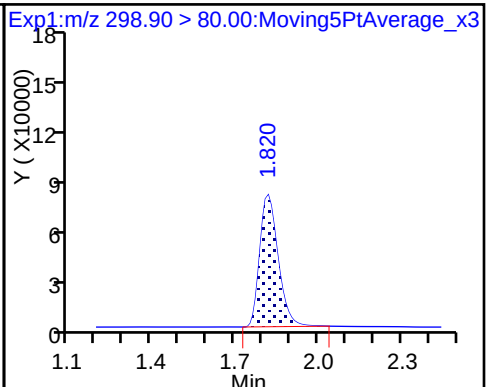
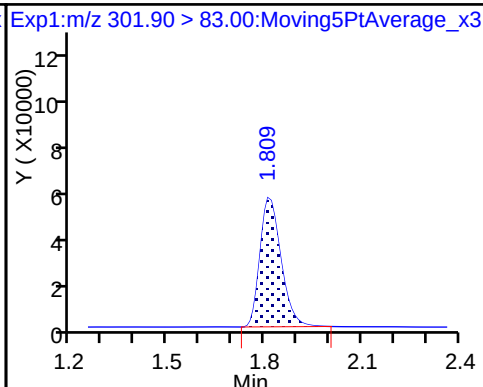
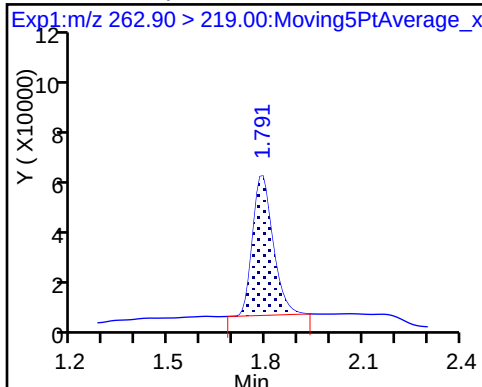
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

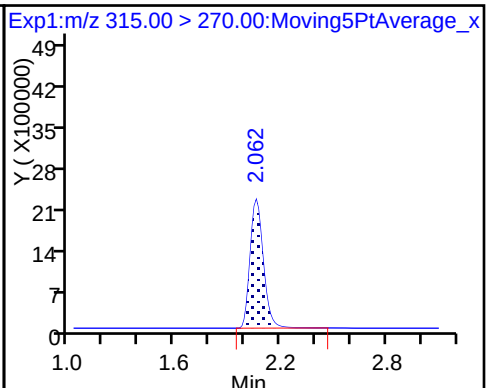
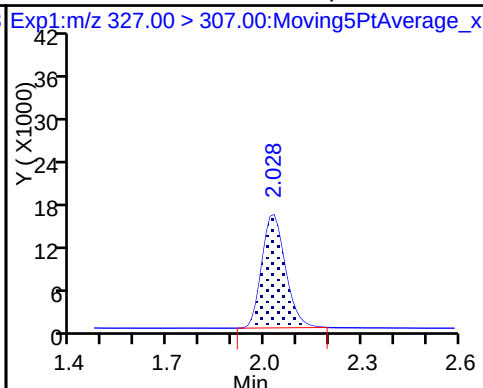
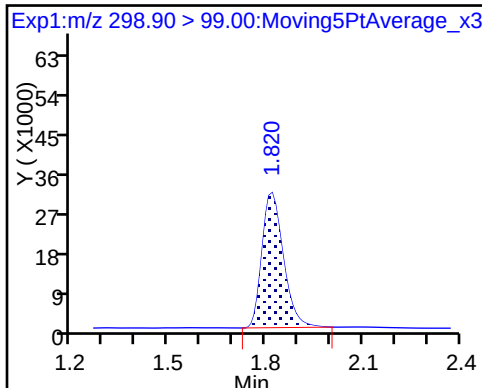
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

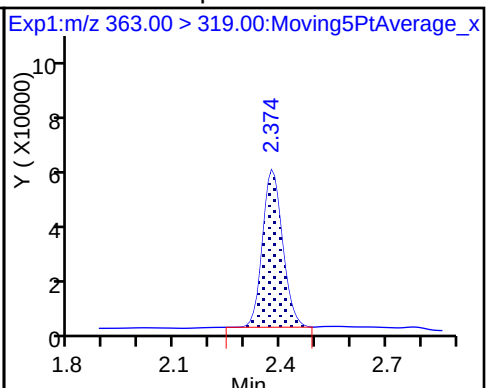
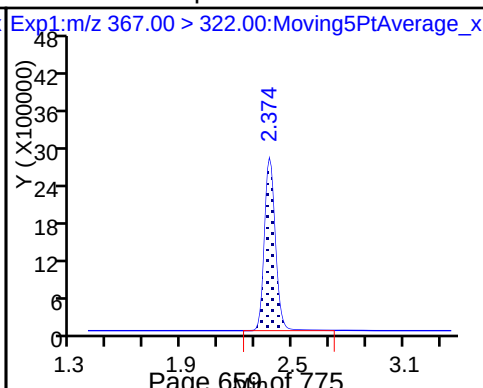
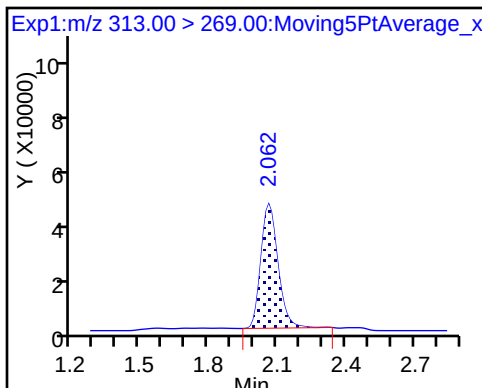
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

D 9 13C4-PFHpA

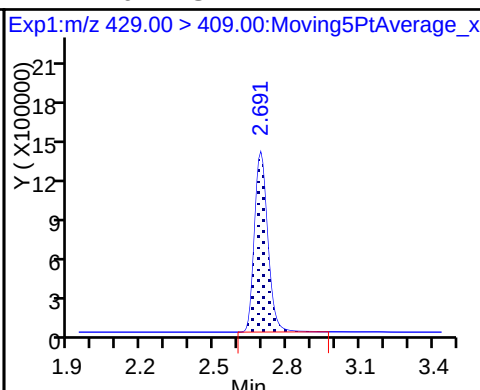
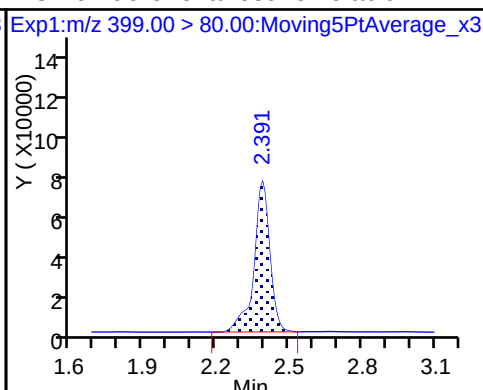
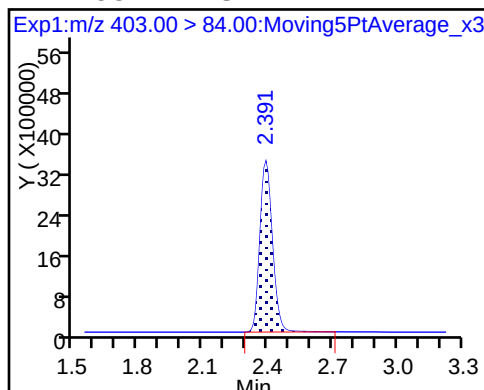
10 Perfluoroheptanoic acid



D 11 18O2 PFHxS

8 Perfluorohexanesulfonic acid

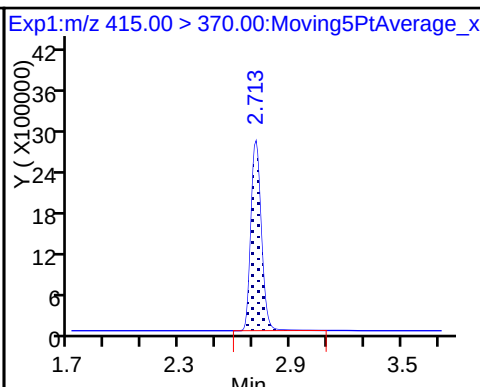
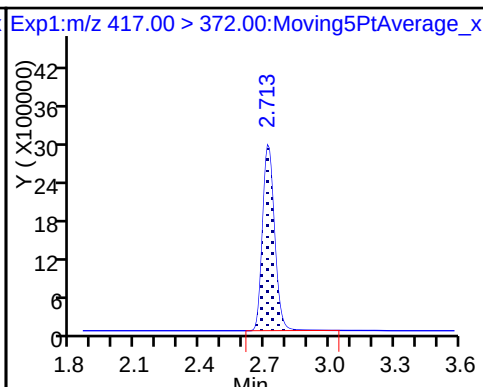
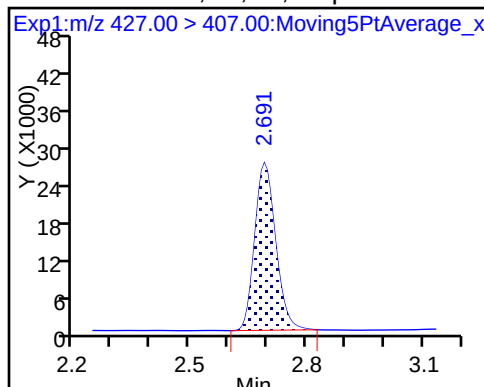
D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctanoate

De 14 13C4 PFOA

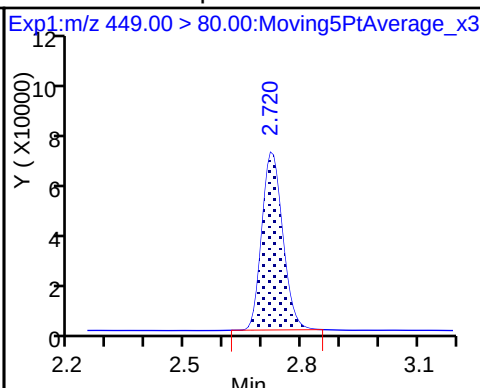
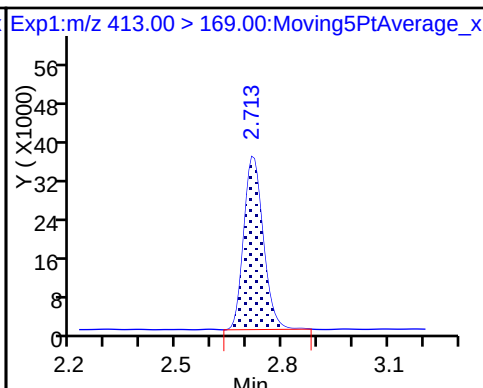
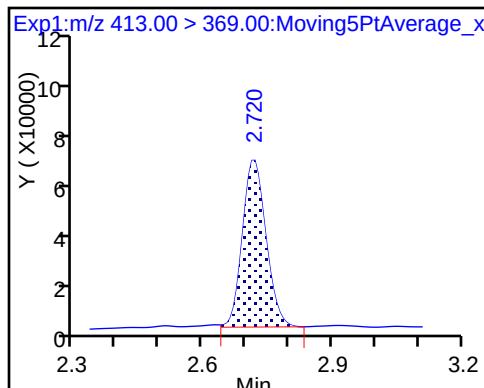
* 62 13C2-PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

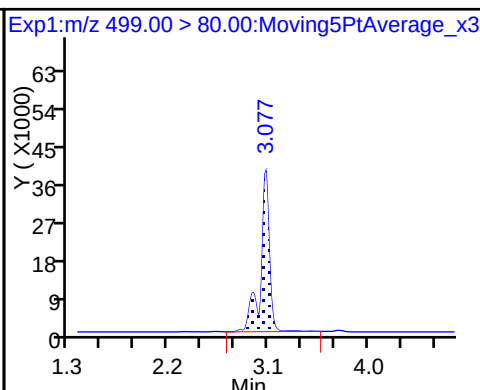
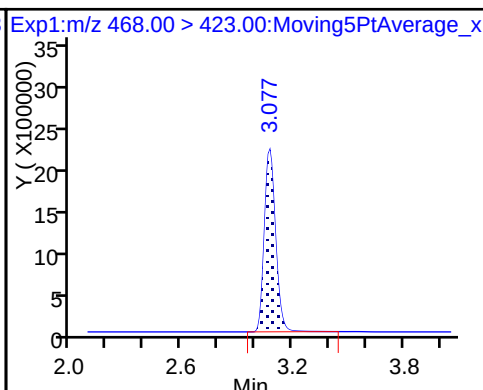
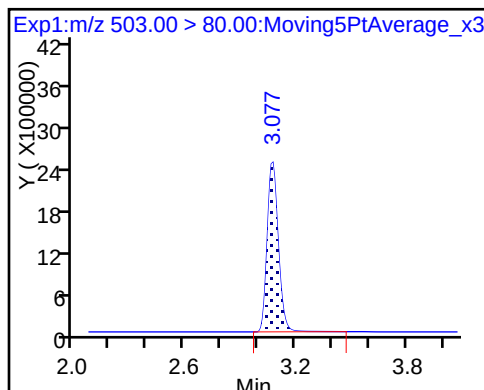
16 Perfluoroheptanesulfonic Acid

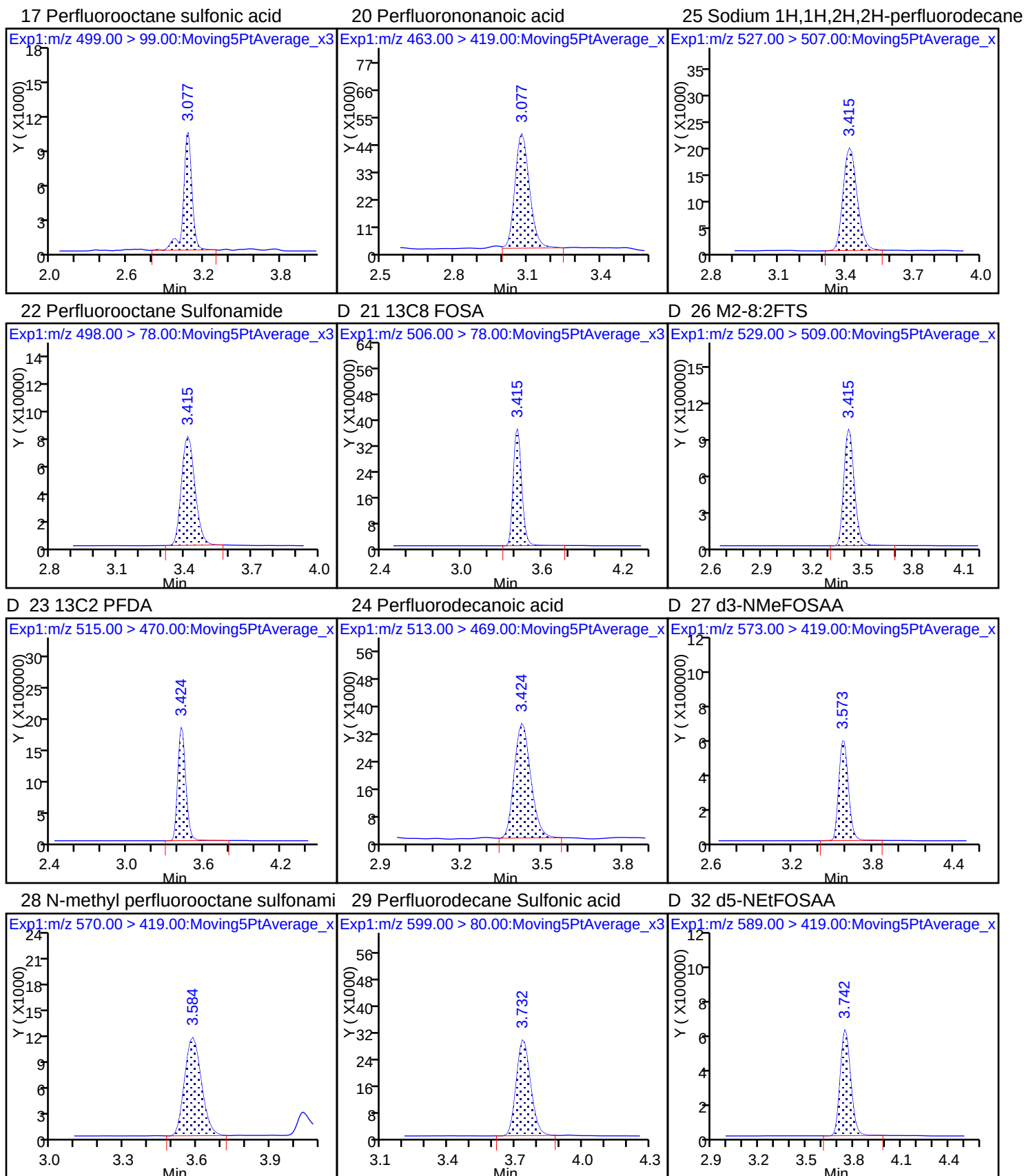


D 18 13C4 PFOS

D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid

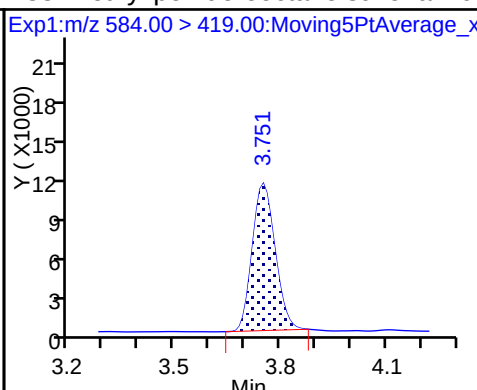
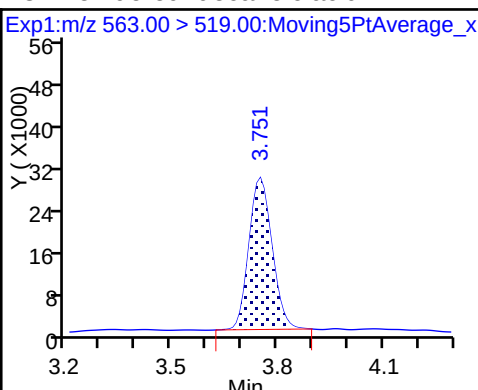
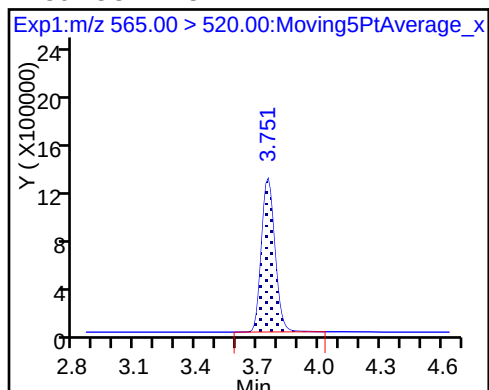




D 30 13C2 PFUnA

31 Perfluoroundecanoic acid

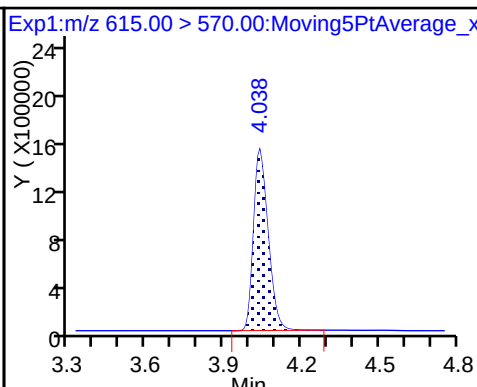
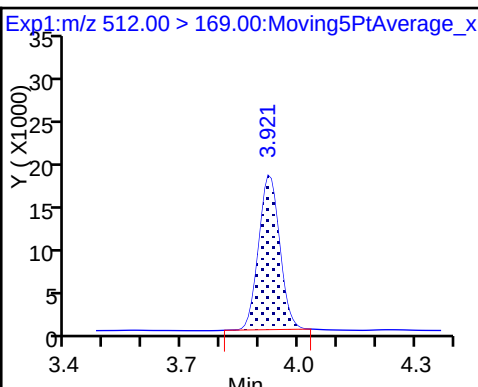
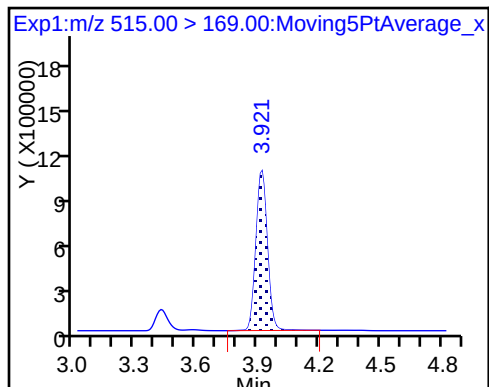
33 N-ethyl perfluorooctane sulfonamid



D 34 d-N-MeFOSA-M

35 MeFOSA

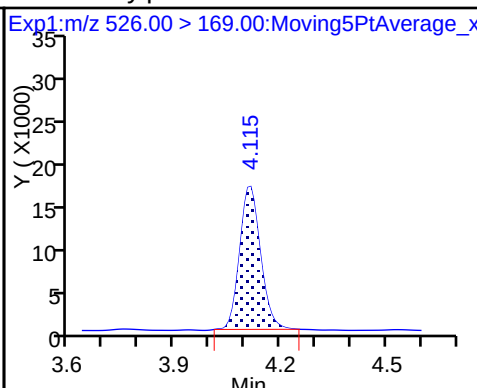
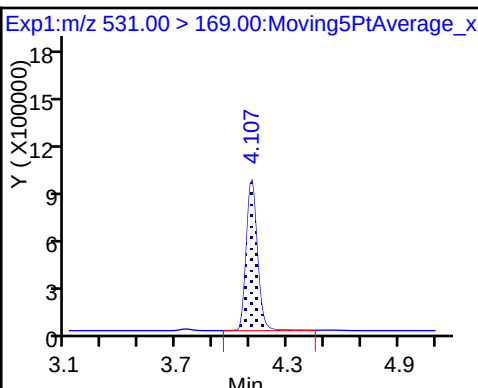
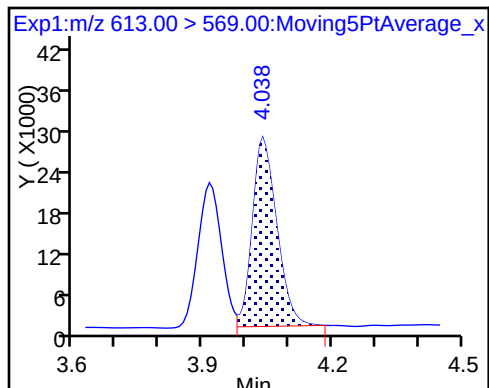
D 36 13C2 PFDaA



37 Perfluorododecanoic acid

D 38 d-N-EtFOSA-M

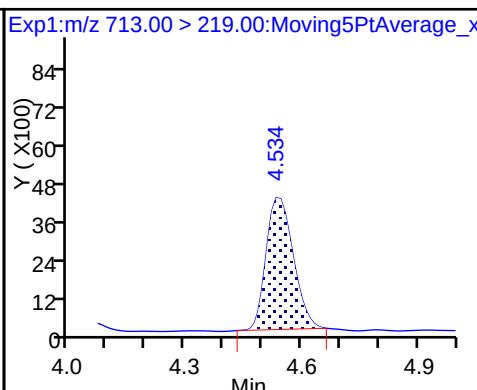
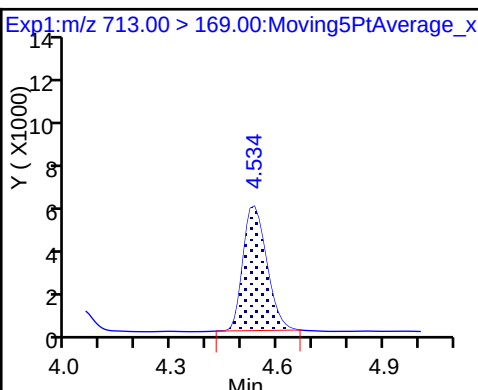
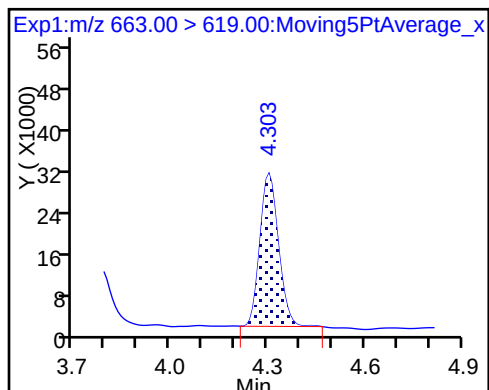
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

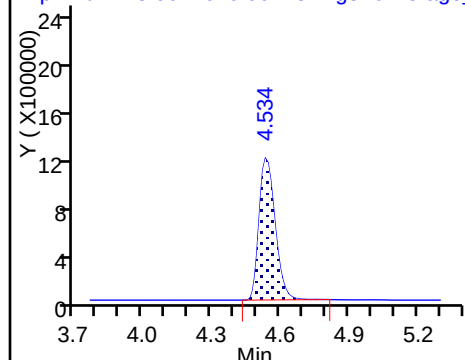


D 43 13C2-PFTeDA

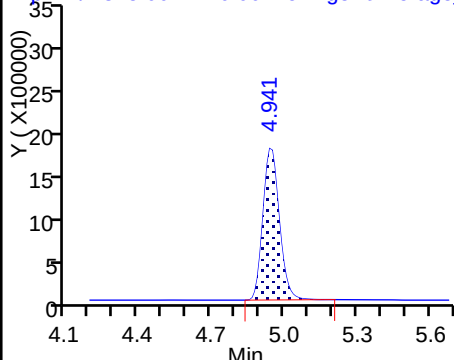
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

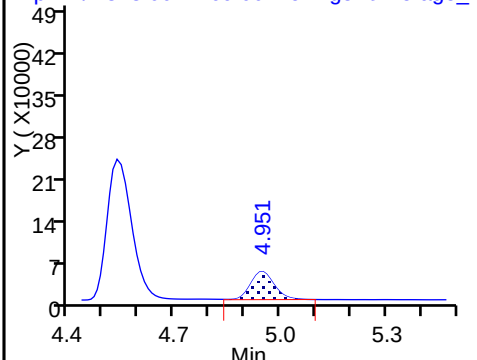
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Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

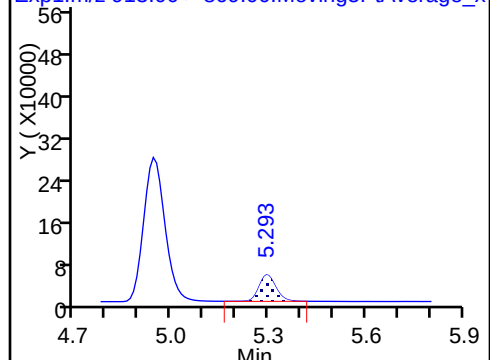


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCV 320-184734/1 Calibration Date: 09/15/2017 22:21

Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14

Lab File ID: 2017.09.15D_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9484	0.9291		49.0	50.0	-2.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.148	1.072		46.7	50.0	-6.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	73.02	63.31		38.3	44.2	-13.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9661	0.9697		50.2	50.0	0.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	1.010		51.5	50.0	3.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.047	1.120		48.6	45.5	6.9	25.0
6:2FTS	AveID	0.9017	0.8684		45.7	47.4	-3.7	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.092	1.082		49.6	50.0	-0.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.212	1.208		47.5	47.6	-0.3	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9635	0.9942		51.6	50.0	3.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.073	1.079		46.6	46.4	0.5	25.0
8:2FTS	AveID	0.9315	0.9207		47.3	47.9	-1.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9500	0.9703		51.1	50.0	2.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9363	0.9299		49.7	50.0	-0.7	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9483	0.9276		48.9	50.0	-2.2	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6277	0.6572		50.5	48.2	4.7	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8706	0.8704		50.0	50.0	-0.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.115	1.023		45.9	50.0	-8.2	25.0
MeFOSA	AveID	0.8862	0.8970		50.6	50.0	1.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9634	0.9556		49.6	50.0	-0.8	25.0
N-EtFOSA-M	AveID	0.9360	0.9217		49.2	50.0	-1.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.137	0.8987		39.5	50.0	-21.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2541	0.2260		44.5	50.0	-11.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9396		54.1	50.0	8.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.046	1.104		52.8	50.0	5.6	25.0
13C4 PFBA	Ave	313031	380264		60.7	50.0	21.5	50.0
13C5 PFPeA	Ave	205049	236355		57.6	50.0	15.3	50.0
13C3-PFBS	Ave	4971	6858		64.1	46.5	38.0	50.0
13C2 PFHxA	Ave	219438	260388		59.3	50.0	18.7	50.0
13C4-PFHpA	Ave	202833	224931		55.4	50.0	10.9	50.0
18O2 PFHxS	Ave	284495	328918		54.7	47.3	15.6	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCV 320-184734/1 Calibration Date: 09/15/2017 22:21
 Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14
 Lab File ID: 2017.09.15D_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	108997	121583		53.0	47.5	11.5	50.0
13C4 PFOA	Ave	195053	218843		56.1	50.0	12.2	50.0
13C4 PFOS	Ave	200518	253329		60.4	47.8	26.3	50.0
13C5 PFNA	Ave	150235	175475		58.4	50.0	16.8	50.0
M2-8:2FTS	Ave	72926	78811		51.8	47.9	8.1	50.0
13C8 FOSA	Ave	311775	359146		57.6	50.0	15.2	50.0
13C2 PFDA	Ave	134252	152209		56.7	50.0	13.4	50.0
d3-NMeFOSAA	Ave	41835	44728		53.5	50.0	6.9	50.0
d5-NEtFOSAA	Ave	40920	44153		54.0	50.0	7.9	50.0
13C2 PFUnA	Ave	95612	108767		56.9	50.0	13.8	50.0
d-N-MeFOSA-M	Ave	80486	98637		61.3	50.0	22.6	50.0
13C2 PFDoA	Ave	91184	109906		60.3	50.0	20.5	50.0
d-N-EtFOSA-M	Ave	74972	97466		65.0	50.0	30.0	50.0
13C2-PFTeDA	Ave	93828	113636		60.6	50.0	21.1	50.0
13C2-PFHxDA	Ave	143388	148026		51.6	50.0	3.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

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 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 15-Sep-2017 22:21:12 ALS Bottle#: 32 Worklist Smp#: 1
 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*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 14:09:59 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: westendorfc

Date: 19-Sep-2017 14:03:31

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	1.554	1.556	-0.002		19013219	60.7		121	18138	
2 Perfluorobutyric acid										
212.90 > 169.00	1.554	1.556	-0.002	1.000	17665080	49.0		98.0	2531	
D 3 13C5-PFPeA										
267.90 > 223.00	1.754	1.756	-0.002		11817753	57.6		115	49553	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.754	1.756	-0.002	1.000	12664600	46.7		93.3	4718	
D 47 13C3-PFBS										
301.90 > 83.00	1.773	1.784	-0.011		318891	64.1		138	8208	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.782	1.784	-0.002	1.000	19191843	38.3		86.7	30172	
298.90 > 99.00	1.782	1.784	-0.002	1.000	9241092		2.08(0.00-0.00)		22957	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.971	1.975	-0.004	1.000	6136430	52.3		112	31360	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.017	2.020	-0.003	1.000	12624314	50.2		100	11560	
D 7 13C2 PFHxA										
315.00 > 270.00	2.017	2.020	-0.003		13019389	59.3		119	21976	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.324	2.337	-0.013	1.000	11362117	51.5		103	8233	
D 9 13C4-PFHpA										
367.00 > 322.00	2.324	2.337	-0.013		11246538	55.4		111	20312	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.348	2.347	0.001	1.000	16758085	48.6		107	8603	
D 11 18O2 PFHxS										
403.00 > 84.00	2.348	2.347	0.001		15557814	54.7		116	17772	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.652	2.656	-0.004	1.000	5004830	45.7		96.3	18235	
D 12 M2-6:2FTS										
429.00 > 409.00	2.652	2.656	-0.004		5775170	53.0		112	15969	
* 62 13C2-PFOA										
415.00 > 370.00	2.674	2.678	-0.004		10821319	50.0		100	19305	
D 14 13C4 PFOA										
417.00 > 372.00	2.674	2.678	-0.004		10942142	56.1		112	31289	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.674	2.678	-0.004	1.000	11841765	49.6		99.1	1290	
413.00 > 169.00	2.674	2.678	-0.004	1.000	6372423		1.86(0.90-1.10)		9653	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.681	2.685	-0.004	1.000	14567410	47.5		99.7	14112	
D 18 13C4 PFOS										
503.00 > 80.00	3.041	3.043	-0.002		12109120	60.4		126	21801	
20 Perfluorononanoic acid										
463.00 > 419.00	3.041	3.051	-0.010	1.000	8722402	51.6		103	7412	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.041	3.051	-0.010	1.000	12681094	46.6		101	9358	
499.00 > 99.00	3.041	3.051	-0.010	1.000	2749349		4.61(0.90-1.10)		8328	
D 19 13C5 PFNA										
468.00 > 423.00	3.041	3.051	-0.010		8773756	58.4		117	24514	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.384	3.393	-0.009	1.000	3475829	47.3		98.8	22104	
D 26 M2-8:2FTS										
529.00 > 509.00	3.384	3.393	-0.009		3775041	51.8		108	15452	
D 21 13C8 FOSA										
506.00 > 78.00	3.392	3.393	-0.001		17957316	57.6		115	33561	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.401	3.402	-0.001	1.000	7076756	49.7		99.3	11428	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.392	3.402	-0.010	1.000	17423649	51.1		102	15720	
D 23 13C2 PFDA										
515.00 > 470.00	3.401	3.402	-0.001		7610452	56.7		113	28692	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.560	3.561	-0.001	1.003	2074395	48.9		97.8	4231	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.549	3.561	-0.012		2236398	53.5		107	8230	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.709	3.719	-0.010	1.000	8024764	50.5		105	9390	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.728	3.728	0.0	1.003	1921631	50.0		100.0	5724	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.728	3.728	0.0	1.000	5564620	45.9		91.8	5975	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.719	3.728	-0.009		2207662	54.0		108	3387	
D 30 13C2 PFUnA										
565.00 > 520.00	3.728	3.728	0.0		5438338	56.9		114	11465	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M	515.00 > 169.00	3.896	3.904	-0.008	4931873	61.3		123	935	
35 MeFOSA	512.00 > 169.00	3.905	3.904	0.001	1.000	4423768	50.6	101	6531	
37 Perfluorododecanoic acid	613.00 > 569.00	4.022	4.022	0.0	1.000	5251098	49.6	99.2	2516	
D 36 13C2 PFDaA	615.00 > 570.00	4.016	4.022	-0.006	5495280	60.3		121	9280	
D 38 d-N-EtFOSA-M	531.00 > 169.00	4.087	4.087	0.0	4873286	65.0		130	3466	
39 N-ethylperfluoro-1-octanesulfonami	526.00 > 169.00	4.095	4.096	-0.001	1.000	4491892	49.2	98.5	5307	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.282	4.290	-0.008	1.000	4938650	39.5	79.0	507	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.517	4.516	0.001	1.000	1284260	44.5	89.0	5544	
713.00 > 219.00	4.517	4.516	0.001	1.000	1017307		1.26(0.00-0.00)		5244	
D 43 13C2-PFTeDA	715.00 > 670.00	4.517	4.525	-0.008	5681801	60.6		121	7065	
45 Perfluorohexadecanoic acid	813.00 > 769.00	4.934	4.932	0.002	1.000	6954054	54.1	108	397	
D 44 13C2-PFHxDA	815.00 > 770.00	4.934	4.932	0.002	7401294	51.6		103	6890	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.271	5.279	-0.008	1.000	8174554	52.8	106	621	

Reagents:

LCPFC_FULL-L5_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_001.d

Injection Date: 15-Sep-2017 22:21:12

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

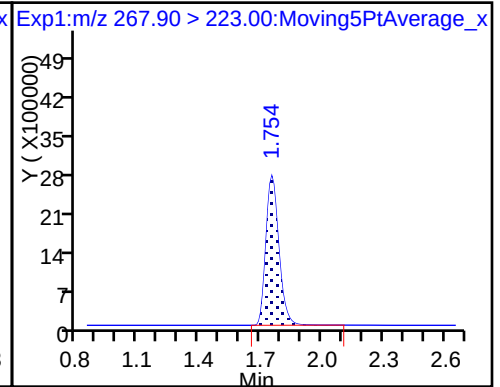
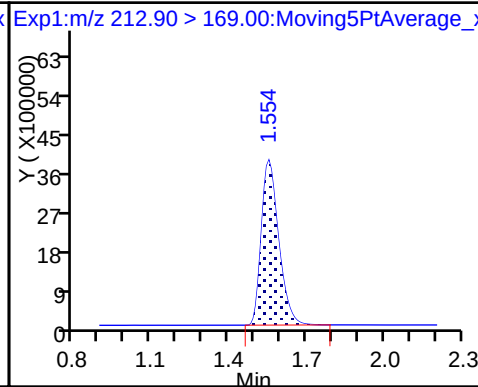
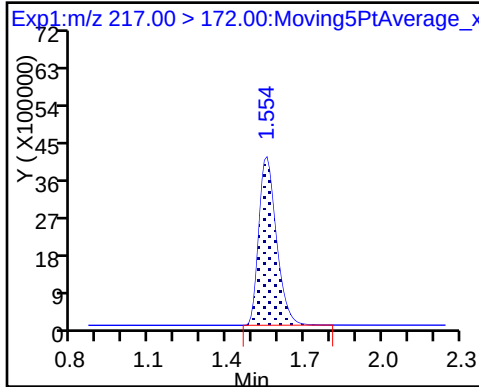
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

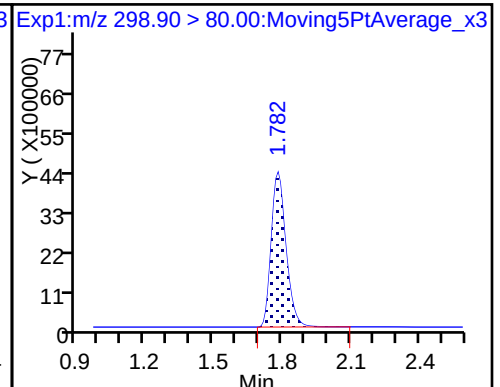
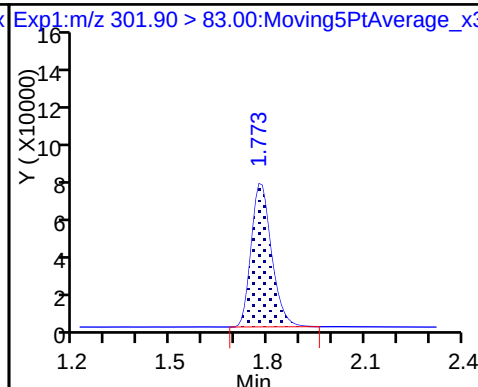
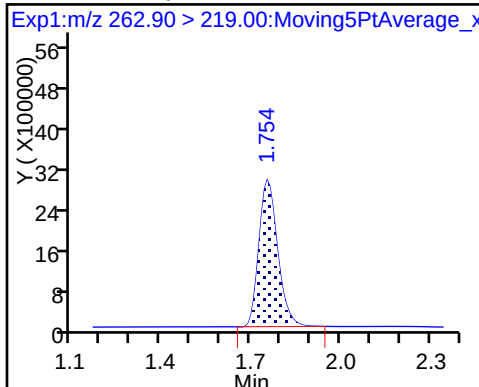
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

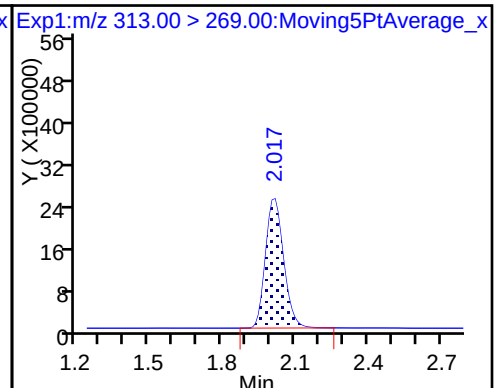
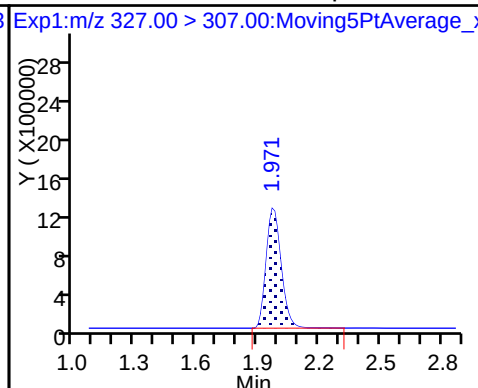
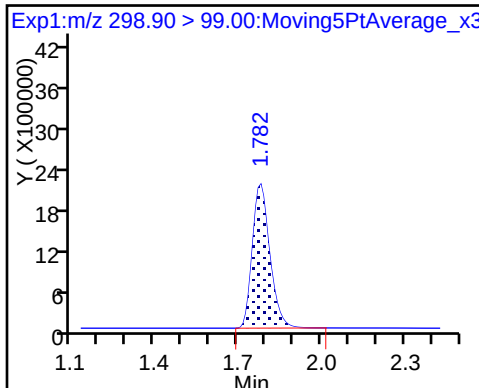
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoate

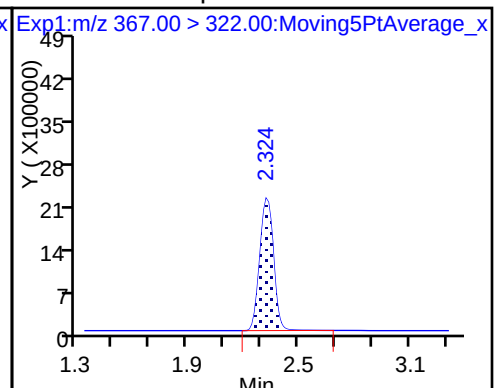
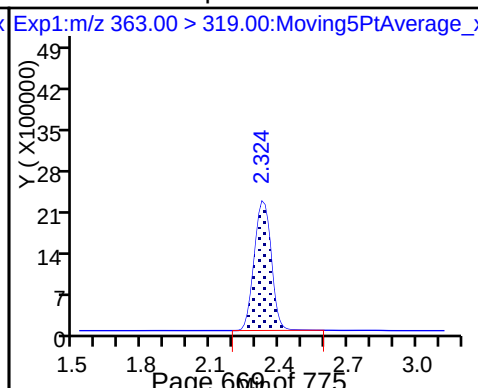
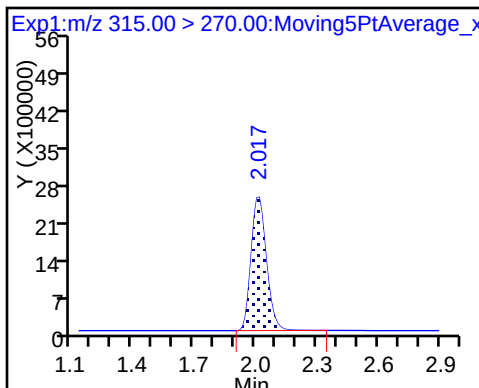
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

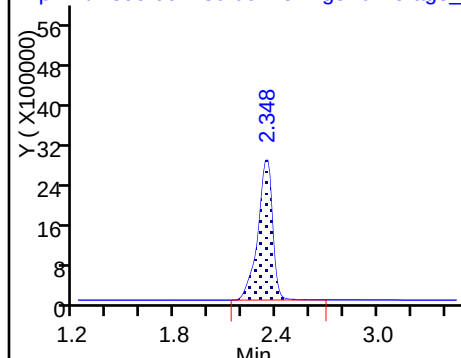


8 Perfluorohexanesulfonic acid

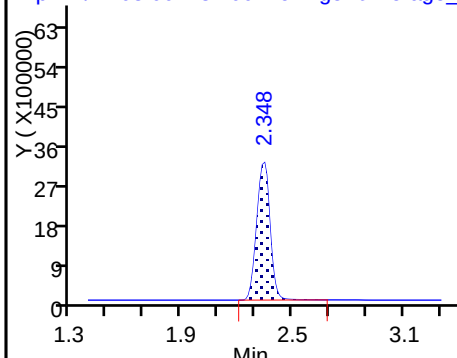
D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctane

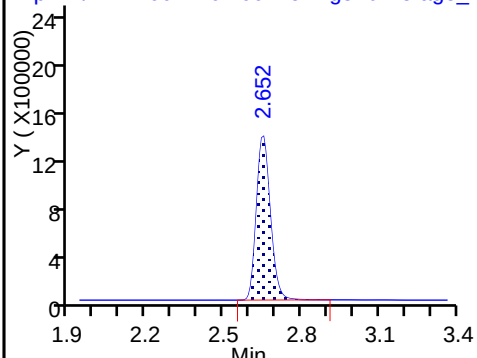
Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3

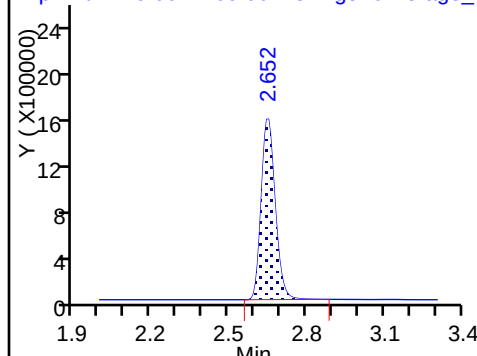


D 12 M2-6:2FTS

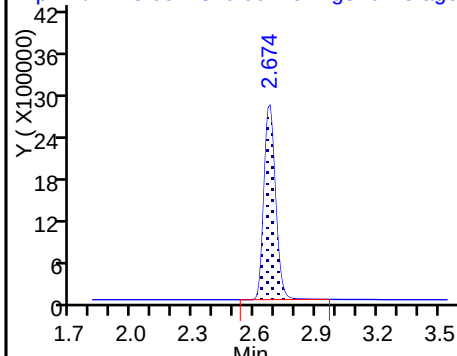
* 62 13C2-PFOA

D 14 13C4 PFOA

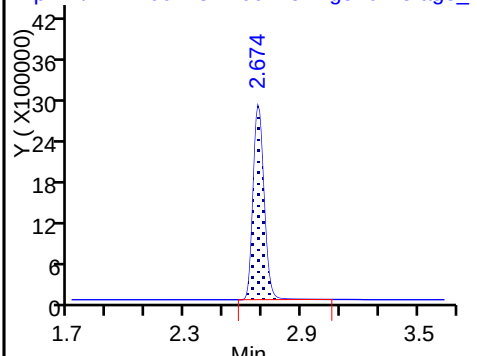
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Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

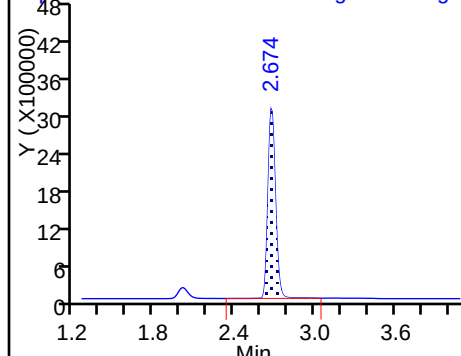


15 Perfluorooctanoic acid

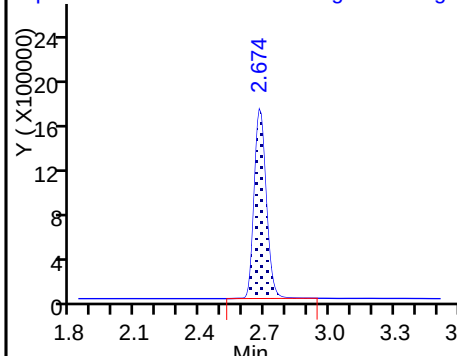
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

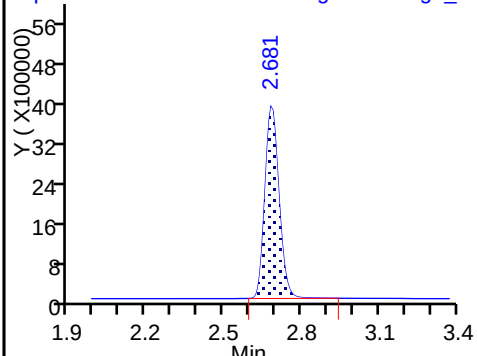
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Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

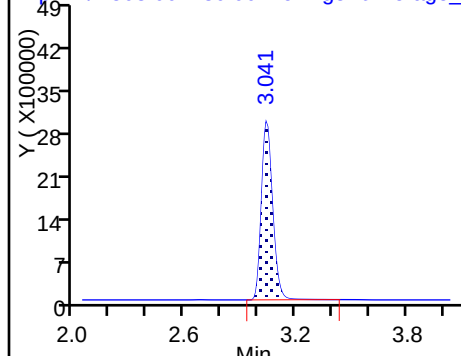


D 18 13C4 PFOS

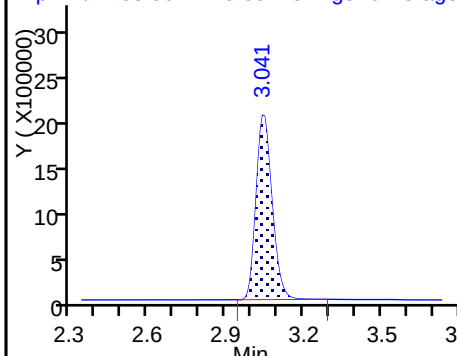
20 Perfluorononanoic acid

17 Perfluorooctane sulfonic acid

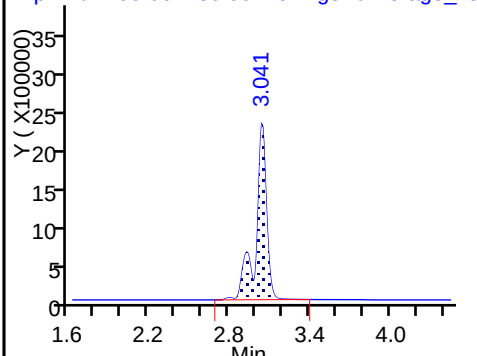
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Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x3



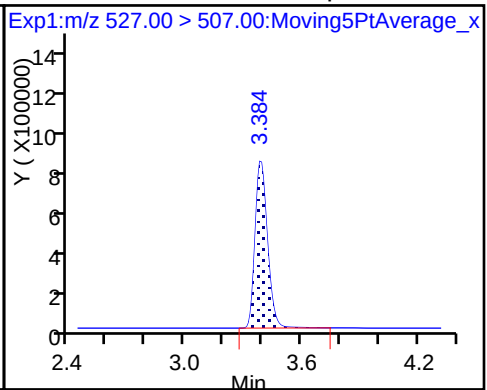
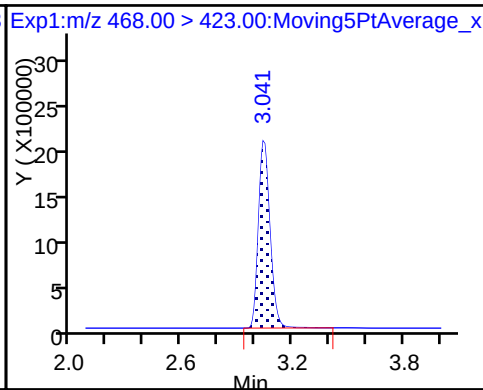
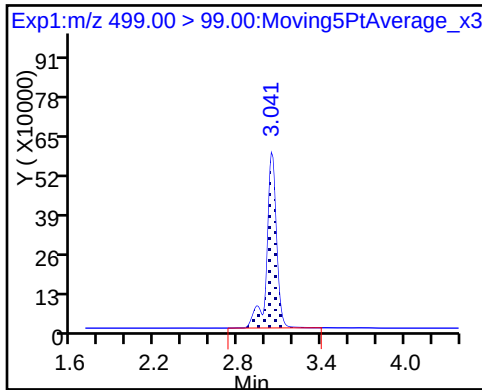
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17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

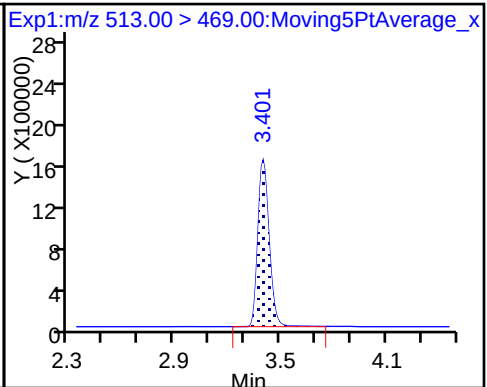
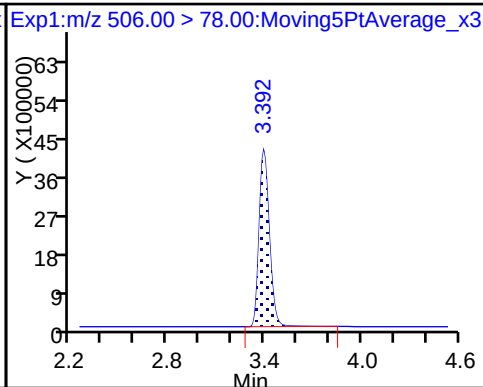
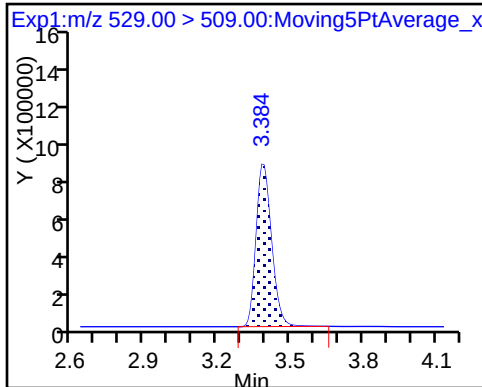
25 Sodium 1H,1H,2H,2H-perfluorodecane



D 26 M2-8:2FTS

D 21 13C8 FOSA

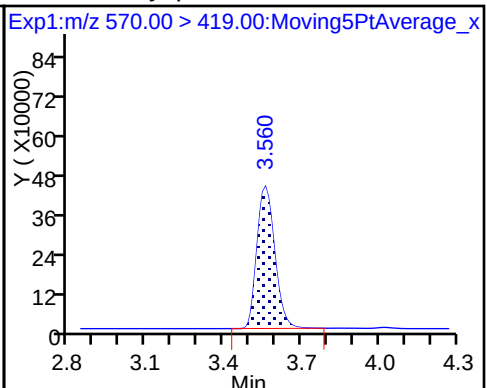
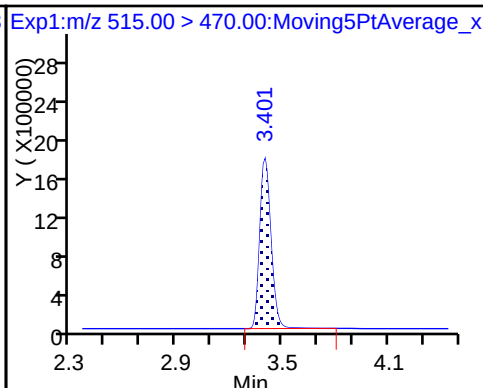
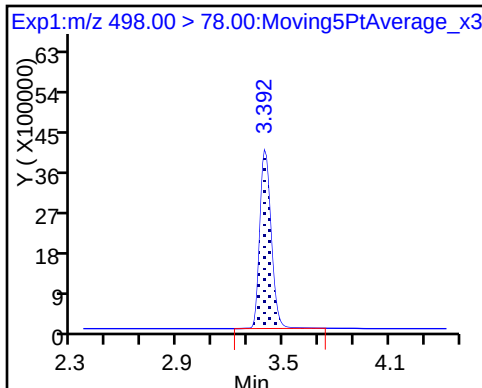
24 Perfluorodecanoic acid



22 Perfluorooctane Sulfonamide

D 23 13C2 PFDA

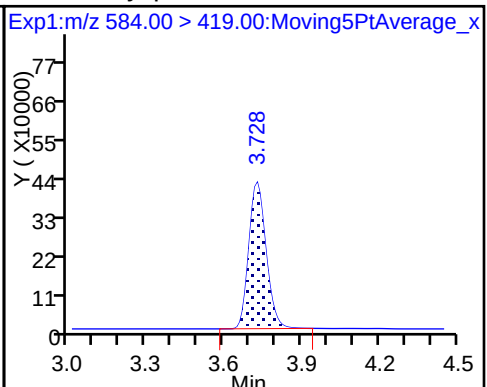
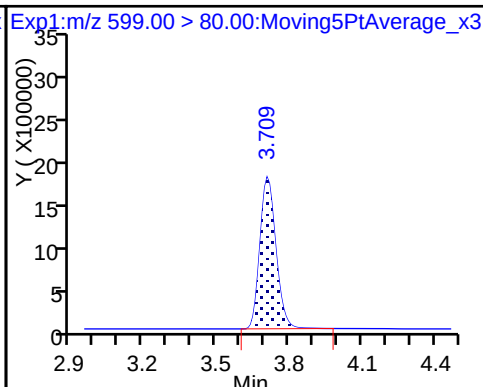
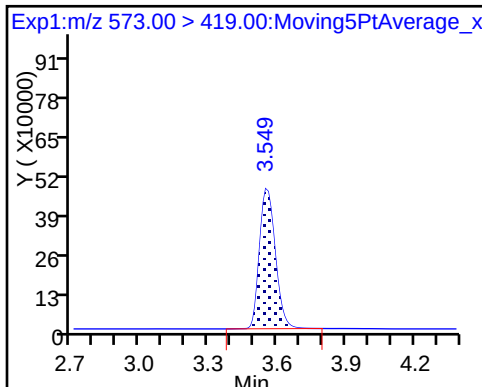
28 N-methyl perfluorooctane sulfonamid



D 27 d3-NMeFOSAA

29 Perfluorodecane Sulfonic acid

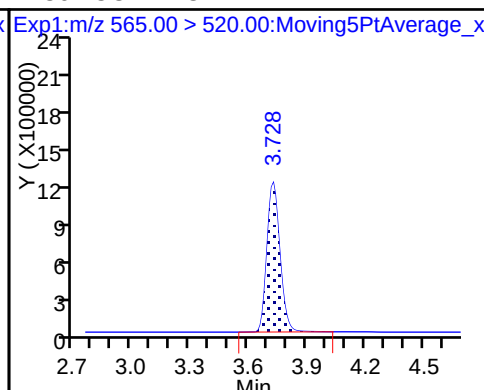
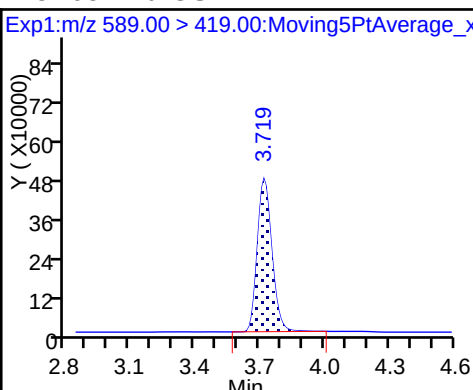
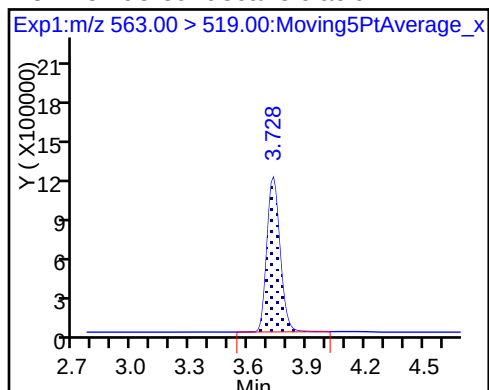
33 N-ethyl perfluorooctane sulfonamid



31 Perfluoroundecanoic acid

D 32 d5-NEtFOSAA

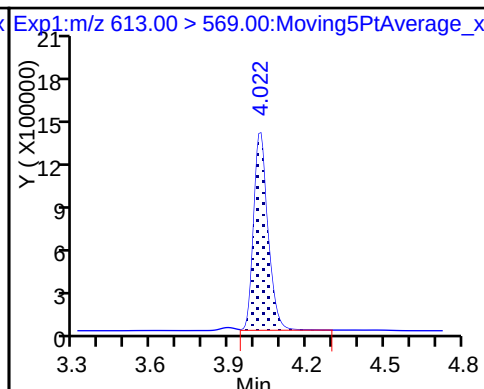
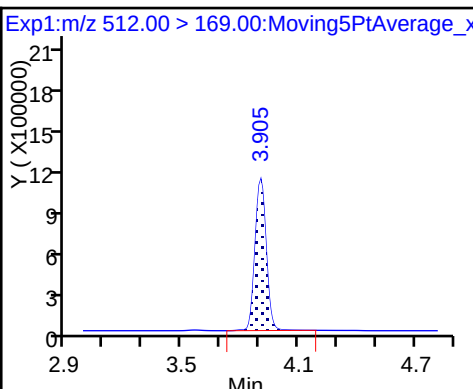
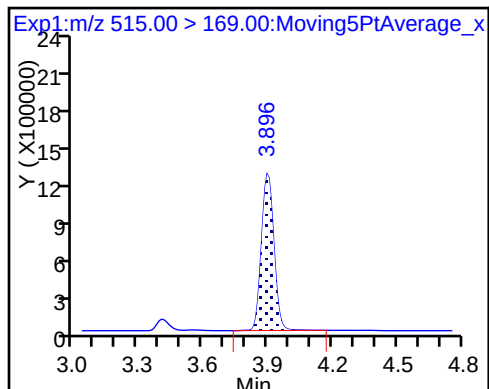
D 30 13C2 PFUnA



D 34 d-N-MeFOSA-M

35 MeFOSA

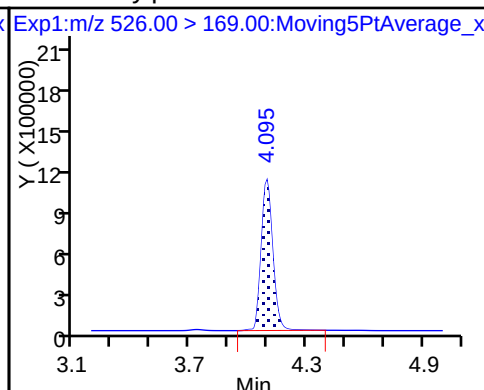
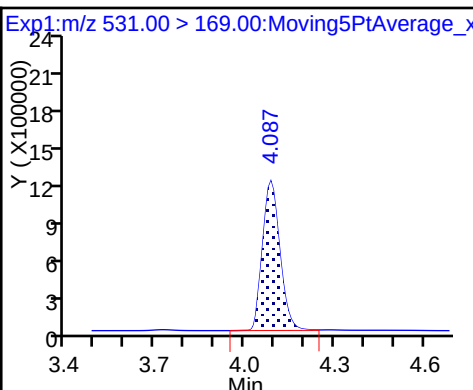
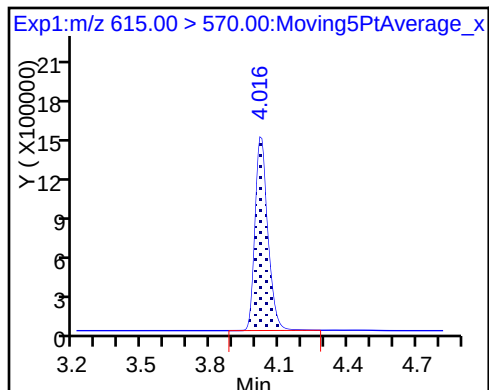
37 Perfluorododecanoic acid



D 36 13C2 PFDaA

D 38 d-N-EtFOSA-M

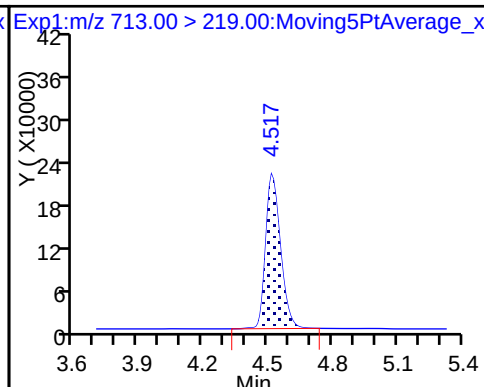
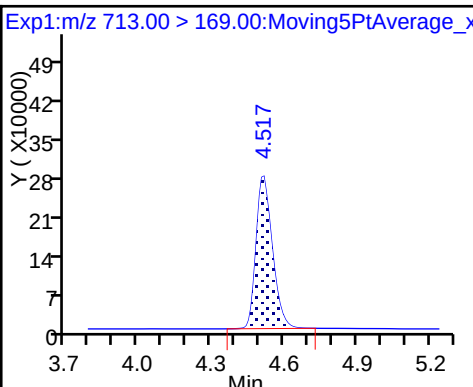
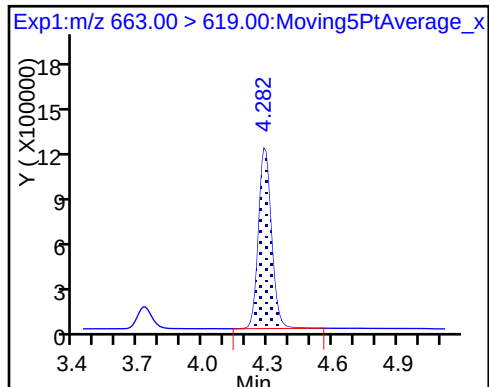
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

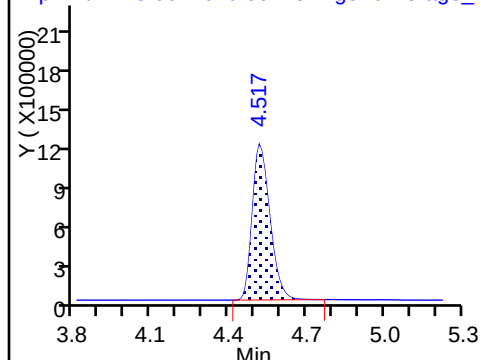


D 43 13C2-PFTeDA

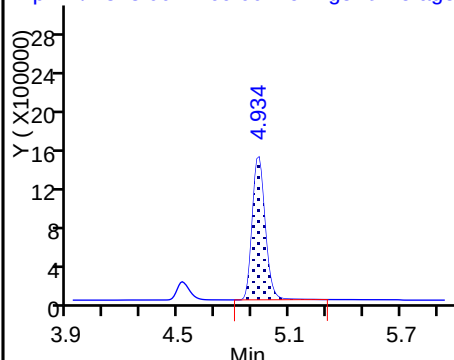
45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

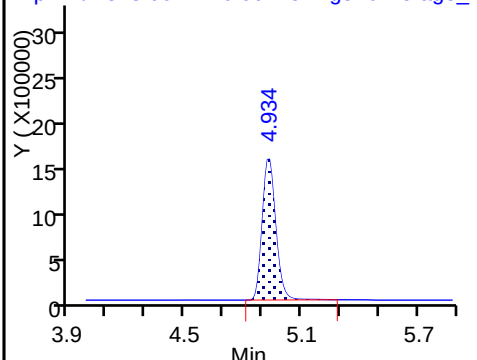
Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x

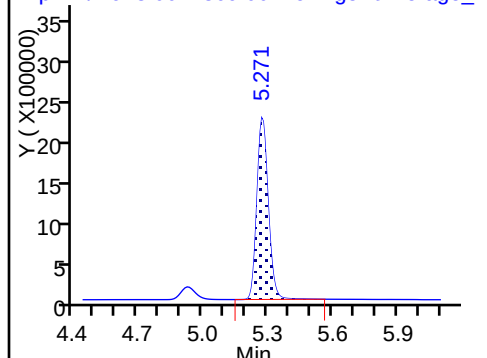


Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCV 320-184734/9 Calibration Date: 09/15/2017 23:16

Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14

Lab File ID: 2017.09.15D_009.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9484	0.997		21.0	20.0	5.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.148	1.163		20.3	20.0	1.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	73.02	75.44		18.3	17.7	3.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9661	0.9837		20.4	20.0	1.8	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	1.029		21.0	20.0	4.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.047	1.133		19.7	18.2	8.2	25.0
6:2FTS	AveID	0.9017	0.9041		19.0	19.0	0.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.092	1.070		19.6	20.0	-2.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.212	1.267		19.9	19.0	4.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9635	0.9708		20.2	20.0	0.8	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.073	1.060		18.3	18.6	-1.2	25.0
8:2FTS	AveID	0.9315	0.9196		18.9	19.2	-1.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9363	0.9422		20.1	20.0	0.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9500	1.053		22.2	20.0	10.8	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9483	0.9214		19.4	20.0	-2.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6277	0.6211		19.1	19.3	-1.0	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8706	0.8496		19.5	20.0	-2.4	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.115	1.018		18.3	20.0	-8.7	25.0
MeFOSA	AveID	0.8862	0.8783		19.8	20.0	-0.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9634	0.8694		18.0	20.0	-9.8	25.0
N-EtFOSA-M	AveID	0.9360	0.9546		20.4	20.0	2.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.137	0.8796		15.5	20.0	-22.6	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2541	0.1938		15.3	20.0	-23.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8931		20.3	20.0	1.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.046	1.025		19.6	20.0	-2.0	25.0
13C4 PFBA	Ave	313031	373633		59.7	50.0	19.4	50.0
13C5 PFPeA	Ave	205049	240092		58.5	50.0	17.1	50.0
13C3-PFBS	Ave	4971	6506		60.9	46.5	30.9	50.0
13C2 PFHxA	Ave	219438	260220		59.3	50.0	18.6	50.0
13C4-PFHpA	Ave	202833	243859		60.1	50.0	20.2	50.0
18O2 PFHxS	Ave	284495	348234		57.9	47.3	22.4	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCV 320-184734/9 Calibration Date: 09/15/2017 23:16
 Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14
 Lab File ID: 2017.09.15D_009.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	108997	119355		52.0	47.5	9.5	50.0
13C4 PFOA	Ave	195053	228145		58.5	50.0	17.0	50.0
13C4 PFOS	Ave	200518	245461		58.5	47.8	22.4	50.0
13C5 PFNA	Ave	150235	182367		60.7	50.0	21.4	50.0
13C8 FOSA	Ave	311775	346746		55.6	50.0	11.2	50.0
M2-8:2FTS	Ave	72926	81016		53.2	47.9	11.1	50.0
13C2 PFDA	Ave	134252	150511		56.1	50.0	12.1	50.0
d3-NMeFOSAA	Ave	41835	43664		52.2	50.0	4.4	50.0
13C2 PFUnA	Ave	95612	109245		57.1	50.0	14.3	50.0
d5-NEtFOSAA	Ave	40920	43620		53.3	50.0	6.6	50.0
d-N-MeFOSA-M	Ave	80486	89977		55.9	50.0	11.8	50.0
13C2 PFDoA	Ave	91184	109625		60.1	50.0	20.2	50.0
d-N-EtFOSA-M	Ave	74972	85940		57.3	50.0	14.6	50.0
13C2-PFTeDA	Ave	93828	116573		62.1	50.0	24.2	50.0
13C2-PFHxDA	Ave	143388	143750		50.1	50.0	0.3	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_009.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 15-Sep-2017 23:16:24 ALS Bottle#: 31 Worklist Smp#: 9
 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*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 14:10:12 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14ICALX_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: westendorfc

