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BRUNSWICK_NAS
SSIC 5000-33c

**LABORATORY DATA PACKAGE, 320-40917-1 REVISION 1, NAS
BRUNSWICK ME**

08/23/2018

TESTAMERICA LABORATORIES INC

Approved for public release: distribution unlimited.

ANALYTICAL REPORT

Job Number: 320-40917-1

Job Description: TT: PFAS, Brunswick, Discharge

For:

Tetra Tech, Inc.
Foster Plaza VII
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Pittsburgh, PA 15220
Attention: Jeff Orient



Approved for release.
David R. Alltucker
Project Manager I
8/23/2018 8:10 AM

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08/23/2018
Revision: 1

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Definitions/Glossary

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

TestAmerica Job ID: 320-40917-1

Qualifiers

LCMS

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

Glossary

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

Job Narrative
320-40917-1

Receipt

The samples were received on 7/6/2018 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

LCMS

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

Method(s) EPA 537 (Mod): The concentration of Perfluorooctanoic acid (PFOA) and Perfluorohexanesulfonic acid (PFHxS) associated with the following sample exceeded the instrument calibration range: TP-PFC-031-TPI (320-40917-1). These analytes have been qualified; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Method(s) EPA 537 (Mod): Results for sample TP-PFC-031-TPI (320-40917-1) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

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 320-233164.

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: 320-40917-1

Client Sample ID: TP-PFC-031-TPI

Lab Sample ID: 320-40917-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	62	M	1.7	0.49	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoropentanoic acid (PFPeA)	180		1.7	0.36	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanoic acid (PFHxA)	320		1.7	0.39	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	65		1.7	0.51	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	1200	M E	1.7	0.45	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorononanoic acid (PFNA)	2.4		1.7	0.44	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorodecanoic acid (PFDA)	0.89	J	1.7	0.40	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	45		1.7	0.39	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	340	E	1.7	0.32	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS)	7.0		1.7	0.31	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	300		3.4	0.92	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanoic acid (PFBA) - DL	64	D	17	4.9	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluoropentanoic acid (PFPeA) - DL	170	D M	17	3.6	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluorohexanoic acid (PFHxA) - DL	340	D	17	3.9	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA) - DL	64	D	17	5.1	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1600	D M	17	4.5	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	55	D	17	3.9	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - DL	350	D	17	3.2	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluoroheptanesulfonic Acid (PFHpS) - DL	7.3	J D	17	3.1	ng/L	10		EPA 537 (Mod)	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	300	D	34	9.2	ng/L	10		EPA 537 (Mod)	Total/NA

Client Sample ID: TP-PFC-031-MID CARBON

Lab Sample ID: 320-40917-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	110	M	1.7	0.50	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoropentanoic acid (PFPeA)	260		1.7	0.36	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanoic acid (PFHxA)	200		1.7	0.40	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	6.1		1.7	0.52	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	29	M	1.7	0.46	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	7.1		1.7	0.39	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.1		1.7	0.32	ng/L	1		EPA 537 (Mod)	Total/NA

Client Sample ID: TP-PFC-031-TPE

Lab Sample ID: 320-40917-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	120	M	1.7	0.51	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoropentanoic acid (PFPeA)	220		1.7	0.37	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanoic acid (PFHxA)	110		1.7	0.41	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.0		1.7	0.53	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	4.1	M	1.7	0.47	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.4		1.7	0.40	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.53	J	1.7	0.33	ng/L	1		EPA 537 (Mod)	Total/NA

Client Sample ID: TP-PFC-031-TPE-D

Lab Sample ID: 320-40917-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	110	M	1.6	0.48	ng/L	1		EPA 537 (Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

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

TestAmerica Job ID: 320-40917-1

Client Sample ID: TP-PFC-031-TPE-D (Continued)

Lab Sample ID: 320-40917-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	220		1.6	0.35	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanoic acid (PFHxA)	110		1.6	0.38	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.1		1.6	0.50	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorooctanoic acid (PFOA)	4.2	M	1.6	0.44	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	2.4		1.6	0.37	ng/L	1		EPA 537 (Mod)	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.44	J	1.6	0.31	ng/L	1		EPA 537 (Mod)	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-40917-1

Client Sample ID: TP-PFC-031-TPI

Lab Sample ID: 320-40917-1

Date Collected: 07/05/18 09:15

Matrix: Water

Date Received: 07/06/18 09:15

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	62	M	1.7	0.49	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluoropentanoic acid (PFPeA)	180		1.7	0.36	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorohexanoic acid (PFHxA)	320		1.7	0.39	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluoroheptanoic acid (PFHpA)	65		1.7	0.51	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorooctanoic acid (PFOA)	1200	M E	1.7	0.45	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorononanoic acid (PFNA)	2.4		1.7	0.44	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorodecanoic acid (PFDA)	0.89	J	1.7	0.40	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluoroundecanoic acid (PFUnA)	1.3	U	1.7	0.60	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorododecanoic acid (PFDoA)	1.3	U	1.7	0.44	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorotridecanoic Acid (PFTriA)	2.5	U	3.4	0.64	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorotetradecanoic acid (PFTeA)	2.5	U	3.4	0.70	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorobutanesulfonic acid (PFBS)	45		1.7	0.39	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorohexanesulfonic acid (PFHxS)	340	E	1.7	0.32	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluoroheptanesulfonic Acid (PFHpS)	7.0		1.7	0.31	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorooctanesulfonic acid (PFOS)	300		3.4	0.92	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorodecanesulfonic acid (PFDS)	1.3	U	1.7	0.47	ng/L		07/10/18 08:16	07/18/18 23:13	1
Perfluorooctane Sulfonamide (FOSA)	2.5	U M	3.4	1.1	ng/L		07/10/18 08:16	07/18/18 23:13	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	96		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C4 PFBA	94		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C5 PFPeA	98		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C2 PFHxA	104		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C4-PFHpA	105		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C4 PFOA	86		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C5 PFNA	99		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C2 PFDA	107		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C2 PFUnA	113		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C2 PFDoA	103		50 - 150	07/10/18 08:16	07/18/18 23:13	1
18O2 PFHxS	99		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C2-PFTeDA	95		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C4 PFOS	102		50 - 150	07/10/18 08:16	07/18/18 23:13	1
13C3-PFBS	101		50 - 150	07/10/18 08:16	07/18/18 23:13	1

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	64	D	17	4.9	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluoropentanoic acid (PFPeA)	170	D M	17	3.6	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluorohexanoic acid (PFHxA)	340	D	17	3.9	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluoroheptanoic acid (PFHpA)	64	D	17	5.1	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluorooctanoic acid (PFOA)	1600	D M	17	4.5	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluorononanoic acid (PFNA)	13	U M	17	4.4	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluorodecanoic acid (PFDA)	8.4	U	17	4.0	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluoroundecanoic acid (PFUnA)	13	U	17	6.0	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluorododecanoic acid (PFDoA)	13	U	17	4.4	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluorotridecanoic Acid (PFTriA)	25	U	34	6.4	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluorotetradecanoic acid (PFTeA)	25	U	34	7.0	ng/L		07/10/18 08:16	07/20/18 01:12	10

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-40917-1

Client Sample ID: TP-PFC-031-TPI

Lab Sample ID: 320-40917-1

Date Collected: 07/05/18 09:15

Matrix: Water

Date Received: 07/06/18 09:15

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	55	D	17	3.9	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluorohexanesulfonic acid (PFHxS)	350	D	17	3.2	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluoroheptanesulfonic Acid (PFHpS)	7.3	J D	17	3.1	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluorooctanesulfonic acid (PFOS)	300	D	34	9.2	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluorodecanesulfonic acid (PFDS)	13	U	17	4.7	ng/L		07/10/18 08:16	07/20/18 01:12	10
Perfluorooctane Sulfonamide (FOSA)	25	U	34	11	ng/L		07/10/18 08:16	07/20/18 01:12	10
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	84		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C4 PFBA	94		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C5 PFPeA	90		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C2 PFHxA	85		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C4-PFHpA	93		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C4 PFOA	87		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C5 PFNA	92		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C2 PFDA	103		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C2 PFUnA	91		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C2 PFDoA	84		50 - 150				07/10/18 08:16	07/20/18 01:12	10
18O2 PFHxS	91		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C2-PFTeDA	70		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C4 PFOS	86		50 - 150				07/10/18 08:16	07/20/18 01:12	10
13C3-PFBS	87		50 - 150				07/10/18 08:16	07/20/18 01:12	10

Client Sample ID: TP-PFC-031-MID CARBON

Lab Sample ID: 320-40917-2

Date Collected: 07/05/18 09:20

Matrix: Water

Date Received: 07/06/18 09:15

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	110	M	1.7	0.50	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluoropentanoic acid (PFPeA)	260		1.7	0.36	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluorohexanoic acid (PFHxA)	200		1.7	0.40	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluoroheptanoic acid (PFHpA)	6.1		1.7	0.52	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluorooctanoic acid (PFOA)	29	M	1.7	0.46	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluorononanoic acid (PFNA)	1.3	U	1.7	0.44	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluorodecanoic acid (PFDA)	0.85	U	1.7	0.41	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluoroundecanoic acid (PFUnA)	1.3	U M	1.7	0.61	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluorododecanoic acid (PFDoA)	1.3	U	1.7	0.44	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluorotridecanoic Acid (PFTriA)	2.5	U	3.4	0.64	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluorotetradecanoic acid (PFTeA)	2.5	U	3.4	0.70	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluorobutanesulfonic acid (PFBS)	7.1		1.7	0.39	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluorohexanesulfonic acid (PFHxS)	2.1		1.7	0.32	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.85	U	1.7	0.31	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluorooctanesulfonic acid (PFOS)	2.5	U	3.4	0.93	ng/L		07/10/18 08:16	07/18/18 23:20	1
Perfluorodecanesulfonic acid (PFDS)	1.3	U	1.7	0.47	ng/L		07/10/18 08:16	07/18/18 23:20	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-40917-1

Client Sample ID: TP-PFC-031-MID CARBON

Lab Sample ID: 320-40917-2

Date Collected: 07/05/18 09:20

Matrix: Water

Date Received: 07/06/18 09:15

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	2.5	U	3.4	1.1	ng/L		07/10/18 08:16	07/18/18 23:20	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	85		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C4 PFBA	89		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C5 PFPeA	80		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C2 PFHxA	88		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C4-PFHpA	101		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C4 PFOA	94		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C5 PFNA	89		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C2 PFDA	91		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C2 PFUnA	95		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C2 PFDoA	87		50 - 150				07/10/18 08:16	07/18/18 23:20	1
18O2 PFHxS	93		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C2-PFTeDA	79		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C4 PFOS	87		50 - 150				07/10/18 08:16	07/18/18 23:20	1
13C3-PFBS	80		50 - 150				07/10/18 08:16	07/18/18 23:20	1

Client Sample ID: TP-PFC-031-TPE

Lab Sample ID: 320-40917-3

Date Collected: 07/05/18 09:25

Matrix: Water

Date Received: 07/06/18 09:15

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	120	M	1.7	0.51	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluoropentanoic acid (PFPeA)	220		1.7	0.37	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorohexanoic acid (PFHxA)	110		1.7	0.41	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluoroheptanoic acid (PFHpA)	2.0		1.7	0.53	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorooctanoic acid (PFOA)	4.1	M	1.7	0.47	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorononanoic acid (PFNA)	1.3	U M	1.7	0.45	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorodecanoic acid (PFDA)	0.87	U	1.7	0.42	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluoroundecanoic acid (PFUnA)	1.3	U M	1.7	0.63	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorododecanoic acid (PFDoA)	1.3	U	1.7	0.45	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorotridecanoic Acid (PFTriA)	2.6	U	3.5	0.66	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorotetradecanoic acid (PFTeA)	2.6	U	3.5	0.72	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorobutanesulfonic acid (PFBS)	2.4		1.7	0.40	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorohexanesulfonic acid (PFHxS)	0.53	J	1.7	0.33	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.87	U	1.7	0.32	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	0.96	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorodecanesulfonic acid (PFDS)	1.3	U	1.7	0.49	ng/L		07/10/18 08:16	07/18/18 23:28	1
Perfluorooctane Sulfonamide (FOSA)	2.6	U M	3.5	1.1	ng/L		07/10/18 08:16	07/18/18 23:28	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	82		50 - 150				07/10/18 08:16	07/18/18 23:28	1
13C4 PFBA	83		50 - 150				07/10/18 08:16	07/18/18 23:28	1
13C5 PFPeA	77		50 - 150				07/10/18 08:16	07/18/18 23:28	1
13C2 PFHxA	83		50 - 150				07/10/18 08:16	07/18/18 23:28	1
13C4-PFHpA	92		50 - 150				07/10/18 08:16	07/18/18 23:28	1
13C4 PFOA	89		50 - 150				07/10/18 08:16	07/18/18 23:28	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-40917-1

Client Sample ID: TP-PFC-031-TPE

Lab Sample ID: 320-40917-3

Date Collected: 07/05/18 09:25

Matrix: Water

Date Received: 07/06/18 09:15

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

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C5 PFNA	84		50 - 150	07/10/18 08:16	07/18/18 23:28	1
13C2 PFDA	92		50 - 150	07/10/18 08:16	07/18/18 23:28	1
13C2 PFUnA	87		50 - 150	07/10/18 08:16	07/18/18 23:28	1
13C2 PFDoA	81		50 - 150	07/10/18 08:16	07/18/18 23:28	1
18O2 PFHxS	87		50 - 150	07/10/18 08:16	07/18/18 23:28	1
13C2-PFTeDA	79		50 - 150	07/10/18 08:16	07/18/18 23:28	1
13C4 PFOS	81		50 - 150	07/10/18 08:16	07/18/18 23:28	1
13C3-PFBS	79		50 - 150	07/10/18 08:16	07/18/18 23:28	1

Client Sample ID: TP-PFC-031-TPE-D

Lab Sample ID: 320-40917-4

Date Collected: 07/05/18 00:00

Matrix: Water

Date Received: 07/06/18 09:15

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

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	110	M	1.6	0.48	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluoropentanoic acid (PFPeA)	220		1.6	0.35	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorohexanoic acid (PFHxA)	110		1.6	0.38	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluoroheptanoic acid (PFHpA)	2.1		1.6	0.50	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorooctanoic acid (PFOA)	4.2	M	1.6	0.44	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorononanoic acid (PFNA)	1.2	U M	1.6	0.42	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorodecanoic acid (PFDA)	0.81	U	1.6	0.39	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluoroundecanoic acid (PFUnA)	1.2	U	1.6	0.59	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorododecanoic acid (PFDoA)	1.2	U	1.6	0.42	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorotridecanoic Acid (PFTriA)	2.4	U	3.3	0.62	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorotetradecanoic acid (PFTeA)	2.4	U	3.3	0.68	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorobutanesulfonic acid (PFBS)	2.4		1.6	0.37	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorohexanesulfonic acid (PFHxS)	0.44	J	1.6	0.31	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.81	U	1.6	0.30	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorooctanesulfonic acid (PFOS)	2.4	U	3.3	0.89	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorodecanesulfonic acid (PFDS)	1.2	U	1.6	0.46	ng/L		07/10/18 08:16	07/18/18 23:36	1
Perfluorooctane Sulfonamide (FOSA)	2.4	U	3.3	1.1	ng/L		07/10/18 08:16	07/18/18 23:36	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	84		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C4 PFBA	88		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C5 PFPeA	80		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C2 PFHxA	87		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C4-PFHpA	95		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C4 PFOA	92		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C5 PFNA	91		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C2 PFDA	90		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C2 PFUnA	91		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C2 PFDoA	85		50 - 150	07/10/18 08:16	07/18/18 23:36	1
18O2 PFHxS	90		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C2-PFTeDA	77		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C4 PFOS	87		50 - 150	07/10/18 08:16	07/18/18 23:36	1
13C3-PFBS	81		50 - 150	07/10/18 08:16	07/18/18 23:36	1

TestAmerica Sacramento

Default Detection Limits

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

TestAmerica Job ID: 320-40917-1

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

Prep: 3535

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

Isotope Dilution Summary

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

TestAmerica Job ID: 320-40917-1

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

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFOSA (50-150)	PFBA (50-150)	PFPeA (50-150)	PFHxA (50-150)	PFHpA (50-150)	PFOA (50-150)	PFNA (50-150)	PFDA (50-150)
320-40917-1	TP-PFC-031-TPI	96	94	98	104	105	86	99	107
320-40917-1 - DL	TP-PFC-031-TPI	84	94	90	85	93	87	92	103
320-40917-2	TP-PFC-031-MID CARBON	85	89	80	88	101	94	89	91
320-40917-3	TP-PFC-031-TPE	82	83	77	83	92	89	84	92
320-40917-4	TP-PFC-031-TPE-D	84	88	80	87	95	92	91	90
LCS 320-233164/2-A	Lab Control Sample	79	89	84	91	97	92	91	92
LCSD 320-233164/3-A	Lab Control Sample Dup	79	89	82	91	96	91	91	94
MB 320-233164/1-A	Method Blank	80	85	80	89	97	93	91	93

		Percent Isotope Dilution Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	PFUnA (50-150)	PFDoA (50-150)	PFHxS (50-150)	PFTDA (50-150)	PFOS (50-150)	3C3-PFB (50-150)
320-40917-1	TP-PFC-031-TPI	113	103	99	95	102	101
320-40917-1 - DL	TP-PFC-031-TPI	91	84	91	70	86	87
320-40917-2	TP-PFC-031-MID CARBON	95	87	93	79	87	80
320-40917-3	TP-PFC-031-TPE	87	81	87	79	81	79
320-40917-4	TP-PFC-031-TPE-D	91	85	90	77	87	81
LCS 320-233164/2-A	Lab Control Sample	94	87	93	77	88	83
LCSD 320-233164/3-A	Lab Control Sample Dup	93	85	96	78	86	83
MB 320-233164/1-A	Method Blank	93	89	90	83	84	80

Surrogate Legend

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

QC Sample Results

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

TestAmerica Job ID: 320-40917-1

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

Lab Sample ID: MB 320-233164/1-A
Matrix: Water
Analysis Batch: 234762

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 233164

Analyte	MB	MB	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	0.634	J	2.0	0.59	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluoropentanoic acid (PFPeA)	0.489	J M	2.0	0.43	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorohexanoic acid (PFHxA)	1.0	U	2.0	0.47	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	0.61	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorooctanoic acid (PFOA)	1.5	U	2.0	0.54	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorononanoic acid (PFNA)	1.5	U	2.0	0.52	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorodecanoic acid (PFDA)	1.0	U	2.0	0.48	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	0.72	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorododecanoic acid (PFDoA)	1.5	U	2.0	0.52	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	0.76	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	0.83	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	0.46	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	0.38	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.0	U	2.0	0.37	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	1.1	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	0.56	ng/L		07/10/18 08:16	07/18/18 22:49	1
Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	1.3	ng/L		07/10/18 08:16	07/18/18 22:49	1

Isotope Dilution	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
13C8 FOSA	80		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C4 PFBA	85		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C5 PFPeA	80		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C2 PFHxA	89		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C4-PFHpA	97		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C4 PFOA	93		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C5 PFNA	91		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C2 PFDA	93		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C2 PFUnA	93		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C2 PFDoA	89		50 - 150	07/10/18 08:16	07/18/18 22:49	1
18O2 PFHxS	90		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C2-PFTeDA	83		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C4 PFOS	84		50 - 150	07/10/18 08:16	07/18/18 22:49	1
13C3-PFBS	80		50 - 150	07/10/18 08:16	07/18/18 22:49	1

Lab Sample ID: LCS 320-233164/2-A
Matrix: Water
Analysis Batch: 234762

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 233164

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	Limits
		Result	Qualifier				
Perfluorobutanoic acid (PFBA)	40.0	35.8	M	ng/L		89	83 - 118
Perfluoropentanoic acid (PFPeA)	40.0	35.0		ng/L		88	83 - 108
Perfluorohexanoic acid (PFHxA)	40.0	38.0		ng/L		95	83 - 109
Perfluoroheptanoic acid (PFHpA)	40.0	36.8		ng/L		92	80 - 113
Perfluorooctanoic acid (PFOA)	40.0	35.8		ng/L		89	80 - 107
Perfluorononanoic acid (PFNA)	40.0	35.2		ng/L		88	83 - 113
Perfluorodecanoic acid (PFDA)	40.0	36.7		ng/L		92	85 - 113
Perfluoroundecanoic acid (PFUnA)	40.0	32.3		ng/L		81	76 - 105

TestAmerica Sacramento

QC Sample Results

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

TestAmerica Job ID: 320-40917-1

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

Lab Sample ID: LCS 320-233164/2-A

Matrix: Water

Analysis Batch: 234762

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 233164

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorododecanoic acid (PFDoA)	40.0	37.0		ng/L		92	87 - 116
Perfluorotridecanoic Acid (PFTriA)	40.0	36.8		ng/L		92	75 - 129
Perfluorotetradecanoic acid (PFTeA)	40.0	36.8		ng/L		92	82 - 115
Perfluorobutanesulfonic acid (PFBS)	35.4	33.0		ng/L		93	87 - 120
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.9		ng/L		88	81 - 106
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	34.9		ng/L		92	80 - 117
Perfluorooctanesulfonic acid (PFOS)	37.1	34.2		ng/L		92	82 - 112
Perfluorodecanesulfonic acid (PFDS)	38.6	33.9		ng/L		88	81 - 114
Perfluorooctane Sulfonamide (FOSA)	40.0	38.6		ng/L		97	85 - 114

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
¹³ C8 FOSA	79		50 - 150
¹³ C4 PFBA	89		50 - 150
¹³ C5 PFPeA	84		50 - 150
¹³ C2 PFHxA	91		50 - 150
¹³ C4-PFHpA	97		50 - 150
¹³ C4 PFOA	92		50 - 150
¹³ C5 PFNA	91		50 - 150
¹³ C2 PFDA	92		50 - 150
¹³ C2 PFUnA	94		50 - 150
¹³ C2 PFDoA	87		50 - 150
¹⁸ O2 PFHxS	93		50 - 150
¹³ C2-PFTeDA	77		50 - 150
¹³ C4 PFOS	88		50 - 150
¹³ C3-PFBS	83		50 - 150

Lab Sample ID: LCSD 320-233164/3-A

Matrix: Water

Analysis Batch: 234762

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 233164

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	40.0	36.9	M	ng/L		92	83 - 118	3	30
Perfluoropentanoic acid (PFPeA)	40.0	37.8		ng/L		94	83 - 108	8	30
Perfluorohexanoic acid (PFHxA)	40.0	38.6		ng/L		97	83 - 109	2	30
Perfluoroheptanoic acid (PFHpA)	40.0	35.5		ng/L		89	80 - 113	3	30
Perfluorooctanoic acid (PFOA)	40.0	36.3		ng/L		91	80 - 107	1	30
Perfluorononanoic acid (PFNA)	40.0	37.2		ng/L		93	83 - 113	5	30
Perfluorodecanoic acid (PFDA)	40.0	38.5		ng/L		96	85 - 113	5	30
Perfluoroundecanoic acid (PFUnA)	40.0	33.1		ng/L		83	76 - 105	2	30
Perfluorododecanoic acid (PFDoA)	40.0	37.8		ng/L		95	87 - 116	2	30

TestAmerica Sacramento

QC Sample Results

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

TestAmerica Job ID: 320-40917-1

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

Lab Sample ID: LCSD 320-233164/3-A
Matrix: Water
Analysis Batch: 234762

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 233164

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD
									Limit
Perfluorotridecanoic Acid (PFTriA)	40.0	39.0		ng/L		98	75 - 129	6	30
Perfluorotetradecanoic acid (PFTeA)	40.0	37.1		ng/L		93	82 - 115	1	30
Perfluorobutanesulfonic acid (PFBS)	35.4	34.0		ng/L		96	87 - 120	3	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.1		ng/L		85	81 - 106	3	30
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	38.5		ng/L		101	80 - 117	10	30
Perfluorooctanesulfonic acid (PFOS)	37.1	35.7		ng/L		96	82 - 112	4	30
Perfluorodecanesulfonic acid (PFDS)	38.6	34.9		ng/L		90	81 - 114	3	30
Perfluorooctane Sulfonamide (FOSA)	40.0	40.2		ng/L		101	85 - 114	4	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C8 FOSA	79		50 - 150
13C4 PFBA	89		50 - 150
13C5 PFPeA	82		50 - 150
13C2 PFHxA	91		50 - 150
13C4-PFHpA	96		50 - 150
13C4 PFOA	91		50 - 150
13C5 PFNA	91		50 - 150
13C2 PFDA	94		50 - 150
13C2 PFUnA	93		50 - 150
13C2 PFDoA	85		50 - 150
18O2 PFHxS	96		50 - 150
13C2-PFTeDA	78		50 - 150
13C4 PFOS	86		50 - 150
13C3-PFBS	83		50 - 150

QC Association Summary

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

TestAmerica Job ID: 320-40917-1

LCMS

Prep Batch: 233164

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40917-1	TP-PFC-031-TPI	Total/NA	Water	3535	
320-40917-1 - DL	TP-PFC-031-TPI	Total/NA	Water	3535	
320-40917-2	TP-PFC-031-MID CARBON	Total/NA	Water	3535	
320-40917-3	TP-PFC-031-TPE	Total/NA	Water	3535	
320-40917-4	TP-PFC-031-TPE-D	Total/NA	Water	3535	
MB 320-233164/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-233164/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-233164/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 234762

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40917-1	TP-PFC-031-TPI	Total/NA	Water	EPA 537 (Mod)	233164
320-40917-2	TP-PFC-031-MID CARBON	Total/NA	Water	EPA 537 (Mod)	233164
320-40917-3	TP-PFC-031-TPE	Total/NA	Water	EPA 537 (Mod)	233164
320-40917-4	TP-PFC-031-TPE-D	Total/NA	Water	EPA 537 (Mod)	233164
MB 320-233164/1-A	Method Blank	Total/NA	Water	EPA 537 (Mod)	233164
LCS 320-233164/2-A	Lab Control Sample	Total/NA	Water	EPA 537 (Mod)	233164
LCSD 320-233164/3-A	Lab Control Sample Dup	Total/NA	Water	EPA 537 (Mod)	233164

Analysis Batch: 235047

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-40917-1 - DL	TP-PFC-031-TPI	Total/NA	Water	EPA 537 (Mod)	233164

Lab Chronicle

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

TestAmerica Job ID: 320-40917-1

Client Sample ID: TP-PFC-031-TPI

Date Collected: 07/05/18 09:15

Date Received: 07/06/18 09:15

Lab Sample ID: 320-40917-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			233164	07/10/18 08:16	SK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	234762	07/18/18 23:13	S1M	TAL SAC
Total/NA	Prep	3535	DL		233164	07/10/18 08:16	SK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)	DL	10	235047	07/20/18 01:12	S1M	TAL SAC

Client Sample ID: TP-PFC-031-MID CARBON

Date Collected: 07/05/18 09:20

Date Received: 07/06/18 09:15

Lab Sample ID: 320-40917-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			233164	07/10/18 08:16	SK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	234762	07/18/18 23:20	S1M	TAL SAC

Client Sample ID: TP-PFC-031-TPE

Date Collected: 07/05/18 09:25

Date Received: 07/06/18 09:15

Lab Sample ID: 320-40917-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			233164	07/10/18 08:16	SK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	234762	07/18/18 23:28	S1M	TAL SAC

Client Sample ID: TP-PFC-031-TPE-D

Date Collected: 07/05/18 00:00

Date Received: 07/06/18 09:15

Lab Sample ID: 320-40917-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			233164	07/10/18 08:16	SK	TAL SAC
Total/NA	Analysis	EPA 537 (Mod)		1	234762	07/18/18 23:36	S1M	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: 320-40917-1

Laboratory: TestAmerica Sacramento

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

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

Method Summary

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

TestAmerica Job ID: 320-40917-1

Method	Method Description	Protocol	Laboratory
EPA 537 (Mod)	PFAS for QSM 5.1, Table B-15	DOD 5.1	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

DOD 5.1 = Department of Defense Quality Systems Manual V5.1

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

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: 320-40917-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-40917-1	TP-PFC-031-TPI	Water	07/05/18 09:15	07/06/18 09:15
320-40917-2	TP-PFC-031-MID CARBON	Water	07/05/18 09:20	07/06/18 09:15
320-40917-3	TP-PFC-031-TPE	Water	07/05/18 09:25	07/06/18 09:15
320-40917-4	TP-PFC-031-TPE-D	Water	07/05/18 00:00	07/06/18 09:15

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 233477

Lab Sample ID: IC 320-233477/2 Client Sample ID: _____

Date Analyzed: 07/11/18 14:48 Lab File ID: 2018.07.11LLICALA_002.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.63	Baseline	westendor fc	07/11/18 16:13
Perfluorohexanoic acid (PFHxA)	1.98	Baseline	westendor fc	07/11/18 16:13
Perfluorooctanesulfonic acid (PFOS)	3.04	Baseline	westendor fc	07/11/18 16:13

Lab Sample ID: IC 320-233477/3 Client Sample ID: _____

Date Analyzed: 07/11/18 14:59 Lab File ID: 2018.07.11LLICALA_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorohexanoic acid (PFHxA)	2.00	Baseline	westendor fc	07/11/18 16:14

Lab Sample ID: IC 320-233477/4 Client Sample ID: _____

Date Analyzed: 07/11/18 15:07 Lab File ID: 2018.07.11LLICALA_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.72	Split Peak	westendor fc	07/11/18 16:15
Perfluorooctanesulfonic acid (PFOS)	3.04	Isomers	westendor fc	07/11/18 16:15

Lab Sample ID: IC 320-233477/5 ICIS Client Sample ID: _____

Date Analyzed: 07/11/18 15:15 Lab File ID: 2018.07.11LLICALA_005.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.43	Incomplete Integration	westendor fc	07/11/18 16:16

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 233477

Lab Sample ID: IC 320-233477/7 Client Sample ID: _____

Date Analyzed: 07/11/18 15:30 Lab File ID: 2018.07.11LLICALA_007.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.04	Isomers	westendorfc	07/11/18 16:16

Lab Sample ID: IC 320-233477/8 Client Sample ID: _____

Date Analyzed: 07/11/18 15:38 Lab File ID: 2018.07.11LLICALA_008.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4 PFBA	1.43	Incomplete Integration	westendorfc	07/11/18 16:17

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 234756

Lab Sample ID: CCV 320-234756/3 CCVIS Client Sample ID: _____

Date Analyzed: 07/18/18 16:57 Lab File ID: 2018.07.18LLAA_056.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Incomplete Integration	mongkols	07/19/18 10:21

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 234762

Lab Sample ID: MB 320-233164/1-A Client Sample ID: _____

Date Analyzed: 07/18/18 22:49 Lab File ID: 2018.07.18LLB_061.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.75	Baseline	mongkols	07/19/18 14:17

Lab Sample ID: LCS 320-233164/2-A Client Sample ID: _____

Date Analyzed: 07/18/18 22:57 Lab File ID: 2018.07.18LLB_062.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Incomplete Integration	mongkols	07/19/18 14:17

Lab Sample ID: LCS 320-233164/3-A Client Sample ID: _____

Date Analyzed: 07/18/18 23:05 Lab File ID: 2018.07.18LLB_063.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.42	Incomplete Integration	mongkols	07/19/18 14:18

Lab Sample ID: 320-40917-1 Client Sample ID: TP-PFC-031-TPI

Date Analyzed: 07/18/18 23:13 Lab File ID: 2018.07.18LLB_064.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.42	Incomplete Integration	mongkols	07/19/18 14:18
Perfluorooctanoic acid (PFOA)	2.71	Isomers	mongkols	07/19/18 14:19
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/19/18 14:19

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 234762

Lab Sample ID: 320-40917-2 Client Sample ID: TP-PFC-031-MID CARBON

Date Analyzed: 07/18/18 23:20 Lab File ID: 2018.07.18LLB_065.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	mongkols	07/19/18 14:19
Perfluorooctanoic acid (PFOA)	2.72	Isomers	mongkols	07/19/18 14:21
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/19/18 14:24

Lab Sample ID: 320-40917-3 Client Sample ID: TP-PFC-031-TPE

Date Analyzed: 07/18/18 23:28 Lab File ID: 2018.07.18LLB_066.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Incomplete Integration	mongkols	07/19/18 14:25
Perfluorooctanoic acid (PFOA)	2.64	Incomplete Integration	mongkols	07/19/18 14:25
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/19/18 14:26
Perfluorooctane Sulfonamide (FOSA)		Invalid Compound ID	mongkols	07/19/18 14:26
Perfluoroundecanoic acid (PFUnA)		Invalid Compound ID	mongkols	07/19/18 14:26

Lab Sample ID: 320-40917-4 Client Sample ID: TP-PFC-031-TPE-D

Date Analyzed: 07/18/18 23:36 Lab File ID: 2018.07.18LLB_067.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.43	Incomplete Integration	mongkols	07/19/18 14:26
Perfluorooctanoic acid (PFOA)	2.64	Isomers	mongkols	07/19/18 14:26
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/19/18 14:26

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 234930

Lab Sample ID: IC 320-234930/2 Client Sample ID: _____

Date Analyzed: 07/19/18 12:09 Lab File ID: 2018.07.19LLICAL_002.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	roycea	07/19/18 14:39
Perfluoropentanoic acid (PFPeA)	1.76	Baseline	roycea	07/19/18 14:40
Perfluorohexanoic acid (PFHxA)	2.06	Assign Peak	roycea	07/19/18 14:41
Perfluorooctanoic acid (PFOA)	2.73	Baseline	roycea	07/19/18 14:41
Perfluorooctanesulfonic acid (PFOS)	3.09	Assign Peak	roycea	07/19/18 14:38
Perfluorodecanoic acid (PFDA)	3.44	Baseline	roycea	07/19/18 14:41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.76	Baseline	roycea	07/19/18 14:42
Perfluoroundecanoic acid (PFUnA)	3.76	Baseline	roycea	07/19/18 14:42

Lab Sample ID: IC 320-234930/3 Client Sample ID: _____

Date Analyzed: 07/19/18 12:17 Lab File ID: 2018.07.19LLICAL_003.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.75	Baseline	roycea	07/19/18 14:43
Perfluorooctanoic acid (PFOA)	2.72	Baseline	roycea	07/19/18 14:43
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	3.76	Isomers	roycea	07/19/18 14:44

Lab Sample ID: IC 320-234930/4 Client Sample ID: _____

Date Analyzed: 07/19/18 12:25 Lab File ID: 2018.07.19LLICAL_004.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanoic acid (PFBA)	1.44	Incomplete Integration	roycea	07/19/18 14:45

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 234930

Lab Sample ID: ICB 320-234930/9 Client Sample ID: _____

Date Analyzed: 07/19/18 13:04 Lab File ID: 2018.07.19LLICAL_009.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.72	Assign Peak	roycea	07/19/18 15:11
Perfluorooctanesulfonic acid (PFOS)	3.08	Assign Peak	roycea	07/19/18 15:14
Perfluoropentanoic acid (PFPeA)		Invalid Compound ID	roycea	07/19/18 15:11

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 235044

Lab Sample ID: CCV 320-235044/3 CCVIS Client Sample ID: _____

Date Analyzed: 07/19/18 19:28 Lab File ID: 2018.07.19LLC_021.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.76	Baseline	mongkols	07/20/18 16:38

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Analysis Batch Number: 235047

Lab Sample ID: 320-40917-1 DL Client Sample ID: TP-PFC-031-TPI DL

Date Analyzed: 07/20/18 01:12 Lab File ID: 2018.07.19LLC_065.d GC Column: GeminiC18 3x1 ID: 3(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoropentanoic acid (PFPeA)	1.75	Baseline	mongkols	07/20/18 16:46
Perfluorooctanoic acid (PFOA)	2.73	Isomers	mongkols	07/20/18 16:46
Perfluorononanoic acid (PFNA)		Invalid Compound ID	mongkols	07/20/18 16:46

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFC_ALL_SU_00083	12/13/18	06/14/18	Methanol, Lot Fisher 168632	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA 00008	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:FTS 00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS 00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA 00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA 00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM3HFPO-DA 00003	200 uL	13C3 HFPO-DA	0.05 ug/mL
					LCM4PFHPA 00014	200 uL	13C4-PFHpa	0.05 ug/mL
					LCM5PFPEA 00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA 00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA 00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS 00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA 00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA 00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA 00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS 00015	200 uL	1802 PFHxS	0.0473 ug/mL
LCMPFNA 00015	200 uL	13C5 PFNA	0.05 ug/mL					
LCMPFOA 00019	200 uL	13C4 PFOA	0.05 ug/mL					
LCMPFOS 00027	200 uL	13C4 PFOS	0.0478 ug/mL					
LCMPFuDA 00017	200 uL	13C2 PFUnA	0.05 ug/mL					
.LCd3-NMeFOSAA 00008	11/08/22		WELLINGTON, Lot d3NMeFOSAA117		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
.LCd5-NETFOSAA 00008	11/08/22		WELLINGTON, Lot d5NETFOSAA117		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
.LCM2-6:FTS 00008	02/16/23		WELLINGTON, Lot M262FTS0218		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
.LCM2-8:2FTS 00010	01/24/23		WELLINGTON, Lot M282FTS0118		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCM2PFHxDA 00016	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA 00014	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM3HFPO-DA 00003	05/18/21		WELLINGTON, Lot M3HFPODA0518		(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
.LCM4PFHPA 00014	05/03/22		Wellington Laboratories, Lot M4PFHpA0517		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
.LCM5PFPEA 00015	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
.LCM8FOSA 00019	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA 00015	02/16/23		Wellington Laboratories, Lot MPFBA0218		(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFBS 00008	02/15/23		Wellington Laboratories, Lot M3PFBS0218		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
.LCMPFDA 00020	02/16/23		Wellington Laboratories, Lot MPFDA0218		(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA 00015	02/16/23		Wellington Laboratories, Lot MPFDoA0218		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA 00022	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS 00015	03/22/23		Wellington Laboratories, Lot MPFHxS0318		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
.LCMPFNA 00015	12/14/22		Wellington Laboratories, Lot MPFNA1217		(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA 00019	05/04/23		Wellington Laboratories, Lot MPFOA0418		(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS 00027	02/15/23		Wellington Laboratories, Lot MPFOS0218		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFuDA 00017	11/22/21		Wellington Laboratories, Lot MPFuDA1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPPFC-IS 00058	12/13/18	06/13/18	Methanol, Lot 090285	200 mL	LCM2PFOA 00008	200 uL	13C2-PFOA	0.05 ug/mL
.LCM2PFOA 00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPPFC_LLO_00007	12/01/18	06/05/18	MeOH/H2O, Lot Baker 141039	200 mL	LCMPFC_ALL_SU_00075	10 mL	13C2-PFOA	2.5 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2PFOA 00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFC_LLO_00007	12/01/18	06/05/18	MeOH/H2O, Lot Baker 141039	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NETFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
..LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA_00008	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:Fts_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2Fts_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22		WELLINGTON, Lot d3NMeFOSAA1117		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00008	11/08/22		WELLINGTON, Lot d5NETFOSAA1117		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:Fts_00008	02/16/23		WELLINGTON, Lot M262Fts0218		(Purchased Reagent)		M2-6:2Fts	47.5 ug/mL
..LCM2-8:2Fts_00010	01/24/23		WELLINGTON, Lot M282Fts0118		(Purchased Reagent)		M2-8:2Fts	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00014	05/03/22		Wellington Laboratories, Lot M4PFHPA0517		(Purchased Reagent)		13C4-PFHpA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM5PFPEA 00015	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA 00019	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00015	02/16/23		Wellington Laboratories, Lot MPFBA0218		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00008	02/15/23		Wellington Laboratories, Lot M3PFBS0218		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00020	02/16/23		Wellington Laboratories, Lot MPFDA0218		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00015	02/16/23		Wellington Laboratories, Lot MPFDoA0218		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00022	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00015	03/22/23		Wellington Laboratories, Lot MPFHxS0318		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA 00015	12/14/22		Wellington Laboratories, Lot MPFNA1217		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00019	05/04/23		Wellington Laboratories, Lot MPFOA0418		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00027	02/15/23		Wellington Laboratories, Lot MPFOS0218		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00017	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC_LL1_00006	11/18/18	06/05/18	MeOH/H2O, Lot 90285	200 mL	LCPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NMeFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							1802 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
					13C4 PFOA	2.5 ng/mL		
					13C4 PFOS	2.39 ng/mL		
					13C2 PFUnA	2.5 ng/mL		
					LCPFCSP_00151	500 uL	1H,1H,2H,2H-perfluorohexanesul fonic acid (4:2)	0.02335 ng/mL
							1H,1H,2H,2H-perfluorooctanesul fonic acid (6:2)	0.0237 ng/mL
							1H,1H,2H,2H-perfluorodecanesul fonic acid (8:2)	0.02395 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.025 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.025 ng/mL
							Perfluorobutanoic acid (PFBA)	0.025 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0221 ng/mL
							Perfluorodecanoic acid (PFDA)	0.025 ng/mL
		Perfluorododecanoic acid (PFDoA)	0.025 ng/mL					

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorodecanesulfonic acid (PFDS)	0.0241 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.025 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0238 ng/mL
							Perfluorohexanoic acid (PFHxA)	0.025 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.02275 ng/mL
							Perfluorononanoic acid (PFNA)	0.025 ng/mL
							Perfluorooctanoic acid (PFOA)	0.025025 ng/mL
							Perfluorononanesulfonic acid	0.024 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0232 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	0.025 ng/mL
							Perfluoropentanoic acid (PFPeA)	0.025 ng/mL
							Perfluoropentanesulfonic acid	0.02345 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	0.025 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	0.025 ng/mL
							Perfluoroundecanoic acid (PFUnA)	0.025 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA_00008	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:FtS_00008	200 uL	M2-6:2FtS	0.0475 ug/mL
					LCM2-8:2FtS_00010	200 uL	M2-8:2FtS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUDa_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22		WELLINGTON, Lot d3NMeFOSAA117				(Purchased Reagent) d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00008	11/08/22		WELLINGTON, Lot d5NETFOSAA117				(Purchased Reagent) d5-NETFOSAA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM2-6:FTS 00008	02/16/23		WELLINGTON, Lot M262FTS0218		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS 00010	01/24/23		WELLINGTON, Lot M282FTS0118		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
..LCM2PFHxDA 00016	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA 00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA 00014	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHxA 00014	05/03/22		Wellington Laboratories, Lot M4PFHxA0517		(Purchased Reagent)		13C4-PFHxA	50 ug/mL
..LCM5PFPEA 00015	07/20/22		Wellington Laboratories, Lot M5PFPEA0717		(Purchased Reagent)		13C5 PFPEA	50 ug/mL
..LCM8FOSA 00019	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00015	02/16/23		Wellington Laboratories, Lot MPFBA0218		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00008	02/15/23		Wellington Laboratories, Lot M3PFBS0218		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00020	02/16/23		Wellington Laboratories, Lot MPFDA0218		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00015	02/16/23		Wellington Laboratories, Lot MPFDoA0218		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00022	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00015	03/22/23		Wellington Laboratories, Lot MPFHxS0318		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA 00015	12/14/22		Wellington Laboratories, Lot MPFNA1217		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00019	05/04/23		Wellington Laboratories, Lot MPFOA0418		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00027	02/15/23		Wellington Laboratories, Lot MPFOS0218		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa 00017	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00151	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LCPFCSP_00148	200 uL	1H,1H,2H,2H-perfluorohexanesul fonic acid (4:2)	0.00934 ug/mL
							1H,1H,2H,2H-perfluorooctanesul fonic acid (6:2)	0.00948 ug/mL
							1H,1H,2H,2H-perfluorodecanesul fonic acid (8:2)	0.00958 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.01 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.01 ug/mL
							Perfluorobutanoic acid (PFBA)	0.01 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.00884 ug/mL
							Perfluorodecanoic acid (PFDA)	0.01 ug/mL
							Perfluorododecanoic acid (PFDoA)	0.01 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.00964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.01 ug/mL
							Perfluoroheptanesulfonic Acid (PFHps)	0.00952 ug/mL
							Perfluorohexanoic acid (PFHxA)	0.01 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0091 ug/mL
							Perfluorononanoic acid (PFNA)	0.01 ug/mL
							Perfluorooctanoic acid (PFOA)	0.01001 ug/mL
							Perfluorononanesulfonic acid	0.0096 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.00928 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctane Sulfonamide (FOSA)	0.01 ug/mL
							Perfluoropentanoic acid (PFPeA)	0.01 ug/mL
							Perfluoropentanesulfonic acid	0.00938 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	0.01 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	0.01 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.01 ug/mL
..LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC4:2FTS_00005	100 uL	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	0.467 ug/mL
					LC6:2FTS_00007	100 uL	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	0.474 ug/mL
					LC8:2FTS_00007	100 uL	1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	0.479 ug/mL
					LCbr-NETFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

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SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
...LC4:2FTS_00005	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	46.7 ug/mL
...LC6:2FTS_00007	04/20/22		WELLINGTON, Lot 62FTS0417		(Purchased Reagent)		1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	47.4 ug/mL
...LC8:2FTS_00007	12/12/21		WELLINGTON, Lot 82FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	47.9 ug/mL
...LCbr-NETFOSAA_00001	01/17/23		WELLINGTON, Lot brNETFOSAA0118		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCbr-NMeFOSAA_00001	01/17/23		WELLINGTON, Lot brNMeFOSAA0118		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCPFBA_00008	05/29/22		Wellington Laboratories, Lot PFBA0517		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00009	09/21/22		Wellington Laboratories, Lot LPFBS0917		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00008	05/29/22		Wellington Laboratories, Lot PFDA0517		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
...LCPFDoA_00008	05/29/22		Wellington Laboratories, Lot PFDoA0517		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDS_00008	11/08/22		Wellington Laboratories, Lot LPFDS1117		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpA_00011	09/27/22		Wellington Laboratories, Lot PFHpA0917		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpSA_00003	09/01/22		Wellington Laboratories, Lot LPFHpS0817		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
...LCPFHxA_00010	09/27/22		Wellington Laboratories, Lot PFHxA0917		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxS-br_00006	01/04/22		Wellington Laboratories, Lot brPFHxSK0117		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00010	07/20/22		Wellington Laboratories, Lot PFNA0717		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFNS_00003	09/27/22		Wellington Laboratories, Lot LPFNS0917		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.05 ug/mL
...LCPFOA_00011	09/27/22		Wellington Laboratories, Lot PFOA0917		(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
...LCPFOS-br_00007	01/12/22		Wellington Laboratories, Lot brPFOSK0117		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFOS_00007	01/12/22		Wellington Laboratories, Lot brPFOSK0117		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00013	09/01/22		Wellington Laboratories, Lot FOSA0817I		(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
...LCPFPeA_00008	06/14/22		Wellington Laboratories, Lot PFPeA0617		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFPeS_00003	01/11/22		Wellington Laboratories, Lot LFPFeS0117		(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
...LCPFTeDA_00008	09/30/21		Wellington Laboratories, Lot PFTeDA0916		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTTrDA_00008	05/02/22		Wellington Laboratories, Lot PFTTrDA0517		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
...LCPFUdA_00008	10/18/21		Wellington Laboratories, Lot PFUdA1016		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL2_00005	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCPMFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NETFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCS_00151	1000 uL	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	0.0467 ng/mL
							1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	0.0474 ng/mL
							1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	0.0479 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.05 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.05 ng/mL
							Perfluorobutanoic acid (PFBA)	0.05 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0442 ng/mL
							Perfluorodecanoic acid (PFDA)	0.05 ng/mL
							Perfluorododecanoic acid (PFDoA)	0.05 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	0.0482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.05 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.0476 ng/mL
							Perfluorohexanoic acid (PFHxA)	0.05 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0455 ng/mL
							Perfluorononanoic acid (PFNA)	0.05 ng/mL
							Perfluorooctanoic acid (PFOA)	0.05005 ng/mL
							Perfluorononanesulfonic acid	0.048 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0464 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	0.05 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoropentanoic acid (PFPeA)	0.05 ng/mL
							Perfluoropentanesulfonic acid	0.0469 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	0.05 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	0.05 ng/mL
							Perfluoroundecanoic acid (PFUnA)	0.05 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NEtFOSAA_00008	200 uL	d5-NEtFOSAA	0.05 ug/mL
					LCM2-6:FtS_00008	200 uL	M2-6:2FtS	0.0475 ug/mL
					LCM2-8:2FtS_00010	200 uL	M2-8:2FtS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22		WELLINGTON, Lot d3NMeFOSAA1117		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00008	11/08/22		WELLINGTON, Lot d5NEtFOSAA1117		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FtS_00008	02/16/23		WELLINGTON, Lot M262FtS0218		(Purchased Reagent)		M2-6:2FtS	47.5 ug/mL
..LCM2-8:2FtS_00010	01/24/23		WELLINGTON, Lot M282FtS0118		(Purchased Reagent)		M2-8:2FtS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00014	05/03/22		Wellington Laboratories, Lot M4PFHpA0517		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23		Wellington Laboratories, Lot MPFBA0218		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23		Wellington Laboratories, Lot M3PFBS0218		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23		Wellington Laboratories, Lot MPFDA0218		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23		Wellington Laboratories, Lot MPFDoA0218		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23		Wellington Laboratories, Lot MPFHxS0318		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22		Wellington Laboratories, Lot MPFNA1217		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23		Wellington Laboratories, Lot MPFOA0418		(Purchased Reagent)		13C4 PFOA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOS_00027	02/15/23		Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)	13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00017	11/22/21		Wellington Laboratories, Lot MPFUDa1116			(Purchased Reagent)	13C2 PFUnA	50 ug/mL
.LCPFCSP_00151	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LCPFCSP_00148	200 uL	1H,1H,2H,2H-perfluorohexanesul fonic acid (4:2)	0.00934 ug/mL
							1H,1H,2H,2H-perfluorooctanesul fonic acid (6:2)	0.00948 ug/mL
							1H,1H,2H,2H-perfluorodecanesul fonic acid (8:2)	0.00958 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.01 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.01 ug/mL
							Perfluorobutanoic acid (PFBA)	0.01 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.00884 ug/mL
							Perfluorodecanoic acid (PFDA)	0.01 ug/mL
							Perfluorododecanoic acid (PFDoA)	0.01 ug/mL
							Perfluorodecanesulfonic acid (PFDS)	0.00964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.01 ug/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	0.00952 ug/mL
							Perfluorohexanoic acid (PFHxA)	0.01 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0091 ug/mL
							Perfluorononanoic acid (PFNA)	0.01 ug/mL
							Perfluorooctanoic acid (PFOA)	0.01001 ug/mL
							Perfluorononanesulfonic acid	0.0096 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.00928 ug/mL
							Perfluorooctane Sulfonamide (FOSA)	0.01 ug/mL
							Perfluoropentanoic acid (PFPeA)	0.01 ug/mL
							Perfluoropentanesulfonic acid	0.00938 ug/mL
							Perfluorotetradecanoic acid (PFTeA)	0.01 ug/mL
							Perfluorotridecanoic Acid (PFTriA)	0.01 ug/mL
							Perfluoroundecanoic acid (PFUnA)	0.01 ug/mL
..LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC4:2FTS_00005	100 uL	1H,1H,2H,2H-perfluorohexanesul fonic acid (4:2)	0.467 ug/mL
					LC6:2FTS_00007	100 uL	1H,1H,2H,2H-perfluorooctanesul fonic acid (6:2)	0.474 ug/mL
					LC8:2FTS_00007	100 uL	1H,1H,2H,2H-perfluorodecanesul fonic acid (8:2)	0.479 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCbr-NETFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
...LC4:2FTS_00005	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	46.7 ug/mL
...LC6:2FTS_00007	04/20/22		WELLINGTON, Lot 62FTS0417		(Purchased Reagent)		1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	47.4 ug/mL
...LC8:2FTS_00007	12/12/21		WELLINGTON, Lot 82FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	47.9 ug/mL
...LCbr-NETFOSAA_00001	01/17/23		WELLINGTON, Lot brNETFOSAA0118		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCbr-NMeFOSAA_00001	01/17/23		WELLINGTON, Lot brNMeFOSAA0118		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCPFBA_00008	05/29/22		Wellington Laboratories, Lot PFBA0517		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
...LCPFBS_00009	09/21/22		Wellington Laboratories, Lot LPFBS0917		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00008	05/29/22		Wellington Laboratories, Lot PFDA0517		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFDaA_00008	05/29/22		Wellington Laboratories, Lot PFDoA0517		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
...LCPFDS_00008	11/08/22		Wellington Laboratories, Lot LPFDS1117		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
...LCPFHpa_00011	09/27/22		Wellington Laboratories, Lot PFHpA0917		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpsA_00003	09/01/22		Wellington Laboratories, Lot LPFHps0817		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHps)	47.6 ug/mL
...LCPFHxA 00010	09/27/22		Wellington Laboratories, Lot PFHxA0917		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
...LCPFHxS-br_00006	01/04/22		Wellington Laboratories, Lot brPFHxSK0117		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00010	07/20/22		Wellington Laboratories, Lot PFNA0717		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFNS 00003	09/27/22		Wellington Laboratories, Lot LPFNS0917		(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
...LCPFOA 00011	09/27/22		Wellington Laboratories, Lot PFOA0917		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFOS-br_00007	01/12/22		Wellington Laboratories, Lot brPFOSK0117		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00013	09/01/22		Wellington Laboratories, Lot FOSA0817I		(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
...LCPFPeA_00008	06/14/22		Wellington Laboratories, Lot PFPeA0617		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
...LCPFPeS 00003	01/11/22		Wellington Laboratories, Lot LPFPeS0117		(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
...LCPFTeDA_00008	09/30/21		Wellington Laboratories, Lot PFTeDA0916		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
...LCPFTrDA_00008	05/02/22		Wellington Laboratories, Lot PFTrDA0517		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
...LCPFUdA_00008	10/18/21		Wellington Laboratories, Lot PFUdA1016		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL3_00005	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NMeFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpa	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration		
					Reagent ID	Volume Added				
					LCPFCS_00148	100 uL	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	0.2335 ng/mL		
							1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	0.237 ng/mL		
							1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	0.2395 ng/mL		
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.25 ng/mL		
							N-methyl perfluorooctane sulfonamidoacetic acid	0.25 ng/mL		
							Perfluorobutanoic acid (PFBA)	0.25 ng/mL		
							Perfluorobutanesulfonic acid (PFBS)	0.221 ng/mL		
							Perfluorodecanoic acid (PFDA)	0.25 ng/mL		
							Perfluorododecanoic acid (PFDoA)	0.25 ng/mL		
							Perfluorodecanesulfonic acid (PFDS)	0.241 ng/mL		
							Perfluoroheptanoic acid (PFHpA)	0.25 ng/mL		
							Perfluoroheptanesulfonic Acid (PFHpS)	0.238 ng/mL		
							Perfluorohexanoic acid (PFHxA)	0.25 ng/mL		
							Perfluorohexanesulfonic acid (PFHxS)	0.2275 ng/mL		
							Perfluorononanoic acid (PFNA)	0.25 ng/mL		
							Perfluorooctanoic acid (PFOA)	0.25025 ng/mL		
							Perfluorononanesulfonic acid	0.24 ng/mL		
							Perfluorooctanesulfonic acid (PFOS)	0.232 ng/mL		
							Perfluorooctane Sulfonamide (FOSA)	0.25 ng/mL		
							Perfluoropentanoic acid (PFPeA)	0.25 ng/mL		
Perfluoropentanesulfonic acid	0.2345 ng/mL									
Perfluorotetradecanoic acid (PFTeA)	0.25 ng/mL									
Perfluorotridecanoic Acid (PFTriA)	0.25 ng/mL									
Perfluoroundecanoic acid (PFUnA)	0.25 ng/mL									
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL		
							LCd5-NetFOSAA_00008	200 uL	d5-NetFOSAA	0.05 ug/mL
							LCM2-6:FtS_00008	200 uL	M2-6:2FtS	0.0475 ug/mL
							LCM2-8:2FtS_00010	200 uL	M2-8:2FtS	0.0479 ug/mL
							LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
							LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
							LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
LCM4PFHPA_00014	200 uL	13C4-PFHPA	0.05 ug/mL							