Date: 19-Sep-2017 14:09:51

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	1.556	1.556	0.0		18681640	59.7		119	29245	
2 Perfluorobutyric acid										
212.90 > 169.00	1.556	1.556	0.0	1.000	7452191	21.0		105	1272	
D 3 13C5-PFPeA										
267.90 > 223.00	1.756	1.756	0.0		12004581	58.5		117	53097	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.756	1.756	0.0	1.000	5586160	20.3		101	2619	
D 47 13C3-PFBS										
301.90 > 83.00	1.784	1.784	0.0		302524	60.9		131	7784	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.784	1.784	0.0	1.000	8677042	18.3		103	29721	
298.90 > 99.00	1.784	1.784	0.0	1.000	3689446		2.35(0.00-0.00)		19849	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.975	1.975	0.0	1.000	2667037	23.2		124	35196	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.020	2.020	0.0	1.000	5119423	20.4		102	7621	
D 7 13C2 PFHxA										
315.00 > 270.00	2.020	2.020	0.0		13010986	59.3		119	29746	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.337	2.337	0.0	1.000	5016979	21.0		105	6814	
D 9 13C4-PFHpA										
367.00 > 322.00	2.337	2.337	0.0		12192961	60.1		120	25564	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.347	2.347	0.0	1.000	7182759	19.7		108	9208	
D 11 18O2 PFHxS										
403.00 > 84.00	2.347	2.347	0.0		16471449	57.9		122	42608	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Sodium 1H,1H,2H,2H-perfluorooctane	427.00 > 407.00	2.656	2.656	0.0	1.000	2046030	19.0	100	14645	
D 12 M2-6:2FTS	429.00 > 409.00	2.656	2.656	0.0		5669366	52.0	110	22100	
* 62 13C2-PFOA	415.00 > 370.00	2.678	2.678	0.0		11089236	50.0	100	25529	
D 14 13C4 PFOA	417.00 > 372.00	2.678	2.678	0.0		11407258	58.5	117	20150	
15 Perfluorooctanoic acid	413.00 > 369.00	2.678	2.678	0.0	1.000	4881896	19.6	98.0	522	
	413.00 > 169.00	2.678	2.678	0.0	1.000	2573640	1.90(0.90-1.10)		8022	
16 Perfluoroheptanesulfonic Acid	449.00 > 80.00	2.685	2.685	0.0	1.000	5919662	19.9	105	14685	
D 18 13C4 PFOS	503.00 > 80.00	3.043	3.043	0.0		11733027	58.5	122	21740	
20 Perfluorononanoic acid	463.00 > 419.00	3.051	3.051	0.0	1.000	3540735	20.2	101	4560	
17 Perfluorooctane sulfonic acid	499.00 > 80.00	3.051	3.051	0.0	1.000	4827872	18.3	98.8	10626	
	499.00 > 99.00	3.043	3.051	-0.008	0.997	1021808	4.72(0.90-1.10)		20991	
D 19 13C5 PFNA	468.00 > 423.00	3.051	3.051	0.0		9118351	60.7	121	22750	
25 Sodium 1H,1H,2H,2H-perfluorodecane	527.00 > 507.00	3.393	3.393	0.0	1.000	1427495	18.9	98.7	9299	
D 26 M2-8:2FTS	529.00 > 509.00	3.393	3.393	0.0		3880647	53.2	111	19873	
D 21 13C8 FOSA	506.00 > 78.00	3.393	3.393	0.0		17337317	55.6	111	22475	
24 Perfluorodecanoic acid	513.00 > 469.00	3.402	3.402	0.0	1.000	2836312	20.1	101	6256	
22 Perfluorooctane Sulfonamide	498.00 > 78.00	3.402	3.402	0.0	1.000	7302953	22.2	111	20006	
D 23 13C2 PFDA	515.00 > 470.00	3.402	3.402	0.0		7525568	56.1	112	18271	
28 N-methyl perfluorooctane sulfonami	570.00 > 419.00	3.561	3.561	0.0	1.000	804618	19.4	97.2	2881	
D 27 d3-NMeFOSAA	573.00 > 419.00	3.561	3.561	0.0		2183189	52.2	104	6879	
29 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.719	3.719	0.0	1.000	2939543	19.1	99.0	8146	
33 N-ethyl perfluorooctane sulfonamid	584.00 > 419.00	3.728	3.728	0.0	1.000	741197	19.5	97.6	4593	
31 Perfluoroundecanoic acid	563.00 > 519.00	3.728	3.728	0.0	1.000	2223280	18.3	91.3	3219	
D 32 d5-NEtFOSAA	589.00 > 419.00	3.728	3.728	0.0		2180999	53.3	107	2397	
D 30 13C2 PFUnA	565.00 > 520.00	3.728	3.728	0.0		5462269	57.1	114	11239	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M	515.00 > 169.00	3.904	3.904	0.0	4498838	55.9		112	815	
35 MeFOSA	512.00 > 169.00	3.904	3.904	0.0	1.000	1580442	19.8	99.1	4649	
37 Perfluorododecanoic acid	613.00 > 569.00	4.022	4.022	0.0	1.000	1906193	18.0	90.2	1025	
D 36 13C2 PFDaA	615.00 > 570.00	4.022	4.022	0.0		5481272	60.1	120	8990	
D 38 d-N-EtFOSA-M	531.00 > 169.00	4.087	4.087	0.0		4297008	57.3	115	4276	
39 N-ethylperfluoro-1-octanesulfonami	526.00 > 169.00	4.096	4.096	0.0	1.000	1640741	20.4	102	4648	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.290	4.290	0.0	1.000	1928521	15.5	77.4	202	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.516	4.516	0.0	1.000	451773	15.3	76.3	4080	
713.00 > 219.00	4.525	4.516	0.009	1.002	366654		1.23(0.00-0.00)		2881	
D 43 13C2-PFTeDA	715.00 > 670.00	4.525	4.525	0.0		5828662	62.1	124	23062	
45 Perfluorohexadecanoic acid	813.00 > 769.00	4.932	4.932	0.0	1.000	2567582	20.3	102	159	
D 44 13C2-PFHxDA	815.00 > 770.00	4.932	4.932	0.0		7187520	50.1	100	9709	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.279	5.279	0.0	1.000	2946191	19.6	98.0	263	

Reagents:

LCPFC_FULL-L4_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_009.d

Injection Date: 15-Sep-2017 23:16:24

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

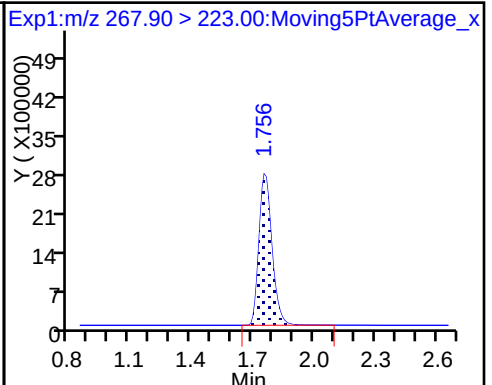
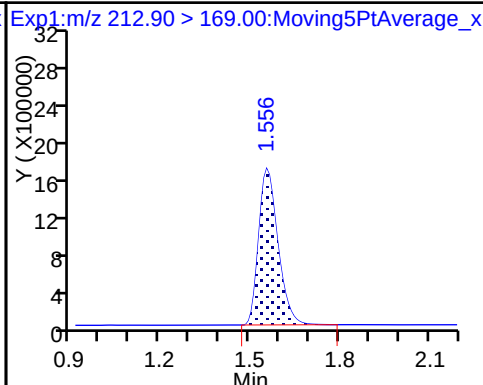
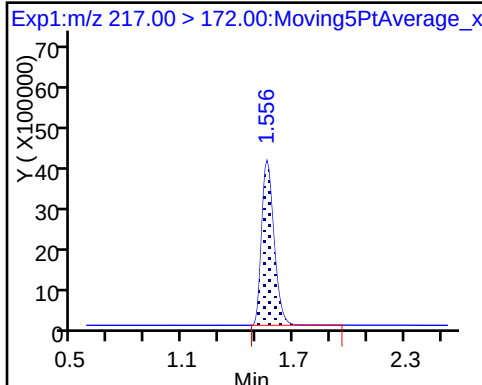
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

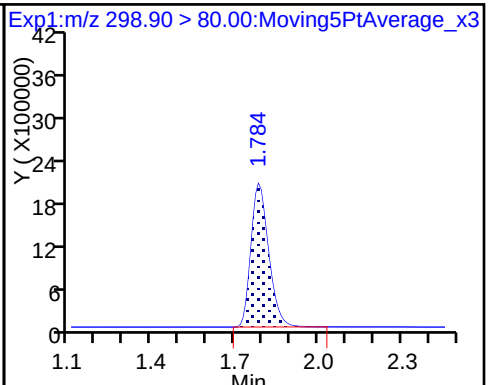
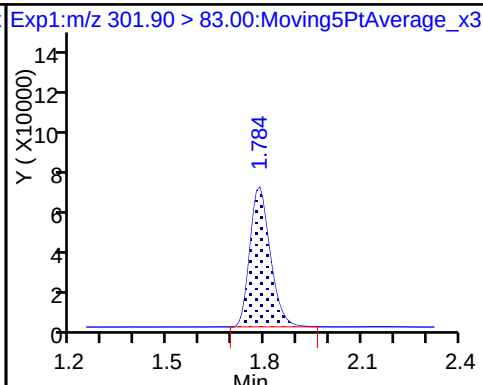
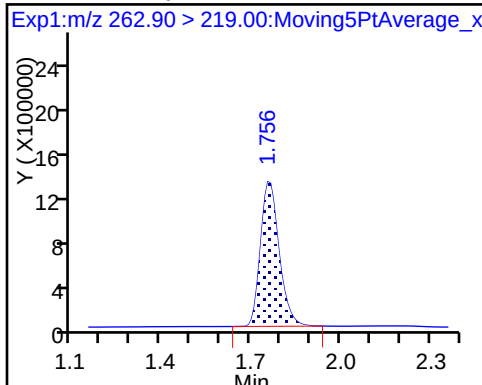
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

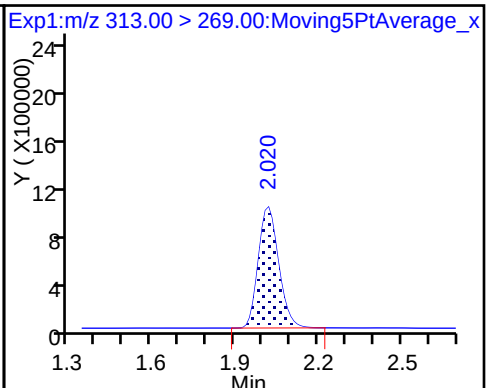
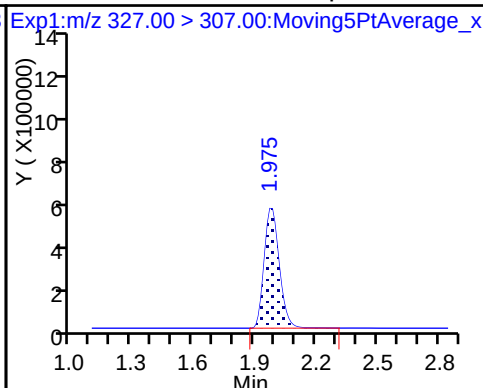
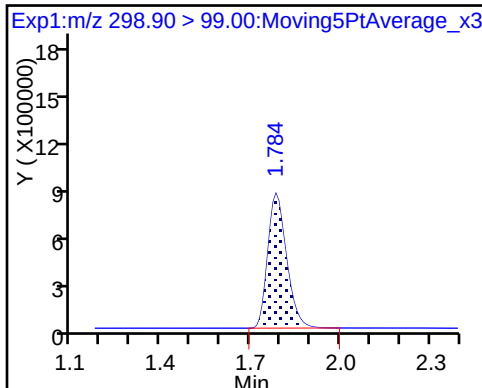
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

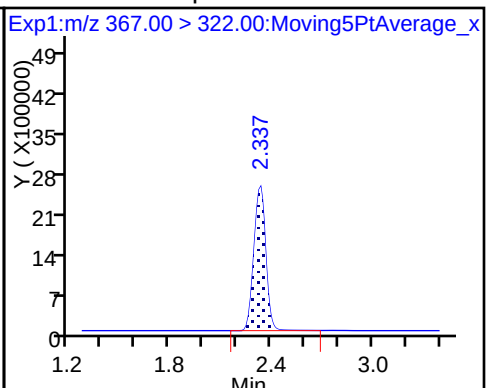
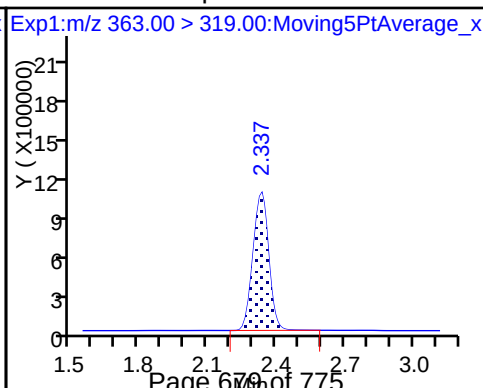
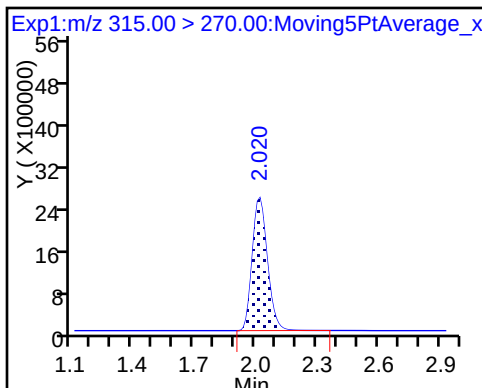
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

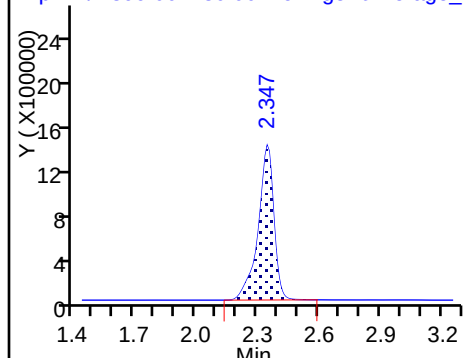


8 Perfluorohexanesulfonic acid

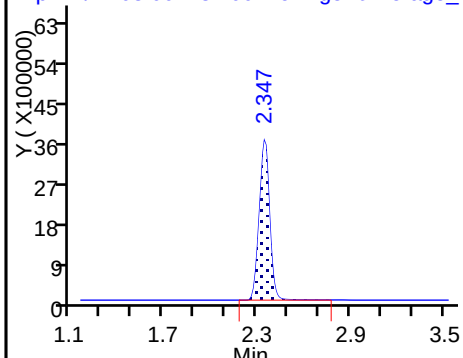
D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctane

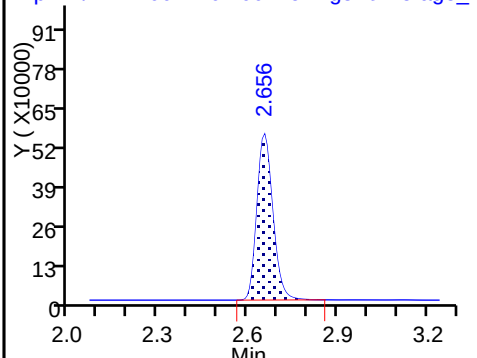
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Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3

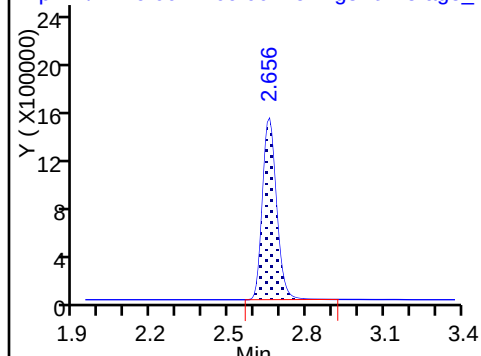


D 12 M2-6:2FTS

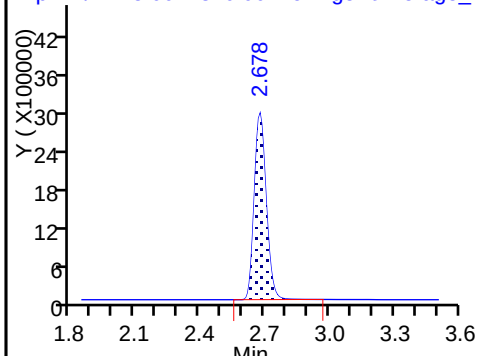
* 62 13C2-PFOA

D 14 13C4 PFOA

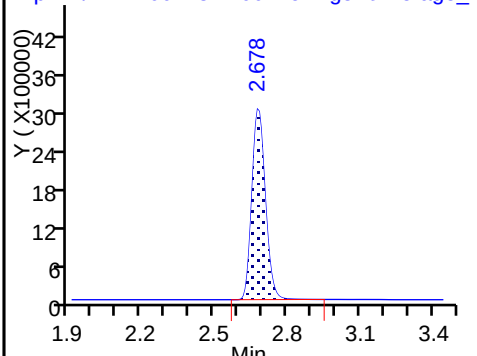
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Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



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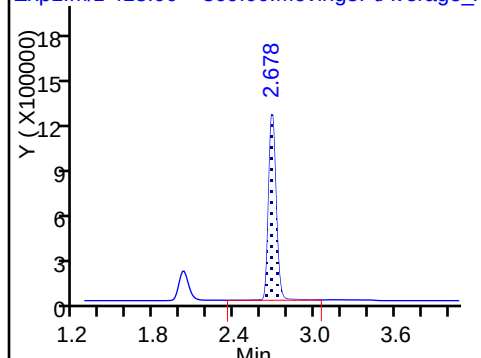


15 Perfluorooctanoic acid

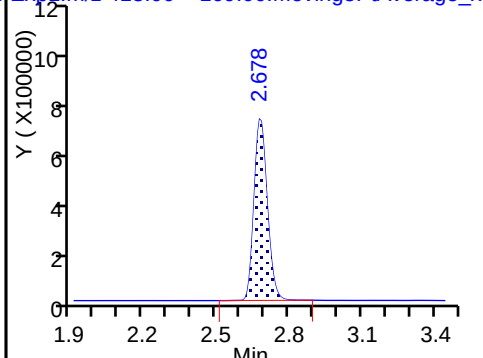
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

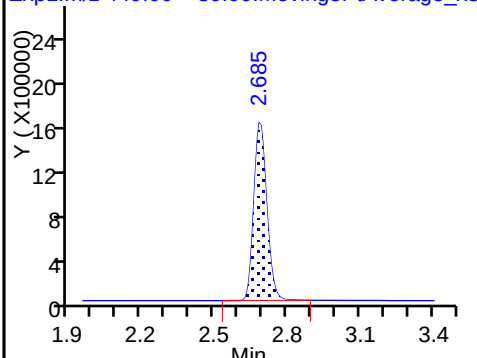
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Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



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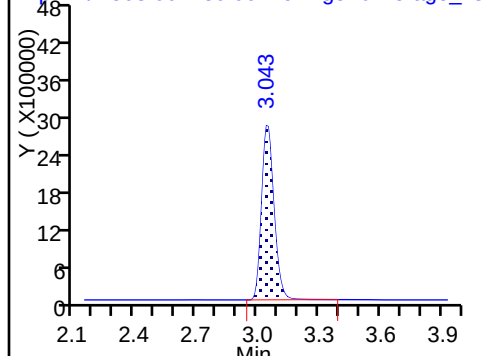


D 18 13C4 PFOS

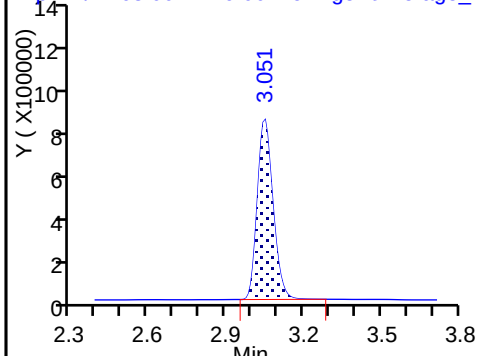
20 Perfluorononanoic acid

17 Perfluorooctane sulfonic acid

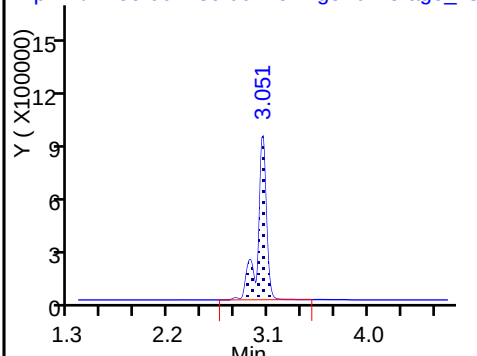
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x3



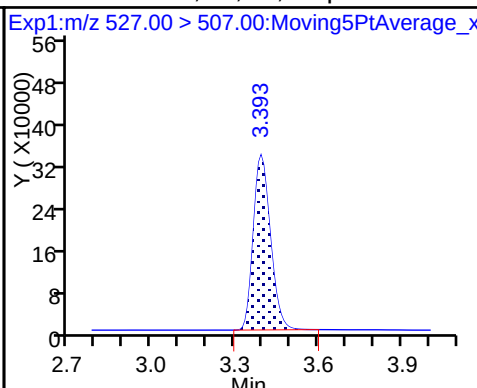
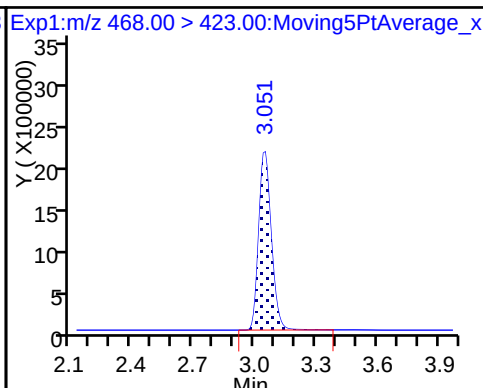
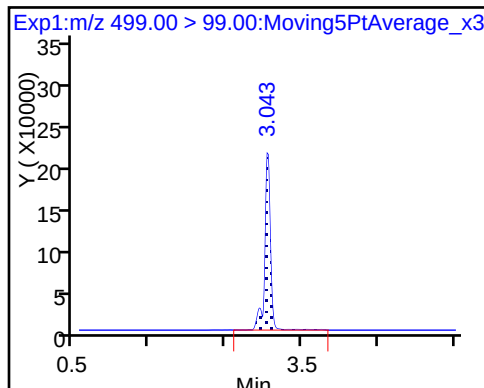
Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3



17 Perfluorooctane sulfonic acid

D 19 13C5 PFNA

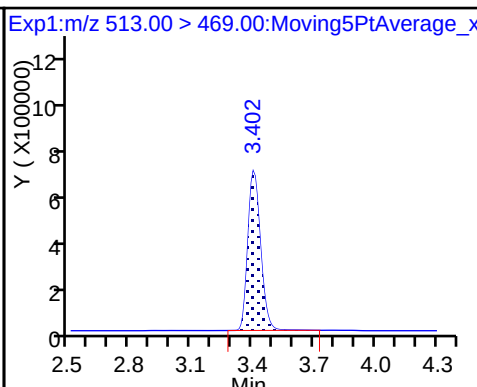
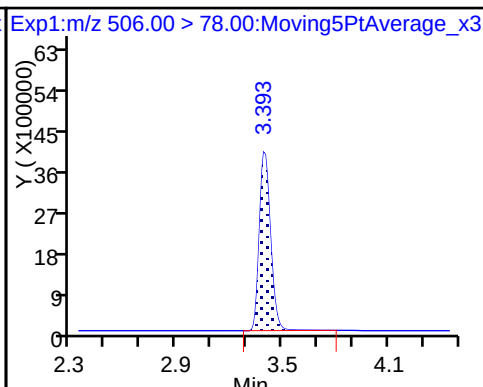
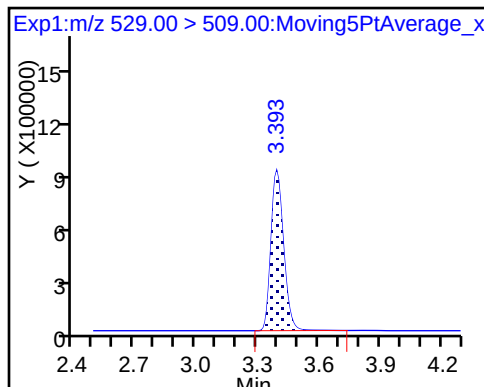
25 Sodium 1H,1H,2H,2H-perfluorodecane



D 26 M2-8:2FTS

D 21 13C8 FOSA

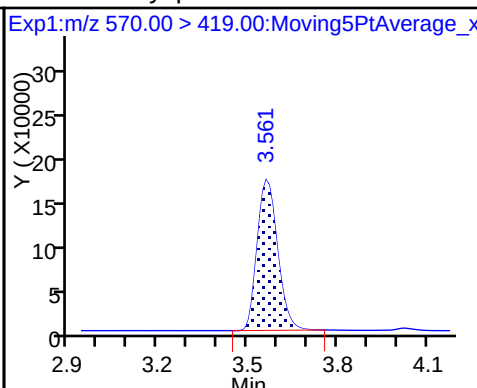
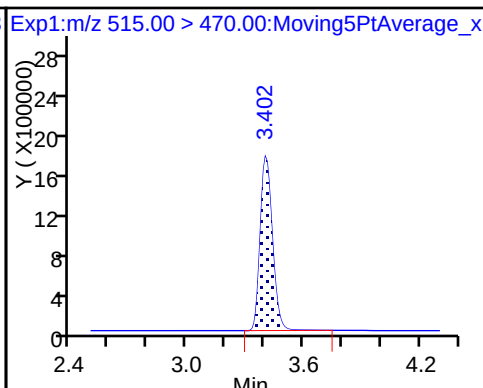
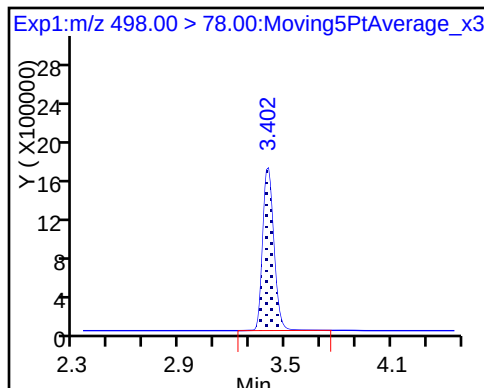
24 Perfluorodecanoic acid



22 Perfluorooctane Sulfonamide

D 23 13C2 PFDA

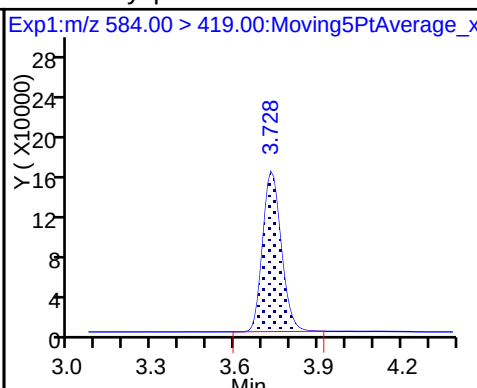
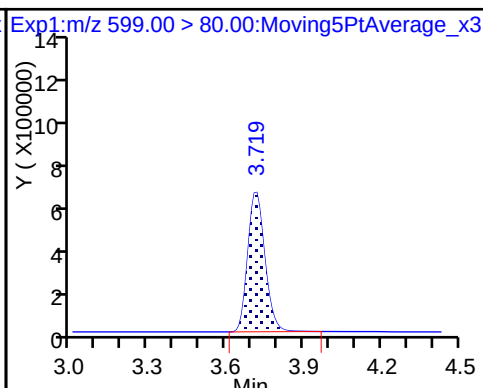
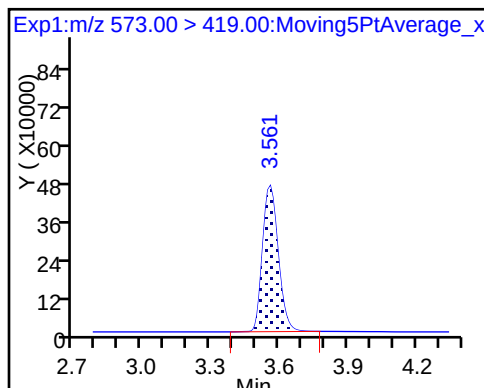
28 N-methyl perfluorooctane sulfonami



D 27 d3-NMeFOSAA

29 Perfluorodecane Sulfonic acid

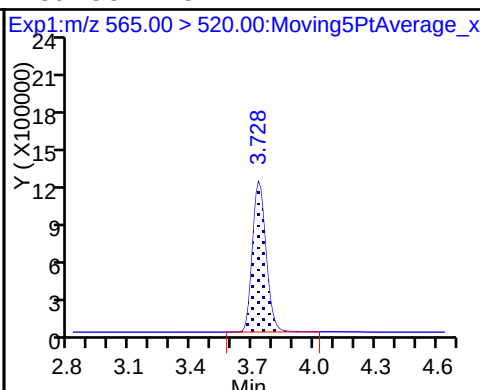
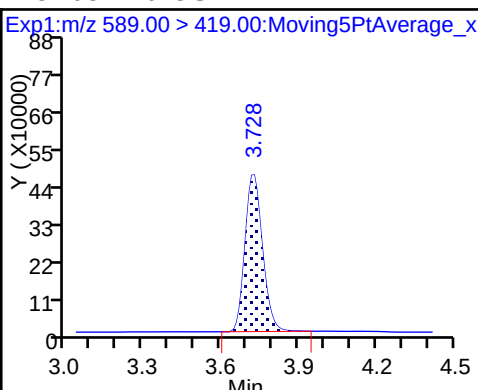
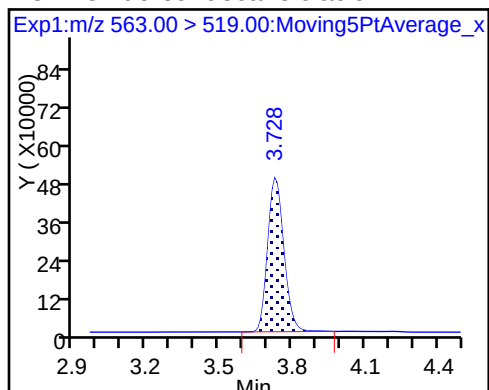
33 N-ethyl perfluorooctane sulfonamid



31 Perfluoroundecanoic acid

D 32 d5-NEtFOSAA

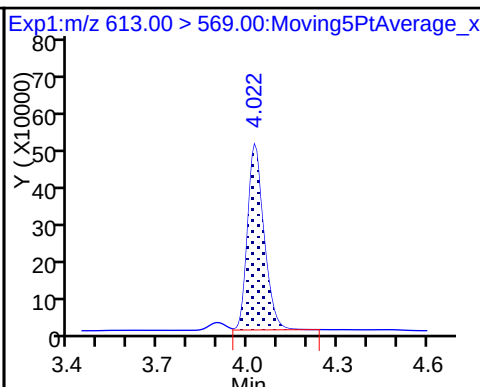
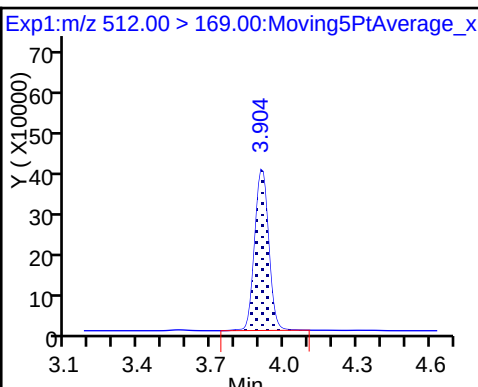
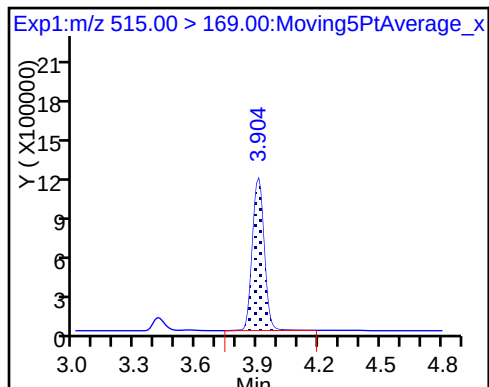
D 30 13C2 PFUnA



D 34 d-N-MeFOSA-M

35 MeFOSA

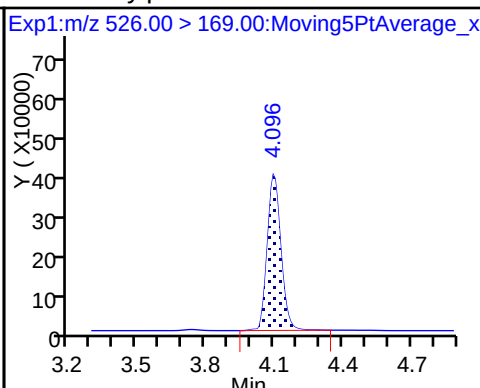
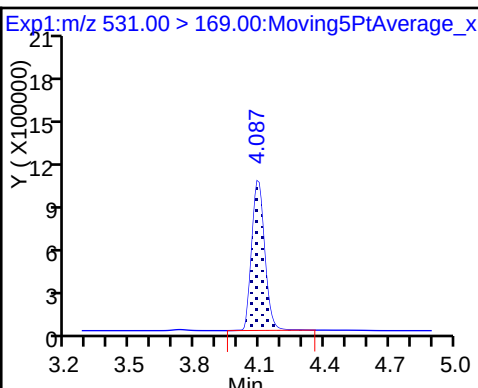
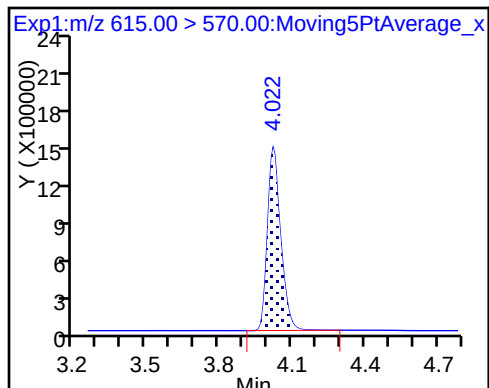
37 Perfluorododecanoic acid



D 36 13C2 PFDaA

D 38 d-N-EtFOSA-M

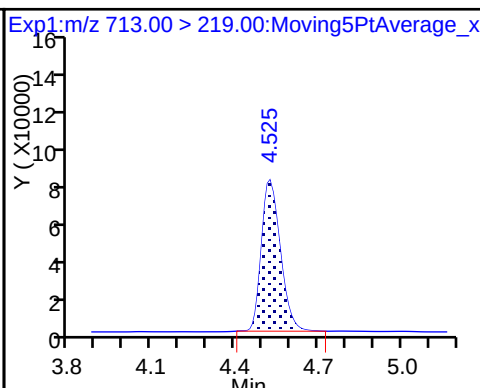
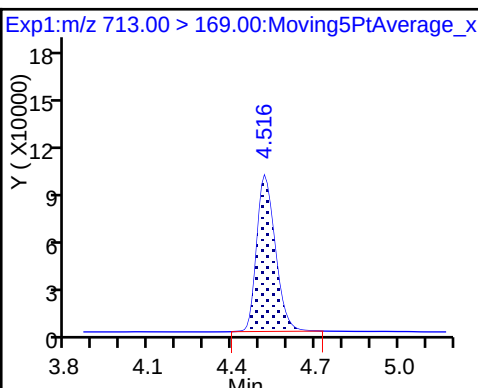
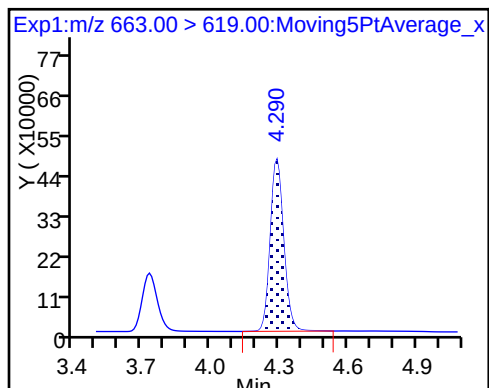
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

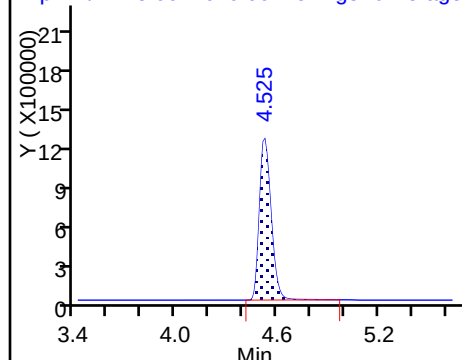


D 43 13C2-PFTeDA

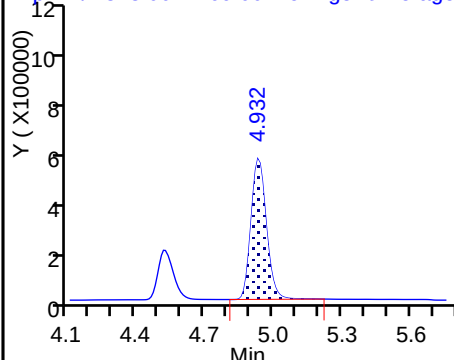
45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

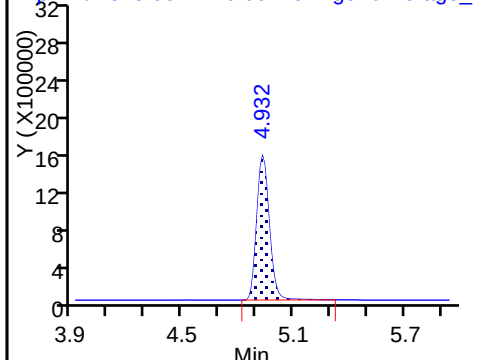
Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x

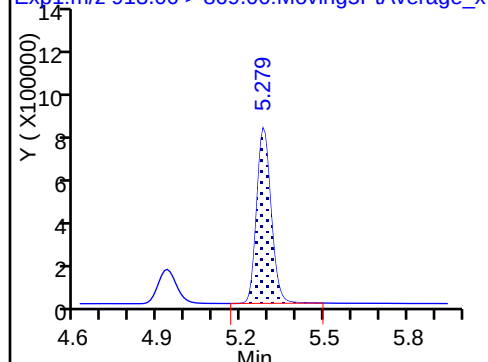


Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: ICV 320-185079/12 Calibration Date: 09/18/2017 16:48

Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34

Lab File ID: 2017.09.18ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9696	0.8393		43.3	50.0	-13.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.142	1.007		44.1	50.0	-11.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	71.67	68.84		42.5	44.3	-4.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9588	0.9479		49.4	50.0	-1.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	0.9535		48.6	50.0	-2.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.062	0.9762		43.4	47.3	-8.1	25.0
6:2FTS	AveID	0.8694	0.8858		48.3	47.4	1.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.076	1.049		48.7	50.0	-2.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.233	1.167		45.0	47.6	-5.4	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9795	0.8983		45.9	50.0	-8.3	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.091	0.9257		40.5	47.8	-15.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.009	0.9441		46.8	50.0	-6.4	25.0
8:2FTS	AveID	0.9241	0.9876		51.2	47.9	6.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9386	0.9007		48.0	50.0	-4.0	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9567	0.9746		50.9	50.0	1.9	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5931	0.5582		45.4	48.3	-5.9	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8825	0.9252		52.4	50.0	4.8	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.110	1.010		45.5	50.0	-9.0	25.0
MeFOSA	AveID	0.8977	0.9405		52.4	50.0	4.8	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9681	0.9155		47.3	50.0	-5.4	25.0
N-EtFOSA-M	AveID	0.9425	1.006		53.4	50.0	6.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9441	0.8875		47.0	50.0	-6.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2410	0.2307		47.9	50.0	-4.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9342		52.6	50.0	5.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.106	1.047		47.3	50.0	-5.3	25.0
13C4 PFBA	Ave	310657	293561		47.2	50.0	-5.5	50.0
13C5 PFPeA	Ave	188315	174574		46.4	50.0	-7.3	50.0
13C3-PFBS	Ave	5176	4561		41.0	46.5	-11.9	50.0
13C2 PFHxA	Ave	201238	180858		44.9	50.0	-10.1	50.0
13C4-PFHpA	Ave	183539	174427		47.5	50.0	-5.0	50.0
18O2 PFHxS	Ave	285701	267949		44.4	47.3	-6.2	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: ICV 320-185079/12 Calibration Date: 09/18/2017 16:48
 Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34
 Lab File ID: 2017.09.18ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	91556	80805		41.9	47.5	-11.7	50.0
13C4 PFOA	Ave	170967	147347		43.1	50.0	-13.8	50.0
13C4 PFOS	Ave	194576	181847		44.7	47.8	-6.5	50.0
13C5 PFNA	Ave	125094	115709		46.2	50.0	-7.5	50.0
13C8 FOSA	Ave	294227	263886		44.8	50.0	-10.3	50.0
M2-8:2FTS	Ave	61800	53500		41.5	47.9	-13.4	50.0
13C2 PFDA	Ave	103643	94807		45.7	50.0	-8.5	50.0
d3-NMeFOSAA	Ave	28332	23445		41.4	50.0	-17.3	50.0
d5-NEtFOSAA	Ave	27910	23139		41.5	50.0	-17.1	50.0
13C2 PFUnA	Ave	66858	57485		43.0	50.0	-14.0	50.0
d-N-MeFOSA-M	Ave	72752	63617		43.7	50.0	-12.6	50.0
13C2 PFDoA	Ave	60091	51344		42.7	50.0	-14.6	50.0
d-N-EtFOSA-M	Ave	65170	56668		43.5	50.0	-13.0	50.0
13C2-PFTeDA	Ave	73970	60178		40.7	50.0	-18.6	50.0
13C2-PFHxDA	Ave	89829	75427		42.0	50.0	-16.0	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_012.d
 Lims ID: ICV Full
 Client ID:
 Sample Type: ICV
 Inject. Date: 18-Sep-2017 16:48:02 ALS Bottle#: 36 Worklist Smp#: 12
 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\20170918-48083.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 08:24:40 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: phomsophat

Date: 18-Sep-2017 19:55:56

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	1.520	1.531	-0.011		14678041	47.2		94.5	41022	
2 Perfluorobutyric acid										
212.90 > 169.00	1.528	1.533	-0.005	1.000	12319330	43.3			1598	
D 3 13C5-PFPeA										
267.90 > 223.00	1.728	1.737	-0.009		8728706	46.4		92.7	50254	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.728	1.739	-0.011	1.000	8790742	44.1			3343	
D 47 13C3-PFBS										
301.90 > 83.00	1.755	1.760	-0.005		212080	41.0		88.1	4997	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.755	1.764	-0.009	1.000	13892580	42.5			66239	
298.90 > 99.00	1.755	1.764	-0.009	1.000	6411703		2.17(0.00-0.00)		44807	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.961	1.971	-0.010	1.000	4268931	50.4			34480	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.995	2.008	-0.013	1.000	8571484	49.4			14487	
D 7 13C2 PFHxA										
315.00 > 270.00	1.995	2.008	-0.013		9042877	44.9		89.9	36052	
D 9 13C4-PFHpA										
367.00 > 322.00	2.334	2.340	-0.006		8721362	47.5		95.0	20806	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.334	2.342	-0.008	1.000	8315818	48.6			10770	
D 11 18O2 PFHxS										
403.00 > 84.00	2.342	2.355	-0.013		12673968	44.4		93.8	22406	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.350	2.355	-0.005	1.000	12359552	43.4			16955	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.670	2.678	-0.008		3838221	41.9		88.3	18133	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.670	2.678	-0.008	1.000	3392718	48.3			27880	
* 62 13C2-PFOA										
415.00 > 370.00	2.692	2.701	-0.009		7757714	50.0			33661	
D 14 13C4 PFOA										
417.00 > 372.00	2.692	2.704	-0.012		7367333	43.1		86.2	20988	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.692	2.705	-0.013	1.000	7727928	48.7			824	
413.00 > 169.00	2.692	2.705	-0.013	1.000	4317151		1.79(0.90-1.10)		11848	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.699	2.711	-0.012	1.000	10099743	45.0			61136	
D 18 13C4 PFOS										
503.00 > 80.00	3.066	3.085	-0.019		8692306	44.7		93.5	27573	
D 19 13C5 PFNA										
468.00 > 423.00	3.075	3.086	-0.011		5785473	46.2		92.5	24082	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.075	3.086	-0.011	1.000	8038372	40.5			211316	
499.00 > 99.00	3.075	3.086	-0.011	1.000	1850683		4.34(0.90-1.10)		8063	
20 Perfluorononanoic acid										
463.00 > 419.00	3.075	3.087	-0.012	1.000	5197070	45.9			7249	
D 21 13C8 FOSA										
506.00 > 78.00	3.398	3.404	-0.006		13194315	44.8		89.7	36632	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.398	3.407	-0.009	1.000	12456681	46.8			47300	
D 26 M2-8:2FTS										
529.00 > 509.00	3.425	3.440	-0.015		2562657	41.5		86.6	17297	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.425	3.441	-0.016	1.000	2530829	51.2			24269	
D 23 13C2 PFDA										
515.00 > 470.00	3.434	3.450	-0.016		4740331	45.7		91.5	31987	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.434	3.450	-0.016	1.000	4269757	48.0			8960	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.592	3.607	-0.015		1172228	41.4		82.7	9362	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.592	3.613	-0.021	1.000	1142442	50.9			7812	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.749	3.765	-0.016	1.000	4898106	45.4			18451	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.759	3.778	-0.019		1156958	41.5		82.9	1716	
D 30 13C2 PFUnA										
565.00 > 520.00	3.769	3.783	-0.014		2874246	43.0		86.0	10931	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.769	3.785	-0.016	1.003	1070411	52.4			8980	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.769	3.785	-0.016	1.000	2901715	45.5			3672	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M	515.00 > 169.00	3.889	3.891	-0.002	3180852	43.7		87.4	621	
35 MeFOSA	512.00 > 169.00	3.889	3.897	-0.008	1.000	2991629	52.4		7915	
D 38 d-N-EtFOSA-M	531.00 > 169.00	4.070	4.078	-0.008	2833384	43.5		87.0	4431	
37 Perfluorododecanoic acid	613.00 > 569.00	4.061	4.081	-0.020	1.000	2350338	47.3		1540	
D 36 13C2 PFDaA	615.00 > 570.00	4.061	4.081	-0.020	2567190	42.7		85.4	12827	
39 N-ethylperfluoro-1-octanesulfonami	526.00 > 169.00	4.079	4.086	-0.007	1.000	2850535	53.4		4577	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.336	4.350	-0.014	1.000	2278487	47.0		380	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.566	4.585	-0.019	1.000	694092	47.9		4808	
713.00 > 219.00	4.578	4.585	-0.007	1.003	507352		1.37(0.00-0.00)		3074	
D 43 13C2-PFTeDA	715.00 > 670.00	4.578	4.593	-0.015	3008908	40.7		81.4	8367	
D 44 13C2-PFHxDA	815.00 > 770.00	4.989	5.011	-0.022	3771339	42.0		84.0	2768	
45 Perfluorohexadecanoic acid	813.00 > 769.00	4.989	5.013	-0.024	1.000	3523101	52.6		290	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.356	5.379	-0.023	1.000	3948349	47.3		538	

Reagents:

LCPFCIC_FULL_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18\ICAL_012.d

Injection Date: 18-Sep-2017 16:48:02

Instrument ID: A8_N

Lims ID: ICV Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 36

Worklist Smp#: 12

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

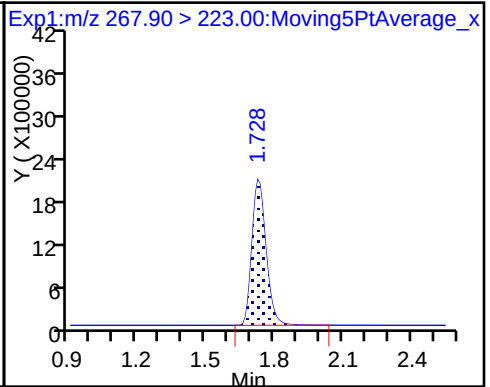
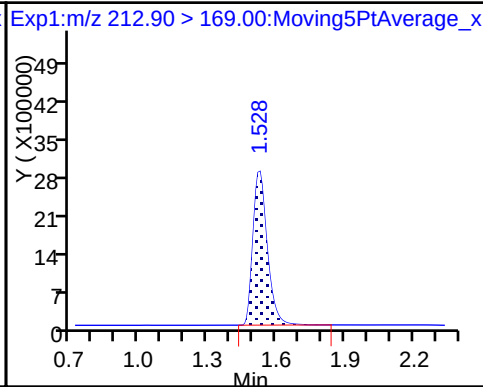
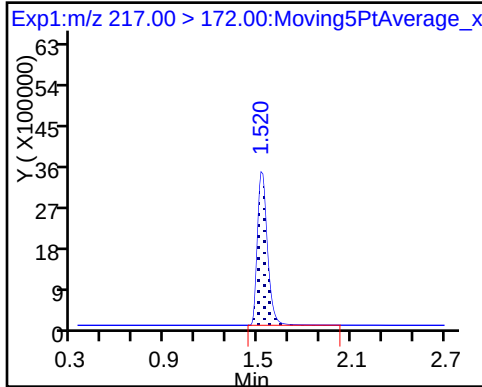
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

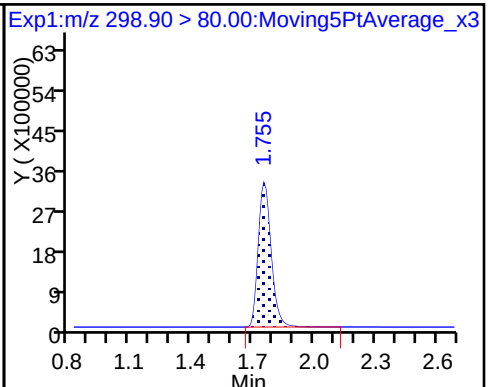
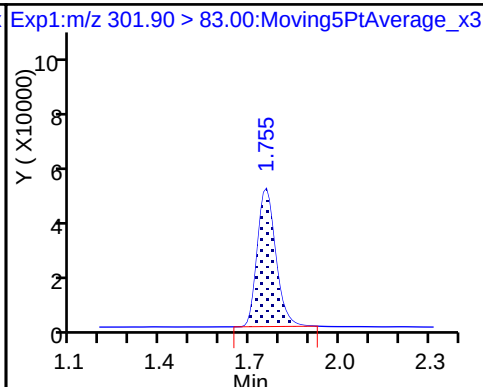
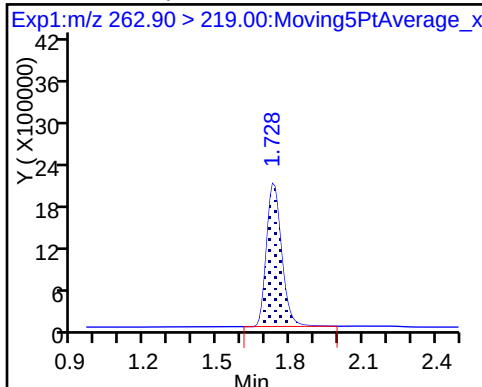
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

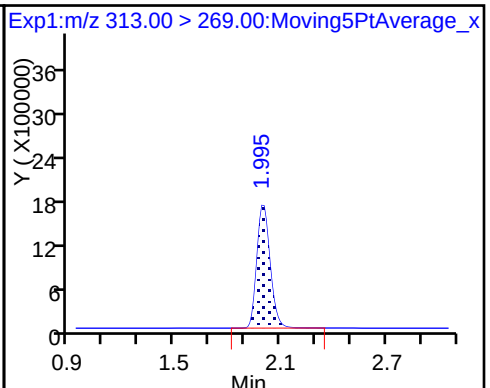
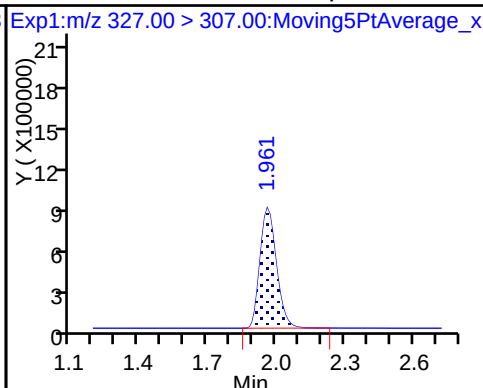
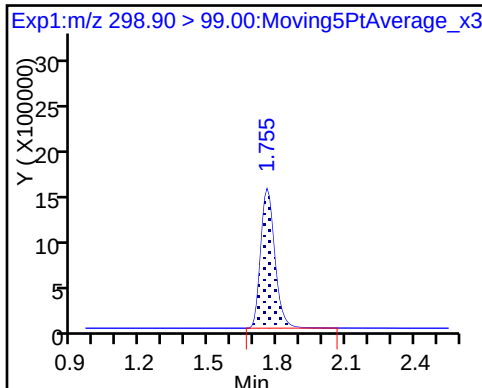
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

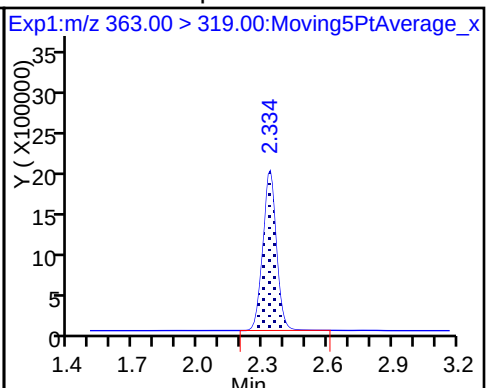
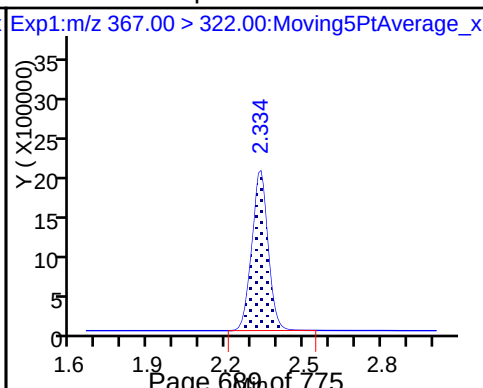
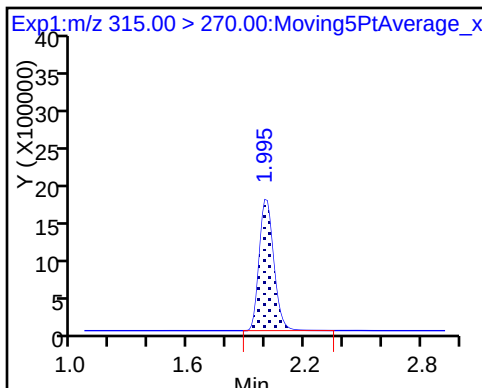
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

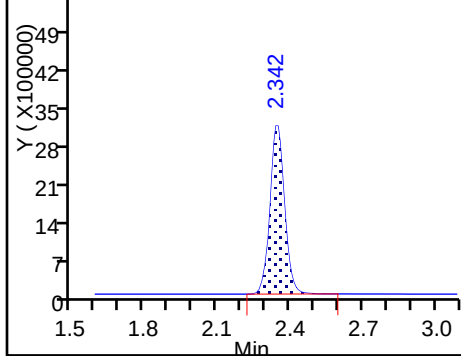


D 11 18O2 PFHxS

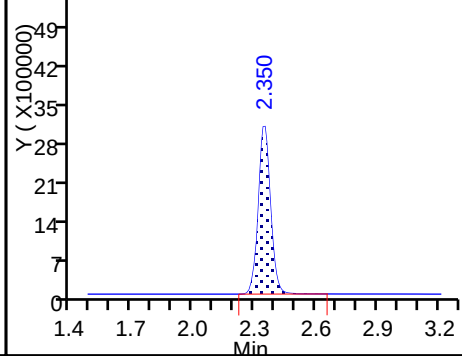
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

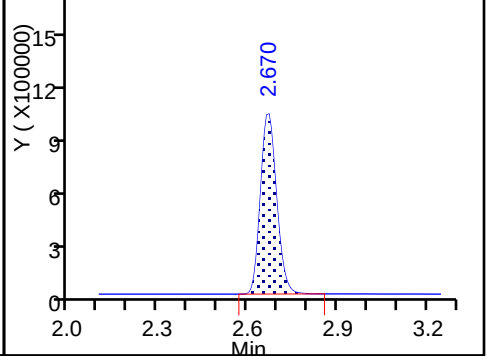
Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



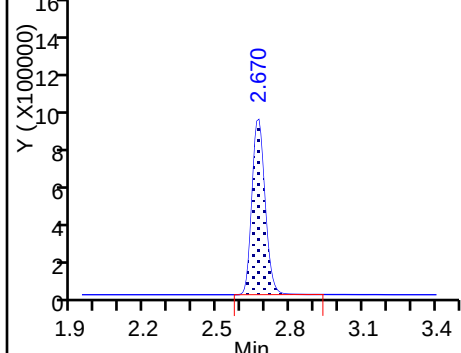
Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x3



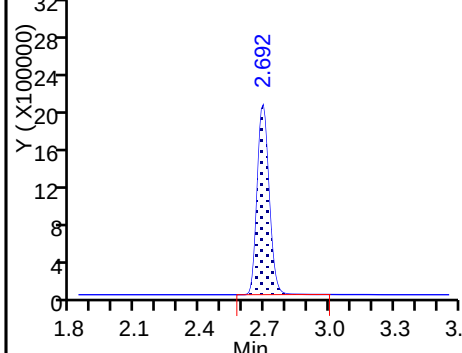
13 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 14 13C4 PFOA

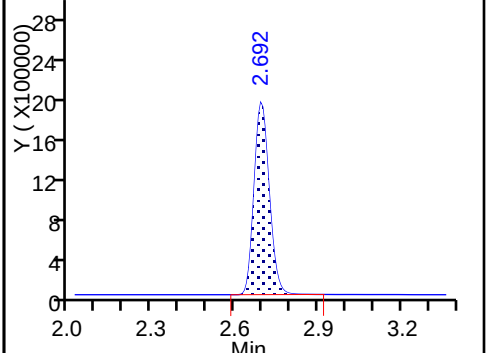
Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3



Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

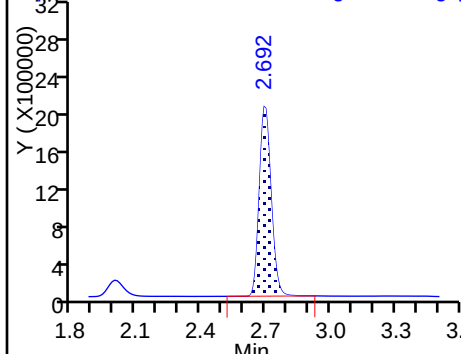


15 Perfluorooctanoic acid

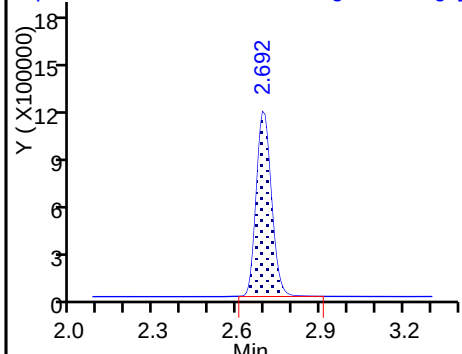
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

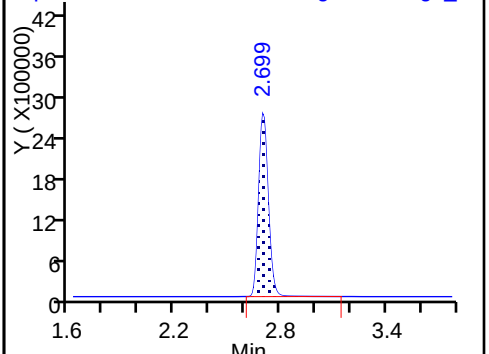
Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x3



Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

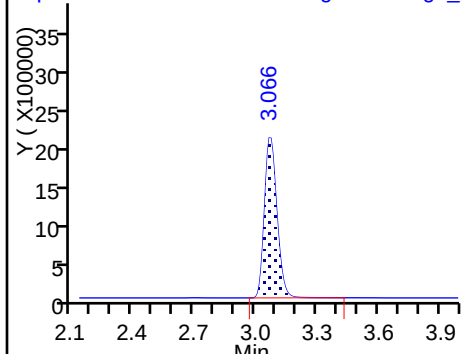


D 18 13C4 PFOS

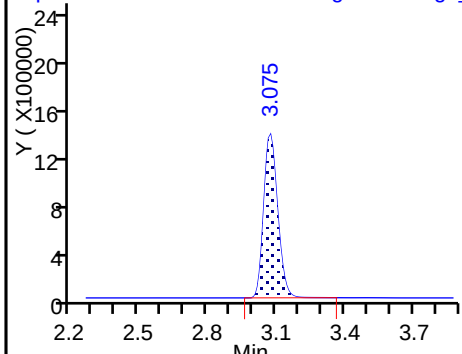
D 19 13C5 PFNA

17 Perfluorooctane sulfonic acid

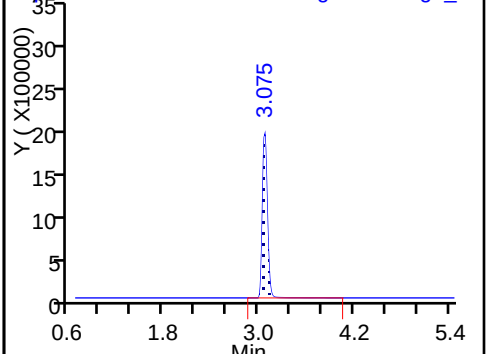
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



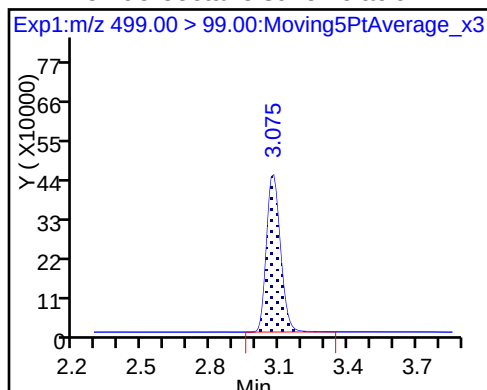
Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x3



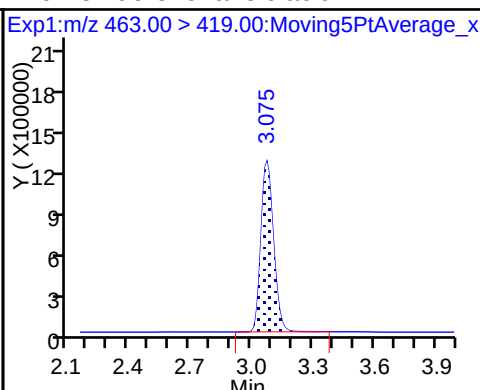
Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3



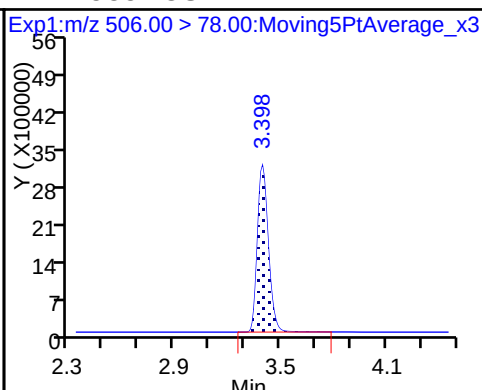
17 Perfluorooctane sulfonic acid



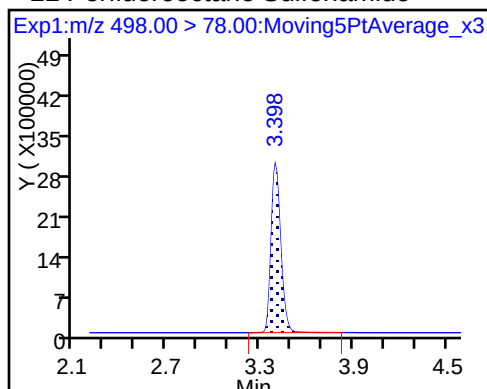
20 Perfluorononanoic acid



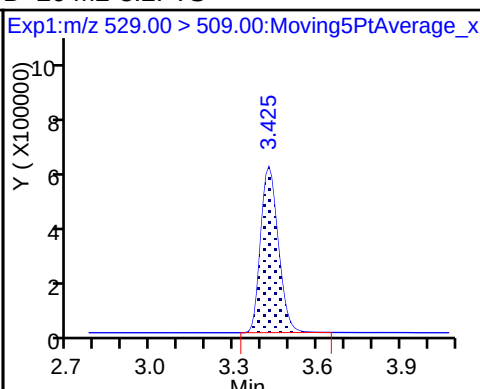
D 21 13C8 FOSA



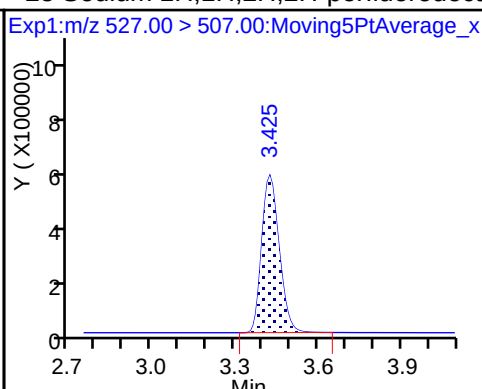
22 Perfluorooctane Sulfonamide



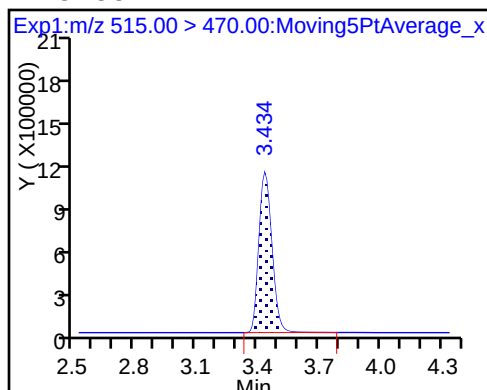
D 26 M2-8:2FTS



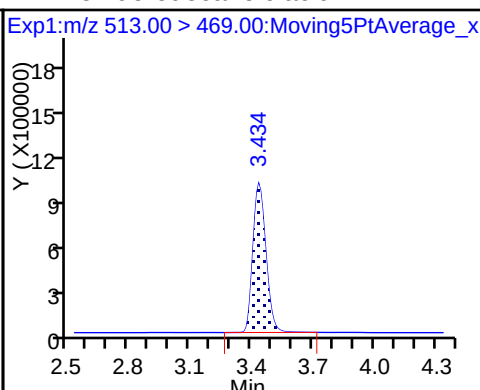
25 Sodium 1H,1H,2H,2H-perfluorodecane



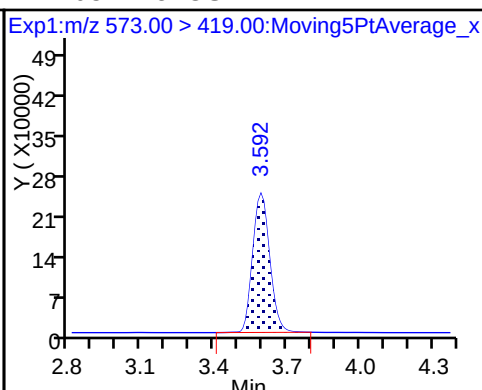
D 23 13C2 PFDA



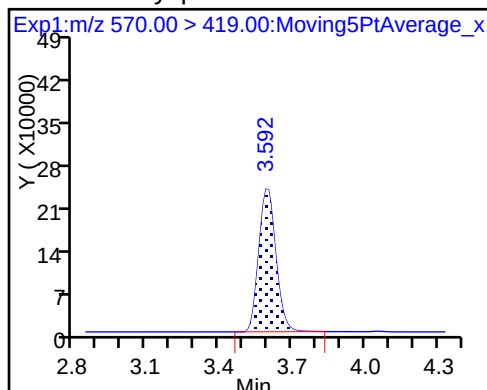
24 Perfluorodecanoic acid



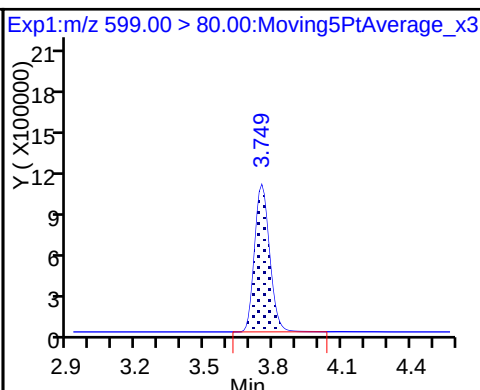
D 27 d3-NMeFOSAA



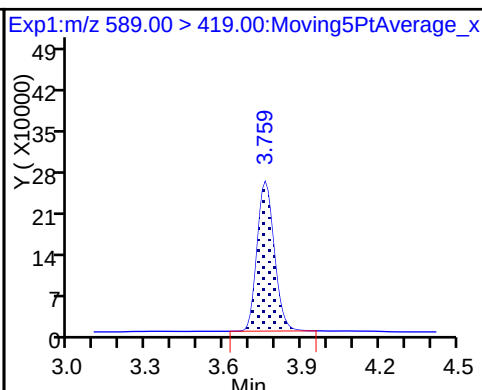
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid