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	1802 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22		WELLINGTON, Lot d3NMeFOSAA1117		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00008	11/08/22		WELLINGTON, Lot d5NEtFOSAA1117		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FtS_00008	02/16/23		WELLINGTON, Lot M262FtS0218		(Purchased Reagent)		M2-6:2FtS	47.5 ug/mL
..LCM2-8:2FtS_00010	01/24/23		WELLINGTON, Lot M282FtS0118		(Purchased Reagent)		M2-8:2FtS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00014	05/03/22		Wellington Laboratories, Lot M4PFHpa0517		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00015	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23		Wellington Laboratories, Lot MPFBA0218		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23		Wellington Laboratories, Lot M3PFBS0218		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23		Wellington Laboratories, Lot MPFDA0218		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23		Wellington Laboratories, Lot MPFDoA0218		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23		Wellington Laboratories, Lot MPFHxS0318		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22		Wellington Laboratories, Lot MPFNA1217		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23		Wellington Laboratories, Lot MPFOA0418		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23		Wellington Laboratories, Lot MPFOS0218		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00017	11/22/21		Wellington Laboratories, Lot MPFUdA1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC4:2FtS_00005	100 uL	1H,1H,2H,2H-perfluorohexanesul fonic acid (4:2)	0.467 ug/mL
					LC6:2FtS_00007	100 uL	1H,1H,2H,2H-perfluorooctanesul fonic acid (6:2)	0.474 ug/mL
					LC8:2FtS_00007	100 uL	1H,1H,2H,2H-perfluorodecanesul fonic acid (8:2)	0.479 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
..LC4:2FTS_00005	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	46.7 ug/mL
..LC6:2FTS_00007	04/20/22		WELLINGTON, Lot 62FTS0417		(Purchased Reagent)		1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	47.4 ug/mL
..LC8:2FTS_00007	12/12/21		WELLINGTON, Lot 82FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	47.9 ug/mL
..LCBr-NEtFOSAA_00001	01/17/23		WELLINGTON, Lot brNETFOSAA0118		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCBr-NMeFOSAA_00001	01/17/23		WELLINGTON, Lot brNMeFOSAA0118		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00008	05/29/22		Wellington Laboratories, Lot PFBA0517		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22		Wellington Laboratories, Lot LPFBS0917		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22		Wellington Laboratories, Lot PFDA0517		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDaA_00008	05/29/22		Wellington Laboratories, Lot PFDoA0517		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00008	11/08/22		Wellington Laboratories, Lot LPFDS1117		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00011	09/27/22		Wellington Laboratories, Lot PFHpA0917		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22		Wellington Laboratories, Lot LPFHpS0817		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00010	09/27/22		Wellington Laboratories, Lot PFHxA0917		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA) Perfluorooctanoic acid (PFOA)	50 ug/mL 0.05 ug/mL
..LCPFNS 00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
..LCPFOA 00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00008	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFPeS 00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
..LCPFTeDA_00008	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00008	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL4_00005	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
					13C2 PFUnA	2.5 ng/mL		
					LCPFCSP_00148	400 uL	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	0.934 ng/mL
							1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	0.948 ng/mL
							1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	0.958 ng/mL
		N-ethyl perfluorooctane sulfonamidoacetic acid	1 ng/mL					
		N-methyl perfluorooctane sulfonamidoacetic acid	1 ng/mL					

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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)	1.001 ng/mL
							Perfluorononanesulfonic acid	0.96 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.928 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	1 ng/mL
							Perfluoropentanoic acid (PFPeA)	1 ng/mL
							Perfluoropentanesulfonic acid	0.938 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	1 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	1 ng/mL
							Perfluoroundecanoic acid (PFUnA)	1 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA_00008	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:F2S_00008	200 uL	M2-6:F2S	0.0475 ug/mL
					LCM2-8:F2S_00010	200 uL	M2-8:F2S	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	1802 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUDa_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22		WELLINGTON, Lot d3NMeFOSAA1117		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00008	11/08/22		WELLINGTON, Lot d5NEtFOSAA1117		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FtS_00008	02/16/23		WELLINGTON, Lot M262FtS0218		(Purchased Reagent)		M2-6:2FtS	47.5 ug/mL
..LCM2-8:2FtS_00010	01/24/23		WELLINGTON, Lot M282FtS0118		(Purchased Reagent)		M2-8:2FtS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFtEDA_00014	11/30/22		Wellington Laboratories, Lot M2PFtEDA1117		(Purchased Reagent)		13C2-PFtEDA	50 ug/mL
..LCM4PFHPA_00014	05/03/22		Wellington Laboratories, Lot M4PFHPA0517		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23		Wellington Laboratories, Lot MPFBA0218		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23		Wellington Laboratories, Lot M3PFBS0218		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23		Wellington Laboratories, Lot MPFDA0218		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDa_00015	02/16/23		Wellington Laboratories, Lot MPFDa0218		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23		Wellington Laboratories, Lot MPFHxS0318		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22		Wellington Laboratories, Lot MPFNA1217		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23		Wellington Laboratories, Lot MPFOA0418		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23		Wellington Laboratories, Lot MPFOS0218		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUDa_00017	11/22/21		Wellington Laboratories, Lot MPFUDa1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCS_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC4:2FtS_00005	100 uL	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	0.467 ug/mL
					LC6:2FtS_00007	100 uL	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	0.474 ug/mL
					LC8:2FtS_00007	100 uL	1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	0.479 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpa_00011	100 uL	Perfluoroheptanoic acid (PFHpa)	0.5 ug/mL
					LCPFHpaSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpaS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
..LC4:2FTS_00005	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	46.7 ug/mL
..LC6:2FTS_00007	04/20/22		WELLINGTON, Lot 62FTS0417		(Purchased Reagent)		1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	47.4 ug/mL
..LC8:2FTS_00007	12/12/21		WELLINGTON, Lot 82FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	47.9 ug/mL
..LCbr-NETFOSAA_00001	01/17/23		WELLINGTON, Lot brNETFOSAA0118		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCbr-NMeFOSAA_00001	01/17/23		WELLINGTON, Lot brNMeFOSAA0118		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00008	05/29/22		Wellington Laboratories, Lot PFBA0517		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22		Wellington Laboratories, Lot LPFBS0917		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22		Wellington Laboratories, Lot PFDA0517		(Purchased Reagent)		Perfluorododecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00008	05/29/22		Wellington Laboratories, Lot PFDoA0517		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00008	11/08/22		Wellington Laboratories, Lot LPFDS1117		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpa_00011	09/27/22		Wellington Laboratories, Lot PFHpA0917		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpsA_00003	09/01/22		Wellington Laboratories, Lot LPFHps0817		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHps)	47.6 ug/mL
..LCPFHxA_00010	09/27/22		Wellington Laboratories, Lot PFHxA0917		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxS-br_00006	01/04/22		Wellington Laboratories, Lot brPFHxSK0117		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22		Wellington Laboratories, Lot PFNA0717		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFNS_00003	09/27/22		Wellington Laboratories, Lot LPFNS0917		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.05 ug/mL
..LCPFOA_00011	09/27/22		Wellington Laboratories, Lot PFOA0917		(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
..LCPFOS-br_00007	01/12/22		Wellington Laboratories, Lot brPFOSK0117		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOSA_00013	09/01/22		Wellington Laboratories, Lot FOSA0817I		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
							Perfluorooctane Sulfonamide (FOSA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFPeA_00008	06/14/22		Wellington Laboratories, Lot PFPeA0617		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFPeS_00003	01/11/22		Wellington Laboratories, Lot LPFPeS0117		(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
..LCPFTeDA_00008	09/30/21		Wellington Laboratories, Lot PFTeDA0916		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00008	05/02/22		Wellington Laboratories, Lot PFTrDA0517		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFuDA_00008	10/18/21		Wellington Laboratories, Lot PFUDa1016		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL5_00005	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCMPFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NETFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
					13C4 PFOA	2.5 ng/mL		
					13C4 PFOS	2.39 ng/mL		
					13C2 PFUnA	2.5 ng/mL		
					LCPFCSP_00148	1000 uL	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	2.335 ng/mL
							1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	2.37 ng/mL
							1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	2.395 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	2.5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	2.5 ng/mL
							Perfluorobutanoic acid (PFBA)	2.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	2.21 ng/mL
							Perfluorodecanoic acid (PFDA)	2.5 ng/mL
		Perfluorododecanoic acid (PFDoA)	2.5 ng/mL					
		Perfluorodecanesulfonic acid (PFDS)	2.41 ng/mL					
		Perfluoroheptanoic acid (PFHpA)	2.5 ng/mL					

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanesulfonic Acid (PFHpS)	2.38 ng/mL
							Perfluorohexanoic acid (PFHxA)	2.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	2.275 ng/mL
							Perfluorononanoic acid (PFNA)	2.5 ng/mL
							Perfluorooctanoic acid (PFOA)	2.5025 ng/mL
							Perfluorononanesulfonic acid (PFOS)	2.4 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	2.32 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	2.5 ng/mL
							Perfluoropentanoic acid (PFPeA)	2.5 ng/mL
							Perfluoropentanesulfonic acid (PFTeA)	2.345 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	2.5 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	2.5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	2.5 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA 00008	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:F2TS 00008	200 uL	M2-6:2F2TS	0.0475 ug/mL
					LCM2-8:2F2TS 00010	200 uL	M2-8:2F2TS	0.0479 ug/mL
					LCM2PFHxDA 00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA 00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA 00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA 00014	200 uL	13C4-PFHpA	0.05 ug/mL
					LCM5PFPEA 00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA 00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA 00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS 00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA 00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA 00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA 00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS 00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA 00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA 00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS 00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUdA 00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA 00008	11/08/22		WELLINGTON, Lot d3NMeFOSAA1117		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA 00008	11/08/22		WELLINGTON, Lot d5NETFOSAA1117		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:F2TS 00008	02/16/23		WELLINGTON, Lot M262F2TS0218		(Purchased Reagent)		M2-6:2F2TS	47.5 ug/mL
..LCM2-8:2F2TS 00010	01/24/23		WELLINGTON, Lot M282F2TS0118		(Purchased Reagent)		M2-8:2F2TS	47.9 ug/mL
..LCM2PFHxDA 00016	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA 00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA 00014	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCM4PFHFA 00014	05/03/22		Wellington Laboratories, Lot M4PFHFA0517		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA 00015	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA 00019	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA 00015	02/16/23		Wellington Laboratories, Lot MPFBA0218		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS 00008	02/15/23		Wellington Laboratories, Lot M3PFBS0218		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA 00020	02/16/23		Wellington Laboratories, Lot MPFDA0218		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA 00015	02/16/23		Wellington Laboratories, Lot MPFDoA0218		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA 00022	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS 00015	03/22/23		Wellington Laboratories, Lot MPFHxS0318		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA 00015	12/14/22		Wellington Laboratories, Lot MPFNA1217		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA 00019	05/04/23		Wellington Laboratories, Lot MPFOA0418		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS 00027	02/15/23		Wellington Laboratories, Lot MPFOS0218		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA 00017	11/22/21		Wellington Laboratories, Lot MPFUdA1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC4:2FTS_00005	100 uL	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	0.467 ug/mL
					LC6:2FTS_00007	100 uL	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	0.474 ug/mL
					LC8:2FTS_00007	100 uL	1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	0.479 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCPFBA 00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA 00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA 00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
							Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFNS 00003	100 uL	Perfluorononanesulfonic acid	0.48 ug/mL
					LCPFOA 00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid	0.469 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFTEdA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
..LC4:2FTS_00005	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	46.7 ug/mL
..LC6:2FTS_00007	04/20/22		WELLINGTON, Lot 62FTS0417		(Purchased Reagent)		1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	47.4 ug/mL
..LC8:2FTS_00007	12/12/21		WELLINGTON, Lot 82FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	47.9 ug/mL
..LCbr-NEtFOSAA_00001	01/17/23		WELLINGTON, Lot brNetFOSAA0118		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCbr-NMeFOSAA_00001	01/17/23		WELLINGTON, Lot brNMeFOSAA0118		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00008	05/29/22		Wellington Laboratories, Lot PFBA0517		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22		Wellington Laboratories, Lot LPFBS0917		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22		Wellington Laboratories, Lot PFDA0517		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00008	05/29/22		Wellington Laboratories, Lot PFDoA0517		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00008	11/08/22		Wellington Laboratories, Lot LPFDS1117		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00011	09/27/22		Wellington Laboratories, Lot PFHpA0917		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22		Wellington Laboratories, Lot LPFHpS0817		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00010	09/27/22		Wellington Laboratories, Lot PFHxA0917		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxS-br_00006	01/04/22		Wellington Laboratories, Lot brPFHxSK0117		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22		Wellington Laboratories, Lot PFNA0717		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFNS_00003	09/27/22		Wellington Laboratories, Lot LPFNS0917		(Purchased Reagent)		Perfluorononanesulfonic acid	0.05 ug/mL
..LCPFOA_00011	09/27/22		Wellington Laboratories, Lot PFOA0917		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	48 ug/mL
..LCPFOS-br_00007	01/12/22		Wellington Laboratories, Lot brPFOSK0117		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	50 ug/mL
..LCPFOSA_00013	09/01/22		Wellington Laboratories, Lot FOSA0817I		(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	46.4 ug/mL
..LCPFPeA_00008	06/14/22		Wellington Laboratories, Lot PFPeA0617		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFPeS_00003	01/11/22		Wellington Laboratories, Lot LPFPeS0117		(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
..LCPFTEdA_00008	09/30/21		Wellington Laboratories, Lot PFTeDA0916		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00008	05/02/22		Wellington Laboratories, Lot PFTrDA0517		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUdA_00008	10/18/21		Wellington Laboratories, Lot PFUdA1016		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL6_00006	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCPMFC_ALL_SU_00075	10 mL	d3-NMeFOSAA d5-NEtFOSAA	2.5 ng/mL 2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00148	2 mL	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	4.67 ng/mL
							1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	4.74 ng/mL
							1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	4.79 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							Perfluorobutanoic acid (PFBA)	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid (PFDA)	5 ng/mL
							Perfluorododecanoic acid (PFDoA)	5 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	4.82 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	4.76 ng/mL
							Perfluorohexanoic acid (PFHxA)	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.55 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5.005 ng/mL
							Perfluorononanesulfonic acid	4.8 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.64 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctane Sulfonamide (FOSA)	5 ng/mL
							Perfluoropentanoic acid (PFPeA)	5 ng/mL
							Perfluoropentanesulfonic acid	4.69 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	5 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	5 ng/mL
							Perfluoroundecanoic acid (PFUnA)	5 ng/mL
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA_00008	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:F2S_00008	200 uL	M2-6:2F2S	0.0475 ug/mL
					LCM2-8:2F2S_00010	200 uL	M2-8:2F2S	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpa	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	1802 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL
					LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCMPFUDa_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22		WELLINGTON, Lot d3NMeFOSAA1117		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00008	11/08/22		WELLINGTON, Lot d5NETFOSAA1117		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:F2S_00008	02/16/23		WELLINGTON, Lot M262F2S0218		(Purchased Reagent)		M2-6:2F2S	47.5 ug/mL
..LCM2-8:2F2S_00010	01/24/23		WELLINGTON, Lot M282F2S0118		(Purchased Reagent)		M2-8:2F2S	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216		(Purchased Reagent)		13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117		(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00014	05/03/22		Wellington Laboratories, Lot M4PFHPA0517		(Purchased Reagent)		13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00015	07/20/22		Wellington Laboratories, Lot M5PFPeA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23		Wellington Laboratories, Lot MPFBA0218		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23		Wellington Laboratories, Lot M3PFBS0218		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23		Wellington Laboratories, Lot MPFDA0218		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23		Wellington Laboratories, Lot MPFDoA0218		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23		Wellington Laboratories, Lot MPFHxS0318		(Purchased Reagent)		1802 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22		Wellington Laboratories, Lot MPFNA1217		(Purchased Reagent)		13C5 PFNA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFOA_00019	05/04/23		Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)	13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23		Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)	13C4 PFOS	47.8 ug/mL
..LCMPFudA_00017	11/22/21		Wellington Laboratories, Lot MPFudA1116			(Purchased Reagent)	13C2 PFUnA	50 ug/mL
..LCPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC4:2FTS_00005	100 uL	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	0.467 ug/mL
					LC6:2FTS_00007	100 uL	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	0.474 ug/mL
					LC8:2FTS_00007	100 uL	1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	0.479 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTriDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
..LC4:2FTS_00005	12/12/21		WELLINGTON, Lot 42FTS1216			(Purchased Reagent)	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	46.7 ug/mL
..LC6:2FTS_00007	04/20/22		WELLINGTON, Lot 62FTS0417			(Purchased Reagent)	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	47.4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LC8:2FTS_00007	12/12/21		WELLINGTON, Lot 82FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	47.9 ug/mL
..LCBr-NEtFOSAA_00001	01/17/23		WELLINGTON, Lot brNETFOSAA0118		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCBr-NMeFOSAA_00001	01/17/23		WELLINGTON, Lot brNMeFOSAA0118		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00008	05/29/22		Wellington Laboratories, Lot PFBA0517		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22		Wellington Laboratories, Lot LPFBS0917		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22		Wellington Laboratories, Lot PFDA0517		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00008	05/29/22		Wellington Laboratories, Lot PFDoA0517		(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00008	11/08/22		Wellington Laboratories, Lot LPFDS1117		(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00011	09/27/22		Wellington Laboratories, Lot PFHpA0917		(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22		Wellington Laboratories, Lot LPFHpS0817		(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00010	09/27/22		Wellington Laboratories, Lot PFHxA0917		(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxS-br_00006	01/04/22		Wellington Laboratories, Lot brPFHxSK0117		(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22		Wellington Laboratories, Lot PFNA0717		(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFNS_00003	09/27/22		Wellington Laboratories, Lot LPFNS0917		(Purchased Reagent)		Perfluorononanesulfonic acid	0.05 ug/mL
..LCPFOA_00011	09/27/22		Wellington Laboratories, Lot PFOA0917		(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00007	01/12/22		Wellington Laboratories, Lot brPFOSK0117		(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00013	09/01/22		Wellington Laboratories, Lot FOSA0817I		(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00008	06/14/22		Wellington Laboratories, Lot PFPeA0617		(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFPeS_00003	01/11/22		Wellington Laboratories, Lot LPFPeS0117		(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
..LCPFTEdA_00008	09/30/21		Wellington Laboratories, Lot PFTeDA0916		(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00008	05/02/22		Wellington Laboratories, Lot PFTTrDA0517		(Purchased Reagent)		Perfluorotridecanoic Acid (PFTria)	50 ug/mL
..LCPFUDA_00008	10/18/21		Wellington Laboratories, Lot PFUDA1016		(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFC_LL7_00005	11/18/18	06/05/18	MeOH/H2O, Lot 090285	200 mL	LCPMFC_ALL_SU_00075	10 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NEtFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFOA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL
							13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
					LCPFCSP_00148	4 mL	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	9.34 ng/mL
							1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	9.48 ng/mL
							1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	9.58 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	10 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	10 ng/mL
							Perfluorobutanoic acid (PFBA)	10 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	8.84 ng/mL
							Perfluorodecanoic acid (PFDA)	10 ng/mL
							Perfluorododecanoic acid (PFDoA)	10 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	9.64 ng/mL
							Perfluoroheptanoic acid (PFHpA)	10 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	9.52 ng/mL
							Perfluorohexanoic acid (PFHxA)	10 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	9.1 ng/mL
							Perfluorononanoic acid (PFNA)	10 ng/mL
							Perfluorooctanoic acid (PFOA)	10.01 ng/mL
							Perfluorononanesulfonic acid	9.6 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	9.28 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	10 ng/mL
							Perfluoropentanoic acid (PFPeA)	10 ng/mL
							Perfluoropentanesulfonic acid	9.38 ng/mL
							Perfluorotetradecanoic acid (PFTeA)	10 ng/mL
							Perfluorotridecanoic Acid (PFTriA)	10 ng/mL
							Perfluoroundecanoic acid (PFUnA)	10 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA_00008	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:F2S_00008	200 uL	M2-6:2F2S	0.0475 ug/mL
					LCM2-8:2F2S_00010	200 uL	M2-8:2F2S	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpa	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL					
LCMPFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL					
LCMPFUdA_00017	200 uL	13C2 PFUnA	0.05 ug/mL					
..LCd3-NMeFOSAA_00008	11/08/22		WELLINGTON, Lot d3NMeFOSAA1117			(Purchased Reagent)	d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00008	11/08/22		WELLINGTON, Lot d5NETFOSAA1117			(Purchased Reagent)	d5-NETFOSAA	50 ug/mL
..LCM2-6:F2S_00008	02/16/23		WELLINGTON, Lot M262F2S0218			(Purchased Reagent)	M2-6:2F2S	47.5 ug/mL
..LCM2-8:2F2S_00010	01/24/23		WELLINGTON, Lot M282F2S0118			(Purchased Reagent)	M2-8:2F2S	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717			(Purchased Reagent)	13C2-PFHxDA	50 ug/mL
..LCM2PFOA_00008	02/12/21		Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)	13C2-PFOA	50 ug/mL
..LCM2PFTeDA_00014	11/30/22		Wellington Laboratories, Lot M2PFTeDA1117			(Purchased Reagent)	13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00014	05/03/22		Wellington Laboratories, Lot M4PFHPA0517			(Purchased Reagent)	13C4-PFHpa	50 ug/mL
..LCM5PFPEA_00015	07/20/22		Wellington Laboratories, Lot M5PFPeA0717			(Purchased Reagent)	13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22		Wellington Laboratories, Lot M8FOSA1017I			(Purchased Reagent)	13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23		Wellington Laboratories, Lot MPFBA0218			(Purchased Reagent)	13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23		Wellington Laboratories, Lot M3PFBS0218			(Purchased Reagent)	13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23		Wellington Laboratories, Lot MPFDA0218			(Purchased Reagent)	13C2 PFDA	50 ug/mL
..LCMPFDoA_00015	02/16/23		Wellington Laboratories, Lot MPFDoA0218			(Purchased Reagent)	13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22		Wellington Laboratories, Lot MPFHxA1017			(Purchased Reagent)	13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23		Wellington Laboratories, Lot MPFHxS0318			(Purchased Reagent)	18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22		Wellington Laboratories, Lot MPFNA1217			(Purchased Reagent)	13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23		Wellington Laboratories, Lot MPFOA0418			(Purchased Reagent)	13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23		Wellington Laboratories, Lot MPFOS0218			(Purchased Reagent)	13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00017	11/22/21		Wellington Laboratories, Lot MPFUdA1116			(Purchased Reagent)	13C2 PFUnA	50 ug/mL
..LCMPFCSP_00148	11/18/18	05/17/18	Methanol, Lot 090285	10 mL	LC4:2F2S_00005	100 uL	1H,1H,2H,2H-perfluorohexanesul fonic acid (4:2)	0.467 ug/mL
					LC6:2F2S_00007	100 uL	1H,1H,2H,2H-perfluorooctanesul fonic acid (6:2)	0.474 ug/mL
					LC8:2F2S_00007	100 uL	1H,1H,2H,2H-perfluorodecanesul fonic acid (8:2)	0.479 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCbr-NETFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.5 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.5 ug/mL
					LCPFDoA_00008	100 uL	Perfluorododecanoic acid (PFDoA)	0.5 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.482 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.5 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.476 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.5 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.455 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.5 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid	0.48 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.5005 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.464 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.5 ug/mL
					LCPFPeA_00008	100 uL	Perfluoropentanoic acid (PFPeA)	0.5 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid	0.469 ug/mL
					LCPFTeDA_00008	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.5 ug/mL
					LCPFTrDA_00008	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.5 ug/mL
					LCPFUDa_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.5 ug/mL
..LC4:2FTS_00005	12/12/21		WELLINGTON, Lot 42FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	46.7 ug/mL
..LC6:2FTS_00007	04/20/22		WELLINGTON, Lot 62FTS0417		(Purchased Reagent)		1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	47.4 ug/mL
..LC8:2FTS_00007	12/12/21		WELLINGTON, Lot 82FTS1216		(Purchased Reagent)		1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	47.9 ug/mL
..LCbr-NETFOSAA_00001	01/17/23		WELLINGTON, Lot brNETFOSAA0118		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCbr-NMeFOSAA_00001	01/17/23		WELLINGTON, Lot brNMeFOSAA0118		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCPFBA_00008	05/29/22		Wellington Laboratories, Lot PFBA0517		(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22		Wellington Laboratories, Lot LPFBS0917		(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22		Wellington Laboratories, Lot PFDA0517		(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFDoA_00008	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpa_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHps0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHps)	47.6 ug/mL
..LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFNS_00003	09/27/22	Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	0.05 ug/mL
..LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorononanesulfonic acid	48 ug/mL
..LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFPeA_00008	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeS_00003	01/11/22	Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00008	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluoropentanesulfonic acid	46.9 ug/mL
..LCPFTrDA_00008	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFUdA_00008	10/18/21	Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
LCPFCIC_FULL_00012	12/05/18	07/05/18	MeOH/H2O, Lot 09285	10 mL	LCMPFC_ALL_SU_00075	0.5 mL	13C2-PFOA	2.5 ng/mL
..LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCM2PFOA_00008	200 uL	13C2-PFOA	0.05 ug/mL
..LCM2PFOA_00008	02/12/21	Wellington Laboratories, Lot M2PFOA0216			(Purchased Reagent)		13C2-PFOA	50 ug/mL
LCPFCIC_FULL_00012	12/05/18	07/05/18	MeOH/H2O, Lot 09285	10 mL	LCMPFC_ALL_SU_00075	0.5 mL	d3-NMeFOSAA	2.5 ng/mL
							d5-NETFOSAA	2.5 ng/mL
							M2-6:2FTS	2.375 ng/mL
							M2-8:2FTS	2.395 ng/mL
							13C2-PFHxDA	2.5 ng/mL
							13C2-PFTeDA	2.5 ng/mL
							13C4-PFHpA	2.5 ng/mL
							13C5 PFPeA	2.5 ng/mL
							13C8 FOSA	2.5 ng/mL
							13C4 PFBA	2.5 ng/mL
							13C3-PFBS	2.325 ng/mL
							13C2 PFDA	2.5 ng/mL
							13C2 PFDoA	2.5 ng/mL
							13C2 PFHxA	2.5 ng/mL
							18O2 PFHxS	2.365 ng/mL
							13C5 PFNA	2.5 ng/mL
							13C4 PFOA	2.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFCS_00155	1.25 mL	13C4 PFOS	2.39 ng/mL
							13C2 PFUnA	2.5 ng/mL
							Perfluorobutanoic acid (PFBA)	2.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	2.21 ng/mL
							Perfluorodecanoic acid (PFDA)	2.5 ng/mL
							Perfluorododecanoic acid (PFDoA)	2.5 ng/mL
							Perfluorodecanesulfonic acid (PFDS)	2.41 ng/mL
							Perfluoroheptanoic acid (PFHpA)	2.5 ng/mL
							Perfluoroheptanesulfonic Acid (PFHpS)	2.38 ng/mL
							Perfluorohexanoic acid (PFHxA)	2.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	2.275 ng/mL
							Perfluorononanoic acid (PFNA)	2.5 ng/mL
							Perfluorooctanoic acid (PFOA)	2.5025 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	2.32 ng/mL
							Perfluorooctane Sulfonamide (FOSA)	2.5 ng/mL
							Perfluoropentanoic acid (PFPeA)	2.5 ng/mL
Perfluorotetradecanoic acid (PFTeA)	2.5 ng/mL							
Perfluorotridecanoic Acid (PFTriA)	2.5 ng/mL							
Perfluoroundecanoic acid (PFUnA)	2.5 ng/mL							
.LCMPFC_ALL_SU_00075	12/05/18	06/05/18	Methanol, Lot Baker 141039	200 mL	LCd3-NMeFOSAA_00008	200 uL	d3-NMeFOSAA	0.05 ug/mL
					LCd5-NETFOSAA_00008	200 uL	d5-NETFOSAA	0.05 ug/mL
					LCM2-6:FTS_00008	200 uL	M2-6:2FTS	0.0475 ug/mL
					LCM2-8:2FTS_00010	200 uL	M2-8:2FTS	0.0479 ug/mL
					LCM2PFHxDA_00016	200 uL	13C2-PFHxDA	0.05 ug/mL
					LCM2PFTeDA_00014	200 uL	13C2-PFTeDA	0.05 ug/mL
					LCM4PFHPA_00014	200 uL	13C4-PFHpa	0.05 ug/mL
					LCM5PFPEA_00015	200 uL	13C5 PFPeA	0.05 ug/mL
					LCM8FOSA_00019	200 uL	13C8 FOSA	0.05 ug/mL
					LCMPFBA_00015	200 uL	13C4 PFBA	0.05 ug/mL
					LCMPFBS_00008	200 uL	13C3-PFBS	0.0465 ug/mL
					LCMPFDA_00020	200 uL	13C2 PFDA	0.05 ug/mL
					LCMPFDoA_00015	200 uL	13C2 PFDoA	0.05 ug/mL
					LCMPFHxA_00022	200 uL	13C2 PFHxA	0.05 ug/mL
					LCMPFHxS_00015	200 uL	18O2 PFHxS	0.0473 ug/mL
					LCMPFNA_00015	200 uL	13C5 PFNA	0.05 ug/mL
					LCMPFOA_00019	200 uL	13C4 PFOA	0.05 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPMFOS_00027	200 uL	13C4 PFOS	0.0478 ug/mL
					LCPMPFudA_00017	200 uL	13C2 PFUnA	0.05 ug/mL
..LCd3-NMeFOSAA_00008	11/08/22		WELLINGTON, Lot d3NMeFOSAA1117		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NETFOSAA_00008	11/08/22		WELLINGTON, Lot d5NETFOSAA1117		(Purchased Reagent)		d5-NETFOSAA	50 ug/mL
..LCM2-6:FtS_00008	02/16/23		WELLINGTON, Lot M262FtS0218		(Purchased Reagent)		M2-6:FtS	47.5 ug/mL
..LCM2-8:2FtS_00010	01/24/23		WELLINGTON, Lot M282FtS0118		(Purchased Reagent)		M2-8:2FtS	47.9 ug/mL
..LCM2PFHxDA_00016	07/13/22		Wellington Laboratories, Lot M2PFHxDA0717		(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTEdA_00014	11/30/22		Wellington Laboratories, Lot M2PFTEdA1117		(Purchased Reagent)		13C2-PFTEdA	50 ug/mL
..LCM4PFHPA_00014	05/03/22		Wellington Laboratories, Lot M4PFHPA0517		(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00015	07/20/22		Wellington Laboratories, Lot M5PFPEA0717		(Purchased Reagent)		13C5 PFPeA	50 ug/mL
..LCM8FOSA_00019	10/11/22		Wellington Laboratories, Lot M8FOSA1017I		(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00015	02/16/23		Wellington Laboratories, Lot MPFBA0218		(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFBS_00008	02/15/23		Wellington Laboratories, Lot M3PFBS0218		(Purchased Reagent)		13C3-PFBS	46.5 ug/mL
..LCMPFDA_00020	02/16/23		Wellington Laboratories, Lot MPFDA0218		(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDaA_00015	02/16/23		Wellington Laboratories, Lot MPFDaA0218		(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00022	10/27/22		Wellington Laboratories, Lot MPFHxA1017		(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00015	03/22/23		Wellington Laboratories, Lot MPFHxS0318		(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00015	12/14/22		Wellington Laboratories, Lot MPFNA1217		(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00019	05/04/23		Wellington Laboratories, Lot MPFOA0418		(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00027	02/15/23		Wellington Laboratories, Lot MPFOS0218		(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFudA_00017	11/22/21		Wellington Laboratories, Lot MPFudA1116		(Purchased Reagent)		13C2 PFUnA	50 ug/mL
..LCPFCSP_00155	12/17/18	06/17/18	Methanol, Lot 180632	250 mL	LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.02 ug/mL
					LCPFBS_00009	100 uL	Perfluorobutanesulfonic acid (PFBS)	0.01768 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.02 ug/mL
					LCPFDaA_00010	100 uL	Perfluorododecanoic acid (PFDoA)	0.02 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.01928 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.02 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.01904 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.02 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexanesulfonic acid (PFHxS)	0.0182 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.02 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.02002 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.01856 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.02 ug/mL
					LCPFPeA_00010	100 uL	Perfluoropentanoic acid (PFPeA)	0.02 ug/mL
					LCPFTeDA_00009	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.02 ug/mL
					LCPFTTrDA_00009	100 uL	Perfluorotridecanoic Acid (PFTTriA)	0.02 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFUDa_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.02 ug/mL
..LCPFBA_00008	05/29/22	Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)		Perfluorobutanoic acid (PFBA)	50 ug/mL
..LCPFBS_00009	09/21/22	Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00008	05/29/22	Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)		Perfluorodecanoic acid (PFDA)	50 ug/mL
..LCPFDoA_00010	05/29/22	Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)		Perfluorododecanoic acid (PFDoA)	50 ug/mL
..LCPFDS_00008	11/08/22	Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)		Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
..LCPFHpA_00011	09/27/22	Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpSA_00003	09/01/22	Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)		Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
..LCPFHxA_00010	09/27/22	Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)		Perfluorohexanoic acid (PFHxA)	50 ug/mL
..LCPFHxS-br_00006	01/04/22	Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00010	07/20/22	Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00011	09/27/22	Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFOS-br_00007	01/12/22	Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00013	09/01/22	Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)		Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
..LCPFPeA_00010	06/14/22	Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)		Perfluoropentanoic acid (PFPeA)	50 ug/mL
..LCPFTeDA_00009	09/30/21	Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)		Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
..LCPFTrDA_00009	05/02/22	Wellington Laboratories, Lot PFTrDA0517			(Purchased Reagent)		Perfluorotridecanoic Acid (PFTriA)	50 ug/mL
..LCPFUDa_00008	10/18/21	Wellington Laboratories, Lot PFUDa1016			(Purchased Reagent)		Perfluoroundecanoic acid (PFUnA)	50 ug/mL
LCPFCS_00155	12/17/18	06/17/18	Methanol, Lot 180632	250 mL	LC11CIPF30Uds_00002	100 uL	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	0.01884 ug/mL
					LC4:2FTS_00005	100 uL	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	0.01868 ug/mL
					LC6:2FTS_00007	100 uL	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	0.01896 ug/mL
					LC8:2FTS_00007	100 uL	1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	0.01916 ug/mL
					LC9CI-PF3ONS_00002	100 uL	9-Chlorohexadecafluoro-3-oxonane-1-sulfonate	0.01864 ug/mL
					LCbr-NEtFOSAA_00001	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCbr-NMeFOSAA_00001	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.02 ug/mL
					LCDONA_00002	100 uL	ADONA	0.02 ug/mL
					LCHFPO-DA_00002	100 uL	Perfluoro(2-propoxypropanoic) acid	0.02 ug/mL
					LCPFBA_00008	100 uL	Perfluorobutanoic acid (PFBA)	0.02 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFBFS_00009	100 uL	Perfluorobutane Sulfonate	0.01768 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.01768 ug/mL
					LCPFDA_00008	100 uL	Perfluorodecanoic acid (PFDA)	0.02 ug/mL
					LCPFDoA_00010	100 uL	Perfluorododecanoic acid (PFDoA)	0.02 ug/mL
					LCPFDS_00008	100 uL	Perfluorodecanesulfonic acid (PFDS)	0.01928 ug/mL
					LCPFHpA_00011	100 uL	Perfluoroheptanoic acid (PFHpA)	0.02 ug/mL
					LCPFHpSA_00003	100 uL	Perfluoroheptanesulfonic Acid (PFHpS)	0.01904 ug/mL
					LCPFHxA_00010	100 uL	Perfluorohexanoic acid (PFHxA)	0.02 ug/mL
					LCPFHxDA_00010	100 uL	Perfluorohexadecanoic acid	0.02 ug/mL
					LCPFHxS-br_00006	100 uL	Perfluorohexane Sulfonate	0.0182 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.0182 ug/mL
					LCPFNA_00010	100 uL	Perfluorononanoic acid (PFNA)	0.02 ug/mL
							Perfluorooctanoic acid (PFOA)	0.02002 ug/mL
					LCPFNS_00003	100 uL	Perfluorononanesulfonic acid	0.0192 ug/mL
					LCPFOA_00011	100 uL	Perfluorooctanoic acid (PFOA)	0.02002 ug/mL
					LCPFODA_00010	100 uL	Perfluorooctadecanoic acid	0.02 ug/mL
					LCPFOS-br_00007	100 uL	Perfluorooctanesulfonic acid (PFOS)	0.01856 ug/mL
					LCPFOSA_00013	100 uL	Perfluorooctane Sulfonamide (FOSA)	0.02 ug/mL
					LCPFPeA_00010	100 uL	Perfluoropentanoic acid (FPeA)	0.02 ug/mL
					LCPFPeS_00003	100 uL	Perfluoropentanesulfonic acid	0.01876 ug/mL
LCPFTeDA_00009	100 uL	Perfluorotetradecanoic acid (PFTeA)	0.02 ug/mL					
LCPFTTrDA_00009	100 uL	Perfluorotridecanoic Acid (PFTriA)	0.02 ug/mL					
LCPFUdA_00008	100 uL	Perfluoroundecanoic acid (PFUnA)	0.02 ug/mL					
.LC11CIPF3OUdS_00002	09/30/21	Wellington Labs, Lot 11CIPF3OUdS0916	(Purchased Reagent)	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonate	47.1 ug/mL			
.LC4:2FTS_00005	12/12/21	WELLINGTON, Lot 42FTS1216	(Purchased Reagent)	1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)	46.7 ug/mL			
.LC6:2FTS_00007	04/20/22	WELLINGTON, Lot 62FTS0417	(Purchased Reagent)	1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)	47.4 ug/mL			
.LC8:2FTS_00007	12/12/21	WELLINGTON, Lot 82FTS1216	(Purchased Reagent)	1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)	47.9 ug/mL			
.LC9CI-PF3ONS_00002	09/30/21	Wellington Labs, Lot 9CIPF3ONS0916	(Purchased Reagent)	9-Chlorohexadecafluoro-3-oxanone-1-sulfonate	46.6 ug/mL			
.LCbr-NETFOSAA_00001	01/17/23	WELLINGTON, Lot brNETFOSAA0118	(Purchased Reagent)	N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL			
.LCbr-NMeFOSAA_00001	01/17/23	WELLINGTON, Lot brNMeFOSAA0118	(Purchased Reagent)	N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL			
.LCDONA_00002	03/26/23	WELLINGTON, Lot NADONA0318	(Purchased Reagent)	ADONA	50 ug/mL			

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCHFPO-DA_00002	03/26/21		WELLINGTON, Lot HFPODA0318			(Purchased Reagent)	Perfluoro(2-propoxypropanoic) acid	50 ug/mL
.LCPFBA 00008	05/29/22		Wellington Laboratories, Lot PFBA0517			(Purchased Reagent)	Perfluorobutanoic acid (PFBA)	50 ug/mL
.LCPFBS_00009	09/21/22		Wellington Laboratories, Lot LPFBS0917			(Purchased Reagent)	Perfluorobutane Sulfonate	44.2 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA 00008	05/29/22		Wellington Laboratories, Lot PFDA0517			(Purchased Reagent)	Perfluorodecanoic acid (PFDA)	50 ug/mL
.LCPFDoA_00010	05/29/22		Wellington Laboratories, Lot PFDoA0517			(Purchased Reagent)	Perfluorododecanoic acid (PFDoA)	50 ug/mL
.LCPFDS_00008	11/08/22		Wellington Laboratories, Lot LPFDS1117			(Purchased Reagent)	Perfluorodecanesulfonic acid (PFDS)	48.2 ug/mL
.LCPFHpA_00011	09/27/22		Wellington Laboratories, Lot PFHpA0917			(Purchased Reagent)	Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpSA_00003	09/01/22		Wellington Laboratories, Lot LPFHpS0817			(Purchased Reagent)	Perfluoroheptanesulfonic Acid (PFHpS)	47.6 ug/mL
.LCPFHxA_00010	09/27/22		Wellington Laboratories, Lot PFHxA0917			(Purchased Reagent)	Perfluorohexanoic acid (PFHxA)	50 ug/mL
.LCPFHxDA_00010	07/13/22		Wellington Laboratories, Lot PFHxDA0717			(Purchased Reagent)	Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00006	01/04/22		Wellington Laboratories, Lot brPFHxSK0117			(Purchased Reagent)	Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00010	07/20/22		Wellington Laboratories, Lot PFNA0717			(Purchased Reagent)	Perfluorononanoic acid (PFNA)	50 ug/mL
							Perfluorooctanoic acid (PFOA)	0.05 ug/mL
.LCPFNS 00003	09/27/22		Wellington Laboratories, Lot LPFNS0917			(Purchased Reagent)	Perfluorononanesulfonic acid	48 ug/mL
.LCPFOA 00011	09/27/22		Wellington Laboratories, Lot PFOA0917			(Purchased Reagent)	Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA 00010	07/13/22		Wellington Laboratories, Lot PFODA0717			(Purchased Reagent)	Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS-br_00007	01/12/22		Wellington Laboratories, Lot brPFOSK0117			(Purchased Reagent)	Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA_00013	09/01/22		Wellington Laboratories, Lot FOSA0817I			(Purchased Reagent)	Perfluorooctane Sulfonamide (FOSA)	50 ug/mL
.LCPFPeA_00010	06/14/22		Wellington Laboratories, Lot PFPeA0617			(Purchased Reagent)	Perfluoropentanoic acid (PFPeA)	50 ug/mL
.LCPFPeS 00003	01/11/22		Wellington Laboratories, Lot LPFPeS0117			(Purchased Reagent)	Perfluoropentanesulfonic acid	46.9 ug/mL
.LCPFTeDA_00009	09/30/21		Wellington Laboratories, Lot PFTeDA0916			(Purchased Reagent)	Perfluorotetradecanoic acid (PFTeA)	50 ug/mL
.LCPFTrDA_00009	05/02/22		Wellington Laboratories, Lot PFTTrDA0517			(Purchased Reagent)	Perfluorotridecanoic Acid (PFTTriA)	50 ug/mL
.LCPFUdA_00008	10/18/21		Wellington Laboratories, Lot PFUdA1016			(Purchased Reagent)	Perfluoroundecanoic acid (PFUdA)	50 ug/mL

Reagent

LC11CIPF30Uds_00002

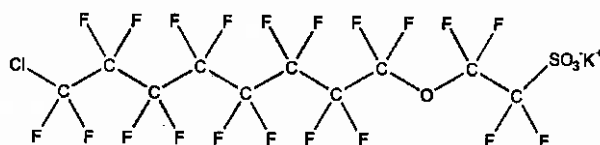


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 11CI-PF3OUdS **LOT NUMBER:** 11CIPF3OUdS0916
COMPOUND: Potassium 11-chloroeicosafluoro-3-oxaundecane-1-sulfonate

STRUCTURE: **CAS #:** 83329-89-9



MOLECULAR FORMULA: C₁₀F₂₀ClSO₄K **MOLECULAR WEIGHT:** 670.69
CONCENTRATION: 50.0 ± 2.5 µg/ml (K Salt) **SOLVENT(S):** Methanol
 47.1 ± 2.4 µg/ml (11CI-PF3OUdS anion)
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.
- This compound is a minor component of the commercial formulation known as F-53B.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date: 10/19/2016
(mm/dd/yyyy)

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

INTENDED USE:

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.

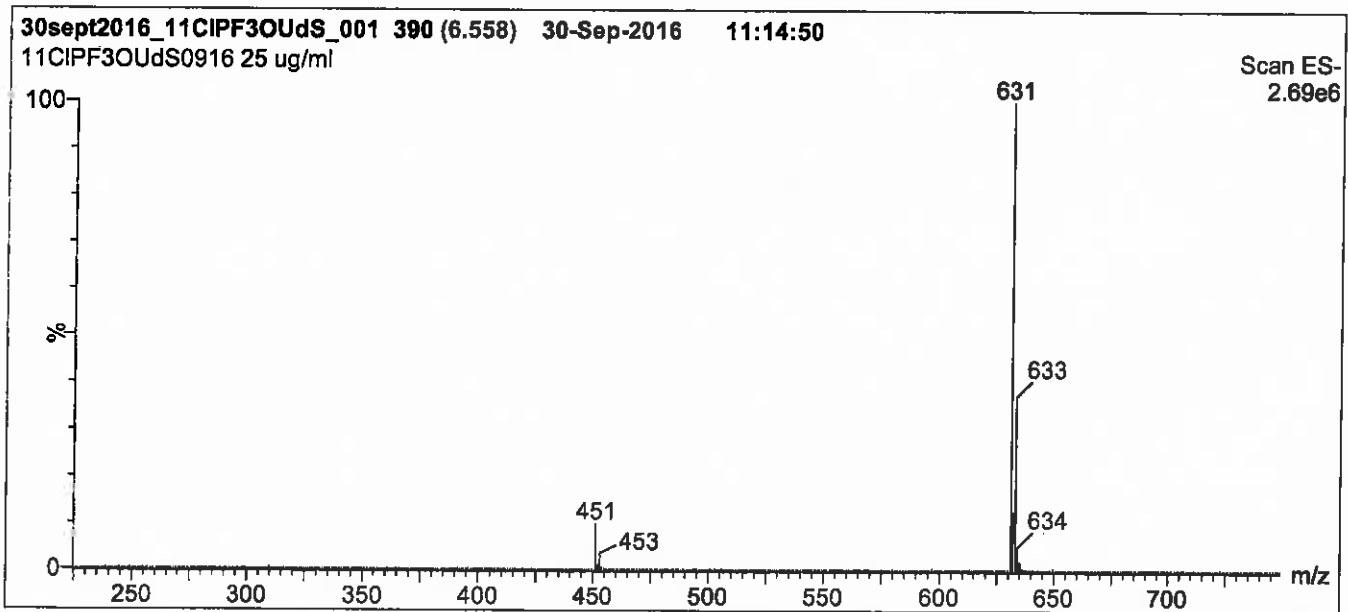
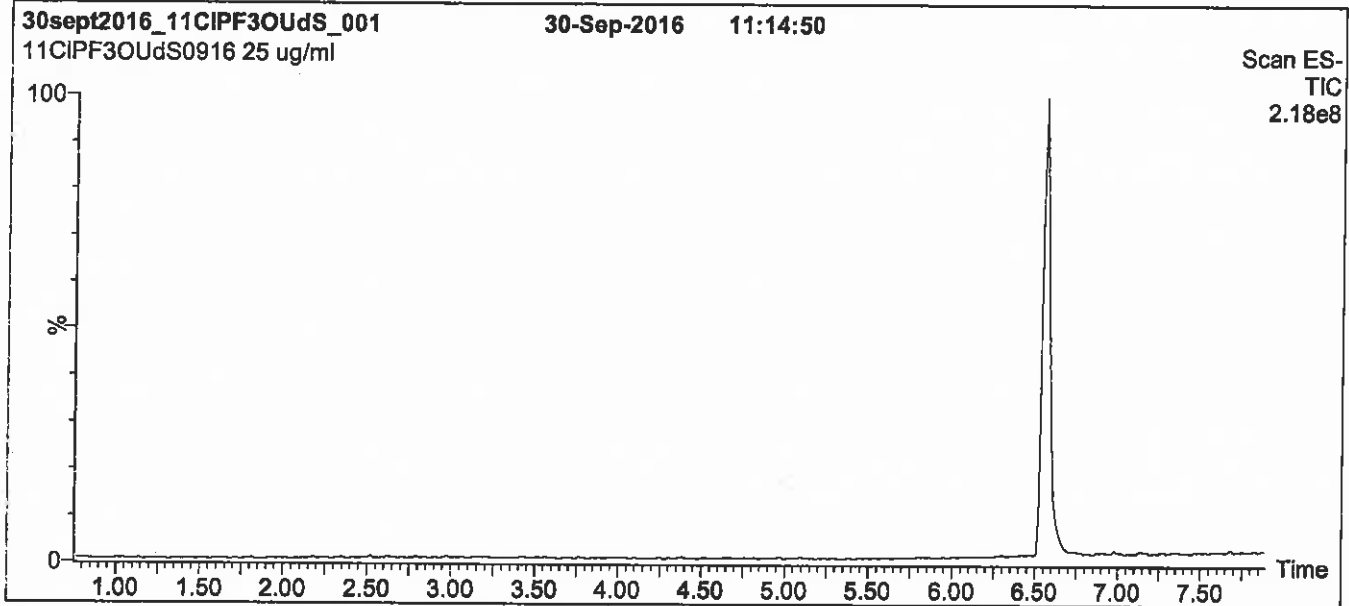
QUALITY MANAGEMENT:

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: 11CI-PF3OUdS; 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

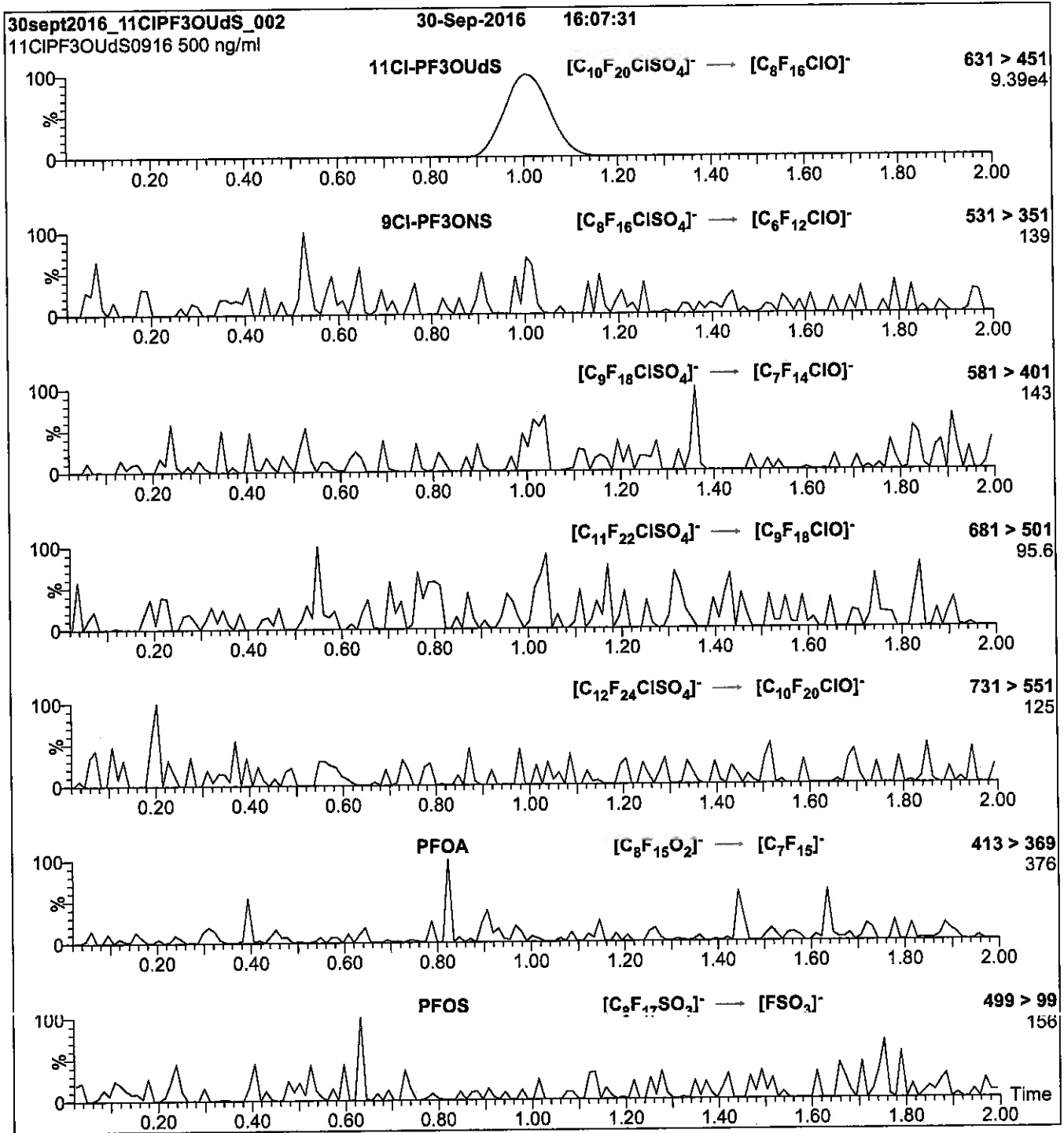
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 45.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: 11Cl-PF3OUdS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml 11Cl-PF3OUdS)

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 20

Reagent

LC4 : 2FTS_00005

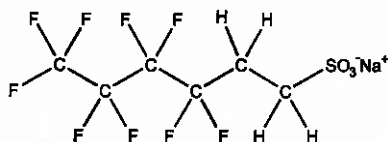


**WELLINGTON
LABORATORIES**

**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: C₆H₄F₉SO₃Na **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:

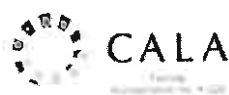
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

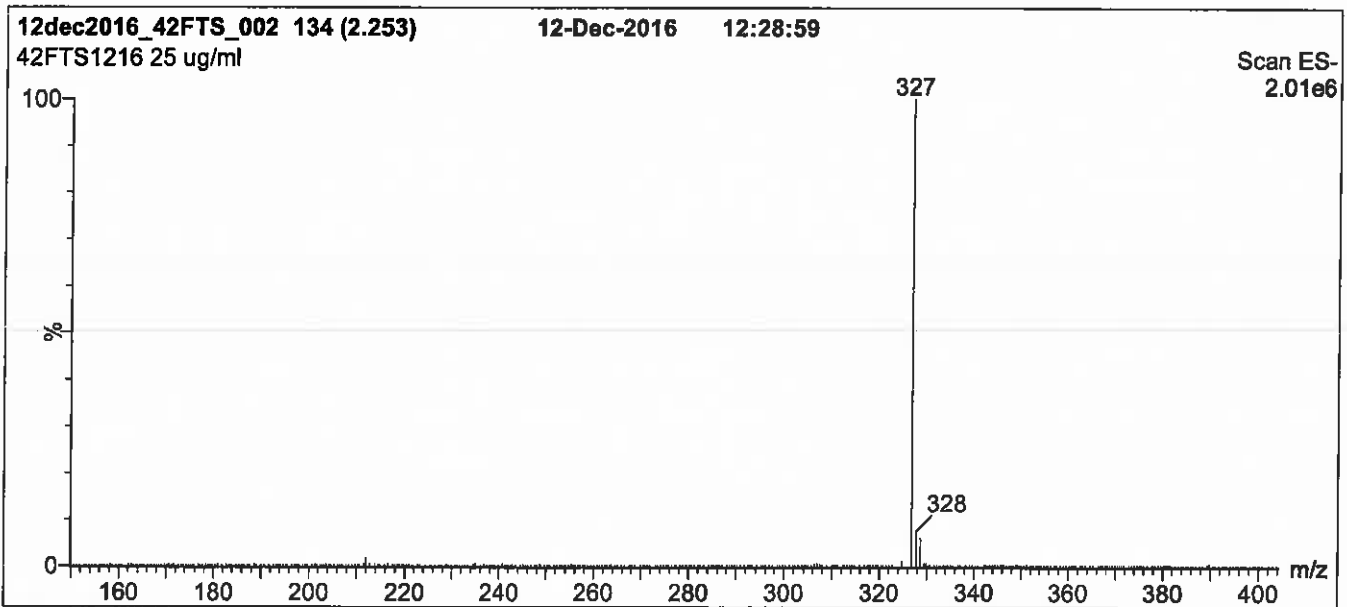
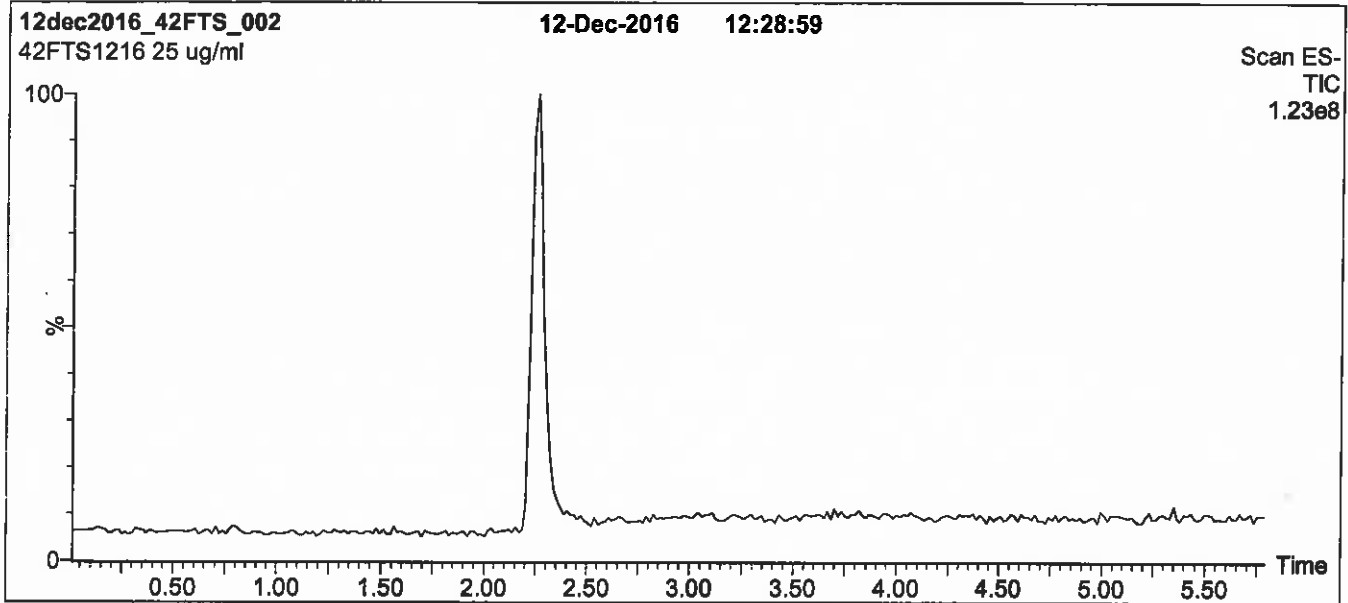
QUALITY MANAGEMENT:

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

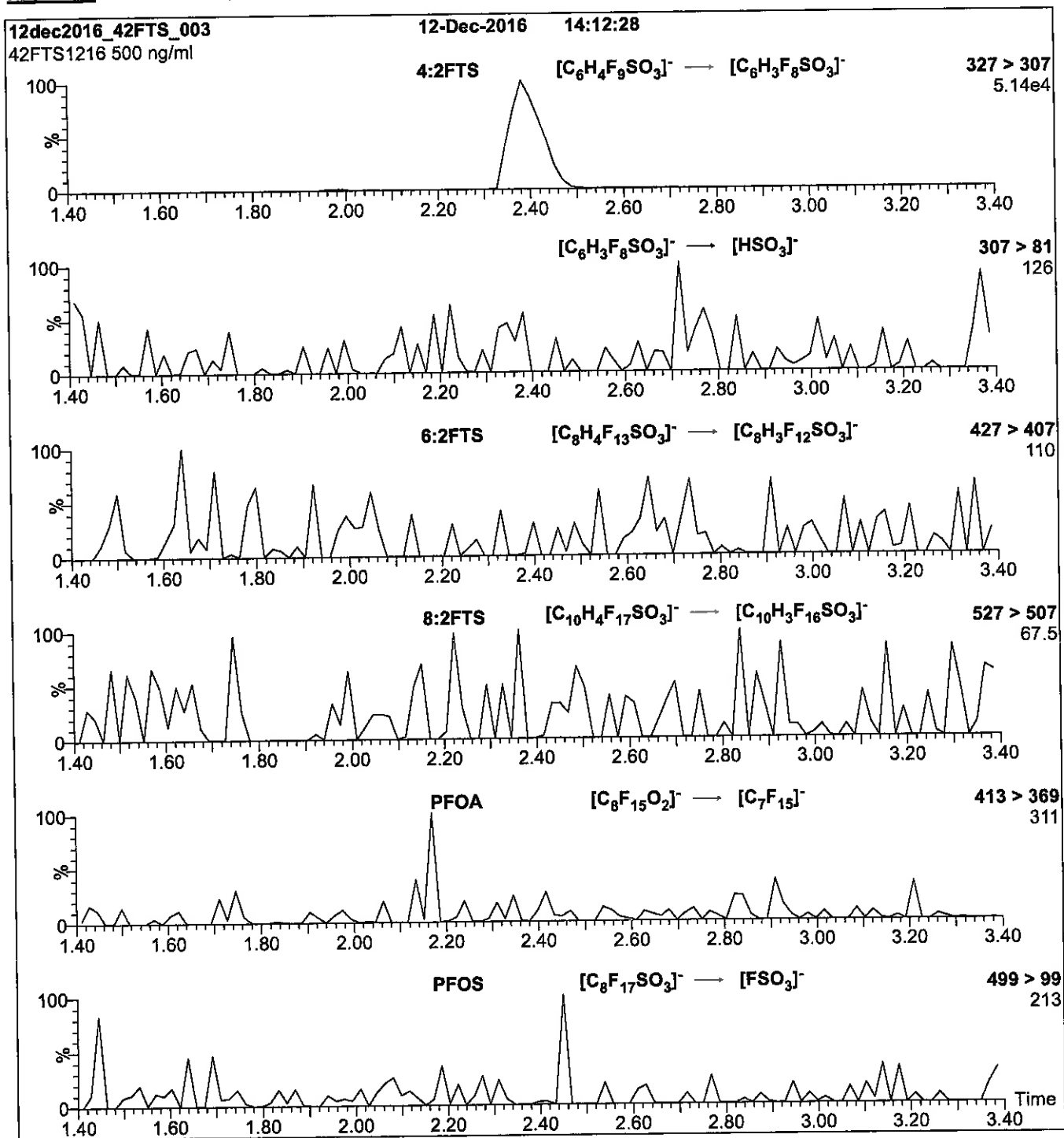
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

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

LC6:2FTS_00007

r: 9/20/17 SW

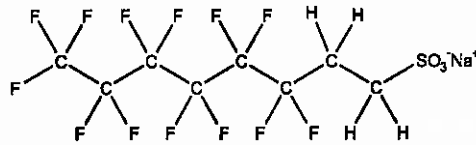


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0417
COMPOUND: Sodium 1H,1H,2H,2H-perfluorooctane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₈H₄F₁₃SO₃Na **MOLECULAR WEIGHT:** 450.15
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.4 ± 2.4 µg/ml (6:2FTS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 04/20/2017
EXPIRY DATE: (mm/dd/yyyy) 04/20/2022
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager **Date:** 04/24/2017
(mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

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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:

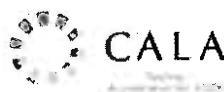
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

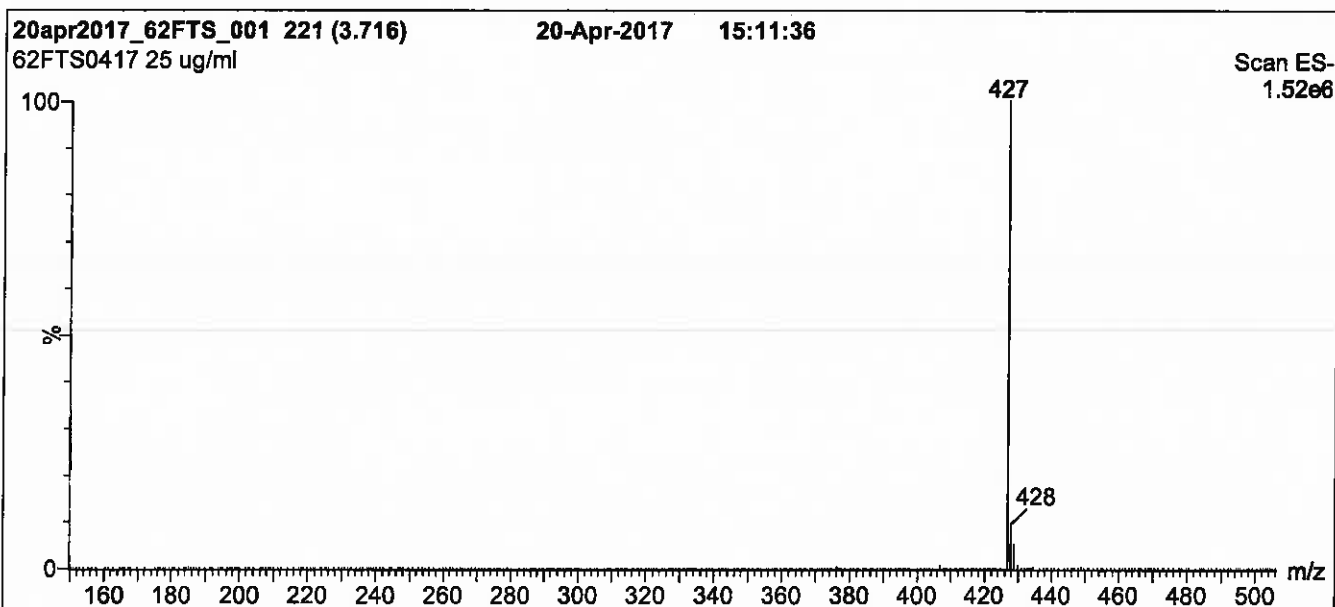
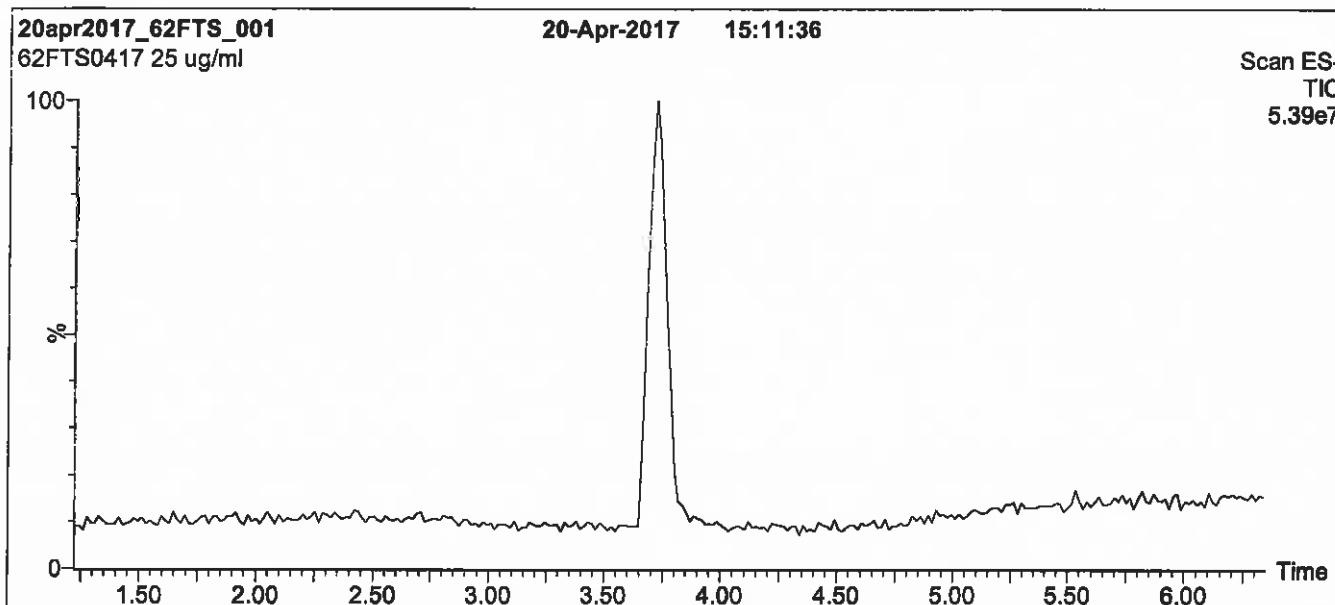
QUALITY MANAGEMENT:

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

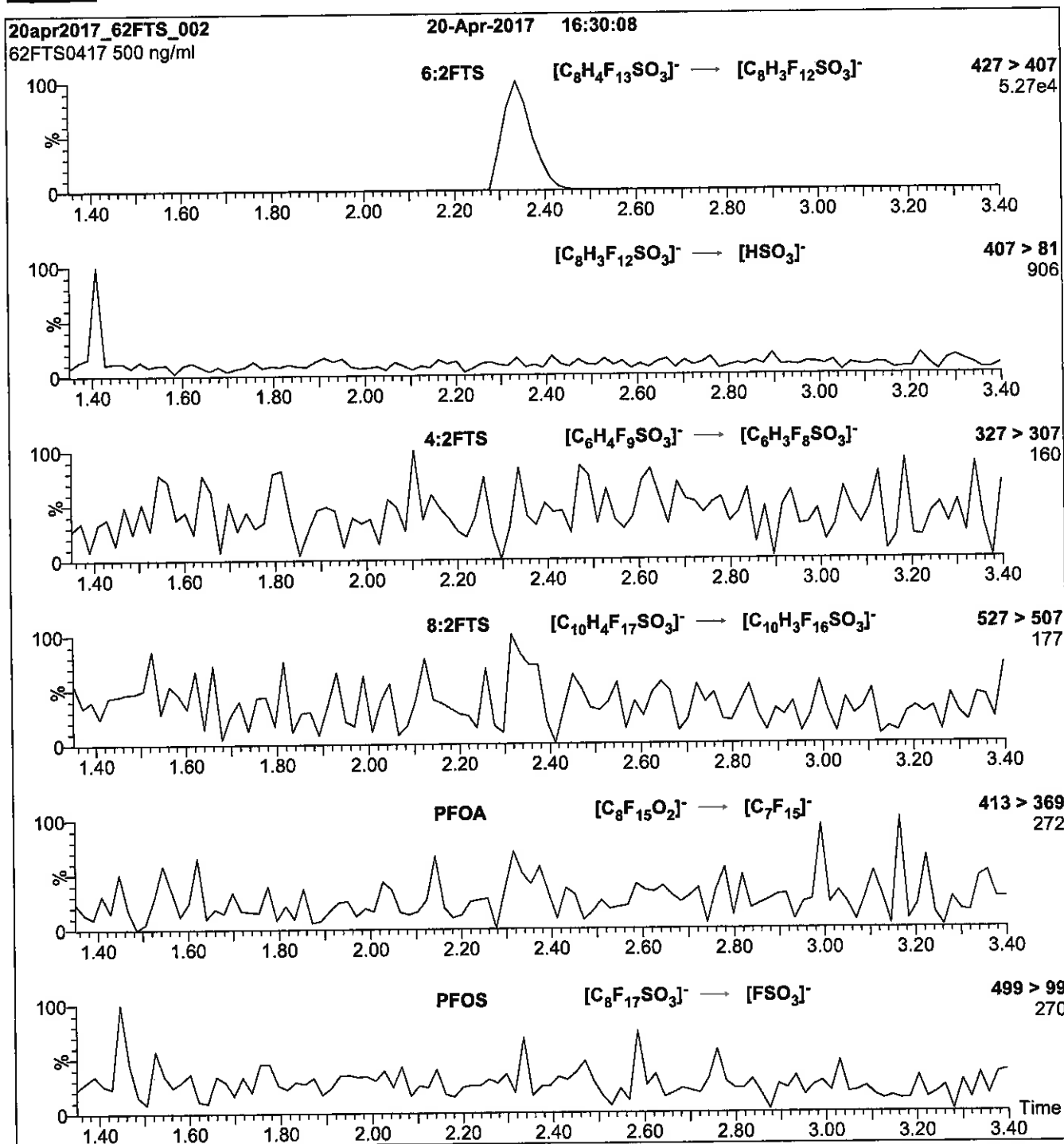
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 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% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
 Collision Energy (eV) = 25

Reagent

LC8 : 2FTS _ 00007

n: 9(21/17SK)

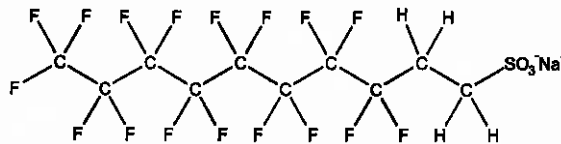


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1216
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 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
 47.9 ± 2.4 µg/ml (8:2FTS 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.

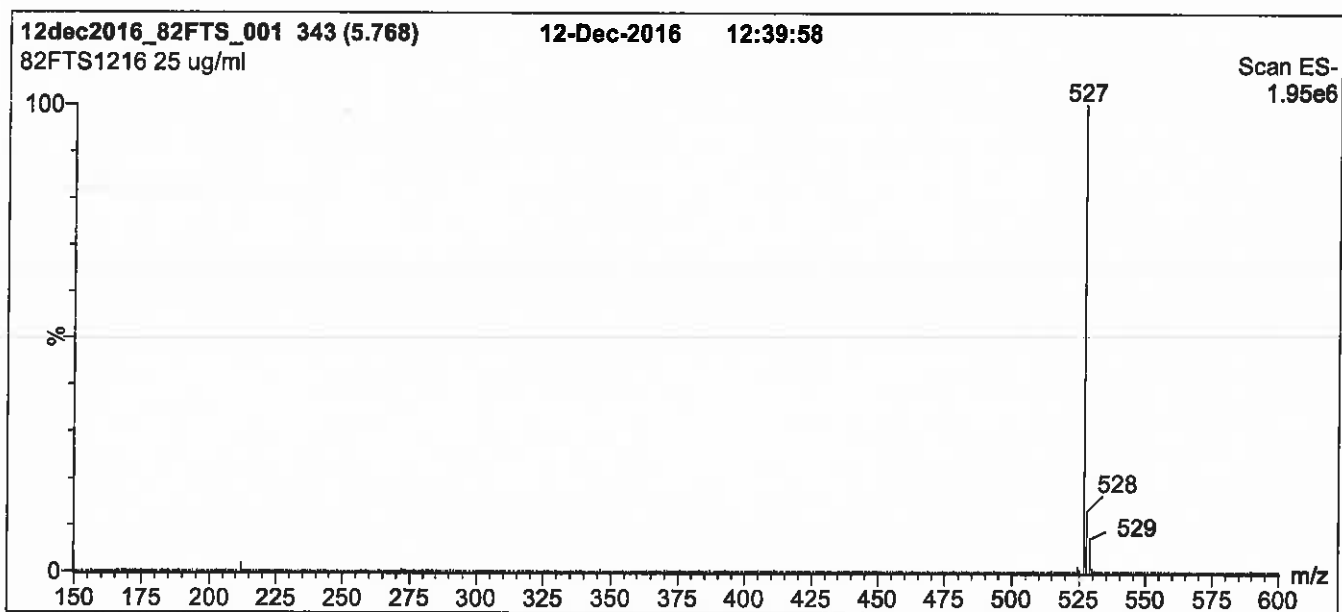
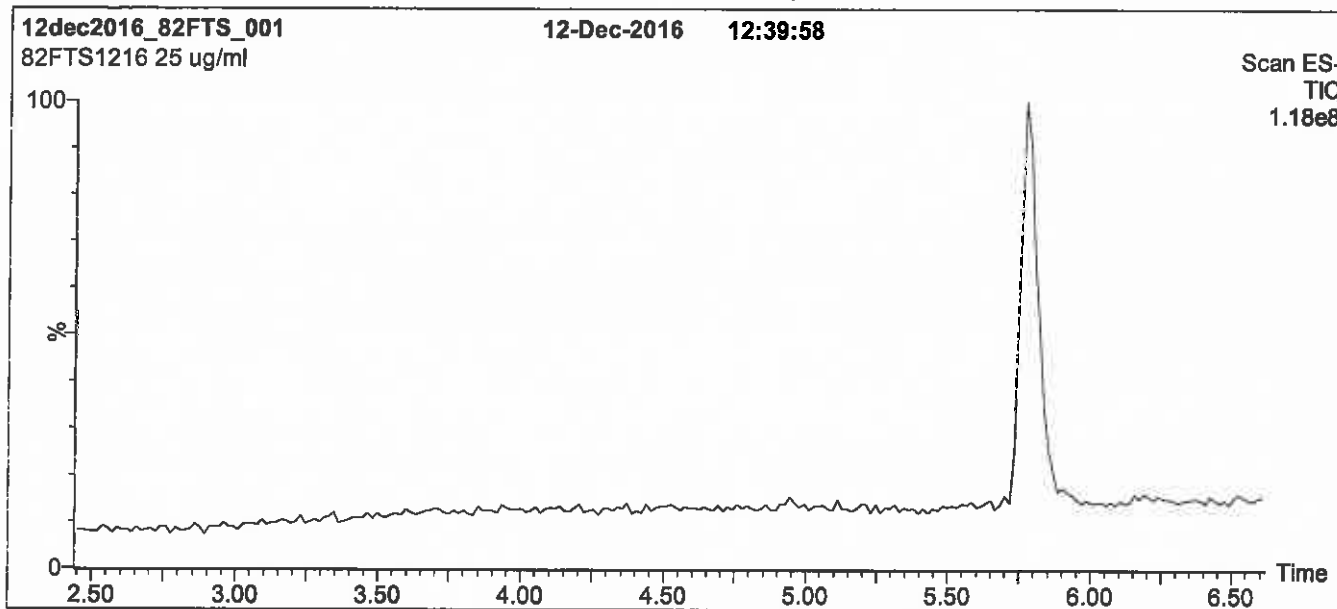
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

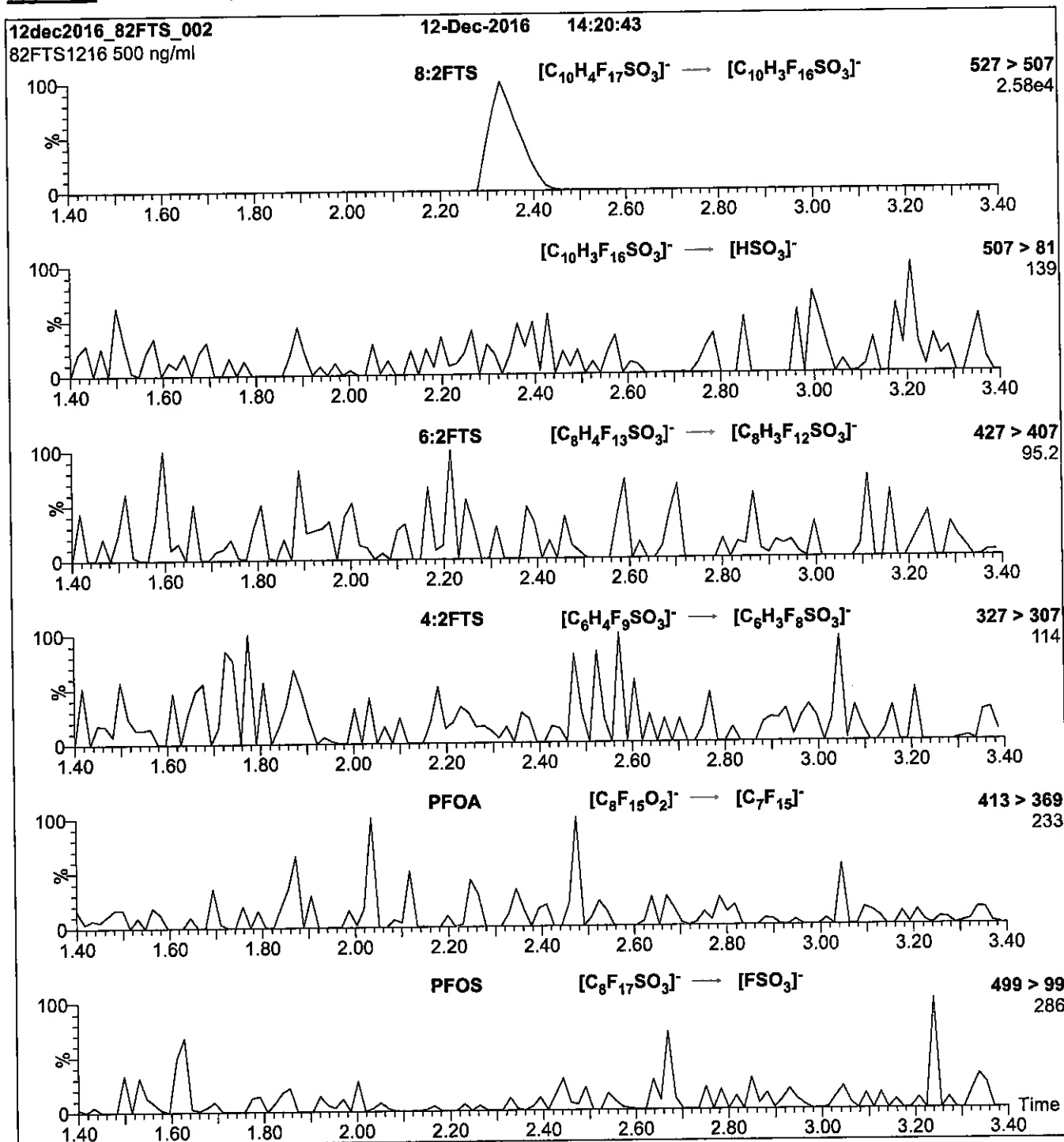
Column: Acquity UPLC BEH Shield RP₁₈
1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 85% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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) = 3.28e-3
Collision Energy (eV) = 30

Reagent

LC9CI-PF3ONS_00002

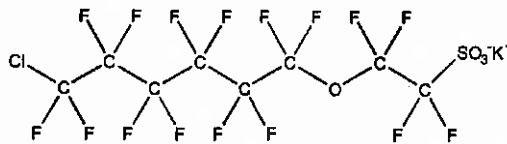


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 9CI-PF3ONS **LOT NUMBER:** 9CIPF3ONS0916
COMPOUND: Potassium 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate

STRUCTURE: **CAS #:** 73606-19-6



MOLECULAR FORMULA: $C_9F_{16}ClSO_4K$ **MOLECULAR WEIGHT:** 570.67
CONCENTRATION: $50.0 \pm 2.5 \mu\text{g/ml}$ (K Salt) **SOLVENT(S):** Methanol
 $46.6 \pm 2.3 \mu\text{g/ml}$ (9CI-PF3ONS anion)
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.
- This compound is the major component of the commercial formulation known as F-53B.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 10/19/2016
 (mm/dd/yyyy)

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

INTENDED USE:

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:

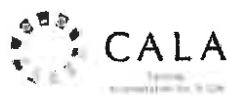
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

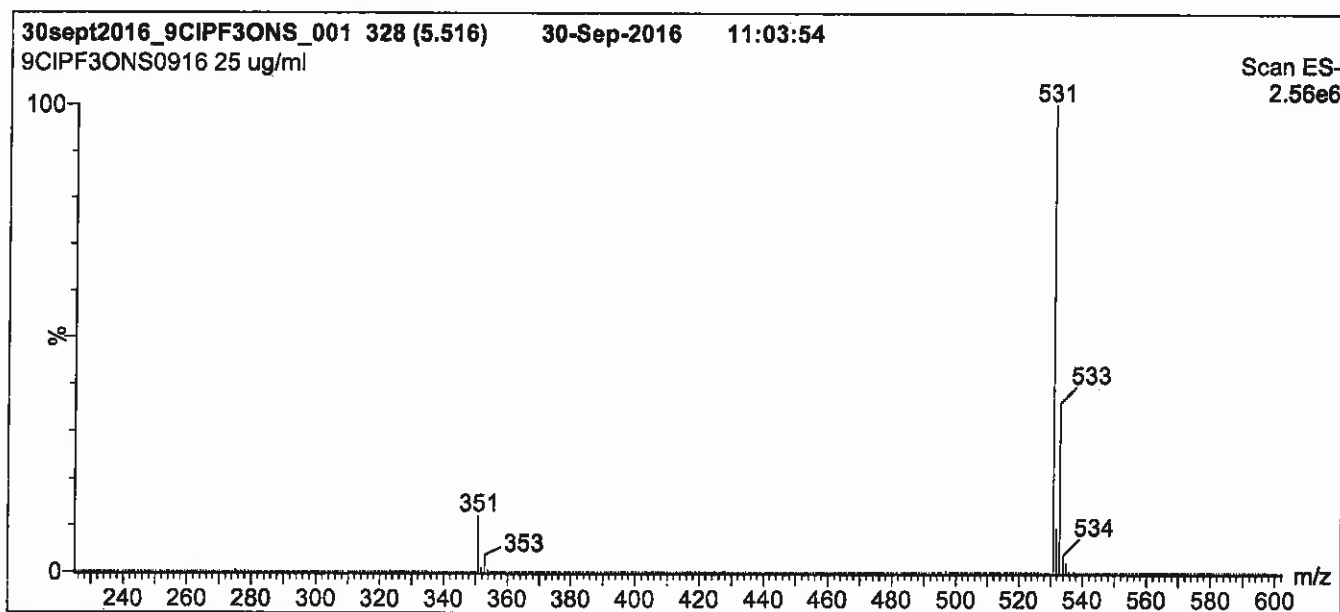
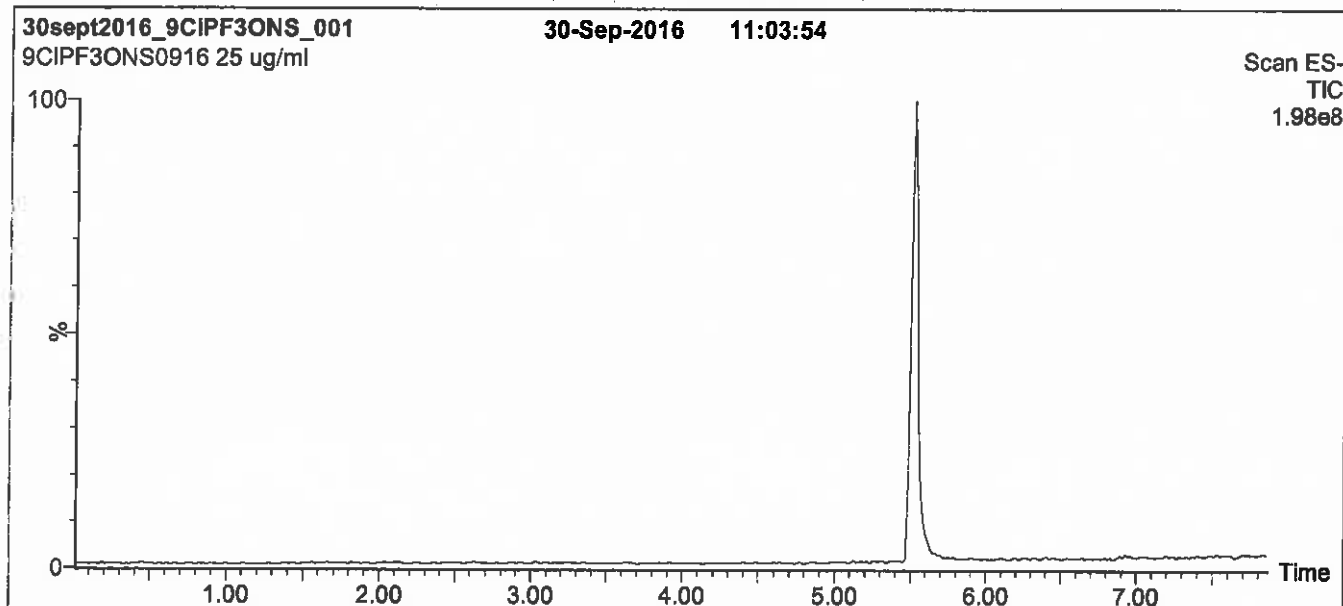
QUALITY MANAGEMENT:

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: 9CI-PF3ONS; 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

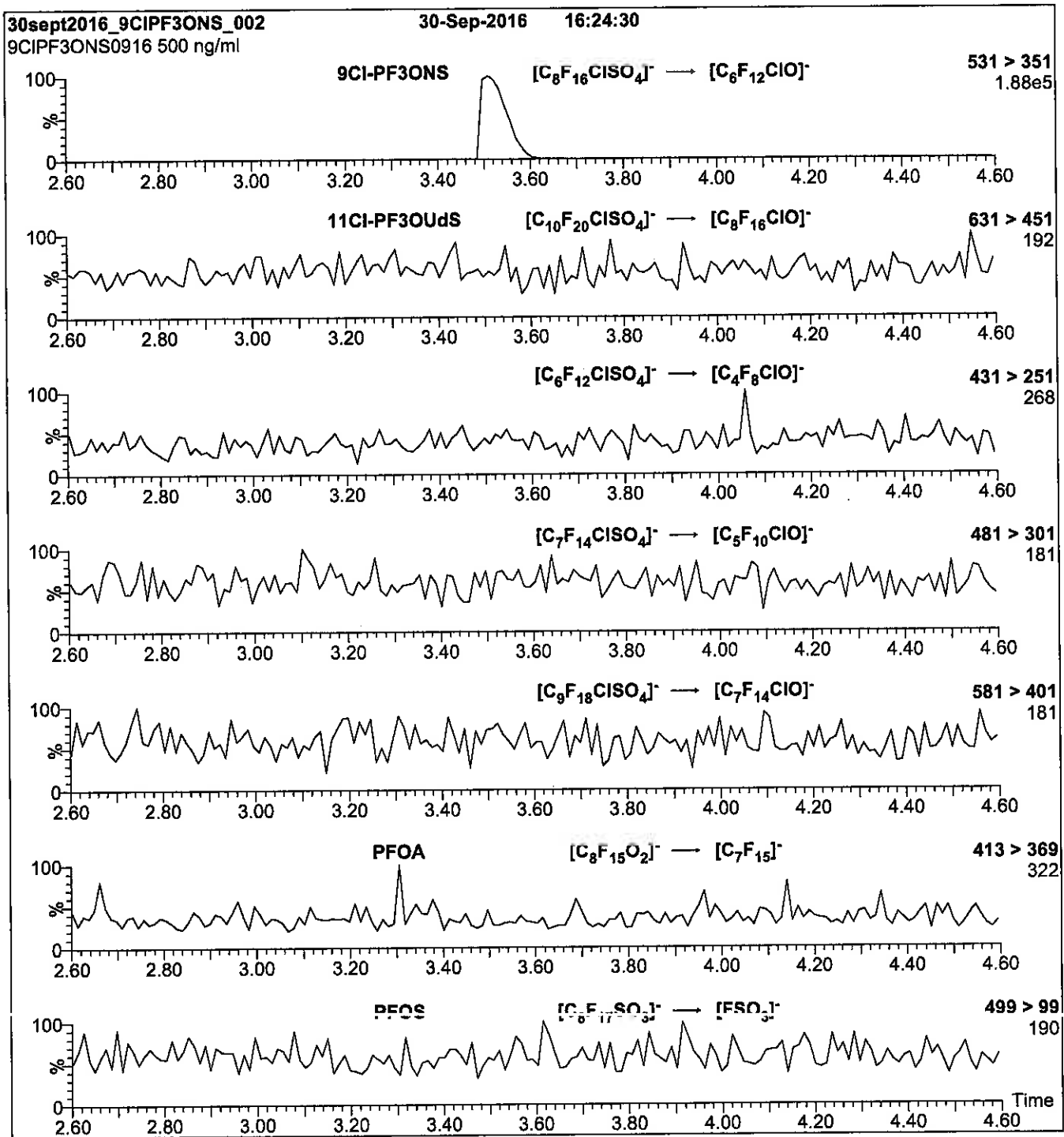
Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for
 1.5 min before returning to initial conditions in 0.5 min.
 Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
 Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 40.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: 9CI-PF3ONS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml 9CI-PF3ONS)

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
 Collision Energy (eV) = 25

Reagent

LCbr-NEtFOSAA_00001



**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

br-NEtFOSAA

**N-Ethylperfluorooctanesulfonamidoacetic
Acid Solution/Mixture of Linear and
Branched Isomers**

PRODUCT CODE: br-NEtFOSAA
LOT NUMBER: brNEtFOSAA0118
CONCENTRATION: 50.0 ± 2.5 µg/ml
SOLVENT(S): Methanol/Water (<1%)
DATE PREPARED: (mm/dd/yyyy) 01/10/2018
LAST TESTED: (mm/dd/yyyy) 01/17/2018
EXPIRY DATE: (mm/dd/yyyy) 01/17/2023
RECOMMENDED STORAGE: Refrigerate ampoule

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-ethylperfluorooctanesulfonamidoacetic acid (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 (SIR)
 Figure 3: 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 acetic acid moiety to its respective methyl ester.

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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.

HANDLING:

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:

Our products are synthesized using single-product unambiguous routes whenever possible. 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, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This 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 calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. 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 17034 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

Table A: br-NEtFOSAA; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

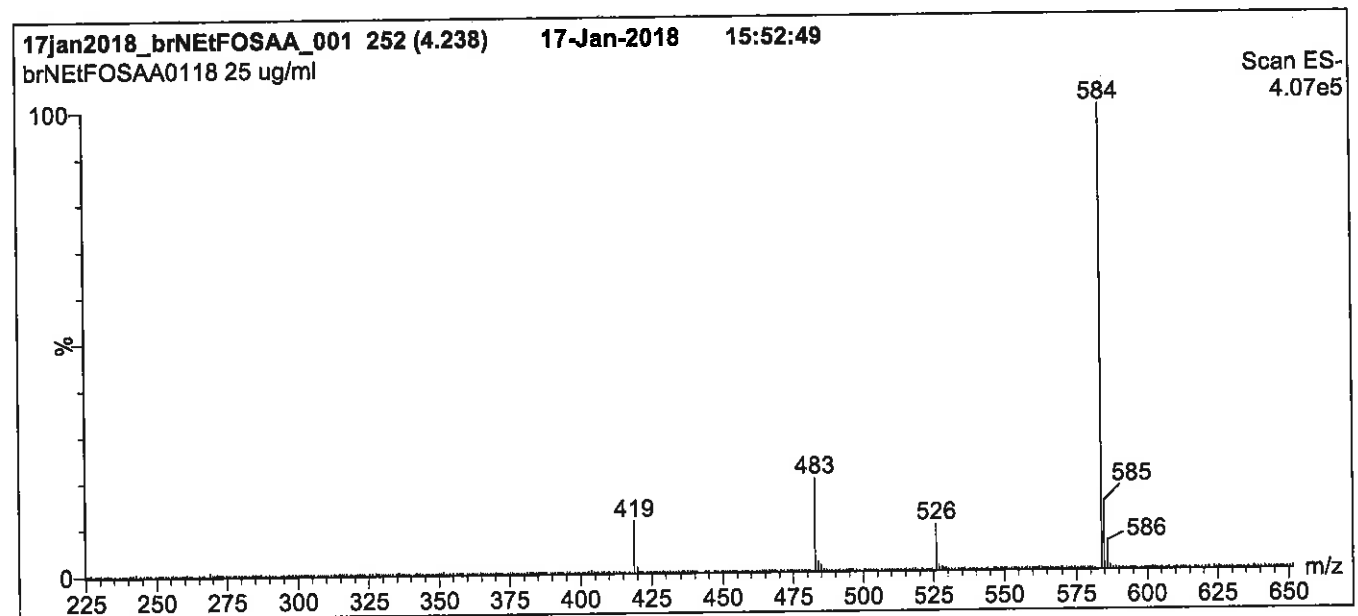
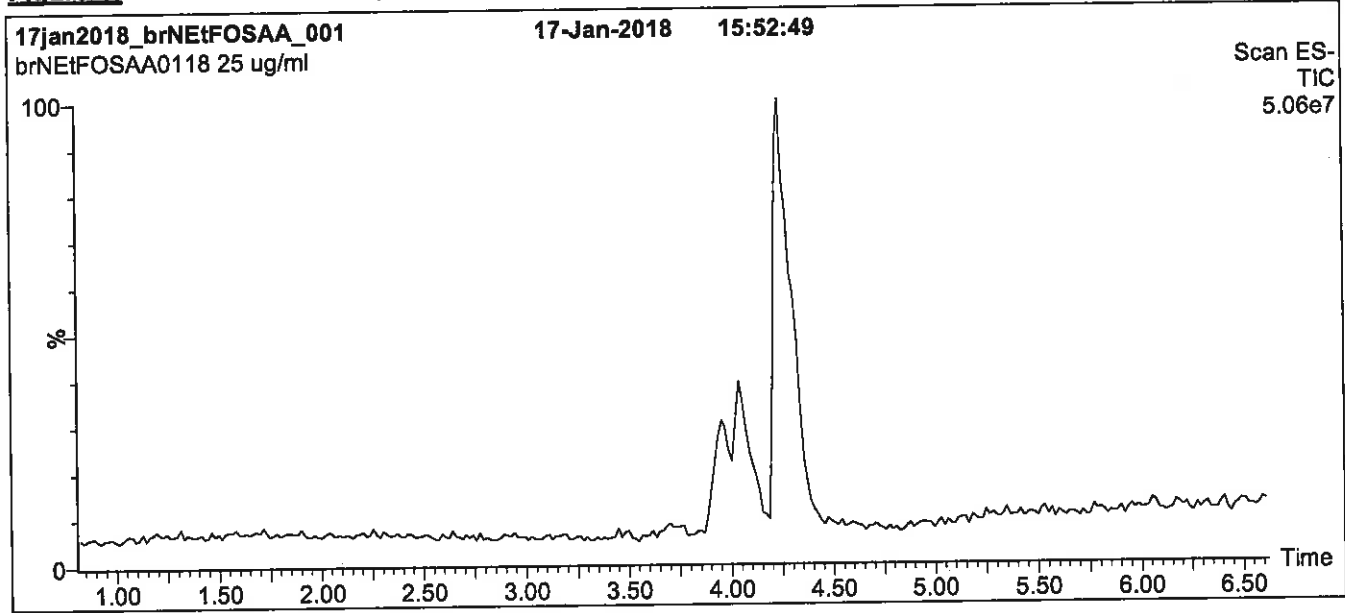
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	N-ethylperfluoro-1-octanesulfonamidoacetic acid	$\text{CF}_3(\text{CF}_2)_7\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ $\quad \quad \quad $ $\quad \quad \quad \text{C}_2\text{H}_5$	77.5
2	N-ethylperfluoro-3-methylheptanesulfonamidoacetic acid	$\text{CF}_3(\text{CF}_2)_3\text{CF}(\text{CF}_2)_2\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ $\quad \quad \quad \quad \quad \quad $ $\quad \quad \quad \text{CF}_3 \quad \quad \quad \text{C}_2\text{H}_5$	2.3
3	N-ethylperfluoro-4-methylheptanesulfonamidoacetic acid	$\text{CF}_3(\text{CF}_2)_2\text{CF}(\text{CF}_2)_3\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ $\quad \quad \quad \quad \quad \quad $ $\quad \quad \quad \text{CF}_3 \quad \quad \quad \text{C}_2\text{H}_5$	2.2
4	N-ethylperfluoro-5-methylheptanesulfonamidoacetic acid	$\text{CF}_3\text{CF}_2\text{CF}(\text{CF}_2)_4\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ $\quad \quad \quad \quad \quad \quad $ $\quad \quad \quad \text{CF}_3 \quad \quad \quad \text{C}_2\text{H}_5$	5.4
5	N-ethylperfluoro-6-methylheptanesulfonamidoacetic acid	$\text{CF}_3\text{CF}(\text{CF}_2)_5\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ $\quad \quad \quad \quad \quad \quad $ $\quad \quad \quad \text{CF}_3 \quad \quad \quad \text{C}_2\text{H}_5$	10.4
6	N-ethylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$\text{CF}_3\text{C}(\text{CF}_2)_4\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ $\quad \quad \quad \quad \quad \quad $ $\quad \quad \quad \text{CF}_3 \quad \quad \quad \text{C}_2\text{H}_5$	0.3
7	N-ethylperfluoro-4,5-dimethylhexanesulfonamidoacetic acid	$\text{CF}_3\text{CF}(\text{CF}_2)_3\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ $\quad \quad \quad \quad \quad \quad $ $\quad \quad \quad \text{CF}_3 \quad \quad \quad \text{C}_2\text{H}_5$	0.3
8	N-ethylperfluoro-3,5-dimethylhexanesulfonamidoacetic acid	$\text{CF}_3\text{CF}(\text{CF}_2)_2\text{CF}(\text{CF}_2)_2\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ $\quad \quad \quad \quad \quad \quad $ $\quad \quad \quad \text{CF}_3 \quad \quad \quad \text{C}_2\text{H}_5$	0.3
9	Other Unidentified Isomers		1.3

* Percent of total N-ethylperfluorooctanesulfonamidoacetic acid isomers only.

Certified By: 
 B.G. Chittim, General Manager

Date: 03/22/2018
(mm/dd/yyyy)

Figure 1: br-NEtFOSAA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1.

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

Chromatographic Conditions

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

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

Time: 10 min

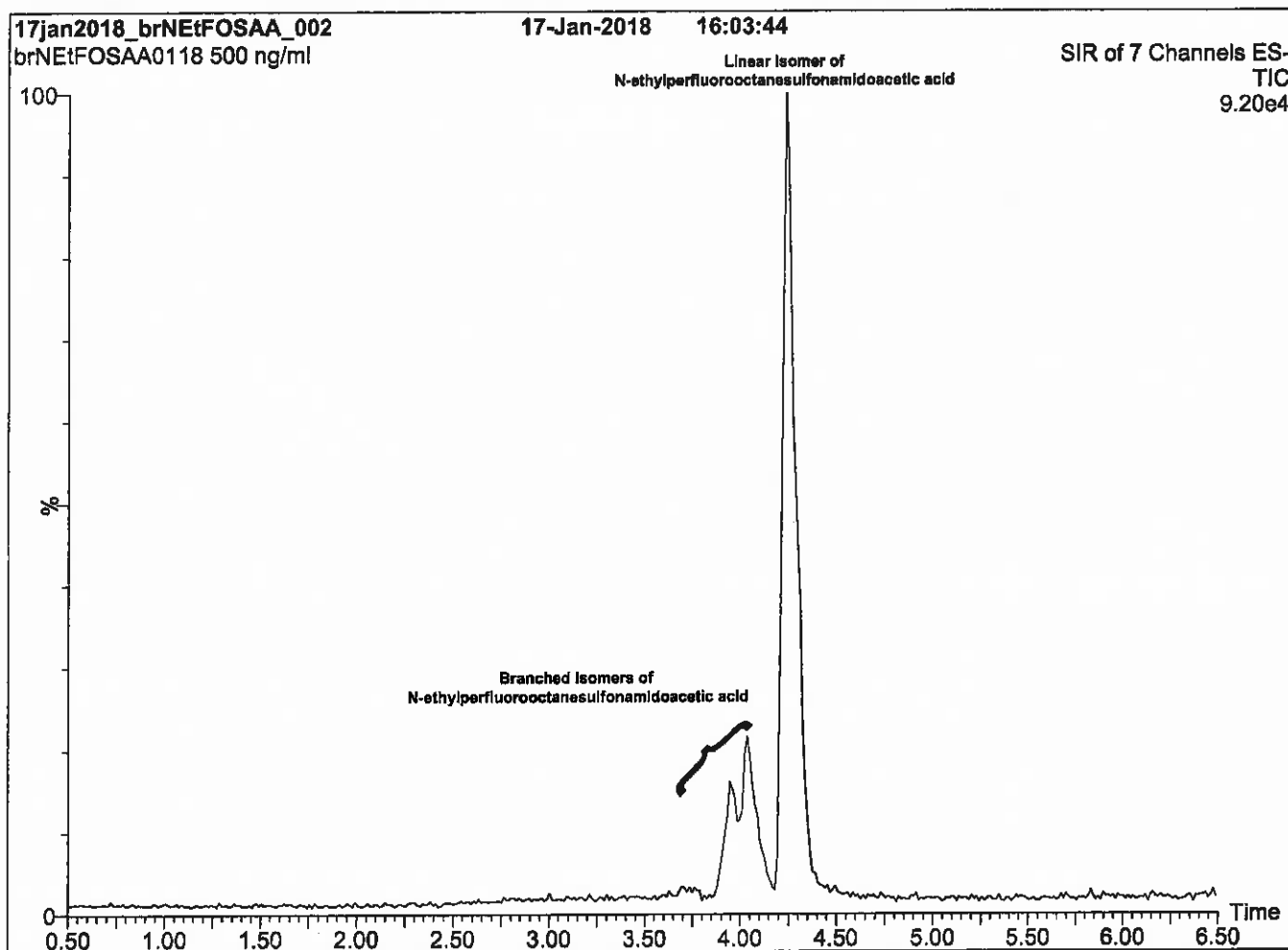
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

Figure 2: br-NEtFOSAA; 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

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

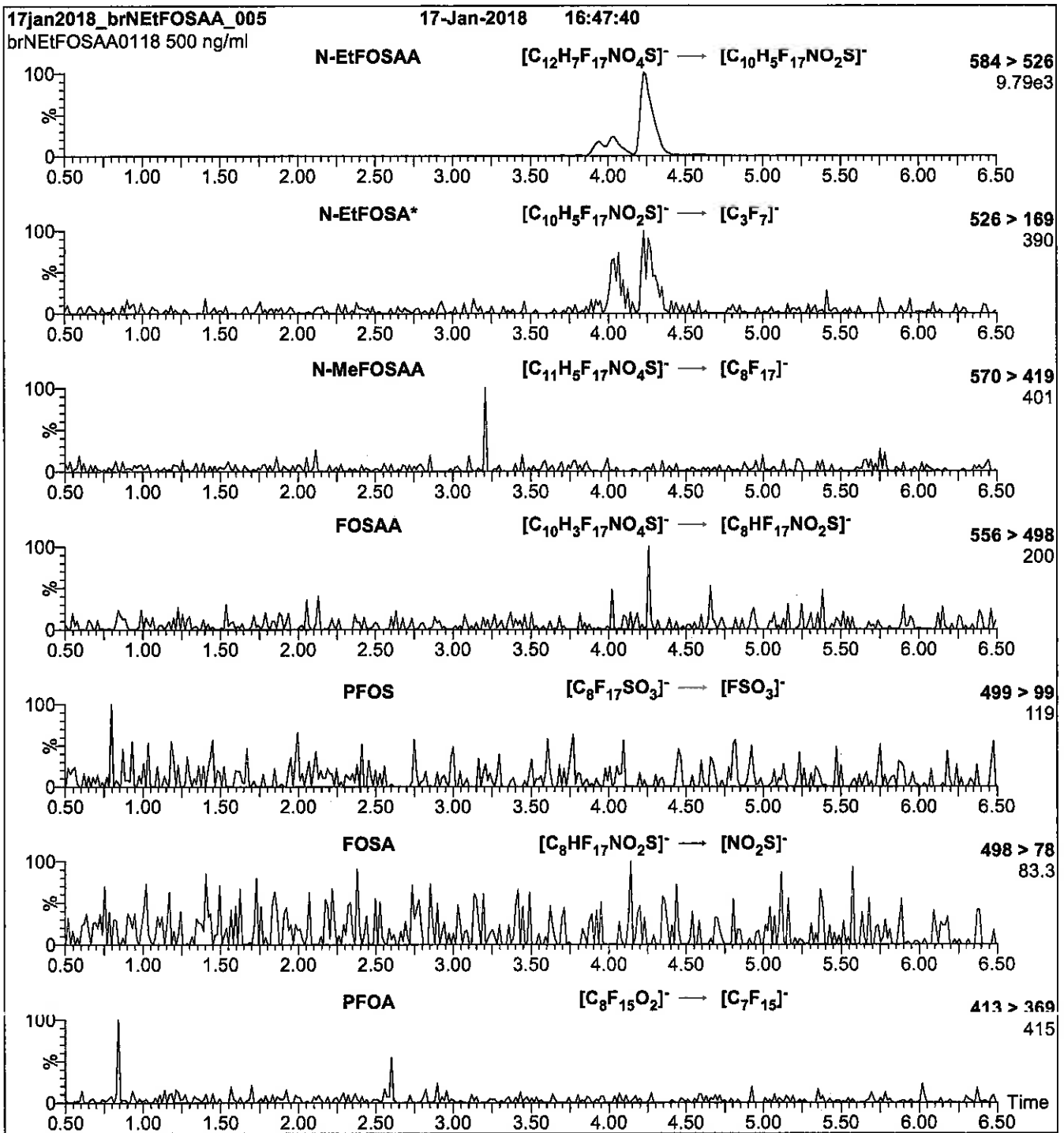
Flow: 300 μ l/min

MS Parameters

Experiment: SIR (7 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 15-60
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 3: br-NEtFOSAA; LC/MS/MS Data (Selected MRM Transitions)



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

Conditions for Figure 3:

Injection: On-column

MS Parameters

Mobile phase: Same as Figure 2

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11-40 (variable)

Flow: 300 μ l/min

Reagent

LCbr-NMeFOSAA_00001



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-NMeFOSAA

N-Methylperfluorooctanesulfonamidoacetic Acid Solution/Mixture of Linear and Branched Isomers

<u>PRODUCT CODE:</u>	br-NMeFOSAA
<u>LOT NUMBER:</u>	brNMeFOSAA0118
<u>CONCENTRATION:</u>	50.0 ± 2.5 µg/ml
<u>SOLVENT(S):</u>	Methanol/Water (<1%)
<u>DATE PREPARED:</u> (mm/dd/yyyy)	01/10/2018
<u>LAST TESTED:</u> (mm/dd/yyyy)	01/17/2018
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	01/17/2023
<u>RECOMMENDED STORAGE:</u>	Refrigerate ampoule

DESCRIPTION:

The chemical purity has been determined to be ≥98% N-methylperfluorooctanesulfonamidoacetic acid (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 (SIR)
 Figure 3: 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 acetic acid moiety to its respective methyl ester.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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.

HANDLING:

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:

Our products are synthesized using single-product unambiguous routes whenever possible. 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, as well as mixtures and calibration solutions, are compared to older lots in a similar manner. This 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 calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

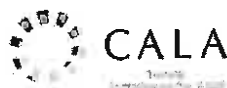
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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 17034 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

Table A: br-NMeFOSAA; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

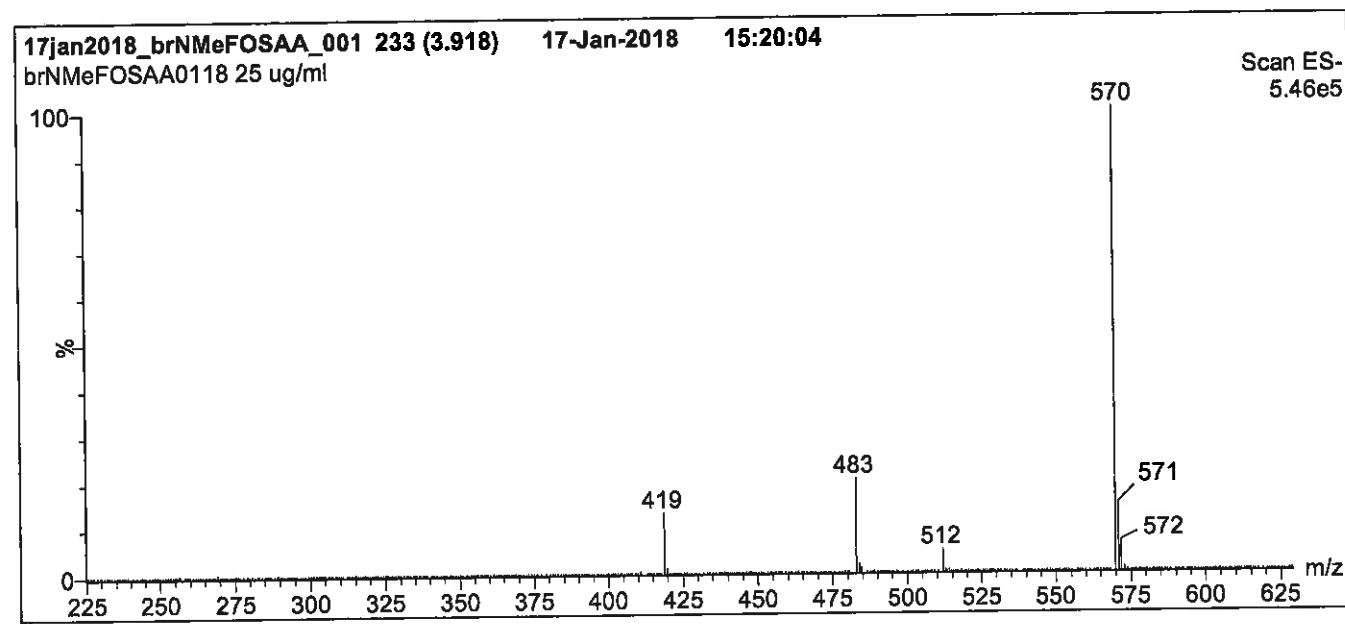
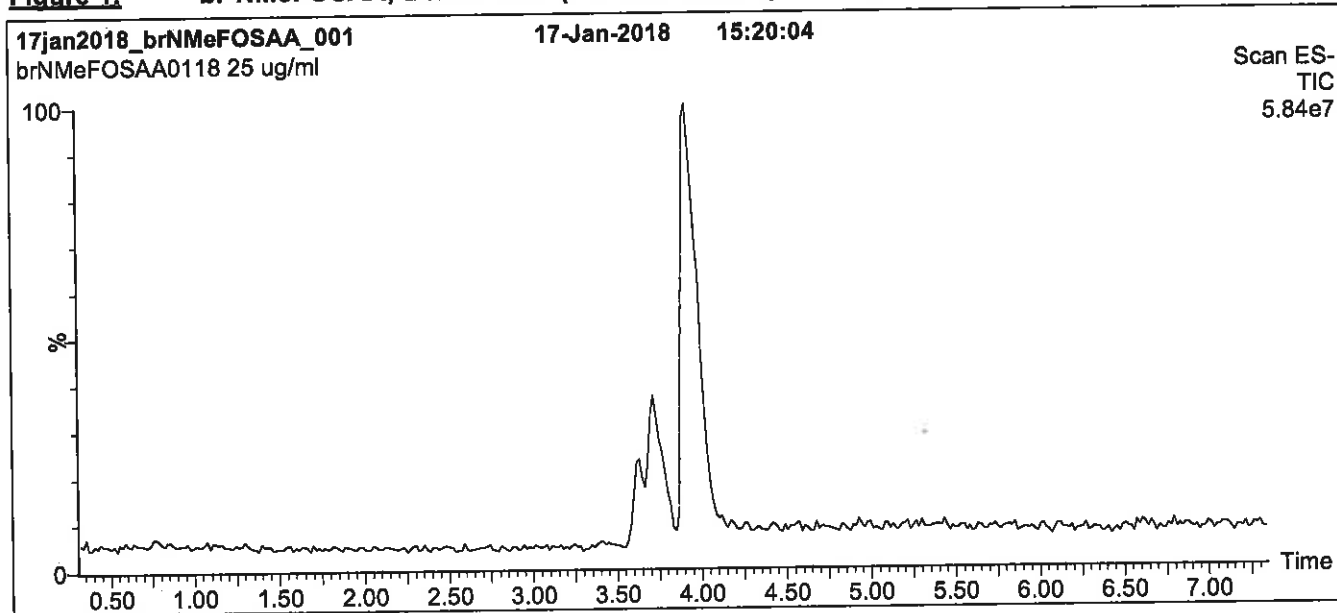
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	N-methylperfluoro-1-octanesulfonamidoacetic acid	$\text{CF}_3(\text{CF}_2)_7\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ <div style="text-align: center; margin-left: 150px;"> CH_3 </div>	76.0
2	N-methylperfluoro-3-methylheptanesulfonamidoacetic acid	$\text{CF}_3(\text{CF}_2)_3\underset{\text{CF}_3}{\text{CF}}(\text{CF}_2)_2\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ <div style="text-align: center; margin-left: 150px;"> CH_3 </div>	0.7
3	N-methylperfluoro-4-methylheptanesulfonamidoacetic acid	$\text{CF}_3(\text{CF}_2)_2\underset{\text{CF}_3}{\text{CF}}(\text{CF}_2)_3\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ <div style="text-align: center; margin-left: 150px;"> CH_3 </div>	2.0
4	N-methylperfluoro-5-methylheptanesulfonamidoacetic acid	$\text{CF}_3\text{CF}_2\underset{\text{CF}_3}{\text{CF}}(\text{CF}_2)_4\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ <div style="text-align: center; margin-left: 150px;"> CH_3 </div>	6.0
5	N-methylperfluoro-6-methylheptanesulfonamidoacetic acid	$\text{CF}_3\underset{\text{CF}_3}{\text{CF}}(\text{CF}_2)_5\text{SO}_2\text{NCH}_2\text{CO}_2\text{H}$ <div style="text-align: center; margin-left: 150px;"> CH_3 </div>	14.0
6	N-methylperfluoro-5,5-dimethylhexanesulfonamidoacetic acid	$\begin{array}{c} \text{CF}_3 \\ \\ \text{CF}_3\text{C}(\text{CF}_2)_4\text{SO}_2\text{NCH}_2\text{CO}_2\text{H} \\ \\ \text{CF}_3 \end{array}$ <div style="text-align: center; margin-left: 150px;"> CH_3 </div>	0.2
7	Other Unidentified isomers		1.1

* Percent of total N-methylperfluorooctanesulfonamidoacetic acid isomers only.

Certified By: 
B.G. Chittim, General Manager

Date: 03/22/2018
(mm/dd/yyyy)

Figure 1: br-NMeFOSAA; 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 μm, 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

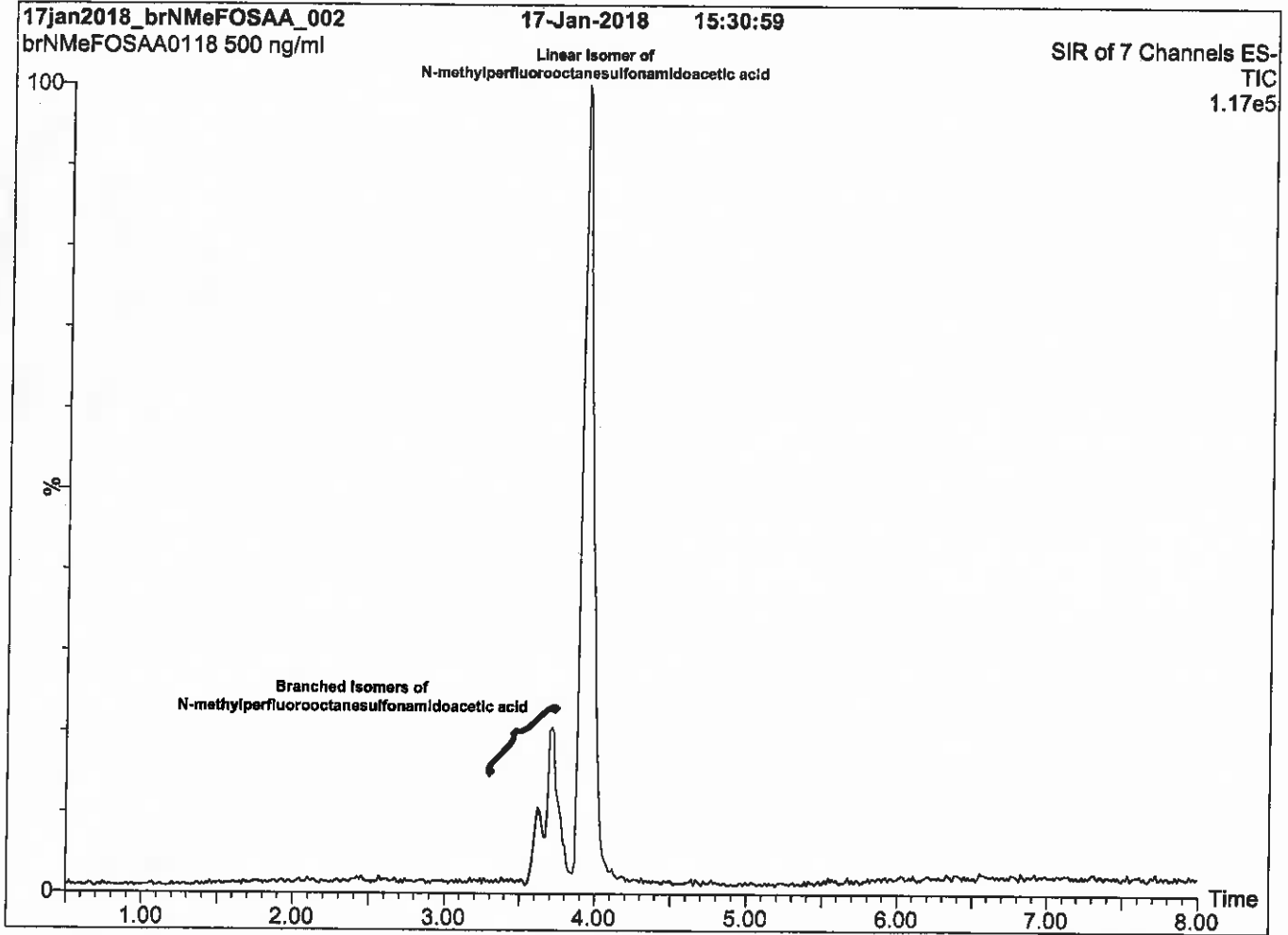
Flow: 300 μl/min

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: br-NMeFOSAA; 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

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

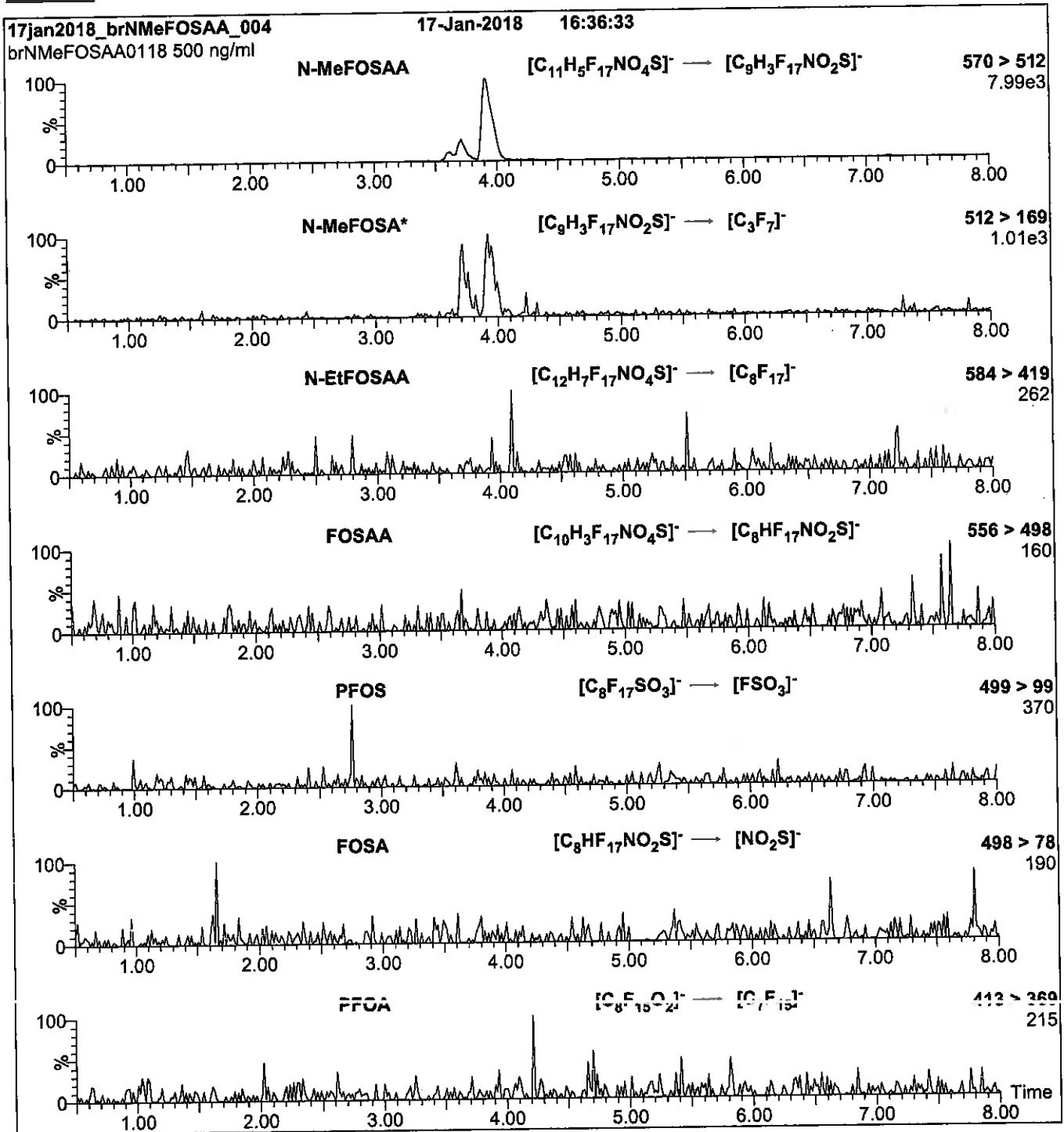
Flow: 300 μ l/min

MS Parameters

Experiment: SIR (7 channels)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 15-60
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 3: br-NMeFOSAA; LC/MS/MS Data (Selected MRM Transitions)



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

Conditions for Figure 3:

Injection: On-column

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 11-40 (variable)

Mobile phase: Same as Figure 2

Flow: 300 μ l/min

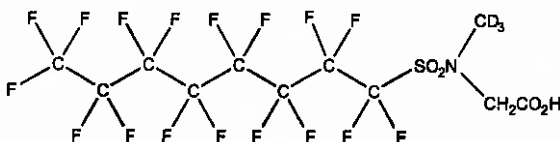
Reagent

LCd3-NMeFOSAA_00008

**WELLINGTON
LABORATORIES****CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA1117
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) 11/08/2017

EXPIRY DATE: (mm/dd/yyyy) 11/08/2022

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

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

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

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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 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:

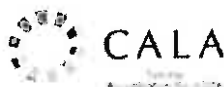
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

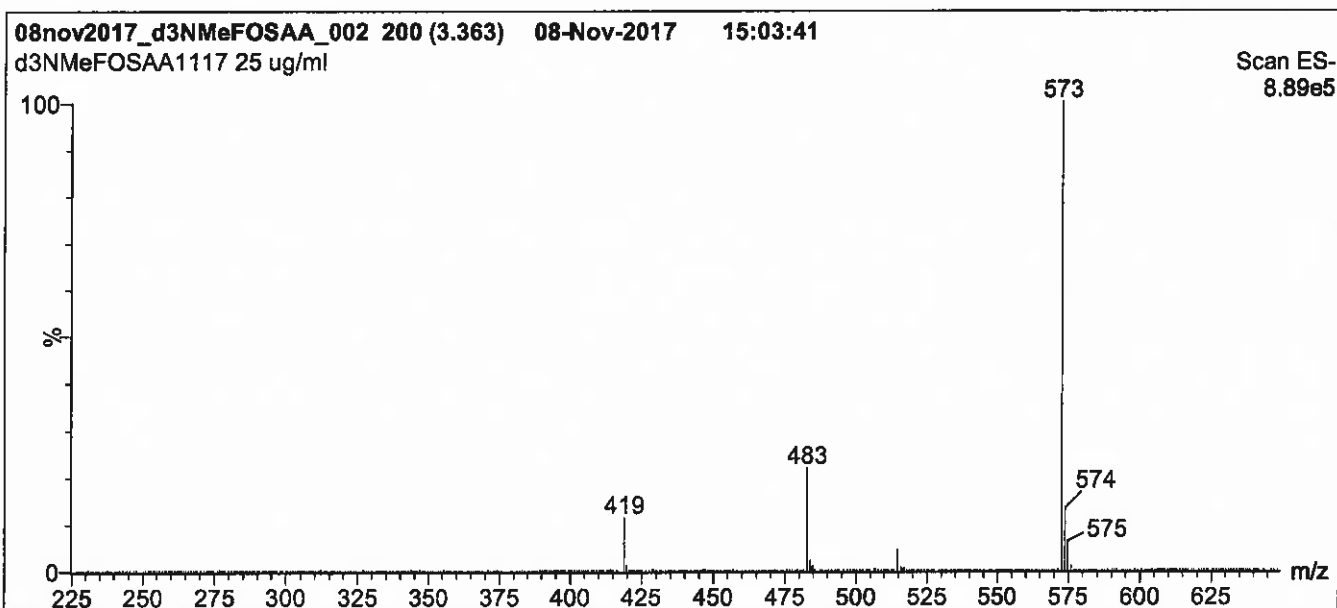
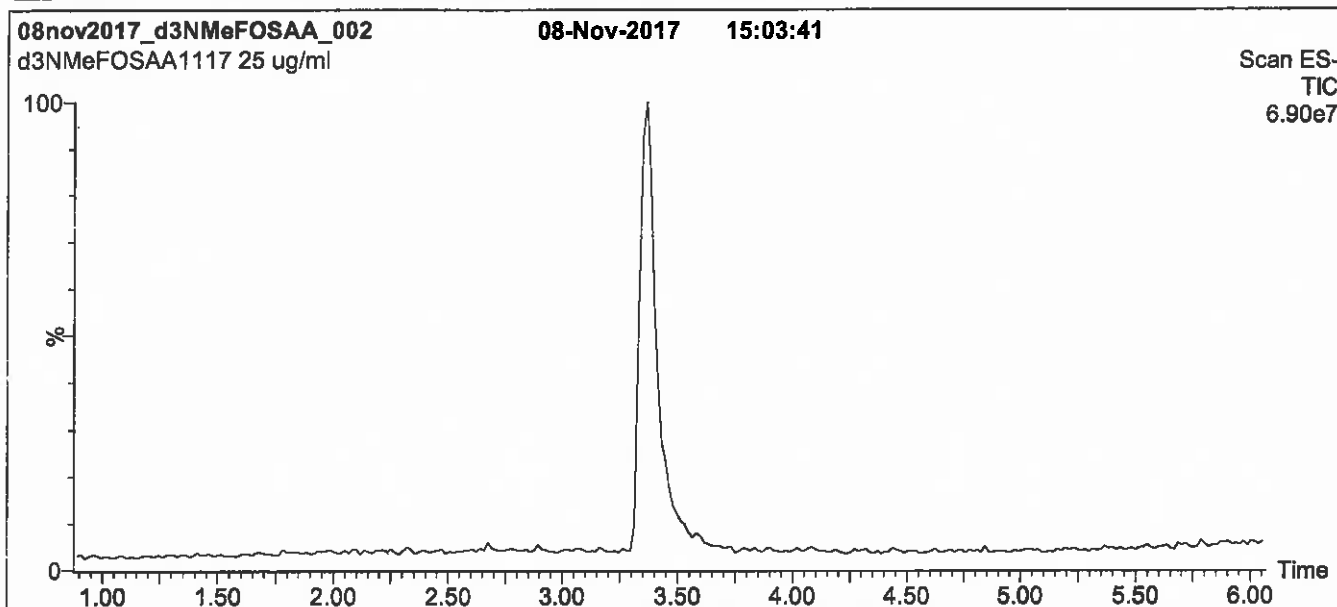
QUALITY MANAGEMENT:

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: 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 μm, 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

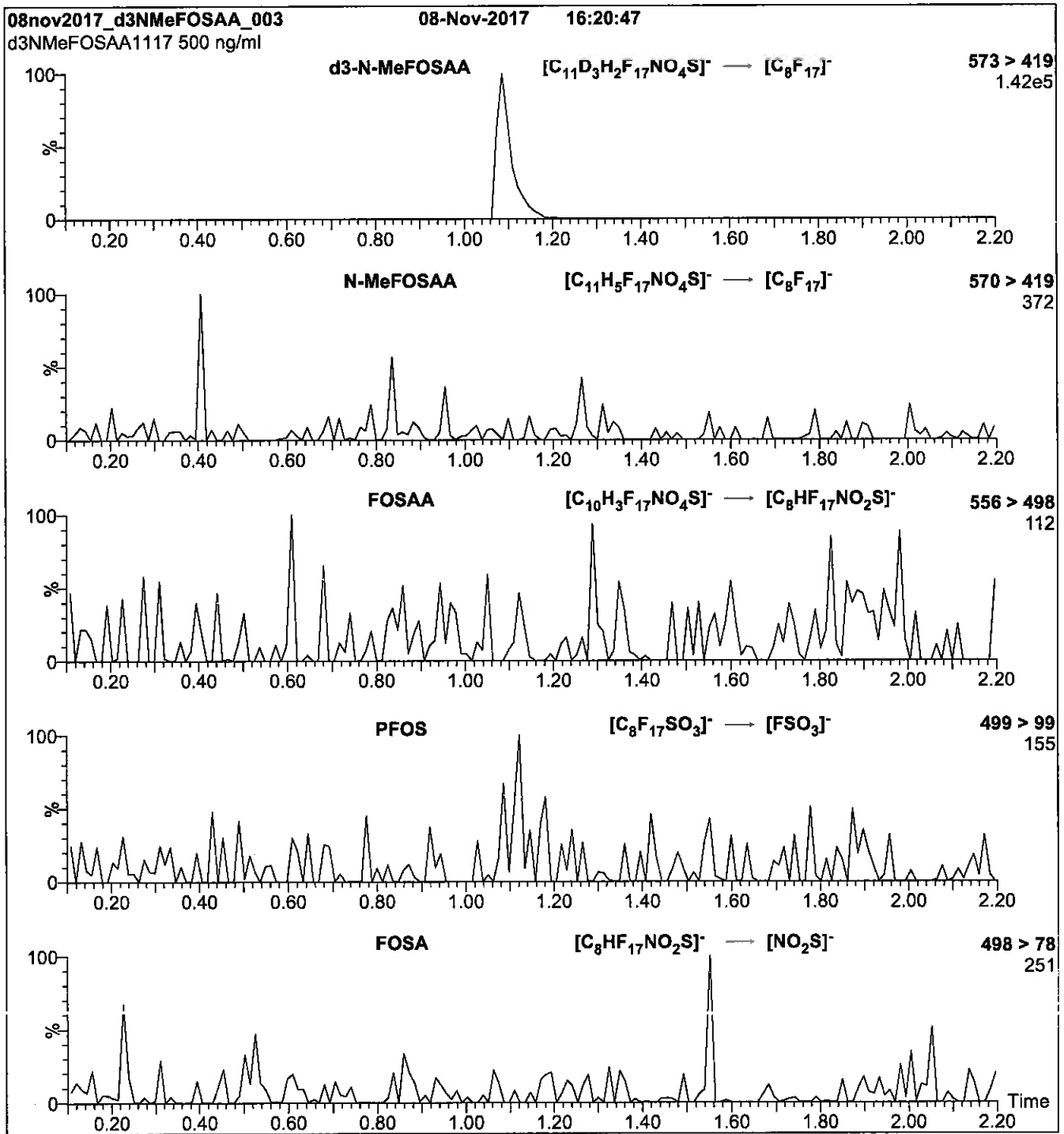
Flow: 300 μl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCd5-NEtFOSAA_00008

1263180
ID: LCd5-NEtFOSAA_00008
Exp: 11/08/22 Prod: CBW Oper: 05/08/16
d5-N-EtFOSAA

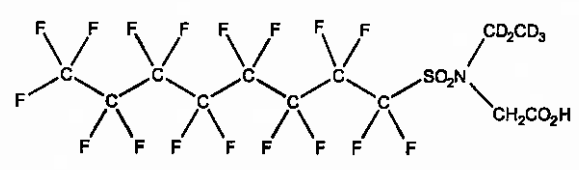


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA1117
COMPOUND: N-ethyl-d5-perfluoro-1-octanesulfonamidoacetic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₁₂D₆H₃F₁₇NO₄S
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 590.26
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/08/2017
EXPIRY DATE: (mm/dd/yyyy) 11/08/2022
RECOMMENDED STORAGE: Refrigerate ampoule

ISOTOPIC PURITY: ≥98% ²H₅

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.

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Certified By: 
B.G. Chittim, General Manager

Date: 11/16/2017
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$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

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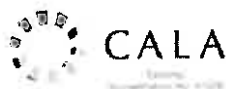
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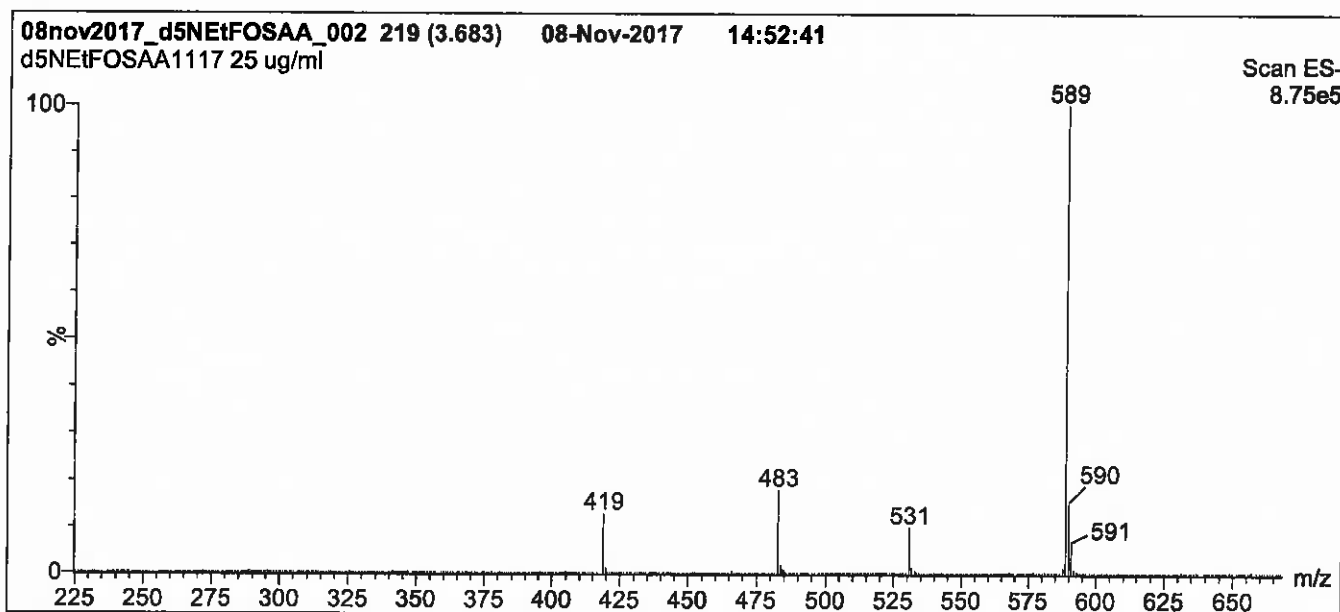
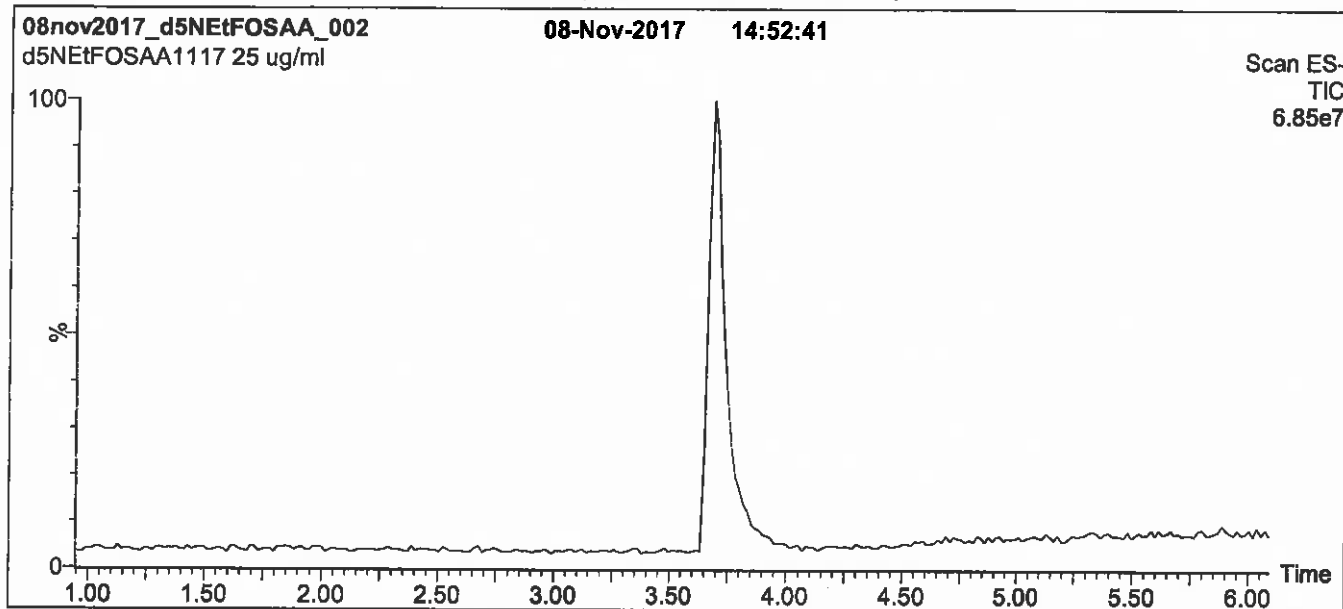
QUALITY MANAGEMENT:

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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

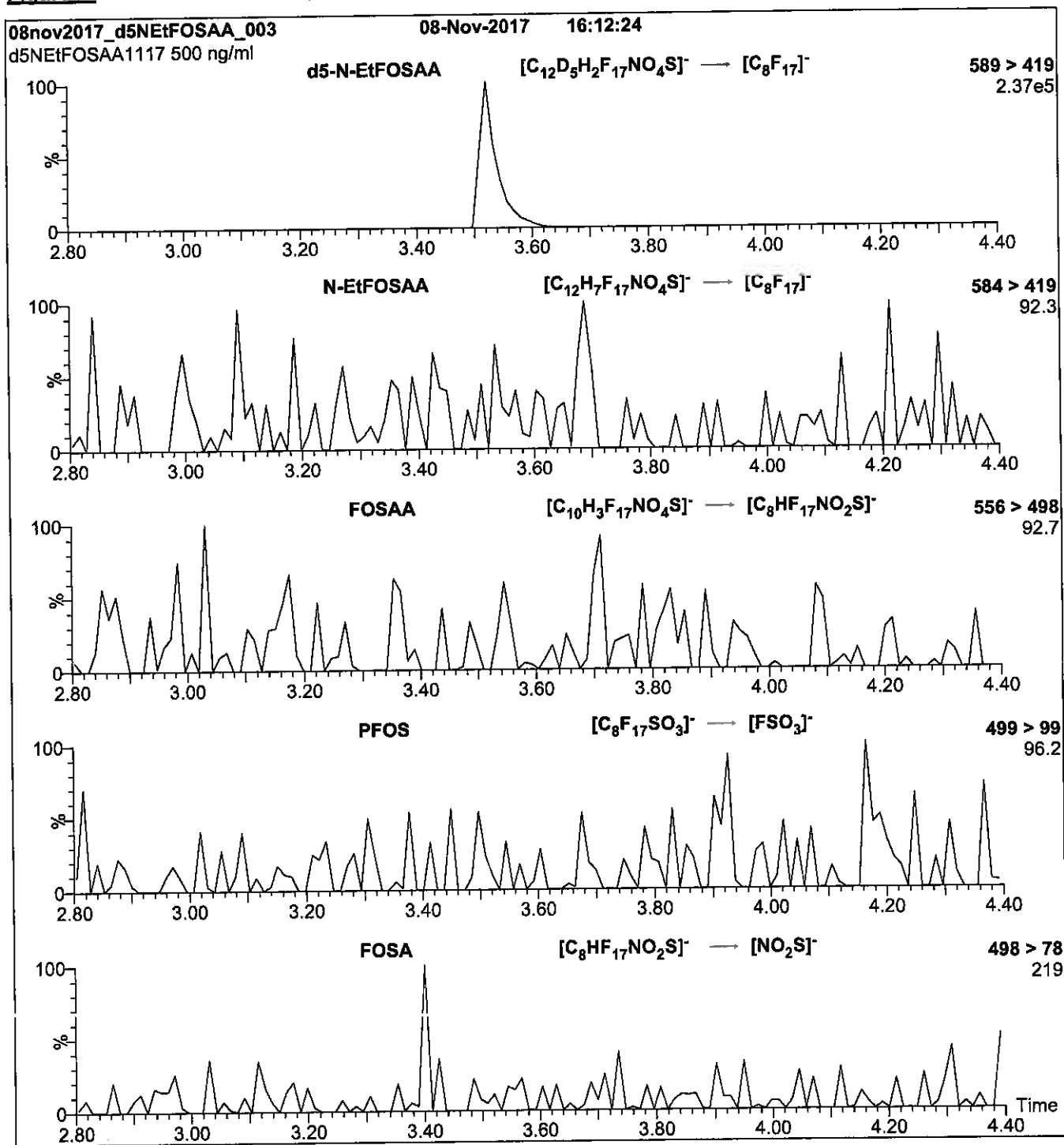
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCDONA_00002

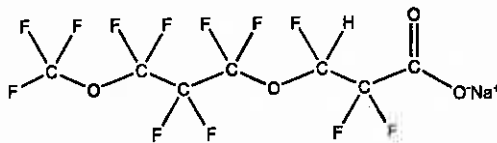


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: NaDONA **LOT NUMBER:** NaDONA0318
COMPOUND: Sodium dodecafluoro-3H-4,8-dioxanonoate

STRUCTURE: **CAS #:** 958445-44-8
(ammonium salt)



MOLECULAR FORMULA: $C_7HF_{12}O_4Na$ **MOLECULAR WEIGHT:** 400.05
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ (Na Salt) **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/26/2018
EXPIRY DATE: (mm/dd/yyyy) 03/26/2023
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.
- Product is commercially known as ADONA.
- 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:** 03/27/2018
(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.

HANDLING:

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:

Our products are synthesized using single-product unambiguous routes whenever possible. 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 calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. 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.

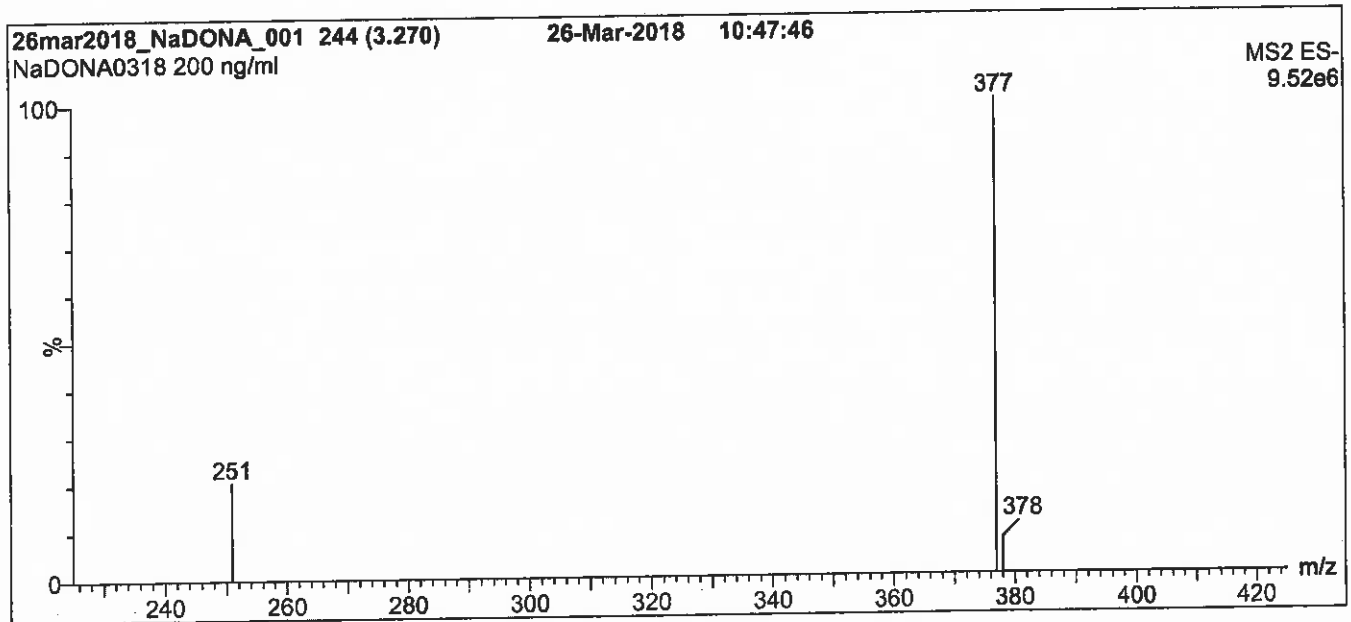
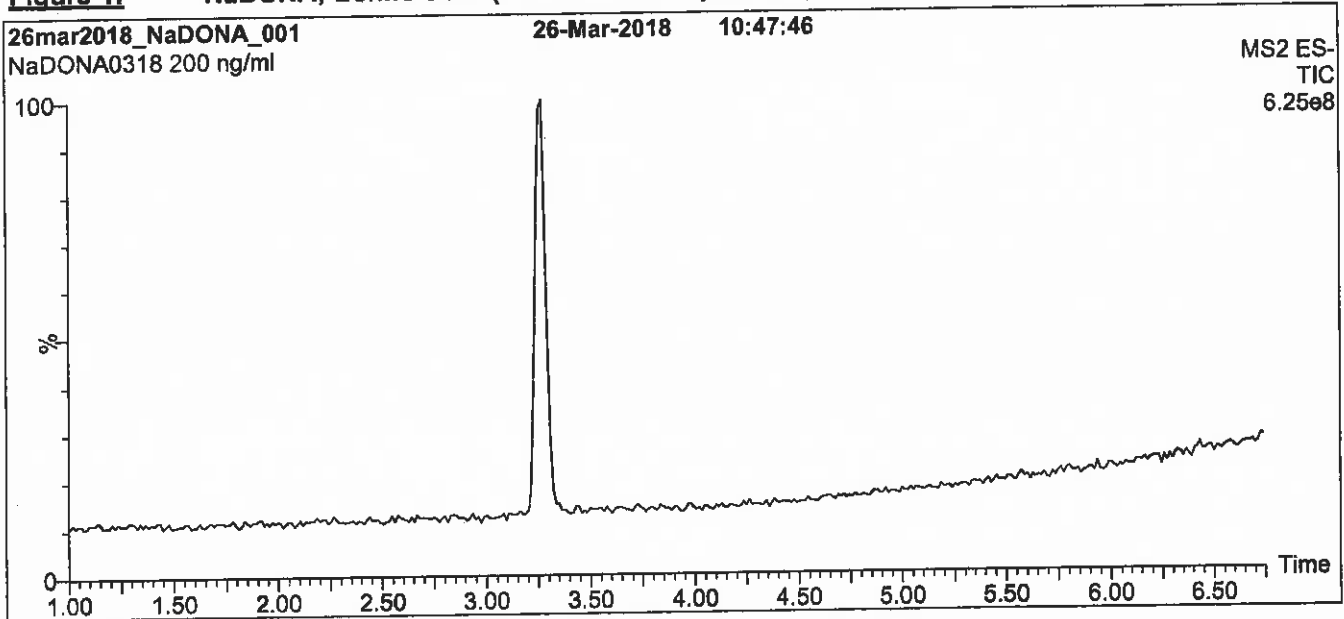
QUALITY MANAGEMENT:

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 17034 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: NaDONA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro 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 80% organic over 7 min and hold for
 3 min before returning to initial conditions in 0.75 min.
 Time: 12 min

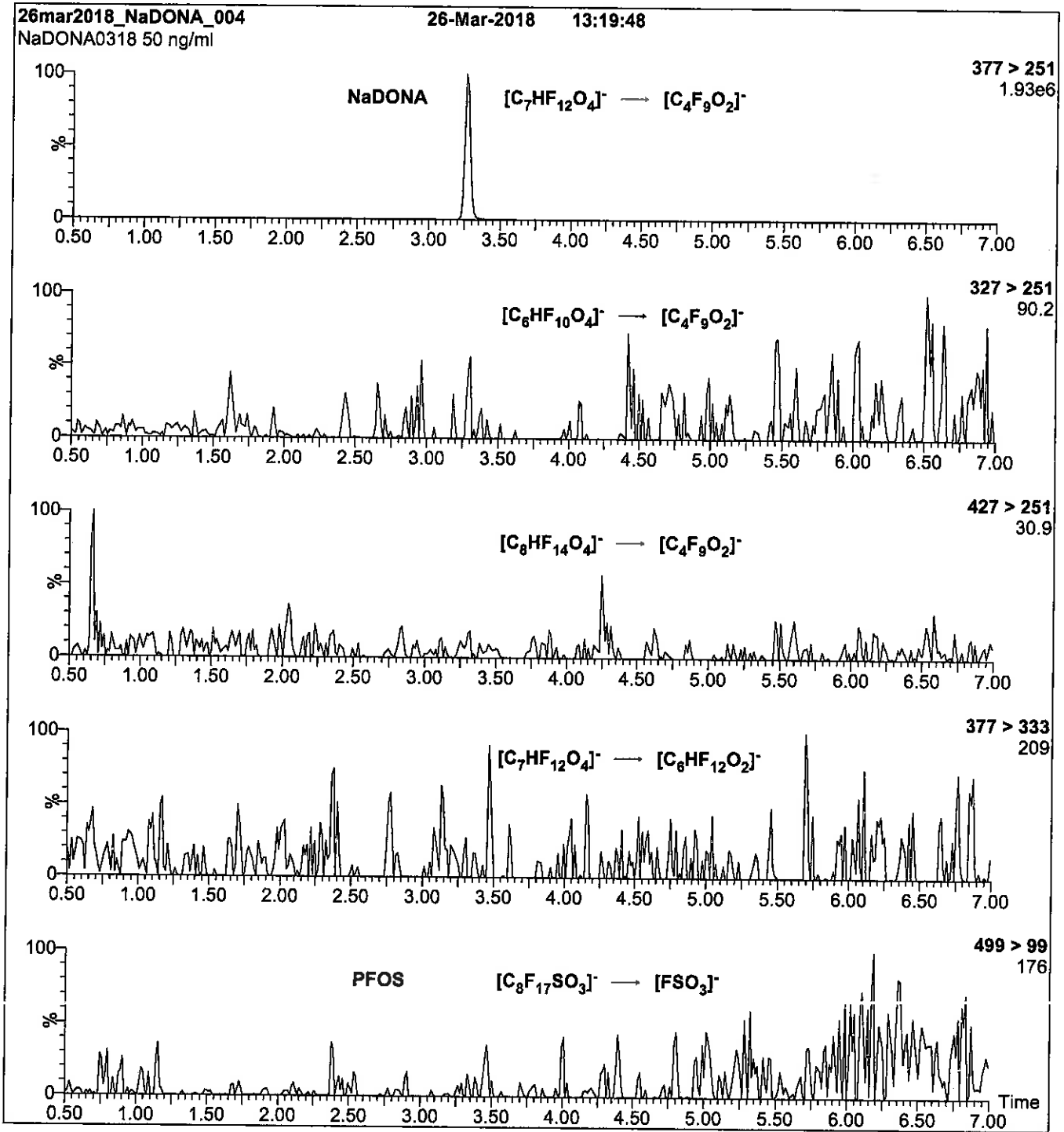
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.70
 Cone Voltage (V) = 20.00
 Desolvation Temperature (°C) = 500
 Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: On-column (NaDONA)
Mobile phase: Same as Figure 1
Flow: 300 µl/min

MS Parameters
Collision Gas (mbar) = 3.65e-3
Collision Energy (eV) = 10

Reagent

LCHFPO-DA_00002

17 4/18/18 Seal

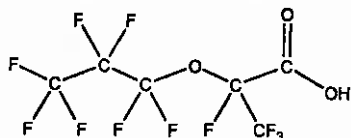


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: HFPO-DA **LOT NUMBER:** HFPODA0318
COMPOUND: 2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid

STRUCTURE: **CAS #:** 13252-13-6



MOLECULAR FORMULA: C₈H₁₁O₃ **MOLECULAR WEIGHT:** 330.05
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 03/26/2018
EXPIRY DATE: (mm/dd/yyyy) 03/26/2021
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.
- Product is commercially known as GenX.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 03/28/2018
 B.G. Chittim, General Manager (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.

HANDLING:

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:

Our products are synthesized using single-product unambiguous routes whenever possible. 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:

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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 calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. 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.

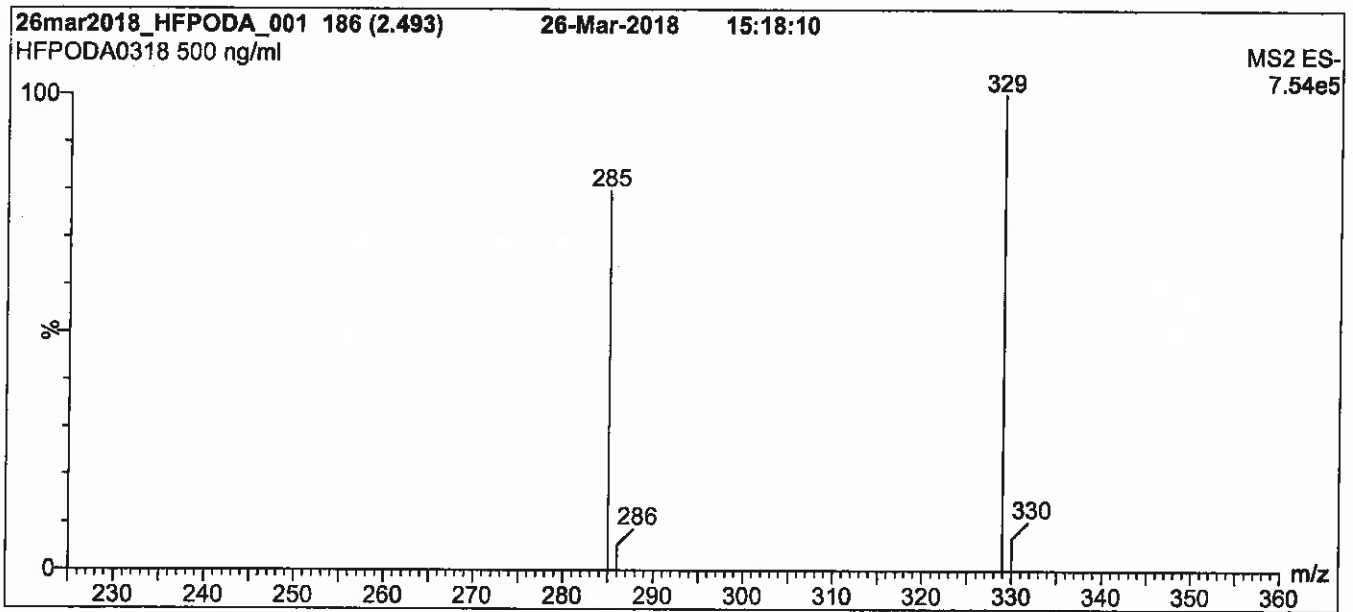
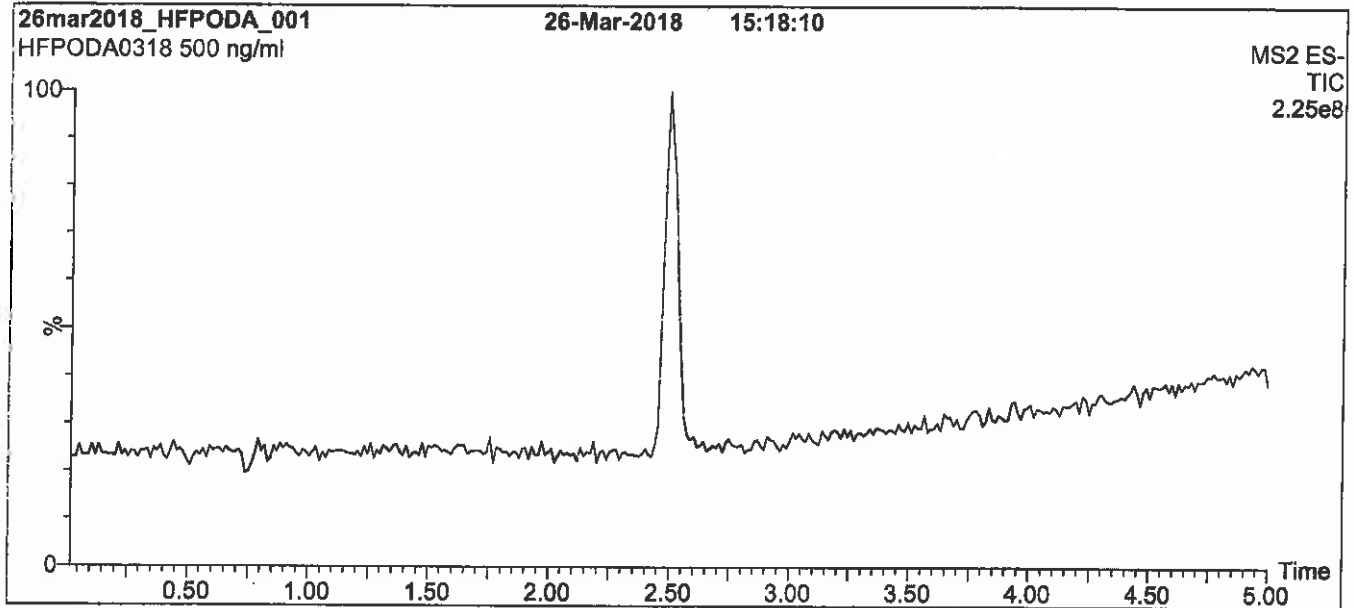
QUALITY MANAGEMENT:

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 17034 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: HFPO-DA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro 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 80% organic over 7 min and hold for
 3 min before returning to initial conditions in 0.75 min.
 Time: 12 min

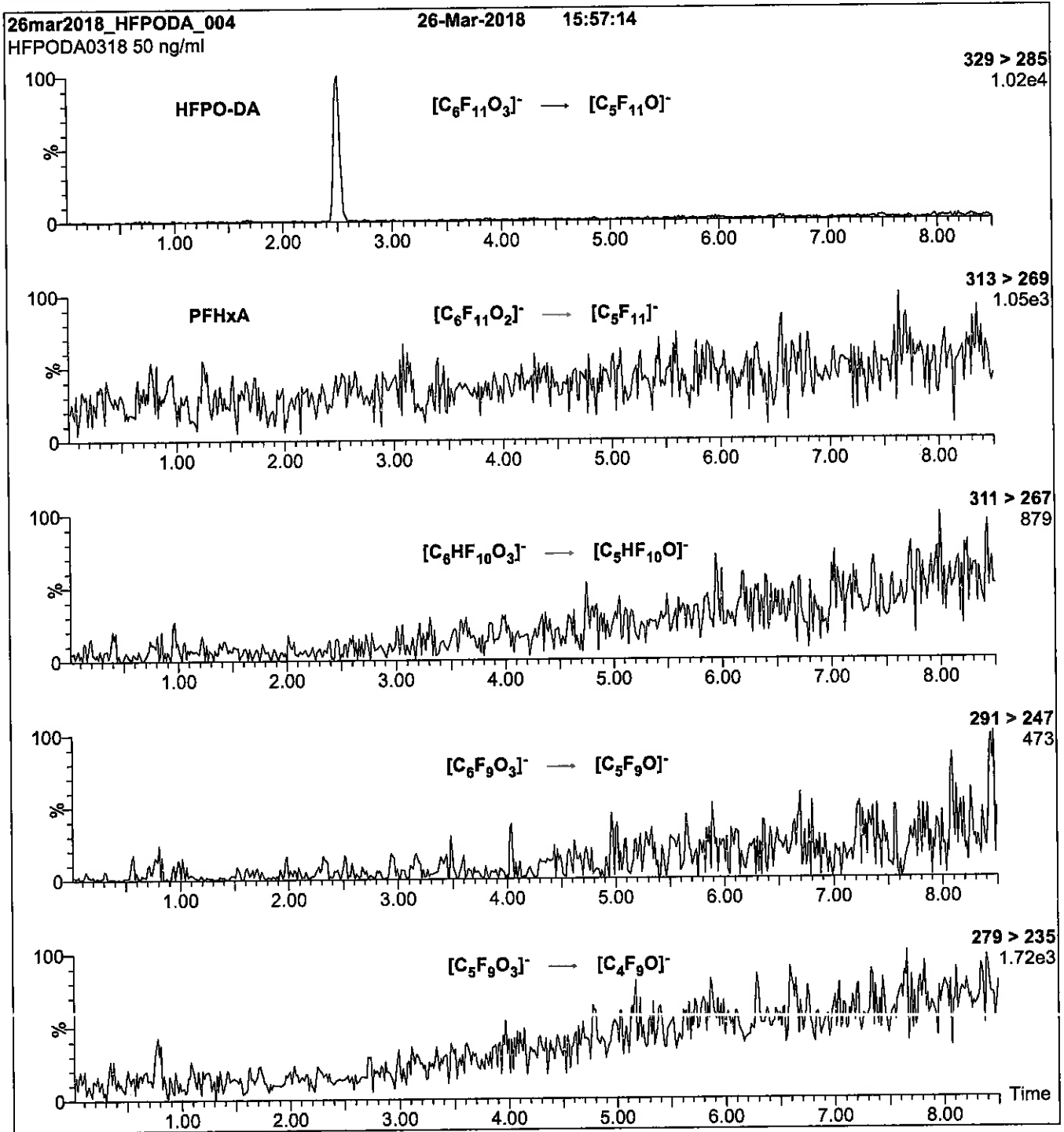
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.10
 Cone Voltage (V) = 7.50
 Desolvation Temperature (°C) = 350
 Desolvation Gas Flow (l/hr) = 750

Figure 2: HFPO-DA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

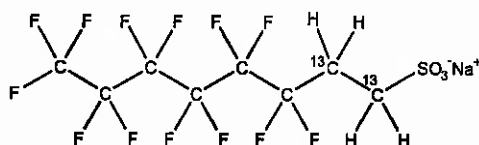
Injection: On-column (HFPO-DA)
 Mobile phase: Same as Figure 1
 Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.69e-3
 Collision Energy (eV) = 6

Reagent

LCM2-6:FTS_00008


R: 5/30/18 *can*1263197
ID: LCM2-6:FTS_00008
Exp:02/16/23 Ppt:CBM Opn:05/02/18
M2-6:2FTS**WELLINGTON
LABORATORIES****CERTIFICATE OF ANALYSIS
DOCUMENTATION****PRODUCT CODE:** M2-6:2FTS **LOT NUMBER:** M262FTS0218
COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-¹³C₂]octane sulfonate**STRUCTURE:** **CAS #:** Not available

MOLECULAR FORMULA:	¹³ C ₂ ¹² C ₆ H ₄ F ₁₃ SO ₃ Na	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)	ISOTOPIC PURITY:	≥99% ¹³ C
CHEMICAL PURITY:	>98%		(1,2- ¹³ C ₂)
LAST TESTED: (mm/dd/yyyy)	02/16/2018		
EXPIRY DATE: (mm/dd/yyyy)	02/16/2023		
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, General Manager

Date: 03/07/2018
(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.

HANDLING:

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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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

UNCERTAINTY:

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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 calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

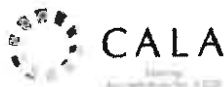
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

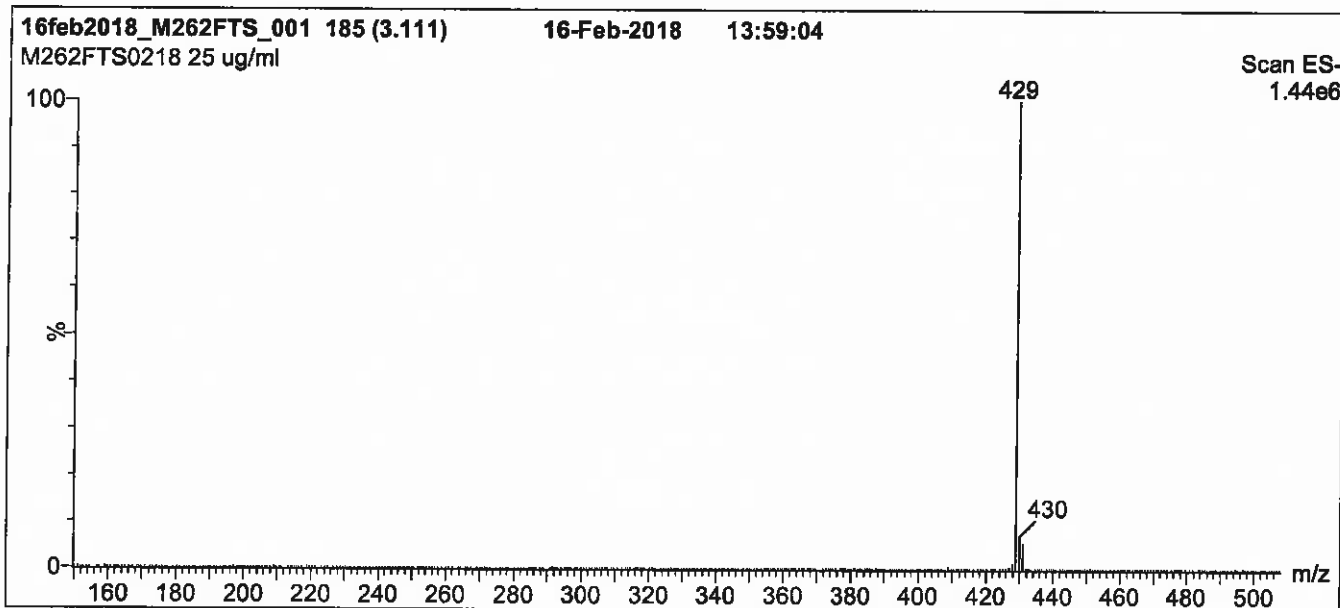
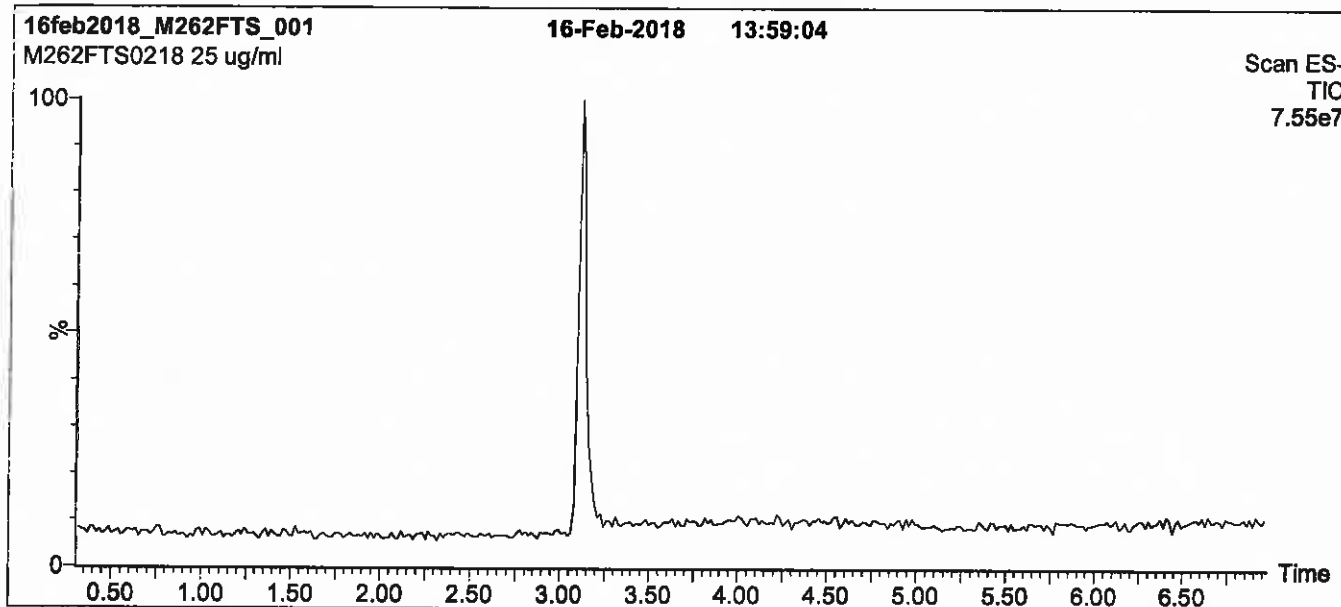
QUALITY MANAGEMENT:

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 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

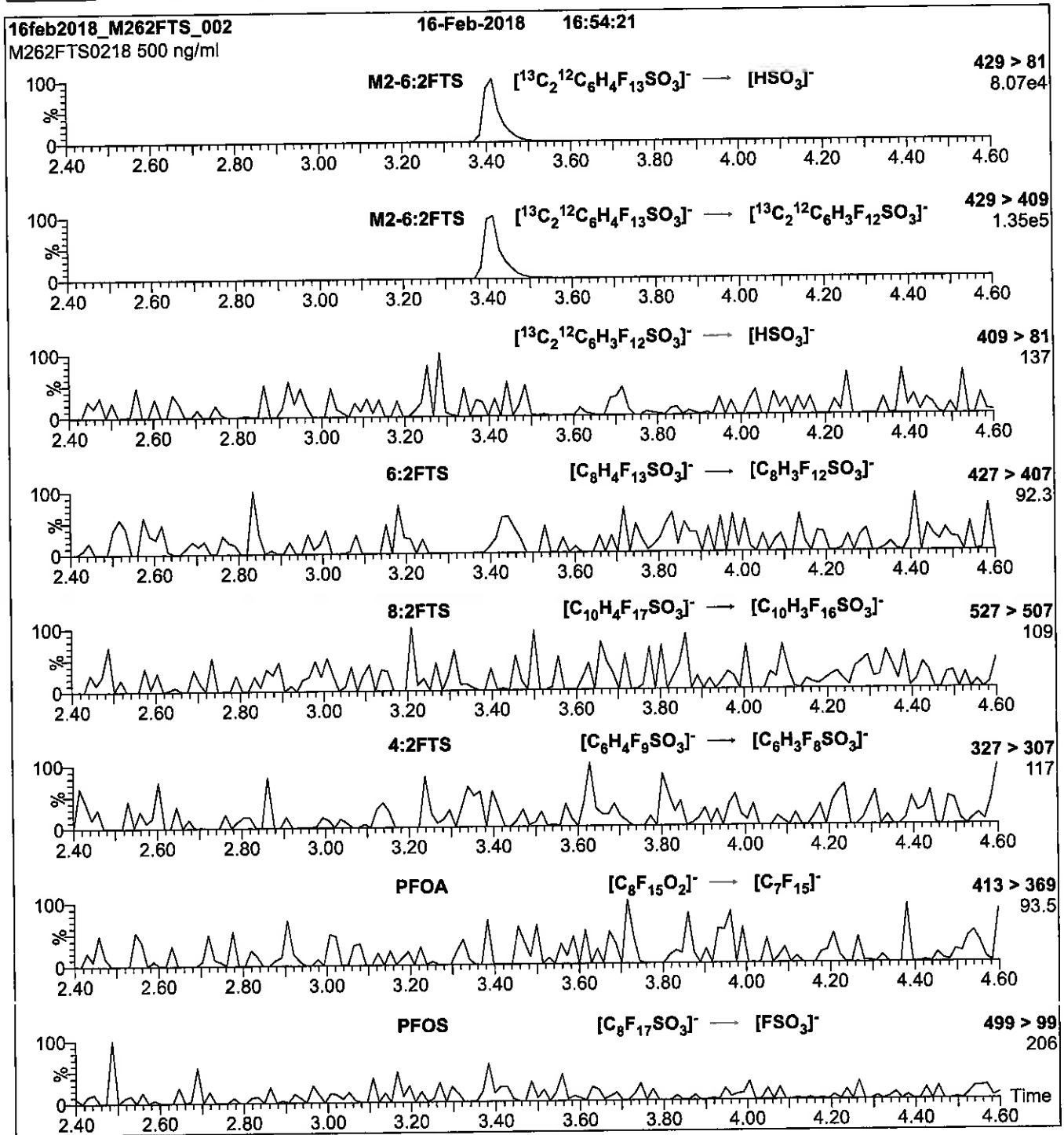
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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_00010

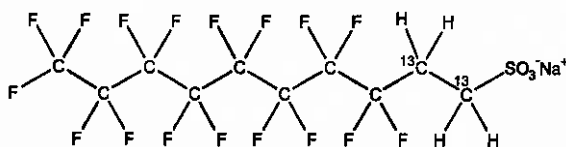


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0118
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) 01/24/2018 (1,2-¹³C₂)
EXPIRY DATE: (mm/dd/yyyy) 01/24/2023
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:** 01/26/2018
B.G. Chittim, General Manager (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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HANDLING:

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TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. 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.