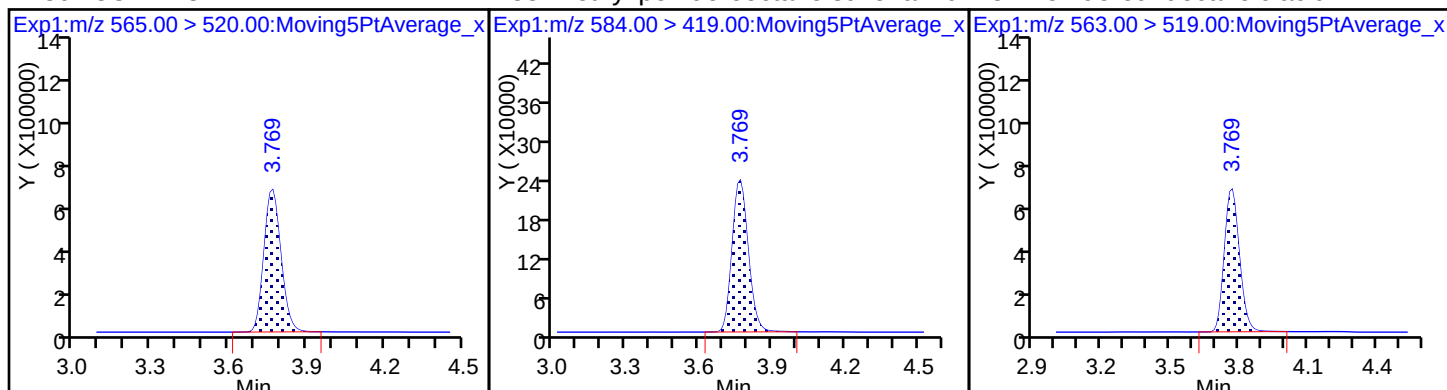
D 32 d5-NEtFOSAA



D 30 13C2 PFUnA

33 N-ethyl perfluorooctane sulfonamid

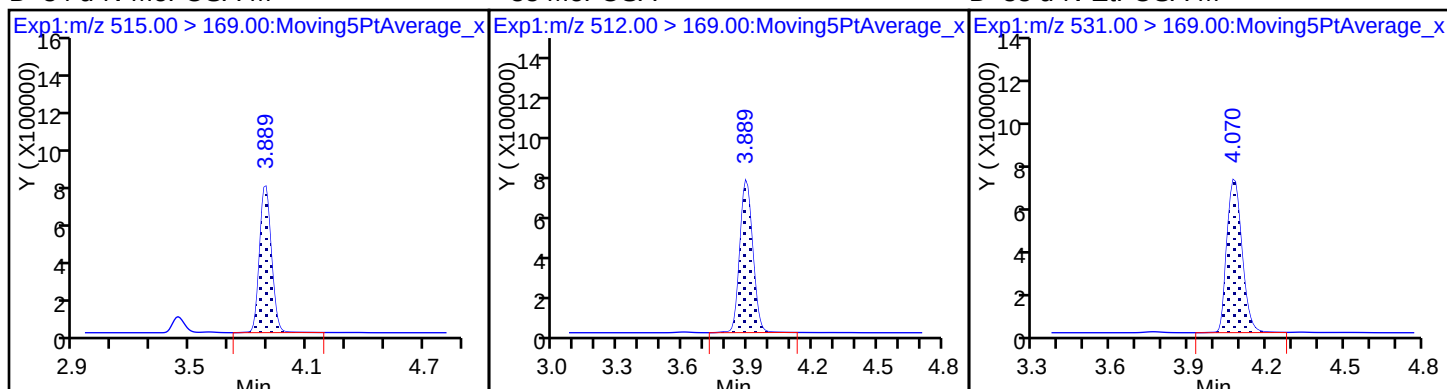
31 Perfluoroundecanoic acid



D 34 d-N-MeFOSA-M

35 MeFOSA

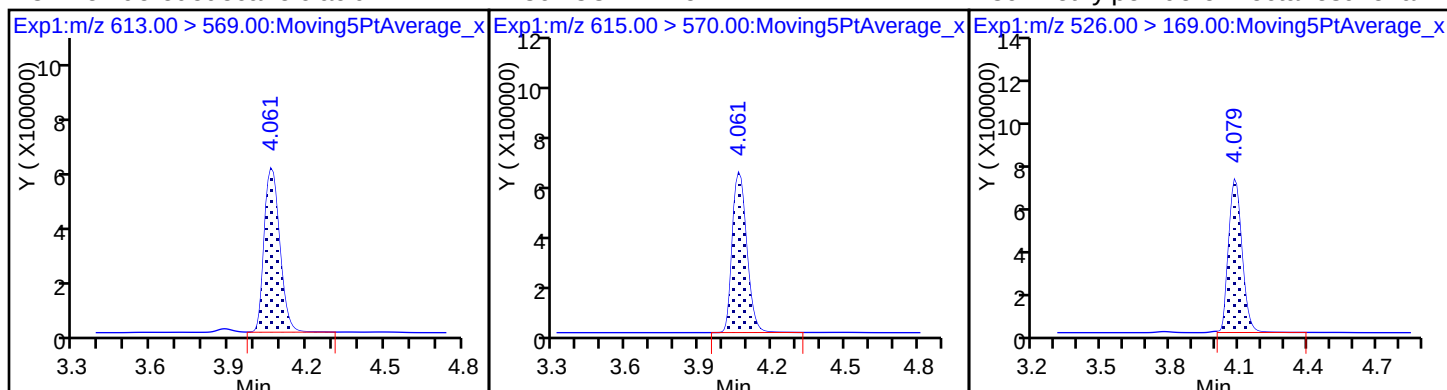
D 38 d-N-EtFOSA-M



37 Perfluorododecanoic acid

D 36 13C2 PFDaA

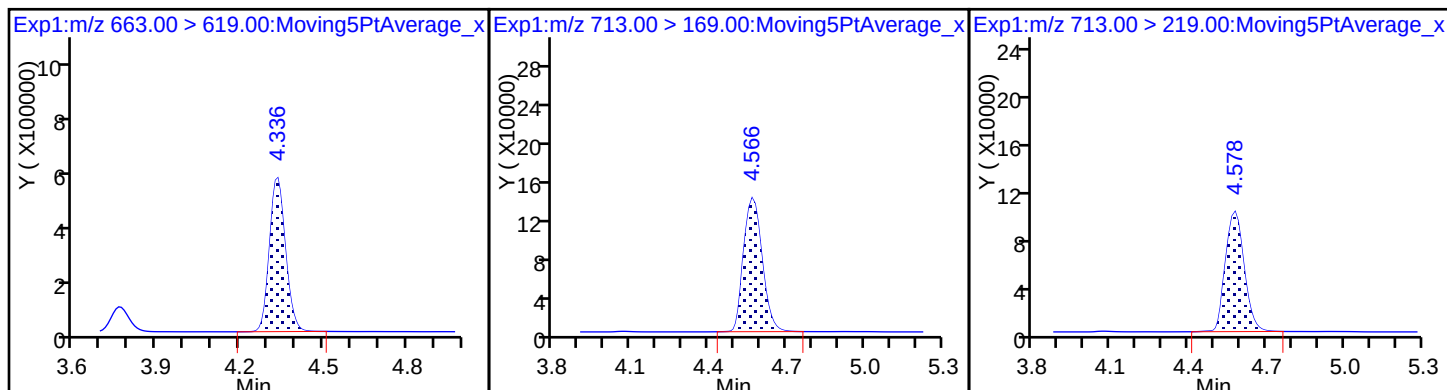
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

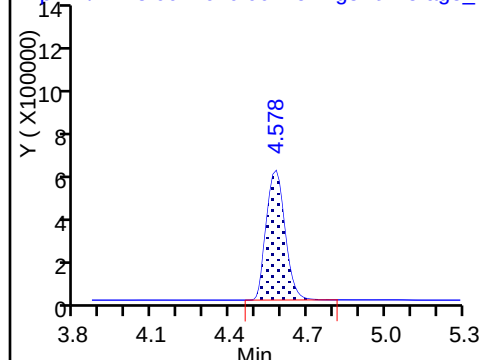


D 43 13C2-PFTeDA

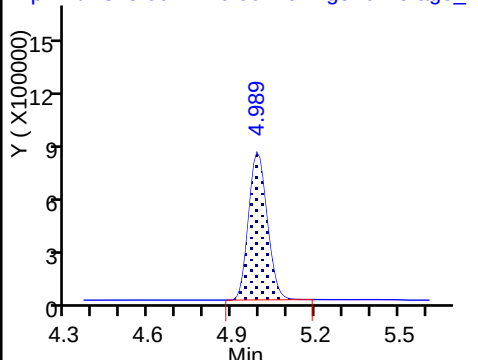
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

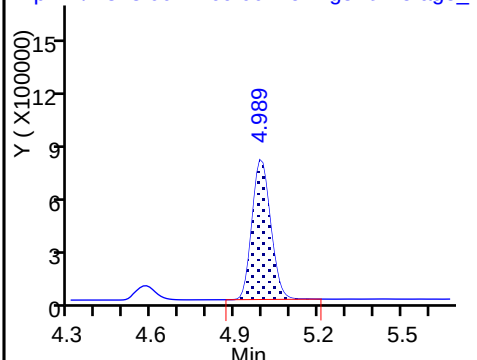
Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

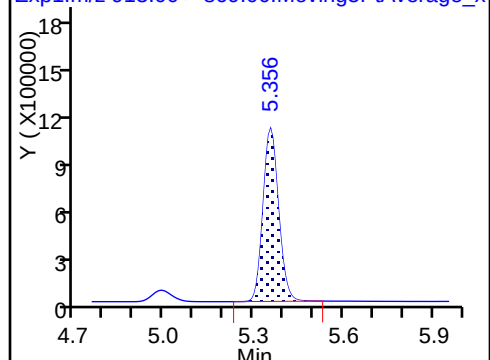


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCVL 320-185175/2 Calibration Date: 09/19/2017 09:58

Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34

Lab File ID: 2017.09.19A_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9696	1.061		1.09	1.00	9.5	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.142	1.245		1.09	1.00	9.0	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	71.67	75.08		0.926	0.884	4.8	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9588	1.107		1.15	1.00	15.4	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	1.077		1.10	1.00	9.9	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.062	1.331		1.14	0.910	25.3	50.0
6:2FTS	AveID	0.8694	0.9432		1.03	0.948	8.5	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.076	1.181		1.10	1.00	9.8	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.233	1.324		1.02	0.952	7.4	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.091	0.999		0.849	0.928	-8.5	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9795	1.003		1.02	1.00	2.4	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.009	1.094		1.08	1.00	8.4	50.0
8:2FTS	AveID	0.9241	1.006		1.04	0.958	8.9	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9386	1.029		1.10	1.00	9.7	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9567	0.9842		1.03	1.00	2.9	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5931	0.5858		0.952	0.964	-1.2	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8825	0.8804		0.998	1.00	-0.2	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.110	1.072		0.966	1.00	-3.4	50.0
MeFOSA	AveID	0.8977	0.8075		0.900	1.00	-10.0	50.0
N-EtFOSA-M	AveID	0.9425	0.8984		0.953	1.00	-4.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9681	0.9047		0.935	1.00	-6.5	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9441	0.9400		0.996	1.00	-0.4	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2410	0.2614		1.08	1.00	8.5	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.285		0.958	1.00	-4.2	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.106	0.0430		0.200	1.00	-96.1*	50.0
13C4 PFBA	Ave	310657	362042		58.3	50.0	16.5	50.0
13C5 PFPeA	Ave	188315	242750		64.5	50.0	28.9	50.0
13C3-PFBS	Ave	5176	6830		61.4	46.5	31.9	50.0
13C2 PFHxA	Ave	201238	257944		64.1	50.0	28.2	50.0
13C4-PFHpA	Ave	183539	252341		68.7	50.0	37.5	50.0
18O2 PFHxS	Ave	285701	350219		58.0	47.3	22.6	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-185175/2 Calibration Date: 09/19/2017 09:58
 Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34
 Lab File ID: 2017.09.19A_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	91556	132763		68.9	47.5	45.0	50.0
13C4 PFOA	Ave	170967	248007		72.5	50.0	45.1	50.0
13C4 PFOS	Ave	194576	252527		62.0	47.8	29.8	50.0
13C5 PFNA	Ave	125094	179380		71.7	50.0	43.4	50.0
13C8 FOSA	Ave	294227	349873		59.5	50.0	18.9	50.0
M2-8:2FTS	Ave	61800	84025		65.1	47.9	36.0	50.0
13C2 PFDA	Ave	103643	150650		72.7	50.0	45.4	50.0
d3-NMeFOSAA	Ave	28332	40389		71.3	50.0	42.6	50.0
13C2 PFUnA	Ave	66858	100288		75.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	27910	41135		73.7	50.0	47.4	50.0
d-N-MeFOSA-M	Ave	72752	88558		60.9	50.0	21.7	50.0
d-N-EtFOSA-M	Ave	65170	78589		60.3	50.0	20.6	50.0
13C2 PFDoA	Ave	60091	86876		72.3	50.0	44.6	50.0
13C2-PFTeDA	Ave	73970	94568		63.9	50.0	27.8	50.0
13C2-PFHxDA	Ave	89829	121455		67.6	50.0	35.2	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48111.b\2017.09.19A_006.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 19-Sep-2017 09:58:30 ALS Bottle#: 29 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*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48111.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 11:22:57 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK006

First Level Reviewer: westendorfc

Date: 19-Sep-2017 11:20:00

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	1.530	1.528	0.002		18102104	58.3		117	47293	
2 Perfluorobutyric acid										
212.90 > 169.00	1.530	1.528	0.002	1.000	384275	1.09		109	79.9	
D 3 13C5-PFPeA										
267.90 > 223.00	1.738	1.727	0.011		12137498	64.5		129	69484	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.738	1.727	0.011	1.000	302276	1.09		109	124	
D 47 13C3-PFBS										
301.90 > 83.00	1.756	1.754	0.002		317597	61.4		132	9467	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.756	1.754	0.002	1.000	453322	0.9260		105	10730	
298.90 > 99.00	1.756	1.754	0.002	1.000	191396		2.37(0.00-0.00)		4133	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.963	1.960	0.003	1.000	130413	0.9377		100	6642	
D 7 13C2 PFHxA										
315.00 > 270.00	1.997	1.994	0.003		12897214	64.1		128	35512	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.997	1.994	0.003	1.000	285457	1.15		115	818	
D 9 13C4-PFHpA										
367.00 > 322.00	2.330	2.330	0.0		12617058	68.7		137	21846	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.330	2.330	0.0	1.000	271710	1.10		110	437	
D 11 18O2 PFHxS										
403.00 > 84.00	2.346	2.338	0.008		16565340	58.0		123	21179	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.346	2.338	0.008	1.000	424182	1.14		125	5375	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.670	2.657	0.013		6306263	68.9		145	23125	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.670	2.665	0.005	1.000	118716	1.03		108	3464	
* 62 13C2-PFOA										
415.00 > 370.00	2.691	2.679	0.012		12327173	50.0		100	37058	
D 14 13C4 PFOA										
417.00 > 372.00	2.691	2.686	0.005		12400373	72.5		145	33021	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.691	2.686	0.005	1.000	292973	1.10		110	32.6	
413.00 > 169.00	2.691	2.686	0.005	1.000	162262		1.81(0.90-1.10)		2188	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.699	2.694	0.005	1.000	318328	1.02		107	5765	
D 19 13C5 PFNA										
468.00 > 423.00	3.065	3.059	0.006		8969020	71.7		143	19344	
D 18 13C4 PFOS										
503.00 > 80.00	3.065	3.059	0.006		12070792	62.0		130	29121	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.065	3.059	0.006	1.000	234079	0.8493		91.5	3258	
499.00 > 99.00	3.065	3.059	0.006	1.000	56493		4.14(0.90-1.10)		433	
20 Perfluorononanoic acid										
463.00 > 419.00	3.073	3.059	0.014	1.000	179836	1.02		102	248	
D 21 13C8 FOSA										
506.00 > 78.00	3.381	3.378	0.003		17493650	59.5		119	28445	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.381	3.378	0.003	1.000	382823	1.08		108	5176	
D 26 M2-8:2FTS										
529.00 > 509.00	3.425	3.413	0.012		4024797	65.1		136	16311	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.425	3.413	0.012	1.000	81002	1.04		109	2724	
D 23 13C2 PFDA										
515.00 > 470.00	3.433	3.422	0.011		7532506	72.7		145	16802	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.433	3.422	0.011	1.000	155056	1.10		110	317	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.585	3.587	-0.002		2019454	71.3		143	12239	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.596	3.587	0.009	1.003	39752	1.03		103	402	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.753	3.743	0.010	1.000	142614	0.9521		98.8	2856	
D 30 13C2 PFUnA										
565.00 > 520.00	3.763	3.753	0.010		5014401	75.0		150	18772	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.763	3.753	0.010		2056769	73.7		147	2619	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.763	3.762	0.001	1.000	36216	1.00		99.8	571	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.763	3.762	0.001	1.000	107557	0.9664		96.6	171	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.872	3.865	0.007		4427879	60.9		122	530	
35 MeFOSA										
512.00 > 169.00	3.872	3.873	-0.001	1.000	71506	0.8995		90.0	2183	
D 36 13C2 PFDaA										
615.00 > 570.00	4.064	4.056	0.008		4343809	72.3		145	19816	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.064	4.056	0.008	1.000	78600	0.9346		93.5	44.1	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.054	4.056	-0.002		3929472	60.3		121	6057	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.064	4.065	-0.001	1.000	70605	0.9532		95.3	2202	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.336	4.330	0.006	1.000	81662	1.00		99.6	8.3	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.586	4.569	0.017		4728376	63.9		128	21478	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.575	4.569	0.006	1.000	24722	1.08		108	223	
713.00 > 219.00	4.586	4.569	0.017	1.002	18224		1.36(0.00-0.00)		136	
D 44 13C2-PFHxDA										
815.00 > 770.00	5.002	4.998	0.004		6072774	67.6		135	8720	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.012	4.998	0.014	1.000	156013	0.9584		95.8	10.9	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.256	5.371	-0.115	1.000	5221	0.0389		3.9	0.4	

Reagents:

LCPFC_FULL-L2_00009

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48111.b\2017.09.19A_006.d

Injection Date: 19-Sep-2017 09:58:30

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 29

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

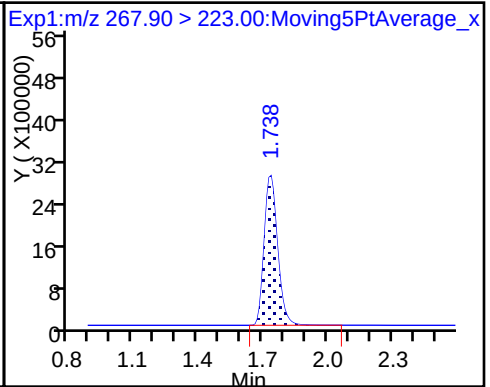
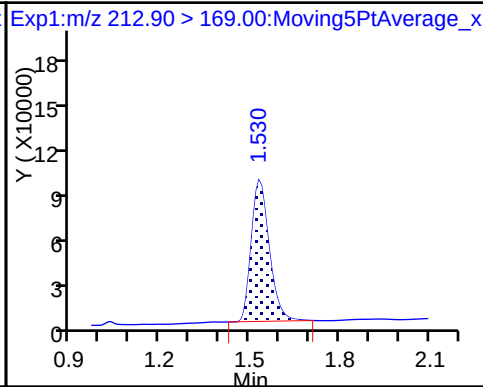
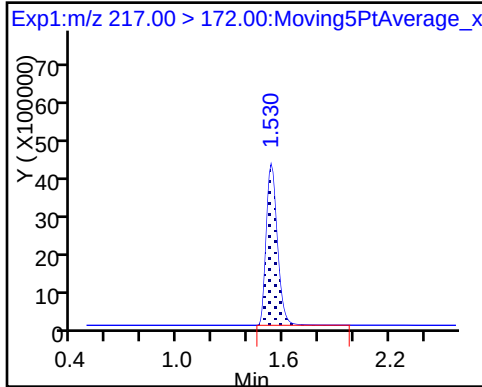
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

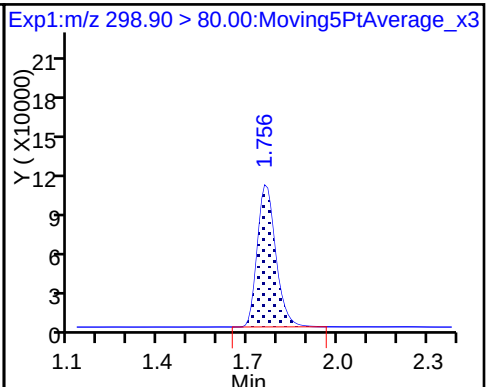
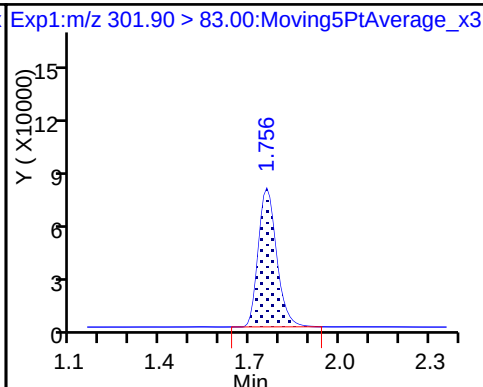
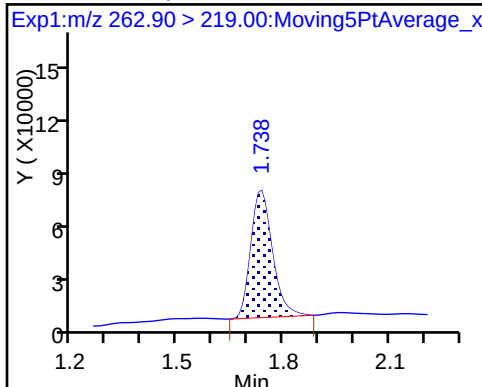
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

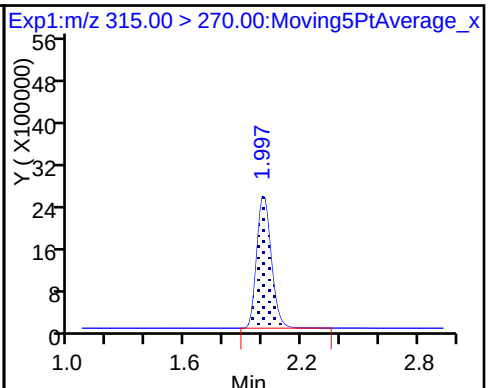
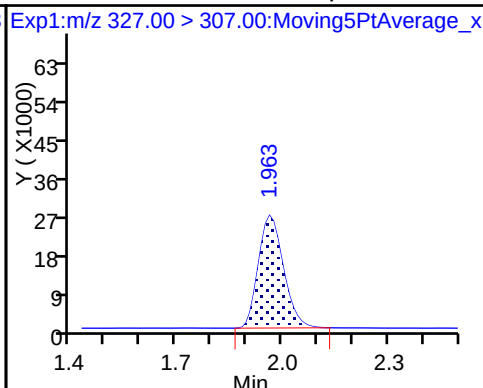
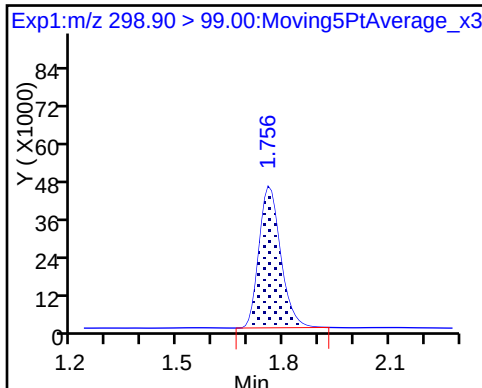
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

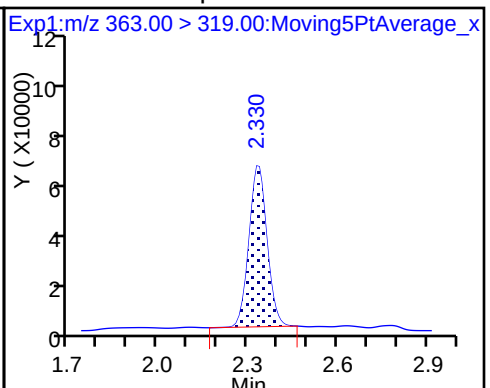
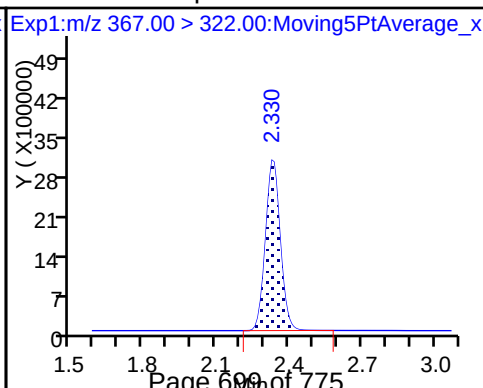
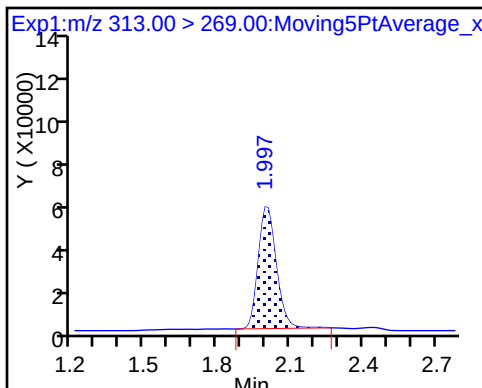
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

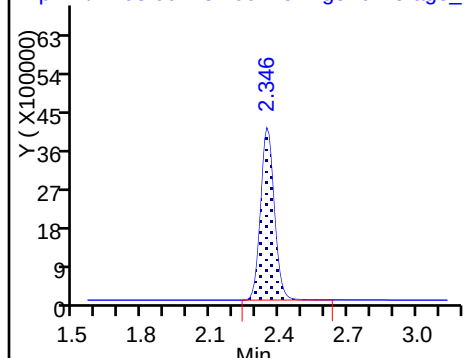


D 11 18O2 PFHxS

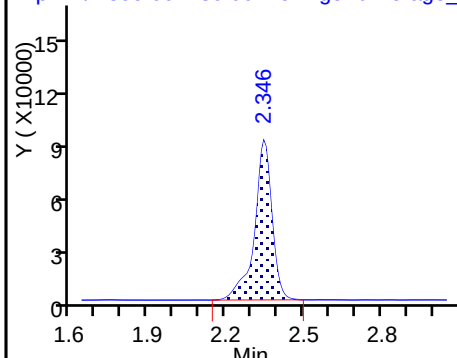
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

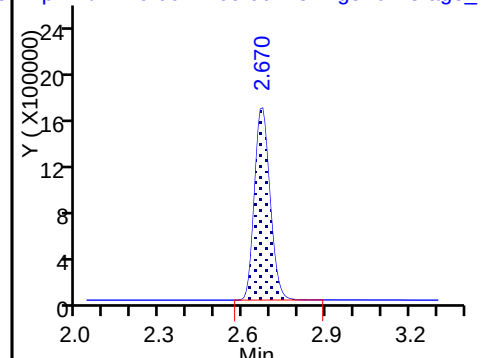
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Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



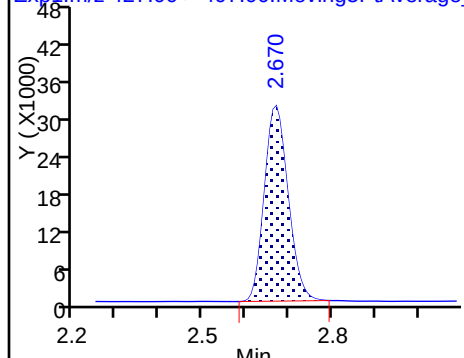
Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x3



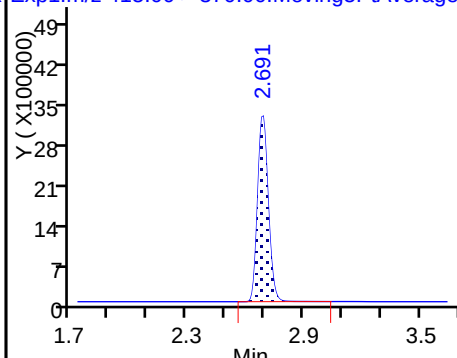
13 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 14 13C4 PFOA

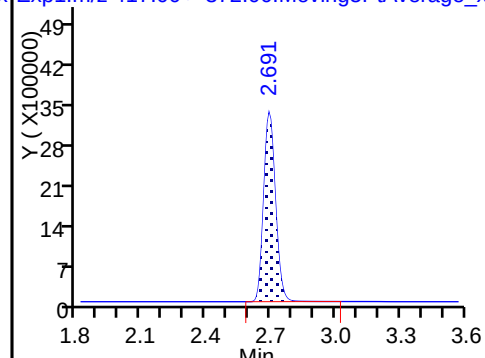
Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3



Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

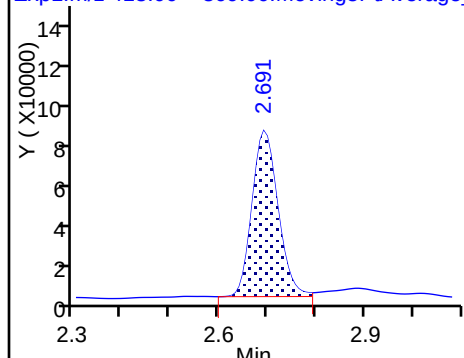


15 Perfluorooctanoic acid

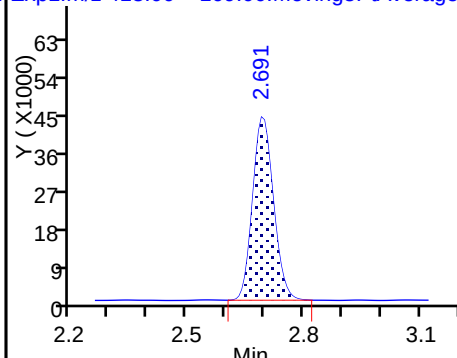
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

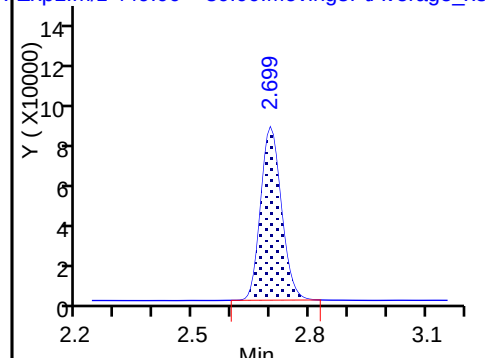
Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x3



Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

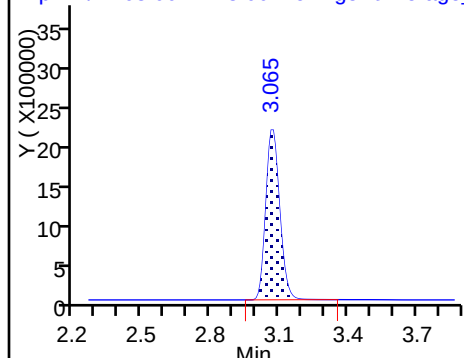


D 19 13C5 PFNA

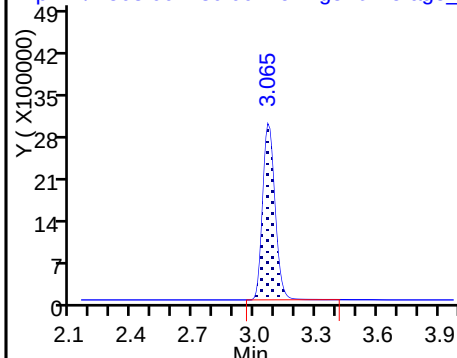
D 18 13C4 PFOS

17 Perfluorooctane sulfonic acid

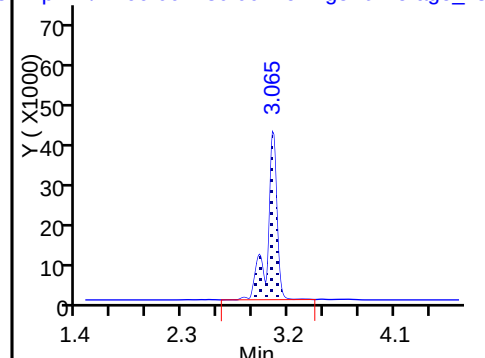
Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x3



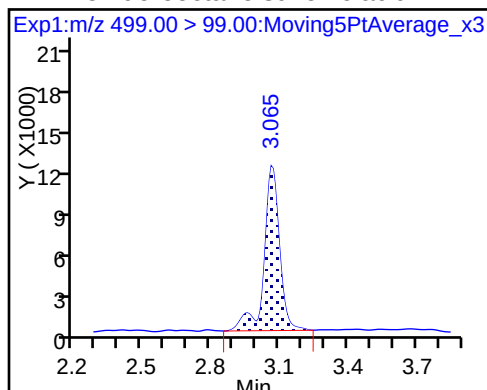
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



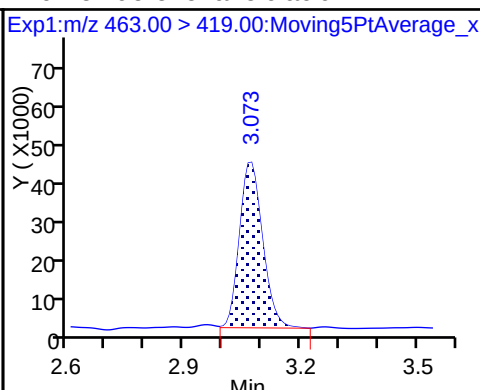
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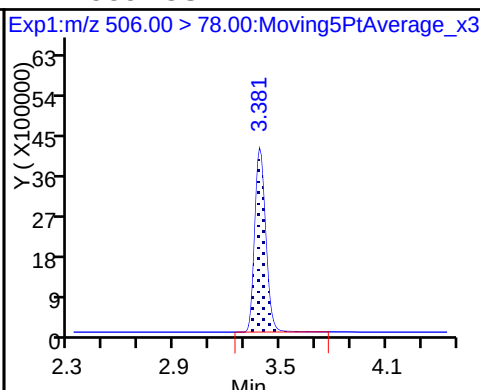
17 Perfluorooctane sulfonic acid



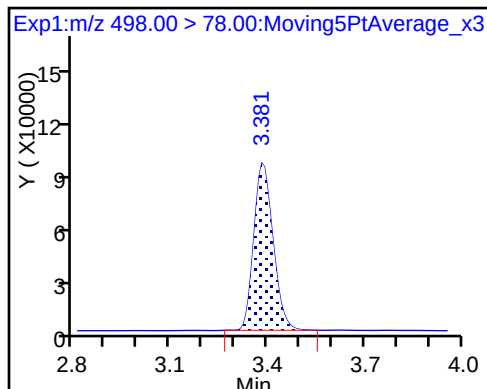
20 Perfluorononanoic acid



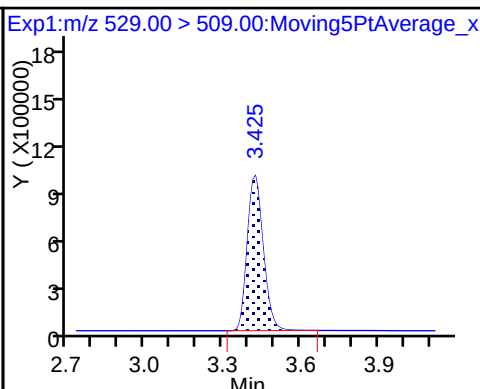
D 21 13C8 FOSA



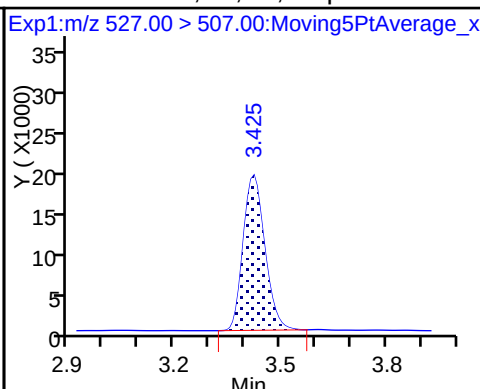
22 Perfluorooctane Sulfonamide



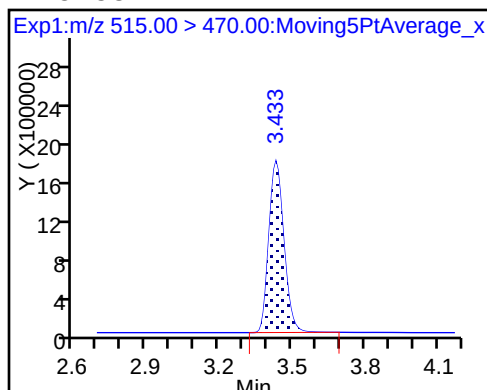
D 26 M2-8:2FTS



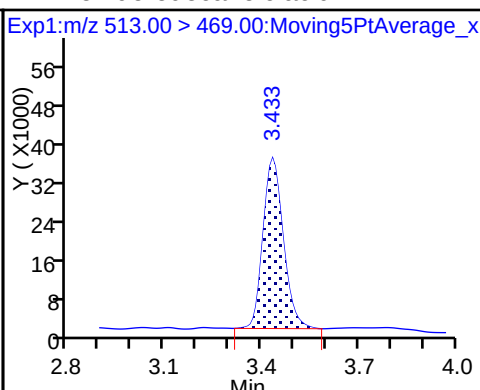
25 Sodium 1H,1H,2H,2H-perfluorodecane



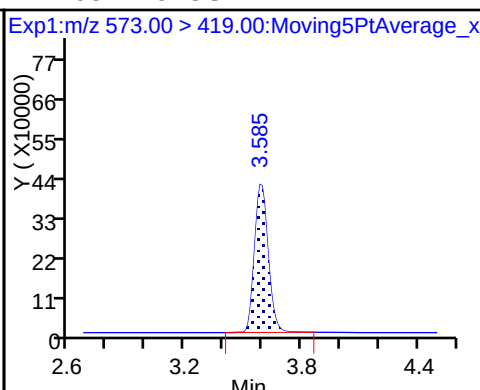
D 23 13C2 PFDA



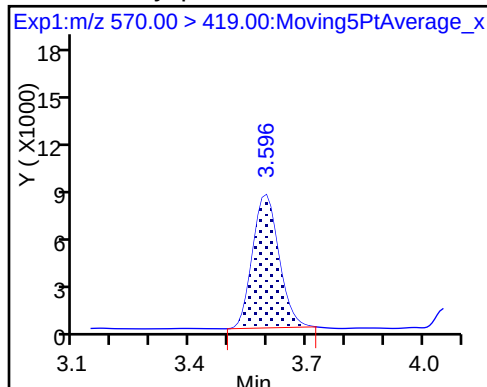
24 Perfluorodecanoic acid



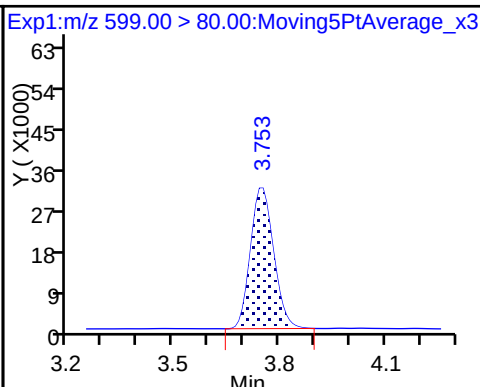
D 27 d3-NMeFOSAA



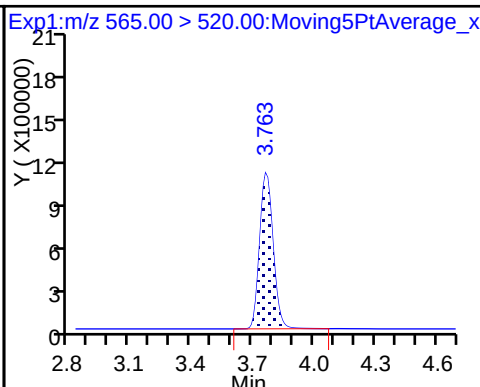
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid



D 30 13C2 PFUnA

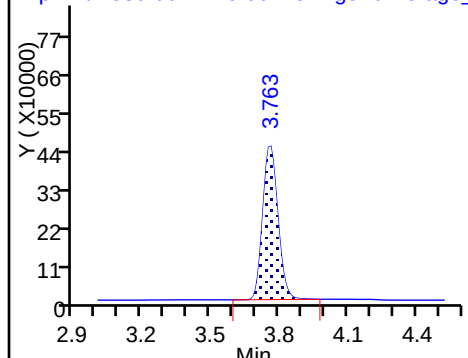


D 32 d5-NEtFOSAA

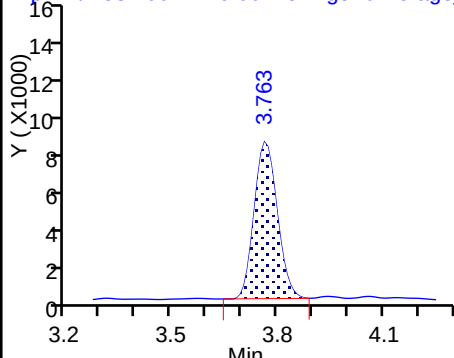
33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

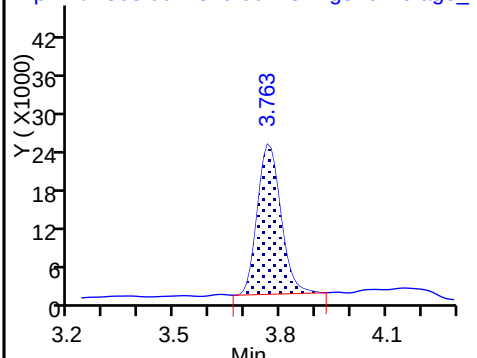
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Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x



Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x

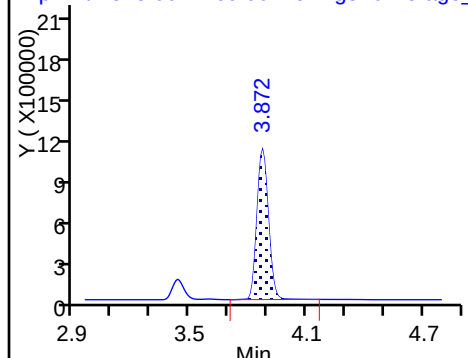


D 34 d-N-MeFOSA-M

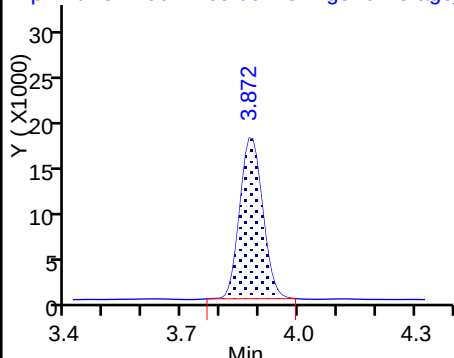
35 MeFOSA

D 36 13C2 PFDaA

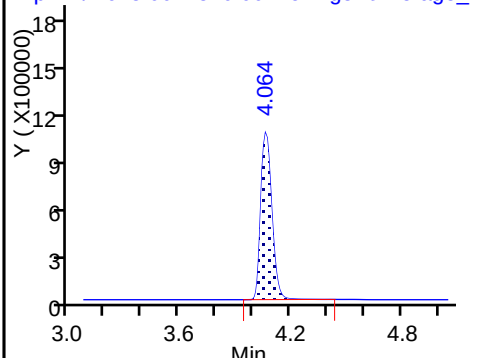
Exp1:m/z 515.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 512.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x

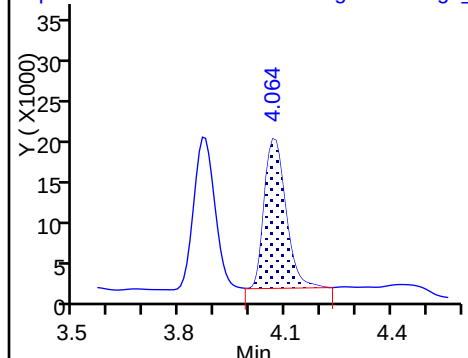


37 Perfluorododecanoic acid

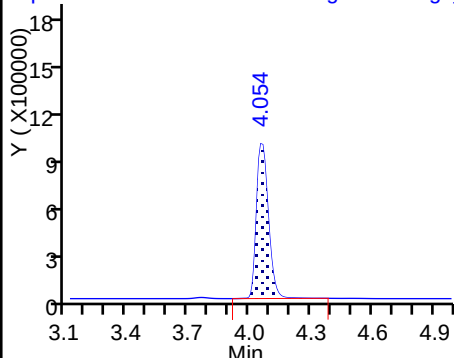
D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

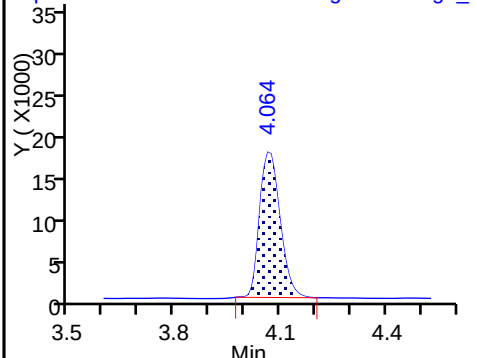
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Exp1:m/z 531.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 526.00 > 169.00:Moving5PtAverage_x

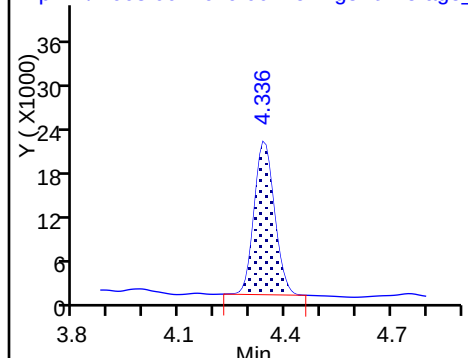


41 Perfluorotridecanoic acid

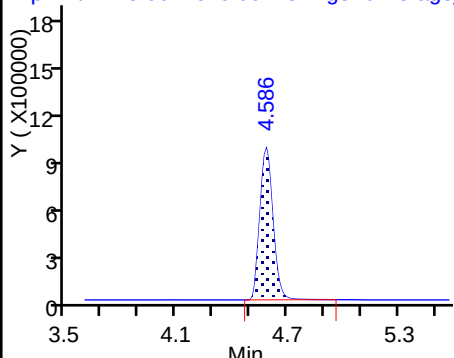
D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

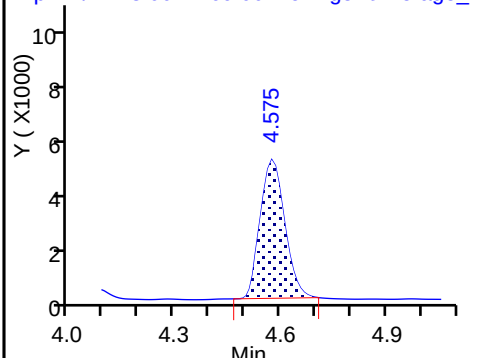
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Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 169.00:Moving5PtAverage_x

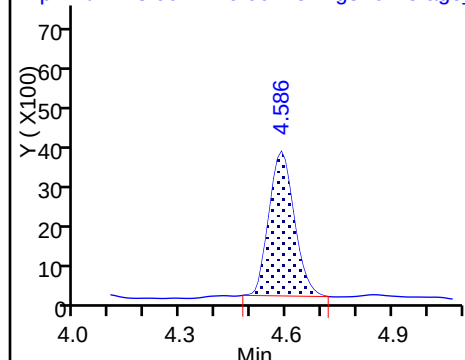


42 Perfluorotetradecanoic acid

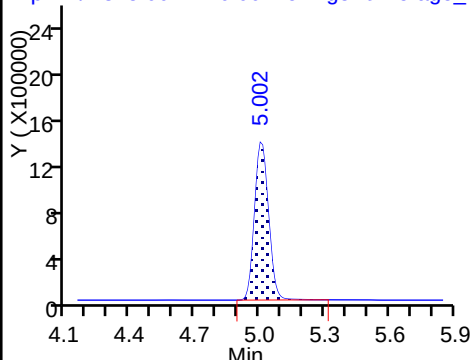
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

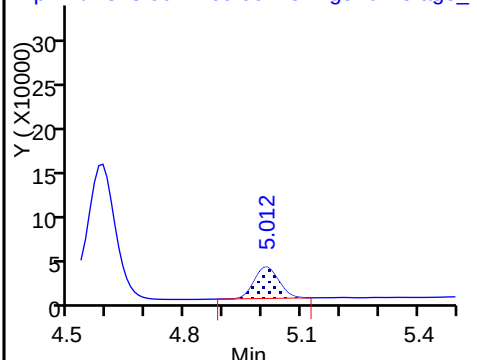
Exp1:m/z 713.00 > 219.00:Moving5PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

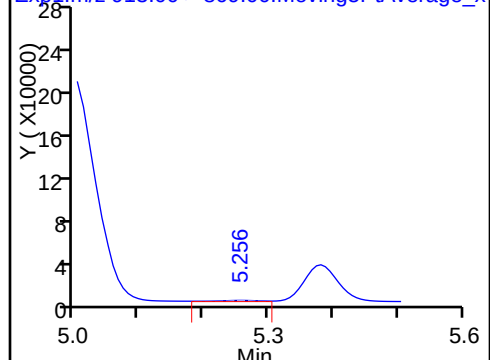


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCV 320-185322/1 Calibration Date: 09/19/2017 23:00

Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34

Lab File ID: 2017.09.19B_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	0.9696	1.012		20.9	20.0	4.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.142	1.149		20.1	20.0	0.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	71.67	74.74		18.4	17.7	4.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9588	0.9917		20.7	20.0	3.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	1.016		20.7	20.0	3.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.062	1.074		18.4	18.2	1.1	25.0
6:2FTS	AveID	0.8694	0.8627		18.8	19.0	-0.8	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.076	1.042		19.4	20.0	-3.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.233	1.294		20.0	19.0	4.9	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9795	0.9654		19.7	20.0	-1.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.091	1.047		17.8	18.6	-4.1	25.0
8:2FTS	AveID	0.9241	0.9329		19.3	19.2	0.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.009	1.007		20.0	20.0	-0.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9386	0.9630		20.5	20.0	2.6	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9567	0.9207		19.2	20.0	-3.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5931	0.6073		19.7	19.3	2.4	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8825	0.8355		18.9	20.0	-5.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.110	1.026		18.5	20.0	-7.5	25.0
MeFOSA	AveID	0.8977	0.8835		19.7	20.0	-1.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9681	0.9600		19.8	20.0	-0.8	25.0
N-EtFOSA-M	AveID	0.9425	0.9323		19.8	20.0	-1.1	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9441	0.8394		17.8	20.0	-11.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2410	0.2277		18.9	20.0	-5.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9266		20.6	20.0	2.8	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.106	1.060		19.2	20.0	-4.1	25.0
13C4 PFBA	Ave	310657	340109		54.7	50.0	9.5	50.0
13C5 PFPeA	Ave	188315	214167		56.9	50.0	13.7	50.0
13C3-PFBS	Ave	5176	5872		52.7	46.5	13.4	50.0
13C2 PFHxA	Ave	201238	230752		57.3	50.0	14.7	50.0
13C4-PFHpA	Ave	183539	223058		60.8	50.0	21.5	50.0
18O2 PFHxS	Ave	285701	344588		57.0	47.3	20.6	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCV 320-185322/1 Calibration Date: 09/19/2017 23:00
 Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34
 Lab File ID: 2017.09.19B_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	91556	99139		51.4	47.5	8.3	50.0
13C4 PFOA	Ave	170967	203079		59.4	50.0	18.8	50.0
13C4 PFOS	Ave	194576	221098		54.3	47.8	13.6	50.0
13C5 PFNA	Ave	125094	156963		62.7	50.0	25.5	50.0
13C8 FOSA	Ave	294227	330813		56.2	50.0	12.4	50.0
M2-8:2FTS	Ave	61800	64389		49.9	47.9	4.2	50.0
13C2 PFDA	Ave	103643	125586		60.6	50.0	21.2	50.0
d3-NMeFOSAA	Ave	28332	32903		58.1	50.0	16.1	50.0
d5-NEtFOSAA	Ave	27910	34456		61.7	50.0	23.5	50.0
13C2 PFUnA	Ave	66858	83809		62.7	50.0	25.4	50.0
d-N-MeFOSA-M	Ave	72752	78924		54.2	50.0	8.5	50.0
13C2 PFDoA	Ave	60091	84945		70.7	50.0	41.4	50.0
d-N-EtFOSA-M	Ave	65170	73180		56.1	50.0	12.3	50.0
13C2-PFTeDA	Ave	73970	86897		58.7	50.0	17.5	50.0
13C2-PFHxDA	Ave	89829	110132		61.3	50.0	22.6	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48149.b\2017.09.19B_013.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 19-Sep-2017 23:00:12 ALS Bottle#: 31 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*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48149.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 20-Sep-2017 14:16:59 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNA\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK029

First Level Reviewer: westendorfc

Date: 20-Sep-2017 14:14:21

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	1.528	1.528	0.0		17005457	54.7		109	32943	
2 Perfluorobutyric acid										
212.90 > 169.00	1.528	1.528	0.0	1.000	6886569	20.9		104	1233	
D 3 13C5-PFPeA										
267.90 > 223.00	1.736	1.736	0.0		10708338	56.9		114	60098	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.736	1.736	0.0	1.000	4923563	20.1		101	3030	
D 47 13C3-PFBS										
301.90 > 83.00	1.754	1.754	0.0		273041	52.7		113	9326	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.754	1.754	0.0	1.000	7758859	18.4		104	48324	
298.90 > 99.00	1.754	1.754	0.0	1.000	3267000		2.37(0.00-0.00)		32499	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.960	1.960	0.0	1.000	2026244	19.5		104	29231	
D 7 13C2 PFHxA										
315.00 > 270.00	1.994	1.994	0.0		11537619	57.3		115	36304	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.994	1.994	0.0	1.000	4576915	20.7		103	10567	
D 9 13C4-PFHpA										
367.00 > 322.00	2.317	2.317	0.0		11152911	60.8		122	18999	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.317	2.317	0.0	1.000	4530713	20.7		104	6462	
D 11 18O2 PFHxS										
403.00 > 84.00	2.333	2.333	0.0		16299001	57.0		121	39221	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.333	2.333	0.0	1.000	6736421	18.4		101	11599	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.644	2.644	0.0		4709110	51.4		108	18645	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.644	2.644	0.0	1.000	1621588	18.8		99.2	13317	
* 62 13C2-PFOA										
415.00 > 370.00	2.666	2.666	0.0		9700679	50.0		100	27637	
D 14 13C4 PFOA										
417.00 > 372.00	2.673	2.673	0.0		10153928	59.4		119	27780	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.673	2.673	0.0	1.000	4231062	19.4		96.8	491	
413.00 > 169.00	2.673	2.673	0.0	1.000	2356604		1.80(0.90-1.10)		8590	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.680	2.680	0.0	1.000	5445608	20.0		105	19852	
D 19 13C5 PFNA										
468.00 > 423.00	3.042	3.042	0.0		7848171	62.7		125	20563	
D 18 13C4 PFOS										
503.00 > 80.00	3.042	3.042	0.0		10568503	54.3		114	14787	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.042	3.042	0.0	1.000	4295639	17.8		95.9	7236	
499.00 > 99.00	3.042	3.042	0.0	1.000	953379		4.51(0.90-1.10)		4111	
20 Perfluorononanoic acid										
463.00 > 419.00	3.042	3.042	0.0	1.000	3030787	19.7		98.6	3967	
D 21 13C8 FOSA										
506.00 > 78.00	3.380	3.380	0.0		16540664	56.2		112	352229	
D 26 M2-8:2FTS										
529.00 > 509.00	3.388	3.388	0.0		3084226	49.9		104	23572	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.388	3.388	0.0	1.000	1150849	19.3		101	13667	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.388	3.388	0.0	1.000	6661529	20.0		99.8	36882	
D 23 13C2 PFDA										
515.00 > 470.00	3.397	3.397	0.0		6279299	60.6		121	32061	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.397	3.397	0.0	1.000	2418773	20.5		103	7261	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.554	3.554	0.0		1645165	58.1		116	9383	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.565	3.565	0.0	1.003	605888	19.2		96.2	2820	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.712	3.712	0.0	1.000	2588589	19.7		102	13948	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.722	3.722	0.0		1722807	61.7		123	3653	
D 30 13C2 PFUnA										
565.00 > 520.00	3.731	3.731	0.0		4190472	62.7		125	11189	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.731	3.731	0.0	1.003	575736	18.9		94.7	5708	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.731	3.731	0.0	1.000	1720457	18.5		92.5	2496	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M	515.00 > 169.00	3.880	3.880	0.0	3946191	54.2		108	965	
35 MeFOSA	512.00 > 169.00	3.889	3.889	0.0	1.000	1394557	19.7	98.4	6114	
D 36 13C2 PFDaA	615.00 > 570.00	4.021	4.021	0.0	4247262	70.7		141	15864	
37 Perfluorododecanoic acid	613.00 > 569.00	4.021	4.021	0.0	1.000	1631020	19.8	99.2	1169	
D 38 d-N-EtFOSA-M	531.00 > 169.00	4.069	4.069	0.0	3658998	56.1		112	5406	
39 N-ethylperfluoro-1-octanesulfonami	526.00 > 169.00	4.078	4.078	0.0	1.000	1364536	19.8	98.9	4198	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.290	4.290	0.0	1.000	1425997	17.8	88.9	218	
D 43 13C2-PFTeDA	715.00 > 670.00	4.524	4.524	0.0	4344833	58.7		117	14288	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.524	4.524	0.0	1.000	395647	18.9	94.5	5330	
	713.00 > 219.00	4.524	4.524	0.0	1.000	317191	1.25(0.00-0.00)		3156	
D 44 13C2-PFHxDA	815.00 > 770.00	4.939	4.939	0.0	5506612	61.3		123	8408	
45 Perfluorohexadecanoic acid	813.00 > 769.00	4.949	4.949	0.0	1.000	2040890	20.6	103	157	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.297	5.297	0.0	1.000	2334759	19.2	95.9	342	

Reagents:

LCPFC_FULL-L4_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48149.b\2017.09.19B_013.d

Injection Date: 19-Sep-2017 23:00:12

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 31

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

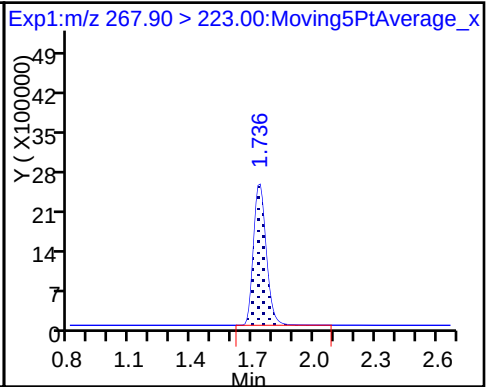
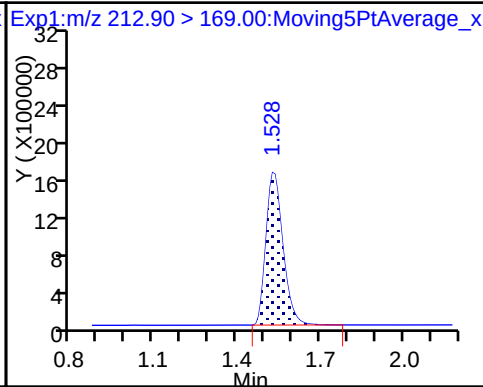
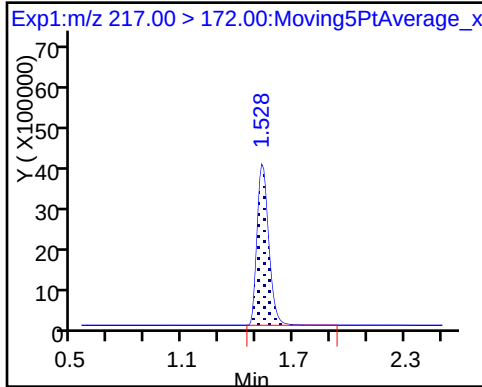
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

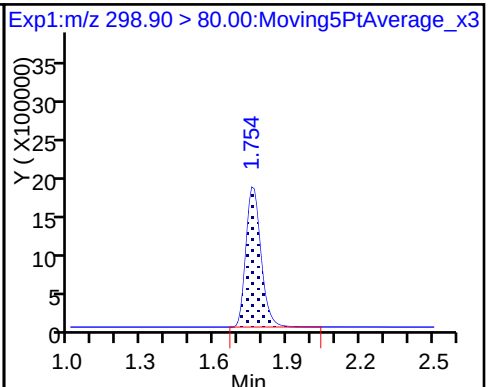
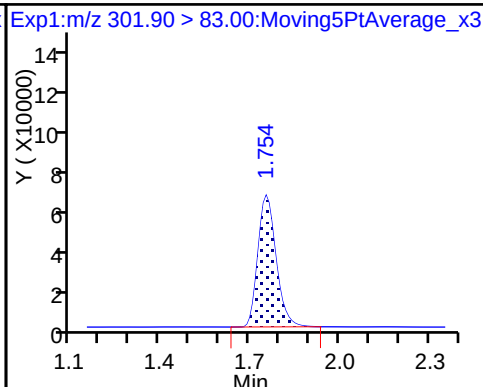
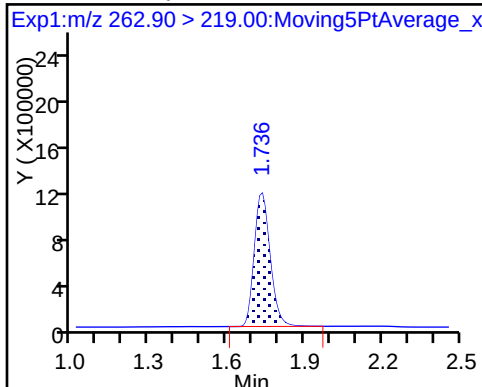
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

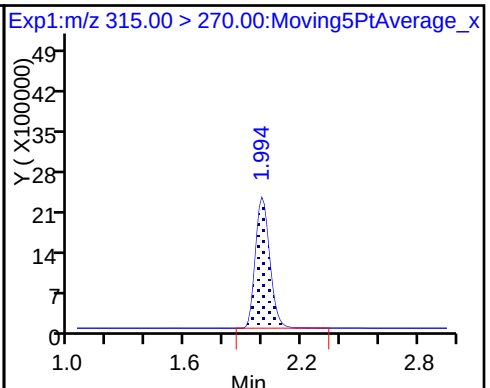
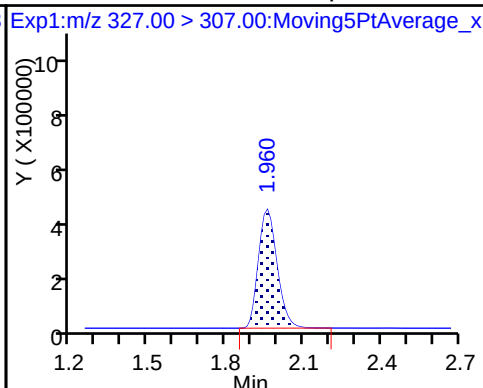
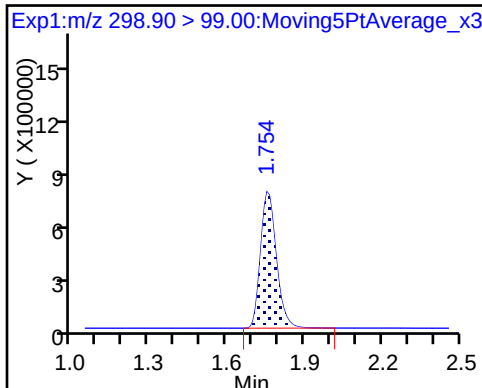
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

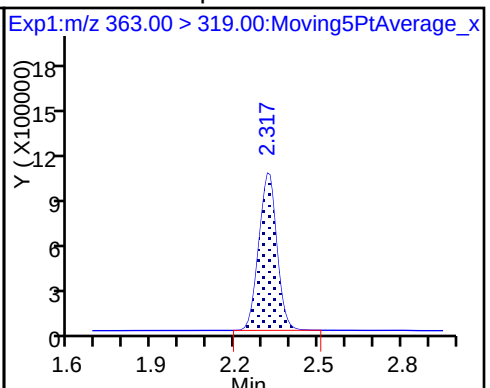
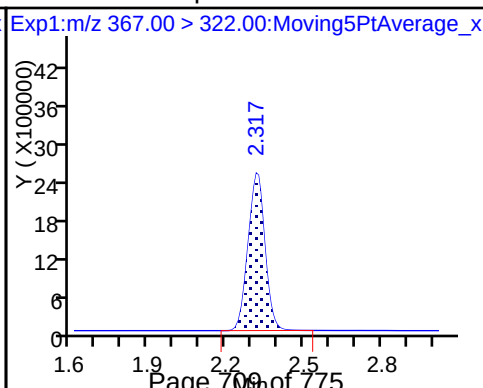
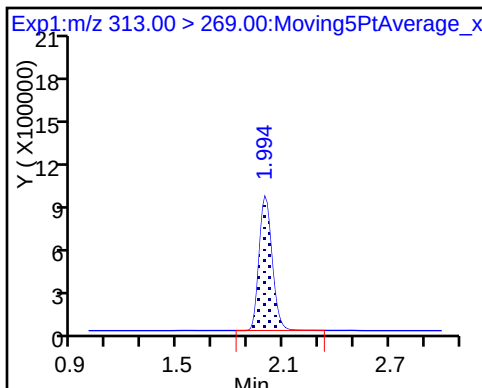
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

D 9 13C4-PFHpA

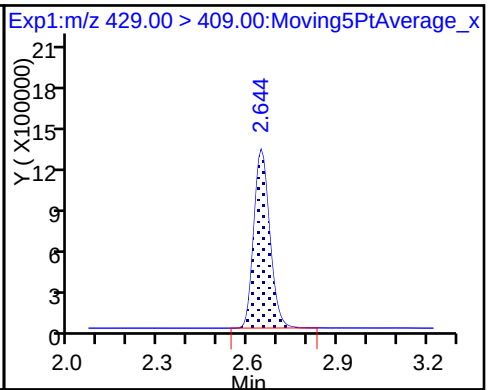
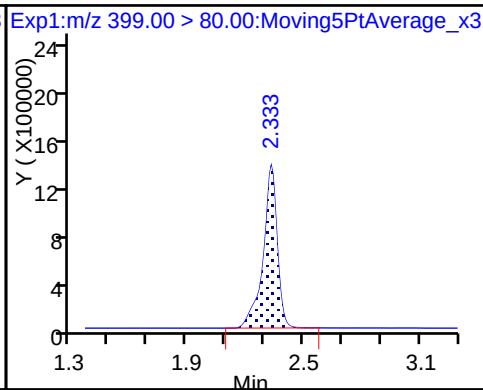
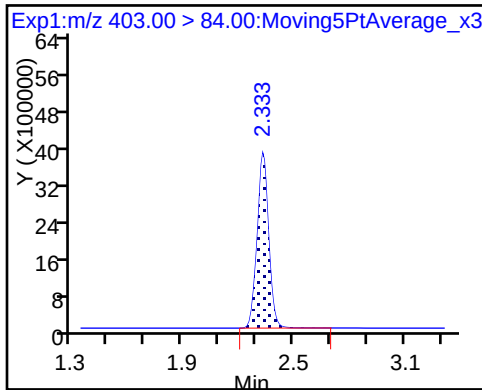
10 Perfluoroheptanoic acid



D 11 18O2 PFHxS

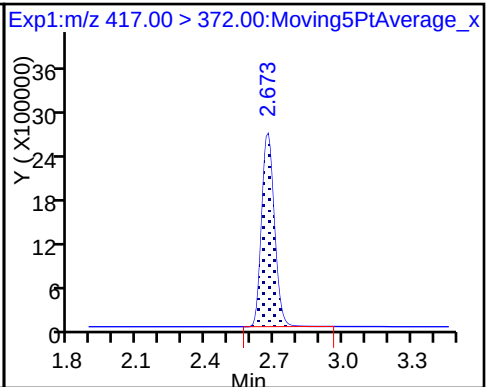
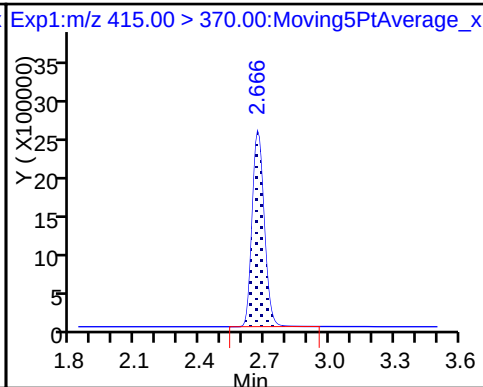
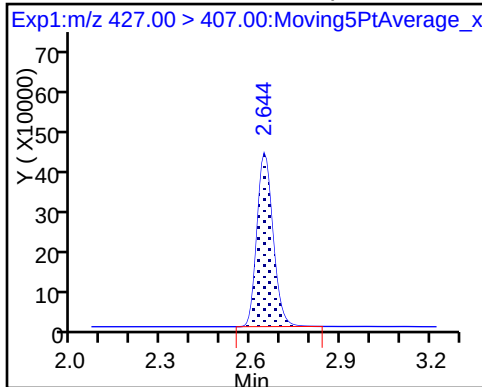
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS



13 Sodium 1H,1H,2H,2H-perfluorooctanoate

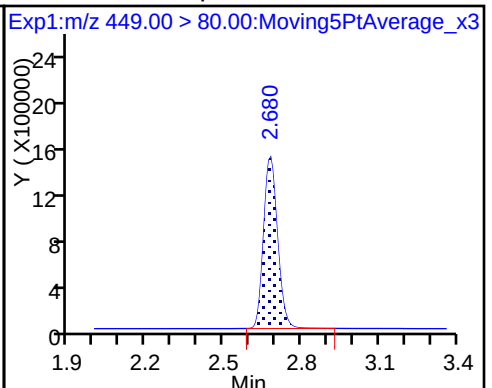
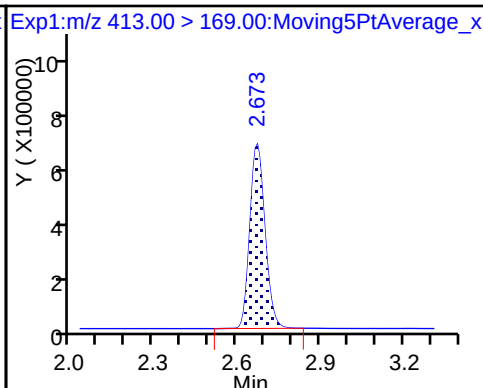
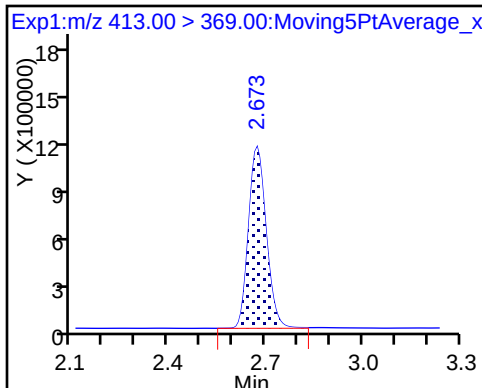
D 14 13C4 PFOA



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

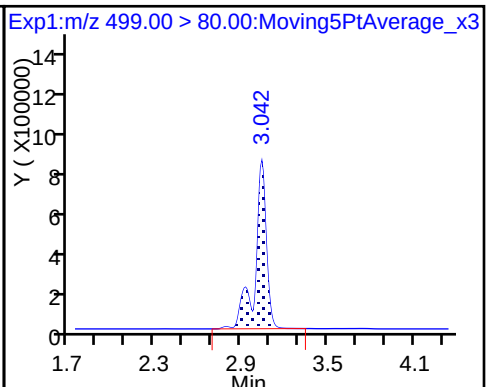
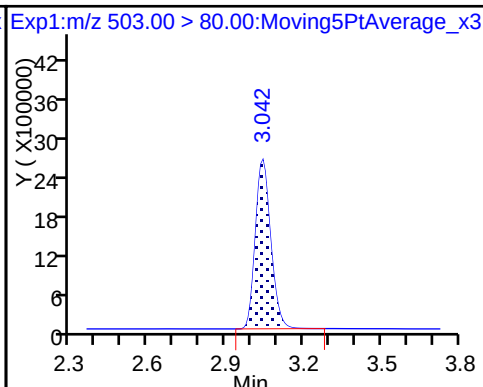
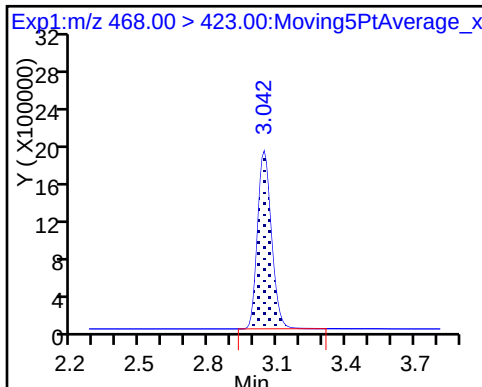
16 Perfluoroheptanesulfonic Acid



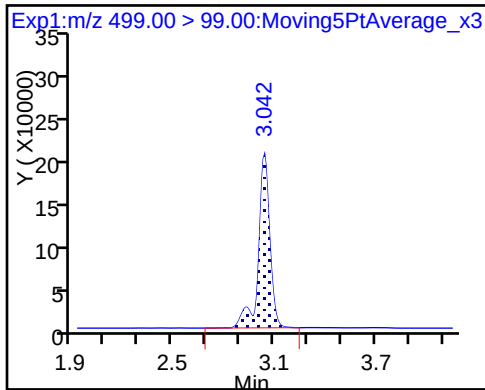
D 19 13C5 PFNA

D 18 13C4 PFOS

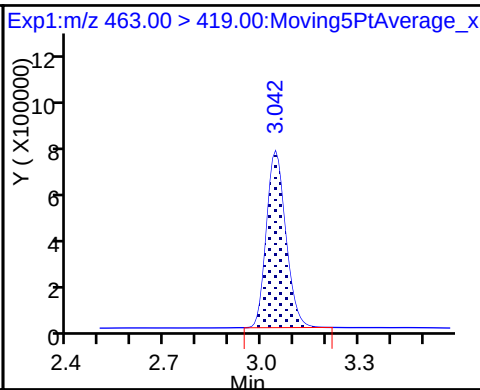
17 Perfluorooctane sulfonic acid



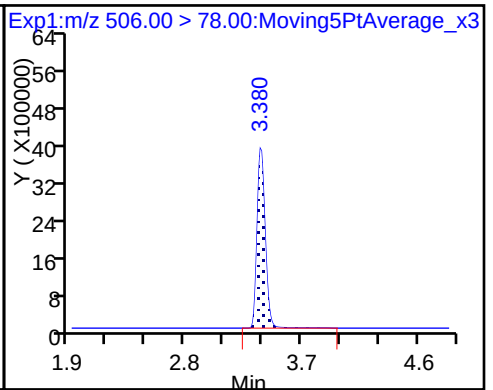
17 Perfluorooctane sulfonic acid



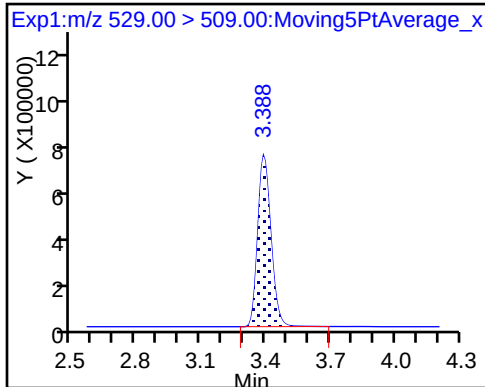
20 Perfluorononanoic acid



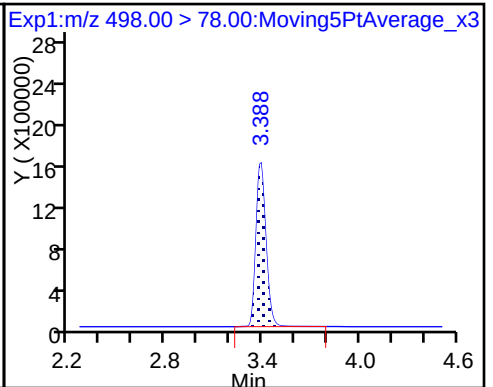
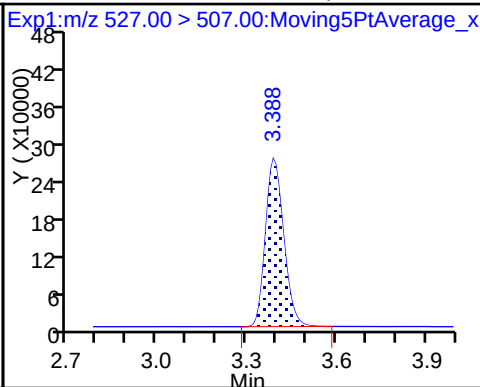
D 21 13C8 FOSA



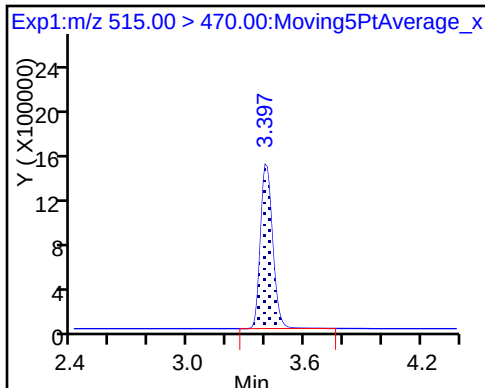
D 26 M2-8:2FTS



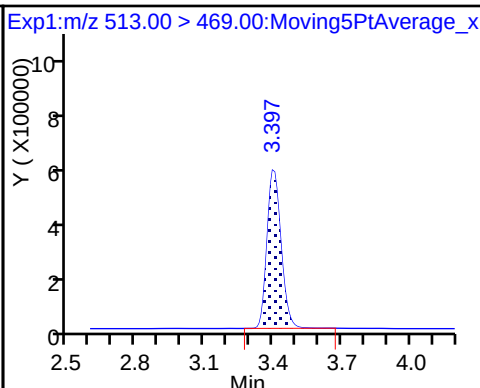
25 Sodium 1H,1H,2H,2H-perfluorodecan-2-yl Perfluorooctane Sulfonamide



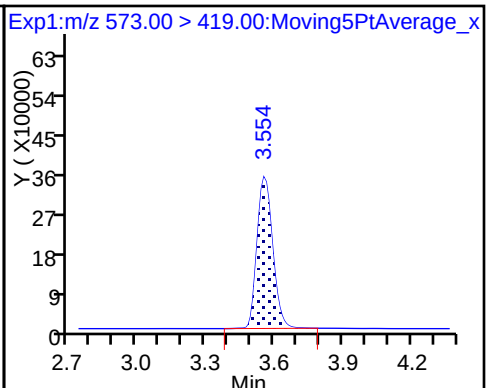
D 23 13C2 PFDA



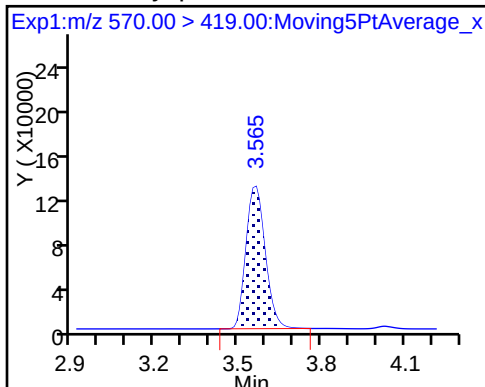
24 Perfluorodecanoic acid



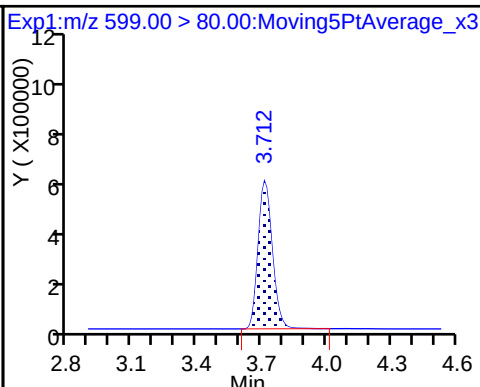
D 27 d3-NMeFOSAA



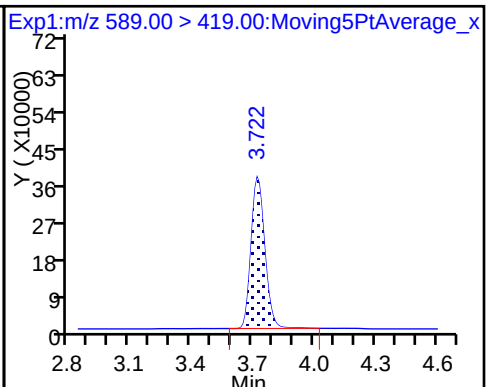
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid



D 32 d5-NEtFOSAA

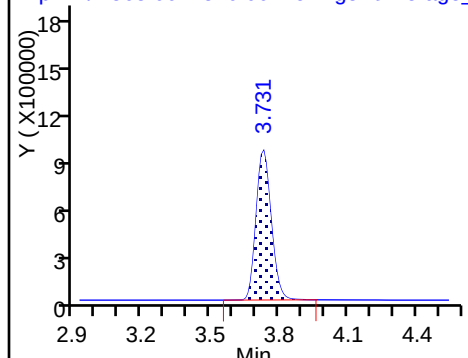


D 30 13C2 PFUnA

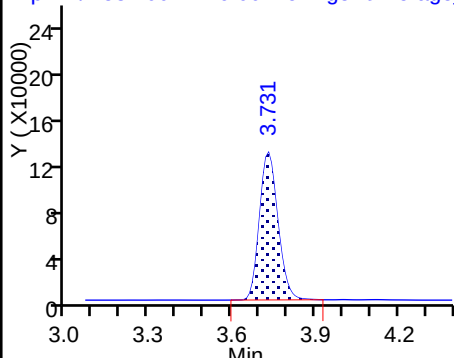
33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

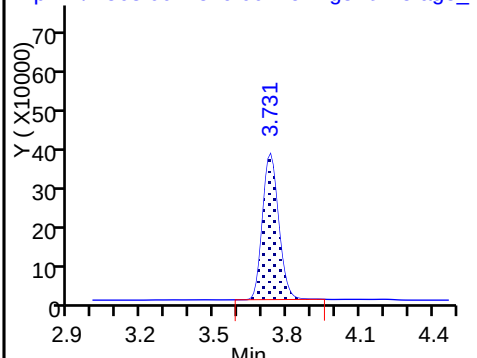
Exp1:m/z 565.00 > 520.00:Moving5PtAverage_x



Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x



Exp1:m/z 563.00 > 519.00:Moving5PtAverage_x

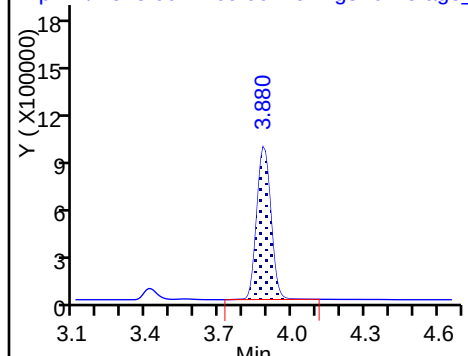


D 34 d-N-MeFOSA-M

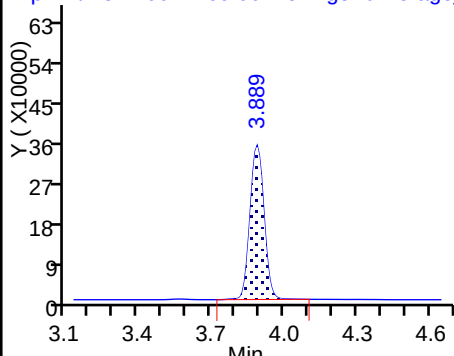
35 MeFOSA

D 36 13C2 PFDaA

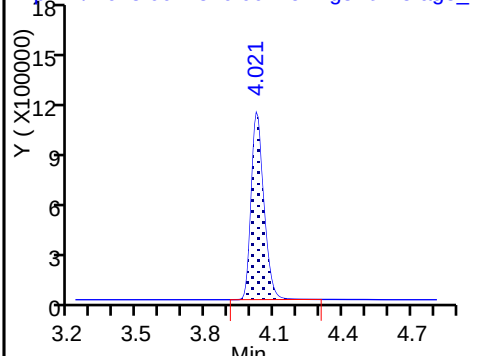
Exp1:m/z 515.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 512.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 615.00 > 570.00:Moving5PtAverage_x

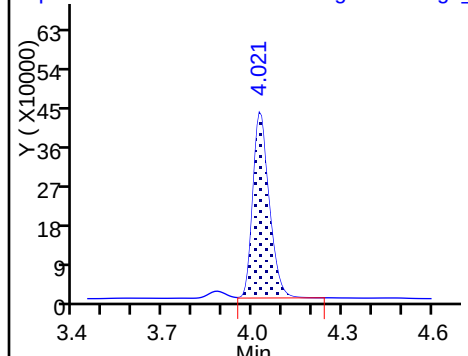


37 Perfluorododecanoic acid

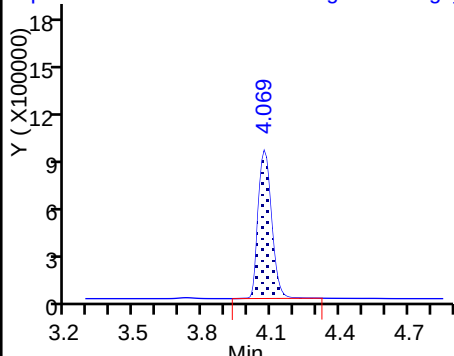
D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

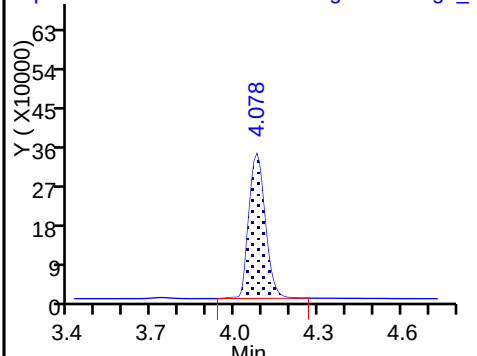
Exp1:m/z 613.00 > 569.00:Moving5PtAverage_x



Exp1:m/z 531.00 > 169.00:Moving5PtAverage_x



Exp1:m/z 526.00 > 169.00:Moving5PtAverage_x

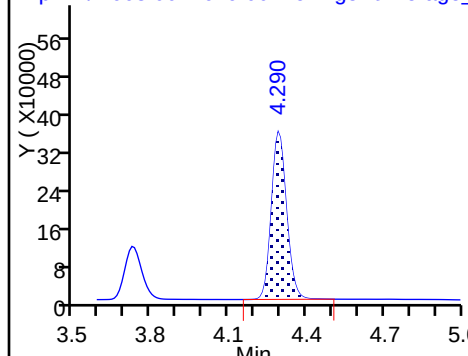


41 Perfluorotridecanoic acid

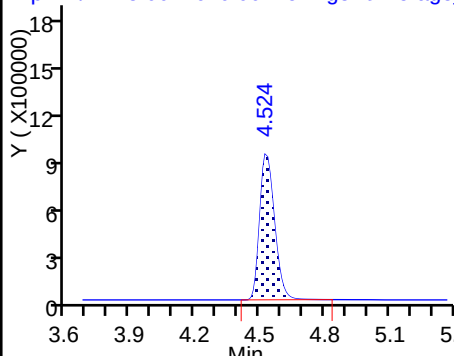
D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

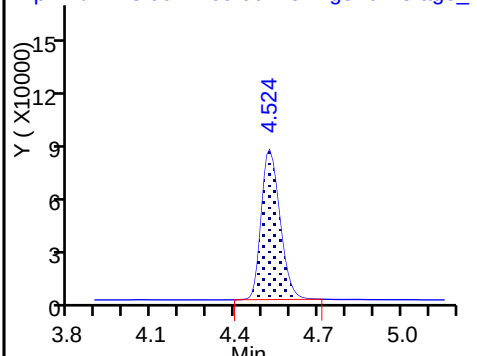
Exp1:m/z 663.00 > 619.00:Moving5PtAverage_x



Exp1:m/z 715.00 > 670.00:Moving5PtAverage_x



Exp1:m/z 713.00 > 169.00:Moving5PtAverage_x

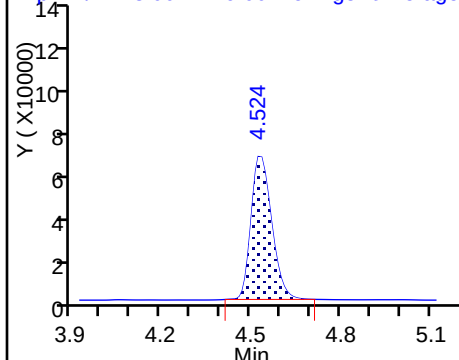


42 Perfluorotetradecanoic acid

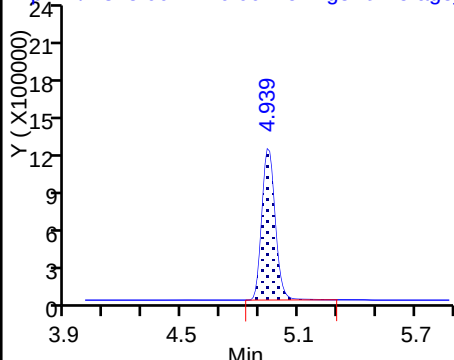
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

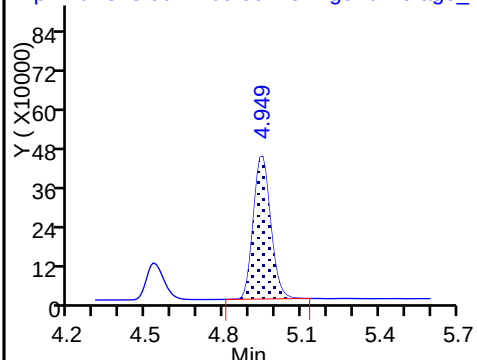
Exp1:m/z 713.00 > 219.00:Moving5PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

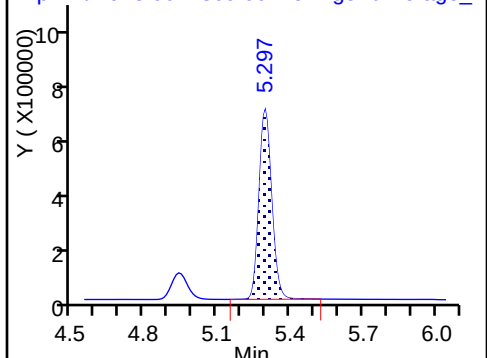


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCV 320-185322/5 Calibration Date: 09/19/2017 23:27

Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34

Lab File ID: 2017.09.19B_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9696	0.9069		46.8	50.0	-6.5	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.142	1.091		47.8	50.0	-4.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	71.67	62.33		38.4	44.2	-13.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9588	0.9790		51.1	50.0	2.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	0.9888		50.4	50.0	0.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.062	1.067		45.7	45.5	0.5	25.0
6:2FTS	AveID	0.8694	0.8259		45.0	47.4	-5.0	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.076	1.057		49.1	50.0	-1.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.233	1.217		47.0	47.6	-1.3	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9795	1.008		51.5	50.0	2.9	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.091	1.026		43.6	46.4	-6.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.009	0.9509		47.1	50.0	-5.8	25.0
8:2FTS	AveID	0.9241	0.8925		46.3	47.9	-3.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9386	0.8929		47.6	50.0	-4.9	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9567	0.9126		47.7	50.0	-4.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5931	0.6109		49.6	48.2	3.0	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8825	0.8470		48.0	50.0	-4.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.110	0.9782		44.1	50.0	-11.9	25.0
MeFOSA	AveID	0.8977	0.9067		50.5	50.0	1.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9681	0.9847		50.9	50.0	1.7	25.0
N-EtFOSA-M	AveID	0.9425	0.9188		48.7	50.0	-2.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9441	0.9247		49.0	50.0	-2.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2410	0.2208		45.8	50.0	-8.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9156		51.5	50.0	3.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.106	1.028		46.5	50.0	-7.0	25.0
13C4 PFBA	Ave	310657	340959		54.9	50.0	9.8	50.0
13C5 PFPeA	Ave	188315	208729		55.4	50.0	10.8	50.0
13C3-PFBS	Ave	5176	6082		54.6	46.5	17.5	50.0
13C2 PFHxA	Ave	201238	225629		56.1	50.0	12.1	50.0
13C4-PFHpA	Ave	183539	204809		55.8	50.0	11.6	50.0
18O2 PFHxS	Ave	285701	331313		54.9	47.3	16.0	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCV 320-185322/5 Calibration Date: 09/19/2017 23:27
 Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34
 Lab File ID: 2017.09.19B_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	91556	99073		51.4	47.5	8.2	50.0
13C4 PFOA	Ave	170967	190006		55.6	50.0	11.1	50.0
13C4 PFOS	Ave	194576	220961		54.3	47.8	13.6	50.0
13C5 PFNA	Ave	125094	150044		60.0	50.0	19.9	50.0
13C8 FOSA	Ave	294227	317732		54.0	50.0	8.0	50.0
M2-8:2FTS	Ave	61800	64366		49.9	47.9	4.2	50.0
13C2 PFDA	Ave	103643	128375		61.9	50.0	23.9	50.0
d3-NMeFOSAA	Ave	28332	33954		59.9	50.0	19.8	50.0
d5-NEtFOSAA	Ave	27910	33507		60.0	50.0	20.1	50.0
13C2 PFUnA	Ave	66858	88436		66.1	50.0	32.3	50.0
d-N-MeFOSA-M	Ave	72752	80098		55.0	50.0	10.1	50.0
13C2 PFDoA	Ave	60091	81136		67.5	50.0	35.0	50.0
d-N-EtFOSA-M	Ave	65170	73878		56.7	50.0	13.4	50.0
13C2-PFTeDA	Ave	73970	90780		61.4	50.0	22.7	50.0
13C2-PFHxDA	Ave	89829	111205		61.9	50.0	23.8	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48149.b\2017.09.19B_017.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 19-Sep-2017 23:27:48 ALS Bottle#: 32 Worklist Smp#: 5
 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*sub18
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48149.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 20-Sep-2017 14:17:08 Calib Date: 18-Sep-2017 16:34:14
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last Ical File: \\ChromNa\Sacramento\ChromData\A8_N\20170918-48083.b\2017.09.18ICAL_010.d

Column 1 : Det: EXP1

Process Host: XAWRK029

First Level Reviewer: westendorfc

Date: 20-Sep-2017 14:16:25

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	1.528	1.528	0.0		17047945	54.9		110	34871	
2 Perfluorobutyric acid										
212.90 > 169.00	1.528	1.528	0.0	1.000	15460718	46.8		93.5	2424	
D 3 13C5-PFPeA										
267.90 > 223.00	1.727	1.736	-0.009		10436473	55.4		111	46700	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.727	1.736	-0.009	1.000	11388128	47.8		95.5	6334	
D 47 13C3-PFBS										
301.90 > 83.00	1.746	1.754	-0.008		282790	54.6		117	9529	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.755	1.754	0.001	1.000	16753553	38.4		87.0	111425	
298.90 > 99.00	1.755	1.754	0.001	1.000	8083616		2.07(0.00-0.00)		100736	
61 Sodium 1H,1H,2H,2H-perfluorohexane										
327.00 > 307.00	1.949	1.960	-0.011	1.000	5193630	50.0		107	36148	
D 7 13C2 PFHxA										
315.00 > 270.00	1.995	1.994	0.001		11281471	56.1		112	30151	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.995	1.994	0.001	1.000	11044940	51.1		102	17409	
D 9 13C4-PFHpA										
367.00 > 322.00	2.320	2.317	0.003		10240474	55.8		112	24527	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.320	2.317	0.003	1.000	10125641	50.4		101	11216	
D 11 18O2 PFHxS										
403.00 > 84.00	2.328	2.333	-0.005		15671102	54.9		116	23967	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.328	2.333	-0.005	1.000	16089770	45.7		100	10613	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.642	2.644	-0.002		4705991	51.4		108	16369	
13 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.642	2.644	-0.002	1.000	3878239	45.0		95.0	14119	
* 62 13C2-PFOA										
415.00 > 370.00	2.663	2.666	-0.003		9409952	50.0		100	18474	
D 14 13C4 PFOA										
417.00 > 372.00	2.663	2.673	-0.010		9500282	55.6		111	17056	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.663	2.673	-0.010	1.000	10037813	49.1		98.2	1084	
413.00 > 169.00	2.663	2.673	-0.010	1.000	5635468		1.78(0.90-1.10)		10812	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.671	2.680	-0.009	1.000	12804009	47.0		98.7	19792	
D 19 13C5 PFNA										
468.00 > 423.00	3.038	3.042	-0.004		7502195	60.0		120	33631	
D 18 13C4 PFOS										
503.00 > 80.00	3.030	3.042	-0.012		10561941	54.3		114	22270	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.038	3.042	-0.004	1.000	10515933	43.6		94.0	9086	
499.00 > 99.00	3.030	3.042	-0.012	0.997	2295216		4.58(0.90-1.10)		7920	
20 Perfluorononanoic acid										
463.00 > 419.00	3.038	3.042	-0.004	1.000	7564302	51.5		103	11624	
D 21 13C8 FOSA										
506.00 > 78.00	3.376	3.380	-0.004		15886579	54.0		108	208792	
D 26 M2-8:2FTS										
529.00 > 509.00	3.385	3.388	-0.003		3083146	49.9		104	19563	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.385	3.388	-0.003	1.000	2751574	46.3		96.6	14071	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.376	3.388	-0.012	1.000	15106209	47.1		94.2	84752	
D 23 13C2 PFDA										
515.00 > 470.00	3.393	3.397	-0.004		6418759	61.9		124	28197	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.393	3.397	-0.004	1.000	5731288	47.6		95.1	13032	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.549	3.554	-0.005		1697679	59.9		120	7890	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.549	3.565	-0.016	1.000	1549367	47.7		95.4	4612	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.707	3.712	-0.005	1.000	6506744	49.6		103	13055	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.717	3.722	-0.005		1675366	60.0		120	2240	
D 30 13C2 PFUnA										
565.00 > 520.00	3.726	3.731	-0.005		4421802	66.1		132	14428	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.726	3.731	-0.005	1.003	1419072	48.0		96.0	6806	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.726	3.731	-0.005	1.000	4325327	44.1		88.1	7305	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.876	3.880	-0.004		4004905	55.0		110	1218	
35 MeFOSA										
512.00 > 169.00	3.885	3.889	-0.004	1.000	3631285	50.5		101	7242	
D 36 13C2 PFDaA										
615.00 > 570.00	4.018	4.021	-0.003		4056816	67.5		135	13251	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.018	4.021	-0.003	1.000	3994583	50.9		102	2702	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.063	4.069	-0.006		3693904	56.7		113	5724	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.072	4.078	-0.006	1.000	3393866	48.7		97.5	4496	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.285	4.290	-0.005	1.000	3751263	49.0		97.9	589	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.517	4.524	-0.007		4538996	61.4		123	16543	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.517	4.524	-0.007	1.000	1002129	45.8		91.6	8714	
713.00 > 219.00	4.526	4.524	0.002	1.002	743830		1.35(0.00-0.00)		5577	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.932	4.939	-0.007		5560237	61.9		124	6981	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.932	4.949	-0.017	1.000	5090760	51.5		103	355	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.290	5.297	-0.007	1.000	5714080	46.5		93.0	733	

Reagents:

LCPFC_FULL-L5_00008

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48149.b\2017.09.19B_017.d

Injection Date: 19-Sep-2017 23:27:48

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 32

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

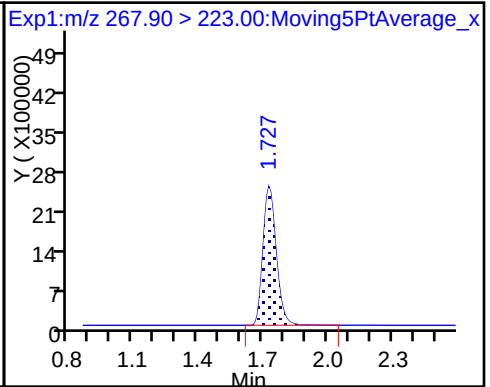
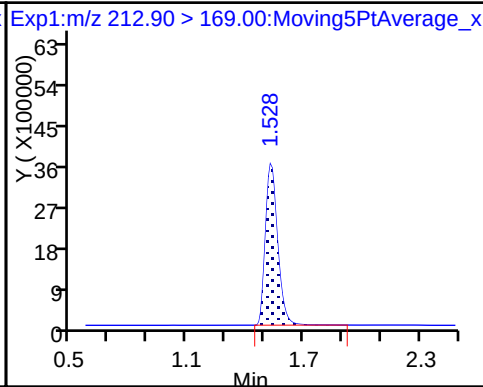
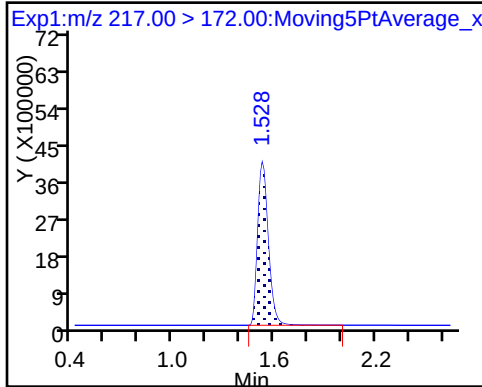
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

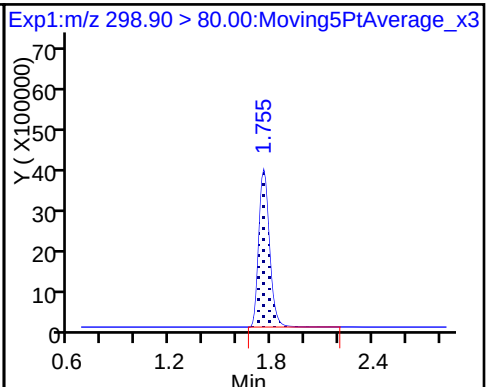
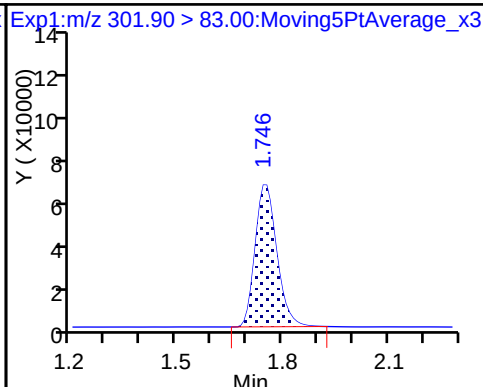
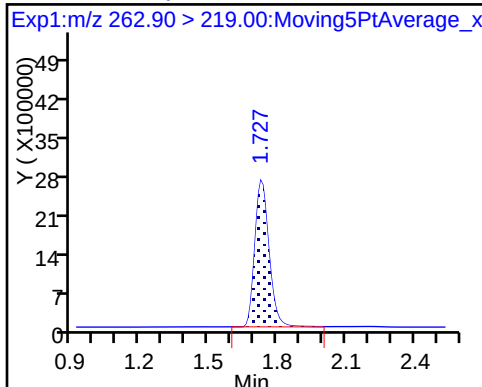
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

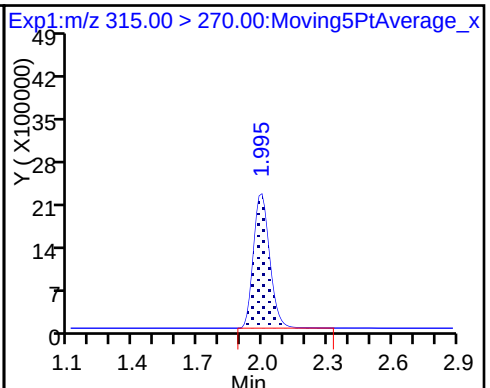
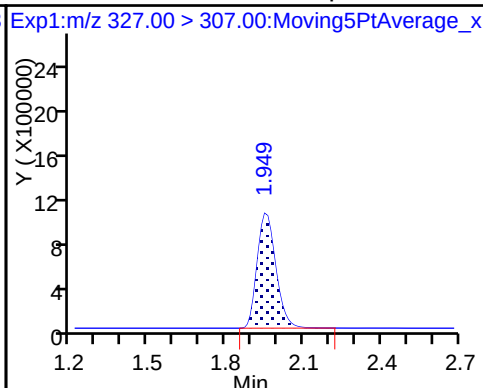
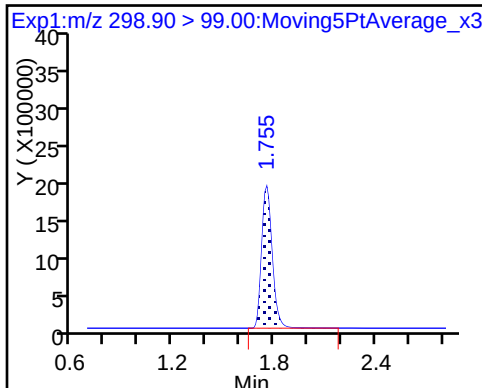
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexa

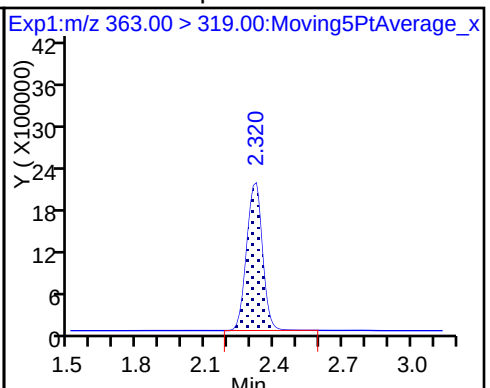
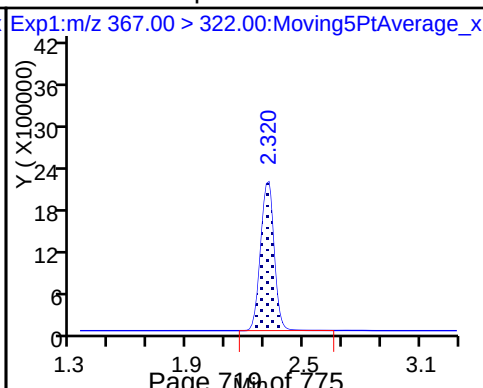
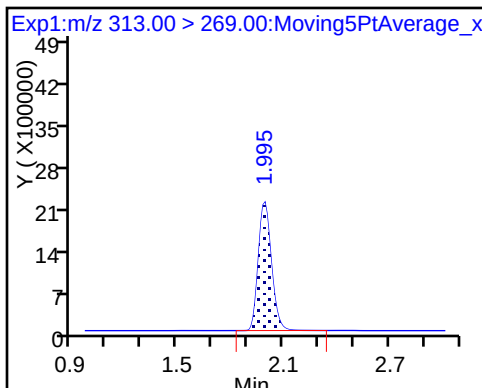
De 7 13C2 PFHxA



6 Perfluorohexanoic acid

D 9 13C4-PFHpA

10 Perfluoroheptanoic acid

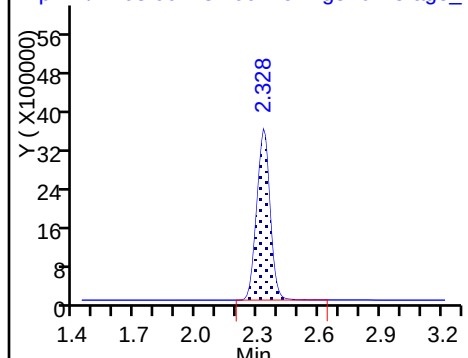


D 11 18O2 PFHxS

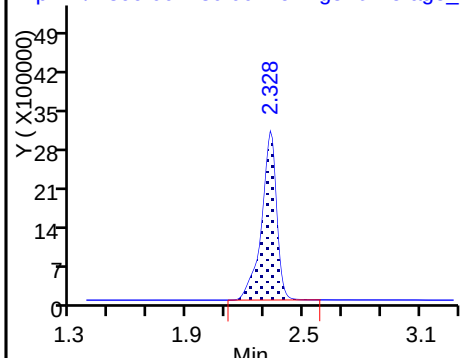
8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

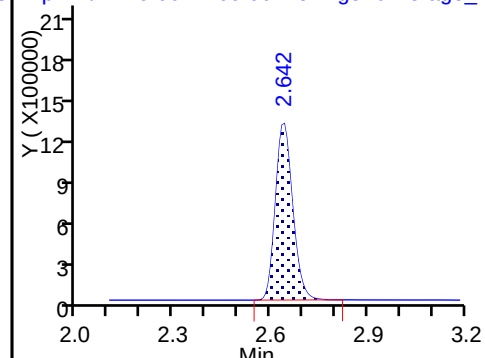
Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 399.00 > 80.00:Moving5PtAverage_x3



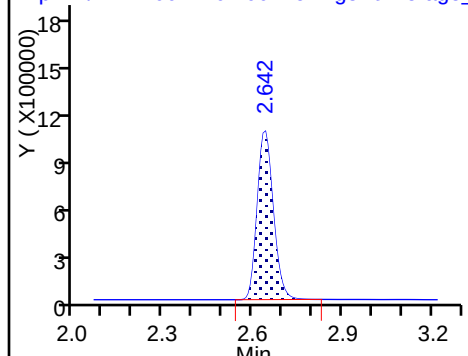
Exp1:m/z 429.00 > 409.00:Moving5PtAverage_x3



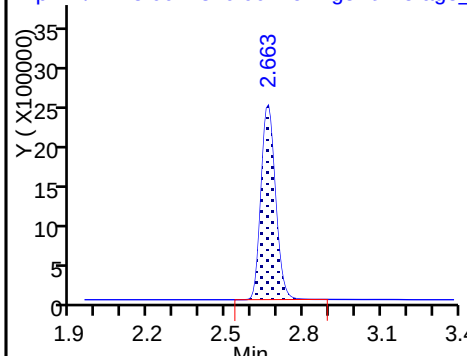
13 Sodium 1H,1H,2H,2H-perfluorooctanoate

D 14 13C4 PFOA

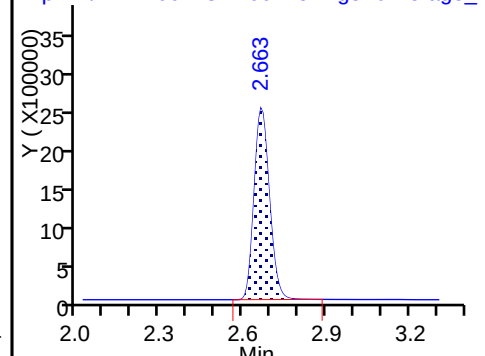
Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3



Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

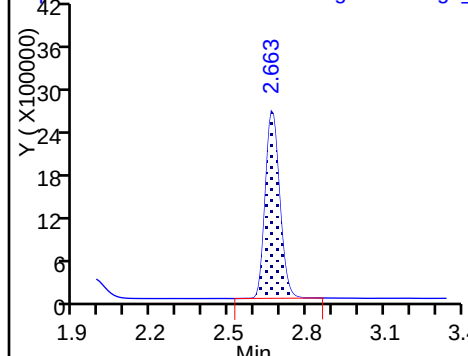


15 Perfluorooctanoic acid

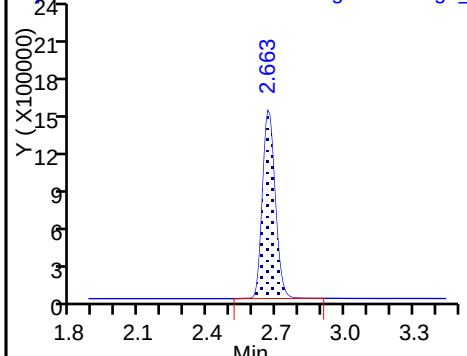
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

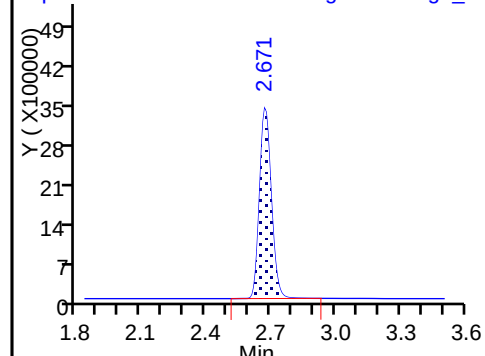
Exp1:m/z 413.00 > 369.00:Moving5PtAverage_x3



Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

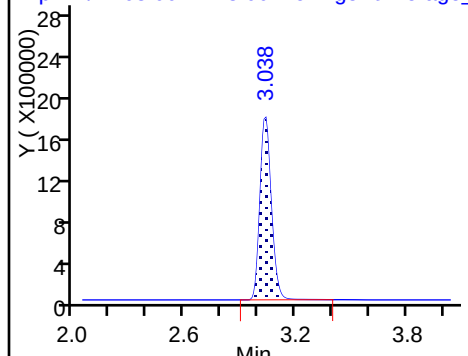


D 19 13C5 PFNA

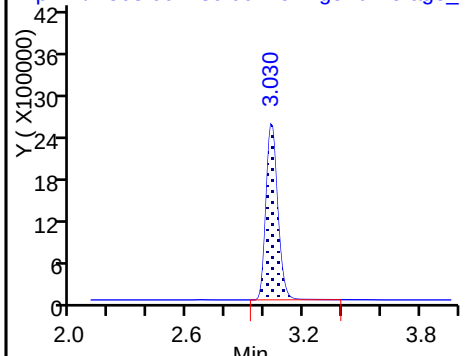
D 18 13C4 PFOS

17 Perfluorooctane sulfonic acid

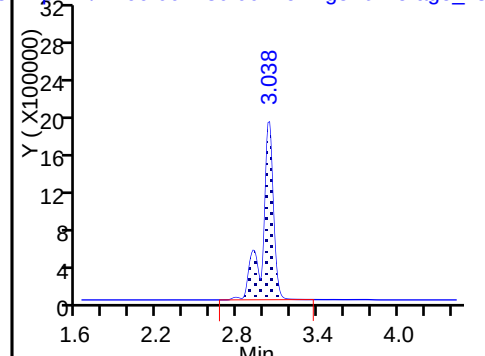
Exp1:m/z 468.00 > 423.00:Moving5PtAverage_x3



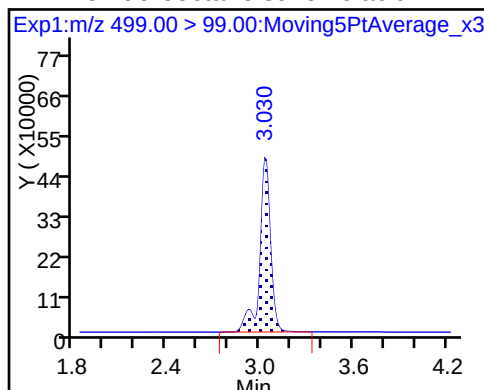
Exp1:m/z 503.00 > 80.00:Moving5PtAverage_x3



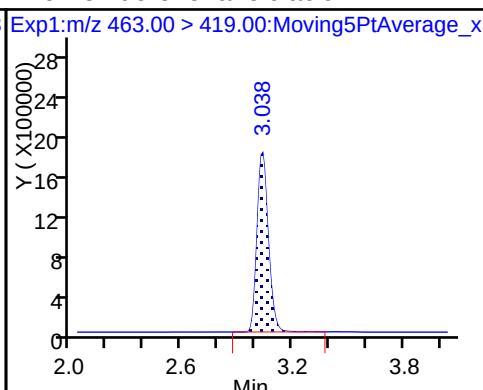
Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3



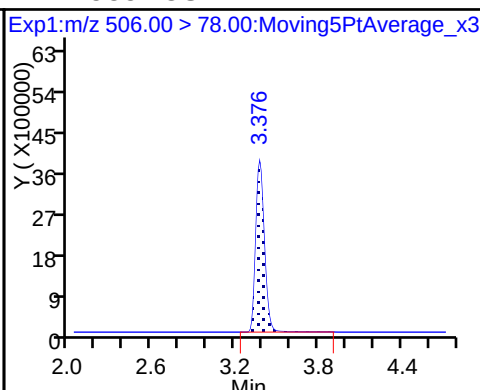
17 Perfluorooctane sulfonic acid



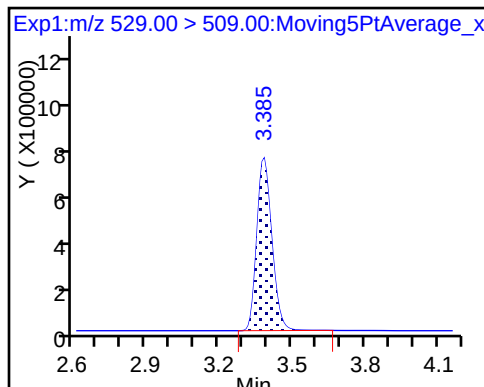
20 Perfluorononanoic acid



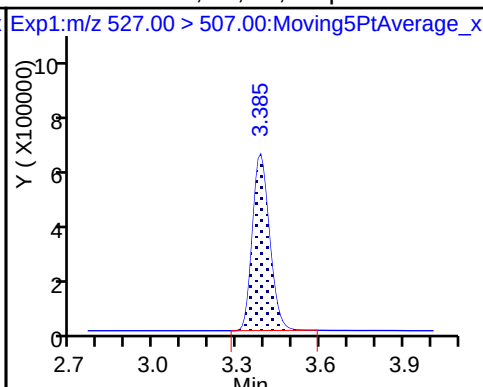
D 21 13C8 FOSA



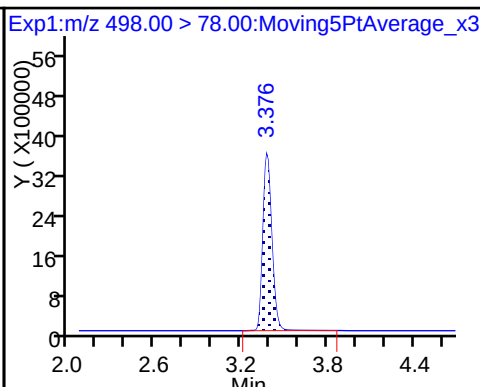
D 26 M2-8:2FTS



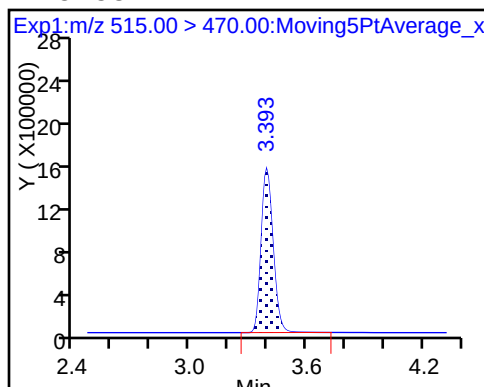
25 Sodium 1H,1H,2H,2H-perfluorodecan-2-yl Perfluorooctane Sulfonamide



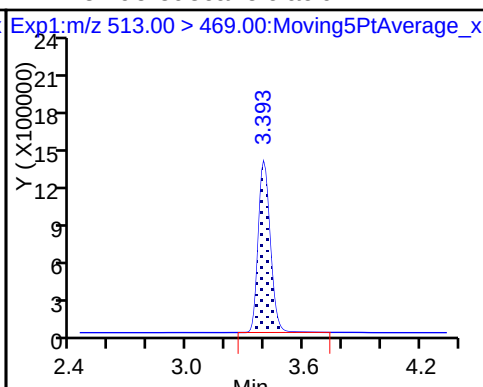
D 27 d3-NMeFOSAA



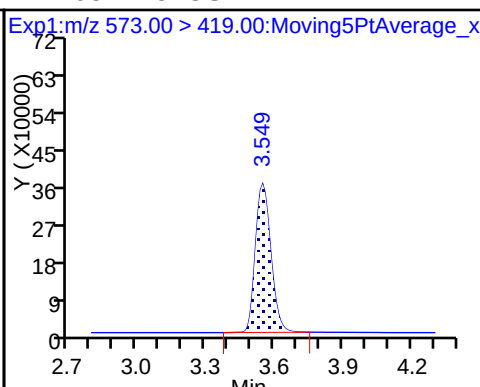
D 23 13C2 PFDA



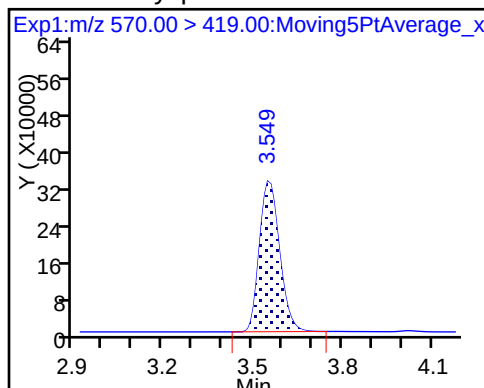
24 Perfluorodecanoic acid



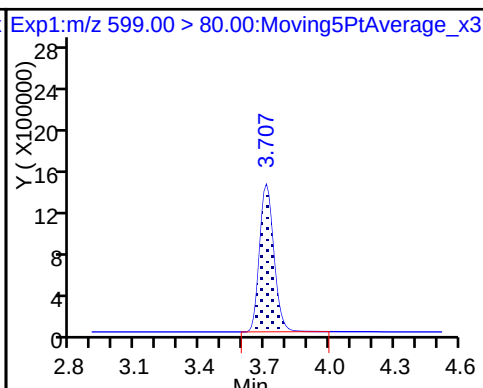
D 27 d3-NMeFOSAA



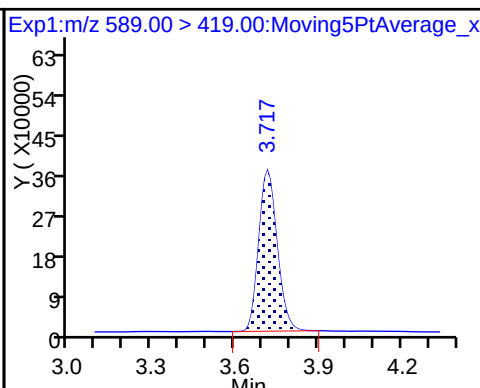
28 N-methyl perfluorooctane sulfonami



29 Perfluorodecane Sulfonic acid



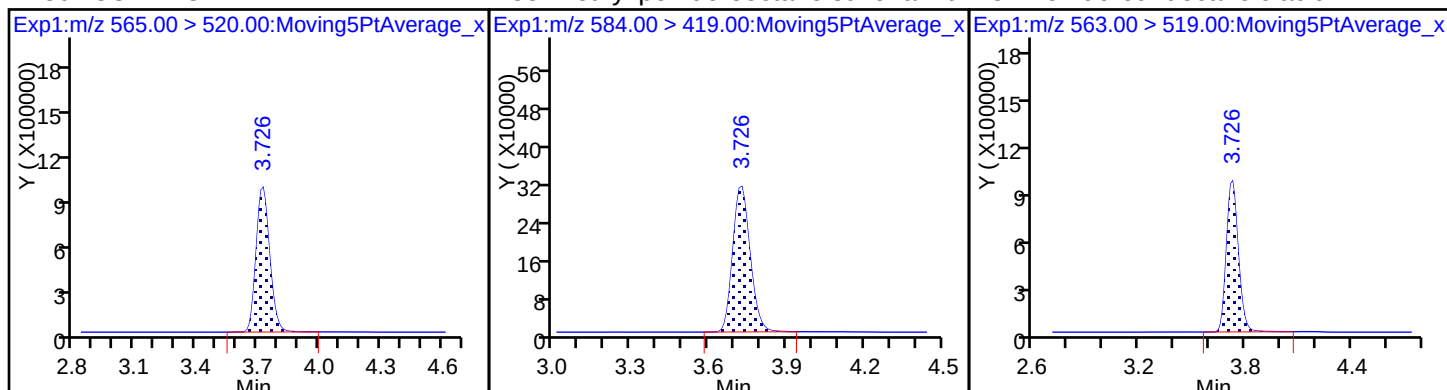
D 32 d5-NEtFOSAA



D 30 13C2 PFUnA

33 N-ethyl perfluorooctane sulfonamid

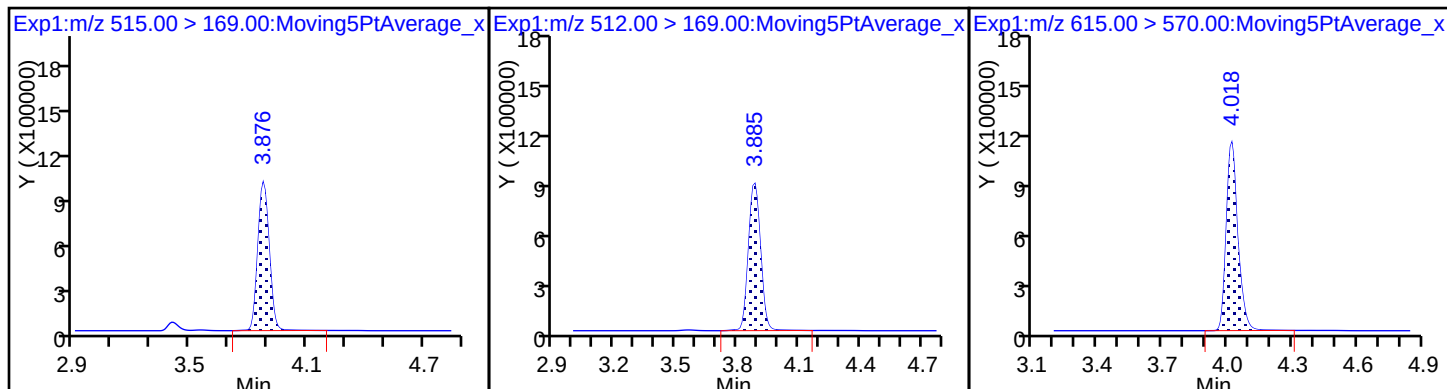
31 Perfluoroundecanoic acid



D 34 d-N-MeFOSA-M

35 MeFOSA

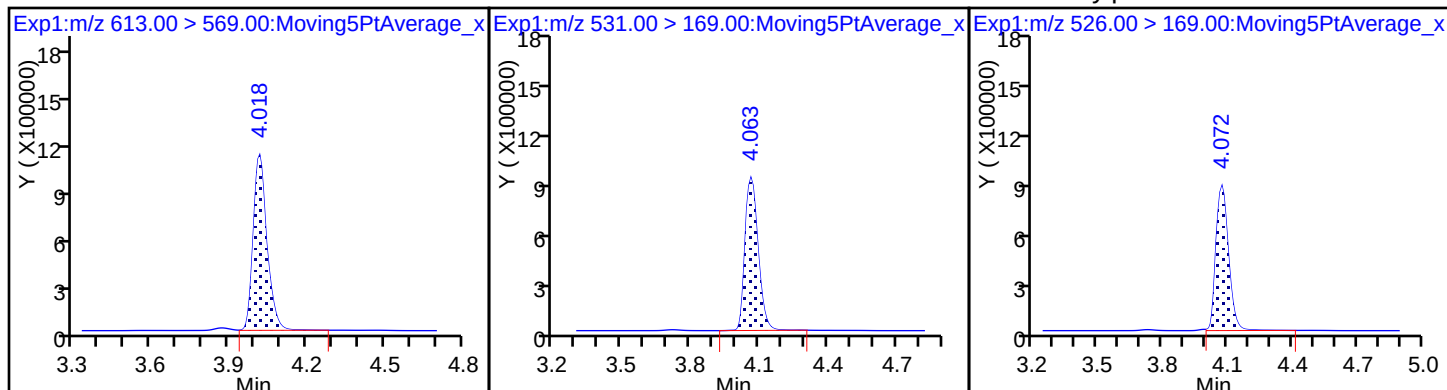
D 36 13C2 PFDaA



37 Perfluorododecanoic acid

D 38 d-N-EtFOSA-M

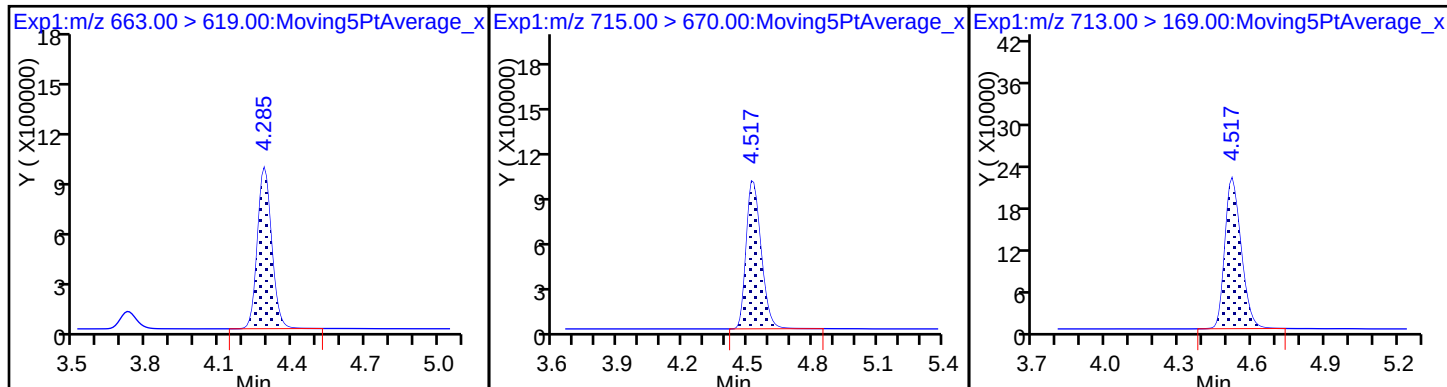
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid

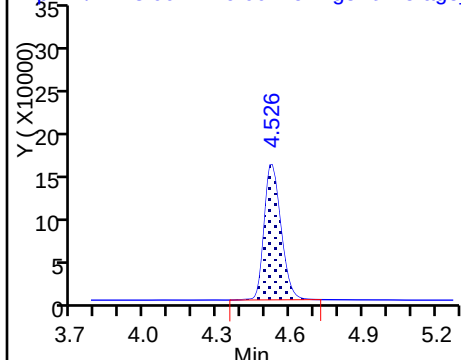


42 Perfluorotetradecanoic acid

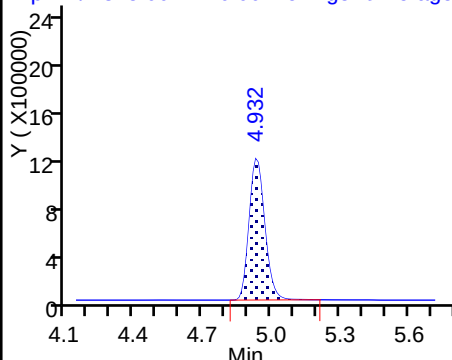
D 44 13C2-PFHxDA

45 Perfluorohexadecanoic acid

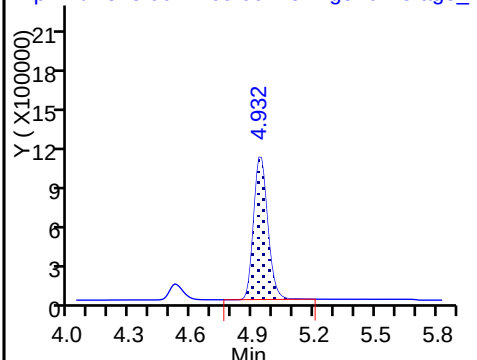
Exp1:m/z 713.00 > 219.00:Moving5PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x

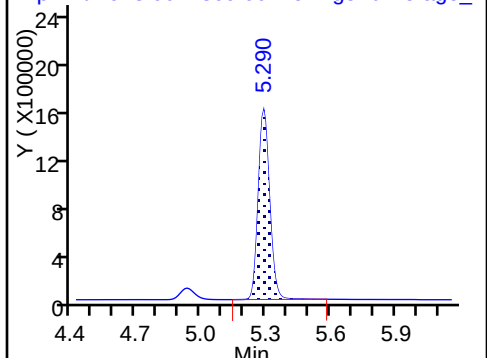


Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



46 Perfluorooctadecanoic acid

Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-183917/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_002.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>09/15/2017 22:28</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.513	J	2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	2.0	U	2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	2.0	U	2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	2.0	U	2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	2.0	U	2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.0	U	2.5	2.0	0.55
376-06-7	Perfluorotetradecanoic acid (PFTeA)	1.0	U	2.5	1.0	0.40
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U M	4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	3.0	U	4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.13	J	40	2.0	0.64

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-183917/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_002.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>09/15/2017 22:28</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	78		25-150
STL00992	13C4 PFBA	120		25-150
STL00993	13C2 PFHxA	116		25-150
STL00990	13C4 PFOA	127		25-150
STL00995	13C5 PFNA	124		25-150
STL00996	13C2 PFDA	127		25-150
STL00997	13C2 PFUnA	119		25-150
STL00998	13C2 PFDoA	104		25-150
STL00994	18O2 PFHxS	111		25-150
STL00991	13C4 PFOS	117		25-150
STL01892	13C4-PFHpA	136		25-150
STL01893	13C5 PFPeA	116		25-150
STL02337	13C3-PFBS	125		25-150
STL02116	13C2-PFTeDA	123		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_002.d
 Lims ID: MB 320-183917/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 15-Sep-2017 22:28:06 ALS Bottle#: 1 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-183917/1-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 14:09:59 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14ICALX_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK006

First Level Reviewer: westendorfc

Date: 19-Sep-2017 14:04:14

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	1.553	1.556	-0.003	18761987	59.9		120	15197	
2 Perfluorobutyric acid	212.90 > 169.00	1.553	1.556	-0.003	1.000	91280	0.2565		9.9	
D 3 13C5-PFPeA	267.90 > 223.00	1.754	1.756	-0.002	11863883	57.9		116	25911	
D 47 13C3-PFBS	301.90 > 83.00	1.781	1.784	-0.003	289724	58.3		125	6074	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.772	1.784	-0.012	1.000	16619	0.0365		118	
	298.90 > 99.00	1.772	1.784	-0.012	1.000	4867	3.41(0.00-0.00)		17.1	
61 Sodium 1H,1H,2H,2H-perfluorohexane	327.00 > 307.00	1.971	1.975	-0.004	1.000	4452	0.0333		182	
6 Perfluorohexanoic acid	313.00 > 269.00	2.005	2.020	-0.015	1.000	16774	0.0681		22.9	
D 7 13C2 PFHxA	315.00 > 270.00	2.017	2.020	-0.003	12752278	58.1		116	13550	
10 Perfluoroheptanoic acid	363.00 > 319.00	2.329	2.337	-0.008	1.000	19407	0.0719		32.0	
D 9 13C4-PFHpA	367.00 > 322.00	2.329	2.337	-0.008	13759929	67.8		136	15883	
8 Perfluorohexanesulfonic acid	399.00 > 80.00	2.348	2.347	0.001	1.000	63704	0.1929		483	
D 11 18O2 PFHxS	403.00 > 84.00	2.348	2.347	0.001	14910414	52.4		111	11309	
13 Sodium 1H,1H,2H,2H-perfluorooctane	427.00 > 407.00	2.652	2.656	-0.004	1.000	11898	0.0953		280	
D 12 M2-6:2FTS	429.00 > 409.00	2.652	2.656	-0.004	6575216	60.3		127	8328	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
* 62 13C2-PFOA										
415.00 > 370.00	2.674	2.678	-0.004		17508	50.0			606	
D 14 13C4 PFOA										
417.00 > 372.00	2.681	2.678	0.003		12400406	63.6		127	9683	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.681	2.678	0.003	1.000	49660	0.1834			5.2	
413.00 > 169.00	2.681	2.678	0.003	1.000	21332		2.33(0.90-1.10)		196	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.688	2.685	0.003	1.000	12467	0.0440			217	
D 18 13C4 PFOS										
503.00 > 80.00	3.043	3.043	0.0		11172333	55.7		117	17043	
20 Perfluorononanoic acid										
463.00 > 419.00	3.051	3.051	0.0	1.000	8427	0.0469			13.9	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.043	3.051	-0.008	1.000	57897	0.2308			355	M
499.00 > 99.00	3.043	3.051	-0.008	1.000	12576		4.60(0.90-1.10)		40.6	M
D 19 13C5 PFNA										
468.00 > 423.00	3.043	3.051	-0.008		9332089	62.1		124	7926	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.394	3.393	0.001	1.000	4427	0.0450			101	
D 26 M2-8:2FTS										
529.00 > 509.00	3.394	3.393	0.001		5064530	69.4		145	15677	
D 21 13C8 FOSA										
506.00 > 78.00	3.394	3.393	0.001		12137122	38.9		77.9	29873	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.403	3.402	0.001	1.000	8602	0.0537			30.8	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.394	3.402	-0.008	1.000	130462	0.5657			923	
D 23 13C2 PFDA										
515.00 > 470.00	3.403	3.402	0.001		8557244	63.7		127	13811	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.559	3.561	-0.002	1.000	5469	0.1558			29.9	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.559	3.561	-0.002		1850693	44.2		88.5	5937	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.716	3.719	-0.003	1.000	9400	0.0641			162	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.736	3.728	0.008	1.005	5429	0.1690			94.1	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.726	3.728	-0.002	1.000	22243	0.1756			38.2	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.716	3.728	-0.012		1844528	45.1		90.2	2630	
D 30 13C2 PFUnA										
565.00 > 520.00	3.726	3.728	-0.002		5683938	59.4		119	20938	
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.901	3.904	-0.003		9664	0.1201		0.2	1.9	
35 MeFOSA										
512.00 > 169.00	3.909	3.904	0.005	1.000	5047	29.5			117	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
37 Perfluorododecanoic acid	613.00 > 569.00	4.024	4.022	0.002	1.000	9660	0.1061		11.7	
D 36 13C2 PFDaA	615.00 > 570.00	4.017	4.022	-0.005		4725564	51.8	104	19403	
D 38 d-N-EtFOSA-M	531.00 > 169.00	4.088	4.087	0.001		8305	0.1108	0.2	20.5	
39 N-ethylperfluoro-1-octanesulfonami	526.00 > 169.00	4.097	4.096	0.001	1.000	3718	23.9		71.3	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.283	4.290	-0.007	1.000	15393	0.1432		1.9	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.516	4.516	0.0	1.000	4866	0.1657		123	
	713.00 > 219.00	4.525	4.516	0.009	1.002	3654	1.33(0.00-0.00)		53.8	
D 43 13C2-PFTeDA	715.00 > 670.00	4.516	4.525	-0.009		5778858	61.6	123	30204	
45 Perfluorohexadecanoic acid	813.00 > 769.00	4.928	4.932	-0.004	1.000	84665	0.3657		7.5	
D 44 13C2-PFHxDA	815.00 > 770.00	4.928	4.932	-0.004		6087431	42.5	84.9	8183	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.276	5.279	-0.003	1.000	40219	0.3158		5.1	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_002.d

Injection Date: 15-Sep-2017 22:28:06

Instrument ID: A8_N

Lims ID: MB 320-183917/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 1

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

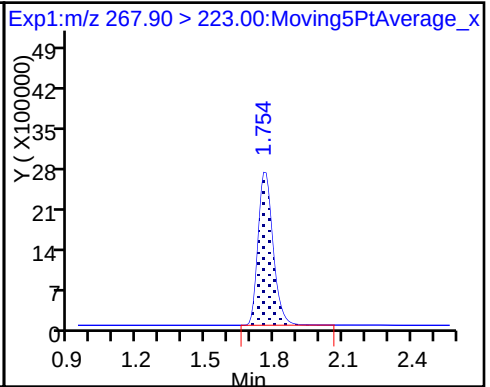
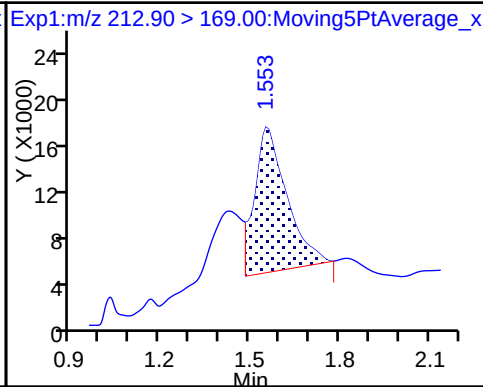
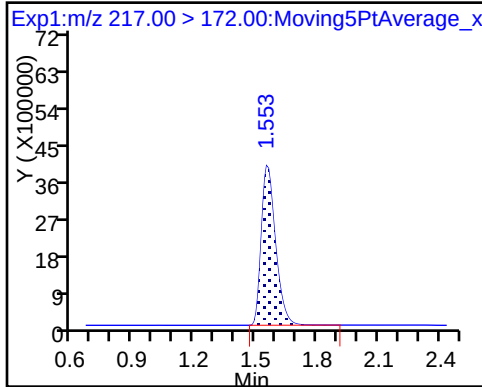
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

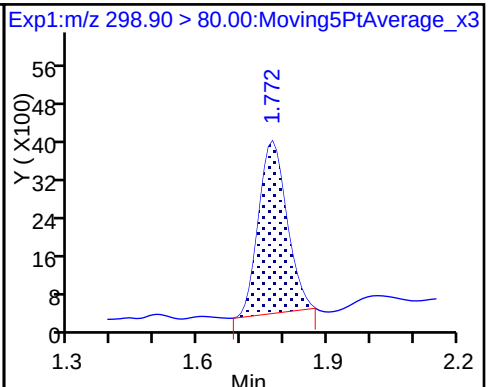
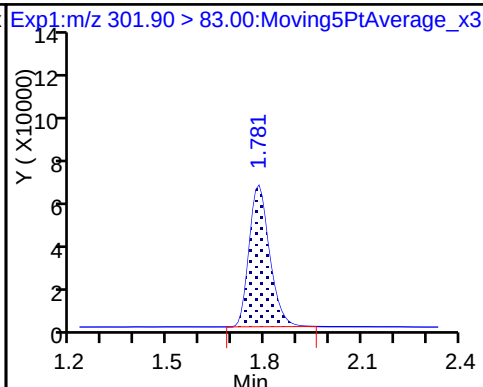
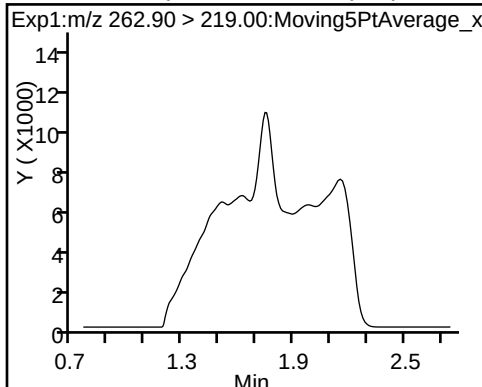
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (ND)

D 47 13C3-PFBS

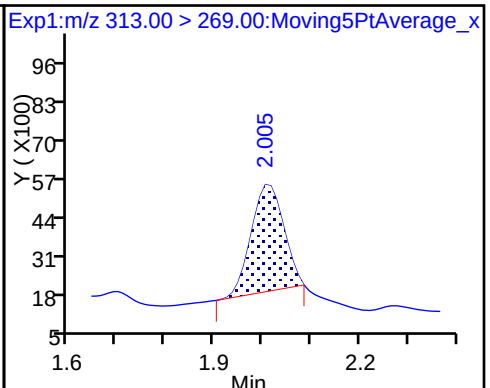
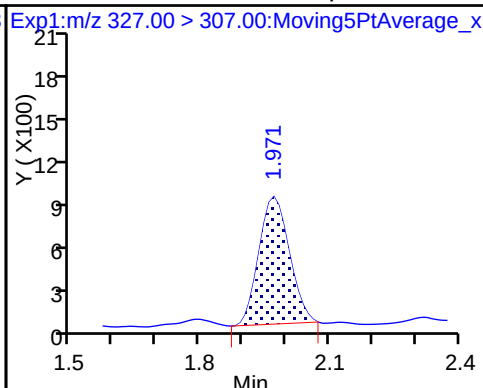
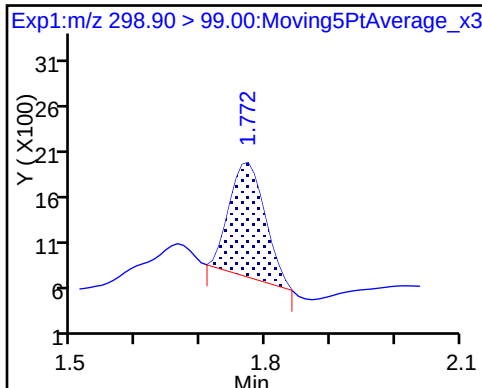
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