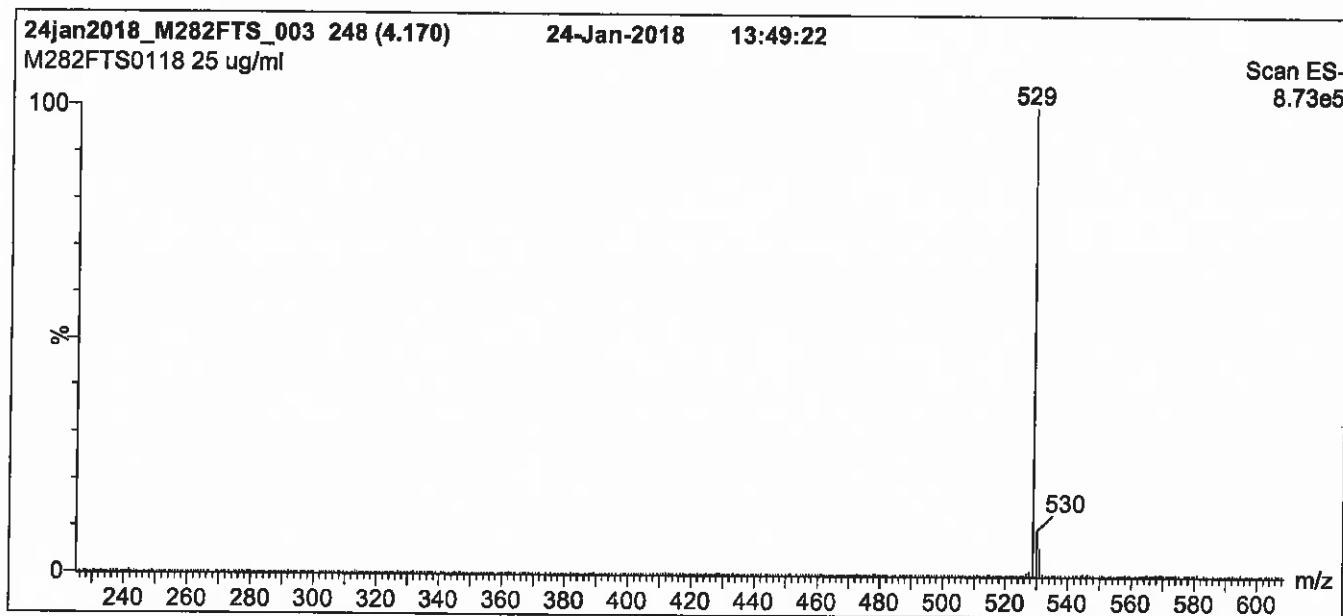
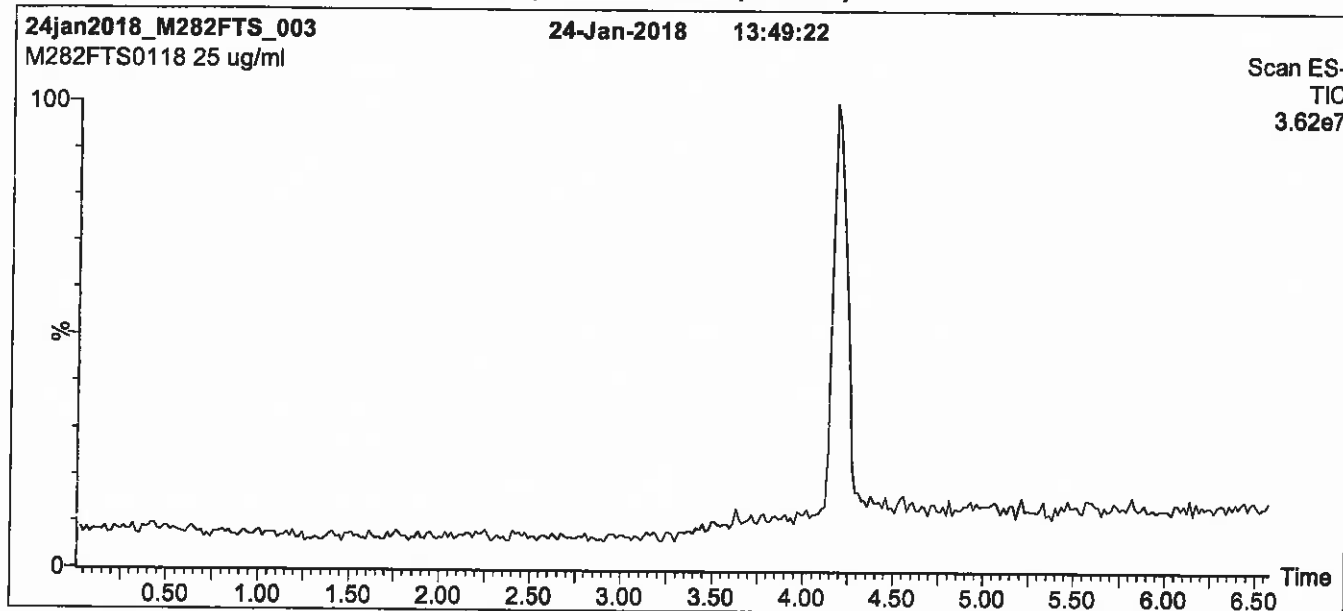
QUALITY MANAGEMENT:

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 17034 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

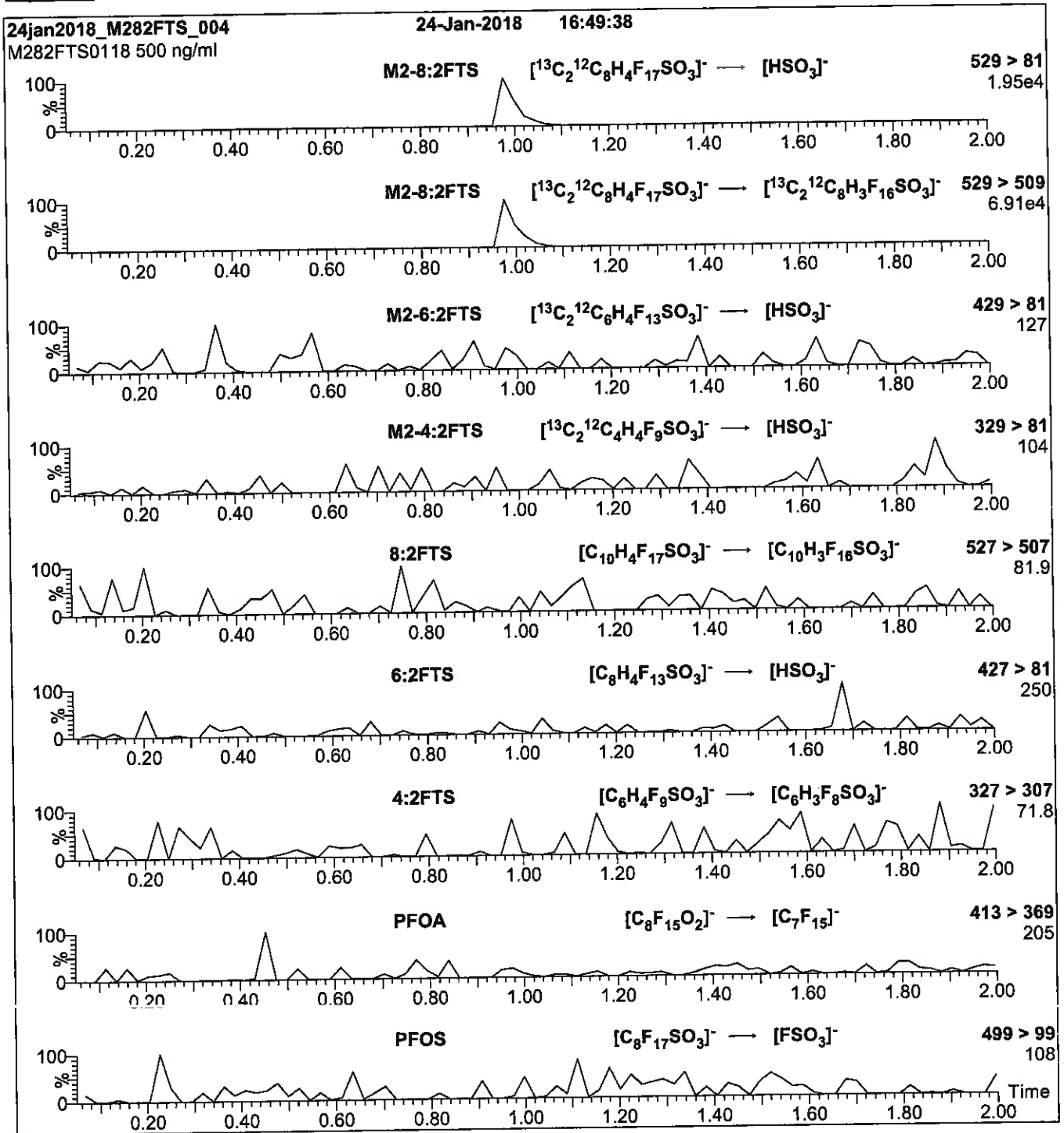
Column: Acquity UPLC BEH Shield RP₁₈, 1.7 μ m, 2.1 x 100 mm
Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7 min and hold for 2 min before returning to initial conditions in 0.5 min.
 Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV): 3.00
Cone Voltage (V): 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) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCM2PFHxDA_00016



1283133
 ID: LCM2PFHxDA_00016
 Exp: 07/13/22 Prep: CBW Opn: 06/30/18
 13C2-PFHxDA at 50ug/mL

R: 5/30/18 CBW

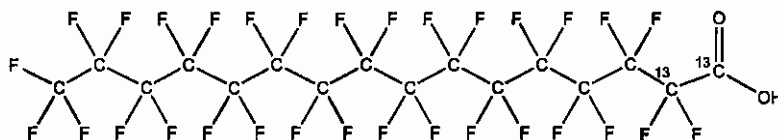


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFHxDA **LOT NUMBER:** M2PFHxDA0717
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)	07/13/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/13/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 07/14/2017
 B.G. Chittim, General Manager (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.

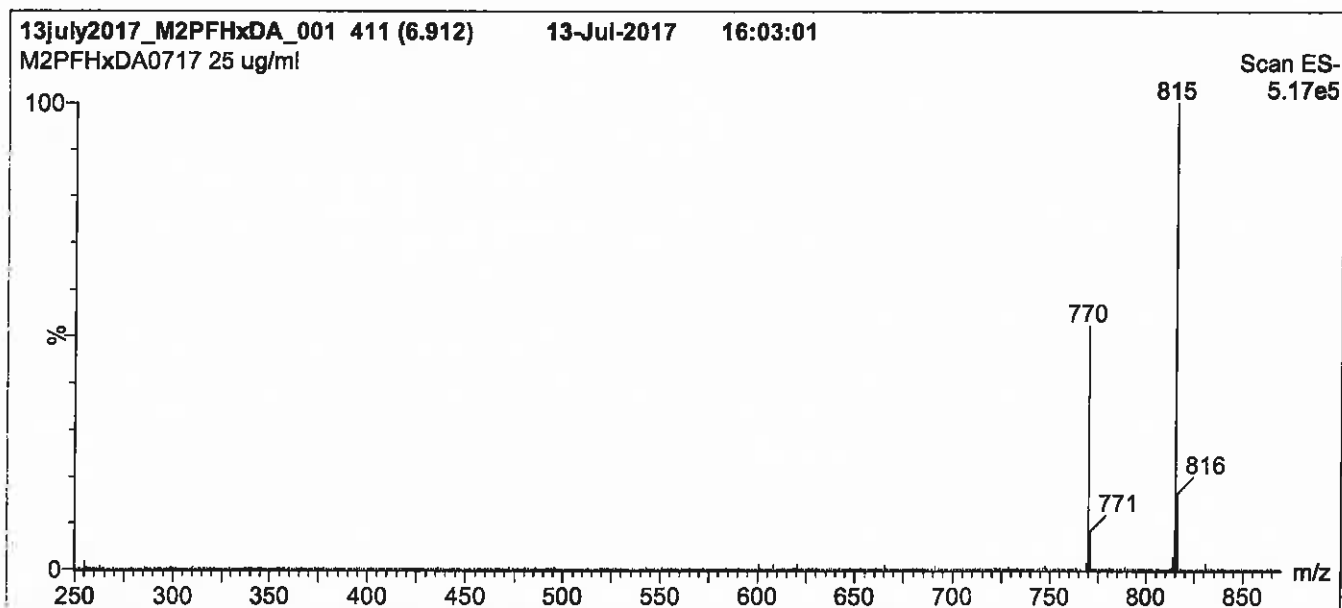
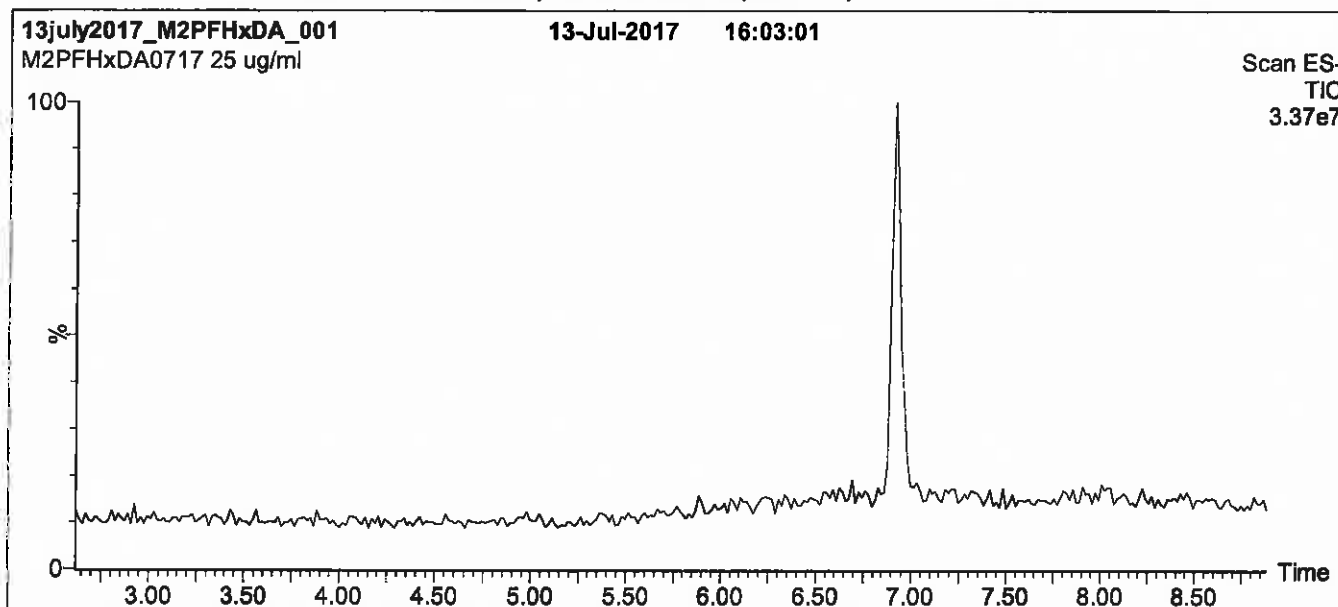
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

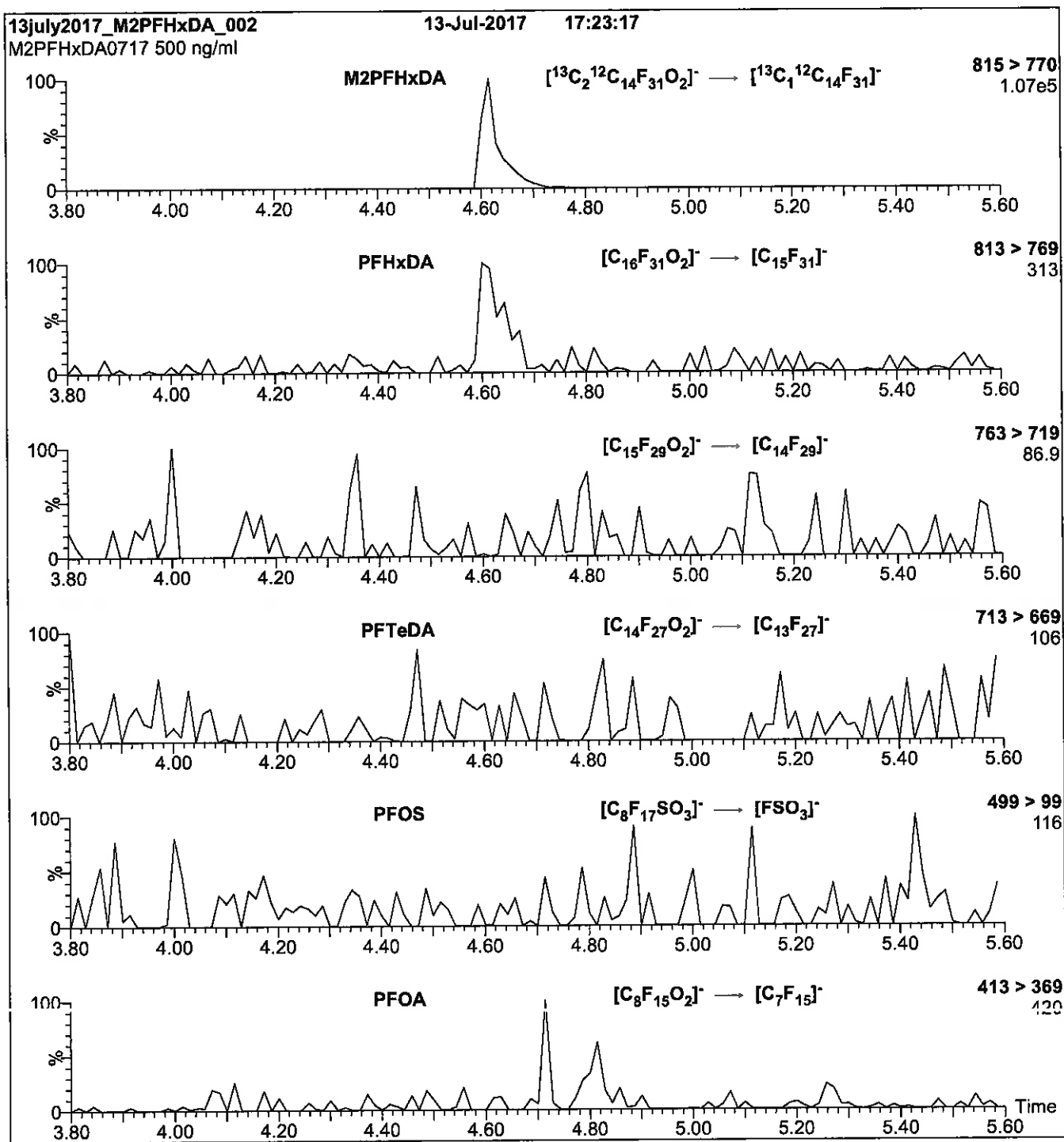
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 15

Reagent

LCM2PFOA_00008

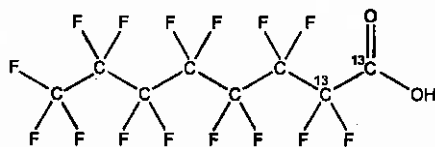


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFOA **LOT NUMBER:** M2PFOA0216
COMPOUND: Perfluoro-n-[1,2-¹³C₂]octanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₆HF₁₆O₂ **MOLECULAR WEIGHT:** 416.05
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) 02/12/2016
EXPIRY DATE: (mm/dd/yyyy) 02/12/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

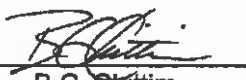
DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 02/24/2016
 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

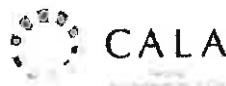
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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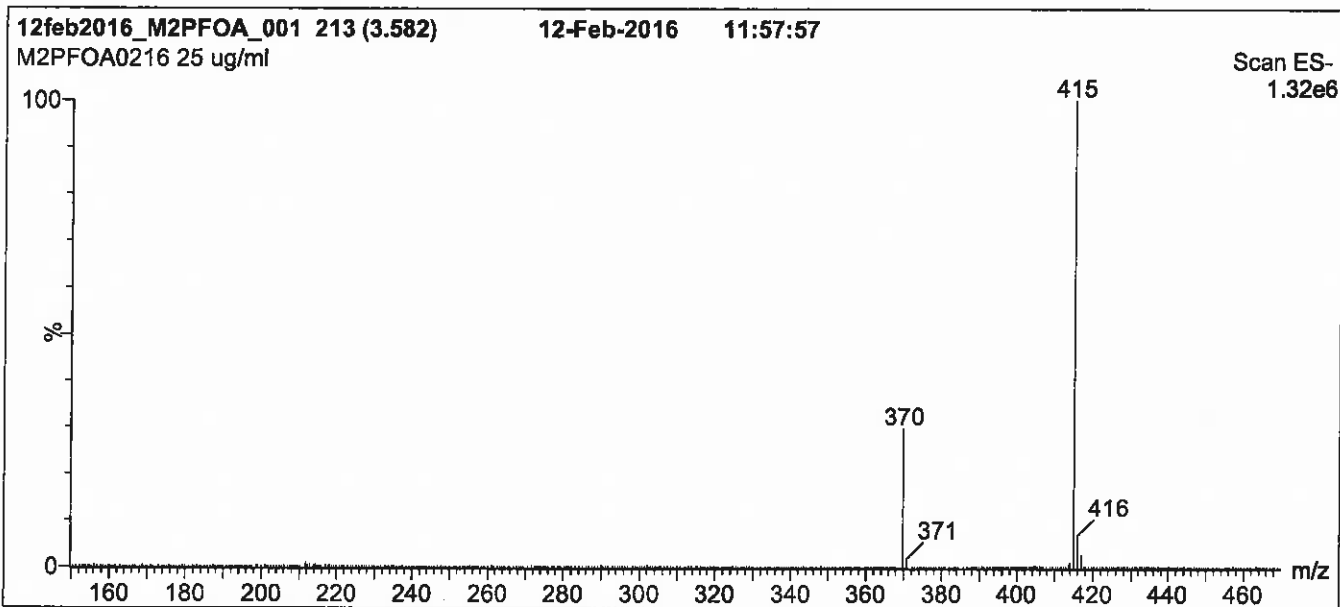
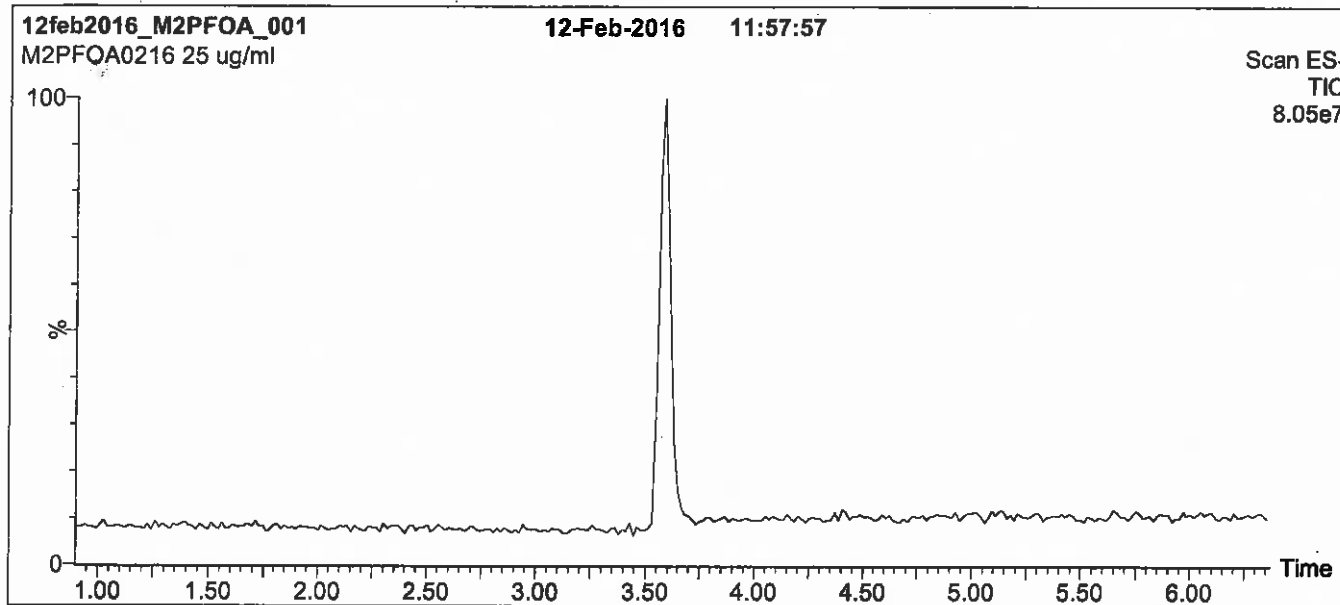
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

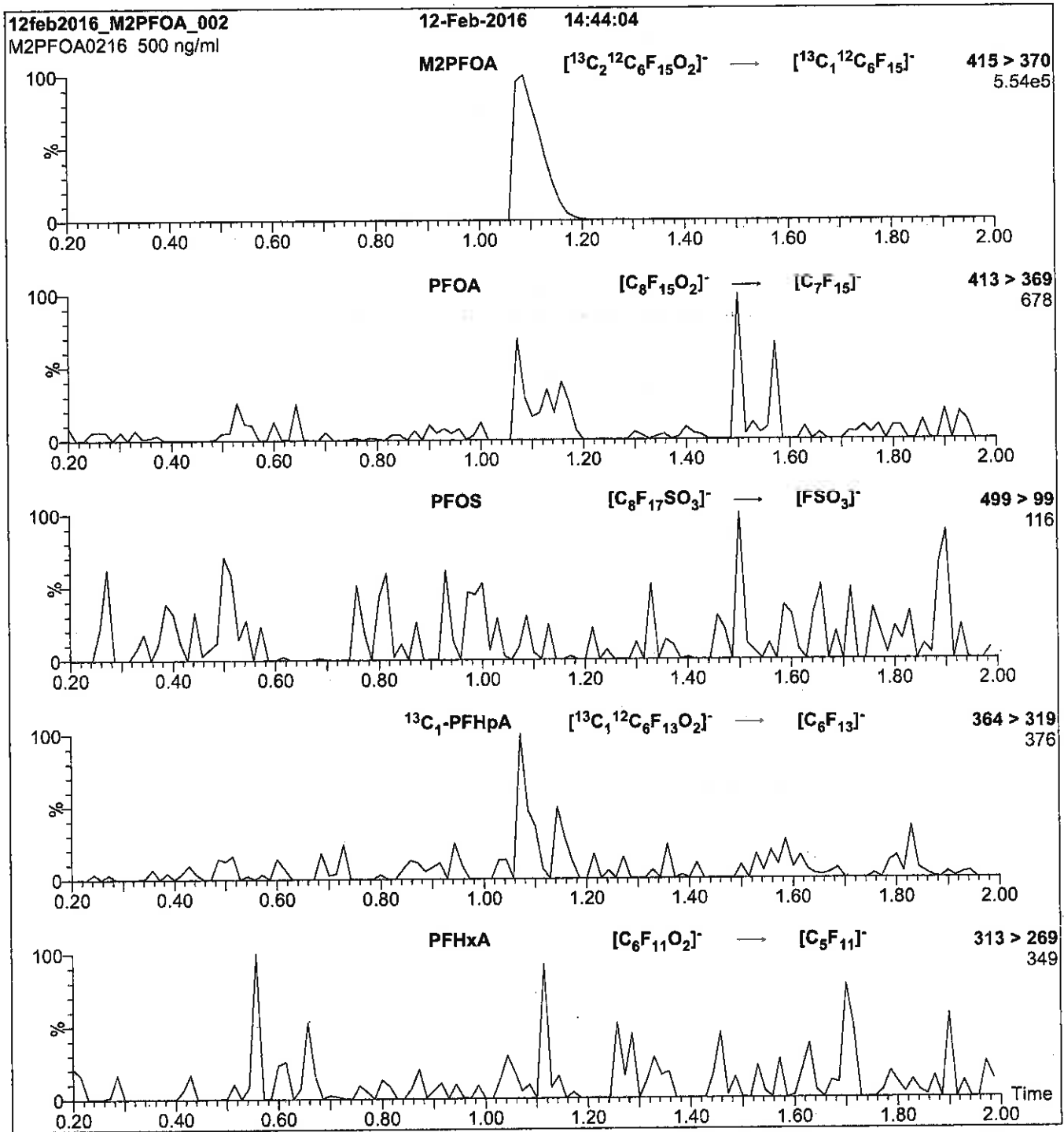
Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 7.5 min and hold for 1.5 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)
 Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 100
 Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H_2O

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

MS Parameters

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

Reagent

LCM2PFTeDA_00014



1263136
 ID: LCM2PFTeDA_00014
 Exp: 11/30/22 Ppt: CBW Opn: 05/30/18
 13C2-PFTeDA at 50ug/mL

R: 5/30/18 CAW

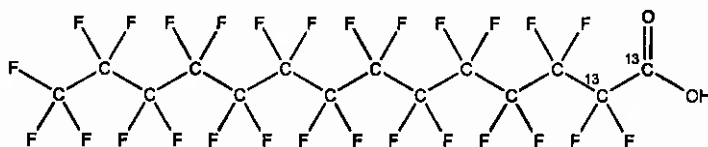


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M2PFTeDA **LOT NUMBER:** M2PFTeDA1117
COMPOUND: Perfluoro-n-[1,2-¹³C₂]tetradecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	¹³ C ₂ ¹² C ₁₂ HF ₂₇ O ₂	MOLECULAR WEIGHT:	716.10
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)	11/30/2017		
EXPIRY DATE: (mm/dd/yyyy)	11/30/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 12/01/2017
 B.G. Chittim, General Manager (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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

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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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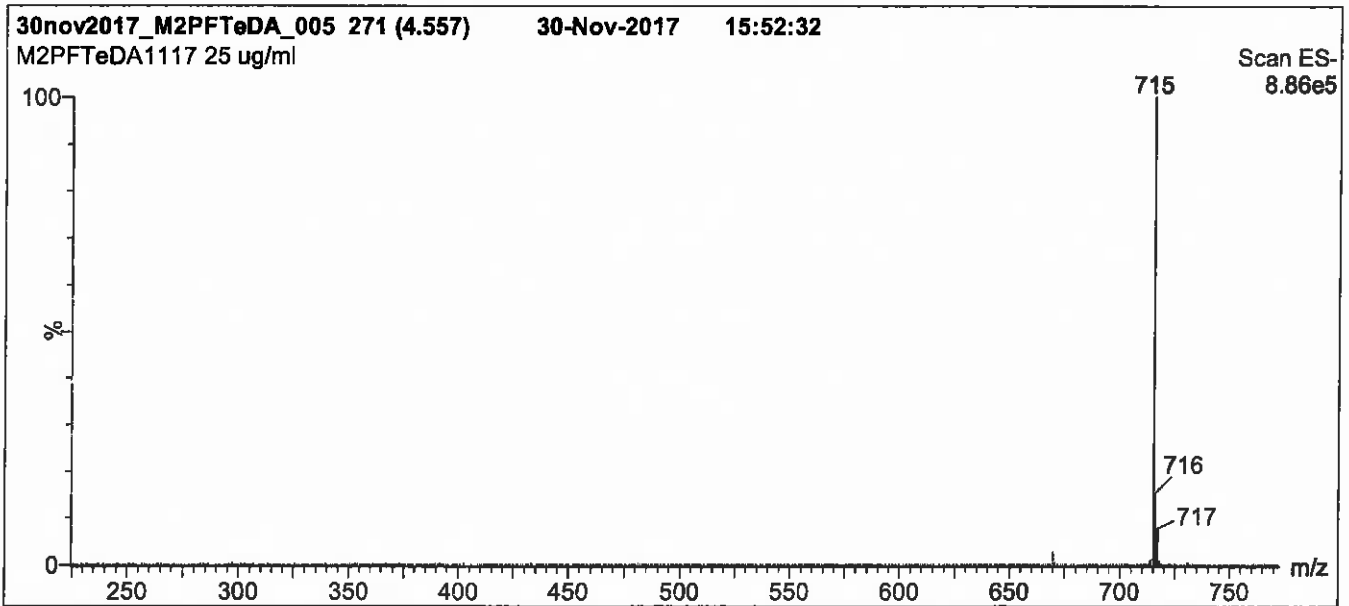
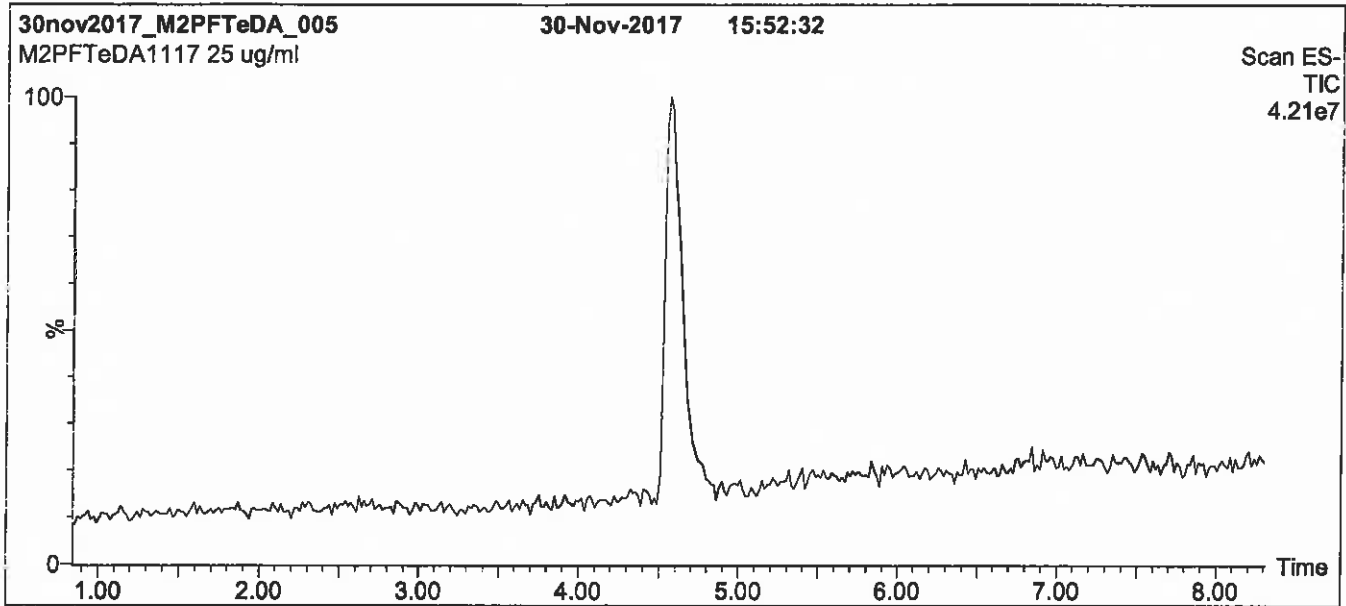
QUALITY MANAGEMENT:

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

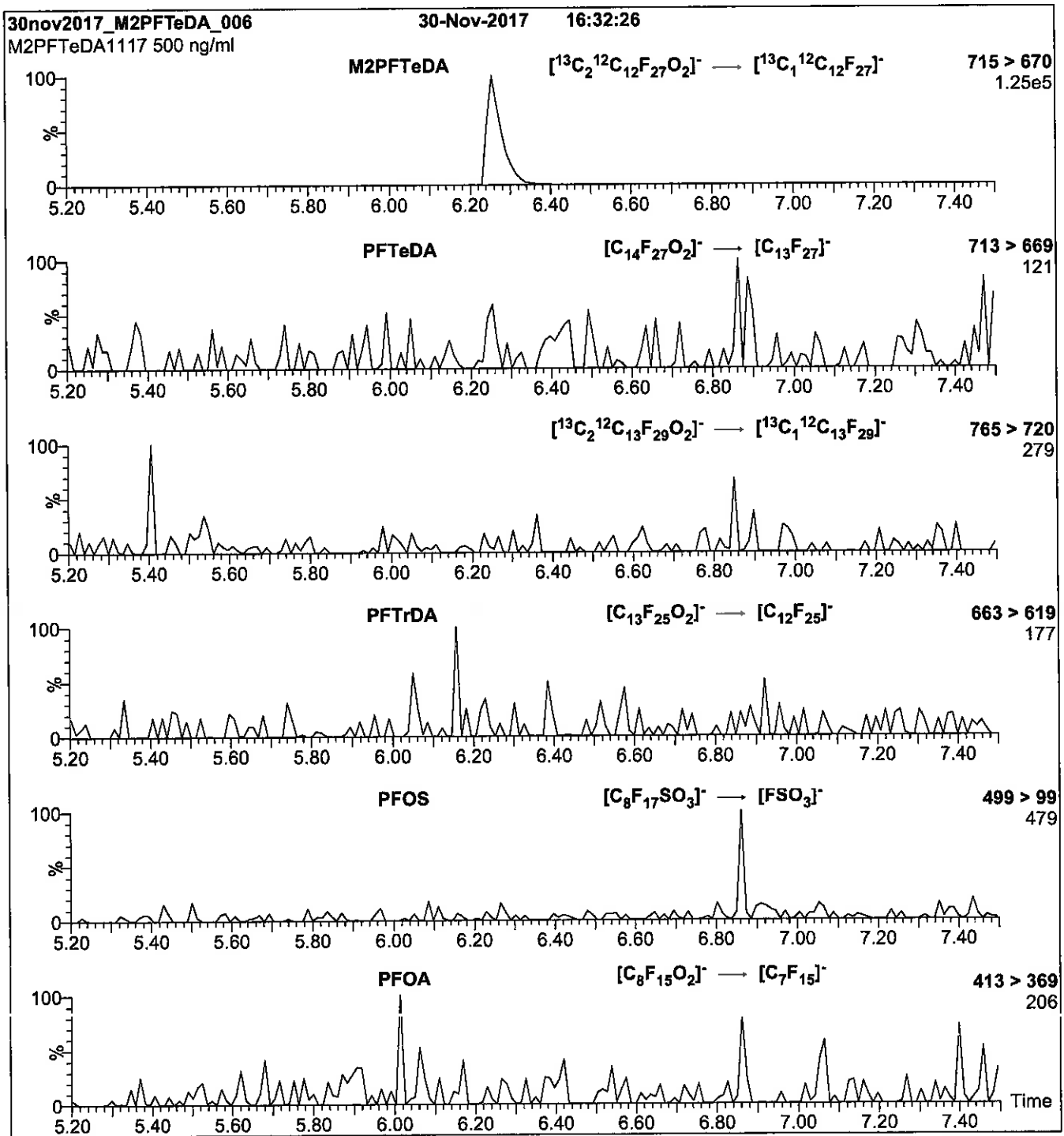
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = $3.31\text{e-}3$
Collision Energy (eV) = 14

Reagent

LCM3HFPO-DA_00003



1263201

ID: LCM3HFPO-DA_00003

Exp:05/18/21 Print:CSM Opn:05/30/18

M3HFPO-DA



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

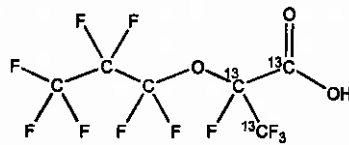
M3HFPO-DA

LOT NUMBER:

M3HFPODA0518

COMPOUND:2,3,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-¹³C₃-propanoic acid**STRUCTURE:****CAS #:**

Not available

**MOLECULAR FORMULA:**¹³C₃¹²C₃HF₁₁O₃**MOLECULAR WEIGHT:**

333.03

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

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

05/18/2018

(¹³C₃)**EXPIRY DATE:** (mm/dd/yyyy)

05/18/2021

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.5% of two constitutional isomers.
- Product is commercially known as GenX.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager

Date: 05/25/2018

(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.

HANDLING:

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:

Our products are synthesized using single-product unambiguous routes whenever possible. 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:

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

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

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

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. 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.

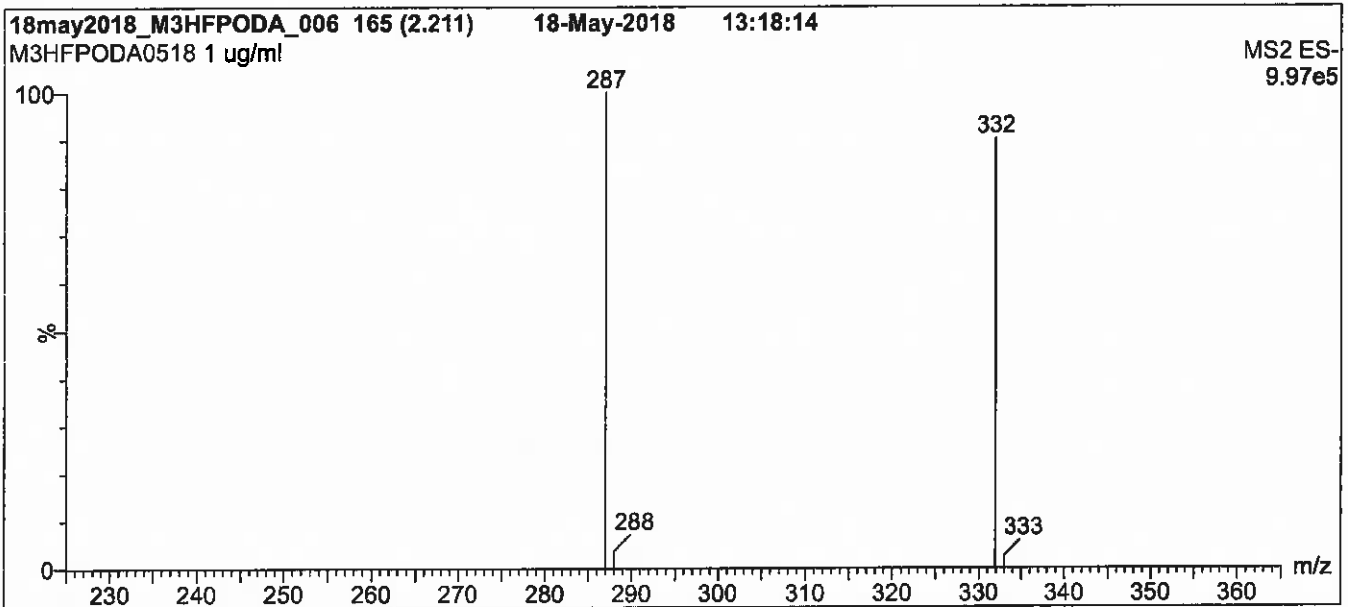
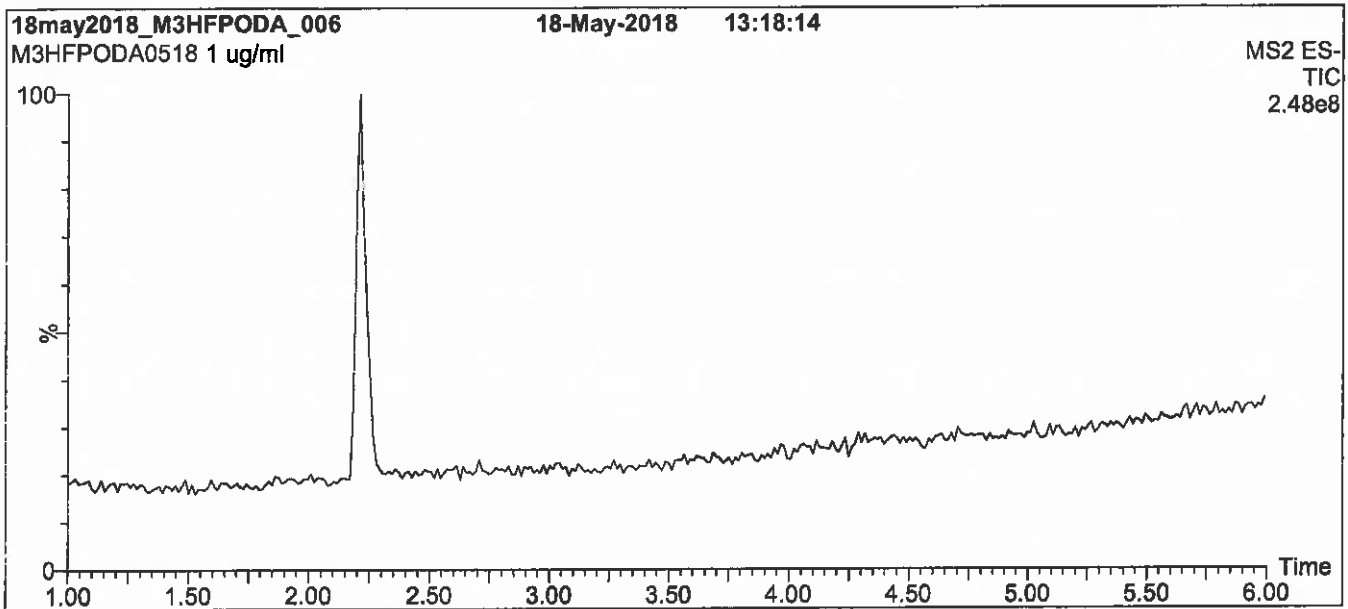
QUALITY MANAGEMENT:

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 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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Figure 1: M3HFPO-DA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro 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 80% organic over 8 min and hold for
2 min before returning to initial conditions in 0.75 min.
Time: 12 min

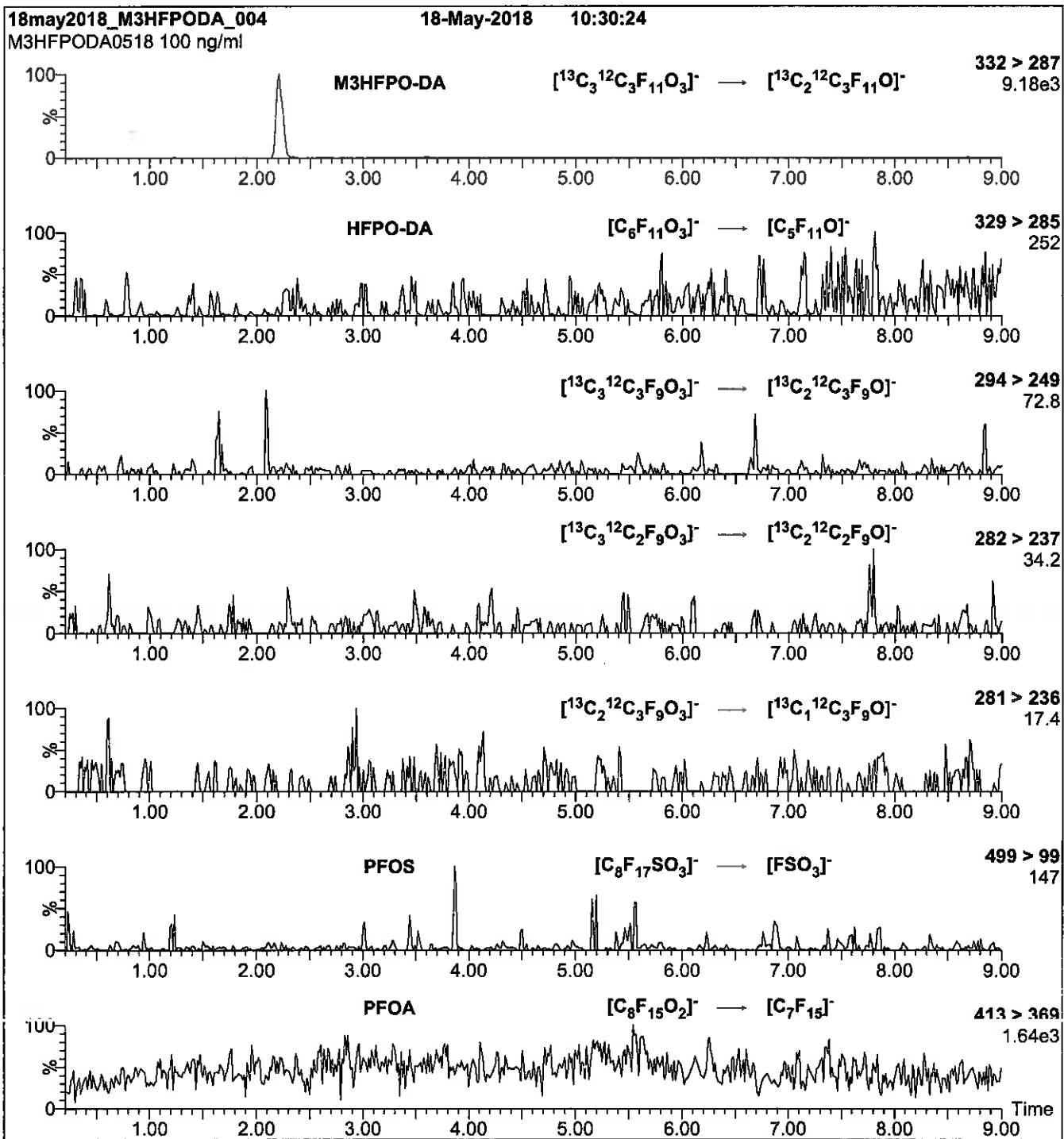
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.10
Cone Voltage (V) = 7.50
Desolvation Temperature (°C) = 350
Desolvation Gas Flow (l/hr) = 750

Figure 2: M3HFPO-DA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: On-column (M3HFPO-DA)
Mobile phase: Same as Figure 1
Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 6

Reagent

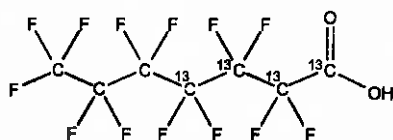
LCM4PFHPA_00014



1263142

ID: LCM4PFHPA_00014
Exp: 05/03/22 Prod: CBW Opr: 05/30/18
13C4-Perfluoroheptanoic a

R: 12T 5/30/18 CAW

**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%
LAST TESTED: (mm/dd/yyyy) 05/03/2017
EXPIRY DATE: (mm/dd/yyyy) 05/03/2022**ISOTOPIC PURITY:** ≥99%¹³C
(1,2,3,4-¹³C₄)**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

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EXPIRY DATE / PERIOD OF VALIDITY:

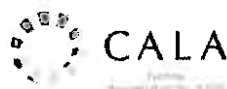
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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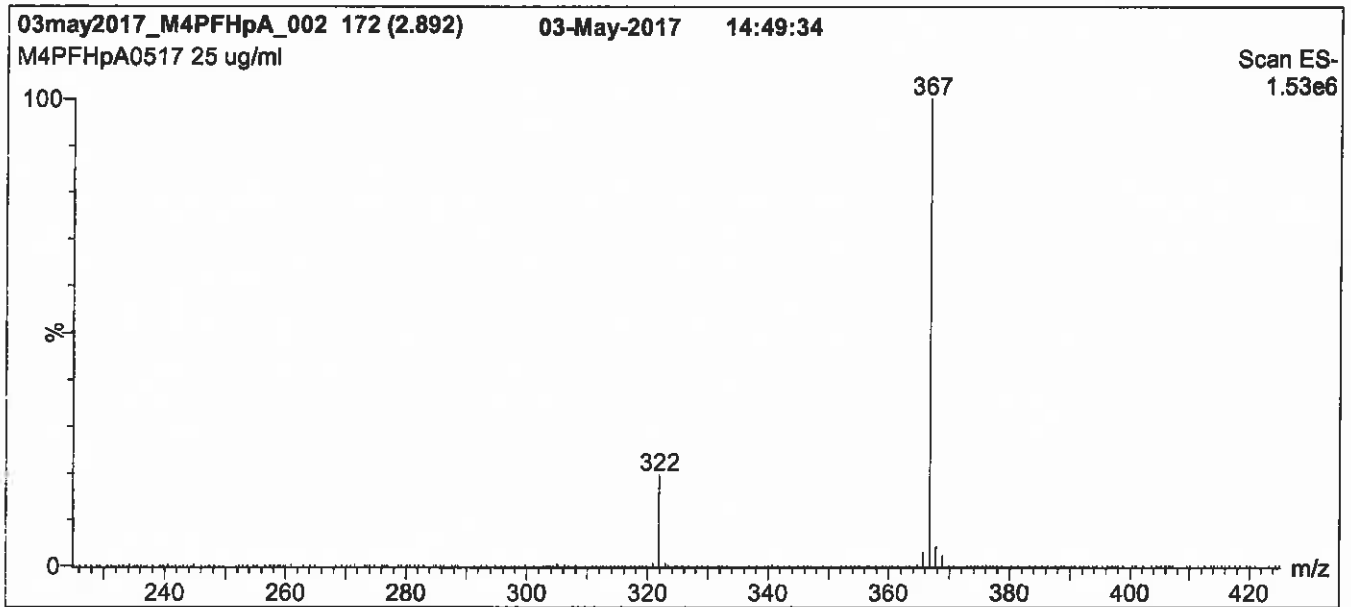
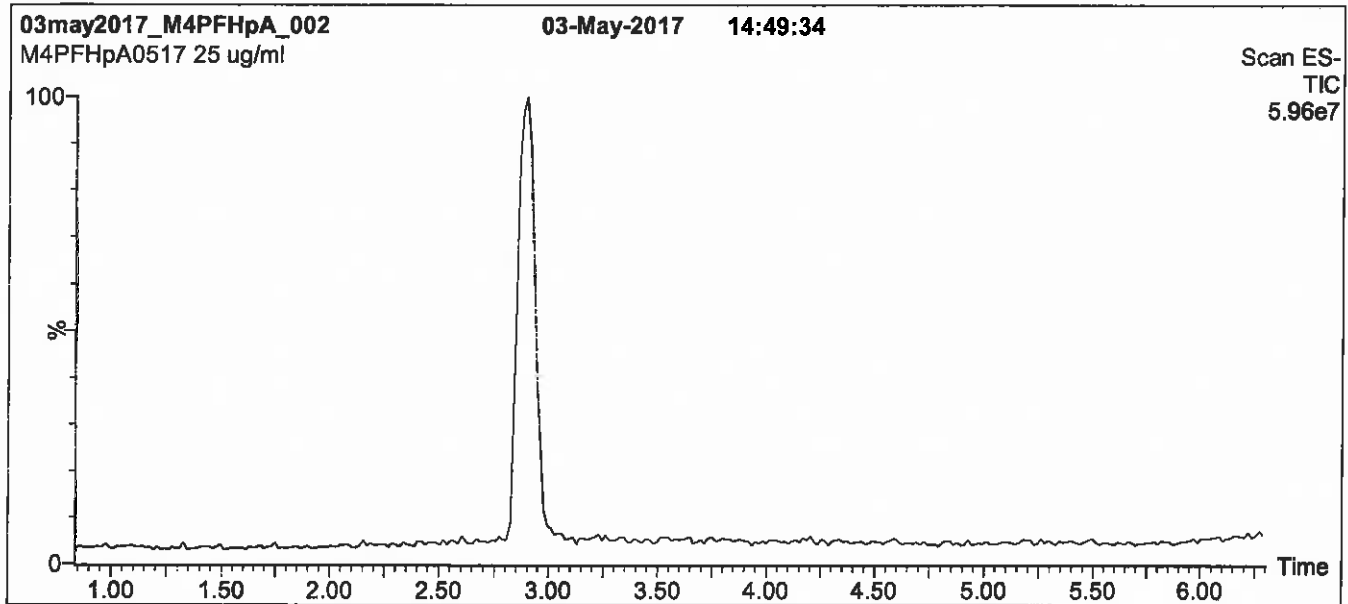
QUALITY MANAGEMENT:

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Figure 1: 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

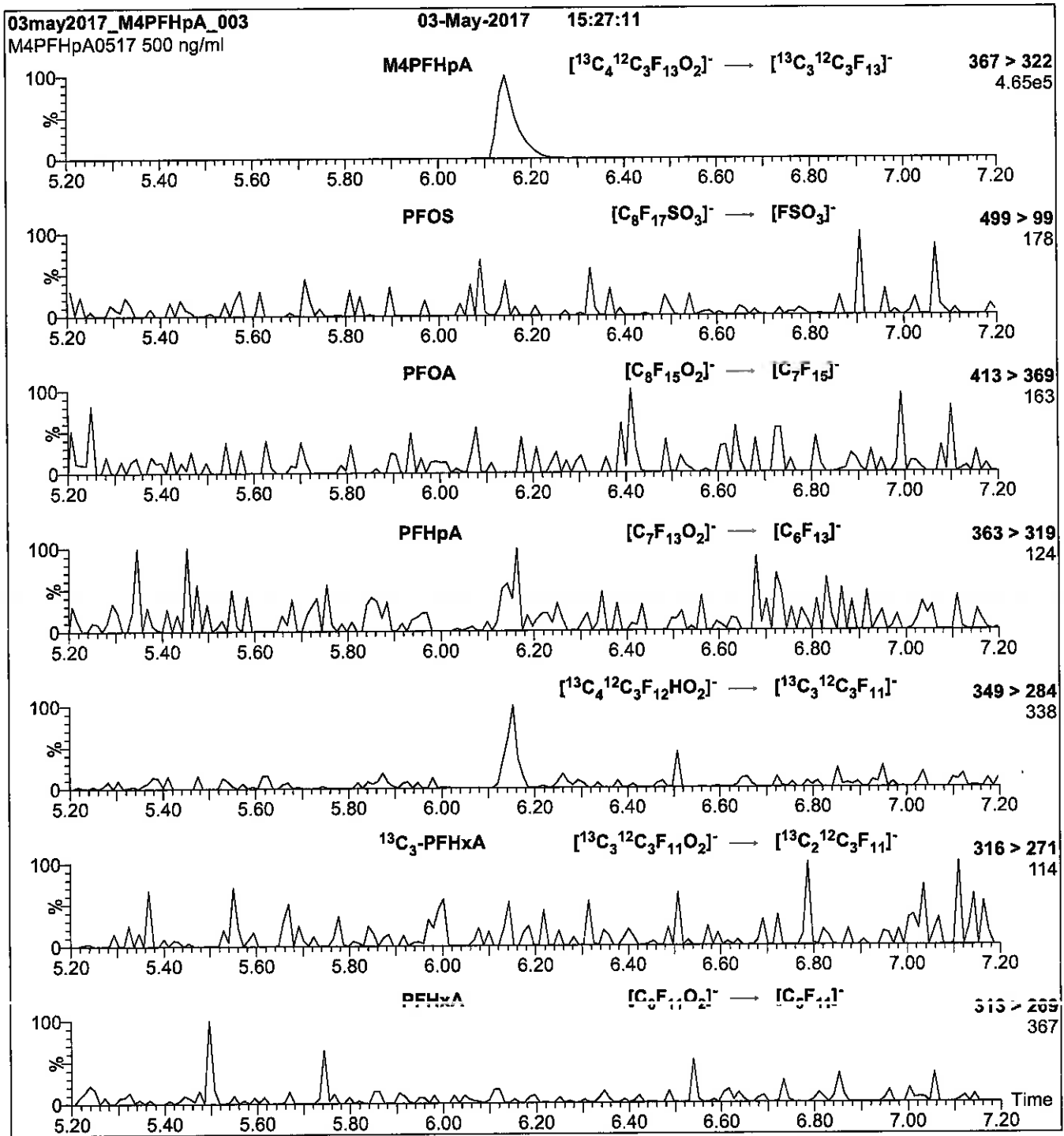
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

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

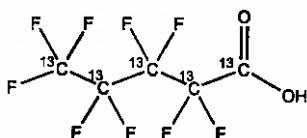
LCM5PFPEA_00015



R: 5/30/18 CW

1263145

ID: LCM5PFPEA_00015

Exp: 07/20/22 Prod: CBW Opn: 05/30/18
13C5-Perfluoropentanoic a**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** M5PFPeA **LOT NUMBER:** M5PFPeA0717
COMPOUND: Perfluoro-n-[¹³C₅]pentanoic acid**STRUCTURE:** **CAS #:** Not available

MOLECULAR FORMULA:	¹³ C ₅ HF ₈ O ₂	MOLECULAR WEIGHT:	269.01
CONCENTRATION:	50 ± 2.5 µg/ml	SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C (¹³ C ₅)
LAST TESTED: (mm/dd/yyyy)	07/20/2017		
EXPIRY DATE: (mm/dd/yyyy)	07/20/2022		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim, General Manager
Date: 07/26/2017
(mm/dd/yyyy)

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

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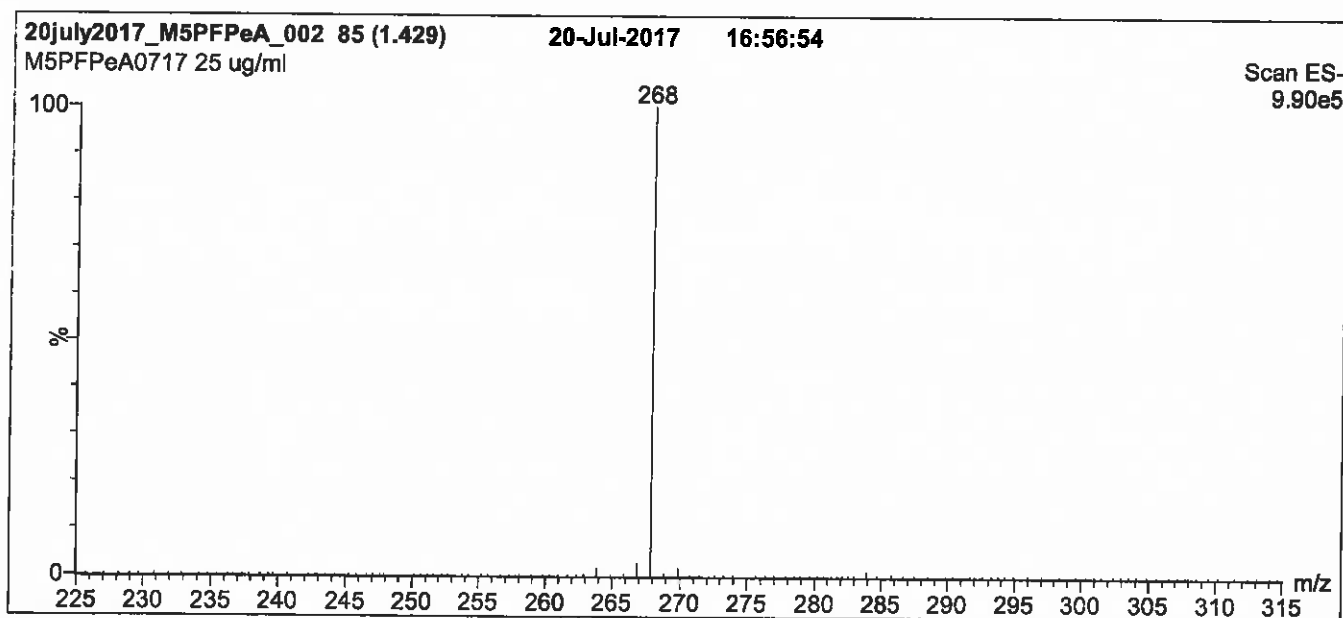
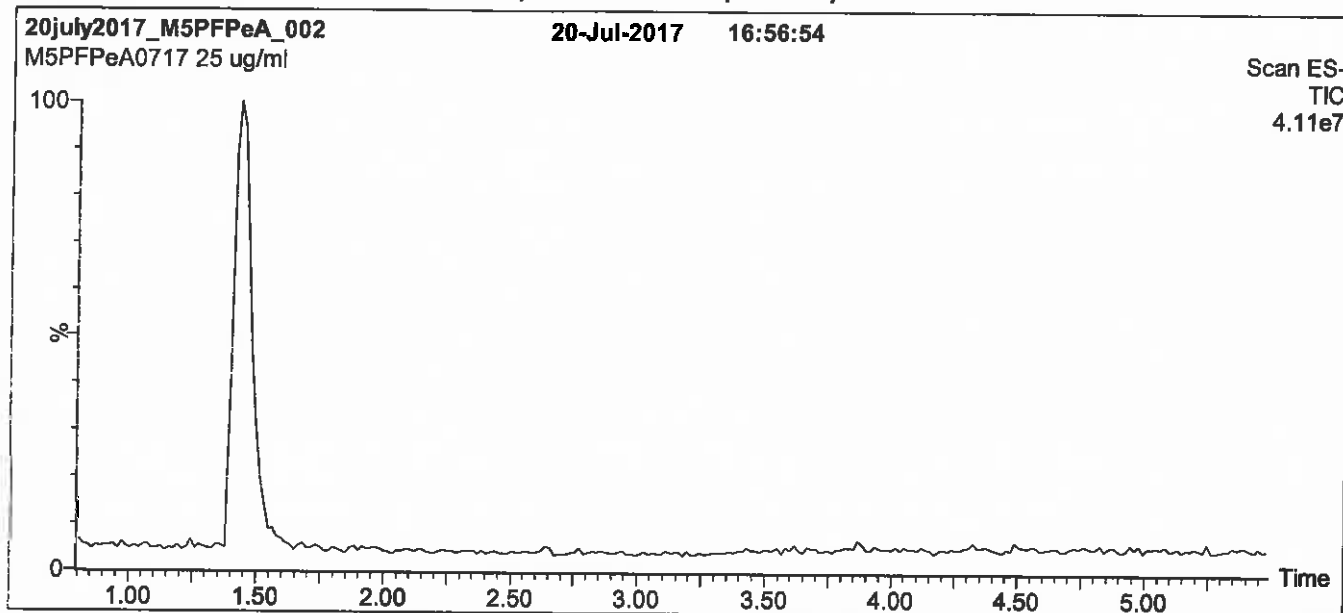
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Figure 1: M5PFPeA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

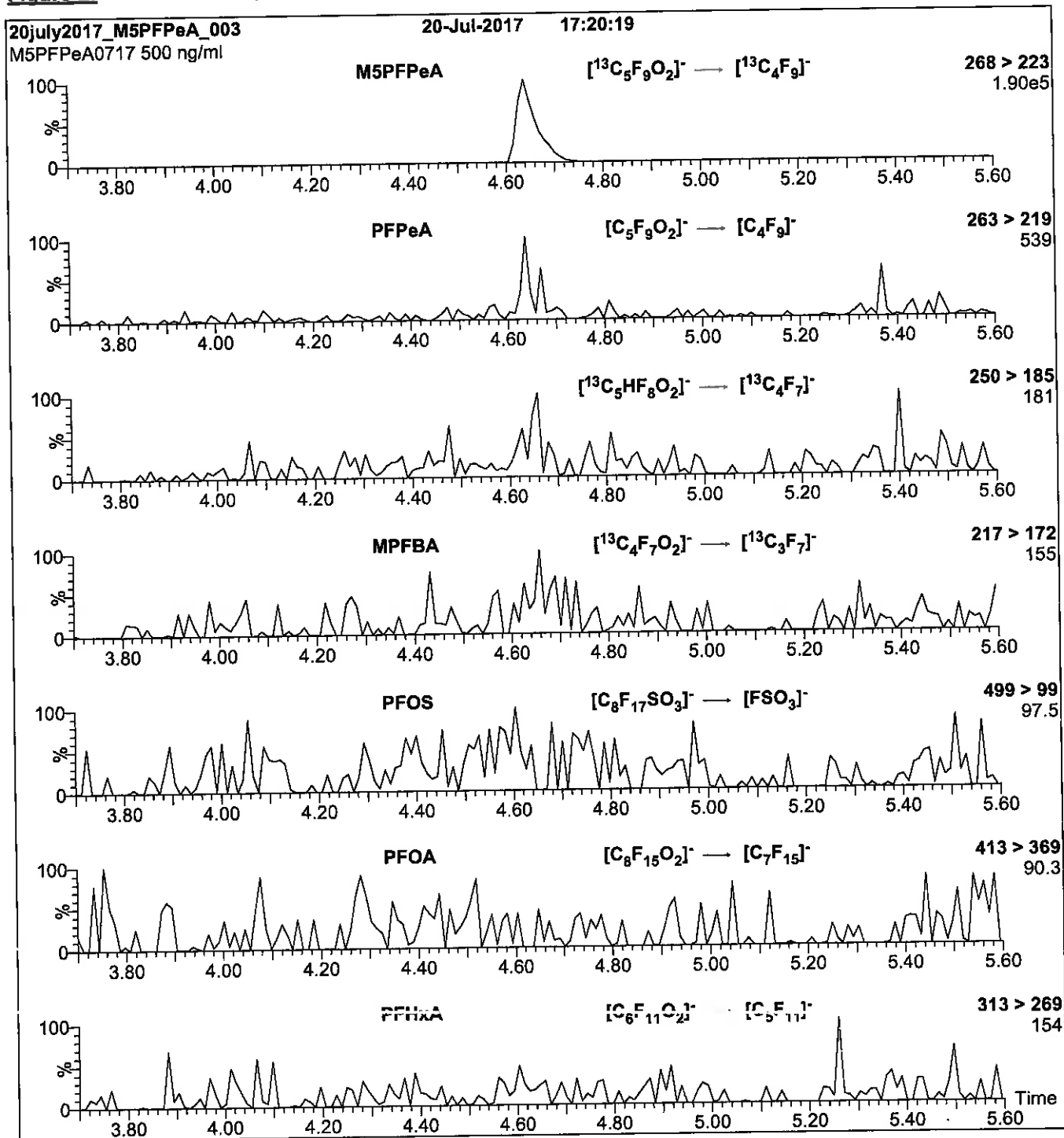
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Hold for 1 min. Ramp to 90% organic over 7 min and hold
for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

MS Parameters

Collision Gas (mbar) = 3.54e-3
 Collision Energy (eV) = 9

Reagent

LCM8FOSA_00019



WELLINGTON LABORATORIES

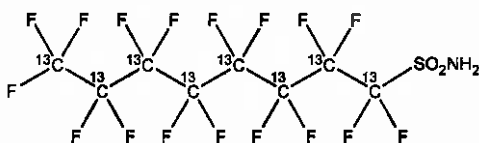
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: M8FOSA10171

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA: ¹³C₈H₂F₁₇NO₂S
CONCENTRATION: 50 ± 2.5 µg/ml
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/11/2017
EXPIRY DATE: (mm/dd/yyyy) 10/11/2022
RECOMMENDED STORAGE: Refrigerate ampoule

MOLECULAR WEIGHT: 507.09
SOLVENT(S): Isopropanol
ISOTOPIC PURITY: ≥99% ¹³C
(¹³C₈)

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 1.1% of perfluoro-1-[¹³C₈]octanesulfonamide and ~ 0.01% of perfluoro-1-[¹³C₇]heptanesulfonamide.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager
Date: 10/20/2017
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external ISO/IEC 17025 accredited calibration company. In addition, their calibration is verified prior to each weighing using calibrated NIST and/or NRC traceable external weights. All volumetric glassware used is calibrated, of Class A tolerance, and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

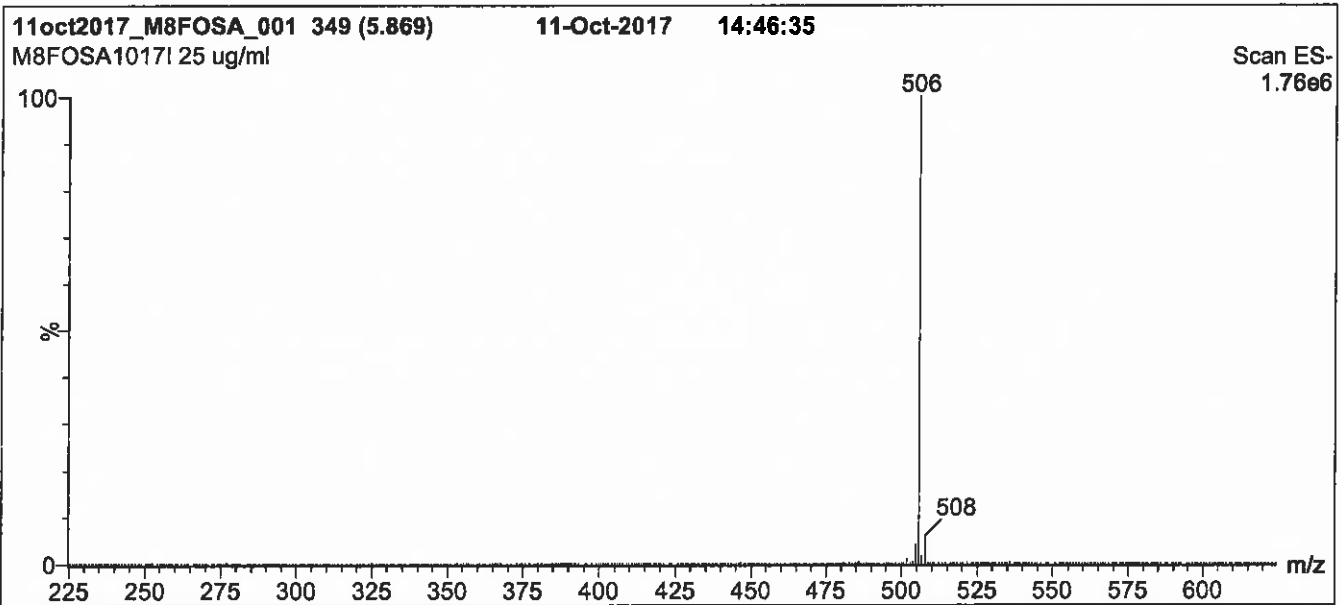
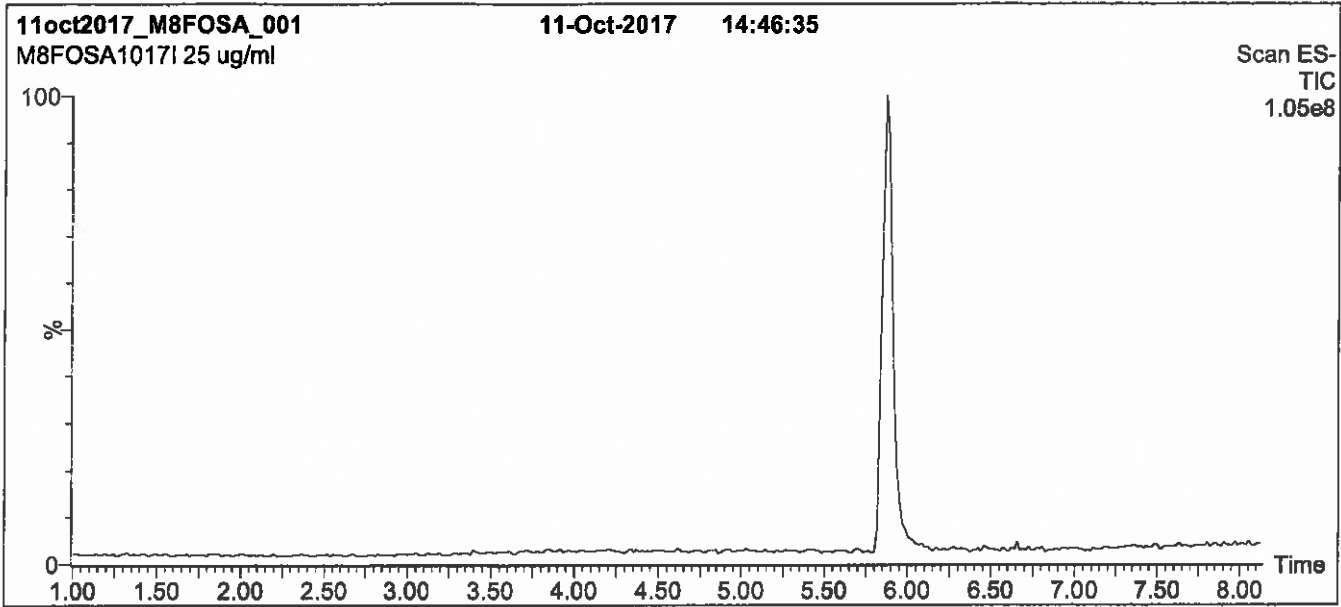
QUALITY MANAGEMENT:

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



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



Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient

Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)

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

Time: 10 min

Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)

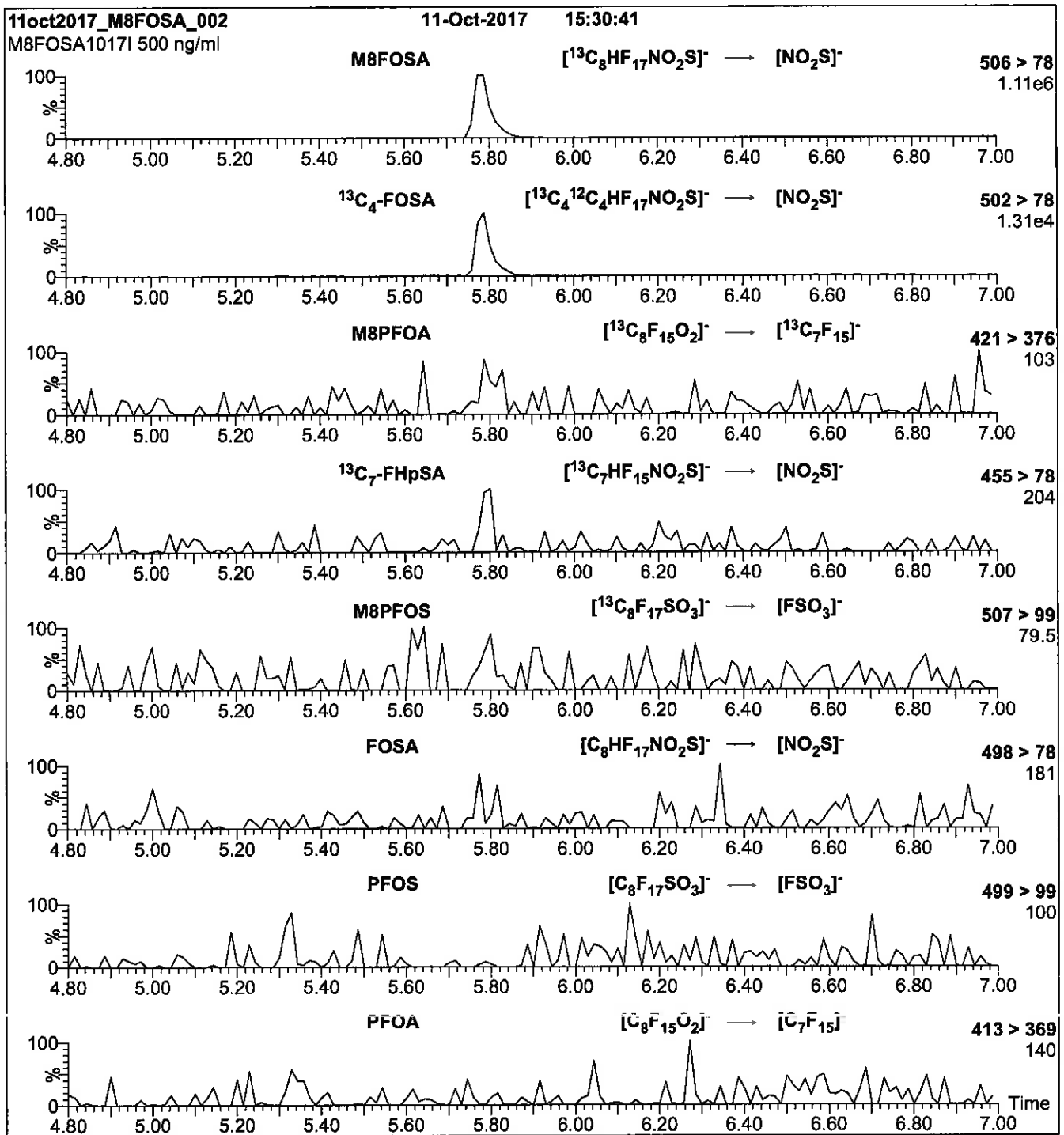
Capillary Voltage (kV) = 2.50

Cone Voltage (V) = 40.00

Cone Gas Flow (l/hr) = 50

Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

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

MS Parameters

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

Reagent

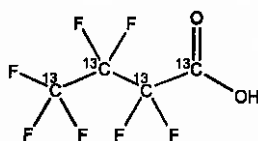
LCMPFBA_00015



R: 5/30/18 CBW

1263154

ID: LCMFBA_00015

Exp: 02/16/23 Prep: CBW Opn: 05/30/18
13C4-Perfluorobutanoic ac**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION**PRODUCT CODE:** MPFBA **LOT NUMBER:** MPFBA0218
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]butanoic acid**STRUCTURE:** **CAS #:** Not available

MOLECULAR FORMULA:	¹³ C ₄ HF ₇ O ₂	MOLECULAR WEIGHT:	218.01
CONCENTRATION:	50 ± 2.5 µg/ml	SOLVENT(S):	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	ISOTOPIC PURITY:	≥99% ¹³ C (1,2,3,4- ¹³ C ₄)
LAST TESTED: (mm/dd/yyyy)	02/16/2018		
EXPIRY DATE: (mm/dd/yyyy)	02/16/2023		
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: 02/22/2018
(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.

HANDLING:

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:

Our products are synthesized using single-product unambiguous routes whenever possible. 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.

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EXPIRY DATE / PERIOD OF VALIDITY:

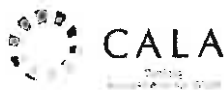
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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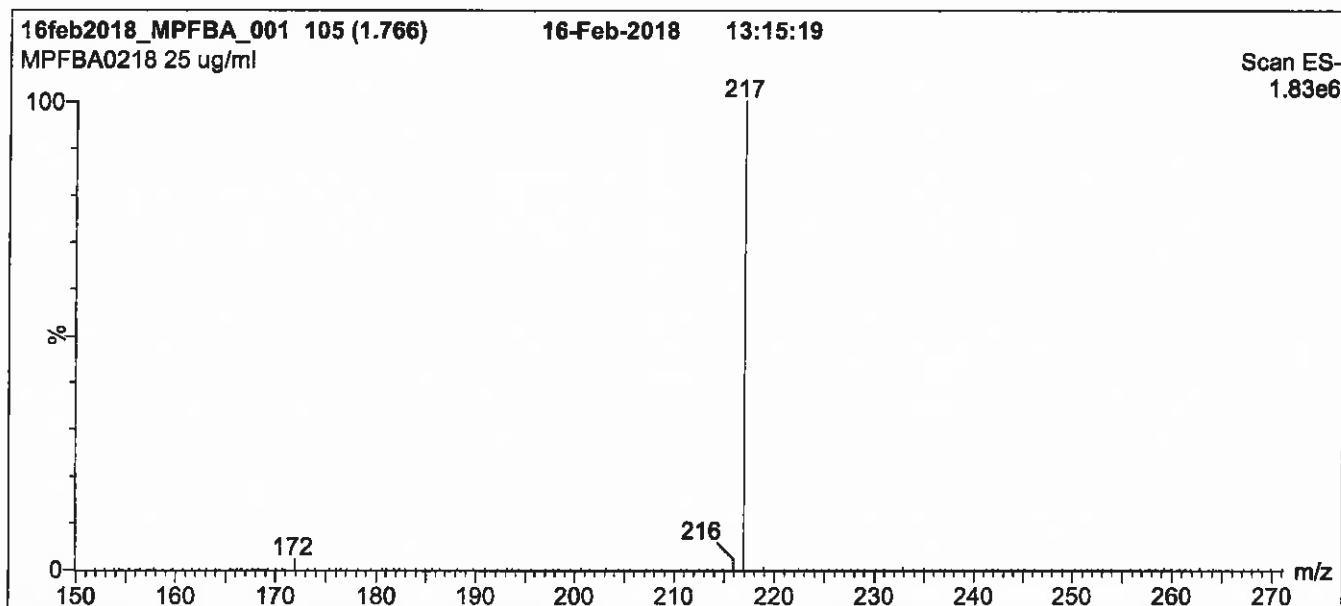
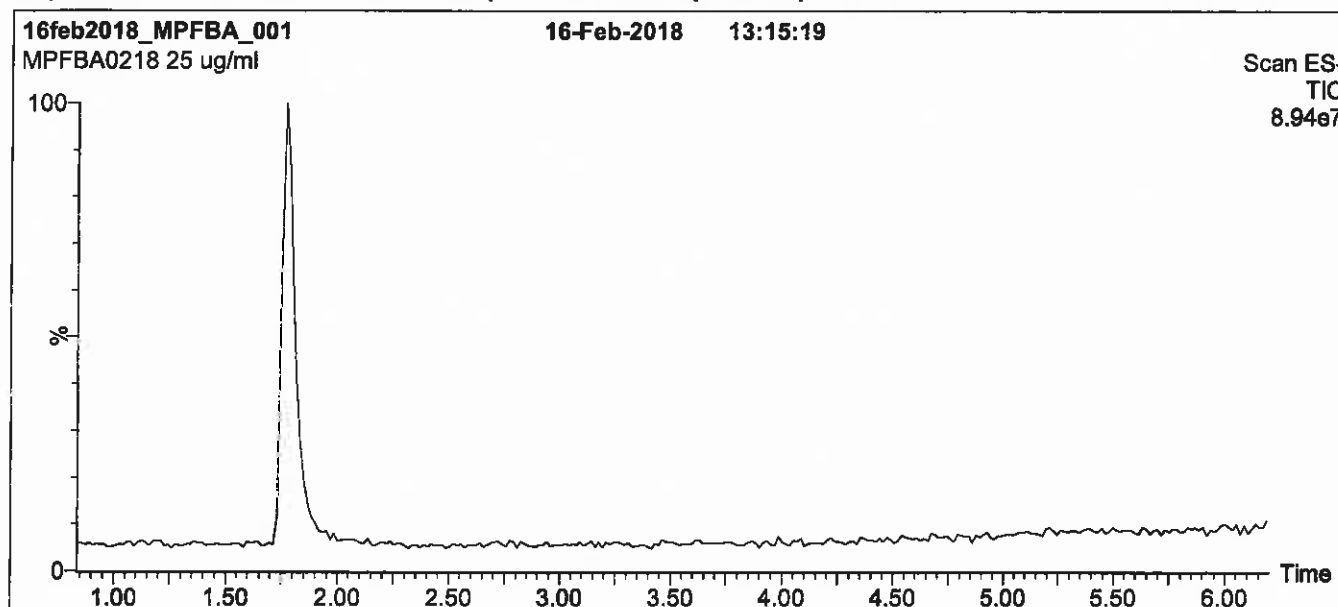
QUALITY MANAGEMENT:

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 17034 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).



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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

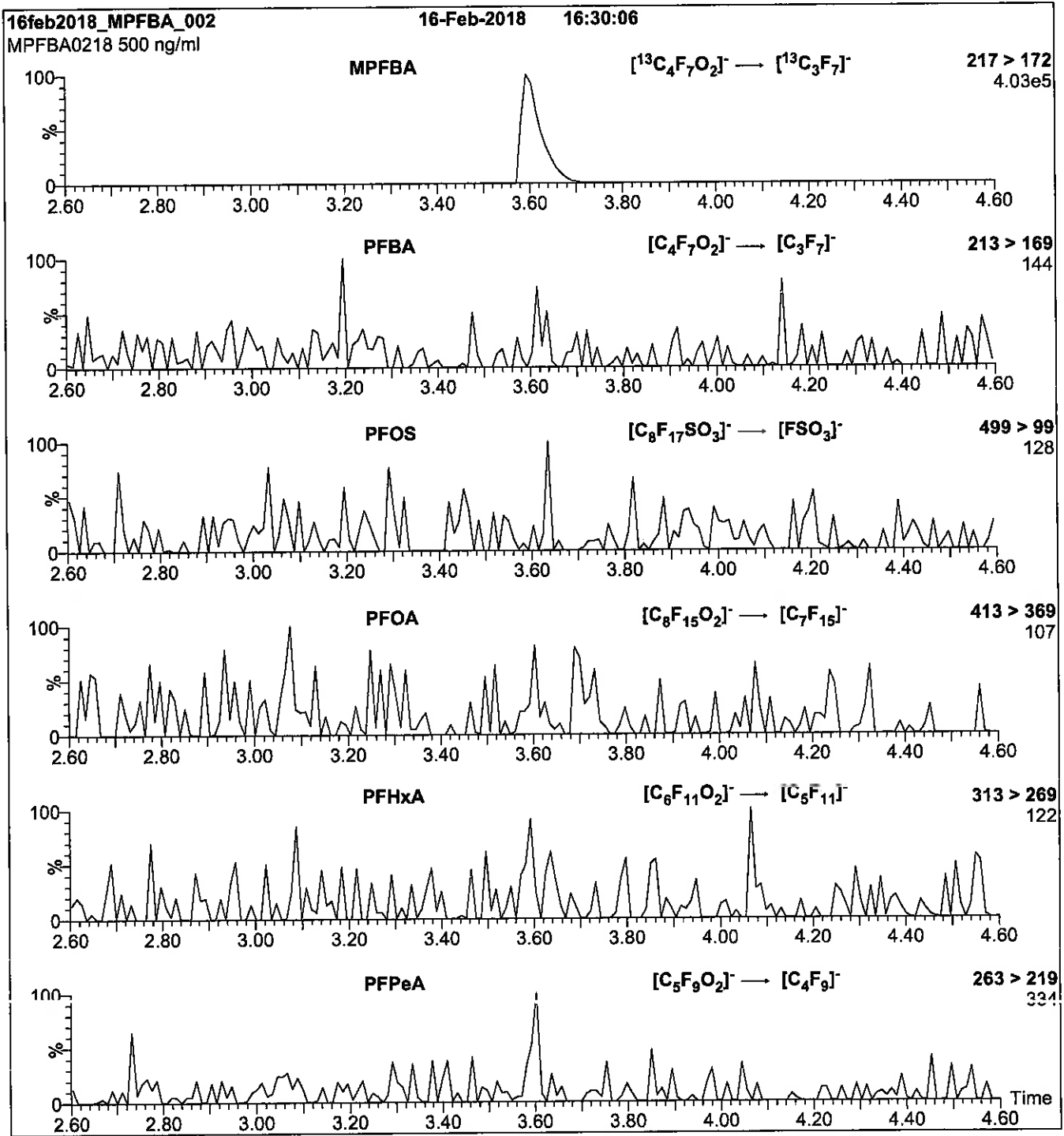
Flow: 300 μ l/min

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) = 3.31e-3
Collision Energy (eV) = 10

Reagent

LCMPFBS_00008

R: 5/30/18 *CB*

1263177
ID: LCMFBS_00008
Exp: 02/15/23 Prod: CBW Opn: 05/30/18
13C3-Perfluorobutanesulfo

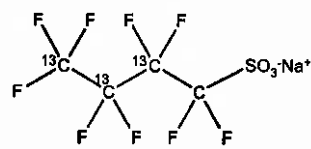


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: M3PFBS **LOT NUMBER:** M3PFBS0218
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)	02/15/2018		
EXPIRY DATE: (mm/dd/yyyy)	02/15/2023		
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: **Date:** 02/16/2018
B.G. Chittim, General Manager (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.

HANDLING:

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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. 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:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

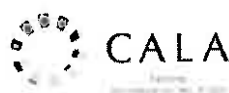
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

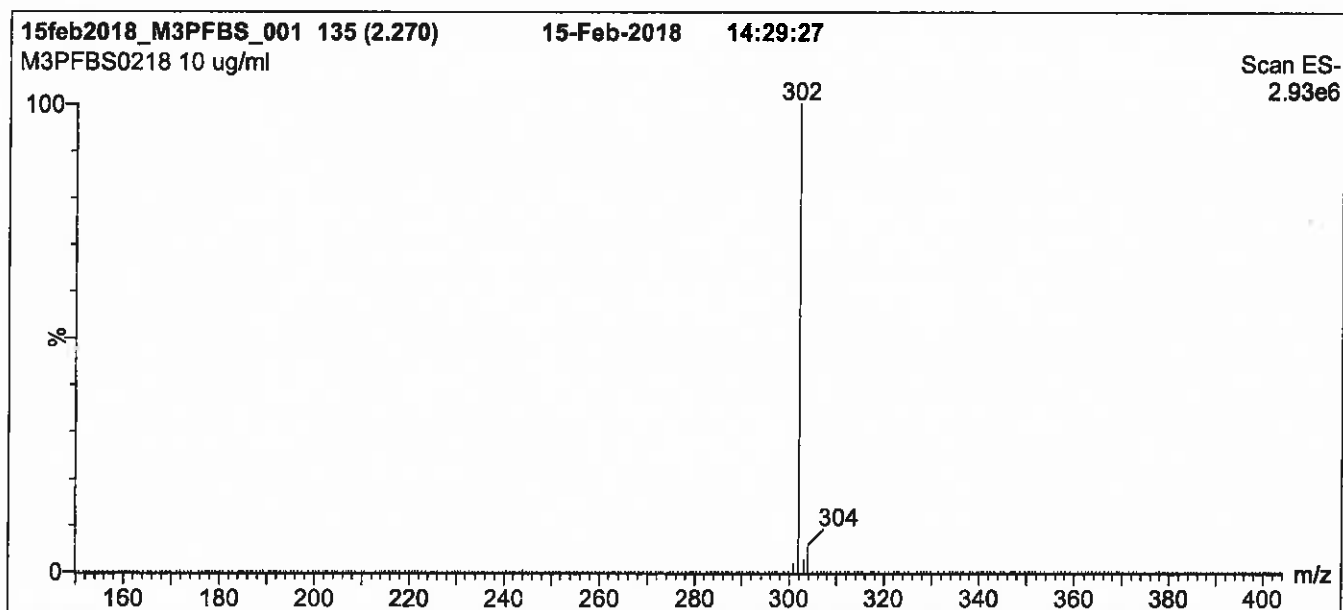
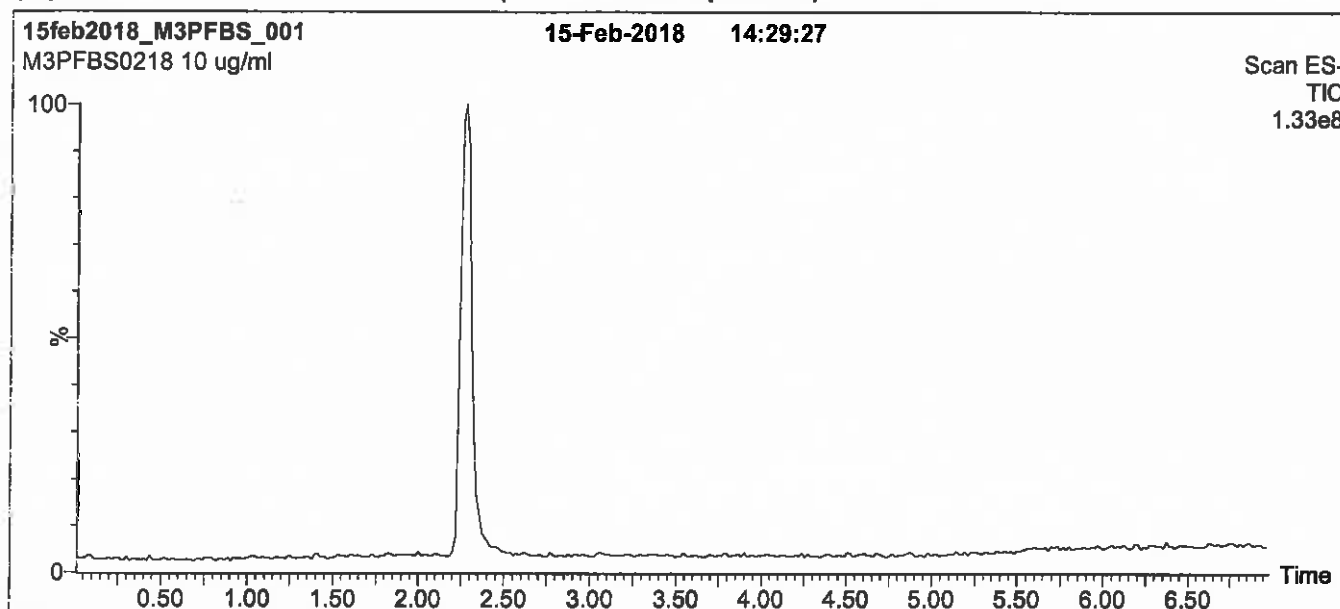
QUALITY MANAGEMENT:

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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

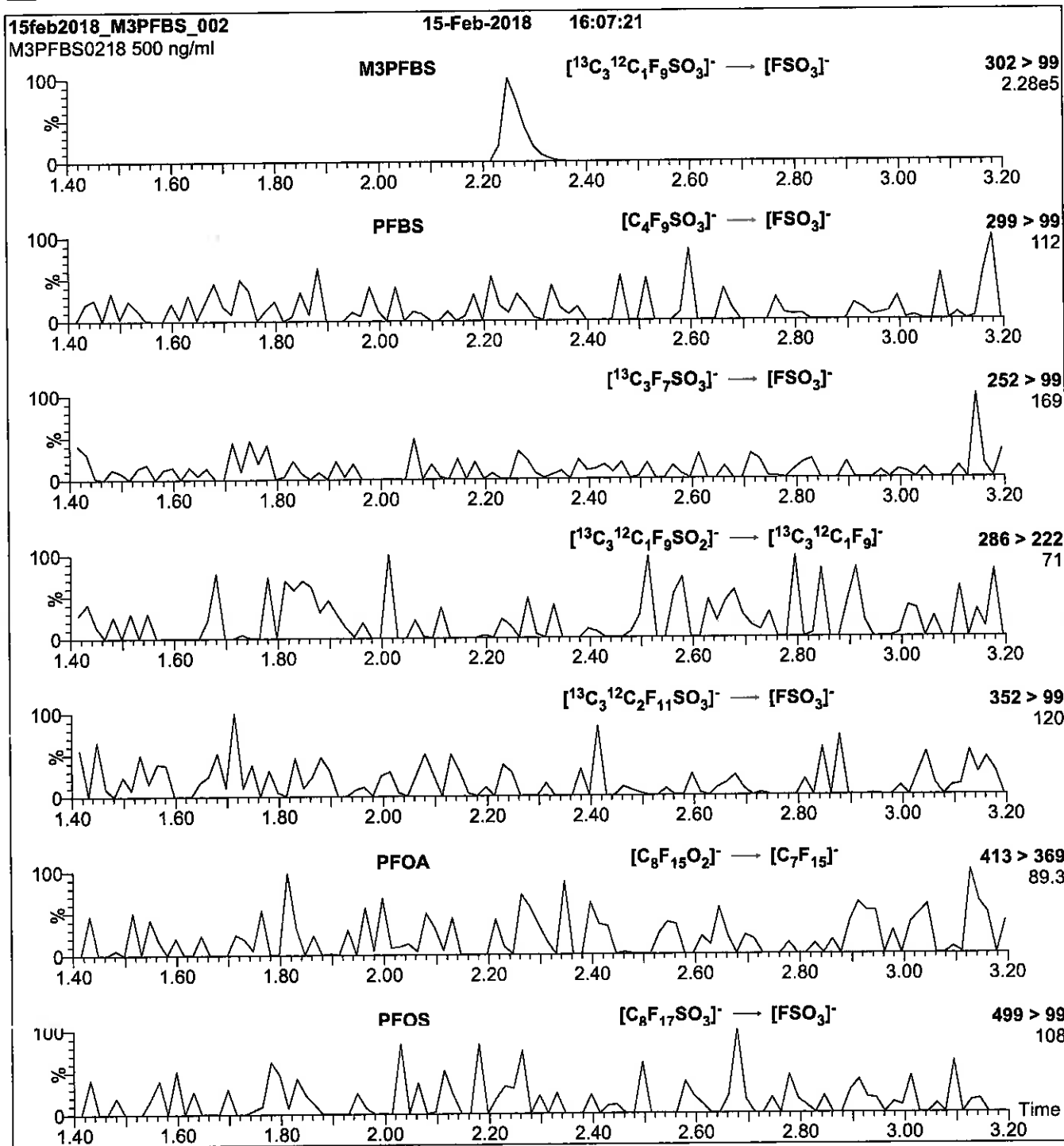
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
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) = 3.17e-3
Collision Energy (eV) = 25

Reagent

LCMPFDA_00020



1263165

ID: LCMPFDA_00020

Exp:02/16/23 Prod:CBM Cpn:0500/18

13C2-Perfluorodecanoic a

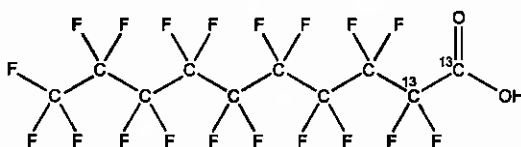


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDA **LOT NUMBER:** MPFDA0218
COMPOUND: Perfluoro-n-[1,2-¹³C₂]decanoic acid

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%

ISOTOPIC PURITY: ≥99% ¹³C
 (1,2-¹³C₂)

LAST TESTED: (mm/dd/yyyy) 02/16/2018

EXPIRY DATE: (mm/dd/yyyy) 02/16/2023

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 03/07/2018
 (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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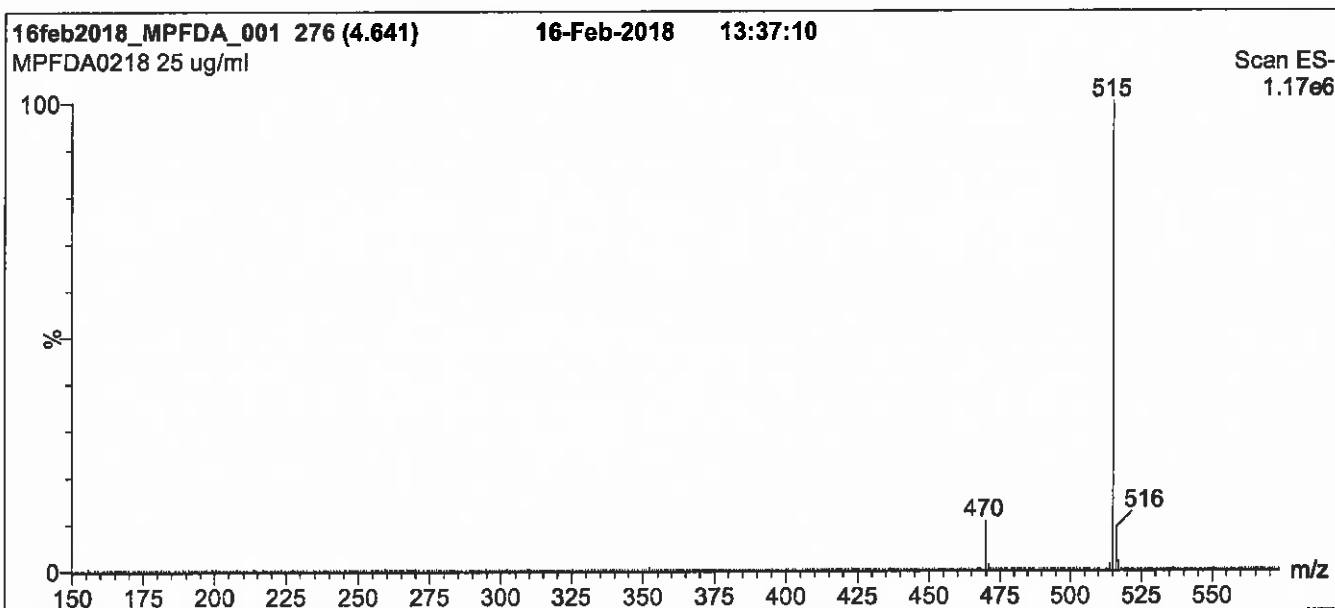
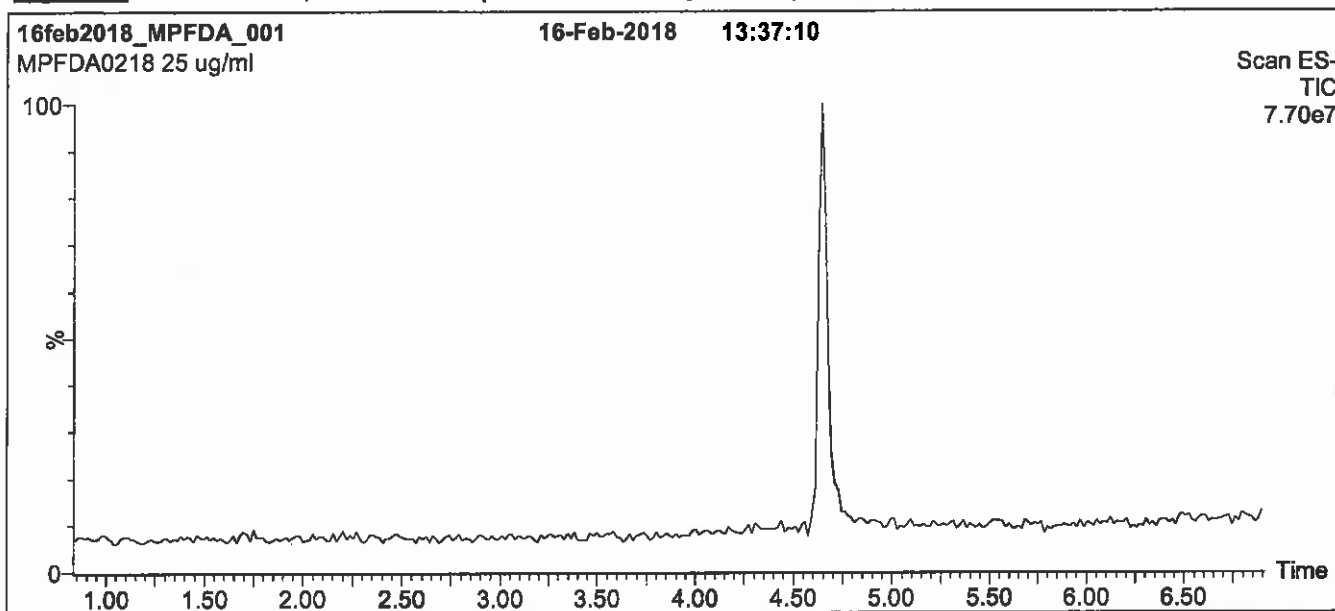
QUALITY MANAGEMENT:

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Figure 1: 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 2 min
before returning to initial conditions in: 0.5 min.
Time: 10 min

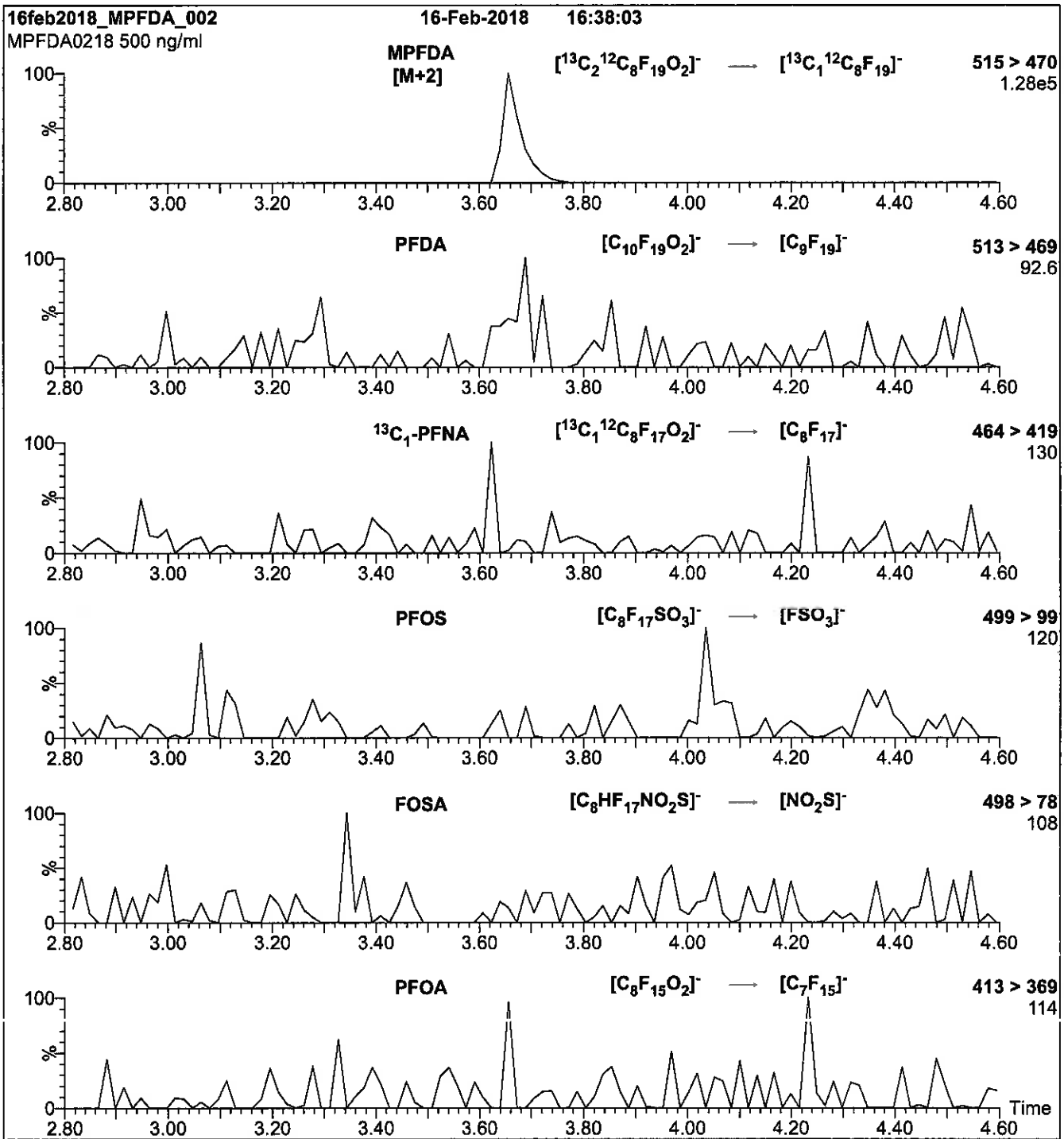
Flow: 300 μ l/min

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

Reagent

LCMPFD_oA_00015

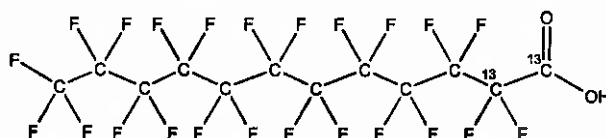


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFDoA **LOT NUMBER:** MPFDoA0218
COMPOUND: Perfluoro-n-[1,2-¹³C₂]dodecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₁₀HF₂₃O₂ **MOLECULAR WEIGHT:** 616.08
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) 02/16/2018
EXPIRY DATE: (mm/dd/yyyy) 02/16/2023
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:  **Date:** 02/23/2018
B.G. Chittim, General Manager (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.