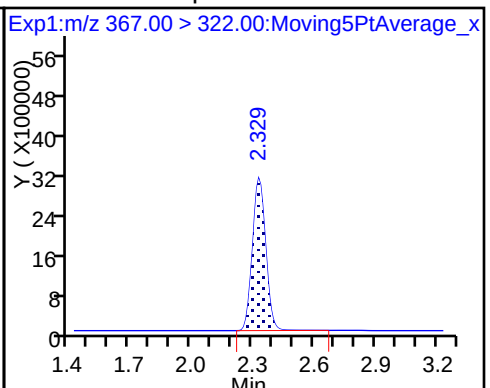
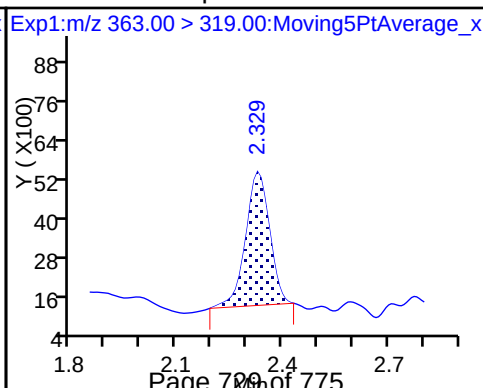
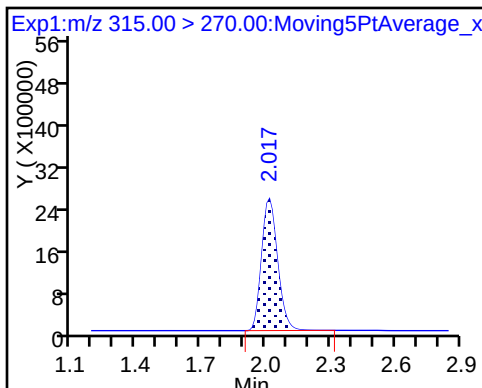
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

D 9 13C4-PFHpA

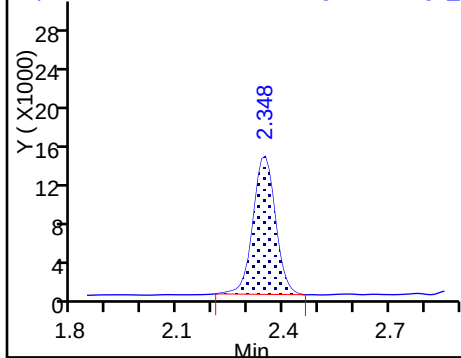


8 Perfluorohexanesulfonic acid

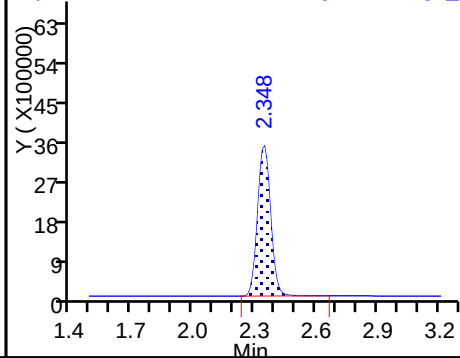
D 11 18O2 PFHxS

13 Sodium 1H,1H,2H,2H-perfluorooctane

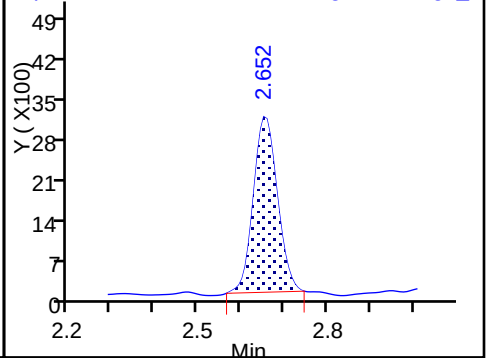
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Exp1:m/z 403.00 > 84.00:Moving5PtAverage_x3



Exp1:m/z 427.00 > 407.00:Moving5PtAverage_x3

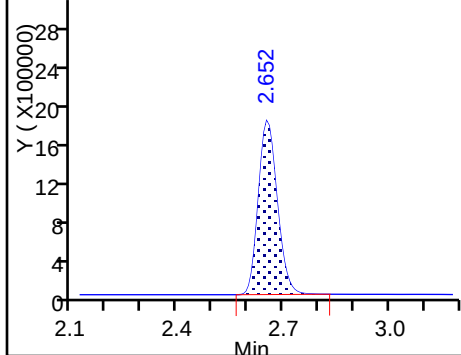


D 12 M2-6:2FTS

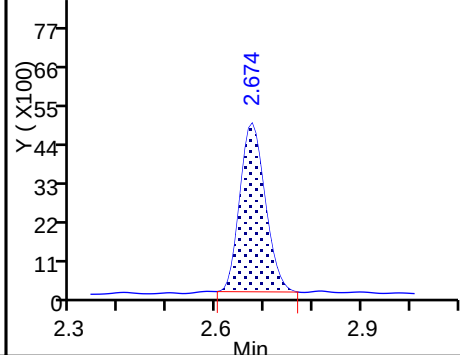
* 62 13C2-PFOA

D 14 13C4 PFOA

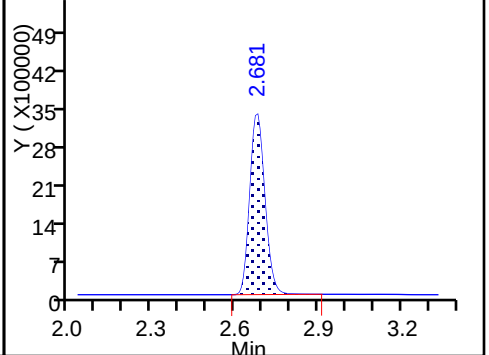
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Exp1:m/z 415.00 > 370.00:Moving5PtAverage_x3



Exp1:m/z 417.00 > 372.00:Moving5PtAverage_x3

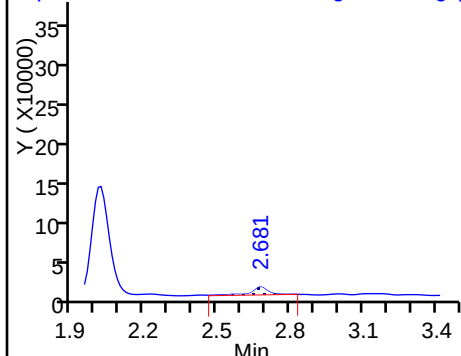


15 Perfluorooctanoic acid

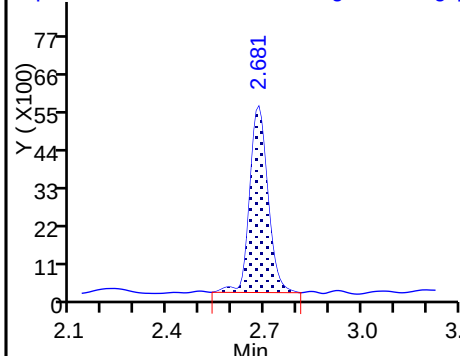
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic Acid

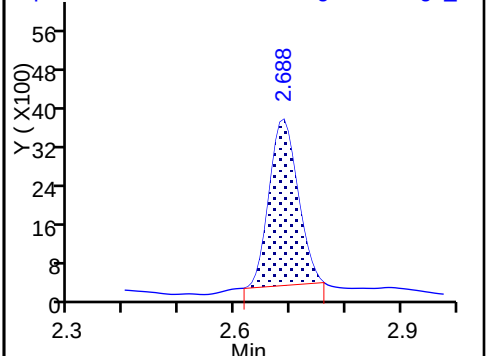
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Exp1:m/z 413.00 > 169.00:Moving5PtAverage_x3



Exp1:m/z 449.00 > 80.00:Moving5PtAverage_x3

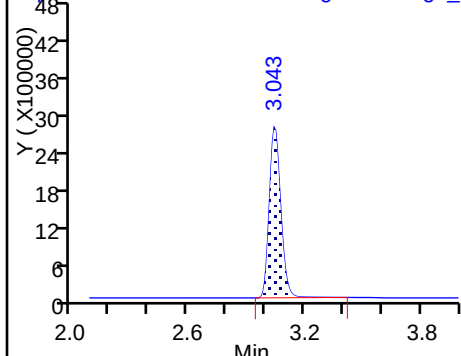


D 18 13C4 PFOS

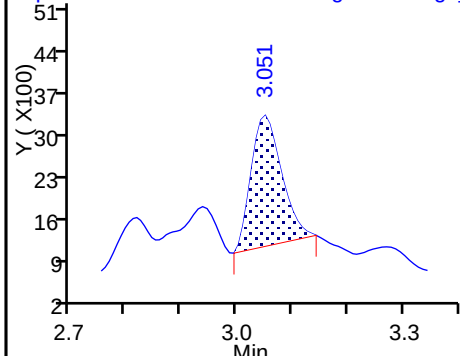
20 Perfluorononanoic acid

17 Perfluorooctane sulfonic acid (M)

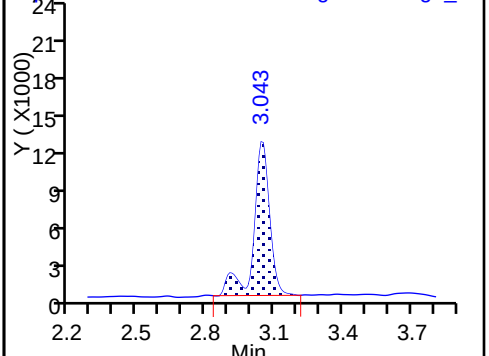
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Exp1:m/z 463.00 > 419.00:Moving5PtAverage_x3

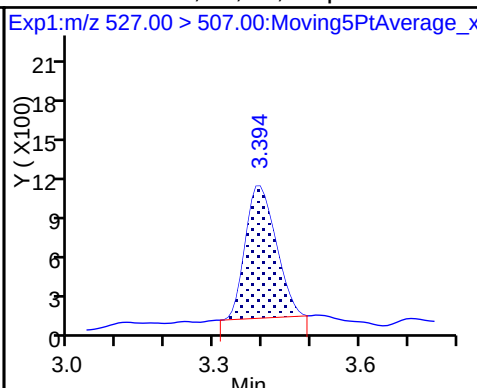
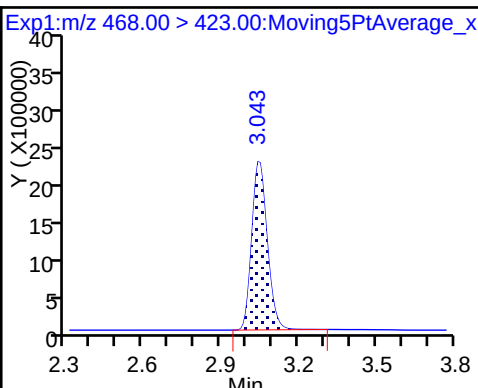
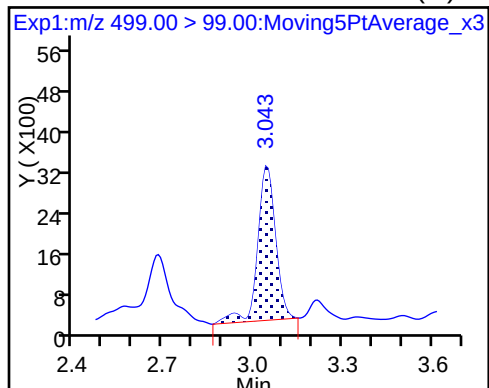


Exp1:m/z 499.00 > 80.00:Moving5PtAverage_x3



17 Perfluorooctane sulfonic acid (M) D 19 13C5 PFNA

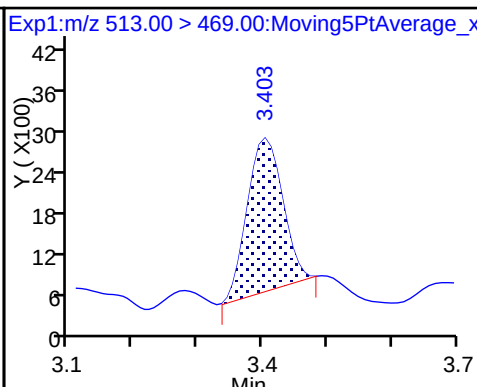
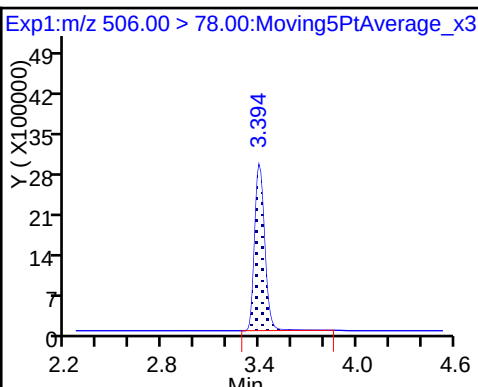
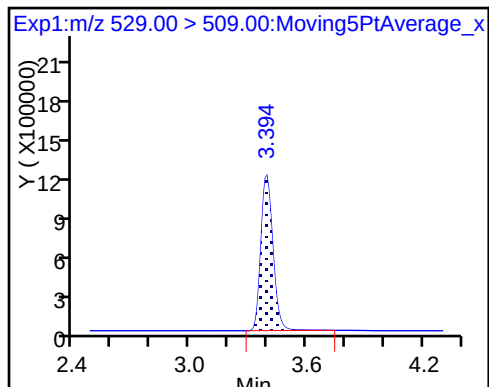
25 Sodium 1H,1H,2H,2H-perfluorodecane



D 26 M2-8:2FTS

D 21 13C8 FOSA

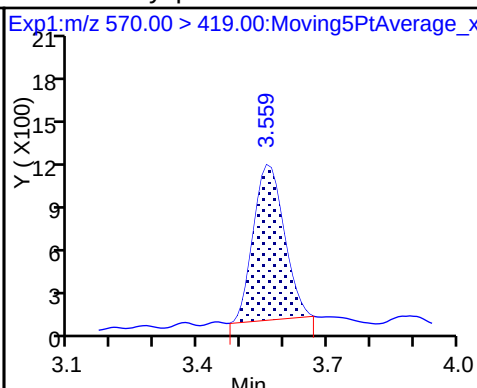
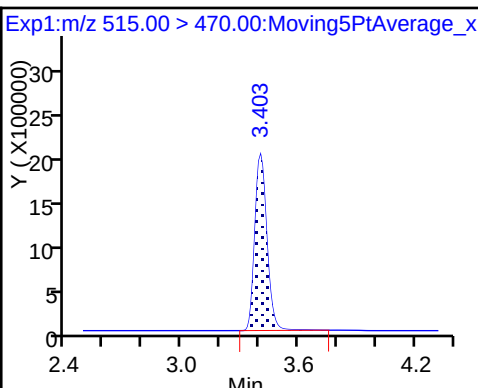
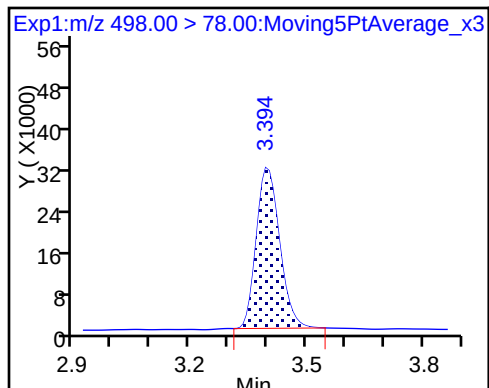
24 Perfluorodecanoic acid



22 Perfluorooctane Sulfonamide

D 23 13C2 PFDA

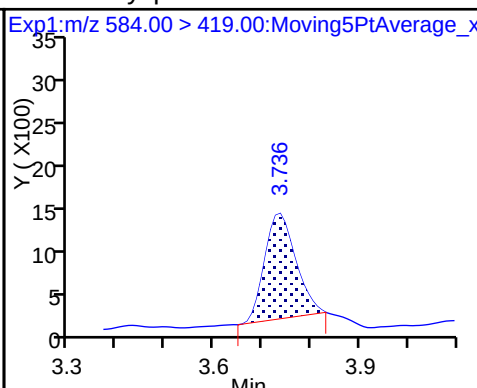
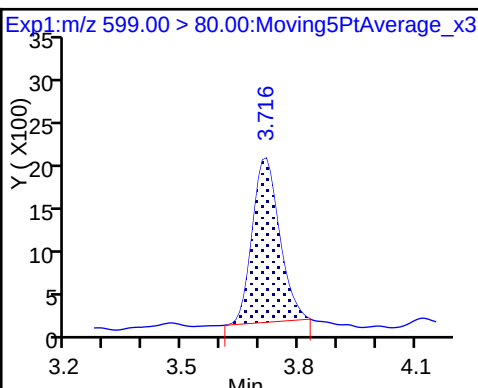
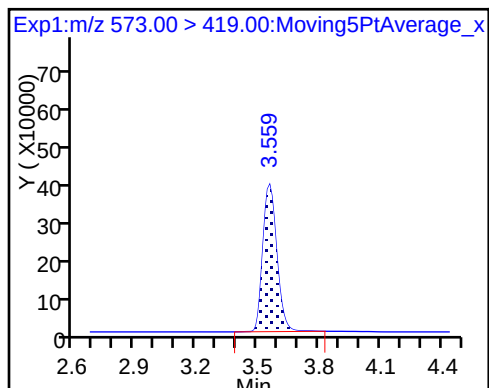
28 N-methyl perfluorooctane sulfonami



D 27 d3-NMeFOSAA

29 Perfluorodecane Sulfonic acid

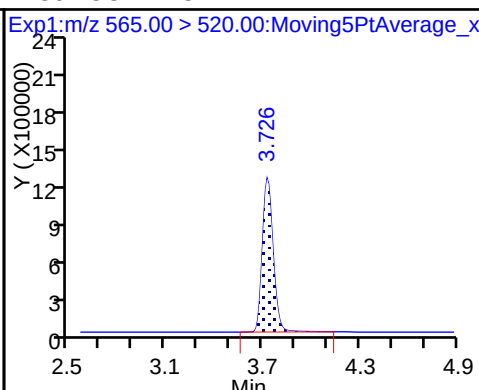
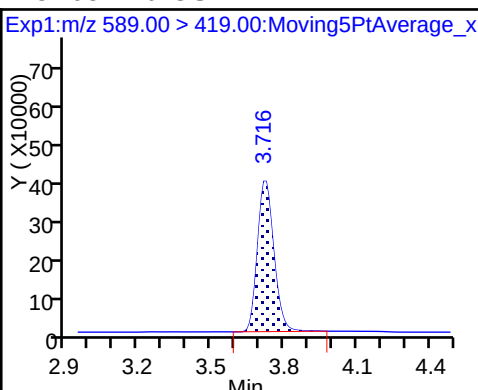
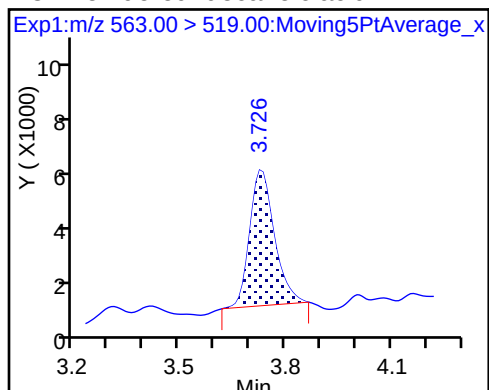
33 N-ethyl perfluorooctane sulfonamid



31 Perfluoroundecanoic acid

D 32 d5-NEtFOSAA

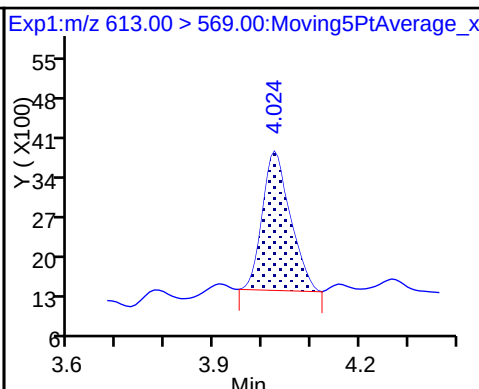
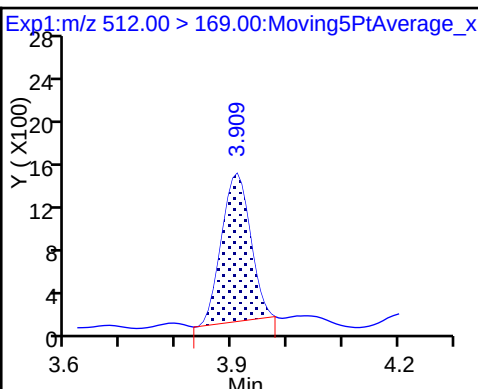
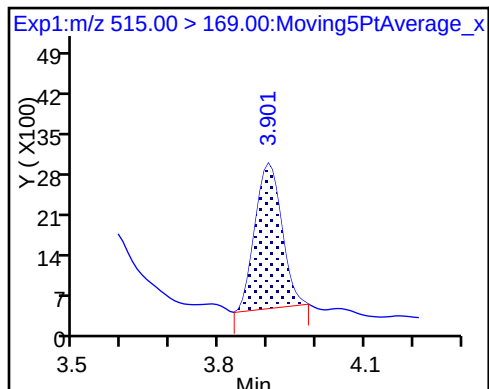
D 30 13C2 PFUnA



D 34 d-N-MeFOSA-M

35 MeFOSA

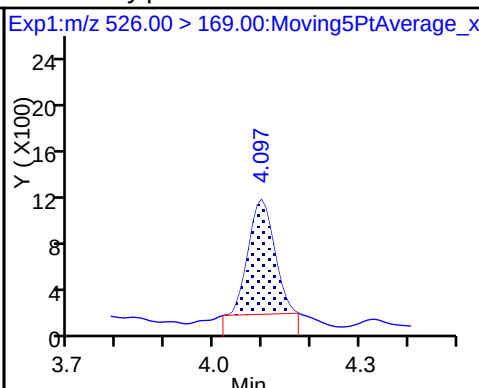
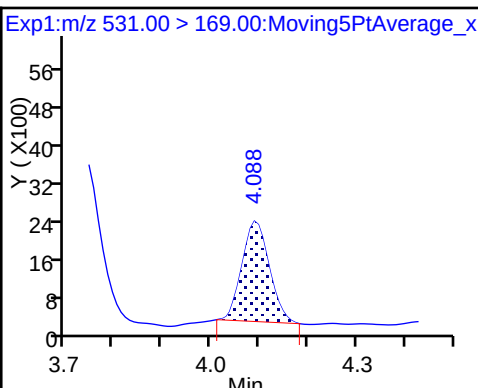
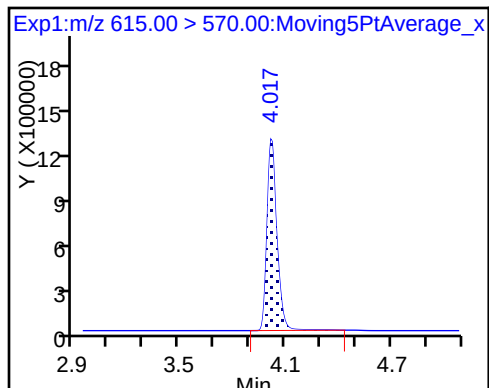
37 Perfluorododecanoic acid



D 36 13C2 PFDaA

D 38 d-N-EtFOSA-M

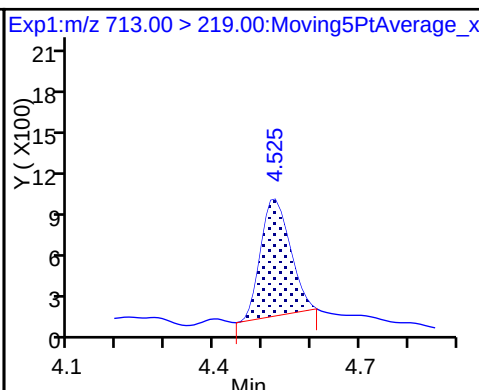
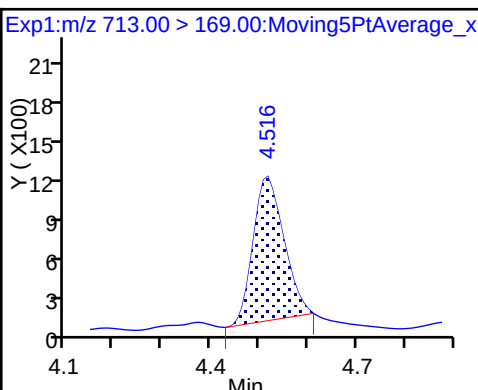
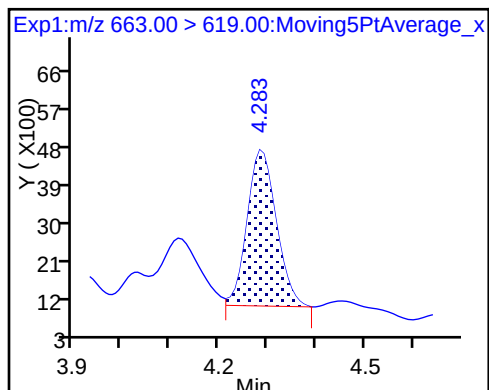
39 N-ethylperfluoro-1-octanesulfonami



41 Perfluorotridecanoic acid

42 Perfluorotetradecanoic acid

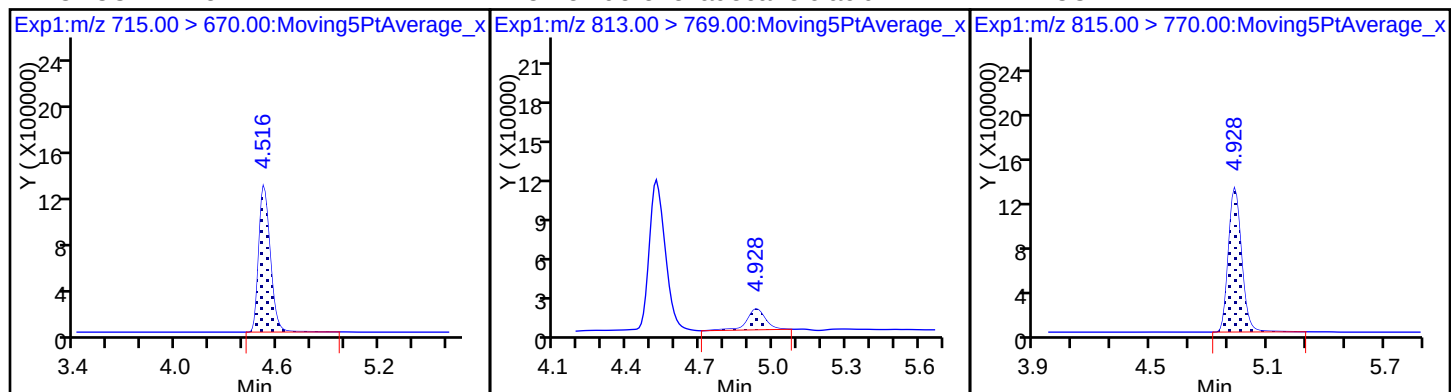
42 Perfluorotetradecanoic acid



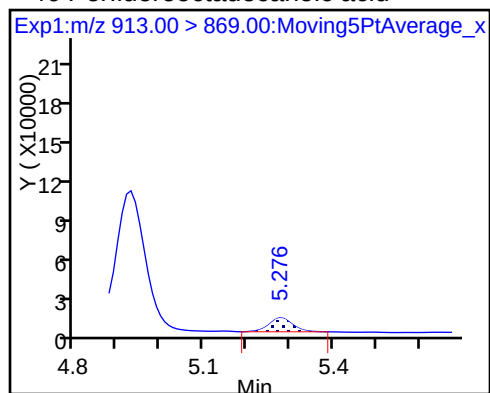
D 43 13C2-PFTeDA

45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA



46 Perfluorooctadecanoic acid



TestAmerica Sacramento

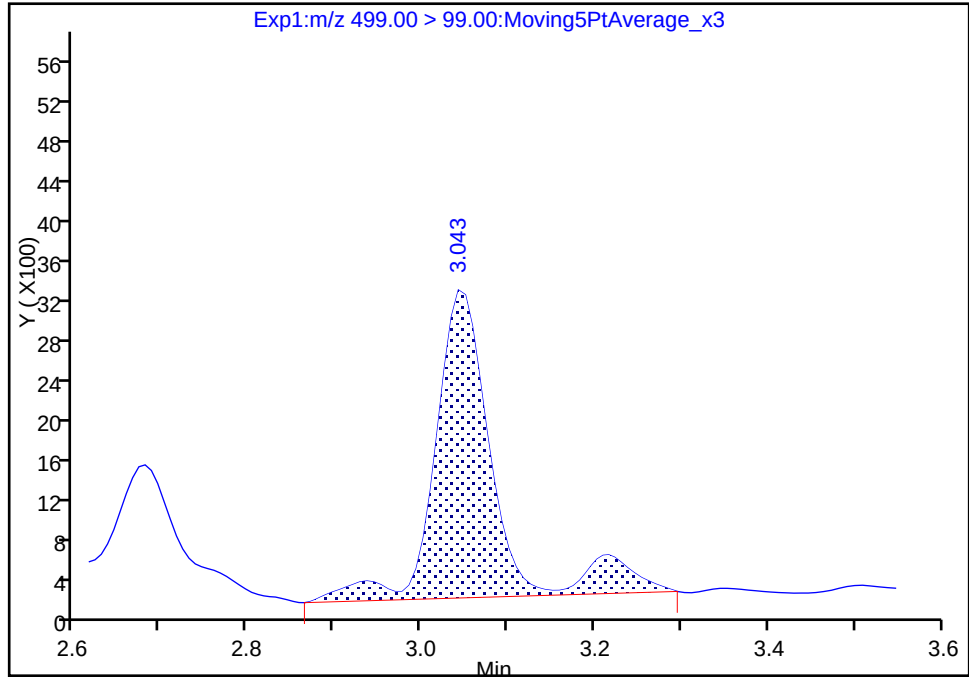
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Injection Date: 15-Sep-2017 22:28:06 Instrument ID: A8_N
Lims ID: MB 320-183917/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 2

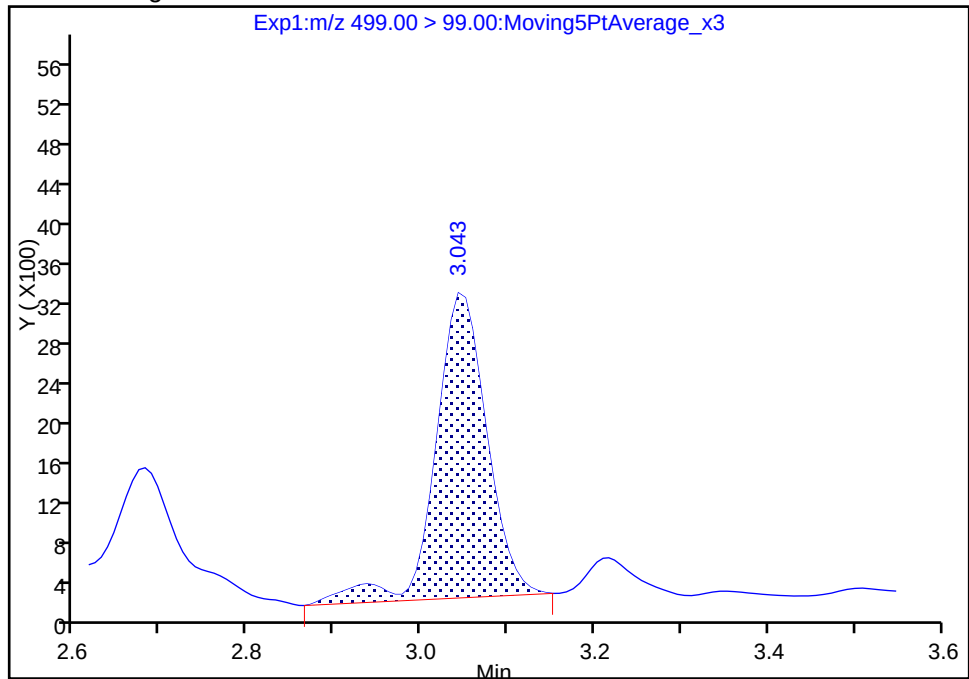
RT: 3.04
Area: 14492
Amount: 0.248242
Amount Units: ng/ml

Processing Integration Results



RT: 3.04
Area: 12576
Amount: 0.230834
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 14:03:56

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Sacramento

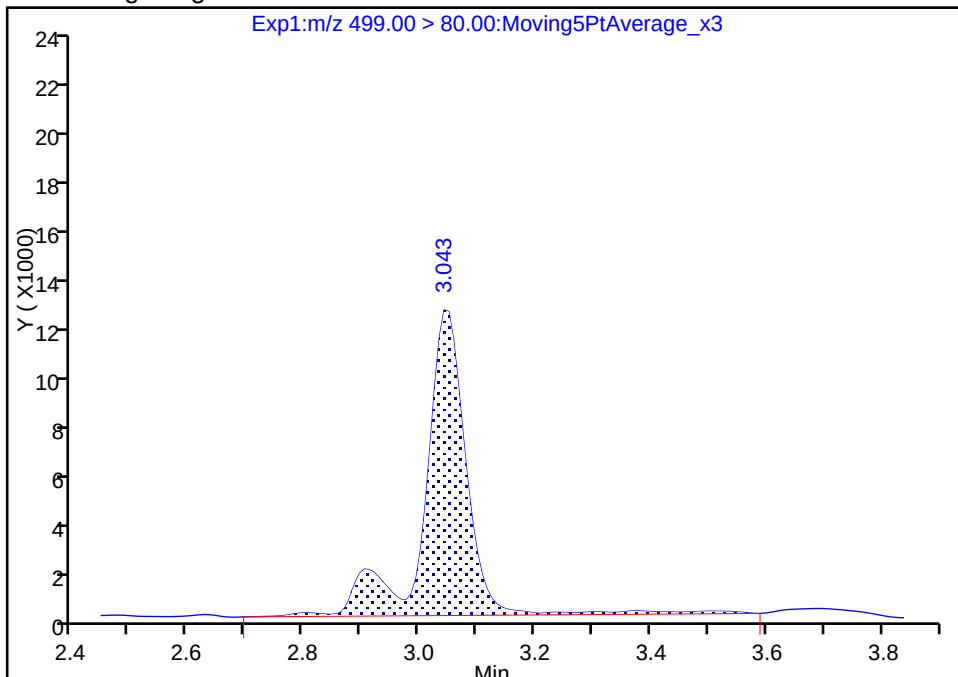
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Injection Date: 15-Sep-2017 22:28:06 Instrument ID: A8_N
Lims ID: MB 320-183917/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 1 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

17 Perfluorooctane sulfonic acid, CAS: 1763-23-1

Signal: 1

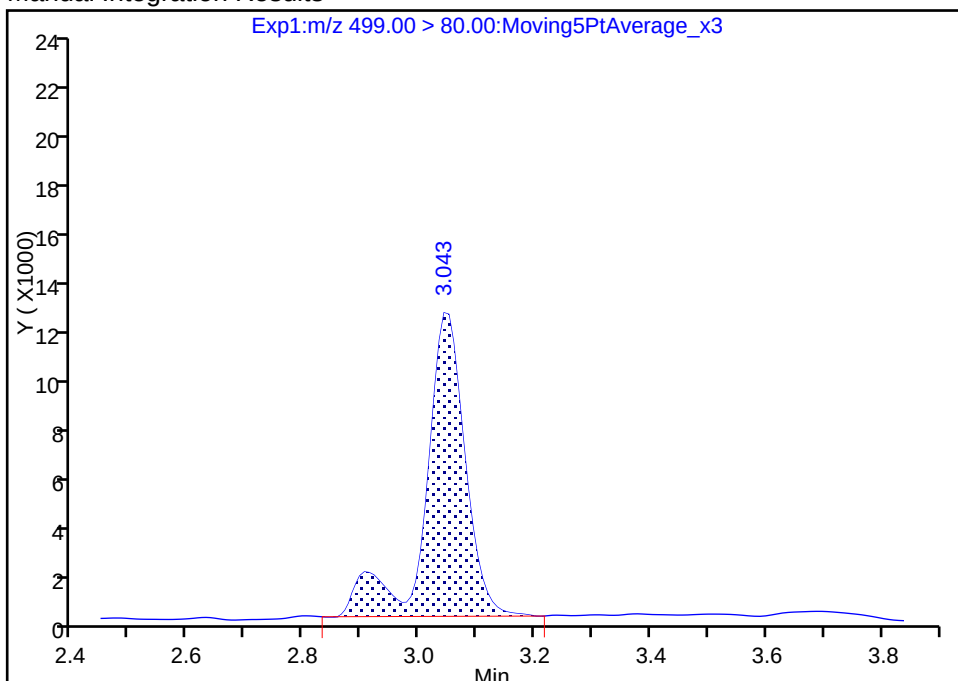
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Amount: 0.248242
Amount Units: ng/ml

Processing Integration Results



RT: 3.04
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Amount: 0.230834
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 19-Sep-2017 14:03:58

Audit Action: Manually Integrated

Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCS 320-183917/2-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_003.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>09/15/2017 22:35</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	45.6		2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	41.9		2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	45.0		2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	47.0		2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	43.3		2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	46.4		2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	44.5		2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	41.8		2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	44.3		2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	48.2		2.5	2.0	0.55
376-06-7	Perfluorotetradecanoic acid (PFTeA)	37.9		2.5	1.0	0.40
375-73-5	Perfluorobutanesulfonic acid (PFBS)	38.6		2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	42.9		2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	43.7		2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	39.8		4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	40.1		4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	49.7		40	2.0	0.64

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCS 320-183917/2-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_003.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>09/15/2017 22:35</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	73		25-150
STL00992	13C4 PFBA	103		25-150
STL00993	13C2 PFHxA	99		25-150
STL00990	13C4 PFOA	104		25-150
STL00995	13C5 PFNA	103		25-150
STL00996	13C2 PFDA	113		25-150
STL00997	13C2 PFUnA	100		25-150
STL00998	13C2 PFDoA	88		25-150
STL00994	18O2 PFHxS	103		25-150
STL00991	13C4 PFOS	102		25-150
STL01892	13C4-PFHpA	111		25-150
STL01893	13C5 PFPeA	94		25-150
STL02337	13C3-PFBS	107		25-150
STL02116	13C2-PFTeDA	122		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_003.d
 Lims ID: LCS 320-183917/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 15-Sep-2017 22:35:00 ALS Bottle#: 2 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 320-183917/2-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 14:09:59 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14ICALX_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK006

First Level Reviewer: westendorfc

Date: 19-Sep-2017 14:04:25

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	1.553	1.556	-0.003	16172596	51.7		103	15614	
2 Perfluorobutyric acid	212.90 > 169.00	1.553	1.556	-0.003	1.000	6993365	22.8	114	1539	
D 3 13C5-PFPeA	267.90 > 223.00	1.754	1.756	-0.002	9667017	47.1		94.3	34339	
4 Perfluoropentanoic acid	262.90 > 219.00	1.754	1.756	-0.002	1.000	4651749	21.0	105	1934	
D 47 13C3-PFBS	301.90 > 83.00	1.781	1.784	-0.003	246975	49.7		107	4750	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.781	1.784	-0.003	1.000	7475569	19.3	109	16256	
	298.90 > 99.00	1.781	1.784	-0.003	1.000	3146177	2.38(0.00-0.00)		9241	
61 Sodium 1H,1H,2H,2H-perfluorohexane	327.00 > 307.00	1.971	1.975	-0.004	1.000	2500451	23.0	123	15416	
6 Perfluorohexanoic acid	313.00 > 269.00	2.016	2.020	-0.004	1.000	4708901	22.5	112	4815	
D 7 13C2 PFHxA	315.00 > 270.00	2.016	2.020	-0.004	10842127	49.4		98.8	19880	
10 Perfluoroheptanoic acid	363.00 > 319.00	2.333	2.337	-0.004	1.000	5206841	23.5	118	4948	
D 9 13C4-PFHpA	367.00 > 322.00	2.333	2.337	-0.004	11290696	55.7		111	9202	
8 Perfluorohexanesulfonic acid	399.00 > 80.00	2.343	2.347	-0.004	1.000	6548989	21.4	118	5329	
D 11 18O2 PFHxS	403.00 > 84.00	2.343	2.347	-0.004	13797811	48.5		103	12446	
13 Sodium 1H,1H,2H,2H-perfluorooctane	427.00 > 407.00	2.651	2.656	-0.005	1.000	2343995	23.1	122	10772	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.651	2.656	-0.005		5352136	49.1		103	11563	
D 14 13C4 PFOA										
417.00 > 372.00	2.680	2.678	0.002		10157960	52.1		104	9685	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.680	2.678	0.002	1.000	4805724	21.7		108	798	
413.00 > 169.00	2.680	2.678	0.002	1.000	2532318		1.90(0.90-1.10)		5521	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.687	2.685	0.002	1.000	5429300	21.9		115	8754	
D 18 13C4 PFOS										
503.00 > 80.00	3.045	3.043	0.002		9799536	48.9		102	10140	
20 Perfluorononanoic acid										
463.00 > 419.00	3.045	3.051	-0.006	1.000	3451350	23.2		116	2656	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.045	3.051	-0.006	1.000	4383129	19.9		107	5180	
499.00 > 99.00	3.045	3.051	-0.006	1.000	952539		4.60(0.90-1.10)		2744	
D 19 13C5 PFNA										
468.00 > 423.00	3.045	3.051	-0.006		7724137	51.4		103	6336	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.394	3.393	0.001	1.000	1984196	22.4		117	8626	
D 26 M2-8:2FTS										
529.00 > 509.00	3.394	3.393	0.001		4549844	62.4		130	130000	
D 21 13C8 FOSA										
506.00 > 78.00	3.394	3.393	0.001		11429493	36.7		73.3	17947	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.403	3.402	0.001	1.000	3168783	22.3		111	7260	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.394	3.402	-0.008	1.000	5398623	24.9		124	12750	
D 23 13C2 PFDA										
515.00 > 470.00	3.403	3.402	0.001		7604553	56.6		113	31361	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.560	3.561	-0.001	1.000	656904	22.1		110	2177	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.560	3.561	-0.001		1568974	37.5		75.0	8347	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.708	3.719	-0.011	1.000	2579671	20.0		104	7790	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.727	3.728	-0.001	1.003	602130	23.3		117	3722	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.727	3.728	-0.001	1.000	2226848	20.9		105	3295	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.718	3.728	-0.010		1482396	36.2		72.5	2420	
D 30 13C2 PFUnA										
565.00 > 520.00	3.727	3.728	-0.001		4778308	50.0		100.0	11576	
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.903	3.904	-0.001		68637	0.8528		1.7	15.2	
35 MeFOSA										
512.00 > 169.00	3.903	3.904	-0.001	1.000	32127	26.4		132	294	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
37 Perfluorododecanoic acid										
613.00 > 569.00	4.020	4.022	-0.002	1.000	1720846	22.1		111	1974	
D 36 13C2 PFDaA										
615.00 > 570.00	4.020	4.022	-0.002		4033695	44.2		88.5	7059	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.091	4.087	0.004		36014	0.4804		1.0	85.7	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.091	4.096	-0.005	1.000	16909	25.1		125	109	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.286	4.290	-0.004	1.000	2210099	24.1		120	348	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.511	4.516	-0.005	1.000	552087	19.0		94.9	5923	
713.00 > 219.00	4.520	4.516	0.004	1.002	419005		1.32(0.00-0.00)		4376	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.520	4.525	-0.005		5726164	61.0		122	9404	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.254	4.932	0.322	1.000	622	-0.4352		-2.2	0.0	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.931	4.932	-0.001		5194902	36.2		72.5	9357	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.275	5.279	-0.004	1.000	2405064	22.1		111	328	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_003.d

Injection Date: 15-Sep-2017 22:35:00

Instrument ID: A8_N

Lims ID: LCS 320-183917/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 2

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

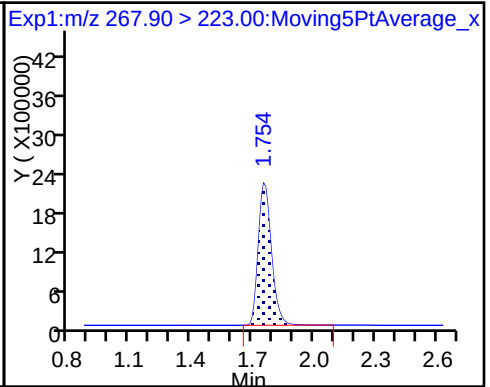
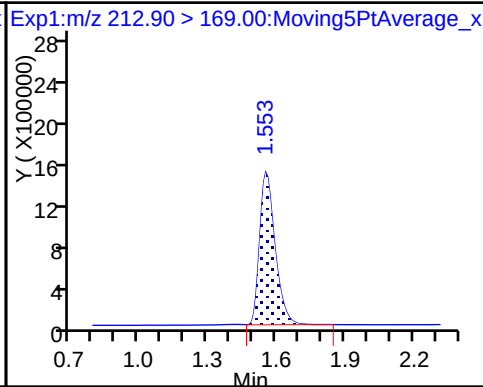
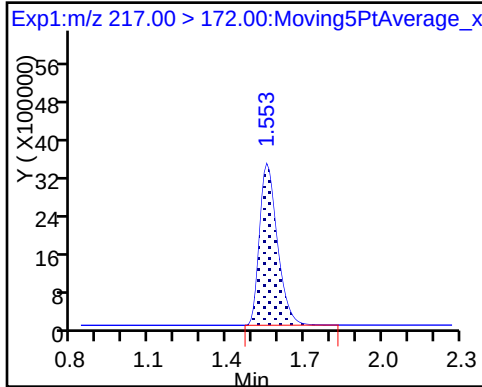
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

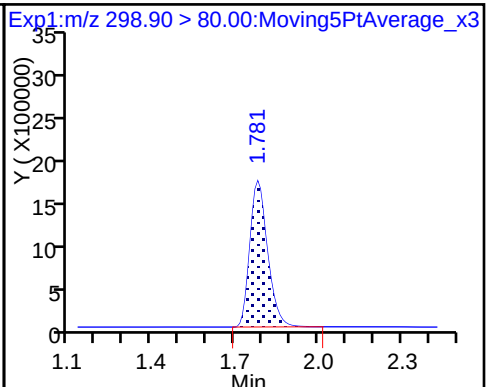
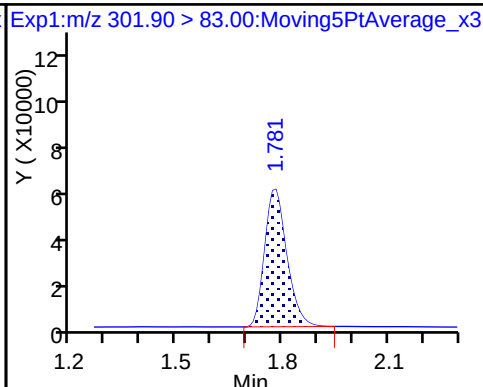
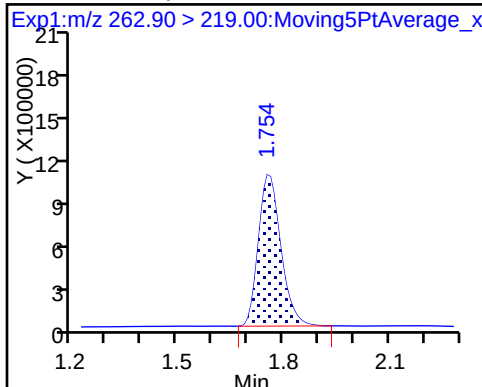
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

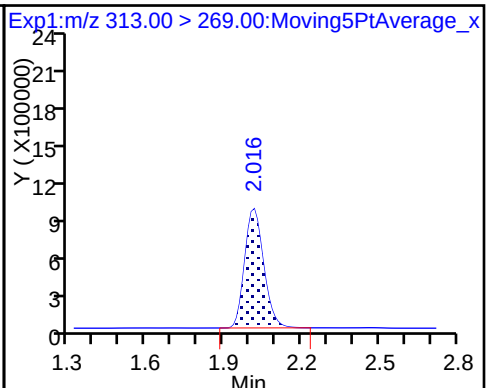
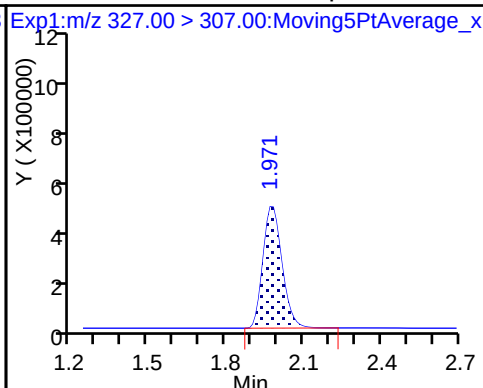
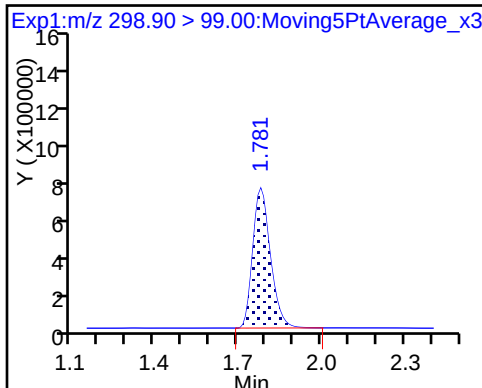
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoic acid

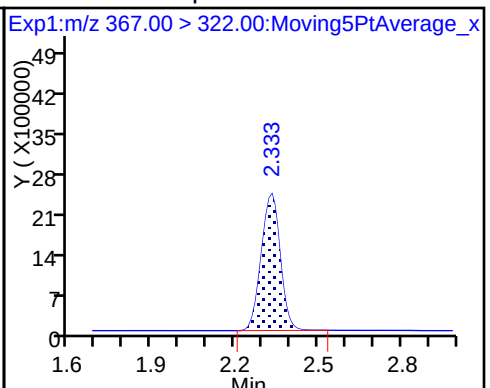
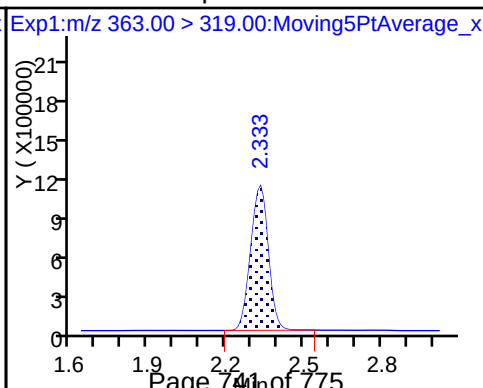
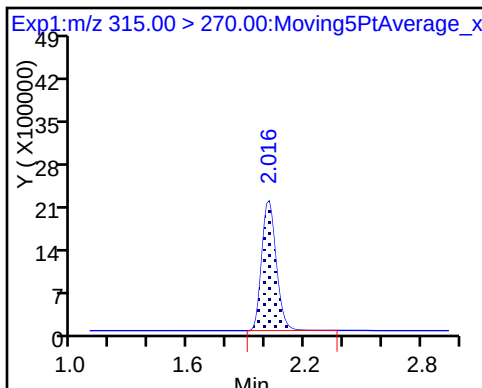
6 Perfluorohexanoic acid

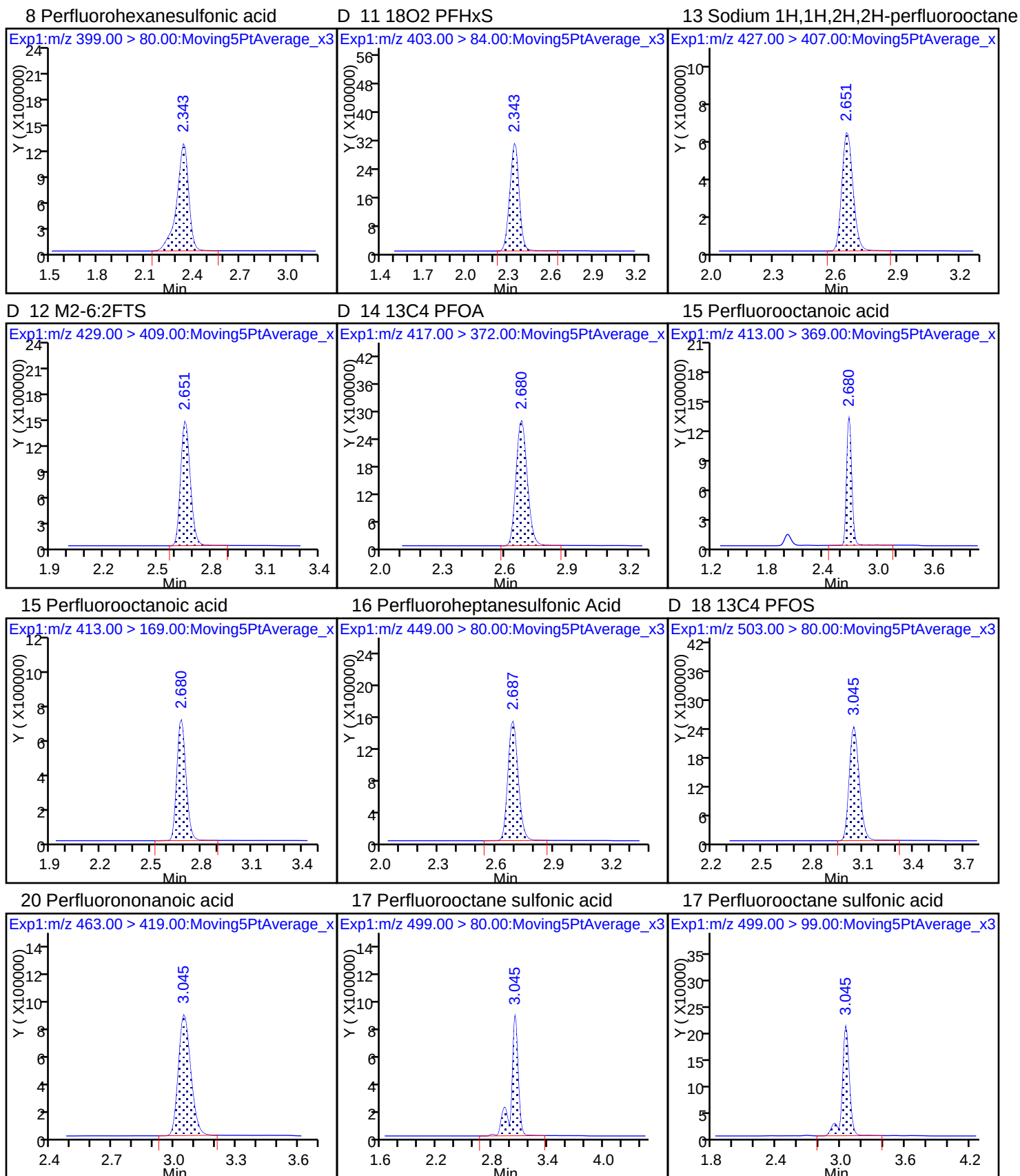


D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

D 9 13C4-PFHpA



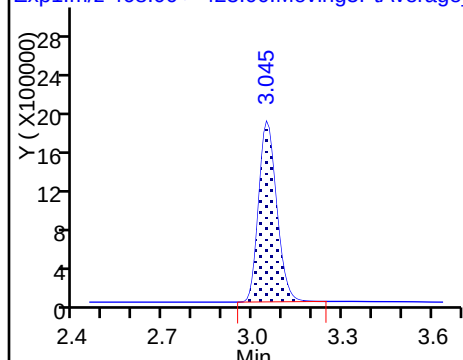


D 19 13C5 PFNA

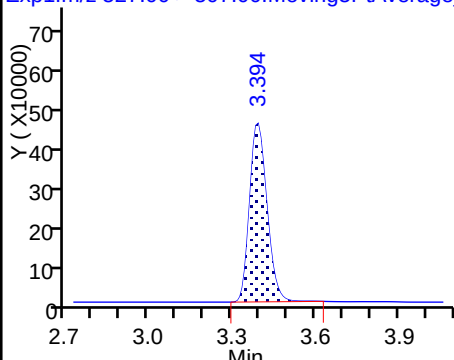
25 Sodium 1H,1H,2H,2H-perfluorodecanoate

De26 M2-8:2FTS

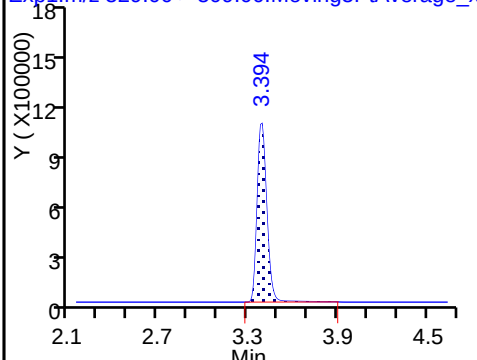
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Exp1:m/z 529.00 > 509.00:Moving5PtAverage_x

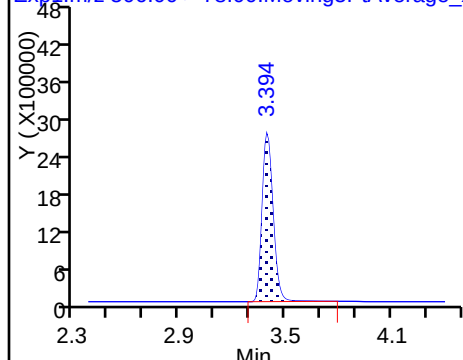


D 21 13C8 FOSA

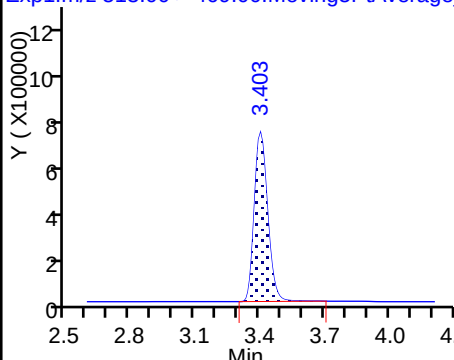
24 Perfluorodecanoic acid

22 Perfluorooctane Sulfonamide

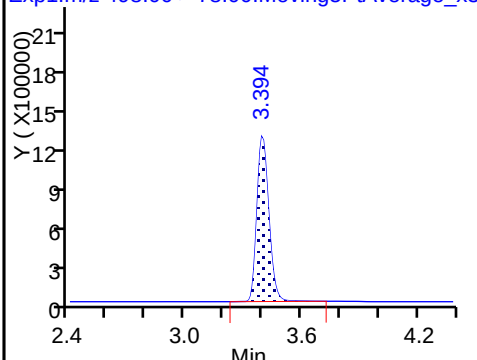
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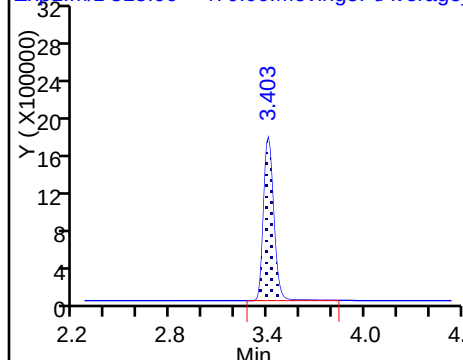


D 23 13C2 PFDA

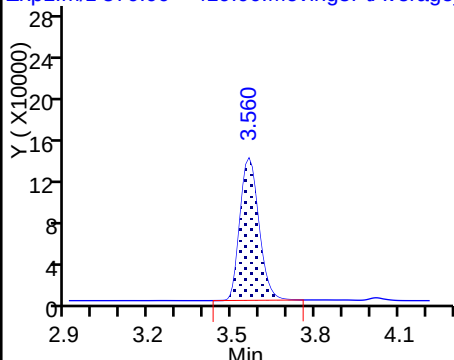
28 N-methyl perfluorooctane sulfonamide

D 27 d3-NMeFOSAA

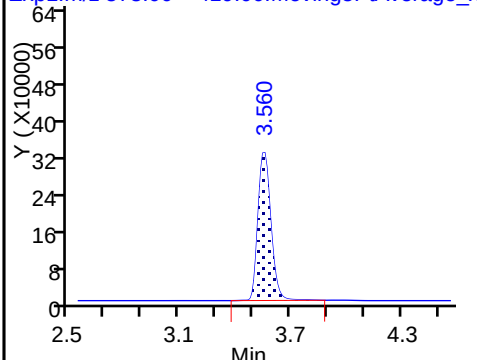
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Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x



Exp1:m/z 573.00 > 419.00:Moving5PtAverage_x

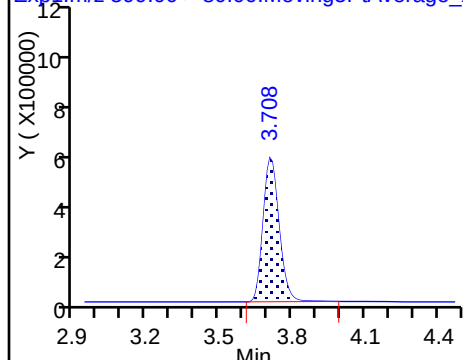


29 Perfluorodecanoic Sulfonic acid

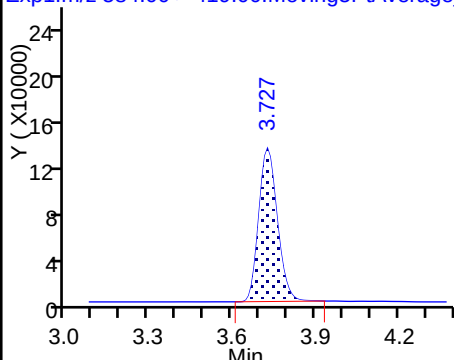
33 N-ethyl perfluorooctane sulfonamide

31 Perfluoroundecanoic acid

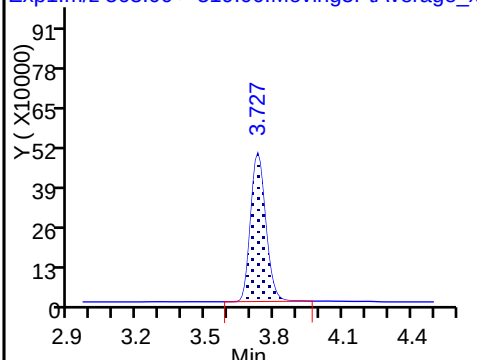
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Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x



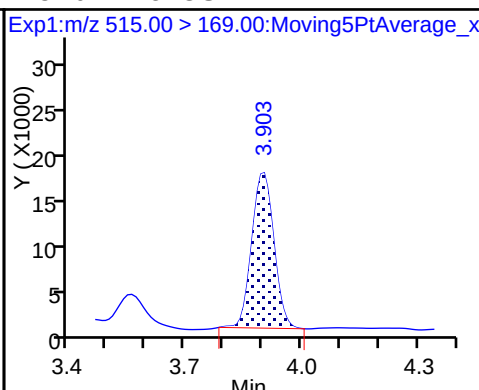
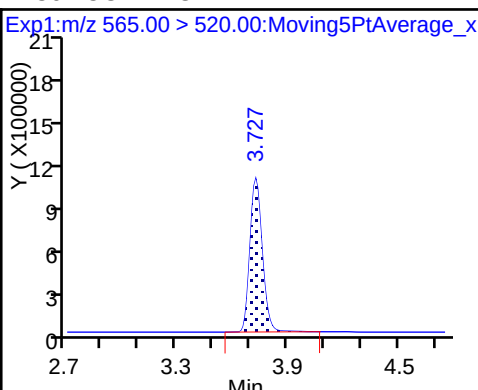
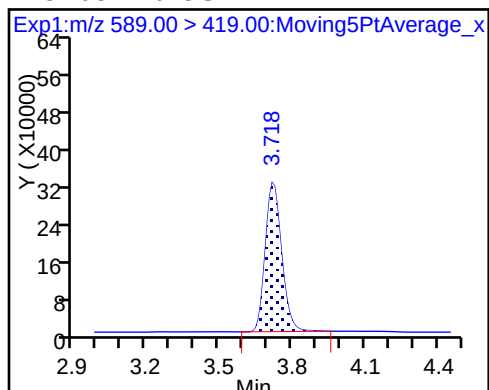
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D 32 d5-NEtFOSAA

D 30 13C2 PFUnA

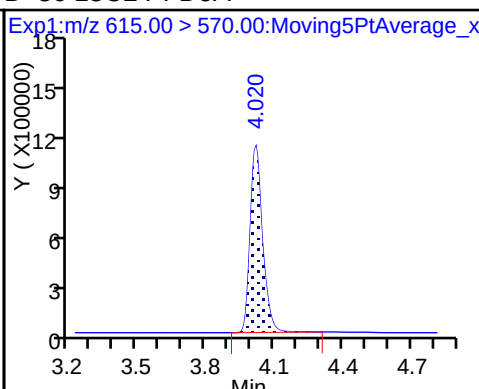
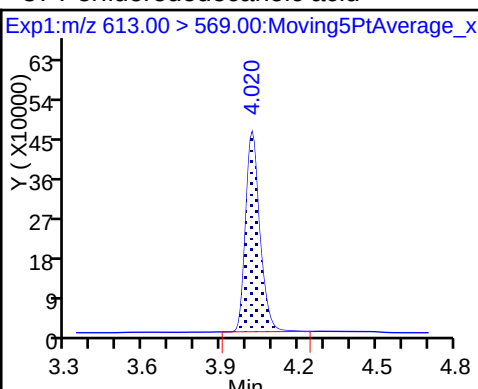
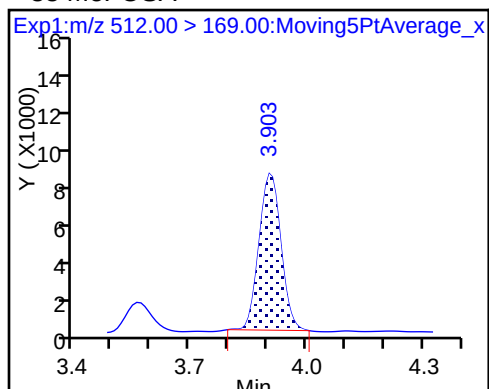
D 34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

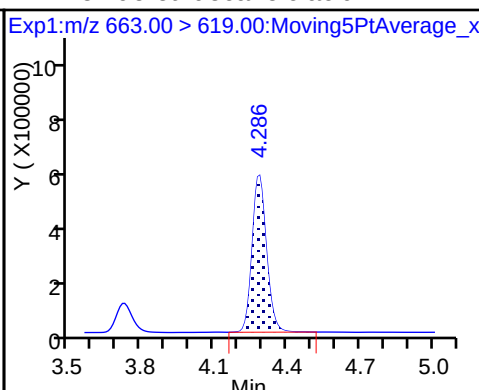
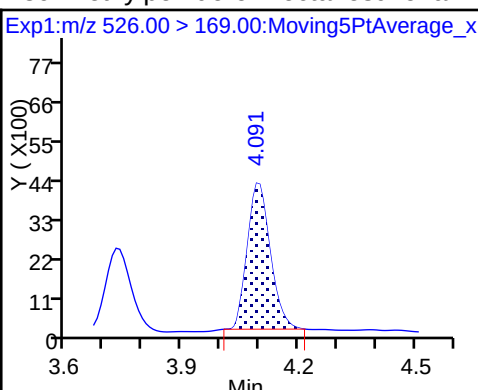
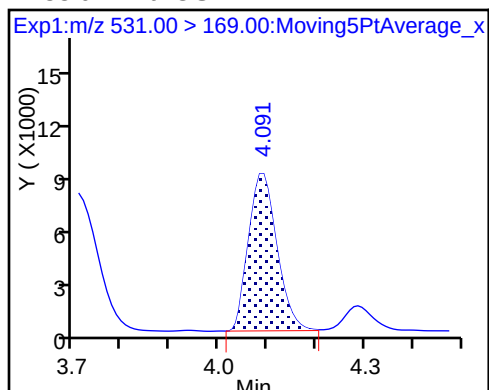
D 36 13C2 PFDaA



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

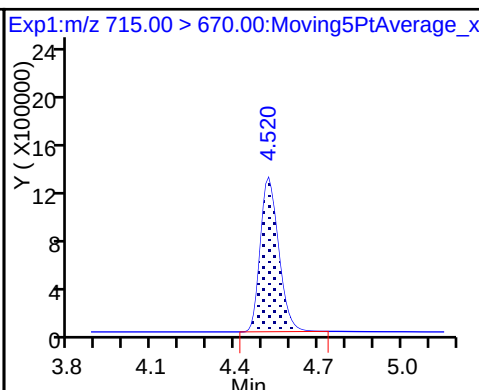
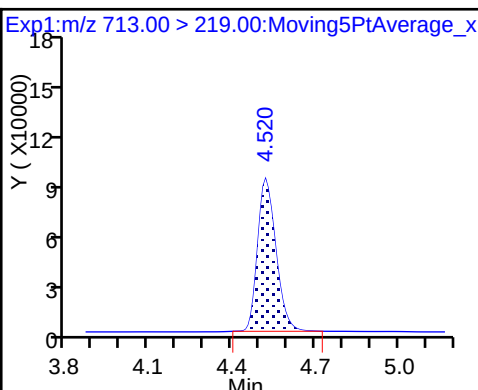
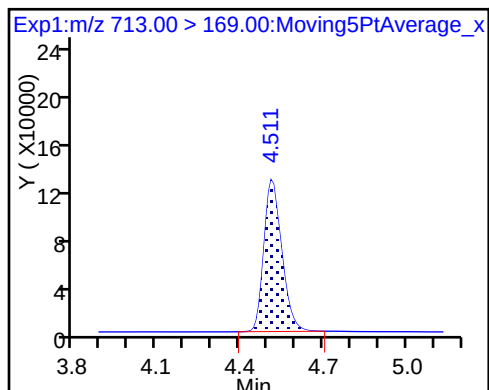
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

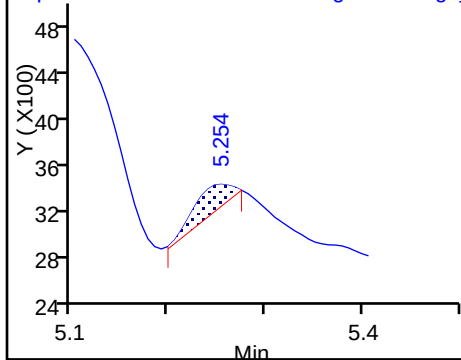


45 Perfluorohexadecanoic acid

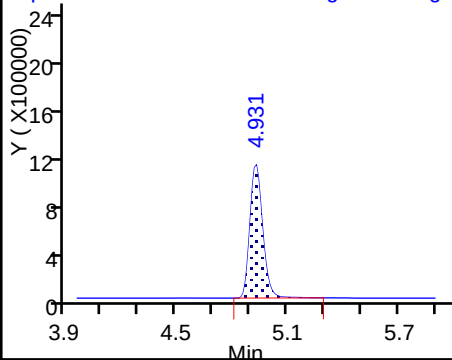
D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid

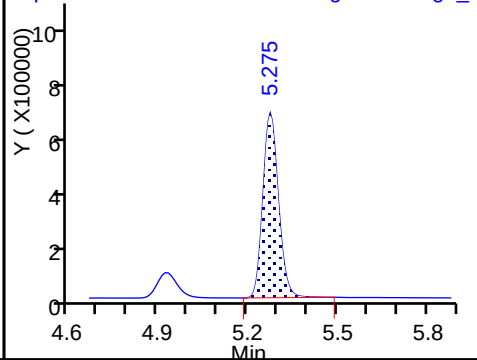
Exp1:m/z 813.00 > 769.00:Moving5PtAverage_x



Exp1:m/z 815.00 > 770.00:Moving5PtAverage_x



Exp1:m/z 913.00 > 869.00:Moving5PtAverage_x



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCSD 320-183917/3-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_004.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>09/15/2017 22:41</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	45.3		2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	41.1		2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	44.1		2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	45.2		2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	42.5		2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	43.0		2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	43.1		2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	41.2		2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	42.1		2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	41.3		2.5	2.0	0.55
376-06-7	Perfluorotetradecanoic acid (PFTeA)	36.0		2.5	1.0	0.40
375-73-5	Perfluorobutanesulfonic acid (PFBS)	38.8		2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	41.9		2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	44.4		2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	38.1		4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	36.4		4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	46.4		40	2.0	0.64

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCSD 320-183917/3-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_004.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>09/15/2017 22:41</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	70		25-150
STL00992	13C4 PFBA	105		25-150
STL00993	13C2 PFHxA	97		25-150
STL00990	13C4 PFOA	105		25-150
STL00995	13C5 PFNA	105		25-150
STL00996	13C2 PFDA	109		25-150
STL00997	13C2 PFUnA	91		25-150
STL00998	13C2 PFDoA	83		25-150
STL00994	18O2 PFHxS	103		25-150
STL00991	13C4 PFOS	100		25-150
STL01892	13C4-PFHpA	116		25-150
STL01893	13C5 PFPeA	98		25-150
STL02337	13C3-PFBS	107		25-150
STL02116	13C2-PFTeDA	109		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_004.d
 Lims ID: LCSD 320-183917/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 15-Sep-2017 22:41:54 ALS Bottle#: 3 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: lcsd 320-183917/3-a
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\A8_N.m
 Limit Group: LC PFC_DOD ICAL
 Last Update: 19-Sep-2017 14:09:59 Calib Date: 14-Sep-2017 15:14:13
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20170914-47938.b\2017.09.14ICALX_010.d
 Column 1 : Det: EXP1
 Process Host: XAWRK006

First Level Reviewer: westendorfc

Date: 19-Sep-2017 14:04:37

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	1.556	1.556	0.0	16361177	52.3		105	40321	
2 Perfluorobutyric acid	212.90 > 169.00	1.556	1.556	0.0	1.000	7033754	22.7	113	1114	
D 3 13C5-PFPeA	267.90 > 223.00	1.756	1.756	0.0	10003546	48.8		97.6	48353	
4 Perfluoropentanoic acid	262.90 > 219.00	1.756	1.756	0.0	1.000	4717770	20.5	103	1958	
D 47 13C3-PFBS	301.90 > 83.00	1.784	1.784	0.0	248094	49.9		107	5697	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.784	1.784	0.0	1.000	7553544	19.4	110	23497	
	298.90 > 99.00	1.784	1.784	0.0	1.000	3206752	2.36(0.00-0.00)		8735	
61 Sodium 1H,1H,2H,2H-perfluorohexane	327.00 > 307.00	1.975	1.975	0.0	1.000	2510772	21.7	116	27882	
6 Perfluorohexanoic acid	313.00 > 269.00	2.020	2.020	0.0	1.000	4541492	22.0	110	5216	
D 7 13C2 PFHxA	315.00 > 270.00	2.020	2.020	0.0	10671213	48.6		97.3	46642	
10 Perfluoroheptanoic acid	363.00 > 319.00	2.336	2.337	-0.001	1.000	5186259	22.6	113	6296	
D 9 13C4-PFHpA	367.00 > 322.00	2.336	2.337	-0.001	11715911	57.8		116	25947	
8 Perfluorohexanesulfonic acid	399.00 > 80.00	2.346	2.347	-0.001	1.000	6398333	20.9	115	9277	
D 11 18O2 PFHxS	403.00 > 84.00	2.346	2.347	-0.001	13798858	48.5		103	23882	
13 Sodium 1H,1H,2H,2H-perfluorooctane	427.00 > 407.00	2.653	2.656	-0.003	1.000	2167152	20.1	106	17286	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 409.00	2.653	2.656	-0.003		5693577	52.2		110	24905	
D 14 13C4 PFOA										
417.00 > 372.00	2.682	2.678	0.004		10277178	52.7		105	58377	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.682	2.678	0.004	1.000	4768087	21.2		106	773	
413.00 > 169.00	2.682	2.678	0.004	1.000	2431601		1.96(0.90-1.10)		9228	
16 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.689	2.685	0.004	1.000	5395282	22.2		117	15506	
D 18 13C4 PFOS										
503.00 > 80.00	3.048	3.043	0.005		9587724	47.8		100	26270	
20 Perfluorononanoic acid										
463.00 > 419.00	3.048	3.051	-0.003	1.000	3261835	21.5		107	4345	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.048	3.051	-0.003	1.000	4095431	19.0		103	11529	
499.00 > 99.00	3.048	3.051	-0.003	1.000	881253		4.65(0.90-1.10)		2895	
D 19 13C5 PFNA										
468.00 > 423.00	3.048	3.051	-0.003		7879460	52.4		105	23739	
25 Sodium 1H,1H,2H,2H-perfluorodecane										
527.00 > 507.00	3.397	3.393	0.004	1.002	1810112	21.4		112	14504	
D 26 M2-8:2FTS										
529.00 > 509.00	3.389	3.393	-0.004		4350675	59.7		125	15396	
D 21 13C8 FOSA										
506.00 > 78.00	3.397	3.393	0.004		10879335	34.9		69.8	24088	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.406	3.402	0.004	1.000	2964342	21.5		108	7633	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.397	3.402	-0.005	1.000	4796533	23.2		116	20764	
D 23 13C2 PFDA										
515.00 > 470.00	3.406	3.402	0.004		7349494	54.7		109	20998	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.566	3.561	0.005	1.003	628178	21.4		107	2593	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.555	3.561	-0.006		1550600	37.1		74.1	7268	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.714	3.719	-0.005	1.000	2291202	18.2		94.4	8815	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.733	3.728	0.005	1.003	596783	21.7		108	4829	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.733	3.728	0.005	1.000	1995756	20.6		103	2854	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.723	3.728	-0.005		1581364	38.6		77.3	2298	
D 30 13C2 PFUnA										
565.00 > 520.00	3.733	3.728	0.005		4341035	45.4		90.8	8322	
D 34 d-N-MeFOSA-M										
515.00 > 169.00	3.899	3.904	-0.005		66774	0.8296		1.7	15.7	
35 MeFOSA										
512.00 > 169.00	3.908	3.904	0.004	1.000	29359	24.8		124	262	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
37 Perfluorododecanoic acid										
613.00 > 569.00	4.024	4.022	0.002	1.000	1534625	21.1		105	2166	
D 36 13C2 PFDaA										
615.00 > 570.00	4.024	4.022	0.002		3781967	41.5		83.0	8742	
D 38 d-N-EtFOSA-M										
531.00 > 169.00	4.089	4.087	0.002		22399	0.2988		0.6	61.7	
39 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.097	4.096	0.001	1.000	9595	22.9		114	67.7	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.284	4.290	-0.006	1.000	1776494	20.7		103	269	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.517	4.516	0.001	1.000	466697	18.0		90.0	4671	
713.00 > 219.00	4.517	4.516	0.001	1.000	380101		1.23(0.00-0.00)		2944	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.517	4.525	-0.008		5101781	54.4		109	11548	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	5.250	4.932	0.318	1.000	644	-0.4349		-2.2	0.0	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.929	4.932	-0.003		5194119	36.2		72.4	6682	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.277	5.279	-0.002	1.000	2077803	19.1		95.6	282	

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b\2017.09.15D_004.d

Injection Date: 15-Sep-2017 22:41:54

Instrument ID: A8_N

Lims ID: LCSD 320-183917/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 3

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

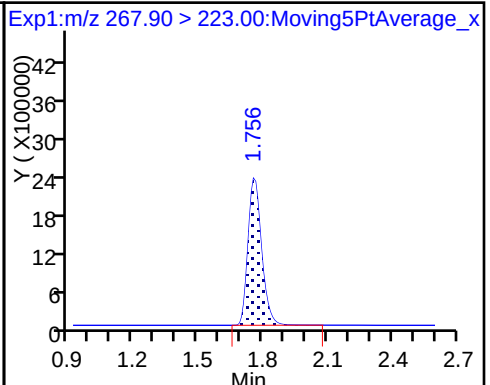
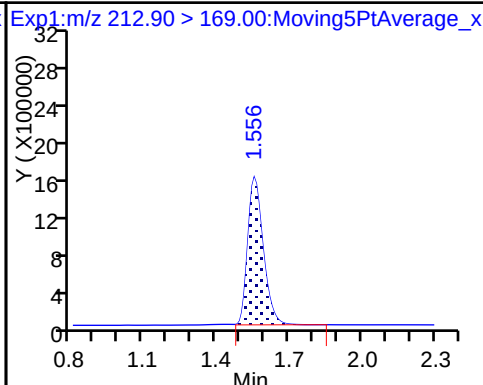
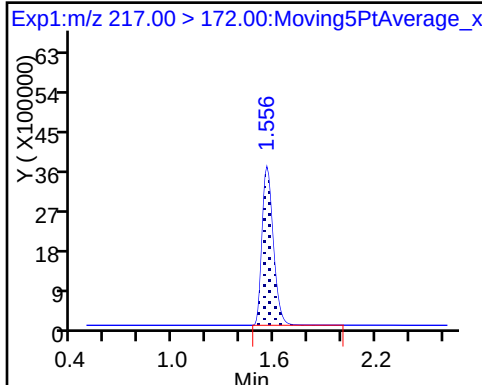
Method: A8_N

Limit Group: LC PFC_DOD ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

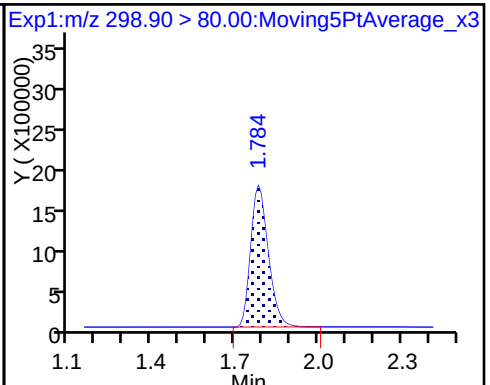
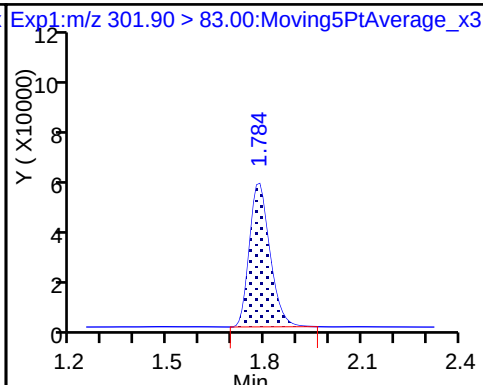
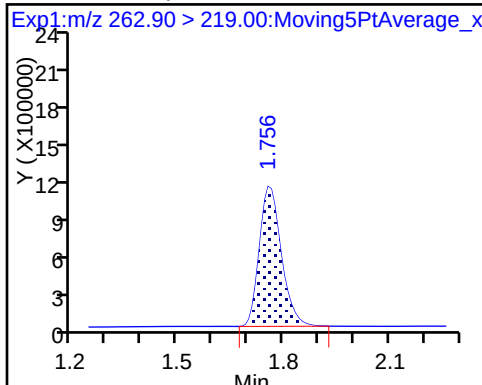
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

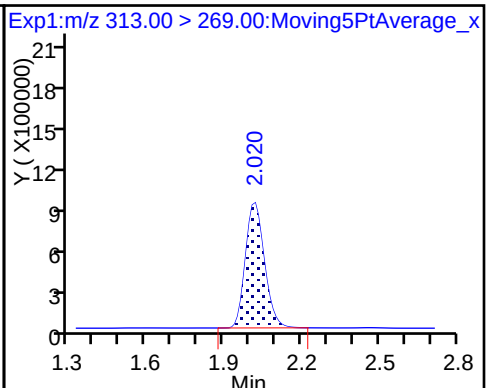
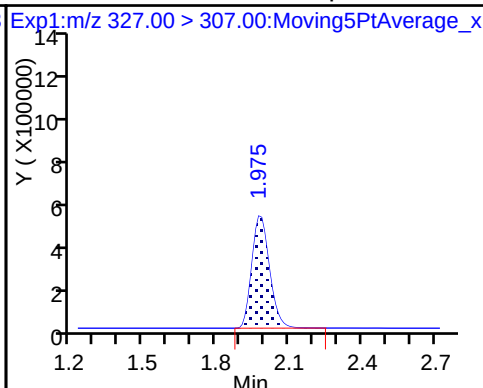
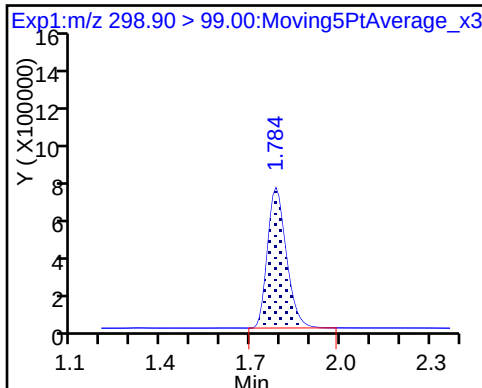
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 Sodium 1H,1H,2H,2H-perfluorohexanoate

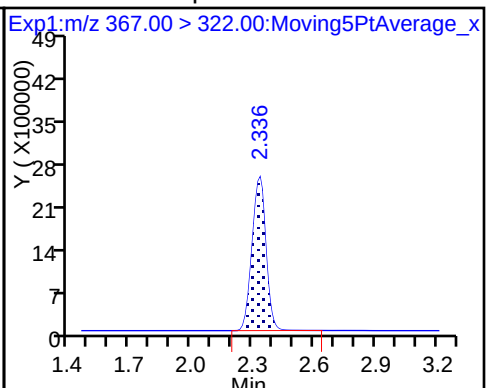
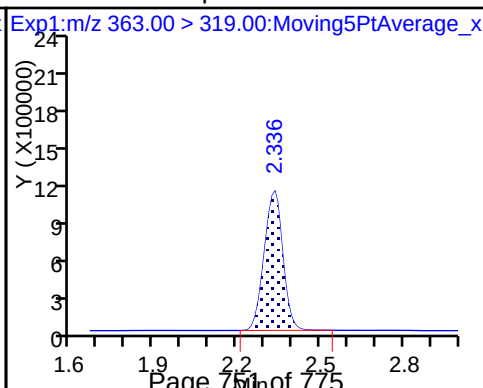
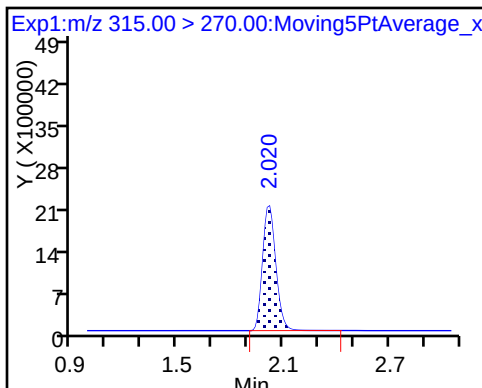
6 Perfluorohexanoic acid

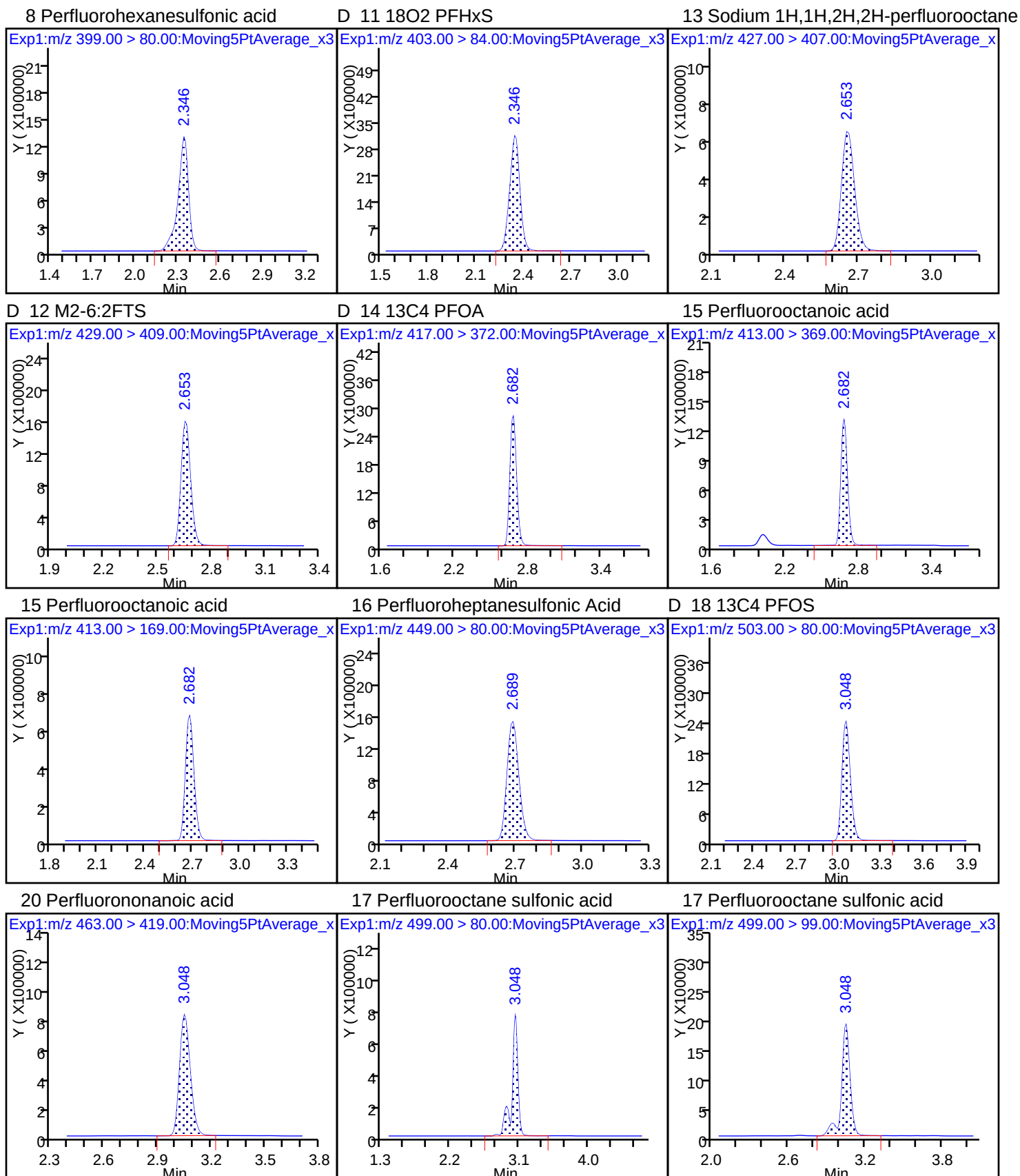


D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

D 9 13C4-PFHpA



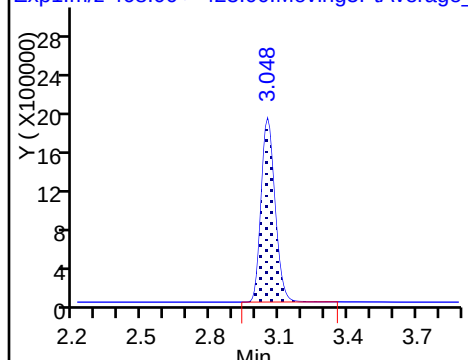


D 19 13C5 PFNA

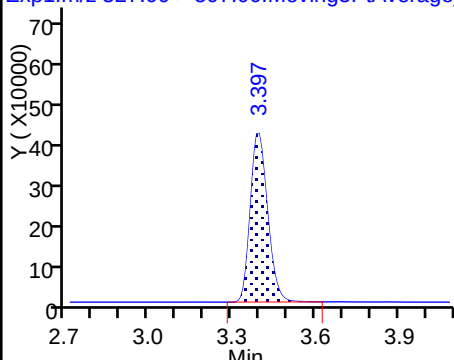
25 Sodium 1H,1H,2H,2H-perfluorodecanoate

De26 M2-8:2FTS

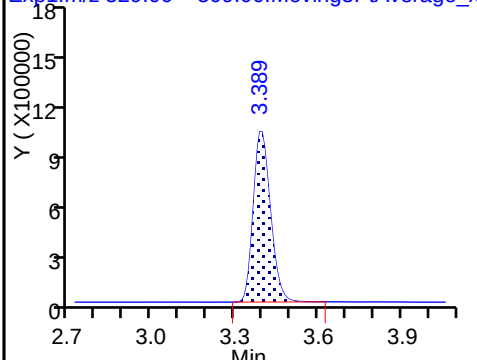
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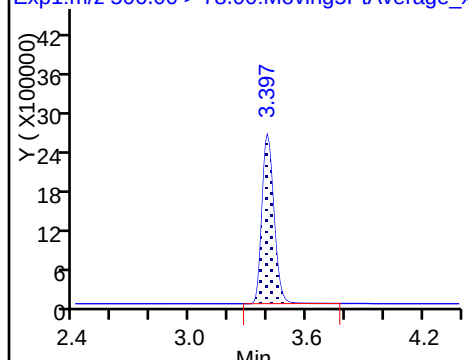


D 21 13C8 FOSA

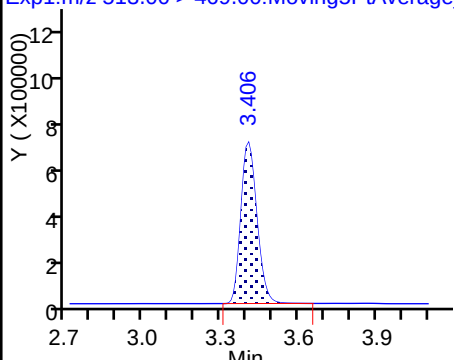
24 Perfluorodecanoic acid

22 Perfluorooctane Sulfonamide

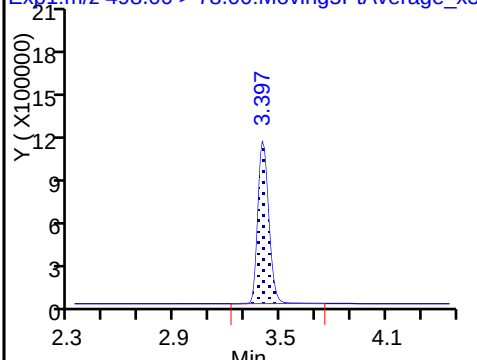
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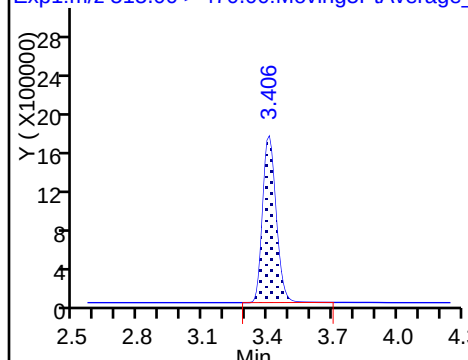


D 23 13C2 PFDA

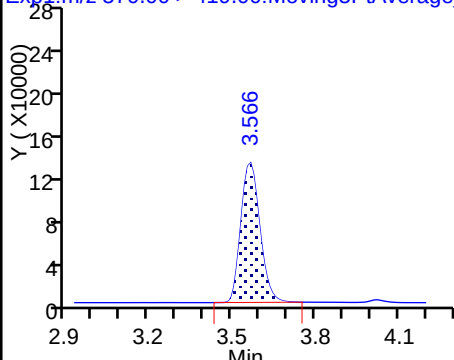
28 N-methyl perfluorooctane sulfonamide

D 27 d3-NMeFOSAA

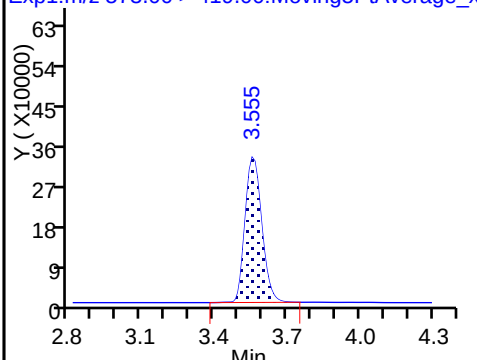
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Exp1:m/z 570.00 > 419.00:Moving5PtAverage_x



Exp1:m/z 573.00 > 419.00:Moving5PtAverage_x

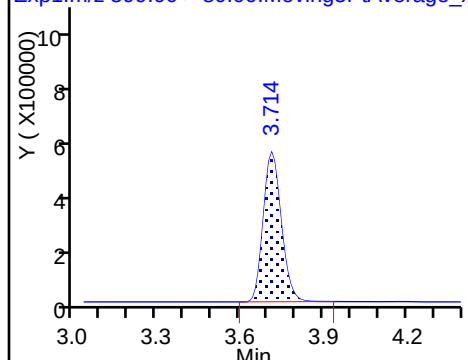


29 Perfluorodecanoic Sulfonic acid

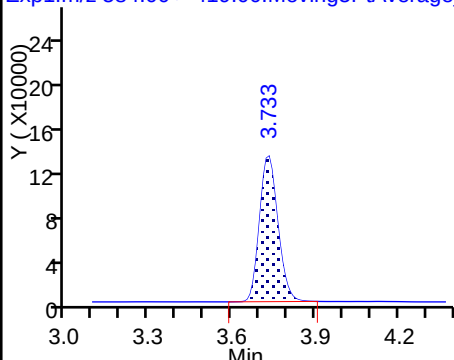
33 N-ethyl perfluorooctane sulfonamide

31 Perfluoroundecanoic acid

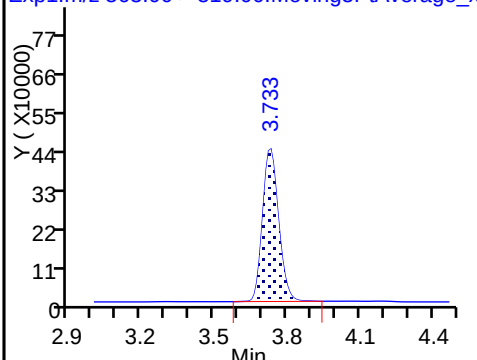
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Exp1:m/z 584.00 > 419.00:Moving5PtAverage_x



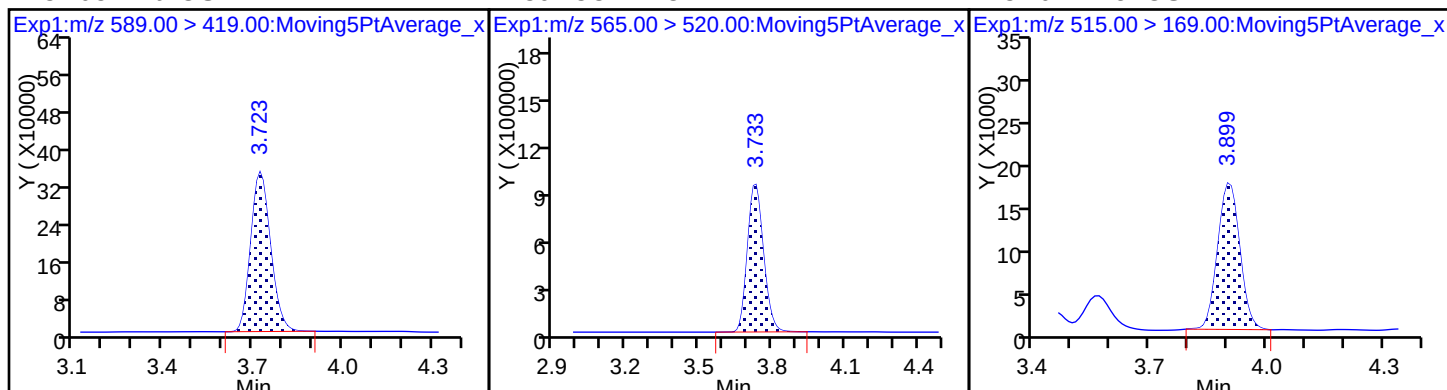
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D 32 d5-NEtFOSAA

D 30 13C2 PFUnA

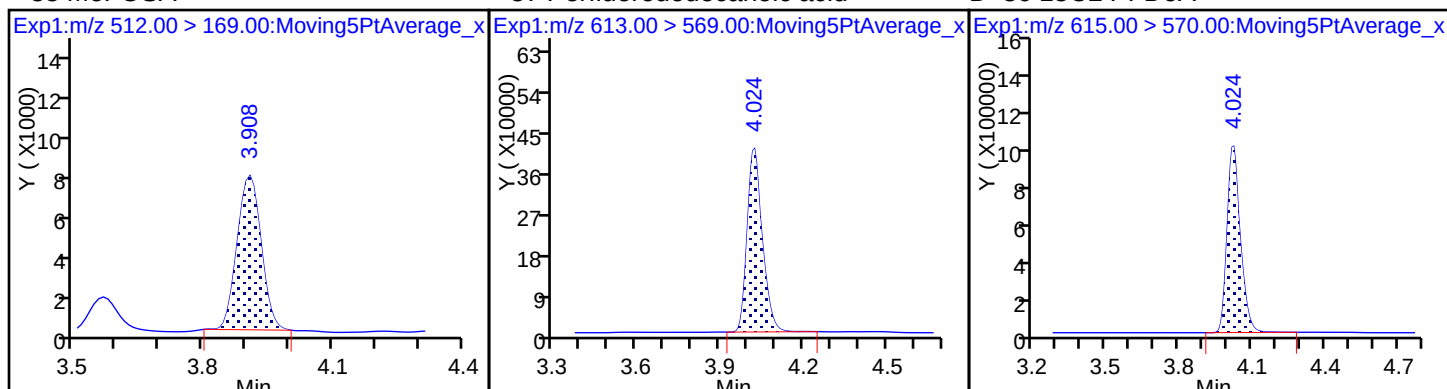
D 34 d-N-MeFOSA-M



35 MeFOSA

37 Perfluorododecanoic acid

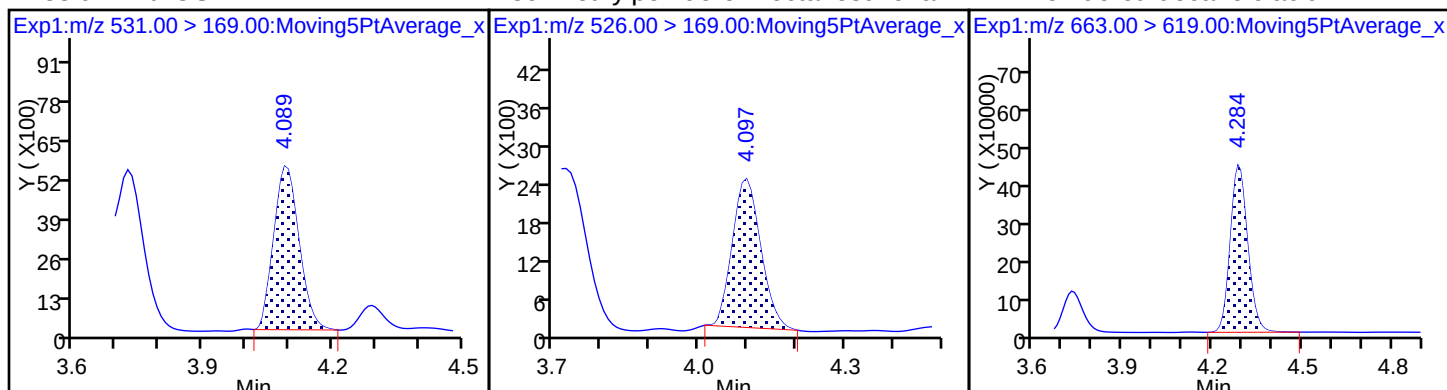
D 36 13C2 PFDaA



D 38 d-N-EtFOSA-M

39 N-ethylperfluoro-1-octanesulfonami

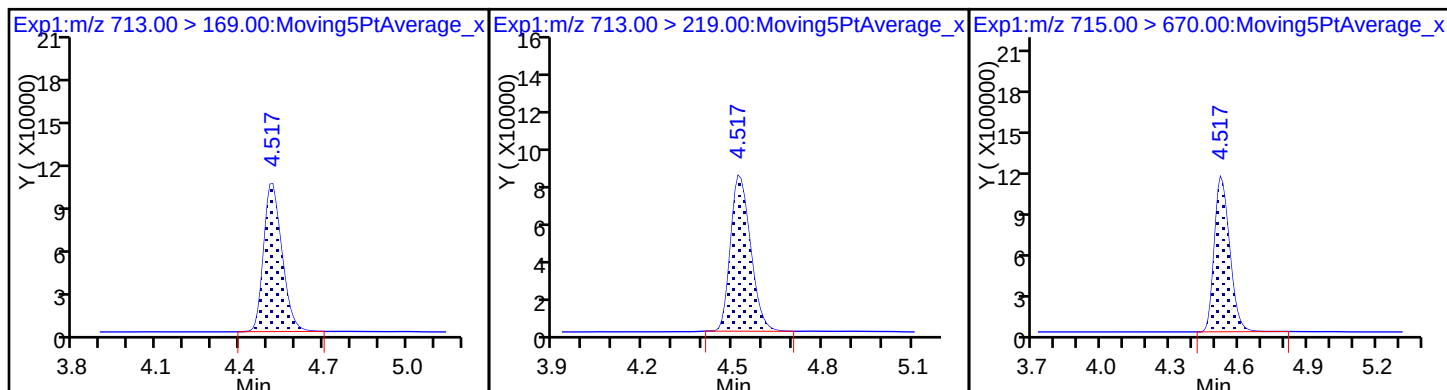
41 Perfluorotridecanoic acid



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

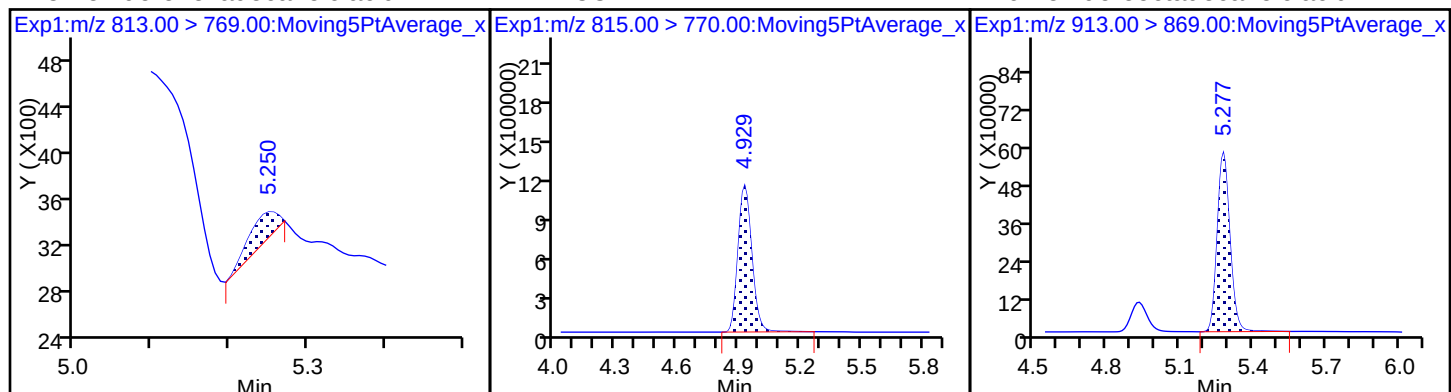
D 43 13C2-PFTeDA



45 Perfluorohexadecanoic acid

D 44 13C2-PFHxDA

46 Perfluorooctadecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_NStart Date: 09/14/2017 14:25Analysis Batch Number: 184448End Date: 09/14/2017 15:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-184448/3		09/14/2017 14:25	1	2017.09.14ICALX 003.d	GeminiC18 3x100 3(mm)
IC 320-184448/4		09/14/2017 14:32	1	2017.09.14ICALX 004.d	GeminiC18 3x100 3(mm)
IC 320-184448/5		09/14/2017 14:39	1	2017.09.14ICALX 005.d	GeminiC18 3x100 3(mm)
IC 320-184448/6		09/14/2017 14:46	1	2017.09.14ICALX 006.d	GeminiC18 3x100 3(mm)
IC 320-184448/7		09/14/2017 14:53	1	2017.09.14ICALX 007.d	GeminiC18 3x100 3(mm)
IC 320-184448/8		09/14/2017 15:00	1	2017.09.14ICALX 008.d	GeminiC18 3x100 3(mm)
IC 320-184448/9		09/14/2017 15:07	1	2017.09.14ICALX 009.d	GeminiC18 3x100 3(mm)
IC 320-184448/10		09/14/2017 15:14	1	2017.09.14ICALX 010.d	GeminiC18 3x100 3(mm)
ICB 320-184448/11		09/14/2017 15:21	1		GeminiC18 3x100 3(mm)
ICV 320-184448/12		09/14/2017 15:28	1	2017.09.14ICALX 012.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Start Date: 09/15/2017 11:27Analysis Batch Number: 184715 End Date: 09/15/2017 13:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RINSE 320-184715/2		09/15/2017 11:27	1		GeminiC18 3x100 3(mm)
CCVL 320-184715/3		09/15/2017 11:34	1	2017.09.15B_003 .d	GeminiC18 3x100 3(mm)
CCV 320-184715/4		09/15/2017 11:41	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/15/2017 11:48	1		GeminiC18 3x100 3(mm)
CCV 320-184715/20		09/15/2017 13:31	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Start Date: 09/15/2017 22:21Analysis Batch Number: 184734 End Date: 09/15/2017 23:16

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-184734/1		09/15/2017 22:21	1	2017.09.15D_001 .d	GeminiC18 3x100 3(mm)
MB 320-183917/1-A		09/15/2017 22:28	1	2017.09.15D_002 .d	GeminiC18 3x100 3(mm)
LCS 320-183917/2-A		09/15/2017 22:35	1	2017.09.15D_003 .d	GeminiC18 3x100 3(mm)
LCSD 320-183917/3-A		09/15/2017 22:41	1	2017.09.15D_004 .d	GeminiC18 3x100 3(mm)
320-31407-1		09/15/2017 22:48	1	2017.09.15D_005 .d	GeminiC18 3x100 3(mm)
320-31407-2		09/15/2017 22:55	1	2017.09.15D_006 .d	GeminiC18 3x100 3(mm)
320-31407-3		09/15/2017 23:02	1	2017.09.15D_007 .d	GeminiC18 3x100 3(mm)
320-31407-4		09/15/2017 23:09	1	2017.09.15D_008 .d	GeminiC18 3x100 3(mm)
CCV 320-184734/9		09/15/2017 23:16	1	2017.09.15D_009 .d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Start Date: 09/18/2017 15:45Analysis Batch Number: 185079 End Date: 09/18/2017 16:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-185079/3		09/18/2017 15:45	1	2017.09.18ICAL_ 003.d	GeminiC18 3x100 3(mm)
IC 320-185079/4		09/18/2017 15:52	1	2017.09.18ICAL_ 004.d	GeminiC18 3x100 3(mm)
IC 320-185079/5		09/18/2017 15:59	1	2017.09.18ICAL_ 005.d	GeminiC18 3x100 3(mm)
IC 320-185079/6		09/18/2017 16:06	1	2017.09.18ICAL_ 006.d	GeminiC18 3x100 3(mm)
IC 320-185079/7		09/18/2017 16:13	1	2017.09.18ICAL_ 007.d	GeminiC18 3x100 3(mm)
IC 320-185079/8		09/18/2017 16:20	1	2017.09.18ICAL_ 008.d	GeminiC18 3x100 3(mm)
IC 320-185079/9		09/18/2017 16:27	1	2017.09.18ICAL_ 009.d	GeminiC18 3x100 3(mm)
IC 320-185079/10		09/18/2017 16:34	1	2017.09.18ICAL_ 010.d	GeminiC18 3x100 3(mm)
ICB 320-185079/11		09/18/2017 16:41	1		GeminiC18 3x100 3(mm)
ICV 320-185079/12		09/18/2017 16:48	1	2017.09.18ICAL_ 012.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/18/2017 16:54	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Start Date: 09/19/2017 09:58Analysis Batch Number: 185175 End Date: 09/19/2017 12:02

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-185175/2		09/19/2017 09:58	1	2017.09.19A_006 .d	GeminiC18 3x100 3(mm)
CCV 320-185175/3		09/19/2017 10:05	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/19/2017 10:12	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/19/2017 11:55	1		GeminiC18 3x100 3(mm)
CCV 320-185175/20		09/19/2017 12:02	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Start Date: 09/19/2017 23:00Analysis Batch Number: 185322 End Date: 09/19/2017 23:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-185322/1		09/19/2017 23:00	1	2017.09.19B_013 .d	GeminiC18 3x100 3(mm)
320-31407-1 DL		09/19/2017 23:07	10	2017.09.19B_014 .d	GeminiC18 3x100 3(mm)
ZZZZZ		09/19/2017 23:14	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/19/2017 23:20	1		GeminiC18 3x100 3(mm)
CCV 320-185322/5		09/19/2017 23:27	1	2017.09.19B_017 .d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Batch Number: 183917 Batch Start Date: 09/12/17 08:50 Batch Analyst: Sharifi, NooshinBatch Method: 3535 Batch End Date: 09/14/17 19:23

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00010	LCPFCSP 00110
MB 320-183917/1		3535, 537 (modified)				250 mL	0.50 mL	500 uL	
LCS 320-183917/2		3535, 537 (modified)				250 mL	0.50 mL	500 uL	500 uL
LCSD 320-183917/3		3535, 537 (modified)				250 mL	0.50 mL	500 uL	500 uL
320-31407-A-1	TP-PFC-021-TPI	3535, 537 (modified)	T	287.56 g	26.78 g	260.8 mL	0.50 mL	500 uL	
320-31407-A-2	TP-PFC-021-MID-C ARBON	3535, 537 (modified)	T	296.24 g	26.78 g	269.5 mL	0.50 mL	500 uL	
320-31407-A-3	TP-PFC-021-TPE	3535, 537 (modified)	T	284.83 g	27.07 g	257.8 mL	0.50 mL	500 uL	
320-31407-A-4	TP-PFC-021-TPE-D	3535, 537 (modified)	T	292.84 g	27.25 g	265.6 mL	0.50 mL	500 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	BD: ABH FV:ABH AL:ABH
H2O ID	9/08/17
Hexane ID	981623
Manifold ID	11
Methanol ID	1016218
Sodium Hydroxide ID	1024131
Pipette ID	N32761F
Analyst ID - Reagent Drop	NSH
Analyst ID - SU Reagent Drop	NSH
Analyst ID - SU Reagent Drop Witness	JNS
Solvent Lot #	1029947
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003237137A

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.

537 (modified)

Page 1 of 2

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Batch Number: 183917 Batch Start Date: 09/12/17 08:50 Batch Analyst: Sharifi, NooshinBatch Method: 3535 Batch End Date: 09/14/17 19:23

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): 3/407

Work List ID(s): 48004, 48149

Extraction Batch: 183917

Analysis Batch(es): 184734, 185322, 184715 (cont), 185175 (cont)

Delivery Rank: 4

Due Date: 185175 (cont)

	1 st Level	2 nd Level	N/A
A. Calibration/Instrument Run QC			
1. ICAL locked in Chrom and TALS? ICAL Batch# <u>184448, 185079</u>	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• RF _{average} criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• 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			
1. Are all non-conformances documented/attached? NCM#	✓	✓	
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): S. [Signature]

Date: 9/20/17

2nd Level Reviewer: [Signature]

Date: 9/22/2017

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 15SEP2017F_PFC Worklist Number: 48004
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 184734
# 1 CCV L5	# 1 CCV L5
# 2 MB 320-183917/1-A	# 2 MB 320-183917/1-A
# 3 LCS 320-183917/2-A	# 3 LCS 320-183917/2-A
# 4 LCSD 320-183917/3-A	# 4 LCSD 320-183917/3-A
# 5 320-31407-A-1-A	# 5 320-31407-A-1-A <i>6-kg</i>
# 6 320-31407-A-2-A	# 6 320-31407-A-2-A <i>FCB IDA</i>
# 7 320-31407-A-3-A	# 7 320-31407-A-3-A <i>0.1</i>
# 8 320-31407-A-4-A	# 8 320-31407-A-4-A
# 9 CCV L4	# 9 CCV L4

TestAmerica Laboratories

Worklist QC Batch Report

Worklist Name: 19SEP2017G_PFC

Worklist Number: 48149

Instrument Name: A8_N

Chrom Method: A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48149.b

QC Batching: Disabled

Limit Group Batching: Enabled

QC Batch: 1	LC PFC ICAL Raw Batch: 185321	LC PFC_DOD ICAL Raw Batch: 185322
# 1 CCV L4	# 1 CCV L4	# 1 CCV L4
# 2 320-31407-A-1-A		# 2 320-31407-A-1-A
# 3 320-31407-A-2-A		# 3 320-31407-A-2-A
# 4 320-31407-A-3-A		# 4 320-31407-A-3-A
# 5 CCV L5	# 5 CCV L5	# 5 CCV L5

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Sharifi, Nooshin

Batch Number: 320-183917

Method Code: 320-3535_PFC-320

RI 9/19/17

Batch Open: 9/12/2017 8:50:00AM

Batch End: 9/14/2017 7:23:00PM

Solid-Phase Extraction (SPE)

Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1 MB-320-183917/1 N/A	N/A		250 mL				N/A	N/A	N/A		
			0.50 mL								
2 LCS-320-183917/2 N/A	N/A		250 mL				N/A	N/A	N/A		
			0.50 mL								
3 LCSD-320-183917/3 N/A	N/A		250 mL				N/A	N/A	N/A		
			0.50 mL								
4 320-31407-A-1 (PFC_IDA_DOD5)	N/A (320-31407-1)	287.56 g	260.8 mL				9/24/17	16_Days	4	10x	
		26.78 g	0.50 mL								
5 320-31407-A-2 (PFC_IDA_DOD5)	N/A (320-31407-1)	296.24 g	269.5 mL				9/24/17	16_Days	4	RA	
		26.78 g	0.50 mL								
6 320-31407-A-3 (PFC_IDA_DOD5)	N/A (320-31407-1)	284.83 g	257.8 mL				9/24/17	16_Days	4	RA	
		27.07 g	0.50 mL								
7 320-31407-A-4 (PFC_IDA_DOD5)	N/A (320-31407-1)	292.84 g	265.6 mL				9/24/17	16_Days	4		
		27.25 g	0.50 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-183917

Analyst: Sharifi, Nooshin

Batch Open: 9/12/2017 8:50:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Notes

Manifold ID 11

Methanol ID 1016218

Hexane ID 981623

Sodium Hydroxide ID 1024131

First Start time NA

First End time NA

SPE Cartridge Type WAX 500mg

Solid Phase Extraction Disk ID 003237137A

Balance ID QA-070

H2O ID 9/08/17

Pipette ID N32761F

Solvent Name 0.3% NH4OH/MeOH

Solvent Lot # 1029947

Analyst ID - Reagent Drop NSH

Analyst ID - SU Reagent Drop NSH

Analyst ID - SU Reagent Drop

Witness

Acid Name NA

Acid ID NA

Reagent ID NA

Reagent Lot Number NA

SOP Number WS-LC-0025

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-183917

Analyst: Sharifi, Nooshin

Batch Open: 9/12/2017 8:50:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Comment NA

BD: ABH FV: ABH AL: ABH
INST/CD

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-183917

Analyst: Sharifi, Nooshin

Batch Open: 9/12/2017 8:50:00AM

Method Code: 320-3535_PFC-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-183917/1	LCMPFC_ALL_SU_00010	500 uL	0.50 mL	NSH 9/12/17	JN 9/12/17
LCS 320-183917/2	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		
LCS 320-183917/2	LCPFCSP_00110	500 uL	0.50 mL		
LCSD 320-183917/3	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		
LCSD 320-183917/3	LCPFCSP_00110	500 uL	0.50 mL		
320-31407-A-1	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		
320-31407-A-2	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		
320-31407-A-3	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		
320-31407-A-4	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		

Other Reagents:

Reagent

Amount/Units

Lot#:

Preparation Batch Number(s): 183917 Test: 3535 - PFC
 Earliest Holding Time: 9/20/17

Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved	NA	NA
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 correctly in TALS	NA	N/A
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
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	✓	✓

1st Level Reviewer: VPM Date: 9/14/17
 2nd Level Reviewer: TBN Date: 09/14/17
 Comments: _____

Sample Dilution Record

Method ID PFC - IDA

Job # See below

Analyst (Print Name) Thep Phonsepha

Analyst Initials TP

Date 9/19/17

[illegible]

Comments:

Shipping and Receiving Documents

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:

Client Contact		Project Manager: Jeff Orient		Site Contact: Kevin Lammert		Date: 9/7/2017		COC No: 198928		
Company Name: Tetra Tech		Tel/Fax: (412) 921-8778		Lab Contact: David Altucher		Carrier: Fed Ex		1 of 1 COCs		
Address: 661 Anderson Dr.		Analysis Turnaround Time		Filtered Sample (Y/N) Perform MS/MSD (Y/N) PFC (full list) LC/MS/MS				Sampler: Kevin Lammert		
City/State/Zip: Pittsburgh, PA 15220		☒ CALENDAR DAYS ☐ WORKING DAYS						For Lab Use Only:		
Phone: (412) 921-8778		TAT if different from Below						Walk-in Client:		
Fax:		☒ 2 weeks ☐ 1 week ☐ 2 days ☐ 1 day						Lab Sampling:		
Project Name:								Job / SDG No.:		
Site: Former NAS Brunswick Grvts										
PO# 112608005-WB21-PT-LT										
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Sample Specific Notes:			
TP-PFC-021-TPI		9/7/17	1220	G	W	4	KOL			
TP-PFC-021-MID-CARBON		9/7/17	1225	G	W	4				
TP-PFC-021-TPE		9/7/17	1230	G	W	4				
TP-PFC-021-TPE-D		9/7/17	0000	G	W	4				
Preservation Used: 1= Ice, 2= HCl, 3= H2SO4, 4=HNO3, 5=NaOH, 6= Other										
Possible Hazard Identification:										
Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.										
☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown										
Special Instructions/QC Requirements & Comments:										
Custody Seals Intact: ☐ Yes ☐ No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: 1-8		Corr'd:		Therm ID No.: AK-1		
Relinquished by: [Signature]		Company: Tetra Tech		Date/Time: 9/7/17 1600		Received by: [Signature]		Company: Jaws		
Relinquished by:		Company:		Date/Time:		Received by:		Company:		
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Company:		
								Date/Time: 9-8-17 935		

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-31407-1

Login Number: 31407

List Source: TestAmerica Sacramento

List Number: 1

Creator: Edman, Connor M

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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","330","ng/L","D","12","DL","","TRG","","","38","LOQ","NO",-99","","260.8","0.50","29",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","2058-94-8","Perfluoroundecanoic acid (PFUnA)","19","ng/L","U","7.2","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","2706-90-3","Perfluoropentanoic acid (PFPeA)","210","ng/L","D","9.5","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","307-24-4","Perfluorohexanoic acid (PFHxA)","390","ng/L","D","7.5","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","307-55-1","Perfluorododecanoic acid (PFDoA)","19","ng/L","U","5.6","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","1800","ng/L","D M","7.2","DL","","TRG","","","24","LOQ","YES",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","335-76-2","Perfluorodecanoic acid (PFDA)","9.6","ng/L","U","4.2","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","9.6",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","335-77-3","Perfluorodecanesulfonic acid (PFDS)","29","ng/L","U","12","DL","","TRG","","","38","LOQ","NO",-99","","260.8","0.50","29",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","420","ng/L","D","8.3","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","375-22-4","Perfluorobutanoic acid (PFBA)","77","ng/L","D","4.4","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","9.6",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","58","ng/L","D","8.8","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","78","ng/L","D","7.7","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid (PFHpS)","9.9","ng/L","J D","6.8","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","19","ng/L","U","6.3","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","376-06-7","Perfluorotetradecanoic acid (PFTeA)","9.6","ng/L","U","3.8","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","9.6",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","72629-94-8","Perfluorotridecanoic Acid (PFTriA)","19","ng/L","U","5.3","DL","","TRG","","","24","LOQ","NO",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","754-91-6","Perfluorooctane Sulfonamide (FOSA)","19","ng/L","U","6.1","DL","","TRG","","","380","LOQ","NO",-99","","260.8","0.50","19",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL00990","13C4 PFOA","86","ng/L","","-99","DL","","TRG","90","","-99","LOQ","YES","95.9","","260.8","0.50","960",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL00991","13C4 PFOS","83","ng/L","","-99","DL","","TRG","91","","-99","LOQ","YES","91.6","","260.8","0.50","960",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL00992","13C4 PFBA","87","ng/L","","-99","DL","","TRG","90","","-99","LOQ","YES","95.9","","260.8","0.50","960",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL00993","13C2 PFHxA","89","ng/L","","-99","DL","","TRG","93","","-99","LOQ","YES","95.9","","260.8","0.50","960",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL00994","18O2 PFHxS","92","ng/L","","-99","DL","","TRG","101","","-99","LOQ","YES","90.7","","260.8","0.50","960",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL00995","13C5 PFNA","93","ng/L","","-99","DL","","TRG","97","","-99","LOQ","YES","95.9","","260.8","0.50","960",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL00996","13C2 PFDA","86","ng/L","","-99","DL","","TRG","90","","-99","LOQ","YES","95.9","","260.8","0.50","960",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL00997","13C2 PFUnA","96","ng/L","","-99","DL","","TRG","101","","-99","LOQ","YES","95.9","","260.8","0.50","960",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL00998","13C2 PFDoA","94","ng/L","","-99","DL","","TRG","98","","-99","LOQ","YES","95.9","","260.8","0.50","960",""

"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL01056","13C8

FOSA","28","ng/L","",-99","DL","","TRG","29","",-99","LOQ","YES","95.9","","260.8","0.50","960",""
"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL01892","13C4-
PFHpA","98","ng/L","",-99","DL","","TRG","103","",-99","LOQ","YES","95.9","","260.8","0.50","960",""
"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL01893","13C5
PFPeA","85","ng/L","",-99","DL","","TRG","89","",-99","LOQ","YES","95.9","","260.8","0.50","960",""
"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL02116","13C2-
PFTeDA","90","ng/L","",-99","DL","","TRG","93","",-99","LOQ","YES","95.9","","260.8","0.50","960",""
"TP-PFC-021-TPI","537 (modified)","DL","320-31407-1","TALSAC","STL02337","13C3-
PFBS","86","ng/L","",-99","DL","","TRG","96","",-99","LOQ","YES","89.1","","260.8","0.50","0",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","310","ng/L","","1.2","DL","","TRG","","","3.8","LOQ","YES","-99","","260.8","0.50","2.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","2058-94-8","Perfluoroundecanoic acid
(PFUnA)","1.9","ng/L","U","0.72","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","2706-90-3","Perfluoropentanoic acid
(PFPeA)","190","ng/L","","0.95","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","307-24-4","Perfluorohexanoic acid
(PFHxA)","340","ng/L","","0.75","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","307-55-1","Perfluorododecanoic acid
(PFDoA)","1.9","ng/L","U","0.56","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","1100","ng/L","E M","0.72","DL","","TRG","","","2.4","LOQ","NO","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","335-76-2","Perfluorodecanoic acid
(PFDA)","1.0","ng/L","J","0.42","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","0.96",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","335-77-3","Perfluorodecanesulfonic acid
(PFDS)","2.9","ng/L","U","1.2","DL","","TRG","","","3.8","LOQ","YES","-99","","260.8","0.50","2.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","330","ng/L","","0.83","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","375-22-4","Perfluorobutanoic acid
(PFBA)","82","ng/L","","0.44","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","0.96",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","55","ng/L","","0.88","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","82","ng/L","","0.77","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid
(PFHpS)","8.0","ng/L","","0.68","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","2.7","ng/L","","0.63","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","376-06-7","Perfluorotetradecanoic acid
(PFTeA)","0.96","ng/L","U","0.38","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","0.96",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","72629-94-8","Perfluorotridecanoic Acid
(PFTriA)","1.9","ng/L","U","0.53","DL","","TRG","","","2.4","LOQ","YES","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","754-91-6","Perfluorooctane Sulfonamide
(FOSA)","1.8","ng/L","J","0.61","DL","","TRG","","","38","LOQ","YES","-99","","260.8","0.50","1.9",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","STL00990","13C4
PFOA","60","ng/L","",-99","DL","","TRG","63","",-99","LOQ","YES","95.9","","260.8","0.50","96",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","STL00991","13C4
PFOS","93","ng/L","",-99","DL","","TRG","101","",-99","LOQ","YES","91.6","","260.8","0.50","96",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","STL00992","13C4
PFBA","66","ng/L","",-99","DL","","TRG","69","",-99","LOQ","YES","95.9","","260.8","0.50","96",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","STL00993","13C2
PFHxA","67","ng/L","",-99","DL","","TRG","70","",-99","LOQ","YES","95.9","","260.8","0.50","96",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","STL00994","18O2
PFHxS","87","ng/L","",-99","DL","","TRG","96","",-99","LOQ","YES","90.7","","260.8","0.50","96",""
"TP-PFC-021-TPI","537 (modified)","RES","320-31407-1","TALSAC","STL00995","13C5

PFNA", "84", "ng/L", "", "-99", "DL", "", "TRG", "88", "", "-99", "LOQ", "YES", "95.9", "", "260.8", "0.50", "96", ""
"TP-PFC-021-TPI", "537 (modified)", "RES", "320-31407-1", "TALSAC", "STL00996", "13C2
PFDA", "100", "ng/L", "", "-99", "DL", "", "TRG", "104", "", "-99", "LOQ", "YES", "95.9", "", "260.8", "0.50", "96", ""
"TP-PFC-021-TPI", "537 (modified)", "RES", "320-31407-1", "TALSAC", "STL00997", "13C2
PFUnA", "96", "ng/L", "", "-99", "DL", "", "TRG", "100", "", "-99", "LOQ", "YES", "95.9", "", "260.8", "0.50", "96", ""
"TP-PFC-021-TPI", "537 (modified)", "RES", "320-31407-1", "TALSAC", "STL00998", "13C2
PFDaA", "96", "ng/L", "", "-99", "DL", "", "TRG", "100", "", "-99", "LOQ", "YES", "95.9", "", "260.8", "0.50", "96", ""
"TP-PFC-021-TPI", "537 (modified)", "RES", "320-31407-1", "TALSAC", "STL01056", "13C8
FOSA", "29", "ng/L", "", "-99", "DL", "", "TRG", "30", "", "-99", "LOQ", "YES", "95.9", "", "260.8", "0.50", "96", ""
"TP-PFC-021-TPI", "537 (modified)", "RES", "320-31407-1", "TALSAC", "STL01892", "13C4-
PFHpA", "82", "ng/L", "", "-99", "DL", "", "TRG", "86", "", "-99", "LOQ", "YES", "95.9", "", "260.8", "0.50", "96", ""
"TP-PFC-021-TPI", "537 (modified)", "RES", "320-31407-1", "TALSAC", "STL01893", "13C5
PFPeA", "74", "ng/L", "", "-99", "DL", "", "TRG", "77", "", "-99", "LOQ", "YES", "95.9", "", "260.8", "0.50", "96", ""
"TP-PFC-021-TPI", "537 (modified)", "RES", "320-31407-1", "TALSAC", "STL02116", "13C2-
PFTeDA", "100", "ng/L", "", "-99", "DL", "", "TRG", "108", "", "-99", "LOQ", "YES", "95.9", "", "260.8", "0.50", "96", ""
"TP-PFC-021-TPI", "537 (modified)", "RES", "320-31407-1", "TALSAC", "STL02337", "13C3-
PFBS", "89", "ng/L", "", "-99", "DL", "", "TRG", "100", "", "-99", "LOQ", "YES", "89.1", "", "260.8", "0.50", "0", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "1763-23-
1", "Perfluorooctanesulfonic acid
(PFOS)", "2.8", "ng/L", "U", "1.2", "DL", "", "TRG", "", "", "3.7", "LOQ", "YES", "-99", "", "269.5", "0.50", "2.8", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "2058-94-8", "Perfluoroundecanoic
acid (PFUnA)", "1.9", "ng/L", "U", "0.69", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "1.9", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "2706-90-3", "Perfluoropentanoic
acid (PFPeA)", "50", "ng/L", "", "0.92", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "1.9", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "307-24-4", "Perfluorohexanoic
acid (PFHxA)", "5.6", "ng/L", "", "0.73", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "1.9", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "307-55-1", "Perfluorododecanoic
acid (PFDaA)", "1.9", "ng/L", "U", "0.54", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "1.9", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "335-67-1", "Perfluorooctanoic
acid (PFOA)", "0.97", "ng/L", "J M", "0.69", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "1.9", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "335-76-2", "Perfluorodecanoic
acid (PFDA)", "0.93", "ng/L", "U", "0.41", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "0.93", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "335-77-
3", "Perfluorodecanesulfonic acid
(PFDS)", "2.8", "ng/L", "U", "1.1", "DL", "", "TRG", "", "", "3.7", "LOQ", "YES", "-99", "", "269.5", "0.50", "2.8", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "355-46-
4", "Perfluorohexanesulfonic acid
(PFHxS)", "1.9", "ng/L", "U", "0.81", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "1.9", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "375-22-4", "Perfluorobutanoic
acid (PFBA)", "130", "ng/L", "", "0.42", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "0.93", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "375-73-
5", "Perfluorobutanesulfonic acid (PFBS)", "1.9", "ng/L", "U
M", "0.85", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "1.9", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "375-85-9", "Perfluoroheptanoic
acid (PFHpA)", "1.9", "ng/L", "U", "0.74", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "1.9", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "375-92-
8", "Perfluoroheptanesulfonic Acid
(PFHpS)", "1.9", "ng/L", "U", "0.66", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "1.9", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "375-95-1", "Perfluorononanoic
acid (PFNA)", "1.9", "ng/L", "U", "0.61", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "1.9", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "376-06-
7", "Perfluorotetradecanoic acid
(PFTeA)", "0.93", "ng/L", "U", "0.37", "DL", "", "TRG", "", "", "2.3", "LOQ", "YES", "-99", "", "269.5", "0.50", "0.93", ""
"TP-PFC-021-MID-CARBON", "537 (modified)", "RES", "320-31407-2", "TALSAC", "72629-94-

8","Perfluorotridecanoic Acid
(PFTriA)","1.9","ng/L","U","0.51","DL","","","TRG","","","2.3","LOQ","YES","-99","","","269.5","0.50","1.9","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","754-91-6","Perfluorooctane
Sulfonamide
(FOSA)","0.68","ng/L","J","0.59","DL","","","TRG","","","37","LOQ","YES","-99","","","269.5","0.50","1.9","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL00990","13C4
PFOA","97","ng/L","","","-99","DL","","","TRG","104","","","-99","LOQ","YES","92.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL00991","13C4
PFOS","95","ng/L","","","-99","DL","","","TRG","107","","","-99","LOQ","YES","88.7","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL00992","13C4
PFBA","90","ng/L","","","-99","DL","","","TRG","98","","","-99","LOQ","YES","92.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL00993","13C2
PFHxA","86","ng/L","","","-99","DL","","","TRG","93","","","-99","LOQ","YES","92.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL00994","18O2
PFHxS","87","ng/L","","","-99","DL","","","TRG","99","","","-99","LOQ","YES","87.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL00995","13C5
PFNA","95","ng/L","","","-99","DL","","","TRG","103","","","-99","LOQ","YES","92.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL00996","13C2
PFDA","100","ng/L","","","-99","DL","","","TRG","109","","","-99","LOQ","YES","92.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL00997","13C2
PFUnA","88","ng/L","","","-99","DL","","","TRG","95","","","-99","LOQ","YES","92.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL00998","13C2
PFDoA","89","ng/L","","","-99","DL","","","TRG","96","","","-99","LOQ","YES","92.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL01056","13C8
FOSA","18","ng/L","Q","-99","DL","","","TRG","19","","","-99","LOQ","YES","92.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL01892","13C4-
PFHpA","99","ng/L","","","-99","DL","","","TRG","107","","","-99","LOQ","YES","92.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL01893","13C5
PFPeA","82","ng/L","","","-99","DL","","","TRG","88","","","-99","LOQ","YES","92.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL02116","13C2-
PFTeDA","110","ng/L","","","-99","DL","","","TRG","121","","","-99","LOQ","YES","92.8","","","269.5","0.50","93","","
"TP-PFC-021-MID-CARBON","537 (modified)","RES","320-31407-2","TALSAC","STL02337","13C3-
PFBS","93","ng/L","","","-99","DL","","","TRG","107","","","-99","LOQ","YES","86.3","","","269.5","0.50","0","","
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","2.9","ng/L","U","1.2","DL","","","TRG","","","3.9","LOQ","YES","-99","","","257.8","0.50","2.9","","
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","2058-94-8","Perfluoroundecanoic acid
(PFUnA)","1.9","ng/L","U","0.73","DL","","","TRG","","","2.4","LOQ","YES","-99","","","257.8","0.50","1.9","","
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","2706-90-3","Perfluoropentanoic acid
(PFPeA)","37","ng/L","","","0.96","DL","","","TRG","","","2.4","LOQ","YES","-99","","","257.8","0.50","1.9","","
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","307-24-4","Perfluorohexanoic acid
(PFHxA)","7.7","ng/L","","","0.76","DL","","","TRG","","","2.4","LOQ","YES","-99","","","257.8","0.50","1.9","","
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","307-55-1","Perfluorododecanoic acid
(PFDoA)","1.9","ng/L","U","0.57","DL","","","TRG","","","2.4","LOQ","YES","-99","","","257.8","0.50","1.9","","
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","0.78","ng/L","J M","0.73","DL","","","TRG","","","2.4","LOQ","YES","-99","","","257.8","0.50","1.9","","
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","335-76-2","Perfluorodecanoic acid
(PFDA)","0.97","ng/L","U","0.43","DL","","","TRG","","","2.4","LOQ","YES","-99","","","257.8","0.50","0.97","","
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","335-77-3","Perfluorodecanesulfonic acid
(PFDS)","2.9","ng/L","U","1.2","DL","","","TRG","","","3.9","LOQ","YES","-99","","","257.8","0.50","2.9","","
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS)","1.9","ng/L","U","0.84","DL","","","TRG","","","2.4","LOQ","YES","-99","","","257.8","0.50","1.9","","
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","375-22-4","Perfluorobutanoic acid
(PFBA)","120","ng/L","","","0.44","DL","","","TRG","","","2.4","LOQ","YES","-99","","","257.8","0.50","0.97","","
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","375-73-5","Perfluorobutanesulfonic acid

(PFBS)","1.9","ng/L","U","0.89","DL","","","TRG","","","2.4","LOQ","YES",-99","","257.8","0.50","1.9",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","1.9","ng/L","U","0.78","DL","","","TRG","","","2.4","LOQ","YES",-99","","257.8","0.50","1.9",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid
(PFHpS)","1.9","ng/L","U","0.69","DL","","","TRG","","","2.4","LOQ","YES",-99","","257.8","0.50","1.9",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","1.9","ng/L","U","0.63","DL","","","TRG","","","2.4","LOQ","YES",-99","","257.8","0.50","1.9",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","376-06-7","Perfluorotetradecanoic acid
(PFTeA)","0.97","ng/L","U","0.39","DL","","","TRG","","","2.4","LOQ","YES",-99","","257.8","0.50","0.97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","72629-94-8","Perfluorotridecanoic Acid
(PFTriA)","1.9","ng/L","U","0.53","DL","","","TRG","","","2.4","LOQ","YES",-99","","257.8","0.50","1.9",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","754-91-6","Perfluorooctane Sulfonamide
(FOSA)","1.2","ng/L","J","0.62","DL","","","TRG","","","39","LOQ","YES",-99","","257.8","0.50","1.9",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL00990","13C4
PFOA","65","ng/L","","-99","DL","","","TRG","67","","-99","LOQ","YES","97.0","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL00991","13C4
PFOS","120","ng/L","","-99","DL","","","TRG","125","","-99","LOQ","YES","92.7","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL00992","13C4
PFBA","78","ng/L","","-99","DL","","","TRG","80","","-99","LOQ","YES","97.0","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL00993","13C2
PFHxA","68","ng/L","","-99","DL","","","TRG","70","","-99","LOQ","YES","97.0","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL00994","18O2
PFHxS","110","ng/L","","-99","DL","","","TRG","121","","-99","LOQ","YES","91.7","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL00995","13C5
PFNA","59","ng/L","","-99","DL","","","TRG","61","","-99","LOQ","YES","97.0","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL00996","13C2
PFDA","68","ng/L","","-99","DL","","","TRG","70","","-99","LOQ","YES","97.0","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL00997","13C2
PFUnA","71","ng/L","","-99","DL","","","TRG","73","","-99","LOQ","YES","97.0","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL00998","13C2
PFDaA","87","ng/L","","-99","DL","","","TRG","89","","-99","LOQ","YES","97.0","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL01056","13C8
FOSA","5.2","ng/L","Q",-99,"DL","","","TRG","5","","-99","LOQ","YES","97.0","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL01892","13C4-
PFHpA","74","ng/L","","-99","DL","","","TRG","76","","-99","LOQ","YES","97.0","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL01893","13C5
PFPeA","66","ng/L","","-99","DL","","","TRG","68","","-99","LOQ","YES","97.0","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL02116","13C2-
PFTeDA","120","ng/L","","-99","DL","","","TRG","119","","-99","LOQ","YES","97.0","","257.8","0.50","97",""
"TP-PFC-021-TPE","537 (modified)","RES","320-31407-3","TALSAC","STL02337","13C3-
PFBS","120","ng/L","","-99","DL","","","TRG","129","","-99","LOQ","YES","90.2","","257.8","0.50","0",""
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","1763-23-1","Perfluorooctanesulfonic acid
(PFOS)","2.8","ng/L","U","1.2","DL","","","TRG","","","3.8","LOQ","YES",-99","","265.6","0.50","2.8",""
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","2058-94-8","Perfluoroundecanoic acid
(PFUnA)","1.9","ng/L","U","0.70","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","1.9",""
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","2706-90-3","Perfluoropentanoic acid
(PFPeA)","38","ng/L","","0.93","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","1.9",""
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","307-24-4","Perfluorohexanoic acid
(PFHxA)","7.4","ng/L","","0.74","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","1.9",""
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","307-55-1","Perfluorododecanoic acid
(PFDaA)","1.9","ng/L","U","0.55","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","1.9",""
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","0.71","ng/L","J M","0.70","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","1.9",""
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","335-76-2","Perfluorodecanoic acid

(PFDA),"0.94","ng/L","U","0.41","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","0.94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","335-77-3","Perfluorodecanesulfonic acid
(PFDS),"2.8","ng/L","U","1.1","DL","","","TRG","","","3.8","LOQ","YES",-99","","265.6","0.50","2.8","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid
(PFHxS),"1.9","ng/L","U","0.82","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","1.9","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","375-22-4","Perfluorobutanoic acid
(PFBA),"120","ng/L","","","0.43","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","0.94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid
(PFBS),"1.9","ng/L","U M","0.86","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","1.9","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA),"1.9","ng/L","U","0.75","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","1.9","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid
(PFHpS),"1.9","ng/L","U","0.67","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","1.9","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA),"1.9","ng/L","U","0.62","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","1.9","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","376-06-7","Perfluorotetradecanoic acid
(PFTeA),"0.94","ng/L","U","0.38","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","0.94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","72629-94-8","Perfluorotridecanoic Acid
(PFTriA),"1.9","ng/L","U","0.52","DL","","","TRG","","","2.4","LOQ","YES",-99","","265.6","0.50","1.9","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","754-91-6","Perfluorooctane Sulfonamide
(FOSA),"1.7","ng/L","J","0.60","DL","","","TRG","","","38","LOQ","YES",-99","","265.6","0.50","1.9","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL00990","13C4
PFOA","100","ng/L","","","-99","DL","","","TRG","108","","","-99","LOQ","YES","94.1","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL00991","13C4
PFOS","110","ng/L","","","-99","DL","","","TRG","118","","","-99","LOQ","YES","90.0","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL00992","13C4
PFBA","91","ng/L","","","-99","DL","","","TRG","96","","","-99","LOQ","YES","94.1","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL00993","13C2
PFHxA","94","ng/L","","","-99","DL","","","TRG","99","","","-99","LOQ","YES","94.1","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL00994","18O2
PFHxS","100","ng/L","","","-99","DL","","","TRG","117","","","-99","LOQ","YES","89.0","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL00995","13C5
PFNA","99","ng/L","","","-99","DL","","","TRG","105","","","-99","LOQ","YES","94.1","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL00996","13C2
PFDA","110","ng/L","","","-99","DL","","","TRG","115","","","-99","LOQ","YES","94.1","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL00997","13C2
PFUnA","95","ng/L","","","-99","DL","","","TRG","101","","","-99","LOQ","YES","94.1","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL00998","13C2
PFDoA","94","ng/L","","","-99","DL","","","TRG","99","","","-99","LOQ","YES","94.1","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL01056","13C8
FOSA","34","ng/L","","","-99","DL","","","TRG","36","","","-99","LOQ","YES","94.1","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL01892","13C4-
PFHpA","100","ng/L","","","-99","DL","","","TRG","107","","","-99","LOQ","YES","94.1","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL01893","13C5
PFPeA","88","ng/L","","","-99","DL","","","TRG","93","","","-99","LOQ","YES","94.1","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL02116","13C2-
PFTeDA","110","ng/L","","","-99","DL","","","TRG","117","","","-99","LOQ","YES","94.1","","265.6","0.50","94","","
"TP-PFC-021-TPE-D","537 (modified)","RES","320-31407-4","TALSAC","STL02337","13C3-
PFBS","110","ng/L","","","-99","DL","","","TRG","126","","","-99","LOQ","YES","87.5","","265.6","0.50","0","","
"LCS 320-183917/2-A","537 (modified)","RES","LCS 320-183917/2-A","TALSAC","1763-23-
1","Perfluorooctanesulfonic acid
(PFOS),"39.8","ng/L","","","1.3","DL","","","SPK","107","","","4.0","LOQ","YES","37.1","","250","0.50","3.0","","
"LCS 320-183917/2-A","537 (modified)","RES","LCS 320-183917/2-A","TALSAC","2058-94-
8","Perfluoroundecanoic acid

(PFUnA)", "41.8", "ng/L", "", "0.75", "DL", "", "SPK", "105", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "2706-90-3", "Perfluoropentanoic
 acid (PFPeA)", "41.9", "ng/L", "", "0.99", "DL", "", "SPK", "105", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "307-24-4", "Perfluorohexanoic
 acid (PFHxA)", "45.0", "ng/L", "", "0.79", "DL", "", "SPK", "112", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "307-55-1", "Perfluorododecanoic
 acid (PFDoA)", "44.3", "ng/L", "", "0.58", "DL", "", "SPK", "111", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "335-67-1", "Perfluorooctanoic
 acid (PFOA)", "43.3", "ng/L", "", "0.75", "DL", "", "SPK", "108", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "335-76-2", "Perfluorodecanoic
 acid (PFDA)", "44.5", "ng/L", "", "0.44", "DL", "", "SPK", "111", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "1.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "335-77-
 3", "Perfluorodecanesulfonic acid
 (PFDS)", "40.1", "ng/L", "", "1.2", "DL", "", "SPK", "104", "", "4.0", "LOQ", "YES", "38.6", "", "250", "0.50", "3.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "355-46-
 4", "Perfluorohexanesulfonic acid
 (PFHxS)", "42.9", "ng/L", "", "0.87", "DL", "", "SPK", "118", "", "2.5", "LOQ", "YES", "36.4", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "375-22-4", "Perfluorobutanoic
 acid (PFBA)", "45.6", "ng/L", "", "0.46", "DL", "", "SPK", "114", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "1.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "375-73-
 5", "Perfluorobutanesulfonic acid
 (PFBS)", "38.6", "ng/L", "", "0.92", "DL", "", "SPK", "109", "", "2.5", "LOQ", "YES", "35.4", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic
 acid (PFHpA)", "47.0", "ng/L", "", "0.80", "DL", "", "SPK", "118", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "375-92-
 8", "Perfluoroheptanesulfonic Acid
 (PFHpS)", "43.7", "ng/L", "", "0.71", "DL", "", "SPK", "115", "", "2.5", "LOQ", "YES", "38.1", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "375-95-1", "Perfluorononanoic
 acid (PFNA)", "46.4", "ng/L", "", "0.65", "DL", "", "SPK", "116", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "376-06-
 7", "Perfluorotetradecanoic acid
 (PFTeA)", "37.9", "ng/L", "", "0.40", "DL", "", "SPK", "95", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "1.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "72629-94-
 8", "Perfluorotridecanoic Acid
 (PFTriA)", "48.2", "ng/L", "", "0.55", "DL", "", "SPK", "120", "", "2.5", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "754-91-6", "Perfluorooctane
 Sulfonamide
 (FOSA)", "49.7", "ng/L", "", "0.64", "DL", "", "SPK", "124", "", "40", "LOQ", "YES", "40.0", "", "250", "0.50", "2.0", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL00990", "13C4
 PFOA", "104", "ng/L", "", "-99", "DL", "", "SPK", "104", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL00991", "13C4
 PFOS", "97.7", "ng/L", "", "-99", "DL", "", "SPK", "102", "", "-99", "LOQ", "YES", "95.6", "", "250", "0.50", "100", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL00992", "13C4
 PFBA", "103", "ng/L", "", "-99", "DL", "", "SPK", "103", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL00993", "13C2
 PFHxA", "98.8", "ng/L", "", "-99", "DL", "", "SPK", "99", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL00994", "18O2
 PFHxS", "97.0", "ng/L", "", "-99", "DL", "", "SPK", "103", "", "-99", "LOQ", "YES", "94.6", "", "250", "0.50", "100", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL00995", "13C5
 PFNA", "103", "ng/L", "", "-99", "DL", "", "SPK", "103", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL00996", "13C2
 PFDA", "113", "ng/L", "", "-99", "DL", "", "SPK", "113", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
 "LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL00997", "13C2
 PFUnA", "100", "ng/L", "", "-99", "DL", "", "SPK", "100", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""

"LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL00998", "13C2
PFDaA", "88.5", "ng/L", "", "-99", "DL", "", "SPK", "88", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL01056", "13C8
FOSA", "73.3", "ng/L", "", "-99", "DL", "", "SPK", "73", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL01892", "13C4-
PFHpA", "111", "ng/L", "", "-99", "DL", "", "SPK", "111", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL01893", "13C5
PFPeA", "94.3", "ng/L", "", "-99", "DL", "", "SPK", "94", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL02116", "13C2-
PFTeDA", "122", "ng/L", "", "-99", "DL", "", "SPK", "122", "", "-99", "LOQ", "YES", "100", "", "250", "0.50", "100", ""
"LCS 320-183917/2-A", "537 (modified)", "RES", "LCS 320-183917/2-A", "TALSAC", "STL02337", "13C3-
PFBS", "99.4", "ng/L", "", "-99", "DL", "", "SPK", "107", "", "-99", "LOQ", "YES", "93.0", "", "250", "0.50", "0", ""
"LCSD 320-183917/3-A", "537 (modified)", "RES", "LCSD 320-183917/3-A", "TALSAC", "1763-23-
1", "Perfluorooctanesulfonic acid
(PFOS)", "38.1", "ng/L", "", "1.3", "DL", "", "SPK", "103", "5", "4.0", "LOQ", "YES", "37.1", "LCS 320-183917/2-
A", "250", "0.50", "3.0", ""
"LCSD 320-183917/3-A", "537 (modified)", "RES", "LCSD 320-183917/3-A", "TALSAC", "2058-94-
8", "Perfluoroundecanoic acid
(PFUnA)", "41.2", "ng/L", "", "0.75", "DL", "", "SPK", "103", "1", "2.5", "LOQ", "YES", "40.0", "LCS 320-183917/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-183917/3-A", "537 (modified)", "RES", "LCSD 320-183917/3-A", "TALSAC", "2706-90-
3", "Perfluoropentanoic acid
(PFPeA)", "41.1", "ng/L", "", "0.99", "DL", "", "SPK", "103", "2", "2.5", "LOQ", "YES", "40.0", "LCS 320-183917/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-183917/3-A", "537 (modified)", "RES", "LCSD 320-183917/3-A", "TALSAC", "307-24-
4", "Perfluorohexanoic acid
(PFHxA)", "44.1", "ng/L", "", "0.79", "DL", "", "SPK", "110", "2", "2.5", "LOQ", "YES", "40.0", "LCS 320-183917/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-183917/3-A", "537 (modified)", "RES", "LCSD 320-183917/3-A", "TALSAC", "307-55-
1", "Perfluorododecanoic acid
(PFDaA)", "42.1", "ng/L", "", "0.58", "DL", "", "SPK", "105", "5", "2.5", "LOQ", "YES", "40.0", "LCS 320-183917/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-183917/3-A", "537 (modified)", "RES", "LCSD 320-183917/3-A", "TALSAC", "335-67-
1", "Perfluorooctanoic acid
(PFOA)", "42.5", "ng/L", "", "0.75", "DL", "", "SPK", "106", "2", "2.5", "LOQ", "YES", "40.0", "LCS 320-183917/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-183917/3-A", "537 (modified)", "RES", "LCSD 320-183917/3-A", "TALSAC", "335-76-
2", "Perfluorodecanoic acid
(PFDA)", "43.1", "ng/L", "", "0.44", "DL", "", "SPK", "108", "3", "2.5", "LOQ", "YES", "40.0", "LCS 320-183917/2-
A", "250", "0.50", "1.0", ""
"LCSD 320-183917/3-A", "537 (modified)", "RES", "LCSD 320-183917/3-A", "TALSAC", "335-77-
3", "Perfluorodecanesulfonic acid
(PFDS)", "36.4", "ng/L", "", "1.2", "DL", "", "SPK", "94", "10", "4.0", "LOQ", "YES", "38.6", "LCS 320-183917/2-
A", "250", "0.50", "3.0", ""
"LCSD 320-183917/3-A", "537 (modified)", "RES", "LCSD 320-183917/3-A", "TALSAC", "355-46-
4", "Perfluorohexanesulfonic acid
(PFHxS)", "41.9", "ng/L", "", "0.87", "DL", "", "SPK", "115", "2", "2.5", "LOQ", "YES", "36.4", "LCS 320-183917/2-
A", "250", "0.50", "2.0", ""
"LCSD 320-183917/3-A", "537 (modified)", "RES", "LCSD 320-183917/3-A", "TALSAC", "375-22-
4", "Perfluorobutanoic acid
(PFBA)", "45.3", "ng/L", "", "0.46", "DL", "", "SPK", "113", "1", "2.5", "LOQ", "YES", "40.0", "LCS 320-183917/2-
A", "250", "0.50", "1.0", ""
"LCSD 320-183917/3-A", "537 (modified)", "RES", "LCSD 320-183917/3-A", "TALSAC", "375-73-
5", "Perfluorobutanesulfonic acid

(PFBS)","38.8","ng/L","","0.92","DL","","SPK","110","1","2.5","LOQ","YES","35.4","LCS 320-183917/2-A","250","0.50","2.0",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","375-85-9","Perfluoroheptanoic acid
(PFHpA)","45.2","ng/L","","0.80","DL","","SPK","113","4","2.5","LOQ","YES","40.0","LCS 320-183917/2-A","250","0.50","2.0",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid
(PFHpS)","44.4","ng/L","","0.71","DL","","SPK","117","2","2.5","LOQ","YES","38.1","LCS 320-183917/2-A","250","0.50","2.0",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","375-95-1","Perfluorononanoic acid
(PFNA)","43.0","ng/L","","0.65","DL","","SPK","107","8","2.5","LOQ","YES","40.0","LCS 320-183917/2-A","250","0.50","2.0",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","376-06-7","Perfluorotetradecanoic acid
(PFTeA)","36.0","ng/L","","0.40","DL","","SPK","90","5","2.5","LOQ","YES","40.0","LCS 320-183917/2-A","250","0.50","1.0",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","72629-94-8","Perfluorotridecanoic Acid
(PFTriA)","41.3","ng/L","","0.55","DL","","SPK","103","15","2.5","LOQ","YES","40.0","LCS 320-183917/2-A","250","0.50","2.0",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","754-91-6","Perfluorooctane Sulfonamide (FOSA)","46.4","ng/L","","0.64","DL","","SPK","116","7","40","LOQ","YES","40.0","LCS 320-183917/2-A","250","0.50","2.0",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL00990","13C4 PFOA","105","ng/L","","-99","DL","","SPK","105","","-99","LOQ","YES","100","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL00991","13C4 PFOS","95.6","ng/L","","-99","DL","","SPK","100","","-99","LOQ","YES","95.6","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL00992","13C4 PFBA","105","ng/L","","-99","DL","","SPK","105","","-99","LOQ","YES","100","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL00993","13C2 PFHxA","97.3","ng/L","","-99","DL","","SPK","97","","-99","LOQ","YES","100","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL00994","18O2 PFHxS","97.0","ng/L","","-99","DL","","SPK","103","","-99","LOQ","YES","94.6","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL00995","13C5 PFNA","105","ng/L","","-99","DL","","SPK","105","","-99","LOQ","YES","100","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL00996","13C2 PFDA","109","ng/L","","-99","DL","","SPK","109","","-99","LOQ","YES","100","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL00997","13C2 PFUnA","90.8","ng/L","","-99","DL","","SPK","91","","-99","LOQ","YES","100","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL00998","13C2 PFDaA","83.0","ng/L","","-99","DL","","SPK","83","","-99","LOQ","YES","100","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL01056","13C8 FOSA","69.8","ng/L","","-99","DL","","SPK","70","","-99","LOQ","YES","100","LCS 320-183917/2-

A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL01892","13C4-PFHpA","116","ng/L","","-99","DL","","SPK","116","","-99","LOQ","YES","100","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL01893","13C5-PFPeA","97.6","ng/L","","-99","DL","","SPK","98","","-99","LOQ","YES","100","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL02116","13C2-PFTeDA","109","ng/L","","-99","DL","","SPK","109","","-99","LOQ","YES","100","LCS 320-183917/2-A","250","0.50","100",""
"LCSD 320-183917/3-A","537 (modified)","RES","LCSD 320-183917/3-A","TALSAC","STL02337","13C3-PFBS","99.8","ng/L","","-99","DL","","SPK","107","","-99","LOQ","YES","93.0","LCS 320-183917/2-A","250","0.50","0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","3.0","ng/L","U
M","1.3","DL","","TRG","","","4.0","LOQ","YES","-99","","250","0.50","3.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","2058-94-8","Perfluoroundecanoic acid (PFUnA)","2.0","ng/L","U","0.75","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","2706-90-3","Perfluoropentanoic acid (PFPeA)","2.0","ng/L","U","0.99","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","307-24-4","Perfluorohexanoic acid (PFHxA)","2.0","ng/L","U","0.79","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","307-55-1","Perfluorododecanoic acid (PFDoA)","2.0","ng/L","U","0.58","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","2.0","ng/L","U","0.75","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","335-76-2","Perfluorodecanoic acid (PFDA)","1.0","ng/L","U","0.44","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","1.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","335-77-3","Perfluorodecanesulfonic acid (PFDS)","3.0","ng/L","U","1.2","DL","","TRG","","","4.0","LOQ","YES","-99","","250","0.50","3.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","2.0","ng/L","U","0.87","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","375-22-4","Perfluorobutanoic acid (PFBA)","0.513","ng/L","J","0.46","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","1.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","2.0","ng/L","U","0.92","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","2.0","ng/L","U","0.80","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid (PFHpS)","2.0","ng/L","U","0.71","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","2.0","ng/L","U","0.65","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","376-06-7","Perfluorotetradecanoic acid (PFTeA)","1.0","ng/L","U","0.40","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","1.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","72629-94-8","Perfluorotridecanoic Acid (PFTriA)","2.0","ng/L","U","0.55","DL","","TRG","","","2.5","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","754-91-6","Perfluorooctane Sulfonamide (FOSA)","1.13","ng/L","J","0.64","DL","","TRG","","","40","LOQ","YES","-99","","250","0.50","2.0",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL00990","13C4

PFOA","127","ng/L","",-99","DL","","TRG","127","",-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL00991","13C4
PFOS","111","ng/L","",-99","DL","","TRG","117","",-99","LOQ","YES","95.6","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL00992","13C4
PFBA","120","ng/L","",-99","DL","","TRG","120","",-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL00993","13C2
PFHxA","116","ng/L","",-99","DL","","TRG","116","",-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL00994","18O2
PFHxS","105","ng/L","",-99","DL","","TRG","111","",-99","LOQ","YES","94.6","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL00995","13C5
PFNA","124","ng/L","",-99","DL","","TRG","124","",-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL00996","13C2
PFDA","127","ng/L","",-99","DL","","TRG","127","",-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL00997","13C2
PFUnA","119","ng/L","",-99","DL","","TRG","119","",-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL00998","13C2
PFDaA","104","ng/L","",-99","DL","","TRG","104","",-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL01056","13C8
FOSA","77.9","ng/L","",-99","DL","","TRG","78","",-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL01892","13C4-
PFHpA","136","ng/L","",-99","DL","","TRG","136","",-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL01893","13C5
PFPeA","116","ng/L","",-99","DL","","TRG","116","",-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL02116","13C2-
PFTeDA","123","ng/L","",-99","DL","","TRG","123","",-99","LOQ","YES","100","","250","0.50","100",""
"MB 320-183917/1-A","537 (modified)","RES","MB 320-183917/1-A","TALSAC","STL02337","13C3-
PFBS","117","ng/L","",-99","DL","","TRG","125","",-99","LOQ","YES","93.0","","250","0.50","0",""
"Unknown","Unknown","TP-PFC-021-TPI","09/07/2017 12:20","AQ","320-31407-1","NM","","1.80","537
(modified)","3535","RES","09/12/2017 08:51","09/15/2017
22:48","TALSAC","COA","WET","NA","1","NA","NA","","100","320-183917","320-183917","NA","320-
184734","320-31407-1","09/08/2017 09:35","09/11/2017 09:50",""
"Unknown","Unknown","TP-PFC-021-TPI","09/07/2017 12:20","AQ","320-31407-1","NM","","1.80","537
(modified)","3535","DL","09/12/2017 08:51","09/19/2017
23:07","TALSAC","COA","WET","NA","10","NA","NA","","100","320-183917","320-183917","NA","320-
185322","320-31407-1","09/08/2017 09:35","09/11/2017 09:50",""
"Unknown","Unknown","TP-PFC-021-MID-CARBON","09/07/2017 12:25","AQ","320-31407-
2","NM","","1.80","537 (modified)","3535","RES","09/12/2017 08:51","09/15/2017
22:55","TALSAC","COA","WET","NA","1","NA","NA","","100","320-183917","320-183917","NA","320-
184734","320-31407-1","09/08/2017 09:35","09/11/2017 09:50",""
"Unknown","Unknown","TP-PFC-021-TPE","09/07/2017 12:30","AQ","320-31407-3","NM","","1.80","537
(modified)","3535","RES","09/12/2017 08:51","09/15/2017
23:02","TALSAC","COA","WET","NA","1","NA","NA","","100","320-183917","320-183917","NA","320-
184734","320-31407-1","09/08/2017 09:35","09/11/2017 09:50",""
"Unknown","Unknown","TP-PFC-021-TPE-D","09/07/2017 00:00","AQ","320-31407-4","NM","","1.80","537
(modified)","3535","RES","09/12/2017 08:51","09/15/2017
23:09","TALSAC","COA","WET","NA","1","NA","NA","","100","320-183917","320-183917","NA","320-
184734","320-31407-1","09/08/2017 09:35","09/11/2017 09:50",""
"Unknown","Unknown","LCS 320-183917/2-A","","AQ","LCS 320-183917/2-A","LCS","",-99","537
(modified)","3535","RES","09/12/2017 08:51","09/15/2017
22:35","TALSAC","COA","WET","NA","1","NA","NA","","100","320-183917","320-183917","NA","320-
184734","320-31407-1","09/12/2017 08:51","09/11/2017 09:50",""
"Unknown","Unknown","LCSD 320-183917/3-A","","AQ","LCSD 320-183917/3-A","LCSD","",-99","537
(modified)","3535","RES","09/12/2017 08:51","09/15/2017
22:41","TALSAC","COA","WET","NA","1","NA","NA","","100","320-183917","320-183917","NA","320-

184734","320-31407-1","09/12/2017 08:51","09/11/2017 09:50",""
"Unknown","Unknown","MB 320-183917/1-A","","AQ","MB 320-183917/1-A","MB","","-99","537
(modified)","3535","RES","09/12/2017 08:51","09/15/2017
22:28","TALSAC","COA","WET","NA","1","NA","NA","","100","320-183917","320-183917","NA","320-
184734","320-31407-1","09/12/2017 08:51","09/11/2017 09:50",""



TO: JEFF ORIENT **DATE:** OCTOBER 10, 2017

FROM: MEGAN RITCHIE **COPIES:** DV FILE/

SUBJECT: ORGANIC DATA VALIDATION – POLYFLUOROALKYL SUBSTANCES (PFAS)
CTO WE21 - FORMER NAS BRUNSWICK
SDG 320-31407-1

SAMPLES: 4 / Groundwater / PFAS

TP-PFC-021-TPI TP-PFC-021-TPE
TP-PFC-021-MID-CARBON TP-PFC-021-TPE-D

Overview

The sample set for the former NAS Brunswick, SDG 320-31407-1 consists of four (4) groundwater environmental samples. One (1) field duplicate pair was included in this SDG: TP-PFC-021-TPE and TP-PFC-021-TPE-D. The samples were analyzed for per- and polyfluoroalkyl substances (PFAS).

The samples were collected by Tetra Tech on September 7, 2017 and analyzed by Test America of West Sacramento, California. The analysis was conducted in accordance with modified EPA Method 537 Rev. 1.1 analytical and reporting protocols.

The data contained in this SDG were validated with regard to the following parameters:

- * Data Completeness
- * Holding Times/Sample Preservation
- * LC/MS/MS Instrument Tuning and System Performance
- * Initial and Continuing Calibration Verification Results
- * Laboratory Method/Preparation Blank Analyses
- * Isotope Dilution Analyte Recoveries
- * Laboratory Control Sample (LCS) Results
- * Matrix Spike/Matrix Spike Duplicate Results
- * Laboratory Duplicate Sample Results
- * Internal Standard Results
- * Detection Limits

The symbol (*) indicates that quality control criteria were met for this parameter. Issues affecting data quality are discussed below; documentation supporting these findings is presented in Appendix C. Qualified Analytical results are presented in Appendix A. Results as reported by the laboratory are presented in Appendix B.

PFAS

The following contaminant was detected in the method blank at the following maximum concentrations:

Analyte	Maximum Concentration	Reporting Limit (RL) (< or >)
Perfluorobutanoic acid (PFBA)	0.513 J ng/L	< RL
Perfluorooctane sulfonamide (FOSA)	1.13 J ng/L	< RL

Maximum concentration detected in the method blank MB 320-183917/1-A from 9/15/17 @22:28 affecting samples TP-PFC-021-TPI, TP-PFC-021-MID-CARBON, TP-PFC-021-TPE, and TP-PFC-021-TPE-D. FOSA was qualified as not detected (U) in these samples because the FOSA results in the blank and the

TO: J. ORIENT
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sample were less than the RL. No action was taken for PFBA because the associated sample concentrations were above the RL and greater than 10X the blank concentration.

The Isotope Dilution Analyte (IDA) recoveries associated with the following samples were below the QC limit for 13C8 FOSA: TP-PFC-021-MID-CARBON and TP-PFC-021-TPE. The positive results for FOSA in these samples were qualified as estimated (J) but were superseded by the qualifier for blank contamination (U).

Detected results reported below the Limit of Quantitation (LOQ) but above the Detection Limit (DL) were qualified as estimated (J).

Notes

Sample TP-PFC-021-TPI was diluted to bring the concentration of perfluorooctanoic acid (PFOA) within the calibration range.

All analyses were conducted within the hold times specified by the site specific Sampling and Analysis Plan (SAP) and the analytical method.

Non-detected results were reported to the Limit of Detection (LOD).

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Executive Summary

Laboratory Performance: PFBA and FOSA were detected in a method blank. IDA recoveries exceeded QC limits.

Other Factors Affecting Data Quality: Positive results below the LOQ were qualified as estimated.

The data for these analyses were reviewed with reference to the "National Functional Guidelines for Superfund Organic Methods Data Review" (January 2017) and the EPA New England Environmental Data Review Supplement (April 2013). The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
Megan Ritchie
Chemist/Data Validator



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

Appendix A

Qualified Analytical Results

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 ($< 2 \times$ IDL for inorganics and $<$ CRQL for organics)
- Q = Other problems (can encompass a number of issues; i.e. chromatography, interferences, etc.)
- 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
- Z4 = Sample activity is less than the at uncertainty at 3 standard deviations and greater than the MDC
- Z5 = Sample activity is less than the at uncertainty at 3 standard deviations and less than the MDC

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 method detection limit for sample and method.
J	The analyte was positively identified and 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.
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.

PROJ_NO: 08005-WE21 SDG: 320-31407-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	TP-PFC-021-MID-CARBON			TP-PFC-021-TPE			TP-PFC-021-TPE-D			TP-PFC-021-TPI		
	LAB_ID	320-31407-2			320-31407-3			320-31407-4			320-31407-1		
	SAMP_DATE	9/7/2017			9/7/2017			9/7/2017			9/7/2017		
	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-021-TPE					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCCTANOIC ACID		0.97	J	P	0.78	J	P	0.71	J	P			
PERFLUOROBUTANESULFONIC ACID		1.9	U		1.9	U		1.9	U		55		
PERFLUOROBUTANOIC ACID		130			120			120			82		
PERFLUORODECANE SULFONIC ACID		2.8	U		2.9	U		2.8	U		2.9	U	
PERFLUORODECANOIC ACID		0.93	U		0.97	U		0.94	U		1	J	P
PERFLUORODODECANOIC ACID		1.9	U		1.9	U		1.9	U		1.9	U	
PERFLUOROHEPTANESULFONIC ACID		1.9	U		1.9	U		1.9	U		8		
PERFLUOROHEPTANOIC ACID		1.9	U		1.9	U		1.9	U		82		
PERFLUOROHEXANESULFONIC ACID		1.9	U		1.9	U		1.9	U		330		
PERFLUOROHEXANOIC ACID		5.6			7.7			7.4			340		
PERFLUORONONANOIC ACID		1.9	U		1.9	U		1.9	U		2.7		
PERFLUOROOCTANE SULFONAMIDE		0.68	U	A	1.2	U	A	1.7	U	A	1.8	U	A
PERFLUOROOCTANE SULFONIC ACID		2.8	U		2.9	U		2.8	U		310		
PERFLUOROPENTANOIC ACID		50			37			38			190		
PERFLUOROTETRADECANOIC ACID		0.93	U		0.97	U		0.94	U		0.96	U	
PERFLUOROTRIDECANOIC ACID		1.9	U		1.9	U		1.9	U		1.9	U	
PERFLUOROUNDECANOIC ACID		1.9	U		1.9	U		1.9	U		1.9	U	

PROJ_NO: 08005-WE21 SDG: 320-31407-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	TP-PFC-021-TPI-DL		
	LAB_ID	320-31407-1		
	SAMP_DATE	9/7/2017		
	QC_TYPE	NM		
	UNITS	NG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		1800		
PERFLUOROBUTANESULFONIC ACID				
PERFLUOROBUTANOIC ACID				
PERFLUORODECANE SULFONIC ACID				
PERFLUORODECANOIC ACID				
PERFLUORODODECANOIC ACID				
PERFLUOROHEPTANESULFONIC ACID				
PERFLUOROHEPTANOIC ACID				
PERFLUOROHEXANESULFONIC ACID				
PERFLUOROHEXANOIC ACID				
PERFLUORONONANOIC ACID				
PERFLUOROOCTANE SULFONAMIDE				
PERFLUOROOCTANE SULFONIC ACID				
PERFLUOROPENTANOIC ACID				
PERFLUOROTETRADECANOIC ACID				
PERFLUOROTRIDECANOIC ACID				
PERFLUOROUNDECANOIC ACID				

Appendix B

Results as Reported by the Laboratory

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPI</u>	Lab Sample ID: <u>320-31407-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_005.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>260.8 (mL)</u>	Date Analyzed: <u>09/15/2017 22:48</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	82		2.4	0.96	0.44
2706-90-3	Perfluoropentanoic acid (PFPeA)	190		2.4	1.9	0.95
307-24-4	Perfluorohexanoic acid (PFHxA)	340		2.4	1.9	0.75
375-85-9	Perfluoroheptanoic acid (PFHpA)	82		2.4	1.9	0.77
335-67-1	Perfluorooctanoic acid (PFOA)	1100	E M	2.4	1.9	0.72
375-95-1	Perfluorononanoic acid (PFNA)	2.7		2.4	1.9	0.63
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	J	2.4	0.96	0.42
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	1.9	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	1.9	0.56
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.4	1.9	0.53
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.96	U	2.4	0.96	0.38
375-73-5	Perfluorobutanesulfonic acid (PFBS)	55		2.4	1.9	0.88
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	330		2.4	1.9	0.83
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	8.0		2.4	1.9	0.68
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	310		3.8	2.9	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.8	2.9	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.8	J	38	1.9	0.61

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPI</u>	Lab Sample ID: <u>320-31407-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_005.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>260.8 (mL)</u>	Date Analyzed: <u>09/15/2017 22:48</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	30		25-150
STL00992	13C4 PFBA	69		25-150
STL00993	13C2 PFHxA	70		25-150
STL00990	13C4 PFOA	63		25-150
STL00995	13C5 PFNA	88		25-150
STL00996	13C2 PFDA	104		25-150
STL00997	13C2 PFUnA	100		25-150
STL00998	13C2 PFDoA	100		25-150
STL00994	18O2 PFHxS	96		25-150
STL00991	13C4 PFOS	101		25-150
STL01892	13C4-PFHpA	86		25-150
STL01893	13C5 PFPeA	77		25-150
STL02337	13C3-PFBS	100		25-150
STL02116	13C2-PFTeDA	108		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPI DL</u>	Lab Sample ID: <u>320-31407-1 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.19B_014.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>260.8 (mL)</u>	Date Analyzed: <u>09/19/2017 23:07</u>
Con. Extract Vol.: <u>0.50 (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>185322</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	77	D	24	9.6	4.4
2706-90-3	Perfluoropentanoic acid (PFPeA)	210	D	24	19	9.5
307-24-4	Perfluorohexanoic acid (PFHxA)	390	D	24	19	7.5
375-85-9	Perfluoroheptanoic acid (PFHpA)	78	D	24	19	7.7
335-67-1	Perfluorooctanoic acid (PFOA)	1800	D M	24	19	7.2
375-95-1	Perfluorononanoic acid (PFNA)	19	U	24	19	6.3
335-76-2	Perfluorodecanoic acid (PFDA)	9.6	U	24	9.6	4.2
2058-94-8	Perfluoroundecanoic acid (PFUnA)	19	U	24	19	7.2
307-55-1	Perfluorododecanoic acid (PFDoA)	19	U	24	19	5.6
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	19	U	24	19	5.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	9.6	U	24	9.6	3.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	58	D	24	19	8.8
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	420	D	24	19	8.3
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	9.9	J D	24	19	6.8
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	330	D	38	29	12
335-77-3	Perfluorodecanesulfonic acid (PFDS)	29	U	38	29	12
754-91-6	Perfluorooctane Sulfonamide (FOSA)	19	U	380	19	6.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPI DL</u>	Lab Sample ID: <u>320-31407-1 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.19B_014.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>260.8 (mL)</u>	Date Analyzed: <u>09/19/2017 23:07</u>
Con. Extract Vol.: <u>0.50 (mL)</u>	Dilution Factor: <u>10</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>185322</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	29		25-150
STL00992	13C4 PFBA	90		25-150
STL00993	13C2 PFHxA	93		25-150
STL00990	13C4 PFOA	90		25-150
STL00995	13C5 PFNA	97		25-150
STL00996	13C2 PFDA	90		25-150
STL00997	13C2 PFUnA	101		25-150
STL00998	13C2 PFDoA	98		25-150
STL00994	18O2 PFHxS	101		25-150
STL00991	13C4 PFOS	91		25-150
STL01892	13C4-PFHpA	103		25-150
STL01893	13C5 PFPeA	89		25-150
STL02337	13C3-PFBS	96		25-150
STL02116	13C2-PFTeDA	93		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-MID-CARBON</u>	Lab Sample ID: <u>320-31407-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_006.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:25</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>269.5 (mL)</u>	Date Analyzed: <u>09/15/2017 22:55</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	130		2.3	0.93	0.42
2706-90-3	Perfluoropentanoic acid (PFPeA)	50		2.3	1.9	0.92
307-24-4	Perfluorohexanoic acid (PFHxA)	5.6		2.3	1.9	0.73
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	U	2.3	1.9	0.74
335-67-1	Perfluorooctanoic acid (PFOA)	0.97	J M	2.3	1.9	0.69
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.3	1.9	0.61
335-76-2	Perfluorodecanoic acid (PFDA)	0.93	U	2.3	0.93	0.41
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	U	2.3	1.9	0.69
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	U	2.3	1.9	0.54
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.3	1.9	0.51
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.93	U	2.3	0.93	0.37
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	U M	2.3	1.9	0.85
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.3	1.9	0.81
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	2.3	1.9	0.66
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.7	2.8	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.8	U	3.7	2.8	1.1
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.68	J	37	1.9	0.59

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-MID-CARBON</u>	Lab Sample ID: <u>320-31407-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_006.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:25</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>269.5 (mL)</u>	Date Analyzed: <u>09/15/2017 22:55</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	19	Q	25-150
STL00992	13C4 PFBA	98		25-150
STL00993	13C2 PFHxA	93		25-150
STL00990	13C4 PFOA	104		25-150
STL00995	13C5 PFNA	103		25-150
STL00996	13C2 PFDA	109		25-150
STL00997	13C2 PFUnA	95		25-150
STL00998	13C2 PFDoA	96		25-150
STL00994	18O2 PFHxS	99		25-150
STL00991	13C4 PFOS	107		25-150
STL01892	13C4-PFHpA	107		25-150
STL01893	13C5 PFPeA	88		25-150
STL02337	13C3-PFBS	107		25-150
STL02116	13C2-PFTeDA	121		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPE</u>	Lab Sample ID: <u>320-31407-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_007.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:30</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>257.8 (mL)</u>	Date Analyzed: <u>09/15/2017 23:02</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	120		2.4	0.97	0.44
2706-90-3	Perfluoropentanoic acid (PFPeA)	37		2.4	1.9	0.96
307-24-4	Perfluorohexanoic acid (PFHxA)	7.7		2.4	1.9	0.76
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	1.9	0.78
335-67-1	Perfluorooctanoic acid (PFOA)	0.78	J M	2.4	1.9	0.73
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.4	1.9	0.63
335-76-2	Perfluorodecanoic acid (PFDA)	0.97	U	2.4	0.97	0.43
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	1.9	0.73
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	1.9	0.57
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.4	1.9	0.53
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.97	U	2.4	0.97	0.39
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.4	1.9	0.89
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.4	1.9	0.84
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	2.4	1.9	0.69
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	U	3.9	2.9	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.9	U	3.9	2.9	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.2	J	39	1.9	0.62

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPE</u>	Lab Sample ID: <u>320-31407-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_007.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 12:30</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>257.8 (mL)</u>	Date Analyzed: <u>09/15/2017 23:02</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	5	Q	25-150
STL00992	13C4 PFBA	80		25-150
STL00993	13C2 PFHxA	70		25-150
STL00990	13C4 PFOA	67		25-150
STL00995	13C5 PFNA	61		25-150
STL00996	13C2 PFDA	70		25-150
STL00997	13C2 PFUnA	73		25-150
STL00998	13C2 PFDoA	89		25-150
STL00994	18O2 PFHxS	121		25-150
STL00991	13C4 PFOS	125		25-150
STL01892	13C4-PFHpA	76		25-150
STL01893	13C5 PFPeA	68		25-150
STL02337	13C3-PFBS	129		25-150
STL02116	13C2-PFTeDA	119		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPE-D</u>	Lab Sample ID: <u>320-31407-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_008.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>265.6 (mL)</u>	Date Analyzed: <u>09/15/2017 23:09</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	120		2.4	0.94	0.43
2706-90-3	Perfluoropentanoic acid (PFPeA)	38		2.4	1.9	0.93
307-24-4	Perfluorohexanoic acid (PFHxA)	7.4		2.4	1.9	0.74
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	1.9	0.75
335-67-1	Perfluorooctanoic acid (PFOA)	0.71	J M	2.4	1.9	0.70
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.4	1.9	0.62
335-76-2	Perfluorodecanoic acid (PFDA)	0.94	U	2.4	0.94	0.41
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.9	U	2.4	1.9	0.70
307-55-1	Perfluorododecanoic acid (PFDoA)	1.9	U	2.4	1.9	0.55
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	1.9	U	2.4	1.9	0.52
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.94	U	2.4	0.94	0.38
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	U M	2.4	1.9	0.86
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.4	1.9	0.82
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.9	U	2.4	1.9	0.67
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.8	U	3.8	2.8	1.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	2.8	U	3.8	2.8	1.1
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.7	J	38	1.9	0.60

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: <u>TP-PFC-021-TPE-D</u>	Lab Sample ID: <u>320-31407-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_008.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: <u>09/07/2017 00:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>265.6 (mL)</u>	Date Analyzed: <u>09/15/2017 23:09</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	36		25-150
STL00992	13C4 PFBA	96		25-150
STL00993	13C2 PFHxA	99		25-150
STL00990	13C4 PFOA	108		25-150
STL00995	13C5 PFNA	105		25-150
STL00996	13C2 PFDA	115		25-150
STL00997	13C2 PFUnA	101		25-150
STL00998	13C2 PFDoA	99		25-150
STL00994	18O2 PFHxS	117		25-150
STL00991	13C4 PFOS	118		25-150
STL01892	13C4-PFHpA	107		25-150
STL01893	13C5 PFPeA	93		25-150
STL02337	13C3-PFBS	126		25-150
STL02116	13C2-PFTeDA	117		25-150

Appendix C

Support Documentation

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:[illegible]

Job Narrative
320-31407-1

Receipt

The samples were received on 9/8/2017 9:35 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.8° C.

LCMS

Method(s) 537 (modified): 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) 537 (modified): The concentration of Perfluorooctanoic acid (PFOA) associated with the following sample exceeded the instrument calibration range: TP-PFC-021-TPI (320-31407-1). This samples has been re-analyzed at dilution. Both sets of data have been reported.

Method(s) 537 (modified): The Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit for 13C8 FOSA: TP-PFC-021-MID-CARBON (320-31407-2) and TP-PFC-021-TPE (320-31407-3). Reanalysis confirmed the results. 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) 537 (modified): Due to the sporadic recovery performance for the labeled analyte 13C8-FOSA, we are temporarily increasing the reporting limit (RL) for the target analyte FOSA in order to provide better confidence in its reported value. The RL for FOSA has been increased so the same concentration as that fortified into the laboratory control sample (LCS). At this concentration, the LCS demonstrates acceptable FOSA recovery regardless of the recovery of it labeled analog, 13C8-FOSA, which is used to quantitate FOSA. Thus, indicating sufficient analytical performance to support this RL increase. Techniques to improve the recovery performance of 13C8-FOSA are currently underway.

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

Organic Prep

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-183917.

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

FORMER NAWC TRENTON
320-31407-1

SAMPLE IDENTIFICATION

TP-PFC-021-TPI DL

COMPOUND

PFOA

COMPOUND AREA 15655183

INTERNAL STANDARD AMOUNT (ng/ml) 50

DILUTION FACTOR 0.9

INTERNAL STANDARD AREA 12532

AVERAGE RRF 1.0761

SAMPLE VOLUME (ml) 260.8

VOLUME EXTRACT (ml) 0.3

VOLUME INJECTED (μl) 0.03

ml to L 1000

CONCENTRATION = 1802.74 ng/L

Calculation:

$(15655183 * 50 \text{ ng/ml} * 0.9 * 0.3 \text{ mL} * 0.03 \text{ uL} * 1000) / (12532 * 1.0761 * 260.8)$

FIELD DUPLICATE PRECISION
SDG 320-31407-1

ANALYTE	ORIGINAL	DUPLICATE	RL	RPD	RPD > 30%	ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >RL
PERDECAFLUOROOCTANOIC ACID	0.78	0.71	1.9	9	FALSE	FALSE	FALSE	FALSE
PERFLUOROBUTANOIC ACID	120	120	0.94	0	FALSE	TRUE	TRUE	FALSE
PERFLUOROHEXANOIC ACID	7.7	7.4	1.9	4	FALSE	TRUE	TRUE	FALSE
PERFLUOROPENTANOIC ACID	37	38	1.9	3	FALSE	TRUE	TRUE	FALSE

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Matrix: Water Level: Low
 GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	3C3-PFB:#	PFHxA #	PFHpA #	PFHxS #	PFOA #	PFNA #
TP-PFC-021-TPI	320-31407-1	69	77	100	70	86	96	63	88
TP-PFC-021-TPI DL	320-31407-1 DL	90	89	96	93	103	101	90	97
TP-PFC-021-MID-CAR BON	320-31407-2	98	88	107	93	107	99	104	103
TP-PFC-021-TPE	320-31407-3	80	68	129	70	76	121	67	61
TP-PFC-021-TPE-D	320-31407-4	96	93	126	99	107	117	108	105
	MB 320-183917/1-A	120	116	125	116	136	111	127	124
	LCS 320-183917/2-A	103	94	107	99	111	103	104	103
	LCSD 320-183917/3-A	105	98	107	97	116	103	105	105

	<u>QC LIMITS</u>
PFBA = 13C4 PFBA	25-150
PFPeA = 13C5 PFPeA	25-150
13C3-PFBS = 13C3-PFBS	25-150
PFHxA = 13C2 PFHxA	25-150
PFHpA = 13C4-PFHpA	25-150
PFHxS = 1802 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

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-021-TPI	320-31407-1	101	30	104	100	100	108
TP-PFC-021-TPI DL	320-31407-1 DL	91	29	90	101	98	93
TP-PFC-021-MID-CAR BON	320-31407-2	107	19 Q	109	95	96	121
TP-PFC-021-TPE	320-31407-3	125	5 Q	70	73	89	119
TP-PFC-021-TPE-D	320-31407-4	118	36	115	101	99	117
	MB 320-183917/1-A	117	78	127	119	104	123
	LCS 320-183917/2-A	102	73	113	100	88	122
	LCSD 320-183917/3-A	100	70	109	91	83	109

	<u>QC LIMITS</u>
PFOS = 13C4 PFOS	25-150
PFOSA = 13C8 FOSA	25-150
PFDA = 13C2 PFDA	25-150
PFUnA = 13C2 PFUnA	25-150
PFDoA = 13C2 PFDoA	25-150
PFTDA = 13C2-PFTeDA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.09.15D_003.d
 Lab ID: LCS 320-183917/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	40.0	45.6	114	60-140	
Perfluoropentanoic acid (PFPeA)	40.0	41.9	105	60-140	
Perfluorohexanoic acid (PFHxA)	40.0	45.0	112	60-140	
Perfluoroheptanoic acid (PFHpA)	40.0	47.0	118	60-140	
Perfluorooctanoic acid (PFOA)	40.0	43.3	108	60-140	
Perfluorononanoic acid (PFNA)	40.0	46.4	116	60-140	
Perfluorodecanoic acid (PFDA)	40.0	44.5	111	60-140	
Perfluoroundecanoic acid (PFUnA)	40.0	41.8	105	60-140	
Perfluorododecanoic acid (PFDoA)	40.0	44.3	111	60-140	
Perfluorotridecanoic Acid (PFTriA)	40.0	48.2	120	50-150	
Perfluorotetradecanoic acid (PFTeA)	40.0	37.9	95	50-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	38.6	109	50-150	
Perfluorohexanesulfonic acid (PFHxS)	36.4	42.9	118	60-140	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	43.7	115	50-150	
Perfluorooctanesulfonic acid (PFOS)	37.1	39.8	107	60-140	
Perfluorodecanesulfonic acid (PFDS)	38.6	40.1	104	50-150	
Perfluorooctane Sulfonamide (FOSA)	40.0	49.7	124	60-140	
13C8 FOSA	100	73.3	73	25-150	
13C4 PFBA	100	103	103	25-150	
13C2 PFHxA	100	98.8	99	25-150	
13C4 PFOA	100	104	104	25-150	
13C5 PFNA	100	103	103	25-150	
13C2 PFDA	100	113	113	25-150	
13C2 PFUnA	100	100	100	25-150	
13C2 PFDoA	100	88.5	88	25-150	
18O2 PFHxS	94.6	97.0	103	25-150	
13C4 PFOS	95.6	97.7	102	25-150	
13C4-PFHpA	100	111	111	25-150	
13C5 PFPeA	100	94.3	94	25-150	
13C3-PFBS	93.0	99.4	107	25-150	
13C2-PFTeDA	100	122	122	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: 2017.09.15D_004.d
 Lab ID: LCSD 320-183917/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutanoic acid (PFBA)	40.0	45.3	113	1	30	60-140	
Perfluoropentanoic acid (PFPeA)	40.0	41.1	103	2	30	60-140	
Perfluorohexanoic acid (PFHxA)	40.0	44.1	110	2	30	60-140	
Perfluoroheptanoic acid (PFHpA)	40.0	45.2	113	4	30	60-140	
Perfluorooctanoic acid (PFOA)	40.0	42.5	106	2	30	60-140	
Perfluorononanoic acid (PFNA)	40.0	43.0	107	8	30	60-140	
Perfluorodecanoic acid (PFDA)	40.0	43.1	108	3	30	60-140	
Perfluoroundecanoic acid (PFUnA)	40.0	41.2	103	1	30	60-140	
Perfluorododecanoic acid (PFDoA)	40.0	42.1	105	5	30	60-140	
Perfluorotridecanoic Acid (PFTriA)	40.0	41.3	103	15	30	50-150	
Perfluorotetradecanoic acid (PFTeA)	40.0	36.0	90	5	30	50-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	38.8	110	1	30	50-150	
Perfluorohexanesulfonic acid (PFHxS)	36.4	41.9	115	2	30	60-140	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	44.4	117	2	30	50-150	
Perfluorooctanesulfonic acid (PFOS)	37.1	38.1	103	5	30	60-140	
Perfluorodecanesulfonic acid (PFDS)	38.6	36.4	94	10	30	50-150	
Perfluorooctane Sulfonamide (FOSA)	40.0	46.4	116	7	30	60-140	
13C8 FOSA	100	69.8	70			25-150	
13C4 PFBA	100	105	105			25-150	
13C2 PFHxA	100	97.3	97			25-150	
13C4 PFOA	100	105	105			25-150	
13C5 PFNA	100	105	105			25-150	
13C2 PFDA	100	109	109			25-150	
13C2 PFUnA	100	90.8	91			25-150	
13C2 PFDoA	100	83.0	83			25-150	
18O2 PFHxS	94.6	97.0	103			25-150	
13C4 PFOS	95.6	95.6	100			25-150	
13C4-PFHpA	100	116	116			25-150	
13C5 PFPeA	100	97.6	98			25-150	
13C3-PFBS	93.0	99.8	107			25-150	
13C2-PFTeDA	100	109	109			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab File ID: 2017.09.15D_002.d Lab Sample ID: MB 320-183917/1-A
 Matrix: Water Date Extracted: 09/12/2017 08:51
 Instrument ID: A8_N Date Analyzed: 09/15/2017 22:28
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-183917/2-A	2017.09.15D 003.d	09/15/2017 22:35
	LCSD 320-183917/3-A	2017.09.15D 004.d	09/15/2017 22:41
TP-PFC-021-TPI	320-31407-1	2017.09.15D 005.d	09/15/2017 22:48
TP-PFC-021-MID-CARBON	320-31407-2	2017.09.15D 006.d	09/15/2017 22:55
TP-PFC-021-TPE	320-31407-3	2017.09.15D 007.d	09/15/2017 23:02
TP-PFC-021-TPE-D	320-31407-4	2017.09.15D 008.d	09/15/2017 23:09
TP-PFC-021-TPI DL	320-31407-1 DL	2017.09.19B 014.d	09/19/2017 23:07

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-184448/3	2017.09.14ICALX_003.d
Level 2	IC 320-184448/4	2017.09.14ICALX_004.d
Level 3	IC 320-184448/5	2017.09.14ICALX_005.d
Level 4	IC 320-184448/6	2017.09.14ICALX_006.d
Level 5	IC 320-184448/7	2017.09.14ICALX_007.d
Level 6	IC 320-184448/8	2017.09.14ICALX_008.d
Level 7	IC 320-184448/9	2017.09.14ICALX_009.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	1.565	1.563	1.563	1.565	1.563	1.563	++++				1.314 - 1.814	1.564
Perfluoropentanoic acid (PFPeA)	1.802	1.800	1.801	1.802	1.801	1.800	++++				1.551 - 2.051	1.801
Perfluorobutanesulfonic acid (PFBS)	1.834	1.830	1.831	1.834	1.831	1.830	++++				1.651 - 2.011	1.832
4:2 FTS	2.043	2.040	2.040	2.032	2.040	2.040	2.028				1.788 - 2.288	2.038
Perfluorohexanoic acid (PFHxA)	2.077	2.074	2.086	2.078	2.075	2.074	2.074				1.827 - 2.327	2.077
Perfluoroheptanoic acid (PFHpA)	2.398	2.396	2.403	2.397	2.395	2.395	2.397				2.147 - 2.647	2.397
Perfluorohexanesulfonic acid (PFHxS)	++++	2.412	2.419	2.413	2.411	2.411	2.405				2.162 - 2.662	2.412
6:2 FTS	2.728	2.726	2.732	2.725	2.725	2.719	2.713				2.474 - 2.974	2.724
Perfluorooctanoic acid (PFOA)	2.757	2.755	2.754	2.754	2.746	2.748	2.742				2.501 - 3.001	2.751
Perfluoroheptanesulfonic Acid (PFHpS)	2.765	2.762	2.761	2.754	2.754	2.755	2.750				2.507 - 3.007	2.757
Perfluorooctanesulfonic acid (PFOS)	3.124	3.121	3.128	3.121	3.121	3.115	3.116				2.871 - 3.371	3.121
Perfluorononanoic acid (PFNA)	3.133	3.129	3.128	3.121	3.121	3.124	3.116				2.875 - 3.375	3.125
Perfluorooctane Sulfonamide (FOSA)	3.436	3.432	3.439	3.433	3.428	3.433	3.433				3.184 - 3.684	3.433
8:2 FTS	3.471	3.475	3.475	3.462	3.466	3.471	3.462				3.219 - 3.719	3.469
Perfluorodecanoic acid (PFDA)	3.489	3.484	3.484	3.481	3.476	3.481	3.472				3.231 - 3.731	3.481
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	3.642	3.645	3.645	3.639	3.635	3.641	3.632				3.390 - 3.890	3.640
Perfluorodecanesulfonic acid (PFDS)	3.798	3.792	3.792	3.786	3.783	3.789	3.780				3.539 - 4.039	3.789
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.816	3.810	3.810	3.805	3.802	3.808	3.800				3.557 - 4.057	3.807
Perfluoroundecanoic acid (PFUnA)	3.816	3.810	3.810	3.805	3.802	3.808	3.800				3.557 - 4.057	3.807
MeFOSA	3.928	3.931	3.931	3.931	3.931	3.932	3.924				3.680 - 4.180	3.930
Perfluorododecanoic acid (PFDoA)	4.114	4.107	4.107	4.099	4.097	4.101	4.092				3.852 - 4.352	4.102
N-EtFOSA-M	4.123	4.116	4.124	4.116	4.114	4.119	4.118				3.869 - 4.369	4.119
Perfluorotridecanoic Acid (PFTriA)	4.378	4.371	4.371	4.366	4.361	4.361	4.353				4.116 - 4.616	4.366
Perfluorotetradecanoic acid (PFTeA)	4.616	4.605	4.606	4.597	4.599	4.600	4.588				4.352 - 4.852	4.602
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++	5.032	5.033	5.025	5.024	5.016	5.014				4.777 - 5.277	5.024
Perfluoro-n-octadecanoic acid (PFODA)	5.408	5.400	5.400	5.394	5.387	5.384	5.380				5.143 - 5.643	5.393
13C4 PFBA	1.565	1.563	1.563	1.556	1.563	1.563	1.563				1.312 - 1.812	1.562
13C5 PFPeA	1.802	1.800	1.801	1.793	1.801	1.800	1.791				1.548 - 2.048	1.798
13C3-PFBS	1.823	1.830	1.831	1.823	1.820	1.830	1.820				1.725 - 1.925	1.825
13C2 PFHxA	2.077	2.074	2.074	2.078	2.075	2.074	2.074				1.825 - 2.325	2.075
13C4-PFHpA	2.398	2.396	2.403	2.397	2.395	2.395	2.397				2.147 - 2.647	2.397
18O2 PFHxS	2.414	2.412	2.419	2.413	2.411	2.411	2.405				2.162 - 2.662	2.412

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
M2-6:2FTS	2.728	2.726	2.732	2.725	2.718	2.719	2.713				2.473 - 2.973	2.723
13C4 PFOA	2.757	2.755	2.754	2.747	2.746	2.748	2.742				2.500 - 3.000	2.750
13C4 PFOS	3.124	3.121	3.128	3.121	3.121	3.115	3.116				2.871 - 3.371	3.121
13C5 PFNA	3.124	3.129	3.128	3.121	3.121	3.124	3.116				2.873 - 3.373	3.123
13C8 FOSA	3.436	3.432	3.439	3.433	3.428	3.433	3.424				3.182 - 3.682	3.432
M2-8:2FTS	3.471	3.466	3.475	3.462	3.466	3.462	3.462				3.216 - 3.716	3.466
13C2 PFDA	3.489	3.484	3.484	3.481	3.476	3.481	3.472				3.231 - 3.731	3.481
d3-NMeFOSAA	3.642	3.635	3.645	3.628	3.635	3.630	3.621				3.383 - 3.883	3.634
d5-NEtFOSAA	3.807	3.801	3.810	3.796	3.793	3.799	3.790				3.549 - 4.049	3.799
13C2 PFUnA	3.816	3.810	3.810	3.805	3.802	3.808	3.800				3.557 - 4.057	3.807
d-N-MeFOSA-M	3.928	3.923	3.931	3.923	3.922	3.932	3.924				3.676 - 4.176	3.926
13C2 PFDoA	4.114	4.107	4.107	4.099	4.097	4.101	4.092				3.852 - 4.352	4.102
d-N-EtFOSA-M	4.114	4.107	4.116	4.108	4.106	4.110	4.109				3.860 - 4.360	4.110
13C2-PFTeDA	4.616	4.617	4.617	4.608	4.599	4.600	4.600				4.358 - 4.858	4.608
13C2-PFHxDA	5.042	5.032	5.033	5.025	5.014	5.016	5.014				4.775 - 5.275	5.025

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-184448/3	2017.09.14ICALX_003.d
Level 2	IC 320-184448/4	2017.09.14ICALX_004.d
Level 3	IC 320-184448/5	2017.09.14ICALX_005.d
Level 4	IC 320-184448/6	2017.09.14ICALX_006.d
Level 5	IC 320-184448/7	2017.09.14ICALX_007.d
Level 6	IC 320-184448/8	2017.09.14ICALX_008.d
Level 7	IC 320-184448/9	2017.09.14ICALX_009.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	337693 311683	320183 302445	335946 274032	309234	Ave		313030.703				6.9		50.0			
13C5 PFPeA	228838 203523	214080 192887	227621 164458	203936	Ave		205049.240				10.8		50.0			
13C3-PFBS	5315.3 4966.0	5094.2 4773.8	5441.9 4340.6	4866.3	Ave		4971.17051				7.4		50.0			
13C2 PFHxA	244730 213322	228848 209855	242965 180804	215539	Ave		219437.546				10.1		50.0			
13C4-PFHpA	226061 199899	212137 190603	224301 157591	209238	Ave		202832.829				11.6		50.0			
18O2 PFHxS	294372 289323	277195 293718	295466 259589	281805	Ave		284495.461				4.6		50.0			
M2-6:2FTS	115668 105850	116651 102161	113721 94531	114399	Ave		108997.350				7.7		50.0			
13C4 PFOA	216366 194749	218717 170737	210718 146681	207403	Ave		195053.149				13.8		50.0			
13C4 PFOS	211989 199342	200942 196384	216792 179515	198662	Ave		200517.893				6.0		50.0			
13C5 PFNA	165204 146944	162137 134553	169215 118712	154880	Ave		150235.009				12.1		50.0			
13C8 FOSA	331560 306874	321591 304204	339399 270049	308750	Ave		311775.123				7.3		50.0			
M2-8:2FTS	80577 71085	72909 68188	81207 65960	70558	Ave		72926.4122				8.1		50.0			
13C2 PFDA	144314 136854	138981 129455	148126 111775	130256	Ave		134251.506				9.0		50.0			
d3-NMeFOSAA	42889 42772	41277 39822	44649 38921	42513	Ave		41834.8286				4.7		50.0			

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
d5-NEtFOSAA	44718 39453	44259 37454	47440 33001	40117	Ave		40920.1371				12.0		50.0			
13C2 PFUnA	107416 92520	106094 84121	109055 70946	99130	Ave		95611.7029				14.7		50.0			
d-N-MeFOSA-M	80303 80520	80463 81356	84849 77505	78404	Ave		80485.7886				2.9		50.0			
13C2 PFDoA	100770 92811	96395 82932	97741 76938	90698	Ave		91183.5743				9.3		50.0			
d-N-EtFOSA-M	74597 75769	75974 73665	79316 71667	73814	Ave		74971.6114				3.2		50.0			
13C2-PFTeDA	97872 95720	99010 90861	103906 74178	95251	Ave		93828.3800				10.2		50.0			
13C2-PFHxDA	146752 142518	153897 140245	153969 117318	149015	Ave		143387.751				8.8		50.0			

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

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)	1.0571 0.7903	0.9863 ++++	0.9959	0.9675	0.8934	AveID		0.9484				9.9		35.0			
Perfluoropentanoic acid (PFPeA)	1.2748 0.9766	1.2894 ++++	1.1501	1.1246	1.0736	AveID		1.1482				10.4		35.0			
Perfluorobutanesulfonic acid (PFBS)	80.787 58.223	76.386 ++++	78.633	77.669	66.428	AveID		73.021				12.1		50.0			
4:2 FTS	1.1293 0.9160	1.0055 0.7640	1.1064	0.8946	0.9377	AveID		0.9648				13.2		35.0			
Perfluorohexanoic acid (PFHxA)	1.0906 0.8903	1.0409 0.7558	0.9984	0.9988	0.9881	AveID		0.9661				11.5		35.0			
Perfluoroheptanoic acid (PFHpA)	1.0410 0.9187	1.0237 0.8207	1.0317	1.0229	1.0024	AveID		0.9802				8.3		35.0			
Perfluorohexanesulfonic acid (PFHxS)	++++ 0.9319	1.2859 0.8414	1.1119	1.0701	1.0432	AveID		1.0474				14.6		35.0			
6:2FTS	1.1036 0.8329	0.9837 0.7179	0.9507	0.8614	0.8615	AveID		0.9017				13.7		35.0			
Perfluorooctanoic acid (PFOA)	1.3618 0.9980	1.1297 0.8771	1.1192	1.0880	1.0703	AveID		1.0920				13.5		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.3496 1.0911	1.3020 0.8863	1.3217	1.2824	1.2483	AveID		1.2116				13.7		50.0			
Perfluorooctanesulfonic acid (PFOS)	1.1902 1.0406	1.1213 0.9612	1.0802	1.0367	1.0815	AveID		1.0731				6.7		35.0			
Perfluorononanoic acid (PFNA)	1.0167 0.9659	0.9746 0.8664	0.9754	0.9467	0.9988	AveID		0.9635				5.0		35.0			
Perfluorooctane Sulfonamide (FOSA)	1.0877 0.8073	1.0495 0.6751	1.0422	1.0242	0.9642	AveID		0.9500				16.0		35.0			
8:2FTS	0.9715 0.9242	1.0020 0.7879	0.9957	0.9326	0.9064	AveID		0.9315				7.8		35.0			
Perfluorodecanoic acid (PFDA)	1.0431 0.9183	0.9349 0.8785	0.9229	0.9390	0.9173	AveID		0.9363				5.5		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	0.9754 0.9982	1.0205 0.9306	0.9175	0.9267	0.8694	AveID		0.9483				5.5		35.0			
Perfluorodecanesulfonic acid (PFDS)	0.6496 0.6202	0.6194 0.5500	0.6641	0.6346	0.6560	AveID		0.6277				6.1		50.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.9427 0.8706	0.7838 0.9057	0.8579	0.8738	0.8595	AveID		0.8706				5.6		35.0			
Perfluoroundecanoic acid (PFUnA)	1.4065 1.0372	1.1984 0.9995	1.0618	1.0385	1.0599	AveID		1.1146				12.8		35.0			

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.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

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								
MeFOSA	0.8676 0.9127	0.9121 0.8737	0.8872	0.8900	0.8600	AveID		0.8862				2.3		35.0			
Perfluorododecanoic acid (PFDoA)	0.9837 0.9987	0.9921 0.9230	0.9596	0.9491	0.9379	AveID		0.9634				3.0		35.0			
N-EtFOSA-M	0.9413 0.9650	0.9434 0.8966	0.9384	0.9323	0.9352	AveID		0.9360				2.2		35.0			
Perfluorotridecanoic Acid (PFTriA)	1.1998 1.1350	1.1745 1.0546	1.1094	1.1600	1.1254	AveID		1.1370				4.2		50.0			
Perfluorotetradecanoic acid (PFTeA)	0.2876 0.2407	0.2756 0.2547	0.2603	0.2253	0.2342	AveID		0.2541				8.8		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 0.8484	1.2372 0.8483	0.9604	0.8609	0.8985	L2ID	0.3806	0.8608							0.9990		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	1.1328 0.9461	1.1224 1.0188	1.0390	1.0092	1.0533	AveID		1.0459				6.2		50.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-184448/3	2017.09.14ICALX_003.d
Level 2	IC 320-184448/4	2017.09.14ICALX_004.d
Level 3	IC 320-184448/5	2017.09.14ICALX_005.d
Level 4	IC 320-184448/6	2017.09.14ICALX_006.d
Level 5	IC 320-184448/7	2017.09.14ICALX_007.d
Level 6	IC 320-184448/8	2017.09.14ICALX_008.d
Level 7	IC 320-184448/9	2017.09.14ICALX_009.d

ANALYTE	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
13C4 PFBA	Ave	16884639 15122252	16009142 13701578	16797298	15461675	15584162	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5 PFPeA	Ave	11441908 9644368	10704024 8222924	11381034	10196816	10176160	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C3-PFBS	Ave	247163 221981	236879 201840	253049	226285	230919	46.5 46.5	46.5 46.5	46.5	46.5	46.5
13C2 PFHxA	Ave	12236514 10492742	11442396 9040188	12148263	10776938	10666100	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	11303049 9530159	10606841 7879536	11215044	10461895	9994966	50.0 50.0	50.0 50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	13923807 13892859	13111313 12278558	13975541	13329380	13684989	47.3 47.3	47.3 47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	5494223 4852645	5540939 4490246	5401770	5433939	5027857	47.5 47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	10818301 8536856	10935871 7334061	10535908	10370157	9737448	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	10133075 9387145	9605024 8580811	10362647	9496021	9528564	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	8260206 6727637	8106861 5935575	8460738	7744019	7347217	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	16577976 15210180	16079554 13502428	16969962	15437486	15343707	50.0 50.0	50.0 50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	3859656 3266216	3492335 3159485	3889825	3379723	3404986	47.9 47.9	47.9 47.9	47.9	47.9	47.9
13C2 PFDA	Ave	7215675 6472767	6949030 5588731	7406300	6512802	6842722	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d3-NMeFOSAA	Ave	2144446 1991094	2063873 1946042	2232468	2125656	2138611	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	2235886 1872708	2212929 1650027	2371990	2005851	1972657	50.0 50.0	50.0 50.0	50.0	50.0	50.0

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

ANALYTE	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
13C2 PFUnA	Ave	5370817 4206056	5304695 3547294	5452740	4956513	4625981	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d-N-MeFOSA-M	Ave	4015153 4067778	4023173 3875265	4242466	3920191	4026000	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	5038505 4146607	4819726 3846903	4887030	4534918	4640562	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	3729842 3683228	3798702 3583359	3965795	3690675	3788463	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	4893621 4543064	4950496 3708884	5195322	4762553	4785993	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	7337598 7012245	7694867 5865881	7698439	7450762	7125921	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-184448/3	2017.09.14ICALX_003.d
Level 2	IC 320-184448/4	2017.09.14ICALX_004.d
Level 3	IC 320-184448/5	2017.09.14ICALX_005.d
Level 4	IC 320-184448/6	2017.09.14ICALX_006.d
Level 5	IC 320-184448/7	2017.09.14ICALX_007.d
Level 6	IC 320-184448/8	2017.09.14ICALX_008.d
Level 7	IC 320-184448/9	2017.09.14ICALX_009.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	178486 23903531	315784 +++++	1672888	5983565	13922377	0.500 100	1.00 +++++	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	145863 18836917	276040 +++++	1308950	4586813	10925606	0.500 100	1.00 +++++	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		AveID	189799 24570139	343987 +++++	1891370	6682377	14580814	0.442 88.4	0.884 +++++	4.42	17.7	44.2
4:2 FTS		AveID	60999 8740452	109554 13491942	587579	1911666	4635265	0.467 93.4	0.934 187	4.67	18.7	46.7
Perfluorohexanoic acid (PFHxA)		AveID	133456 18684061	238203 27331005	1212903	4305467	10539124	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		AveID	117663 17511525	217170 25867159	1157099	4280576	10019048	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 24908308	324375 39749821	1494840	5488637	13733046	+++++ 91.0	0.910 182	4.55	18.2	45.5
6:2FTS		AveID	60508 8066712	108781 12867260	512470	1868310	4322401	0.474 94.8	0.948 190	4.74	19.0	47.4
Perfluorooctanoic acid (PFOA)		AveID	147323 17040355	247082 25729402	1179145	4513270	10422185	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	136180 20398786	249074 30293818	1363855	4850705	11844370	0.476 95.2	0.952 190	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)		AveID	117073 18963757	209095 32023837	1086604	3822535	10003377	0.464 92.8	0.928 186	4.64	18.6	46.4
Perfluorononanoic acid (PFNA)		AveID	83979 12997068	158020 20570374	825290	2932479	7338658	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	180314 24558971	337507 36463525	1768588	6324248	14794803	0.500 100	1.00 200	5.00	20.0	50.0
8:2FTS		AveID	37498 6037345	69984 9957438	387309	1260808	3086209	0.479 95.8	0.958 192	4.79	19.2	47.9
Perfluorodecanoic acid (PFDA)		AveID	75270 11887352	129935 19639099	683516	2446223	6277104	0.500 100	1.00 200	5.00	20.0	50.0

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

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	20916 3974890	42125 7243858	204826	787897	1859267	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	66378 11740467	119984 19036236	693909	2430799	6302803	0.482 96.4	0.964 193	4.82	19.3	48.2
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	21078 3260757	34692 5977711	203503	701123	1695413	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroundecanoic acid (PFUnA)		AveID	75542 8725284	127147 14182617	578998	2058951	4903035	0.500 100	1.00 200	5.00	20.0	50.0
MeFOSA		AveID	34837 7425602	73394 13543289	376389	1395663	3462298	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	49566 8282286	95629 14202541	468950	1721617	4352392	0.500 100	1.00 200	5.00	20.0	50.0
N-EtFOSA-M		AveID	35110 7108633	71675 12851935	372153	1376368	3543033	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotridecanoic Acid (PFTriA)		AveID	60452 9412918	113216 16228375	542189	2104135	5222524	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		AveID	14073 2187010	27290 3779270	135211	429175	1121083	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	++++ 11897771	190408 19904231	739348	2565875	6402738	++++ 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)		AveID	83120 13268543	172727 23905788	799896	3007660	7505658	0.500 100	1.00 200	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution
L2ID = Linear 1/conc^2 IsoDil

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-184448/3	2017.09.14ICALX_003.d
Level 2	IC 320-184448/4	2017.09.14ICALX_004.d
Level 3	IC 320-184448/5	2017.09.14ICALX_005.d
Level 4	IC 320-184448/6	2017.09.14ICALX_006.d
Level 5	IC 320-184448/7	2017.09.14ICALX_007.d
Level 6	IC 320-184448/8	2017.09.14ICALX_008.d
Level 7	IC 320-184448/9	2017.09.14ICALX_009.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)	+++++	4.0	5.0	2.0	-5.8	-16.7		25	25	25	25	25
Perfluoropentanoic acid (PFPeA)	+++++	12.3	0.2	-2.1	-6.5	-14.9		25	25	25	25	25
Perfluorobutanesulfonic acid (PFBS)	+++++	4.6	7.7	6.4	-9.0	-20.3		25	25	25	25	25
4:2 FTS	-20.8	4.2	14.7	-7.3	-2.8	-5.1	25	25	25	25	25	25
Perfluorohexanoic acid (PFHxA)	-21.8	7.7	3.3	3.4	2.3	-7.8	25	25	25	25	25	25
Perfluoroheptanoic acid (PFHpA)	-16.3	4.4	5.3	4.4	2.3	-6.3	25	25	25	25	25	25
Perfluorohexanesulfonic acid (PFHxS)	+++++ -19.7		6.2	2.2	-0.4	-11.0	25		25	25	25	25
6:2FTS	-20.4	9.1	5.4	-4.5	-4.5	-7.6	25	25	25	25	25	25
Perfluorooctanoic acid (PFOA)	-19.7	3.4	2.5	-0.4	-2.0	-8.6	25	25	25	25	25	25
Perfluoroheptanesulfonic Acid (PFHpS)	-26.8 *	7.5	9.1	5.8	3.0	-9.9	25	25	25	25	25	25
Perfluorooctanesulfonic acid (PFOS)	-10.4	4.5	0.7	-3.4	0.8	-3.0	25	25	25	25	25	25
Perfluorononanoic acid (PFNA)	-10.1	1.2	1.2	-1.7	3.7	0.3	25	25	25	25	25	25
Perfluorooctane Sulfonamide (FOSA)	-28.9 *	10.5	9.7	7.8	1.5	-15.0	25	25	25	25	25	25
8:2FTS	-15.4	7.6	6.9	0.1	-2.7	-0.8	25	25	25	25	25	25
Perfluorodecanoic acid (PFDA)	-6.2	-0.1	-1.4	0.3	-2.0	-1.9	25	25	25	25	25	25