HANDLING:

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:

Our products are synthesized using single-product unambiguous routes whenever possible. 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 calibrated by an external ISO/IEC 17025 accredited laboratory. In addition, their calibration is verified prior to each weighing using calibrated external weights traceable to an ISO/IEC 17025 accredited laboratory. All volumetric glassware used is calibrated, of Class A tolerance, and traceable to an ISO/IEC 17025 accredited laboratory. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

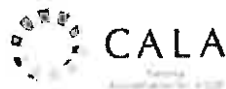
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

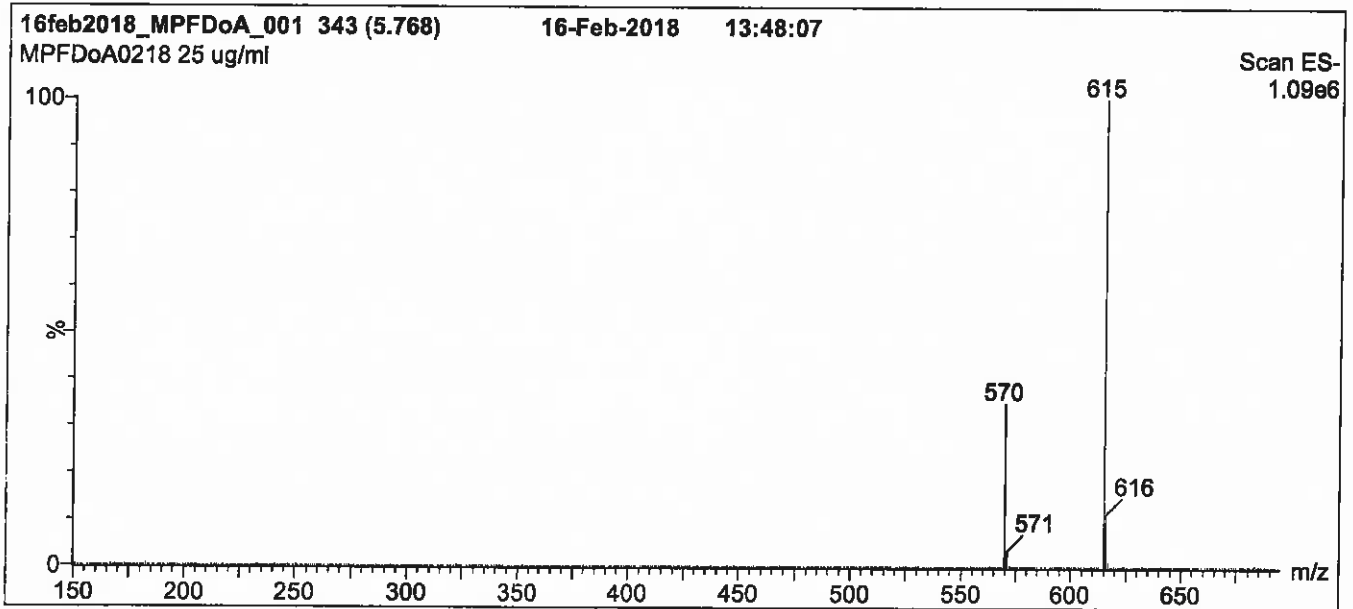
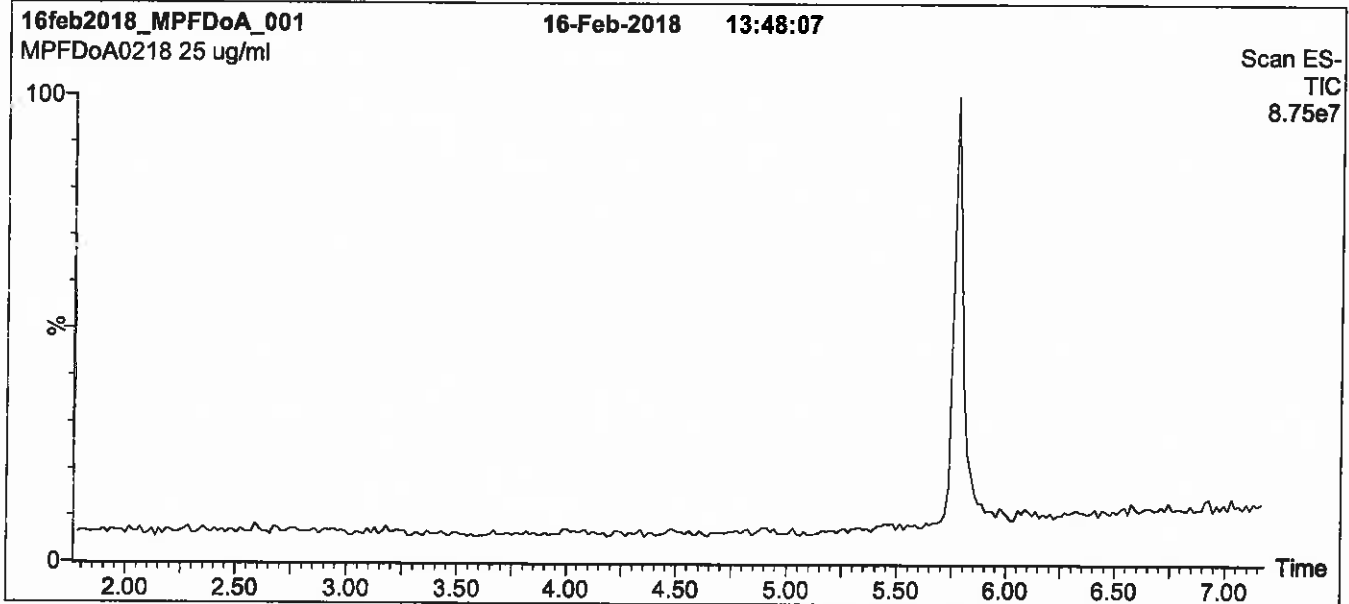
QUALITY MANAGEMENT:

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 17034 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: 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

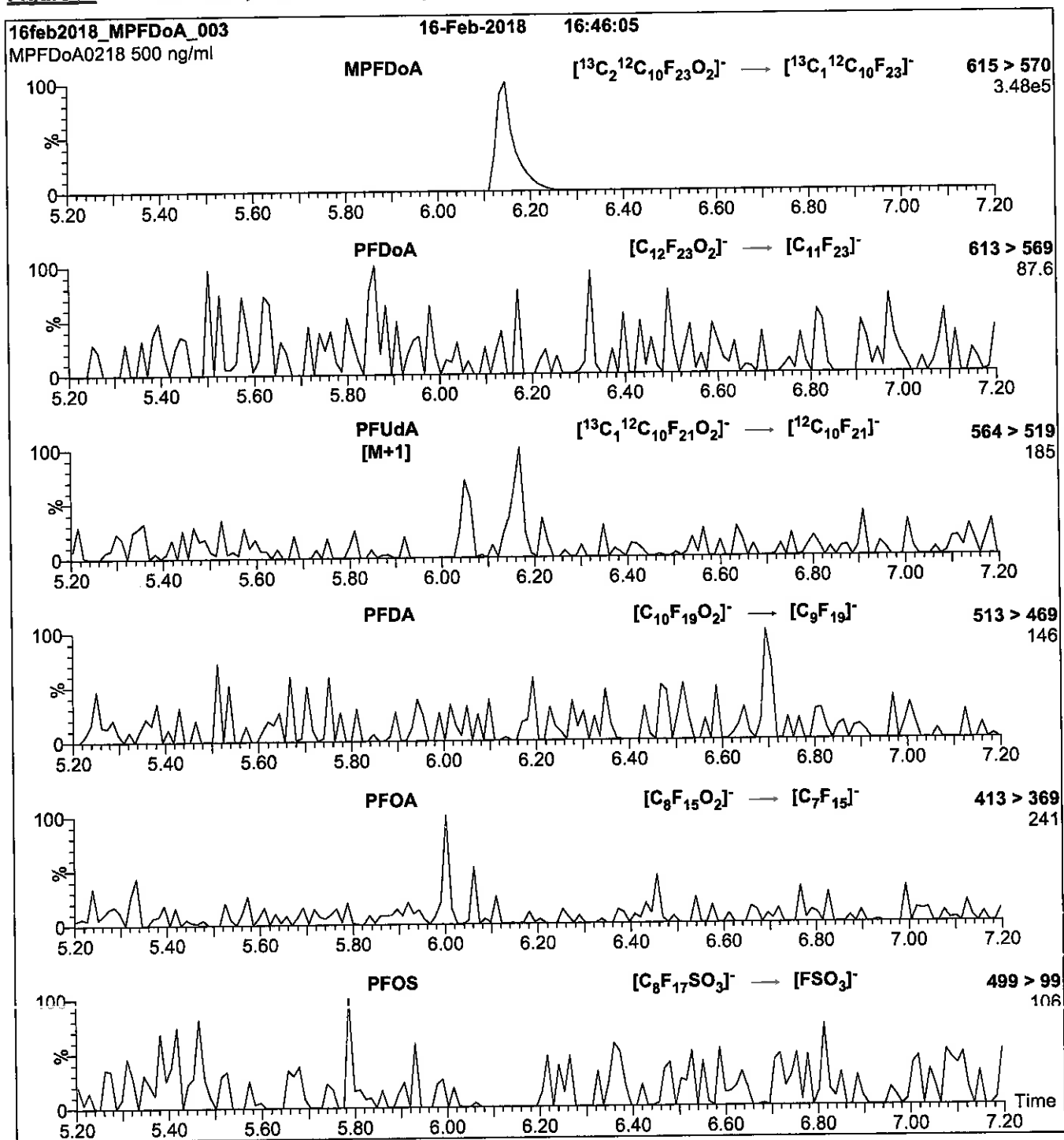
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 20.00
Cone Gas Flow (l/hr) = 50
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) = 3.31e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00022

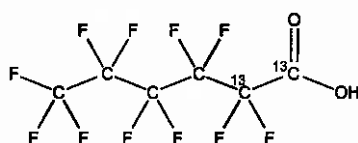


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFHxA **LOT NUMBER:** MPFHxA1017
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%
LAST TESTED: (mm/dd/yyyy) 10/27/2017

ISOTOPIC PURITY: ≥99%¹³C
 (1,2-¹³C₂)

EXPIRY DATE: (mm/dd/yyyy) 10/27/2022

RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

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

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

INTENDED USE:

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

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:

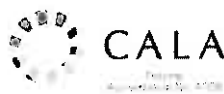
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

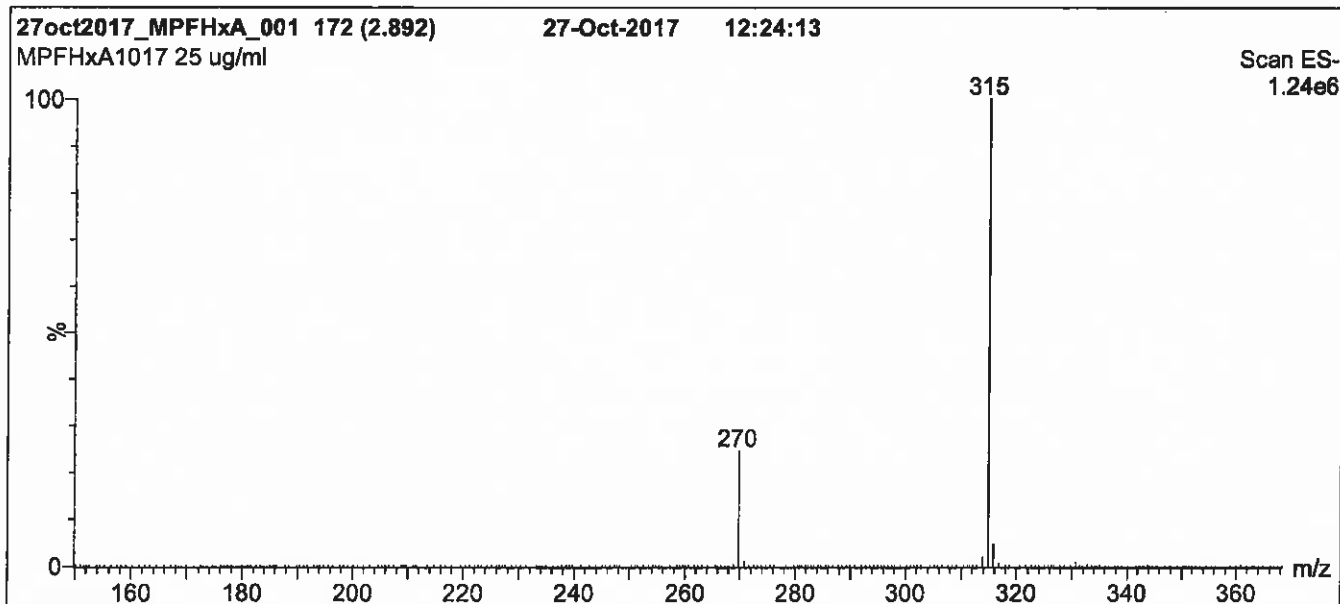
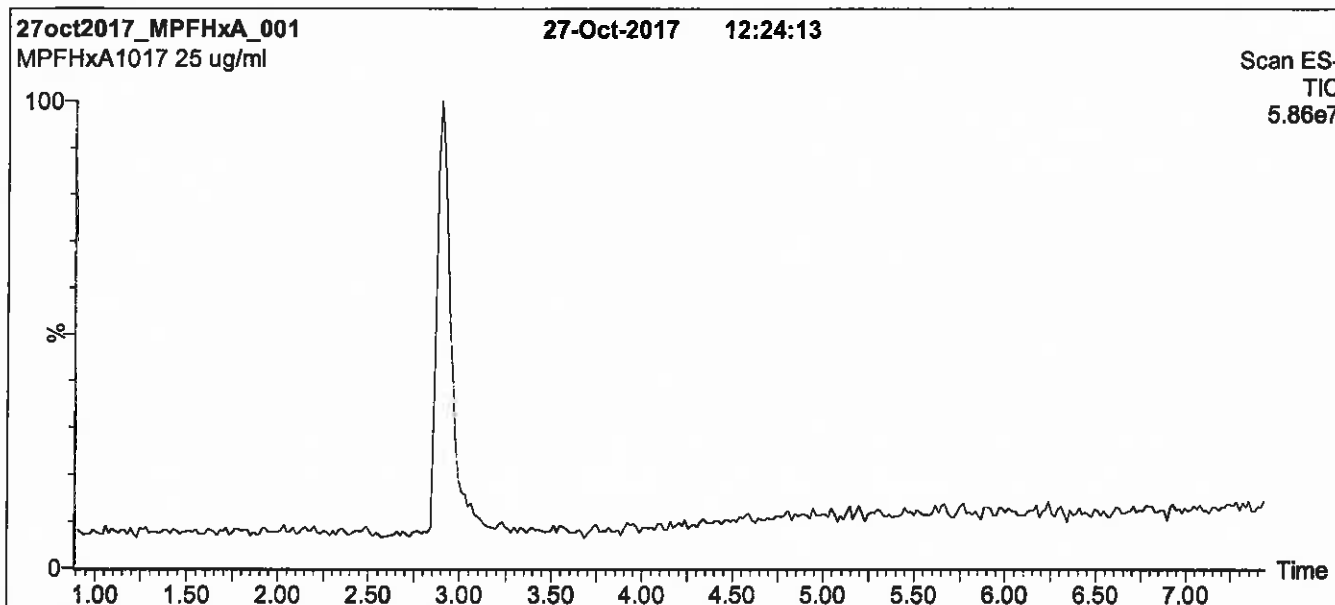
QUALITY MANAGEMENT:

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: 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 μm, 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

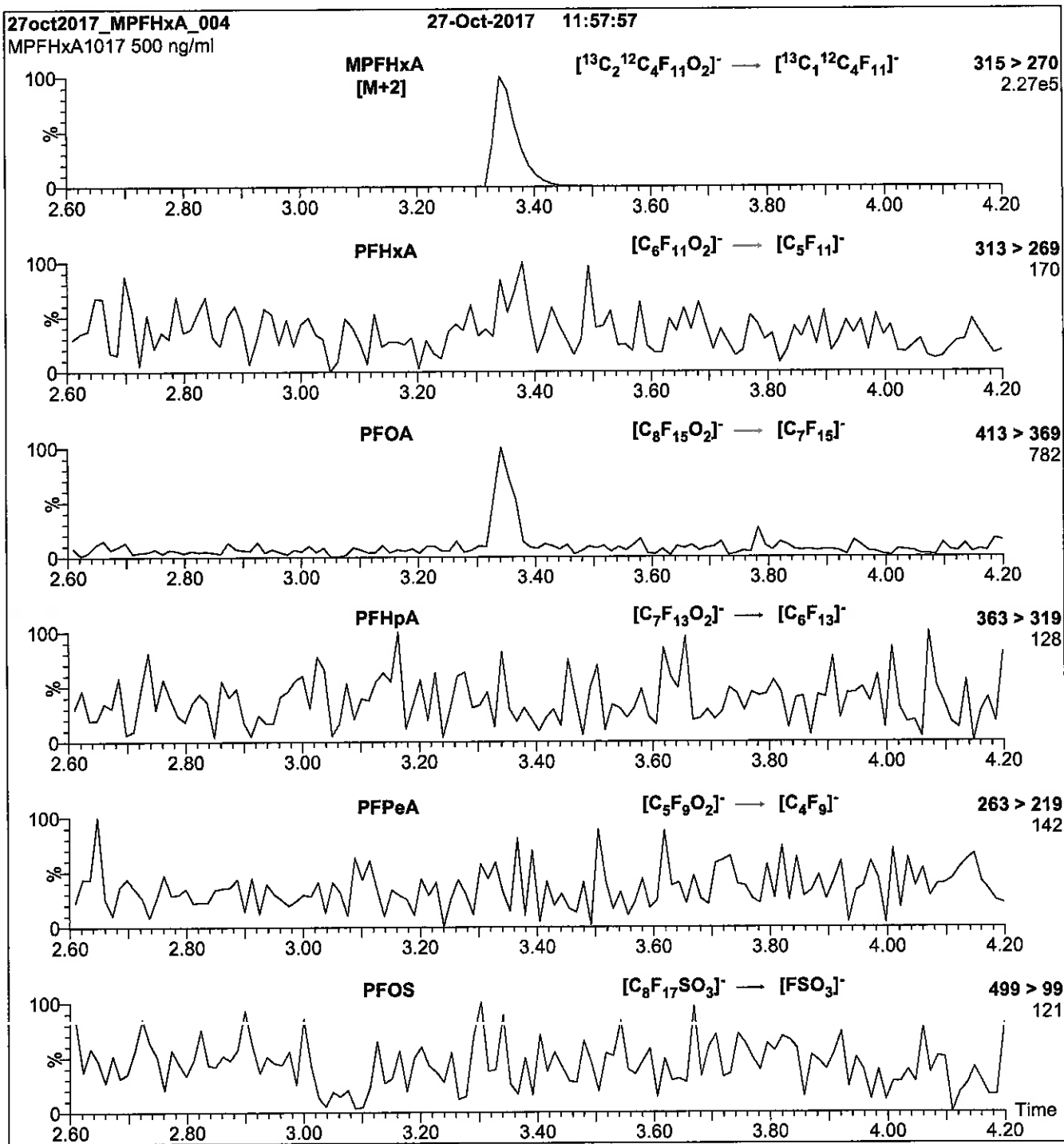
Flow: 300 μl/min

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 μl (500 ng/ml MPFHxA)

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

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

MS Parameters

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

Reagent

LCMPFHXS_00015



1263157

ID: LCMPFHxS_00015

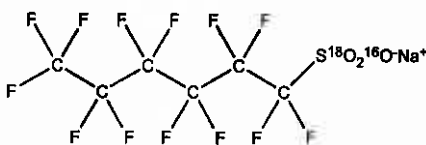
Exp: 03/22/23 Ppd: CBW Opi: 05/00/18

18O2-Perfluorohexanesulfo

**WELLINGTON
LABORATORIES****CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: MPFHxS **LOT NUMBER:** MPFHxS0318
COMPOUND: Sodium perfluoro-1-hexane[¹⁸O₂]sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₆F₁₃S¹⁸O₂¹⁶O⁻Na⁺ **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) 03/22/2018
EXPIRY DATE: (mm/dd/yyyy) 03/22/2023
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) and ~ 0.3% of sodium perfluoro-1-heptane[¹⁸O₂]sulfonate (¹⁸O₂-PFHpS).
- Due to the isotopic purity of the starting material (¹⁸O₂ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager

Date: 03/27/2018
 (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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HANDLING:

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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. In order to maintain the integrity of the assigned value(s), and associated uncertainty, the dilution or injection of a subsample of this product should be performed using calibrated measuring equipment.

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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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LIMITED WARRANTY:

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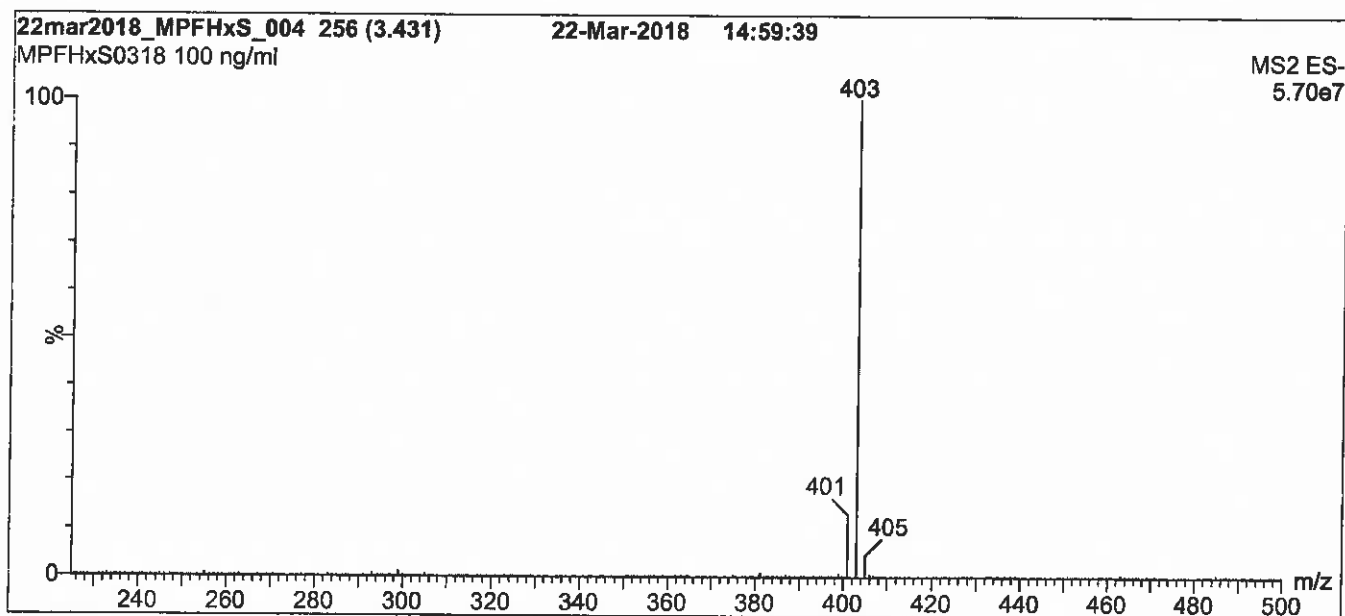
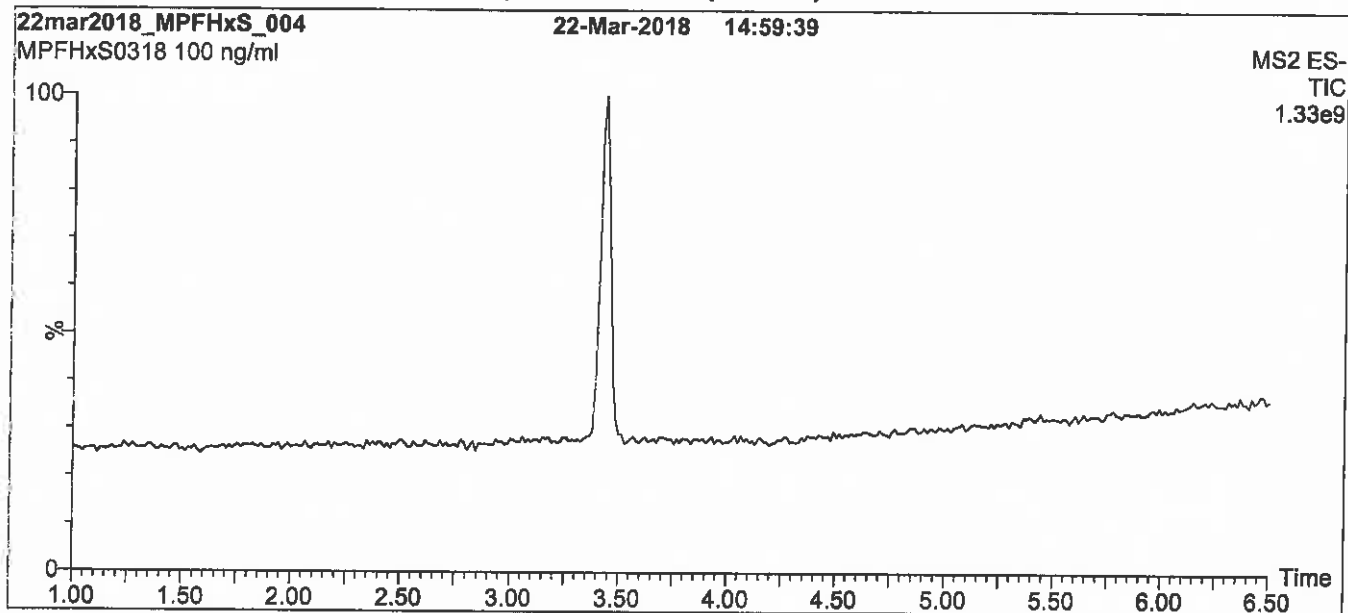
QUALITY MANAGEMENT:

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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: Waters Xevo TQ-S micro 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 80% organic over 7 min and hold for 3 min
before returning to initial conditions in 0.75 min.
Time: 12 min

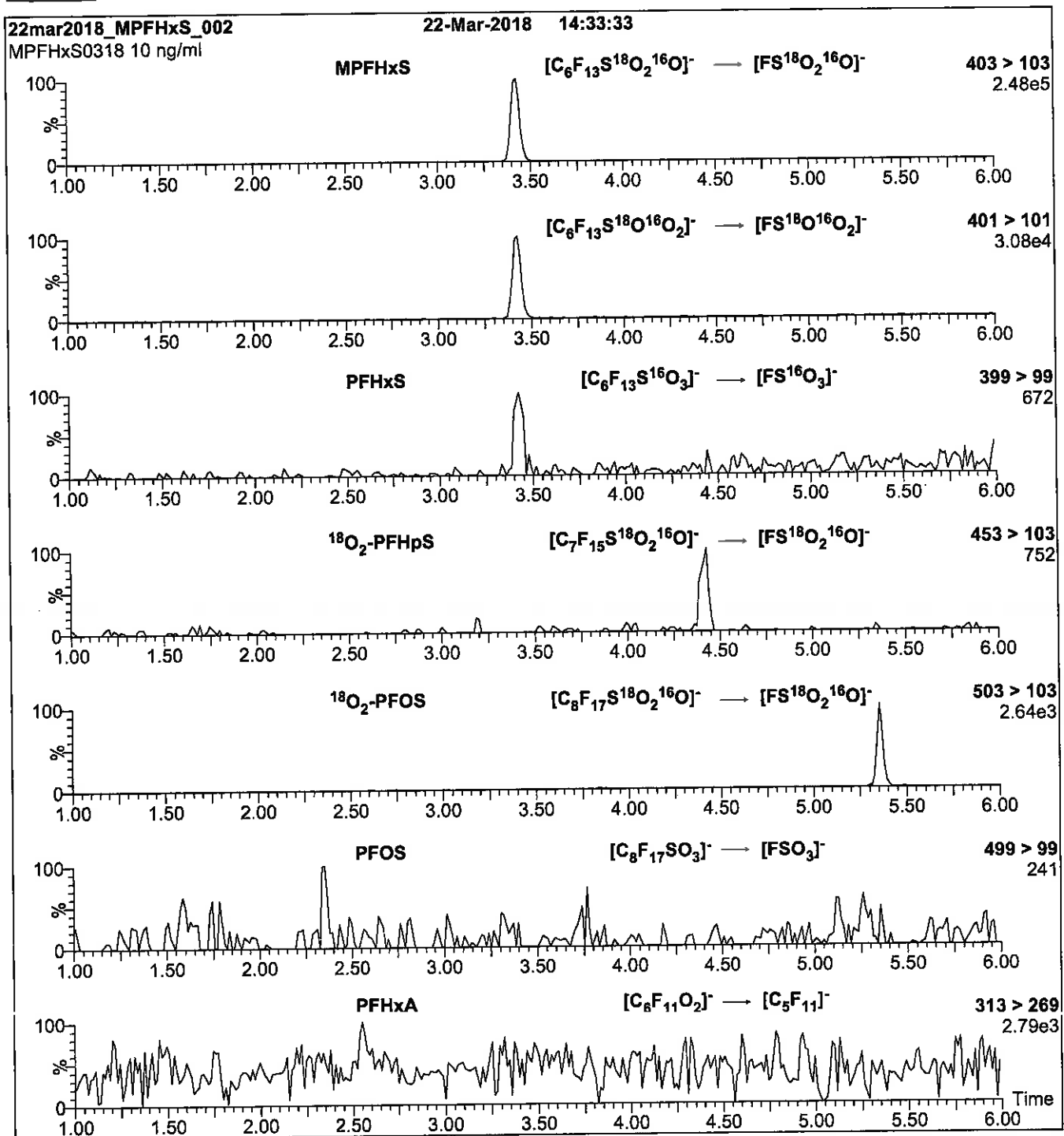
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 0.50
Cone Voltage (V) = 5.00
Desolvation Temperature (°C) = 500
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: On-column (MPFHxS)
Mobile phase: Same as Figure 1
Flow: 300 μ l/min

MS Parameters
Collision Gas (mbar) = 3.64e-3
Collision Energy (eV) = 32

Reagent

LCMPFNA_00015



1263148
 ID: LCMFNA_00015
 Exp: 12/14/22 Prod: CBW Opn: 05/30/18
 13C5-Perfluoronanoic aci

P: 5/30/18 CBW



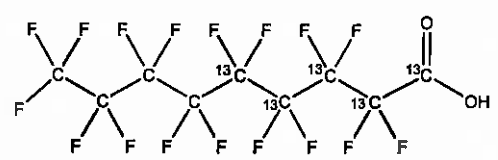
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFNA
COMPOUND: Perfluoro-n-[1,2,3,4,5-¹³C₅]nonanoic acid

LOT NUMBER: MPFNA1217

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₅¹²C₄HF₁₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 469.04
SOLVENT(S): Methanol
 Water (<1%)
ISOTOPIC PURITY: ≥99% ¹³C
 (1,2,3,4,5-¹³C₅)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/14/2017
EXPIRY DATE: (mm/dd/yyyy) 12/14/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim, General Manager
Date: 12/19/2017
 (mm/dd/yyyy)

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

INTENDED USE:

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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:

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.

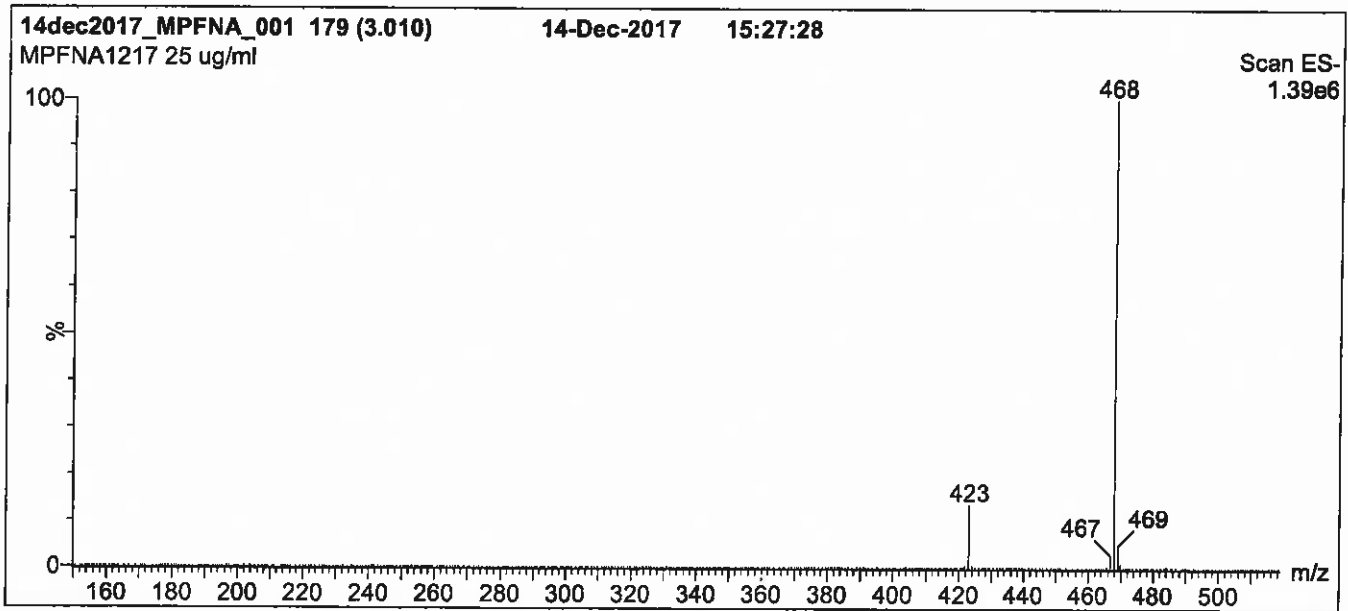
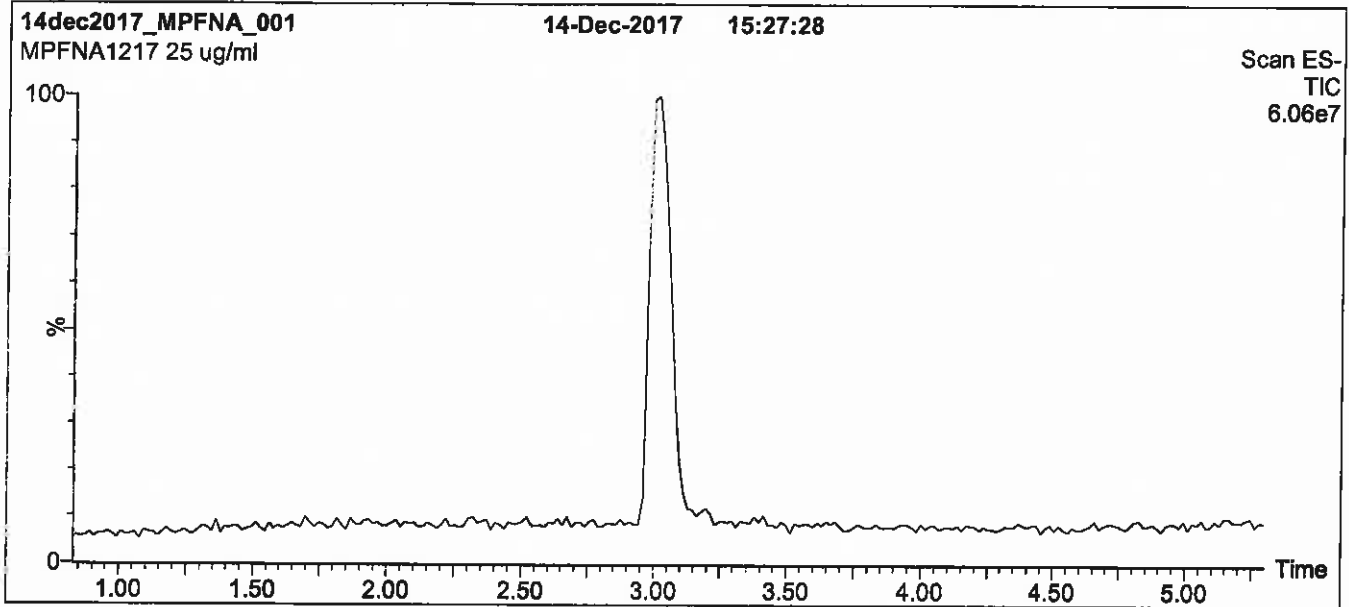
QUALITY MANAGEMENT:

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: 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: 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

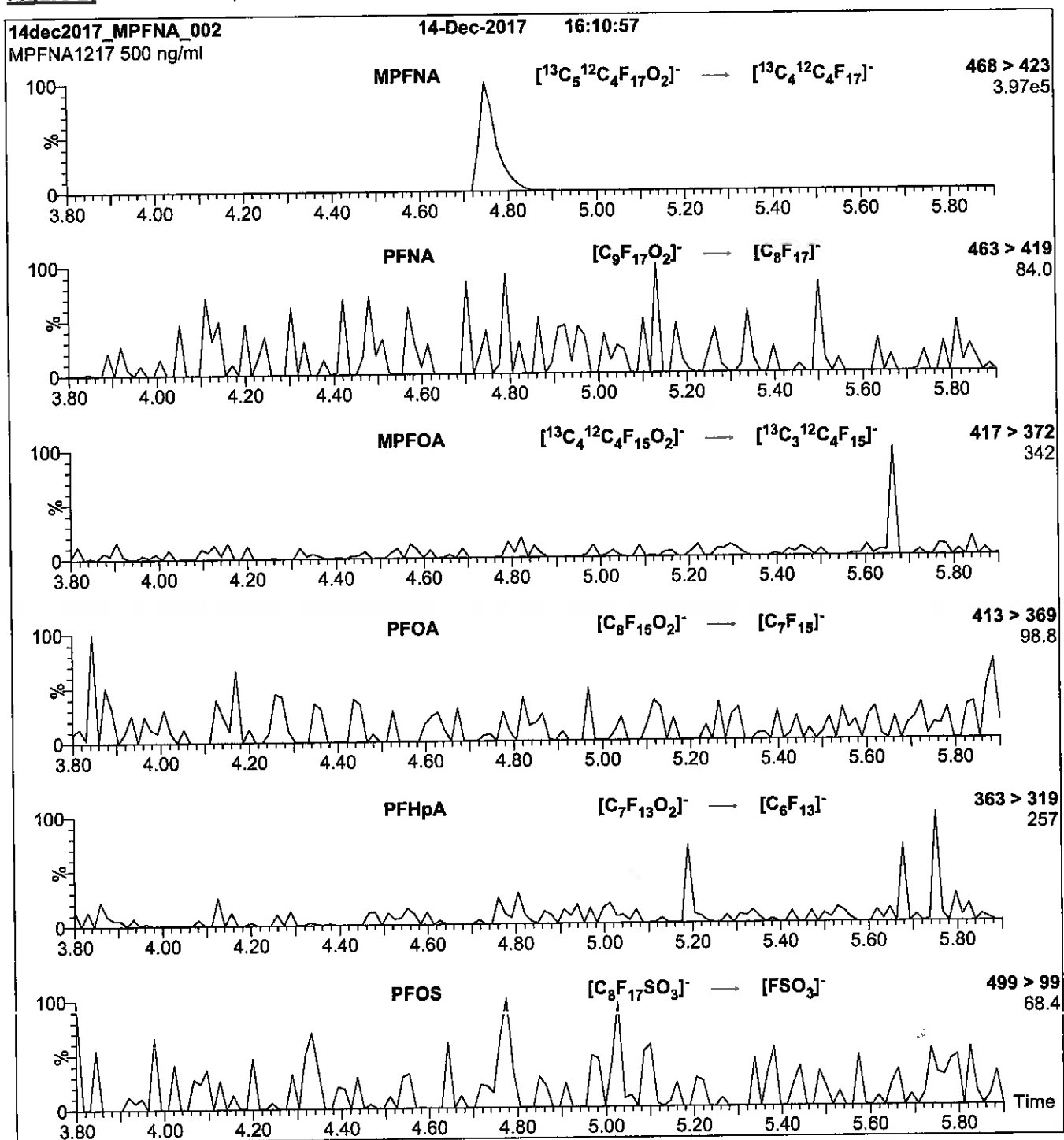
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (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: 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) = 3.43e-3
Collision Energy (eV) = 11

Reagent

LCMPFOA_00019

1263125
ID: LCMPPFOA_00019
Exp: 05/04/23 P1p1:CBW Qp1:050018
13C4-Perfluorooctanoic ac

r: 5/30/18 CBW

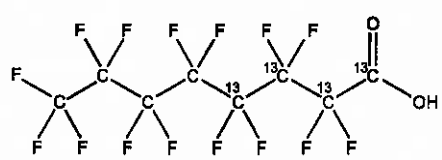


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: MPFOA **LOT NUMBER:** MPFOA0418
COMPOUND: Perfluoro-n-[1,2,3,4-¹³C₄]octanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₄¹²C₄HF₁₆O₂ **MOLECULAR WEIGHT:** 418.04
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥99% ¹³C
(1,2,3,4-¹³C₄)
LAST TESTED: (mm/dd/yyyy) 05/04/2018
EXPIRY DATE: (mm/dd/yyyy) 05/04/2023
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:  **Date:** 05/17/2018
B.G. Chittim, General Manager (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.

HANDLING:

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:

Our products are synthesized using single-product unambiguous routes whenever possible. 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:

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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:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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

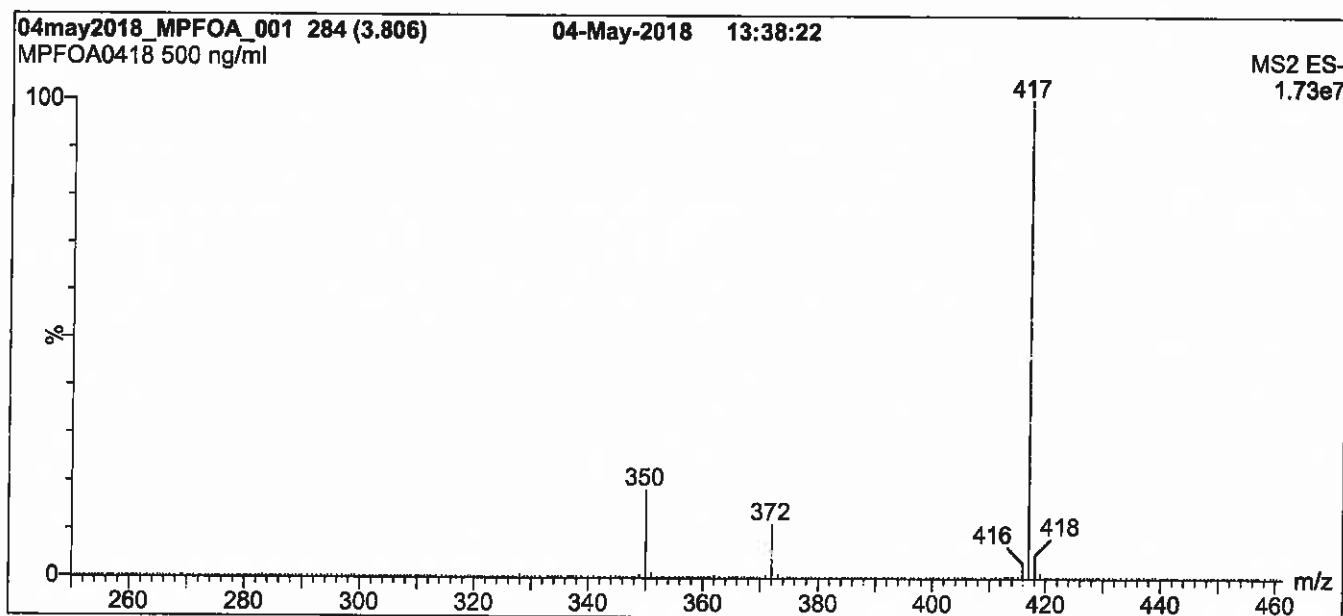
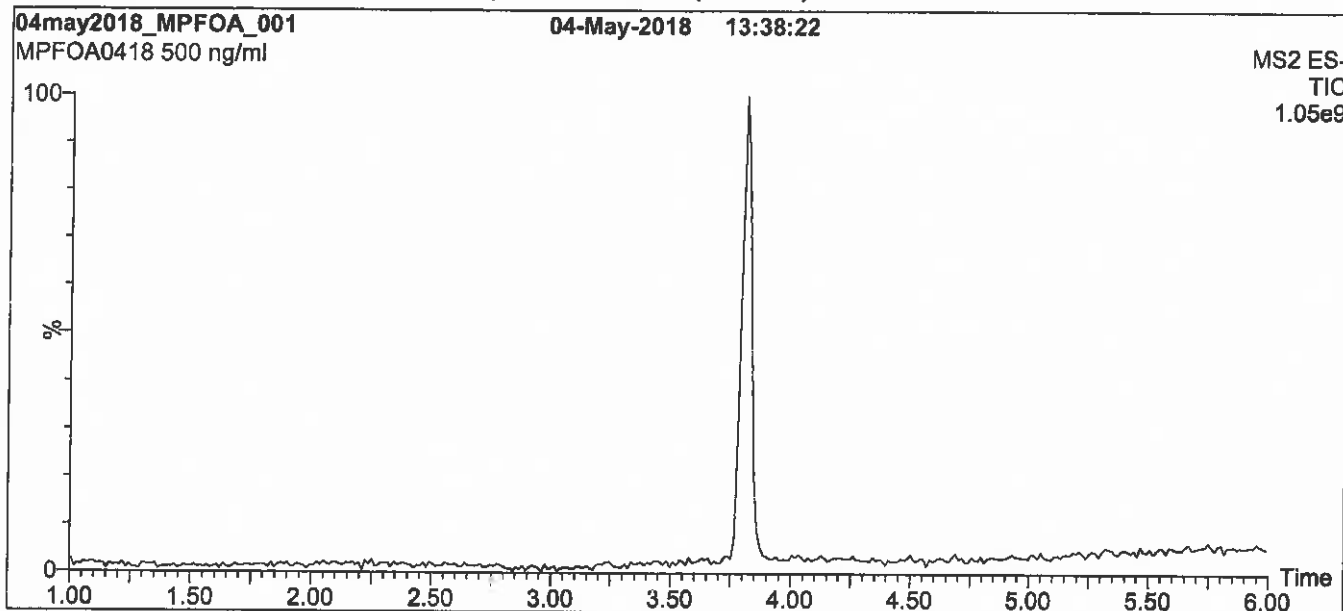
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO 17034 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: MPFOA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity Ultra Performance LC
MS: Waters Xevo TQ-S micro MS

Chromatographic Conditions

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

Mobile phase: Gradient
 Start: 50% (80:20 MeOH:ACN) / 50% H₂O
 (both with 10 mM NH₄OAc buffer)
 Ramp to 80% organic over 7 min and hold for 3 min
 before returning to initial conditions in 0.75 min.
 Time: 12 min

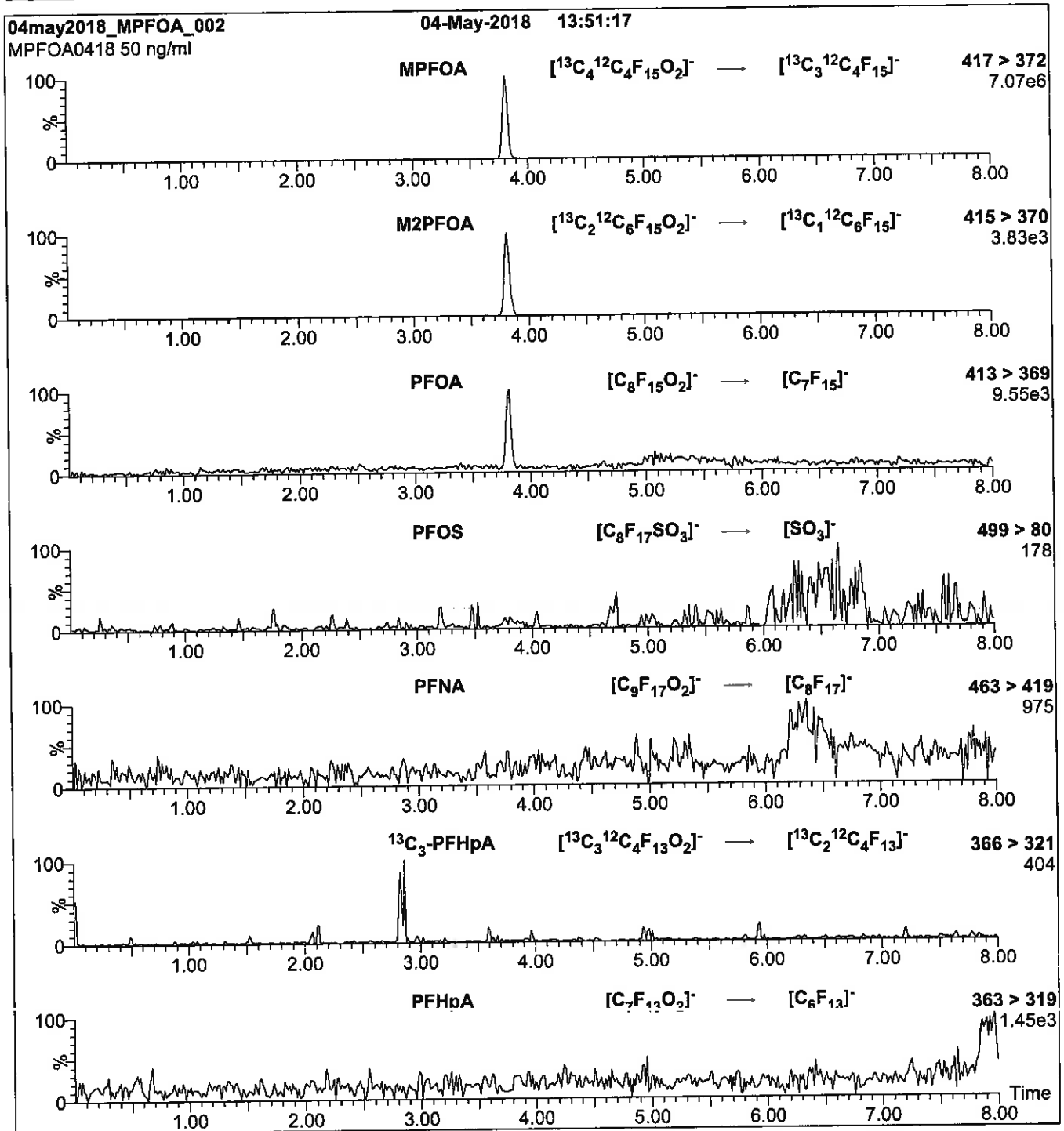
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 0.50
 Cone Voltage (V) = 5.00
 Desolvation Temperature (°C) = 500
 Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: On-column (MPFOA)
 Mobile phase: Same as Figure 1
 Flow: 300 $\mu\text{l}/\text{min}$

MS Parameters
 Collision Gas (mbar) = 3.45e-3
 Collision Energy (eV) = 8

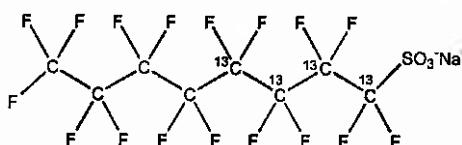
Reagent

LCMPFOS_00027

**WELLINGTON
LABORATORIES****CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0218
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) 02/15/2018 (1,2,3,4-¹³C₄)
EXPIRY DATE: (mm/dd/yyyy) 02/15/2023
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 ~ 0.6% 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: 02/20/2018
(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.