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 184448
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 09/14/2017 14:25 Calibration End Date: 09/14/2017 15:14 Calibration ID: 34335

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)	-1.9	7.6	-3.3	-2.3	-8.3	5.3	25	25	25	25	25	25
Perfluorodecanesulfonic acid (PFDS)	-12.4	-1.3	5.8	1.1	4.5	-1.2	25	25	25	25	25	25
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	4.0	-10.0	-1.5	0.4	-1.3	0.0	25	25	25	25	25	25
Perfluoroundecanoic acid (PFUnA)	-10.3	7.5	-4.7	-6.8	-4.9	-6.9	25	25	25	25	25	25
MeFOSA	-1.4	2.9	0.1	0.4	-3.0	3.0	25	25	25	25	25	25
Perfluorododecanoic acid (PFDoA)	-4.2	3.0	-0.4	-1.5	-2.7	3.7	25	25	25	25	25	25
N-EtFOSA-M	-4.2	0.8	0.3	-0.4	-0.1	3.1	25	25	25	25	25	25
Perfluorotridecanoic Acid (PFTriA)	-7.2	3.3	-2.4	2.0	-1.0	-0.2	25	25	25	25	25	25
Perfluorotetradecanoic acid (PFTeA)	0.3	8.5	2.4	-11.3	-7.8	-5.3	25	25	25	25	25	25
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ -1.7		2.7	-2.2	3.5	-1.9	25		25	25	25	25
Perfluoro-n-octadecanoic acid (PFODA)	-2.6	7.3	-0.7	-3.5	0.7	-9.5	25	25	25	25	25	25

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185079/3	2017.09.18ICAL_003.d
Level 2	IC 320-185079/4	2017.09.18ICAL_004.d
Level 3	IC 320-185079/5	2017.09.18ICAL_005.d
Level 4	IC 320-185079/6	2017.09.18ICAL_006.d
Level 5	IC 320-185079/7	2017.09.18ICAL_007.d
Level 6	IC 320-185079/8	2017.09.18ICAL_008.d
Level 7	IC 320-185079/9	2017.09.18ICAL_009.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	1.528	1.537	1.537	1.537	1.537	1.530	++++				1.283 - 1.783	1.534
Perfluoropentanoic acid (PFPeA)	1.736	1.746	1.746	1.737	1.746	1.729	++++				1.489 - 1.989	1.740
Perfluorobutanesulfonic acid (PFBS)	1.763	1.773	1.773	1.764	1.764	1.757	++++				1.584 - 1.944	1.766
4:2 FTS	1.971	1.983	1.972	1.972	1.972	1.964	1.961				1.721 - 2.221	1.971
Perfluorohexanoic acid (PFHxA)	2.006	2.018	2.017	2.006	2.006	1.998	2.006				1.758 - 2.258	2.008
Perfluoroheptanoic acid (PFHpA)	2.344	2.352	2.349	2.344	2.339	2.332	2.331				2.092 - 2.592	2.342
Perfluorohexanesulfonic acid (PFHxS)	++++	2.360	2.357	2.360	2.355	2.348	2.350				2.105 - 2.605	2.355
6:2 FTS	++++	2.689	2.679	2.685	2.674	2.671	2.667				2.428 - 2.928	2.678
Perfluorooctanoic acid (PFOA)	2.709	2.711	2.708	2.706	2.703	2.700	2.696				2.455 - 2.955	2.705
Perfluoroheptanesulfonic Acid (PFHpS)	2.709	2.718	2.715	2.714	2.710	2.707	2.703				2.461 - 2.961	2.711
Perfluorooctanesulfonic acid (PFOS)	3.087	3.097	3.093	3.088	3.084	3.079	3.073				2.836 - 3.336	3.086
Perfluorononanoic acid (PFNA)	3.087	3.097	3.093	3.088	3.084	3.079	3.082				2.837 - 3.337	3.087
Perfluorooctane Sulfonamide (FOSA)	3.406	3.409	3.413	3.414	3.402	3.404	++++				3.157 - 3.657	3.408
8:2 FTS	3.441	3.453	3.447	3.440	3.439	3.432	3.435				3.191 - 3.691	3.441
Perfluorodecanoic acid (PFDA)	3.450	3.462	3.456	3.449	3.448	3.441	3.444				3.200 - 3.700	3.450
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	3.616	3.620	3.622	3.617	3.610	3.601	3.604				3.363 - 3.863	3.613
Perfluorodecanesulfonic acid (PFDS)	3.773	3.777	3.768	3.763	3.766	3.758	3.751				3.515 - 4.015	3.765
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.792	3.796	3.787	3.783	3.786	3.778	3.771				3.535 - 4.035	3.785
Perfluoroundecanoic acid (PFUnA)	3.792	3.796	3.787	3.783	3.786	3.778	3.771				3.535 - 4.035	3.785
MeFOSA	3.890	3.903	3.904	3.901	3.896	3.891	3.894				3.647 - 4.147	3.897
Perfluorododecanoic acid (PFDoA)	4.084	4.089	4.089	4.079	4.079	4.075	4.070				3.831 - 4.331	4.081
N-EtFOSA-M	4.084	4.089	4.089	4.088	4.087	4.084	4.079				3.836 - 4.336	4.086
Perfluorotridecanoic Acid (PFTriA)	4.355	4.361	4.353	4.353	4.354	4.338	4.335				4.100 - 4.600	4.350
Perfluorotetradecanoic acid (PFTeA)	4.593	4.591	4.591	4.591	4.585	4.572	4.571				4.335 - 4.835	4.585
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++	5.027	5.017	5.017	5.007	5.006	4.996				4.763 - 5.263	5.012
Perfluoro-n-octadecanoic acid (PFODA)	5.390	5.396	5.388	5.379	5.372	5.370	5.361				5.129 - 5.629	5.379
13C4 PFBA	1.528	1.537	1.537	1.528	1.537	1.521	1.529				1.281 - 1.781	1.531
13C5 PFPeA	1.736	1.746	1.746	1.737	1.737	1.729	1.728				1.487 - 1.987	1.737
13C3-PFBS	1.754	1.764	1.764	1.764	1.764	1.757	1.755				1.660 - 1.860	1.760
13C2 PFHxA	2.006	2.018	2.017	2.006	2.006	1.998	2.006				1.758 - 2.258	2.008
13C4-PFHpA	2.344	2.344	2.349	2.344	2.339	2.332	2.331				2.090 - 2.590	2.340
18O2 PFHxS	2.352	2.360	2.357	2.360	2.355	2.348	2.350				2.105 - 2.605	2.355

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
 Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7				RT WINDOW	AVG RT
M2-6:2FTS	2.680	2.689	2.679	2.685	2.674	2.671	2.667				2.428 - 2.928	2.678
13C4 PFOA	2.702	2.711	2.708	2.706	2.703	2.700	2.696				2.454 - 2.954	2.704
13C4 PFOS	3.087	3.097	3.085	3.088	3.084	3.079	3.073				2.835 - 3.335	3.085
13C5 PFNA	3.087	3.097	3.093	3.088	3.084	3.079	3.073				2.836 - 3.336	3.086
13C8 FOSA	3.406	3.409	3.413	3.404	3.402	3.395	3.398				3.154 - 3.654	3.404
M2-8:2FTS	3.441	3.453	3.447	3.440	3.439	3.432	3.426				3.190 - 3.690	3.440
13C2 PFDA	3.450	3.462	3.456	3.449	3.448	3.441	3.444				3.200 - 3.700	3.450
d3-NMeFOSAA	3.606	3.620	3.612	3.607	3.610	3.601	3.593				3.357 - 3.857	3.607
d5-NEtFOSAA	3.782	3.787	3.778	3.783	3.776	3.768	3.771				3.528 - 4.028	3.778
13C2 PFUnA	3.782	3.796	3.787	3.783	3.786	3.778	3.771				3.533 - 4.033	3.783
d-N-MeFOSA-M	3.890	3.894	3.895	3.893	3.896	3.882	3.886				3.641 - 4.141	3.891
d-N-EtFOSA-M	4.075	4.081	4.081	4.079	4.079	4.075	4.079				3.828 - 4.328	4.078
13C2 PFDoA	4.084	4.089	4.089	4.079	4.079	4.075	4.070				3.831 - 4.331	4.081
13C2-PFTeDA	4.593	4.603	4.602	4.591	4.597	4.584	4.583				4.343 - 4.843	4.593
13C2-PFHxDA	5.019	5.027	5.017	5.008	5.007	5.006	4.996				4.761 - 5.261	5.011

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185079/3	2017.09.18ICAL_003.d
Level 2	IC 320-185079/4	2017.09.18ICAL_004.d
Level 3	IC 320-185079/5	2017.09.18ICAL_005.d
Level 4	IC 320-185079/6	2017.09.18ICAL_006.d
Level 5	IC 320-185079/7	2017.09.18ICAL_007.d
Level 6	IC 320-185079/8	2017.09.18ICAL_008.d
Level 7	IC 320-185079/9	2017.09.18ICAL_009.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	345224 297762	318552 299985	341163 273002	298915	Ave		310657.303				8.3		50.0			
13C5 PFPeA	217698 181736	198465 174099	208813 150476	186917	Ave		188315.037				12.0		50.0			
13C3-PFBS	6018.5 4922.8	5083.1 5122.2	5780.4 4432.4	4875.5	Ave		5176.39631				10.6		50.0			
13C2 PFHxA	230130 193871	209166 191160	220039 175101	189201	Ave		201238.320				9.6		50.0			
13C4-PFHpA	209252 179654	188608 179682	203978 145262	178335	Ave		183538.623				11.4		50.0			
18O2 PFHxS	313059 276426	284835 286263	308751 261988	268587	Ave		285701.268				6.7		50.0			
M2-6:2FTS	96833 88196	97887 87089	92957 85014	92916	Ave		91555.9338				5.4		50.0			
13C4 PFOA	189972 170221	192725 148497	184277 127872	183206	Ave		170967.151				14.2		50.0			
13C4 PFOS	213016 187146	196950 193313	212146 177752	181708	Ave		194576.007				7.1		50.0			
13C5 PFNA	143934 121194	134715 116259	141306 100726	117522	Ave		125093.597				12.4		50.0			
13C8 FOSA	323362 283045	288815 293924	314419 275456	280571	Ave		294227.486				6.1		50.0			
M2-8:2FTS	68658 59497	61088 61730	65684 57974	57969	Ave		61800.0626				6.5		50.0			
13C2 PFDA	115580 98456	107219 100228	113677 90596	99747	Ave		103643.274				8.6		50.0			
d3-NMeFOSAA	30769 26389	28124 28546	31002 27064	26430	Ave		28331.9429				6.8		50.0			

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
d5-NETfOSAA	31056 26135	29475 27556	30362 24657	26129	Ave		27909.9571				8.7		50.0			
13C2 PFUnA	76726 61502	72089 64618	72330 55834	64907	Ave		66857.8143				10.8		50.0			
d-N-MeFOSA-M	74073 69411	71858 76140	76393 75792	65596	Ave		72751.8286				5.6		50.0			
d-N-EtFOSA-M	65091 62408	66010 66065	69752 64751	62111	Ave		65169.6886				3.9		50.0			
13C2 PFDoA	65379 57826	63912 57007	65521 52999	57989	Ave		60090.5571				8.1		50.0			
13C2-PFTeDA	85655 68517	77319 72410	79638 61942	72311	Ave		73970.3000				10.5		50.0			
13C2-PFHxDA	91998 86039	91216 89886	103349 81231	85080	Ave		89828.5429				7.9		50.0			

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

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)	1.0880 0.7791	1.0238 ++++	1.0264	0.9982	0.9023	AveID		0.9696				11.5		35.0			
Perfluoropentanoic acid (PFPeA)	1.3924 0.9809	1.1612 ++++	1.1500	1.0942	1.0746	AveID		1.1422				12.1		35.0			
Perfluorobutanesulfonic acid (PFBS)	75.415 55.340	80.546 ++++	74.917	75.525	68.300	AveID		71.674				12.4		50.0			
4:2 FTS	1.2479 1.0354	1.0169 0.8595	1.1933	1.0162	0.9637	AveID		1.0476				12.7		35.0			
Perfluorohexanoic acid (PFHxA)	1.1172 0.8859	1.0172 0.7523	0.9924	0.9967	0.9502	AveID		0.9588				12.0		35.0			
Perfluoroheptanoic acid (PFHpA)	1.0782 0.9088	1.0308 0.8391	1.0236	0.9862	0.9944	AveID		0.9802				8.3		35.0			
Perfluorohexanesulfonic acid (PFHxS)	++++ 0.9776	1.2638 0.8381	1.1271	1.0884	1.0781	AveID		1.0622				13.5		35.0			
6:2FTS	++++ 0.8586	1.0138 0.7146	0.9157	0.8836	0.8302	AveID		0.8694				11.4		35.0			
Perfluorooctanoic acid (PFOA)	1.2679 1.0232	1.1411 0.9127	1.0791	1.0588	1.0503	AveID		1.0761				10.1		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	1.3685 1.0989	1.3242 0.9125	1.3049	1.3676	1.2548	AveID		1.2331				13.7		50.0			
Perfluorooctanesulfonic acid (PFOS)	1.3570 1.0174	1.2017 0.9499	1.0575	1.0238	1.0325	AveID		1.0914				12.8		35.0			
Perfluorononanoic acid (PFNA)	1.0126 0.9514	1.0109 0.9312	0.9703	1.0041	0.9756	AveID		0.9795				3.2		35.0			
Perfluorooctane Sulfonamide (FOSA)	1.0958 0.8236	1.1105 ++++	1.0581	1.0127	0.9537	AveID		1.0091				10.6		35.0			
8:2FTS	0.9392 0.8944	1.0585 0.7882	0.9914	0.9260	0.8714	AveID		0.9241				9.4		35.0			
Perfluorodecanoic acid (PFDA)	1.0066 0.9304	0.9542 0.8935	0.9196	0.9431	0.9227	AveID		0.9386				3.8		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	1.0093 0.9475	0.9863 0.9759	0.9425	0.9212	0.9144	AveID		0.9567				3.7		35.0			
Perfluorodecanesulfonic acid (PFDS)	0.6213 0.5921	0.5893 0.5282	0.5913	0.6220	0.6079	AveID		0.5931				5.4		50.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.8733 0.9222	0.8701 0.9102	0.9120	0.8772	0.8122	AveID		0.8825				4.2		35.0			
Perfluoroundecanoic acid (PFUnA)	1.4040 1.0285	1.1143 0.9932	1.1312	1.0355	1.0613	AveID		1.1097				12.5		35.0			

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.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

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								
MeFOSA	0.9753 0.8945	0.9325 0.8366	0.8938	0.8823	0.8684	AveID		0.8977				5.0		35.0			
Perfluorododecanoic acid (PFDoA)	1.1030 0.9139	0.9846 0.9331	0.9672	0.9316	0.9432	AveID		0.9681				6.6		35.0			
N-EtFOSA-M	0.9481 0.9454	0.9716 0.9099	0.9687	0.9114	0.9426	AveID		0.9425				2.6		35.0			
Perfluorotridecanoic Acid (PFTriA)	1.0629 0.9503	0.8693 0.9601	0.9595	0.8835	0.9234	AveID		0.9441				6.7		50.0			
Perfluorotetradecanoic acid (PFTeA)	0.2469 0.2299	0.2357 0.2457	0.2585	0.2243	0.2458	AveID		0.2410				4.8		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 0.8916	1.3177 0.8829	0.9867	0.9095	0.8595	L2ID	0.4410	0.8802							1.0000		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	1.1582 1.0197	1.1280 1.0962	1.0574	1.1157	1.1636	AveID		1.1055				4.7		50.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185079/3	2017.09.18ICAL_003.d
Level 2	IC 320-185079/4	2017.09.18ICAL_004.d
Level 3	IC 320-185079/5	2017.09.18ICAL_005.d
Level 4	IC 320-185079/6	2017.09.18ICAL_006.d
Level 5	IC 320-185079/7	2017.09.18ICAL_007.d
Level 6	IC 320-185079/8	2017.09.18ICAL_008.d
Level 7	IC 320-185079/9	2017.09.18ICAL_009.d

ANALYTE	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
13C4 PFBA	Ave	17261178 14999243	15927582 13650075	17058155	14945728	14888095	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C5 PFPeA	Ave	10884909 8704961	9923274 7523800	10440651	9345866	9086802	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C3-PFBS	Ave	279859 238183	236363 206106	268788	226709	228909	46.5 46.5	46.5 46.5	46.5	46.5	46.5
13C2 PFHxA	Ave	11506508 9557992	10458293 8755064	11001951	9460062	9693542	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	10462584 8984083	9430421 7263102	10198911	8916742	8982675	50.0 50.0	50.0 50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	14807673 13540255	13472685 12392029	14603935	12704160	13074953	47.3 47.3	47.3 47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	4599569 4136709	4649610 4038178	4415439	4413527	4189316	47.5 47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	9498588 7424834	9636269 6393600	9213859	9160282	8511071	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C4 PFOS	Ave	10182169 9240381	9414213 8496564	10140596	8685623	8945586	47.8 47.8	47.8 47.8	47.8	47.8	47.8
13C5 PFNA	Ave	7196704 5812937	6735737 5036279	7065300	5876099	6059703	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C8 FOSA	Ave	16168075 14696214	14440752 13772811	15720954	14028574	14152240	50.0 50.0	50.0 50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	3288731 2956873	2926129 2776975	3146242	2776720	2849891	47.9 47.9	47.9 47.9	47.9	47.9	47.9
13C2 PFDA	Ave	5778978 5011421	5360962 4529795	5683839	4987363	4922788	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d3-NMeFOSAA	Ave	1538445 1427289	1406222 1353186	1550098	1321475	1319465	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	1552788 1377816	1473725 1232855	1518121	1306443	1306737	50.0 50.0	50.0 50.0	50.0	50.0	50.0

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

ANALYTE	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
13C2 PFUnA	Ave	3836277 3230898	3604455 2791697	3616481	3245328	3075099	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d-N-MeFOSA-M	Ave	3703669 3807001	3592885 3789607	3819649	3279789	3470540	50.0 50.0	50.0 50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	3254550 3303241	3300493 3237549	3487605	3105530	3120423	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	3268959 2850339	3195613 2649968	3276050	2899468	2891298	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	4282739 3620486	3865967 3097097	3981903	3615562	3425851	50.0 50.0	50.0 50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	4599905 4494320	4560794 4061560	5167464	4254000	4301947	50.0 50.0	50.0 50.0	50.0	50.0	50.0

Curve Type Legend:

Ave = Average

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185079/3	2017.09.18ICAL_003.d
Level 2	IC 320-185079/4	2017.09.18ICAL_004.d
Level 3	IC 320-185079/5	2017.09.18ICAL_005.d
Level 4	IC 320-185079/6	2017.09.18ICAL_006.d
Level 5	IC 320-185079/7	2017.09.18ICAL_007.d
Level 6	IC 320-185079/8	2017.09.18ICAL_008.d
Level 7	IC 320-185079/9	2017.09.18ICAL_009.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	187794 23371257	326145 +++++	1750815	5967551	13433463	0.500 100	1.00 +++++	5.00	20.0	50.0
Perfluoropentanoic acid (PFPeA)		AveID	151559 17076720	230462 +++++	1200663	4090533	9764897	0.500 100	1.00 +++++	5.00	20.0	50.0
Perfluorobutanesulfonic acid (PFBS)		AveID	200616 25058068	361930 +++++	1914068	6510101	14861207	0.442 88.4	0.884 +++++	4.42	17.7	44.2
4:2 FTS		AveID	56433 8421949	92971 13649183	518018	1763737	3969200	0.467 93.4	0.934 187	4.67	18.7	46.7
Perfluorohexanoic acid (PFHxA)		AveID	128551 16934914	212754 26345592	1091784	3771369	9210798	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanoic acid (PFHpA)		AveID	112811 16330329	194421 24377138	1043975	3517572	8932267	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 25466661	327583 39960360	1583325	5320624	13559684	+++++ 91.0	0.910 182	4.55	18.2	45.5
6:2FTS		AveID	+++++ 7088731	94075 11518890	403490	1556700	3470702	+++++ 94.8	0.948 190	4.74	19.0	47.4
Perfluorooctanoic acid (PFOA)		AveID	120429 15194855	219913 23340778	994231	3879401	8939258	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	138755 20224079	248281 30883986	1317745	4731458	11177687	0.476 95.2	0.952 190	4.76	19.0	47.6
Perfluorooctanesulfonic acid (PFOS)		AveID	134123 18251893	219634 31337906	1040951	3452894	8965528	0.464 92.8	0.928 186	4.64	18.6	46.4
Perfluorononanoic acid (PFNA)		AveID	72877 11060749	136184 18759616	685566	2360122	5911714	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorooctane Sulfonamide (FOSA)		AveID	177166 24208958	320721 +++++	1663473	5682591	13496285	0.500 100	1.00 +++++	5.00	20.0	50.0
8:2FTS		AveID	30887 5289360	61945 8755172	311927	1028449	2483310	0.479 95.8	0.958 192	4.79	19.2	47.9
Perfluorodecanoic acid (PFDA)		AveID	58169 9325117	102307 16189228	522675	1881348	4542217	0.500 100	1.00 200	5.00	20.0	50.0

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

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	15528 2704667	27740 5282521	146090	486947	1206485	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	63787 11033673	111875 18101824	604653	2179120	5483257	0.482 96.4	0.964 193	4.82	19.3	48.2
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	13561 2541378	25647 4488594	138460	458411	1061364	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoroundecanoic acid (PFUnA)		AveID	53860 6645978	80331 11090476	409105	1344215	3263666	0.500 100	1.00 200	5.00	20.0	50.0
MeFOSA		AveID	36123 6811022	67007 12682035	341407	1157544	3013970	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorododecanoic acid (PFDoA)		AveID	36057 5209804	62928 9890327	316862	1080420	2727117	0.500 100	1.00 200	5.00	20.0	50.0
N-EtFOSA-M		AveID	30856 6245831	64134 11783227	337861	1132180	2941312	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotridecanoic Acid (PFTriA)		AveID	34746 5417121	55557 10176541	314322	1024716	2669871	0.500 100	1.00 200	5.00	20.0	50.0
Perfluorotetradecanoic acid (PFTeA)		AveID	10575 1664790	18224 3044185	102922	324372	842159	0.500 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)		L2ID	+++++ 8013992	120192 14343578	509854	1547680	3697336	+++++ 100	1.00 200	5.00	20.0	50.0
Perfluoro-n-octadecanoic acid (PFODA)		AveID	53276 9165989	102891 17808831	546405	1898462	5005922	0.500 100	1.00 200	5.00	20.0	50.0

Curve Type Legend:

AveID = Average isotope dilution
L2ID = Linear 1/conc^2 IsoDil

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079

SDG No.: _____

Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-185079/3	2017.09.18ICAL_003.d
Level 2	IC 320-185079/4	2017.09.18ICAL_004.d
Level 3	IC 320-185079/5	2017.09.18ICAL_005.d
Level 4	IC 320-185079/6	2017.09.18ICAL_006.d
Level 5	IC 320-185079/7	2017.09.18ICAL_007.d
Level 6	IC 320-185079/8	2017.09.18ICAL_008.d
Level 7	IC 320-185079/9	2017.09.18ICAL_009.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)	+++++	5.6	5.9	2.9	-6.9	-19.7		25	25	25	25	25
Perfluoropentanoic acid (PFPeA)	+++++	1.7	0.7	-4.2	-5.9	-14.1		25	25	25	25	25
Perfluorobutanesulfonic acid (PFBS)	+++++	12.4	4.5	5.4	-4.7	-22.8		25	25	25	25	25
4:2 FTS	-18.0	-2.9	13.9	-3.0	-8.0	-1.2	25	25	25	25	25	25
Perfluorohexanoic acid (PFHxA)	-21.5	6.1	3.5	3.9	-0.9	-7.6	25	25	25	25	25	25
Perfluoroheptanoic acid (PFHpA)	-14.4	5.2	4.4	0.6	1.5	-7.3	25	25	25	25	25	25
Perfluorohexanesulfonic acid (PFHxS)	+++++ -21.1		6.1	2.5	1.5	-8.0	25		25	25	25	25
6:2FTS	+++++ -17.8		5.3	1.6	-4.5	-1.2	25		25	25	25	25
Perfluorooctanoic acid (PFOA)	-15.2	6.0	0.3	-1.6	-2.4	-4.9	25	25	25	25	25	25
Perfluoroheptanesulfonic Acid (PFHpS)	-26.0 *	7.4	5.8	10.9	1.8	-10.9	25	25	25	25	25	25
Perfluorooctanesulfonic acid (PFOS)	-13.0	10.1	-3.1	-6.2	-5.4	-6.8	25	25	25	25	25	25
Perfluorononanoic acid (PFNA)	-4.9	3.2	-0.9	2.5	-0.4	-2.9	25	25	25	25	25	25
Perfluorooctane Sulfonamide (FOSA)	+++++	10.1	4.9	0.4	-5.5	-18.4		25	25	25	25	25
8:2FTS	-14.7	14.5	7.3	0.2	-5.7	-3.2	25	25	25	25	25	25
Perfluorodecanoic acid (PFDA)	-4.8	1.7	-2.0	0.5	-1.7	-0.9	25	25	25	25	25	25

FORM VI
LCMS BY ISOTOPIC DILUTION - INITIAL CALIBRATION DATA
READBACK PERCENT ERROR

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1 Analy Batch No.: 185079
SDG No.: _____
Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
Calibration Start Date: 09/18/2017 15:45 Calibration End Date: 09/18/2017 16:34 Calibration ID: 34441

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)	2.0	3.1	-1.5	-3.7	-4.4	-1.0	25	25	25	25	25	25
Perfluorodecanesulfonic acid (PFDS)	-10.9	-0.7	-0.3	4.9	2.5	-0.2	25	25	25	25	25	25
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.1	-1.4	3.3	-0.6	-8.0	4.5	25	25	25	25	25	25
Perfluoroundecanoic acid (PFUnA)	-10.5	0.4	1.9	-6.7	-4.4	-7.3	25	25	25	25	25	25
MeFOSA	-6.8	3.9	-0.4	-1.7	-3.3	-0.3	25	25	25	25	25	25
Perfluorododecanoic acid (PFDoA)	-3.6	1.7	-0.1	-3.8	-2.6	-5.6	25	25	25	25	25	25
N-EtFOSA-M	-3.5	3.1	2.8	-3.3	0.0	0.3	25	25	25	25	25	25
Perfluorotridecanoic Acid (PFTriA)	1.7	-7.9	1.6	-6.4	-2.2	0.6	25	25	25	25	25	25
Perfluorotetradecanoic acid (PFTeA)	2.0	-2.2	7.3	-6.9	2.0	-4.6	25	25	25	25	25	25
Perfluoro-n-hexadecanoic acid (PFHxDA)	++++ 0.1		2.1	0.8	-3.4	0.8	25		25	25	25	25
Perfluoro-n-octadecanoic acid (PFODA)	-0.8	2.0	-4.4	0.9	5.3	-7.8	25	25	25	25	25	25

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: ICV 320-184448/12 Calibration Date: 09/14/2017 15:28

Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14

Lab File ID: 2017.09.14ICALX_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9484	0.8593		45.3	50.0	-9.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.148	1.044		45.5	50.0	-9.0	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	73.02	68.12		41.3	44.3	-6.7	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9661	0.9343		48.4	50.0	-3.3	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	0.9428		48.1	50.0	-3.8	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.047	0.9662		43.6	47.3	-7.8	25.0
6:2FTS	AveID	0.9017	0.9037		47.5	47.4	0.2	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.092	1.009		46.2	50.0	-7.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.212	1.154		45.3	47.6	-4.7	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9635	0.9211		47.8	50.0	-4.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.073	0.9158		40.8	47.8	-14.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9500	0.9406		49.5	50.0	-1.0	25.0
8:2FTS	AveID	0.9315	0.9722		50.0	47.9	4.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9363	0.9300		49.7	50.0	-0.7	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9483	0.9823		51.8	50.0	3.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6277	0.5965		45.8	48.3	-5.0	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8706	0.9051		52.0	50.0	4.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.115	1.008		45.2	50.0	-9.5	25.0
MeFOSA	AveID	0.8862	0.9331		52.6	50.0	5.3	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9634	0.9128		47.4	50.0	-5.3	25.0
N-EtFOSA-M	AveID	0.9360	1.002		53.5	50.0	7.1	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.137	1.063		46.8	50.0	-6.5	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2541	0.2237		44.0	50.0	-12.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9335		53.8	50.0	7.6	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.046	0.9710		46.4	50.0	-7.2	25.0
13C4 PFBA	Ave	313031	269298		43.0	50.0	-14.0	50.0
13C5 PFPeA	Ave	205049	171138		41.7	50.0	-16.5	50.0
13C3-PFBS	Ave	4971	4163		38.9	46.5	-16.3	50.0
13C2 PFHxA	Ave	219438	185874		42.4	50.0	-15.3	50.0
13C4-PFHpA	Ave	202833	175067		43.2	50.0	-13.7	50.0
18O2 PFHxS	Ave	284495	250346		41.6	47.3	-12.0	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: ICV 320-184448/12 Calibration Date: 09/14/2017 15:28
 Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14
 Lab File ID: 2017.09.14ICALX_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	108997	92306		40.2	47.5	-15.3	50.0
13C4 PFOA	Ave	195053	163586		41.9	50.0	-16.1	50.0
13C4 PFOS	Ave	200518	177903		42.4	47.8	-11.3	50.0
13C5 PFNA	Ave	150235	125562		41.8	50.0	-16.4	50.0
13C8 FOSA	Ave	311775	264837		42.5	50.0	-15.1	50.0
M2-8:2FTS	Ave	72926	60998		40.1	47.9	-16.4	50.0
13C2 PFDA	Ave	134252	112172		41.8	50.0	-16.4	50.0
d3-NMeFOSAA	Ave	41835	33452		40.0	50.0	-20.0	50.0
d5-NEtFOSAA	Ave	40920	32045		39.2	50.0	-21.7	50.0
13C2 PFUnA	Ave	95612	80214		41.9	50.0	-16.1	50.0
d-N-MeFOSA-M	Ave	80486	66827		41.5	50.0	-17.0	50.0
13C2 PFDoA	Ave	91184	79416		43.5	50.0	-12.9	50.0
d-N-EtFOSA-M	Ave	74972	63528		42.4	50.0	-15.3	50.0
13C2-PFTeDA	Ave	93828	78148		41.6	50.0	-16.7	50.0
13C2-PFHxDA	Ave	143388	120499		42.0	50.0	-16.0	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCVL 320-184715/3 Calibration Date: 09/15/2017 11:34

Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14

Lab File ID: 2017.09.15B_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9484	0.9774		1.03	1.00	3.1	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.148	1.161		1.01	1.00	1.1	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	73.02	78.18		0.947	0.884	7.1	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9661	1.023		1.06	1.00	5.8	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	1.031		1.05	1.00	5.2	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.047	1.316		1.14	0.910	25.6	50.0
6:2FTS	AveID	0.9017	0.9560		1.01	0.948	6.0	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.212	1.229		0.966	0.952	1.4	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.092	1.155		1.06	1.00	5.7	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9635	1.050		1.09	1.00	9.0	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.073	1.070		0.925	0.928	-0.3	50.0
8:2FTS	AveID	0.9315	1.045		1.07	0.958	12.2	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9500	1.047		1.10	1.00	10.2	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9363	0.9126		0.975	1.00	-2.5	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9483	0.9694		1.02	1.00	2.2	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6277	0.6326		0.971	0.964	0.8	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8706	0.8893		1.02	1.00	2.1	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.115	1.126		1.01	1.00	1.0	50.0
MeFOSA	AveID	0.8862	0.8388		0.947	1.00	-5.3	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9634	0.9458		0.982	1.00	-1.8	50.0
N-EtFOSA-M	AveID	0.9360	0.8947		0.956	1.00	-4.4	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.137	1.014		0.892	1.00	-10.8	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2541	0.2306		0.908	1.00	-9.2	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.326		1.10	1.00	9.9	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.046	1.107		1.06	1.00	5.9	50.0
13C4 PFBA	Ave	313031	308231		49.2	50.0	-1.5	50.0
13C5 PFPeA	Ave	205049	206153		50.3	50.0	0.5	50.0
13C3-PFBS	Ave	4971	5113		47.8	46.5	2.8	50.0
13C2 PFHxA	Ave	219438	222927		50.8	50.0	1.6	50.0
13C4-PFHpA	Ave	202833	221061		54.5	50.0	9.0	50.0
18O2 PFHxS	Ave	284495	284419		47.3	47.3	-0.0	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-184715/3 Calibration Date: 09/15/2017 11:34
 Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14
 Lab File ID: 2017.09.15B_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	108997	109881		47.9	47.5	0.8	50.0
13C4 PFOA	Ave	195053	219617		56.3	50.0	12.6	50.0
13C4 PFOS	Ave	200518	210665		50.2	47.8	5.1	50.0
13C5 PFNA	Ave	150235	180835		60.2	50.0	20.4	50.0
13C8 FOSA	Ave	311775	312610		50.1	50.0	0.3	50.0
M2-8:2FTS	Ave	72926	84239		55.3	47.9	15.5	50.0
13C2 PFDA	Ave	134252	155754		58.0	50.0	16.0	50.0
d3-NMeFOSAA	Ave	41835	56318		67.3	50.0	34.6	50.0
d5-NEtFOSAA	Ave	40920	56283		68.8	50.0	37.5	50.0
13C2 PFUnA	Ave	95612	117120		61.2	50.0	22.5	50.0
d-N-MeFOSA-M	Ave	80486	79581		49.4	50.0	-1.1	50.0
13C2 PFDoA	Ave	91184	115910		63.6	50.0	27.1	50.0
d-N-EtFOSA-M	Ave	74972	76426		51.0	50.0	1.9	50.0
13C2-PFTeDA	Ave	93828	115036		61.3	50.0	22.6	50.0
13C2-PFHxDA	Ave	143388	166435		58.0	50.0	16.1	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCV 320-184734/1 Calibration Date: 09/15/2017 22:21

Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14

Lab File ID: 2017.09.15D_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9484	0.9291		49.0	50.0	-2.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.148	1.072		46.7	50.0	-6.7	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	73.02	63.31		38.3	44.2	-13.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9661	0.9697		50.2	50.0	0.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	1.010		51.5	50.0	3.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.047	1.120		48.6	45.5	6.9	25.0
6:2FTS	AveID	0.9017	0.8684		45.7	47.4	-3.7	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.092	1.082		49.6	50.0	-0.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.212	1.208		47.5	47.6	-0.3	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9635	0.9942		51.6	50.0	3.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.073	1.079		46.6	46.4	0.5	25.0
8:2FTS	AveID	0.9315	0.9207		47.3	47.9	-1.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9500	0.9703		51.1	50.0	2.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9363	0.9299		49.7	50.0	-0.7	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9483	0.9276		48.9	50.0	-2.2	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6277	0.6572		50.5	48.2	4.7	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8706	0.8704		50.0	50.0	-0.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.115	1.023		45.9	50.0	-8.2	25.0
MeFOSA	AveID	0.8862	0.8970		50.6	50.0	1.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9634	0.9556		49.6	50.0	-0.8	25.0
N-EtFOSA-M	AveID	0.9360	0.9217		49.2	50.0	-1.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.137	0.8987		39.5	50.0	-21.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2541	0.2260		44.5	50.0	-11.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9396		54.1	50.0	8.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.046	1.104		52.8	50.0	5.6	25.0
13C4 PFBA	Ave	313031	380264		60.7	50.0	21.5	50.0
13C5 PFPeA	Ave	205049	236355		57.6	50.0	15.3	50.0
13C3-PFBS	Ave	4971	6858		64.1	46.5	38.0	50.0
13C2 PFHxA	Ave	219438	260388		59.3	50.0	18.7	50.0
13C4-PFHpA	Ave	202833	224931		55.4	50.0	10.9	50.0
18O2 PFHxS	Ave	284495	328918		54.7	47.3	15.6	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCV 320-184734/1 Calibration Date: 09/15/2017 22:21
 Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14
 Lab File ID: 2017.09.15D_001.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	108997	121583		53.0	47.5	11.5	50.0
13C4 PFOA	Ave	195053	218843		56.1	50.0	12.2	50.0
13C4 PFOS	Ave	200518	253329		60.4	47.8	26.3	50.0
13C5 PFNA	Ave	150235	175475		58.4	50.0	16.8	50.0
M2-8:2FTS	Ave	72926	78811		51.8	47.9	8.1	50.0
13C8 FOSA	Ave	311775	359146		57.6	50.0	15.2	50.0
13C2 PFDA	Ave	134252	152209		56.7	50.0	13.4	50.0
d3-NMeFOSAA	Ave	41835	44728		53.5	50.0	6.9	50.0
d5-NEtFOSAA	Ave	40920	44153		54.0	50.0	7.9	50.0
13C2 PFUnA	Ave	95612	108767		56.9	50.0	13.8	50.0
d-N-MeFOSA-M	Ave	80486	98637		61.3	50.0	22.6	50.0
13C2 PFDoA	Ave	91184	109906		60.3	50.0	20.5	50.0
d-N-EtFOSA-M	Ave	74972	97466		65.0	50.0	30.0	50.0
13C2-PFTeDA	Ave	93828	113636		60.6	50.0	21.1	50.0
13C2-PFHxDA	Ave	143388	148026		51.6	50.0	3.2	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCV 320-184734/9 Calibration Date: 09/15/2017 23:16

Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14

Lab File ID: 2017.09.15D_009.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9484	0.997		21.0	20.0	5.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.148	1.163		20.3	20.0	1.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	73.02	75.44		18.3	17.7	3.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9661	0.9837		20.4	20.0	1.8	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	1.029		21.0	20.0	4.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.047	1.133		19.7	18.2	8.2	25.0
6:2FTS	AveID	0.9017	0.9041		19.0	19.0	0.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.092	1.070		19.6	20.0	-2.0	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.212	1.267		19.9	19.0	4.5	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9635	0.9708		20.2	20.0	0.8	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.073	1.060		18.3	18.6	-1.2	25.0
8:2FTS	AveID	0.9315	0.9196		18.9	19.2	-1.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9363	0.9422		20.1	20.0	0.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9500	1.053		22.2	20.0	10.8	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9483	0.9214		19.4	20.0	-2.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6277	0.6211		19.1	19.3	-1.0	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8706	0.8496		19.5	20.0	-2.4	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.115	1.018		18.3	20.0	-8.7	25.0
MeFOSA	AveID	0.8862	0.8783		19.8	20.0	-0.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9634	0.8694		18.0	20.0	-9.8	25.0
N-EtFOSA-M	AveID	0.9360	0.9546		20.4	20.0	2.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.137	0.8796		15.5	20.0	-22.6	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2541	0.1938		15.3	20.0	-23.7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.8931		20.3	20.0	1.5	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.046	1.025		19.6	20.0	-2.0	25.0
13C4 PFBA	Ave	313031	373633		59.7	50.0	19.4	50.0
13C5 PFPeA	Ave	205049	240092		58.5	50.0	17.1	50.0
13C3-PFBS	Ave	4971	6506		60.9	46.5	30.9	50.0
13C2 PFHxA	Ave	219438	260220		59.3	50.0	18.6	50.0
13C4-PFHpA	Ave	202833	243859		60.1	50.0	20.2	50.0
18O2 PFHxS	Ave	284495	348234		57.9	47.3	22.4	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCV 320-184734/9 Calibration Date: 09/15/2017 23:16
 Instrument ID: A8_N Calib Start Date: 09/14/2017 14:25
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/14/2017 15:14
 Lab File ID: 2017.09.15D_009.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	108997	119355		52.0	47.5	9.5	50.0
13C4 PFOA	Ave	195053	228145		58.5	50.0	17.0	50.0
13C4 PFOS	Ave	200518	245461		58.5	47.8	22.4	50.0
13C5 PFNA	Ave	150235	182367		60.7	50.0	21.4	50.0
13C8 FOSA	Ave	311775	346746		55.6	50.0	11.2	50.0
M2-8:2FTS	Ave	72926	81016		53.2	47.9	11.1	50.0
13C2 PFDA	Ave	134252	150511		56.1	50.0	12.1	50.0
d3-NMeFOSAA	Ave	41835	43664		52.2	50.0	4.4	50.0
13C2 PFUnA	Ave	95612	109245		57.1	50.0	14.3	50.0
d5-NEtFOSAA	Ave	40920	43620		53.3	50.0	6.6	50.0
d-N-MeFOSA-M	Ave	80486	89977		55.9	50.0	11.8	50.0
13C2 PFDoA	Ave	91184	109625		60.1	50.0	20.2	50.0
d-N-EtFOSA-M	Ave	74972	85940		57.3	50.0	14.6	50.0
13C2-PFTeDA	Ave	93828	116573		62.1	50.0	24.2	50.0
13C2-PFHxDA	Ave	143388	143750		50.1	50.0	0.3	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: ICV 320-185079/12 Calibration Date: 09/18/2017 16:48

Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34

Lab File ID: 2017.09.18ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9696	0.8393		43.3	50.0	-13.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.142	1.007		44.1	50.0	-11.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	71.67	68.84		42.5	44.3	-4.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9588	0.9479		49.4	50.0	-1.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	0.9535		48.6	50.0	-2.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.062	0.9762		43.4	47.3	-8.1	25.0
6:2FTS	AveID	0.8694	0.8858		48.3	47.4	1.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.076	1.049		48.7	50.0	-2.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.233	1.167		45.0	47.6	-5.4	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9795	0.8983		45.9	50.0	-8.3	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.091	0.9257		40.5	47.8	-15.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.009	0.9441		46.8	50.0	-6.4	25.0
8:2FTS	AveID	0.9241	0.9876		51.2	47.9	6.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9386	0.9007		48.0	50.0	-4.0	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9567	0.9746		50.9	50.0	1.9	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5931	0.5582		45.4	48.3	-5.9	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8825	0.9252		52.4	50.0	4.8	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.110	1.010		45.5	50.0	-9.0	25.0
MeFOSA	AveID	0.8977	0.9405		52.4	50.0	4.8	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9681	0.9155		47.3	50.0	-5.4	25.0
N-EtFOSA-M	AveID	0.9425	1.006		53.4	50.0	6.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9441	0.8875		47.0	50.0	-6.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2410	0.2307		47.9	50.0	-4.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9342		52.6	50.0	5.1	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.106	1.047		47.3	50.0	-5.3	25.0
13C4 PFBA	Ave	310657	293561		47.2	50.0	-5.5	50.0
13C5 PFPeA	Ave	188315	174574		46.4	50.0	-7.3	50.0
13C3-PFBS	Ave	5176	4561		41.0	46.5	-11.9	50.0
13C2 PFHxA	Ave	201238	180858		44.9	50.0	-10.1	50.0
13C4-PFHpA	Ave	183539	174427		47.5	50.0	-5.0	50.0
18O2 PFHxS	Ave	285701	267949		44.4	47.3	-6.2	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: ICV 320-185079/12 Calibration Date: 09/18/2017 16:48
 Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34
 Lab File ID: 2017.09.18ICAL_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	91556	80805		41.9	47.5	-11.7	50.0
13C4 PFOA	Ave	170967	147347		43.1	50.0	-13.8	50.0
13C4 PFOS	Ave	194576	181847		44.7	47.8	-6.5	50.0
13C5 PFNA	Ave	125094	115709		46.2	50.0	-7.5	50.0
13C8 FOSA	Ave	294227	263886		44.8	50.0	-10.3	50.0
M2-8:2FTS	Ave	61800	53500		41.5	47.9	-13.4	50.0
13C2 PFDA	Ave	103643	94807		45.7	50.0	-8.5	50.0
d3-NMeFOSAA	Ave	28332	23445		41.4	50.0	-17.3	50.0
d5-NEtFOSAA	Ave	27910	23139		41.5	50.0	-17.1	50.0
13C2 PFUnA	Ave	66858	57485		43.0	50.0	-14.0	50.0
d-N-MeFOSA-M	Ave	72752	63617		43.7	50.0	-12.6	50.0
13C2 PFDoA	Ave	60091	51344		42.7	50.0	-14.6	50.0
d-N-EtFOSA-M	Ave	65170	56668		43.5	50.0	-13.0	50.0
13C2-PFTeDA	Ave	73970	60178		40.7	50.0	-18.6	50.0
13C2-PFHxDA	Ave	89829	75427		42.0	50.0	-16.0	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCVL 320-185175/2 Calibration Date: 09/19/2017 09:58

Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34

Lab File ID: 2017.09.19A_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9696	1.061		1.09	1.00	9.5	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.142	1.245		1.09	1.00	9.0	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	71.67	75.08		0.926	0.884	4.8	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9588	1.107		1.15	1.00	15.4	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	1.077		1.10	1.00	9.9	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.062	1.331		1.14	0.910	25.3	50.0
6:2FTS	AveID	0.8694	0.9432		1.03	0.948	8.5	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.076	1.181		1.10	1.00	9.8	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.233	1.324		1.02	0.952	7.4	50.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.091	0.999		0.849	0.928	-8.5	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9795	1.003		1.02	1.00	2.4	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.009	1.094		1.08	1.00	8.4	50.0
8:2FTS	AveID	0.9241	1.006		1.04	0.958	8.9	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9386	1.029		1.10	1.00	9.7	50.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9567	0.9842		1.03	1.00	2.9	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5931	0.5858		0.952	0.964	-1.2	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8825	0.8804		0.998	1.00	-0.2	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.110	1.072		0.966	1.00	-3.4	50.0
MeFOSA	AveID	0.8977	0.8075		0.900	1.00	-10.0	50.0
N-EtFOSA-M	AveID	0.9425	0.8984		0.953	1.00	-4.7	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9681	0.9047		0.935	1.00	-6.5	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9441	0.9400		0.996	1.00	-0.4	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2410	0.2614		1.08	1.00	8.5	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		1.285		0.958	1.00	-4.2	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.106	0.0430		0.200	1.00	-96.1*	50.0
13C4 PFBA	Ave	310657	362042		58.3	50.0	16.5	50.0
13C5 PFPeA	Ave	188315	242750		64.5	50.0	28.9	50.0
13C3-PFBS	Ave	5176	6830		61.4	46.5	31.9	50.0
13C2 PFHxA	Ave	201238	257944		64.1	50.0	28.2	50.0
13C4-PFHpA	Ave	183539	252341		68.7	50.0	37.5	50.0
18O2 PFHxS	Ave	285701	350219		58.0	47.3	22.6	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-185175/2 Calibration Date: 09/19/2017 09:58
 Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34
 Lab File ID: 2017.09.19A_006.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	91556	132763		68.9	47.5	45.0	50.0
13C4 PFOA	Ave	170967	248007		72.5	50.0	45.1	50.0
13C4 PFOS	Ave	194576	252527		62.0	47.8	29.8	50.0
13C5 PFNA	Ave	125094	179380		71.7	50.0	43.4	50.0
13C8 FOSA	Ave	294227	349873		59.5	50.0	18.9	50.0
M2-8:2FTS	Ave	61800	84025		65.1	47.9	36.0	50.0
13C2 PFDA	Ave	103643	150650		72.7	50.0	45.4	50.0
d3-NMeFOSAA	Ave	28332	40389		71.3	50.0	42.6	50.0
13C2 PFUnA	Ave	66858	100288		75.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	27910	41135		73.7	50.0	47.4	50.0
d-N-MeFOSA-M	Ave	72752	88558		60.9	50.0	21.7	50.0
d-N-EtFOSA-M	Ave	65170	78589		60.3	50.0	20.6	50.0
13C2 PFDoA	Ave	60091	86876		72.3	50.0	44.6	50.0
13C2-PFTeDA	Ave	73970	94568		63.9	50.0	27.8	50.0
13C2-PFHxDA	Ave	89829	121455		67.6	50.0	35.2	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCV 320-185322/1 Calibration Date: 09/19/2017 23:00

Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34

Lab File ID: 2017.09.19B_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	0.9696	1.012		20.9	20.0	4.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.142	1.149		20.1	20.0	0.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	71.67	74.74		18.4	17.7	4.3	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9588	0.9917		20.7	20.0	3.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	1.016		20.7	20.0	3.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.062	1.074		18.4	18.2	1.1	25.0
6:2FTS	AveID	0.8694	0.8627		18.8	19.0	-0.8	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.076	1.042		19.4	20.0	-3.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.233	1.294		20.0	19.0	4.9	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9795	0.9654		19.7	20.0	-1.4	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.091	1.047		17.8	18.6	-4.1	25.0
8:2FTS	AveID	0.9241	0.9329		19.3	19.2	0.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.009	1.007		20.0	20.0	-0.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9386	0.9630		20.5	20.0	2.6	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9567	0.9207		19.2	20.0	-3.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5931	0.6073		19.7	19.3	2.4	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8825	0.8355		18.9	20.0	-5.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.110	1.026		18.5	20.0	-7.5	25.0
MeFOSA	AveID	0.8977	0.8835		19.7	20.0	-1.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9681	0.9600		19.8	20.0	-0.8	25.0
N-EtFOSA-M	AveID	0.9425	0.9323		19.8	20.0	-1.1	25.0
Perfluorotridecanoic Acid (PFTrIA)	AveID	0.9441	0.8394		17.8	20.0	-11.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2410	0.2277		18.9	20.0	-5.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9266		20.6	20.0	2.8	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.106	1.060		19.2	20.0	-4.1	25.0
13C4 PFBA	Ave	310657	340109		54.7	50.0	9.5	50.0
13C5 PFPeA	Ave	188315	214167		56.9	50.0	13.7	50.0
13C3-PFBS	Ave	5176	5872		52.7	46.5	13.4	50.0
13C2 PFHxA	Ave	201238	230752		57.3	50.0	14.7	50.0
13C4-PFHpA	Ave	183539	223058		60.8	50.0	21.5	50.0
18O2 PFHxS	Ave	285701	344588		57.0	47.3	20.6	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCV 320-185322/1 Calibration Date: 09/19/2017 23:00
 Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34
 Lab File ID: 2017.09.19B_013.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	91556	99139		51.4	47.5	8.3	50.0
13C4 PFOA	Ave	170967	203079		59.4	50.0	18.8	50.0
13C4 PFOS	Ave	194576	221098		54.3	47.8	13.6	50.0
13C5 PFNA	Ave	125094	156963		62.7	50.0	25.5	50.0
13C8 FOSA	Ave	294227	330813		56.2	50.0	12.4	50.0
M2-8:2FTS	Ave	61800	64389		49.9	47.9	4.2	50.0
13C2 PFDA	Ave	103643	125586		60.6	50.0	21.2	50.0
d3-NMeFOSAA	Ave	28332	32903		58.1	50.0	16.1	50.0
d5-NEtFOSAA	Ave	27910	34456		61.7	50.0	23.5	50.0
13C2 PFUnA	Ave	66858	83809		62.7	50.0	25.4	50.0
d-N-MeFOSA-M	Ave	72752	78924		54.2	50.0	8.5	50.0
13C2 PFDoA	Ave	60091	84945		70.7	50.0	41.4	50.0
d-N-EtFOSA-M	Ave	65170	73180		56.1	50.0	12.3	50.0
13C2-PFTeDA	Ave	73970	86897		58.7	50.0	17.5	50.0
13C2-PFHxDA	Ave	89829	110132		61.3	50.0	22.6	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Lab Sample ID: CCV 320-185322/5 Calibration Date: 09/19/2017 23:27

Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45

GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34

Lab File ID: 2017.09.19B_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9696	0.9069		46.8	50.0	-6.5	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.142	1.091		47.8	50.0	-4.5	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	71.67	62.33		38.4	44.2	-13.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9588	0.9790		51.1	50.0	2.1	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	0.9802	0.9888		50.4	50.0	0.9	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.062	1.067		45.7	45.5	0.5	25.0
6:2FTS	AveID	0.8694	0.8259		45.0	47.4	-5.0	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.076	1.057		49.1	50.0	-1.8	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.233	1.217		47.0	47.6	-1.3	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9795	1.008		51.5	50.0	2.9	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.091	1.026		43.6	46.4	-6.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.009	0.9509		47.1	50.0	-5.8	25.0
8:2FTS	AveID	0.9241	0.8925		46.3	47.9	-3.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9386	0.8929		47.6	50.0	-4.9	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9567	0.9126		47.7	50.0	-4.6	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.5931	0.6109		49.6	48.2	3.0	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8825	0.8470		48.0	50.0	-4.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.110	0.9782		44.1	50.0	-11.9	25.0
MeFOSA	AveID	0.8977	0.9067		50.5	50.0	1.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9681	0.9847		50.9	50.0	1.7	25.0
N-EtFOSA-M	AveID	0.9425	0.9188		48.7	50.0	-2.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9441	0.9247		49.0	50.0	-2.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2410	0.2208		45.8	50.0	-8.4	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L2ID		0.9156		51.5	50.0	3.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.106	1.028		46.5	50.0	-7.0	25.0
13C4 PFBA	Ave	310657	340959		54.9	50.0	9.8	50.0
13C5 PFPeA	Ave	188315	208729		55.4	50.0	10.8	50.0
13C3-PFBS	Ave	5176	6082		54.6	46.5	17.5	50.0
13C2 PFHxA	Ave	201238	225629		56.1	50.0	12.1	50.0
13C4-PFHpA	Ave	183539	204809		55.8	50.0	11.6	50.0
18O2 PFHxS	Ave	285701	331313		54.9	47.3	16.0	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1
 SDG No.: _____
 Lab Sample ID: CCV 320-185322/5 Calibration Date: 09/19/2017 23:27
 Instrument ID: A8_N Calib Start Date: 09/18/2017 15:45
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 09/18/2017 16:34
 Lab File ID: 2017.09.19B_017.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE CF	CF	MIN CF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
M2-6:2FTS	Ave	91556	99073		51.4	47.5	8.2	50.0
13C4 PFOA	Ave	170967	190006		55.6	50.0	11.1	50.0
13C4 PFOS	Ave	194576	220961		54.3	47.8	13.6	50.0
13C5 PFNA	Ave	125094	150044		60.0	50.0	19.9	50.0
13C8 FOSA	Ave	294227	317732		54.0	50.0	8.0	50.0
M2-8:2FTS	Ave	61800	64366		49.9	47.9	4.2	50.0
13C2 PFDA	Ave	103643	128375		61.9	50.0	23.9	50.0
d3-NMeFOSAA	Ave	28332	33954		59.9	50.0	19.8	50.0
d5-NEtFOSAA	Ave	27910	33507		60.0	50.0	20.1	50.0
13C2 PFUnA	Ave	66858	88436		66.1	50.0	32.3	50.0
d-N-MeFOSA-M	Ave	72752	80098		55.0	50.0	10.1	50.0
13C2 PFDoA	Ave	60091	81136		67.5	50.0	35.0	50.0
d-N-EtFOSA-M	Ave	65170	73878		56.7	50.0	13.4	50.0
13C2-PFTeDA	Ave	73970	90780		61.4	50.0	22.7	50.0
13C2-PFHxDA	Ave	89829	111205		61.9	50.0	23.8	50.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-183917/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_002.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>09/15/2017 22:28</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.513	J	2.5	1.0	0.46
2706-90-3	Perfluoropentanoic acid (PFPeA)	2.0	U	2.5	2.0	0.99
307-24-4	Perfluorohexanoic acid (PFHxA)	2.0	U	2.5	2.0	0.79
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.5	1.0	0.44
2058-94-8	Perfluoroundecanoic acid (PFUnA)	2.0	U	2.5	2.0	0.75
307-55-1	Perfluorododecanoic acid (PFDoA)	2.0	U	2.5	2.0	0.58
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.0	U	2.5	2.0	0.55
376-06-7	Perfluorotetradecanoic acid (PFTeA)	1.0	U	2.5	1.0	0.40
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	2.0	U	2.5	2.0	0.71
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U M	4.0	3.0	1.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	3.0	U	4.0	3.0	1.2
754-91-6	Perfluorooctane Sulfonamide (FOSA)	1.13	J	40	2.0	0.64

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Sacramento</u>	Job No.: <u>320-31407-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 320-183917/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>2017.09.15D_002.d</u>
Analysis Method: <u>537 (modified)</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>09/12/2017 08:51</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>09/15/2017 22:28</u>
Con. Extract Vol.: <u>0.50 (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>184734</u>	Units: <u>ng/L</u>

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	78		25-150
STL00992	13C4 PFBA	120		25-150
STL00993	13C2 PFHxA	116		25-150
STL00990	13C4 PFOA	127		25-150
STL00995	13C5 PFNA	124		25-150
STL00996	13C2 PFDA	127		25-150
STL00997	13C2 PFUnA	119		25-150
STL00998	13C2 PFDoA	104		25-150
STL00994	18O2 PFHxS	111		25-150
STL00991	13C4 PFOS	117		25-150
STL01892	13C4-PFHpA	136		25-150
STL01893	13C5 PFPeA	116		25-150
STL02337	13C3-PFBS	125		25-150
STL02116	13C2-PFTeDA	123		25-150

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_NStart Date: 09/14/2017 14:25Analysis Batch Number: 184448End Date: 09/14/2017 15:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-184448/3		09/14/2017 14:25	1	2017.09.14ICALX 003.d	GeminiC18 3x100 3(mm)
IC 320-184448/4		09/14/2017 14:32	1	2017.09.14ICALX 004.d	GeminiC18 3x100 3(mm)
IC 320-184448/5		09/14/2017 14:39	1	2017.09.14ICALX 005.d	GeminiC18 3x100 3(mm)
IC 320-184448/6		09/14/2017 14:46	1	2017.09.14ICALX 006.d	GeminiC18 3x100 3(mm)
IC 320-184448/7		09/14/2017 14:53	1	2017.09.14ICALX 007.d	GeminiC18 3x100 3(mm)
IC 320-184448/8		09/14/2017 15:00	1	2017.09.14ICALX 008.d	GeminiC18 3x100 3(mm)
IC 320-184448/9		09/14/2017 15:07	1	2017.09.14ICALX 009.d	GeminiC18 3x100 3(mm)
IC 320-184448/10		09/14/2017 15:14	1	2017.09.14ICALX 010.d	GeminiC18 3x100 3(mm)
ICB 320-184448/11		09/14/2017 15:21	1		GeminiC18 3x100 3(mm)
ICV 320-184448/12		09/14/2017 15:28	1	2017.09.14ICALX 012.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Start Date: 09/15/2017 11:27Analysis Batch Number: 184715 End Date: 09/15/2017 13:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RINSE 320-184715/2		09/15/2017 11:27	1		GeminiC18 3x100 3(mm)
CCVL 320-184715/3		09/15/2017 11:34	1	2017.09.15B_003 .d	GeminiC18 3x100 3(mm)
CCV 320-184715/4		09/15/2017 11:41	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/15/2017 11:48	1		GeminiC18 3x100 3(mm)
CCV 320-184715/20		09/15/2017 13:31	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Start Date: 09/15/2017 22:21Analysis Batch Number: 184734 End Date: 09/15/2017 23:16

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-184734/1		09/15/2017 22:21	1	2017.09.15D_001 .d	GeminiC18 3x100 3(mm)
MB 320-183917/1-A		09/15/2017 22:28	1	2017.09.15D_002 .d	GeminiC18 3x100 3(mm)
LCS 320-183917/2-A		09/15/2017 22:35	1	2017.09.15D_003 .d	GeminiC18 3x100 3(mm)
LCSD 320-183917/3-A		09/15/2017 22:41	1	2017.09.15D_004 .d	GeminiC18 3x100 3(mm)
320-31407-1		09/15/2017 22:48	1	2017.09.15D_005 .d	GeminiC18 3x100 3(mm)
320-31407-2		09/15/2017 22:55	1	2017.09.15D_006 .d	GeminiC18 3x100 3(mm)
320-31407-3		09/15/2017 23:02	1	2017.09.15D_007 .d	GeminiC18 3x100 3(mm)
320-31407-4		09/15/2017 23:09	1	2017.09.15D_008 .d	GeminiC18 3x100 3(mm)
CCV 320-184734/9		09/15/2017 23:16	1	2017.09.15D_009 .d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica SacramentoJob No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_NStart Date: 09/18/2017 15:45Analysis Batch Number: 185079End Date: 09/18/2017 16:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-185079/3		09/18/2017 15:45	1	2017.09.18ICAL_ 003.d	GeminiC18 3x100 3(mm)
IC 320-185079/4		09/18/2017 15:52	1	2017.09.18ICAL_ 004.d	GeminiC18 3x100 3(mm)
IC 320-185079/5		09/18/2017 15:59	1	2017.09.18ICAL_ 005.d	GeminiC18 3x100 3(mm)
IC 320-185079/6		09/18/2017 16:06	1	2017.09.18ICAL_ 006.d	GeminiC18 3x100 3(mm)
IC 320-185079/7		09/18/2017 16:13	1	2017.09.18ICAL_ 007.d	GeminiC18 3x100 3(mm)
IC 320-185079/8		09/18/2017 16:20	1	2017.09.18ICAL_ 008.d	GeminiC18 3x100 3(mm)
IC 320-185079/9		09/18/2017 16:27	1	2017.09.18ICAL_ 009.d	GeminiC18 3x100 3(mm)
IC 320-185079/10		09/18/2017 16:34	1	2017.09.18ICAL_ 010.d	GeminiC18 3x100 3(mm)
ICB 320-185079/11		09/18/2017 16:41	1		GeminiC18 3x100 3(mm)
ICV 320-185079/12		09/18/2017 16:48	1	2017.09.18ICAL_ 012.d	GeminiC18 3x100 3(mm)
ZZZZZ		09/18/2017 16:54	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Start Date: 09/19/2017 09:58Analysis Batch Number: 185175 End Date: 09/19/2017 12:02

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCVL 320-185175/2		09/19/2017 09:58	1	2017.09.19A_006 .d	GeminiC18 3x100 3(mm)
CCV 320-185175/3		09/19/2017 10:05	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/19/2017 10:12	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/19/2017 11:55	1		GeminiC18 3x100 3(mm)
CCV 320-185175/20		09/19/2017 12:02	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Instrument ID: A8_N Start Date: 09/19/2017 23:00Analysis Batch Number: 185322 End Date: 09/19/2017 23:27

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-185322/1		09/19/2017 23:00	1	2017.09.19B_013 .d	GeminiC18 3x100 3(mm)
320-31407-1 DL		09/19/2017 23:07	10	2017.09.19B_014 .d	GeminiC18 3x100 3(mm)
ZZZZZ		09/19/2017 23:14	1		GeminiC18 3x100 3(mm)
ZZZZZ		09/19/2017 23:20	1		GeminiC18 3x100 3(mm)
CCV 320-185322/5		09/19/2017 23:27	1	2017.09.19B_017 .d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Batch Number: 183917 Batch Start Date: 09/12/17 08:50 Batch Analyst: Sharifi, NooshinBatch Method: 3535 Batch End Date: 09/14/17 19:23

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00010	LCPFCSP 00110
MB 320-183917/1		3535, 537 (modified)				250 mL	0.50 mL	500 uL	
LCS 320-183917/2		3535, 537 (modified)				250 mL	0.50 mL	500 uL	500 uL
LCSD 320-183917/3		3535, 537 (modified)				250 mL	0.50 mL	500 uL	500 uL
320-31407-A-1	TP-PFC-021-TPI	3535, 537 (modified)	T	287.56 g	26.78 g	260.8 mL	0.50 mL	500 uL	
320-31407-A-2	TP-PFC-021-MID-C ARBON	3535, 537 (modified)	T	296.24 g	26.78 g	269.5 mL	0.50 mL	500 uL	
320-31407-A-3	TP-PFC-021-TPE	3535, 537 (modified)	T	284.83 g	27.07 g	257.8 mL	0.50 mL	500 uL	
320-31407-A-4	TP-PFC-021-TPE-D	3535, 537 (modified)	T	292.84 g	27.25 g	265.6 mL	0.50 mL	500 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	BD: ABH FV:ABH AL:ABH
H2O ID	9/08/17
Hexane ID	981623
Manifold ID	11
Methanol ID	1016218
Sodium Hydroxide ID	1024131
Pipette ID	N32761F
Analyst ID - Reagent Drop	NSH
Analyst ID - SU Reagent Drop	NSH
Analyst ID - SU Reagent Drop Witness	JNS
Solvent Lot #	1029947
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	003237137A

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.

537 (modified)

Page 1 of 2

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-31407-1

SDG No.: _____

Batch Number: 183917 Batch Start Date: 09/12/17 08:50 Batch Analyst: Sharifi, NooshinBatch Method: 3535 Batch End Date: 09/14/17 19:23

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): 31407

Work List ID(s): 48004, 48149

Extraction Batch: 183917

Analysis Batch(es): 184734, 185322, 184715 (cont)

Delivery Rank: 4

Due Date: 185175 (cont)

	1 st Level	2 nd Level	N/A
A. Calibration/Instrument Run QC			
1. ICAL locked in Chrom and TALS? ICAL Batch# <u>184448, 185079</u>	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• RF _{average} criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• 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			
1. Are all non-conformances documented/attached? NCM#	✓	✓	
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): S. [Signature]

Date: 9/20/17

2nd Level Reviewer: [Signature]

Date: 9/22/2017

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 15SEP2017F_PFC Worklist Number: 48004
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170915-48004.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 184734
# 1 CCV L5	# 1 CCV L5
# 2 MB 320-183917/1-A	# 2 MB 320-183917/1-A
# 3 LCS 320-183917/2-A	# 3 LCS 320-183917/2-A
# 4 LCSD 320-183917/3-A	# 4 LCSD 320-183917/3-A
# 5 320-31407-A-1-A	# 5 320-31407-A-1-A <i>6-kg</i>
# 6 320-31407-A-2-A	# 6 320-31407-A-2-A <i>FCB IDA</i>
# 7 320-31407-A-3-A	# 7 320-31407-A-3-A <i>0"</i>
# 8 320-31407-A-4-A	# 8 320-31407-A-4-A
# 9 CCV L4	# 9 CCV L4

TestAmerica Laboratories

Worklist QC Batch Report

Worklist Name: 19SEP2017G_PFC

Worklist Number: 48149

Instrument Name: A8_N

Chrom Method: A8_N

Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20170919-48149.b

QC Batching: Disabled

Limit Group Batching: Enabled

QC Batch: 1	LC PFC ICAL Raw Batch: 185321	LC PFC_DOD ICAL Raw Batch: 185322
# 1 CCV L4	# 1 CCV L4	# 1 CCV L4
# 2 320-31407-A-1-A		# 2 320-31407-A-1-A
# 3 320-31407-A-2-A		# 3 320-31407-A-2-A
# 4 320-31407-A-3-A		# 4 320-31407-A-3-A
# 5 CCV L5	# 5 CCV L5	# 5 CCV L5

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Analyst: Sharifi, Nooshin

Batch Number: 320-183917

Method Code: 320-3535_PFC-320

RI 9/19/17

Batch Open: 9/12/2017 8:50:00AM

Batch End: 9/14/2017 7:23:00PM

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	Rcvd	PHs Adj1	Adj2	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB-320-183917/1 N/A	N/A		250 mL				N/A	N/A	N/A		
				0.50 mL								
2	LCS-320-183917/2 N/A	N/A		250 mL				N/A	N/A	N/A		
				0.50 mL								
3	LCSD-320-183917/3 N/A	N/A		250 mL				N/A	N/A	N/A		
				0.50 mL								
4	320-31407-A-1 (PFC_IDA_DOD5)	N/A (320-31407-1)	287.56 g	260.8 mL				9/24/17	16_Days	4	10x	
			26.78 g	0.50 mL								
5	320-31407-A-2 (PFC_IDA_DOD5)	N/A (320-31407-1)	296.24 g	269.5 mL				9/24/17	16_Days	4	RA	
			26.78 g	0.50 mL								
6	320-31407-A-3 (PFC_IDA_DOD5)	N/A (320-31407-1)	284.83 g	257.8 mL				9/24/17	16_Days	4	RA	
			27.07 g	0.50 mL								
7	320-31407-A-4 (PFC_IDA_DOD5)	N/A (320-31407-1)	292.84 g	265.6 mL				9/24/17	16_Days	4		
			27.25 g	0.50 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-183917

Analyst: Sharifi, Nooshin

Batch Open: 9/12/2017 8:50:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Notes

Manifold ID 11

Methanol ID 1016218

Hexane ID 981623

Sodium Hydroxide ID 1024131

First Start time NA

First End time NA

SPE Cartridge Type WAX 500mg

Solid Phase Extraction Disk ID 003237137A

Balance ID QA-070

H2O ID 9/08/17

Pipette ID N32761F

Solvent Name 0.3% NH4OH/MeOH

Solvent Lot # 1029947

Analyst ID - Reagent Drop NSH

Analyst ID - SU Reagent Drop NSH

Analyst ID - SU Reagent Drop

Witness

Acid Name NA

Acid ID NA

Reagent ID NA

Reagent Lot Number NA

SOP Number WS-LC-0025

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-183917

Analyst: Sharifi, Nooshin

Batch Open: 9/12/2017 8:50:00AM

Method Code: 320-3535_PFC-320

Batch End:

Batch Comment NA

BD: ABH FV: ABH AL: ABH
INST/CD

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-183917

Analyst: Sharifi, Nooshin

Batch Open: 9/12/2017 8:50:00AM

Method Code: 320-3535_PFC-320

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-183917/1	LCMPFC_ALL_SU_00010	500 uL	0.50 mL	NSH 9/12/17	JN 9/12/17
LCS 320-183917/2	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		
LCS 320-183917/2	LCPFCSP_00110	500 uL	0.50 mL		
LCSD 320-183917/3	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		
LCSD 320-183917/3	LCPFCSP_00110	500 uL	0.50 mL		
320-31407-A-1	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		
320-31407-A-2	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		
320-31407-A-3	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		
320-31407-A-4	LCMPFC_ALL_SU_00010	500 uL	0.50 mL		

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Reagent	Other Reagents:	
	Amount/Units	Lot#:

Preparation Batch Number(s): 183917 Test: 3535 - PFC
 Earliest Holding Time: 9/20/17

Sample List Tab	1 st Level Reviewer	2 nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	1 st Level Reviewer	2 nd Level Reviewer
All samples properly preserved	NA	NA
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 correctly in TALS	NA	N/A
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	1 st Level Reviewer	2 nd Level Reviewer
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
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	✓	✓

1st Level Reviewer: VPM Date: 9/14/17
 2nd Level Reviewer: TBN Date: 09/14/17
 Comments: _____

Sample Dilution Record

Method ID PFC - IDA

Job # See below

Analyst (Print Name) Thep Phonsepha

Analyst Initials TP

Date 9/19/17

[illegible]

Comments:

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	320-31407-1	SITE 00011	SITE 00011	TP-PFC-EFFLUENT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-021-TPE	Ground water	Normal (Regular)	7-Sep-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-31407-1	SITE 00011	SITE 00011	TP-PFC-INFLUENT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-021-TPI	Ground water	Normal (Regular)	7-Sep-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-31407-1	SITE 00011	SITE 00011	TP-PFC-MIDPOINT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-021-MID-CARBON	Ground water	Normal (Regular)	7-Sep-17	537	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-31407-1	SITE 00011	SITE 00011	TP-PFC-EFFLUENT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-021-TPE-D	Ground water	Field duplicate	7-Sep-17	537	Perfluoroalkyl Compounds