HANDLING:

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SYNTHESIS / CHARACTERIZATION:

Our products are synthesized using single-product unambiguous routes whenever possible. 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:

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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:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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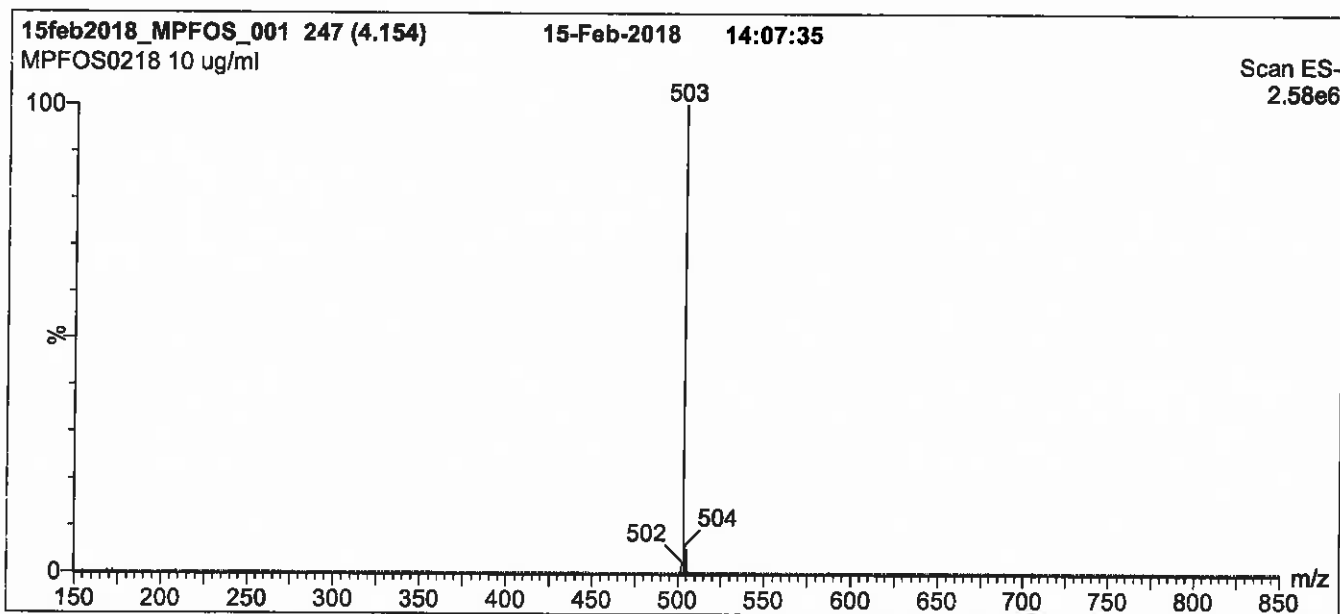
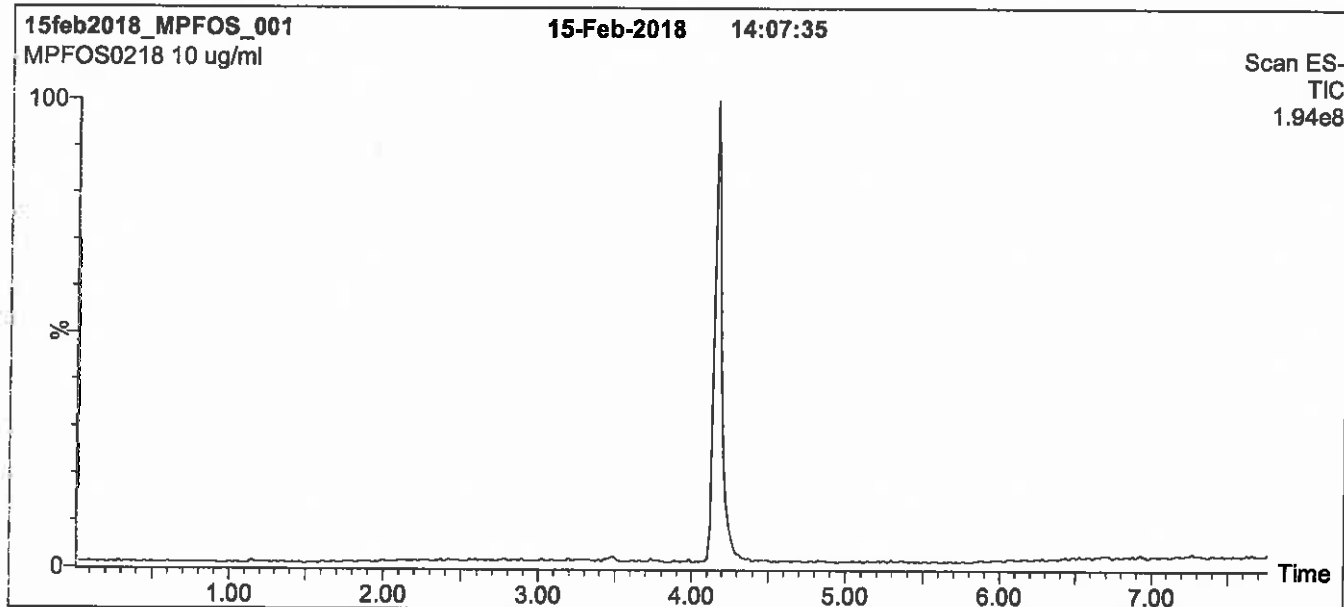
QUALITY MANAGEMENT:

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 17034 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 90% organic over 7 min and hold for 2 min
 before returning to initial conditions in 0.5 min.
 Time: 10 min

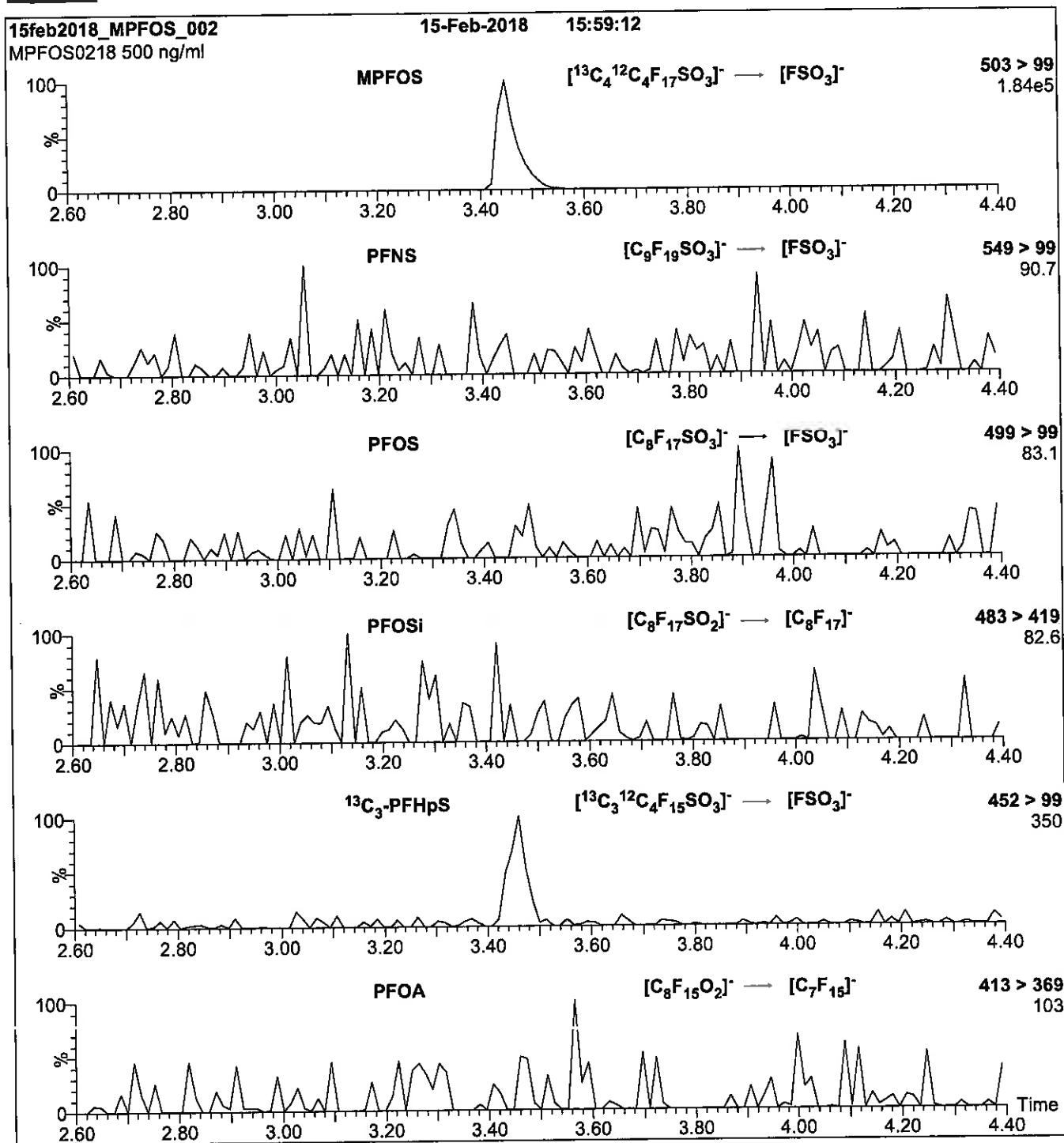
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 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) = 3.28e-3
Collision Energy (eV) = 40

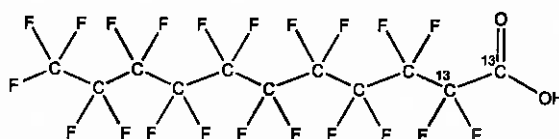
Reagent

LCMPFUdA_00017

**WELLINGTON**
LABORATORIES**CERTIFICATE OF ANALYSIS**
DOCUMENTATION

PRODUCT CODE: MPFUdA **LOT NUMBER:** MPFUdA1116
COMPOUND: Perfluoro-n-[1,2-¹³C₂]undecanoic acid

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: ¹³C₂¹²C₉HF₂₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 566.08
SOLVENT(S): Methanol
 Water (<1%)

CHEMICAL PURITY: >98%
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

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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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

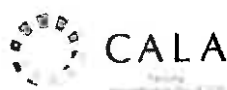
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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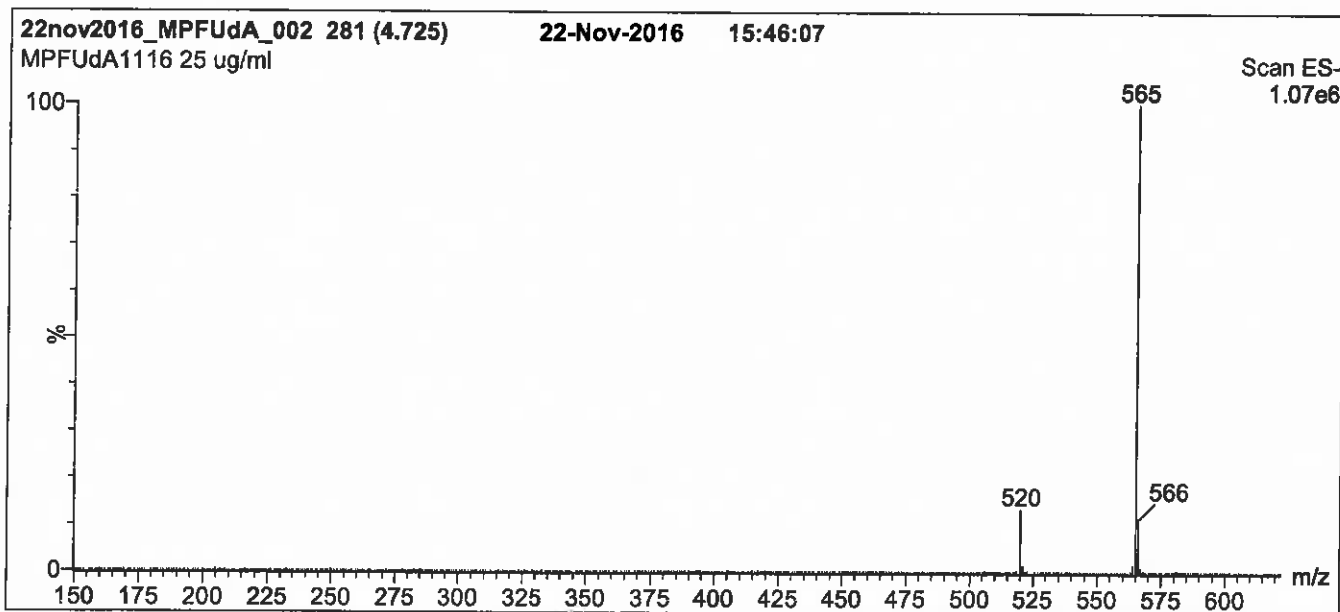
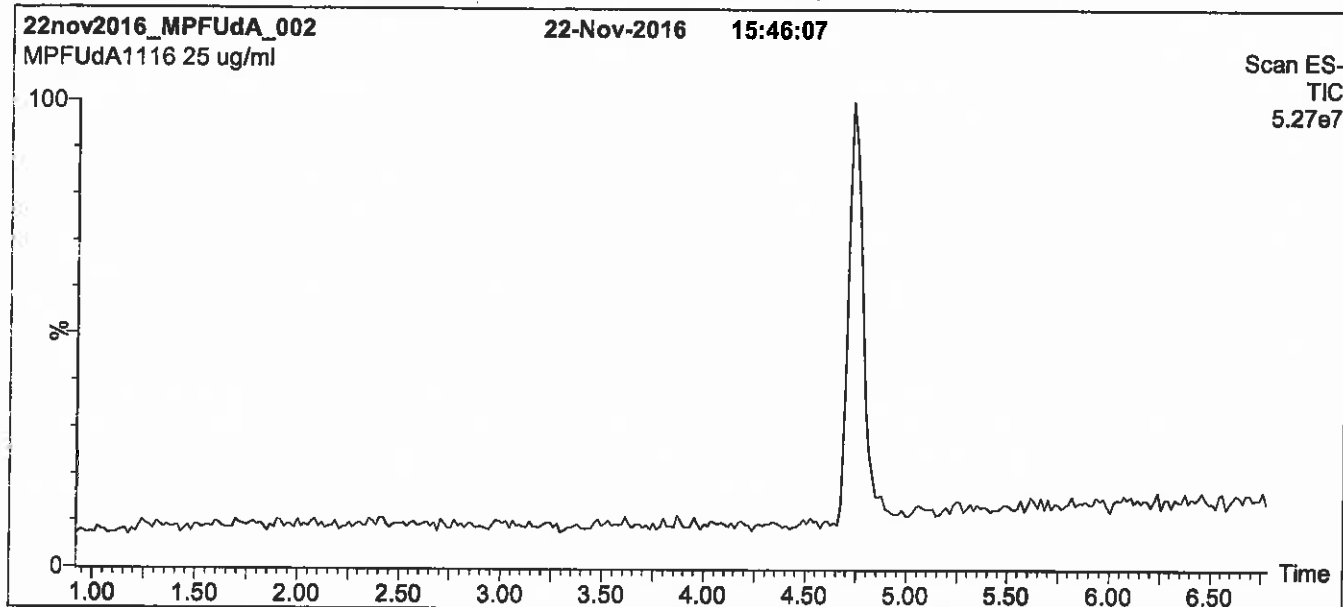
QUALITY MANAGEMENT:

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Figure 1: 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

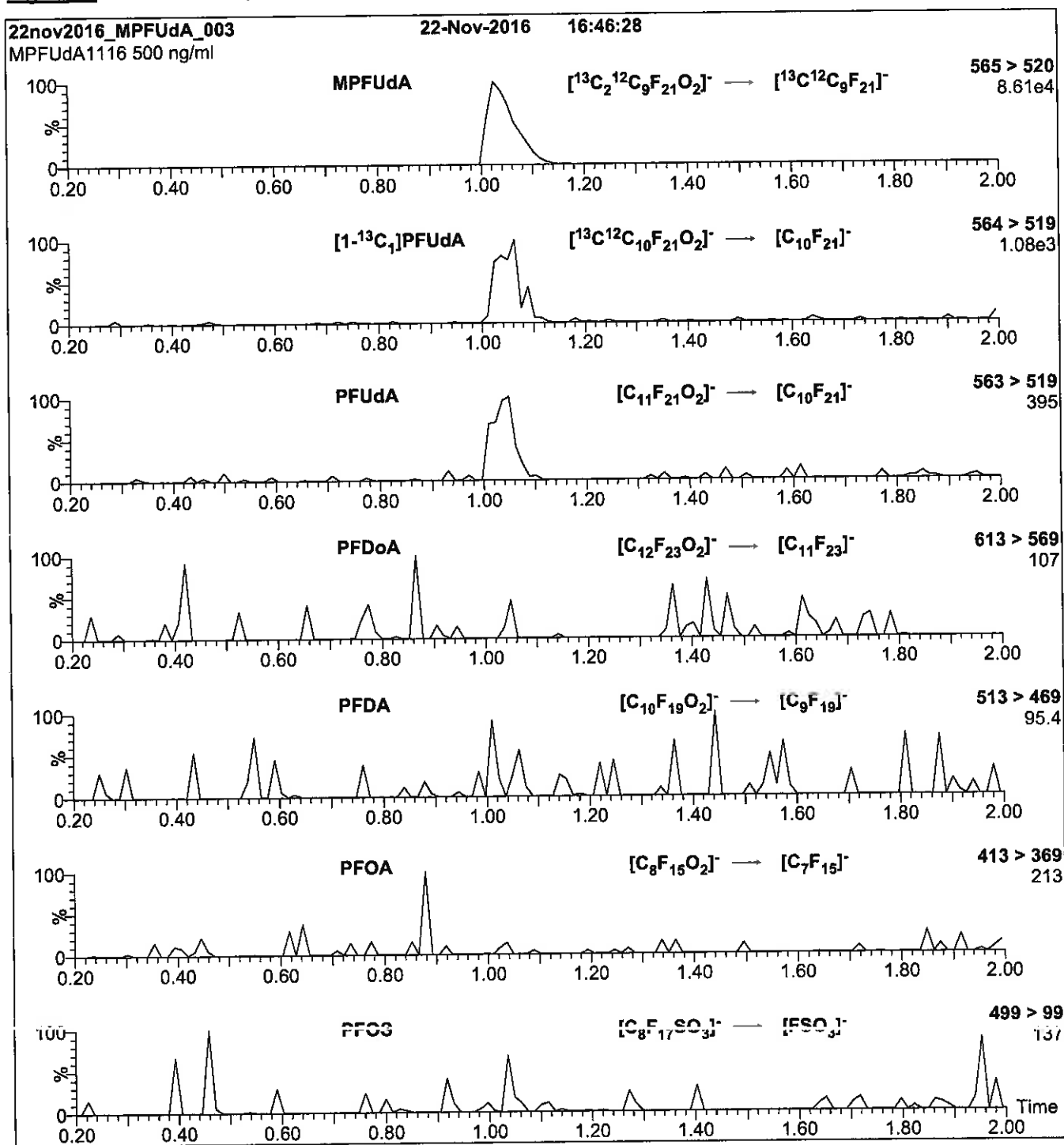
Flow: 300 μ l/min

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

LCPFBA_00008

P: 9/21/17 SKV



WELLINGTON LABORATORIES

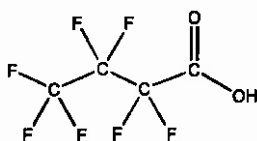
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanoic acid

LOT NUMBER: PFBA0517

STRUCTURE:

CAS #: 375-22-4



MOLECULAR FORMULA: C₄HF₇O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 214.04
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 05/30/2017
(mm/dd/yyyy)

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

INTENDED USE:

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

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:

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.

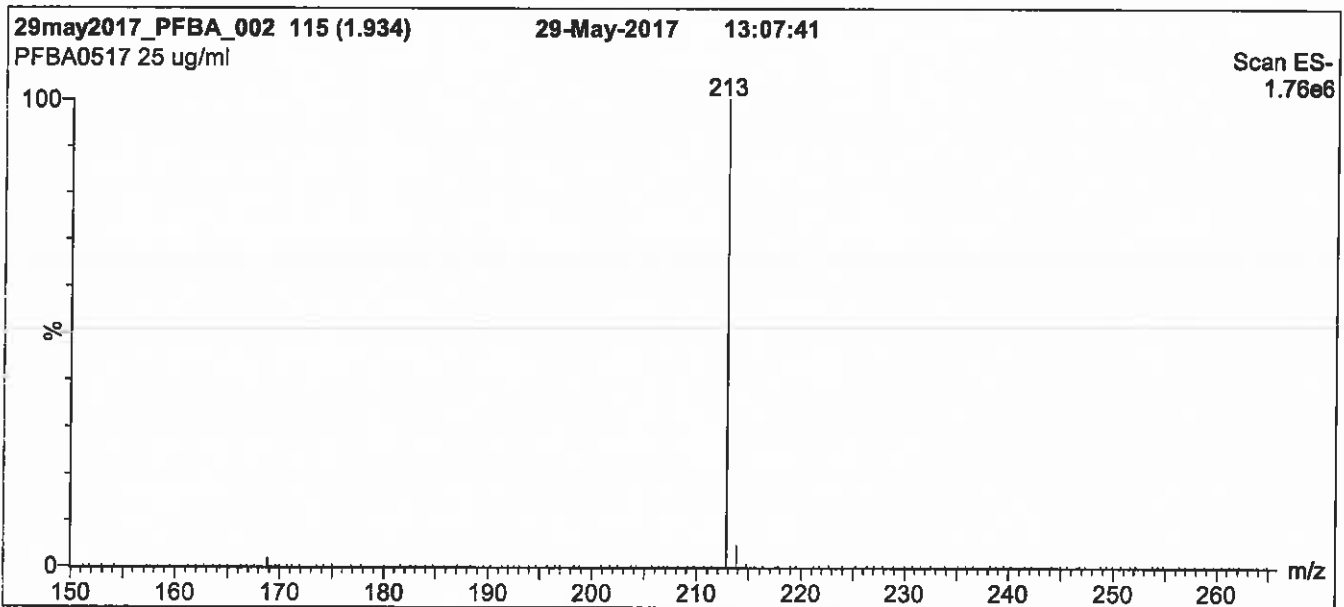
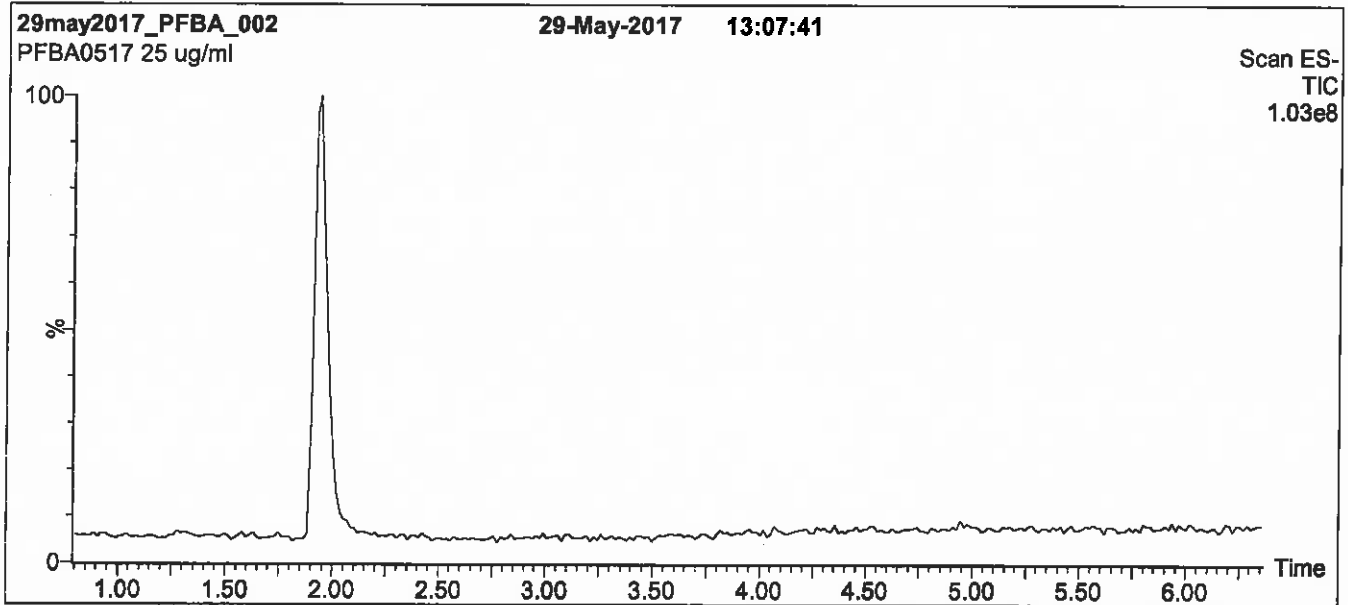
QUALITY MANAGEMENT:

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: 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

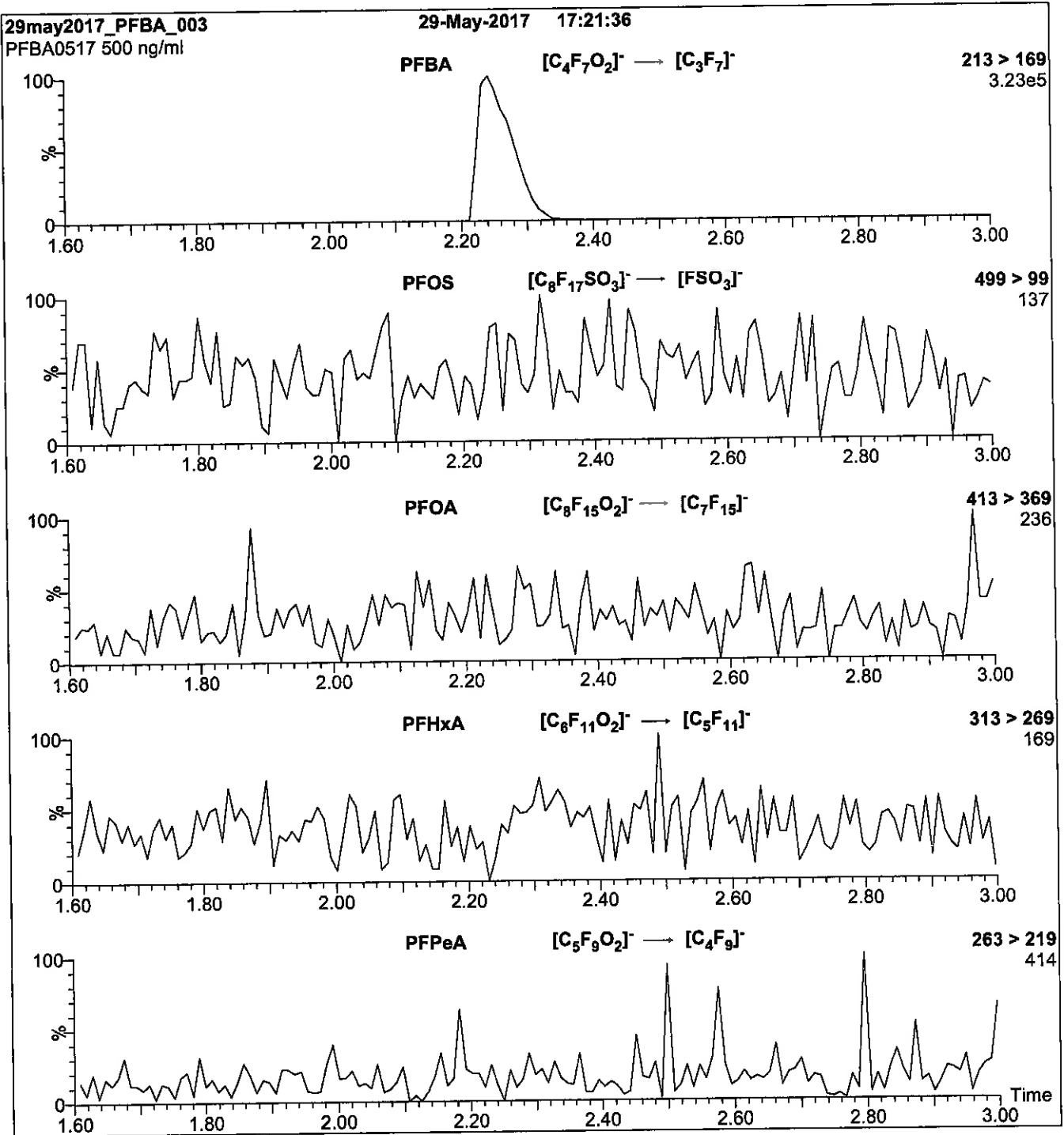
Flow: 300 μ l/min

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

Reagent

LCPFBS_00009

D: 2/16/18 SW

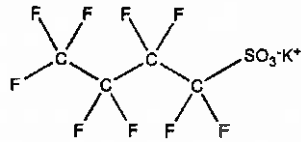


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS **LOT NUMBER:** LPFBS0917
COMPOUND: Potassium perfluoro-1-butanesulfonate

STRUCTURE: **CAS #:** 29420-49-3



MOLECULAR FORMULA: C₄F₉SO₃K **MOLECULAR WEIGHT:** 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt) **SOLVENT(S):** Methanol
44.2 ± 2.2 µg/ml (PFBS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/21/2017
EXPIRY DATE: (mm/dd/yyyy) 09/21/2022
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:  **Date:** 09/22/2017
B.G. Chittim, General Manager (mm/dd/yyyy)

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

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EXPIRY DATE / PERIOD OF VALIDITY:

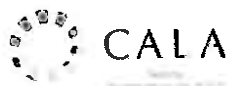
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LIMITED WARRANTY:

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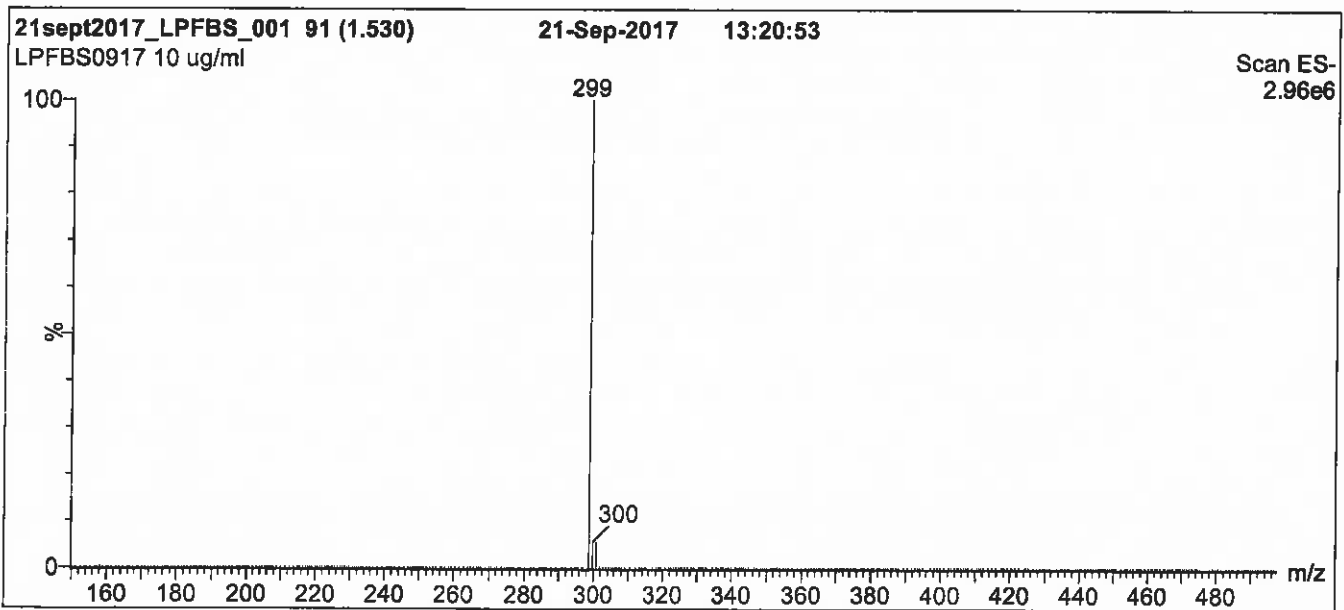
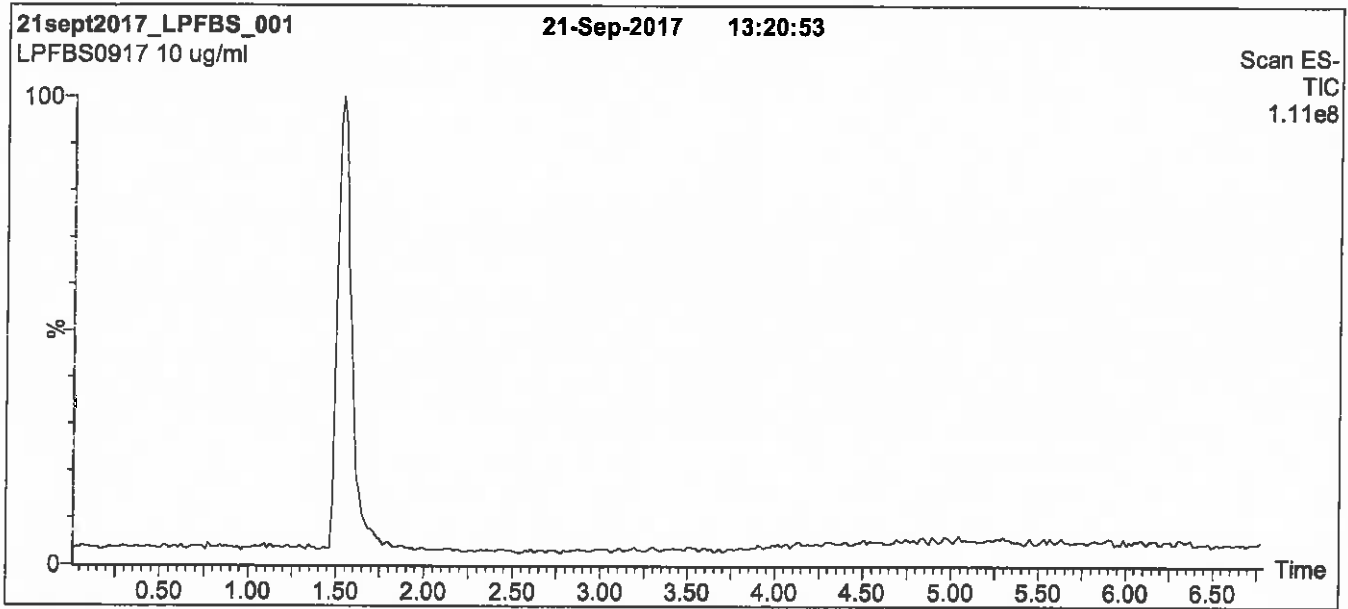
QUALITY MANAGEMENT:

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Figure 1: 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: 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

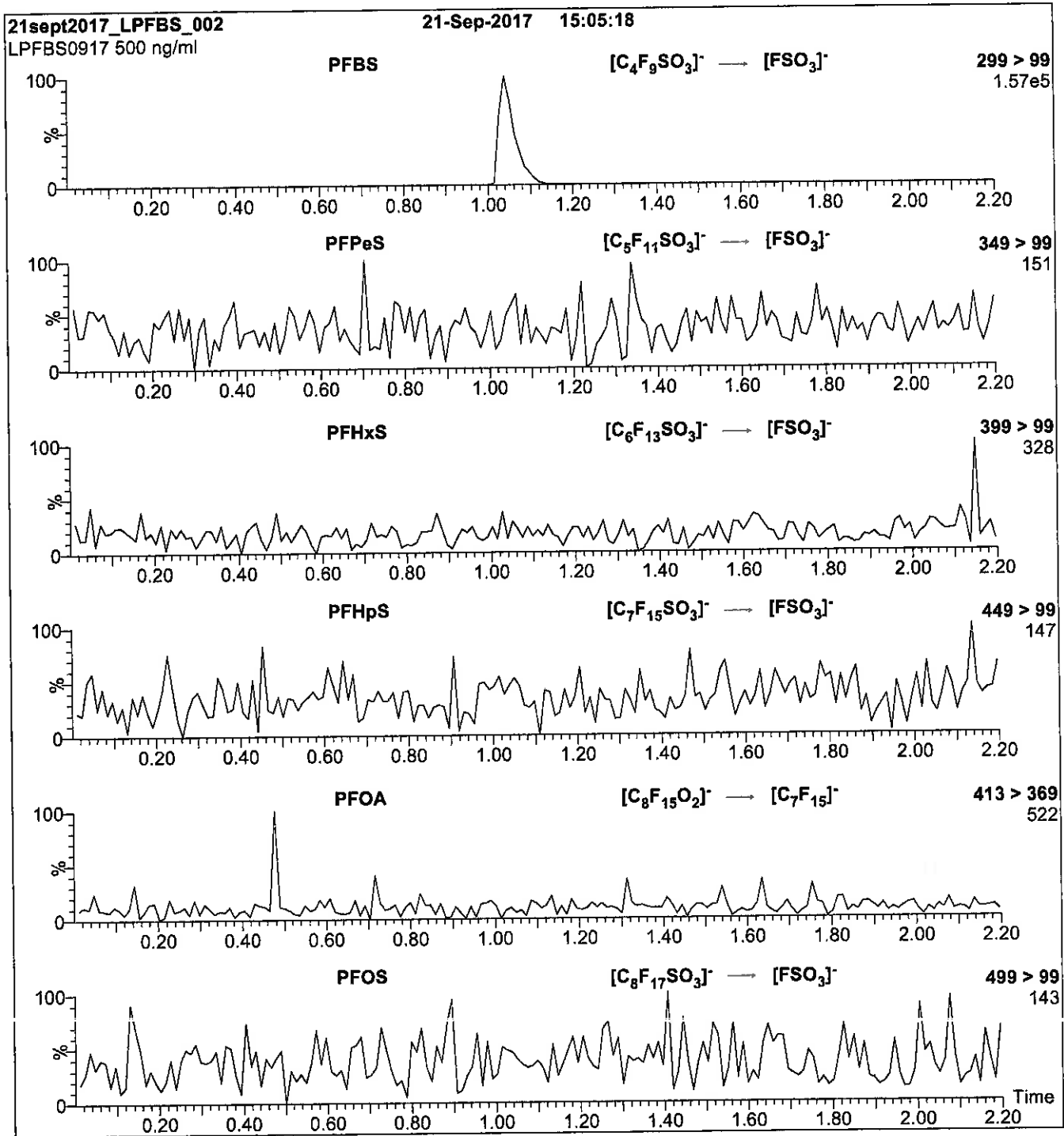
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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% H₂O
 (both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.39e-3

Collision Energy (eV) = 25

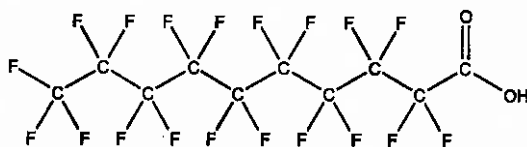
Reagent

LCPFDA_00008


**WELLINGTON
LABORATORIES**
**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: PFDA **LOT NUMBER:** PFDA0517
COMPOUND: Perfluoro-n-decanoic acid

STRUCTURE: **CAS #:** 335-76-2



MOLECULAR FORMULA: C₁₀HF₁₉O₂ **MOLECULAR WEIGHT:** 514.08
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of perfluoro-n-nonanoic acid (PFNA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chltrim, 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

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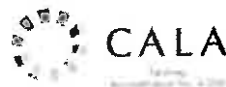
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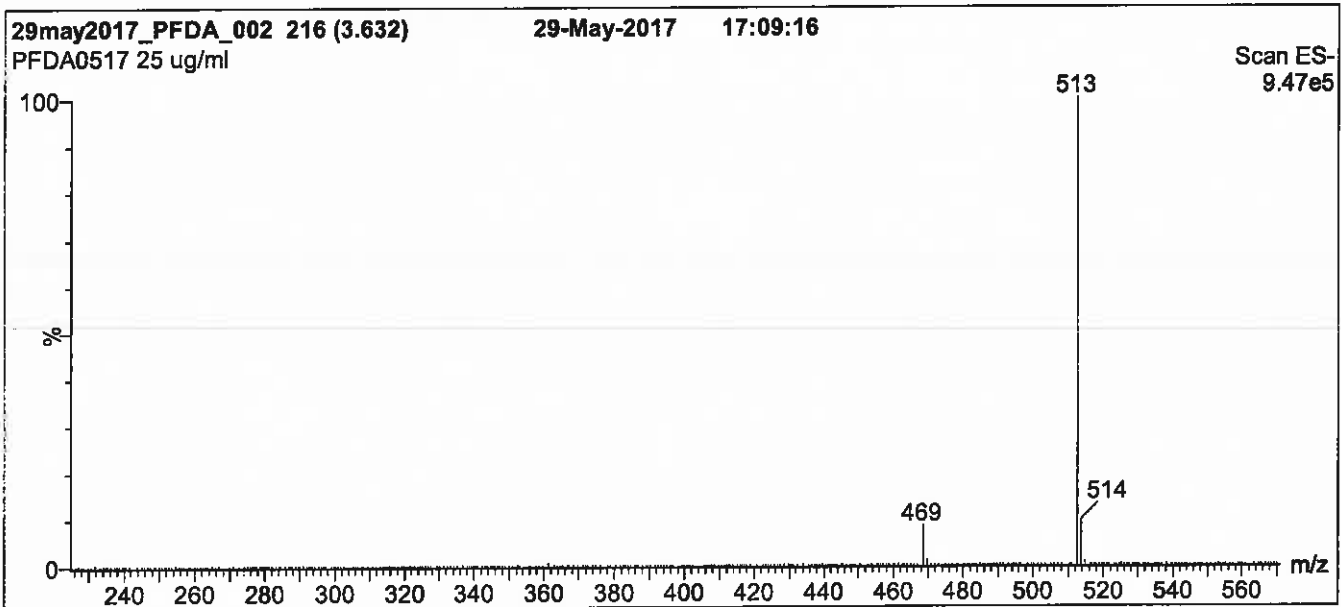
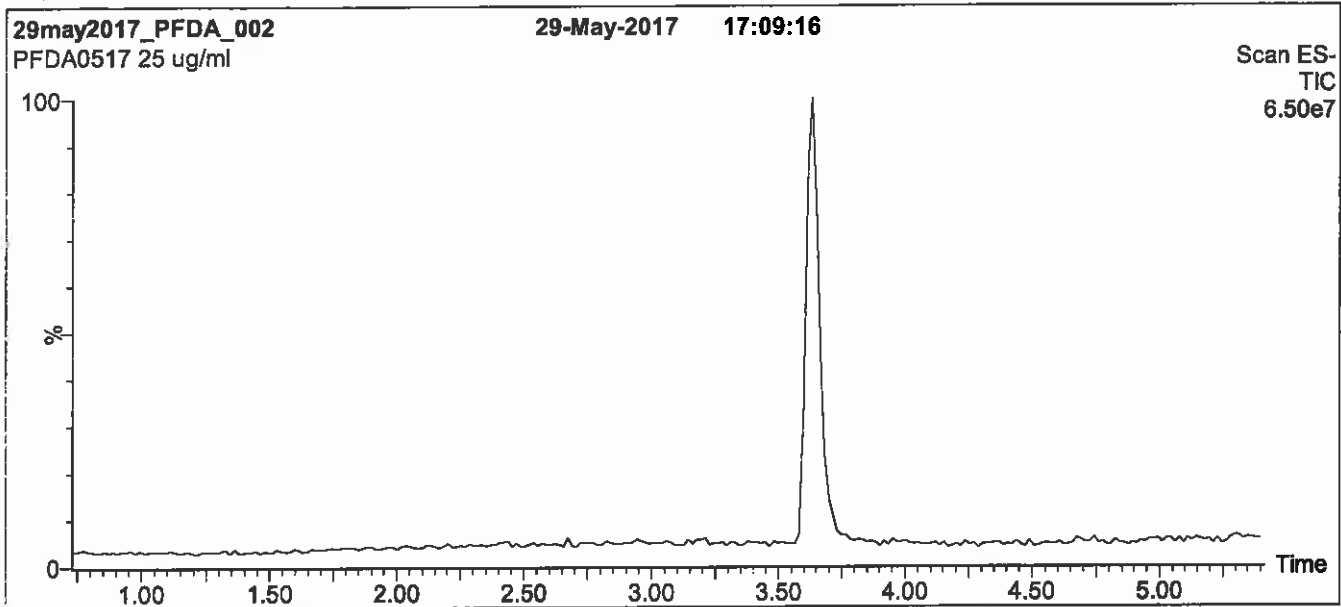
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Figure 1: PFDA; LC/MS Data (TIC and Mass Spectrum)



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

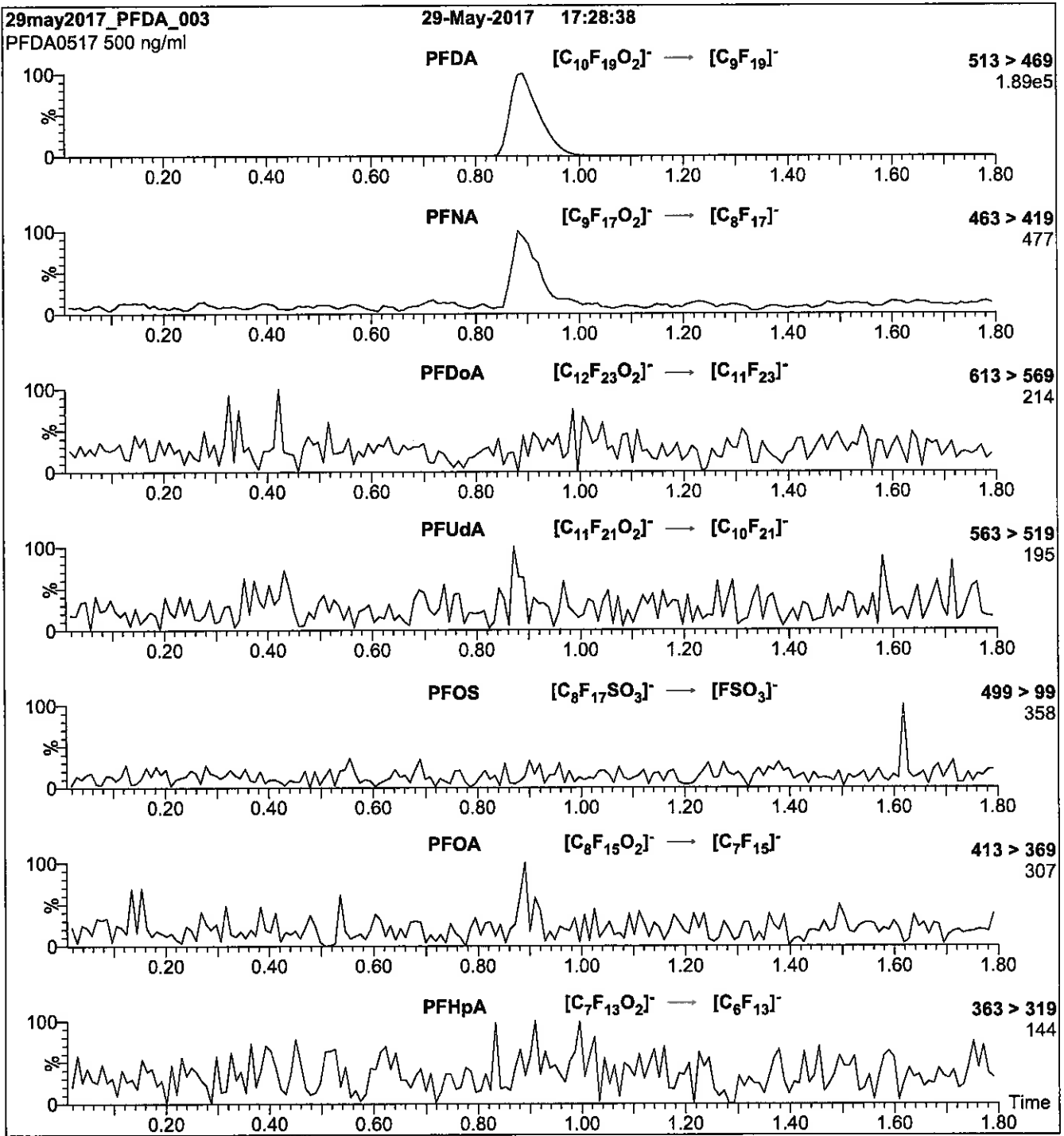
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00008

P: 10/2017 SKV

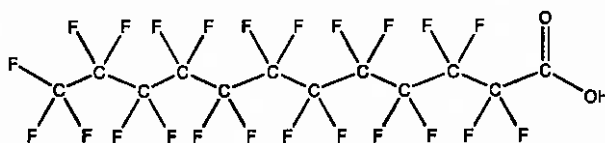


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFD0A **LOT NUMBER:** PFD0A0517
COMPOUND: Perfluoro-n-dodecanoic acid

STRUCTURE: **CAS #:** 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$ **MOLECULAR WEIGHT:** 614.10
CONCENTRATION: $50 \pm 2.5 \mu\text{g/ml}$ **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 05/29/2017
EXPIRY DATE: (mm/dd/yyyy) 05/29/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By:  **Date:** 05/30/2017
B.G. Chittim, General Manager (mm/dd/yyyy)

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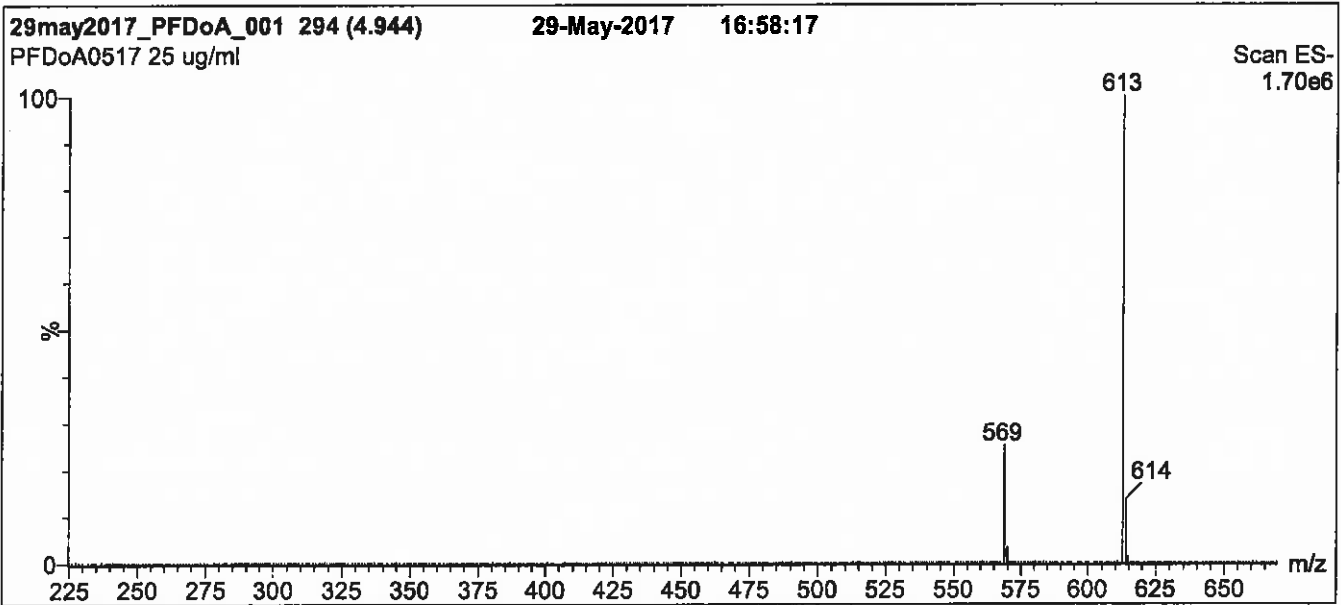
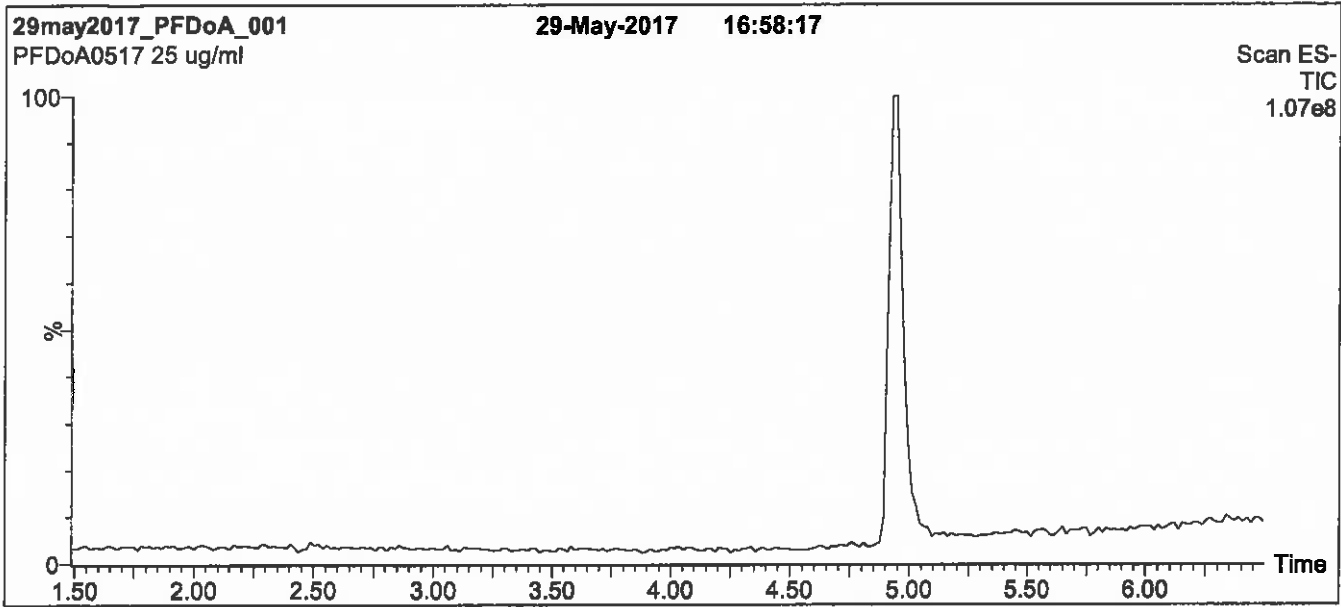
QUALITY MANAGEMENT:

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: 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: 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

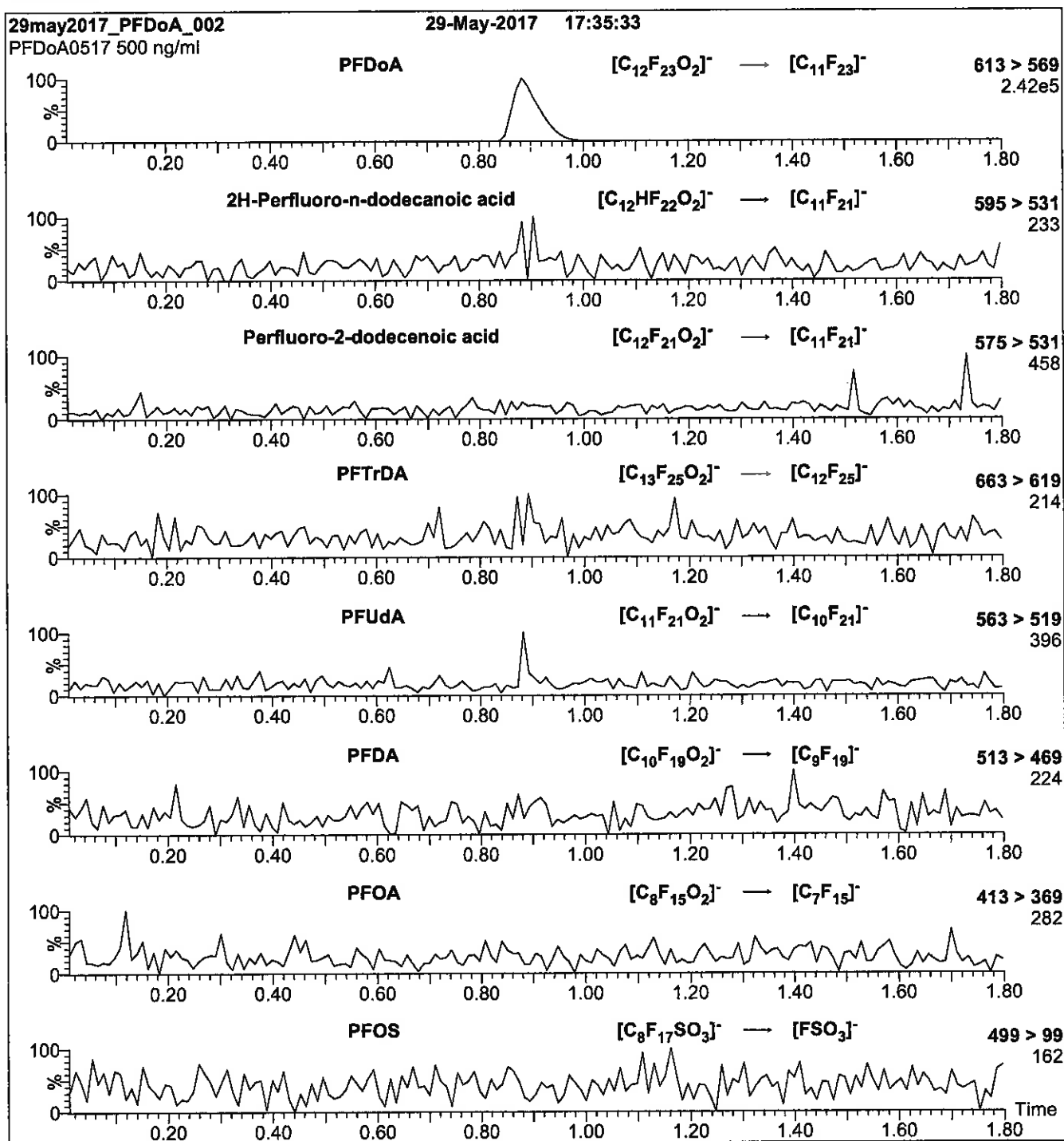
Flow: 300 μ l/min

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: PFDoA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

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

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

LCPFDoA_00010

P: 10/2017 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

PFD0A

LOT NUMBER:

PFD0A0517

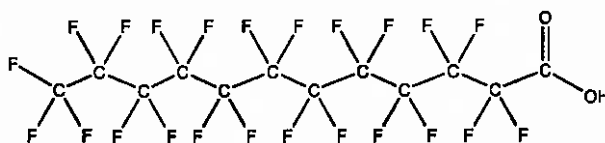
COMPOUND:

Perfluoro-n-dodecanoic acid

STRUCTURE:

CAS #:

307-55-1



MOLECULAR FORMULA:

C₁₂H₂₃F₂₃O₂

MOLECULAR WEIGHT:

614.10

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

05/29/2017

EXPIRY DATE: (mm/dd/yyyy)

05/29/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:


 B.G. Chittim, General Manager

Date:

05/30/2017
 (mm/dd/yyyy)

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

INTENDED USE:

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

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:

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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 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.

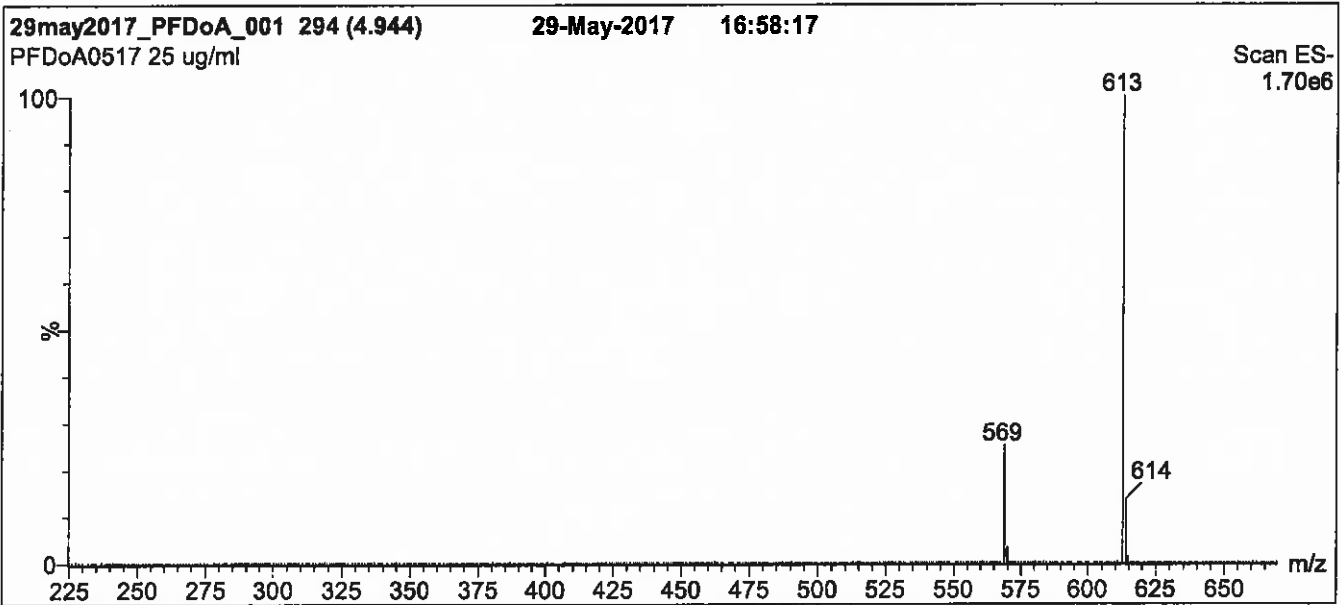
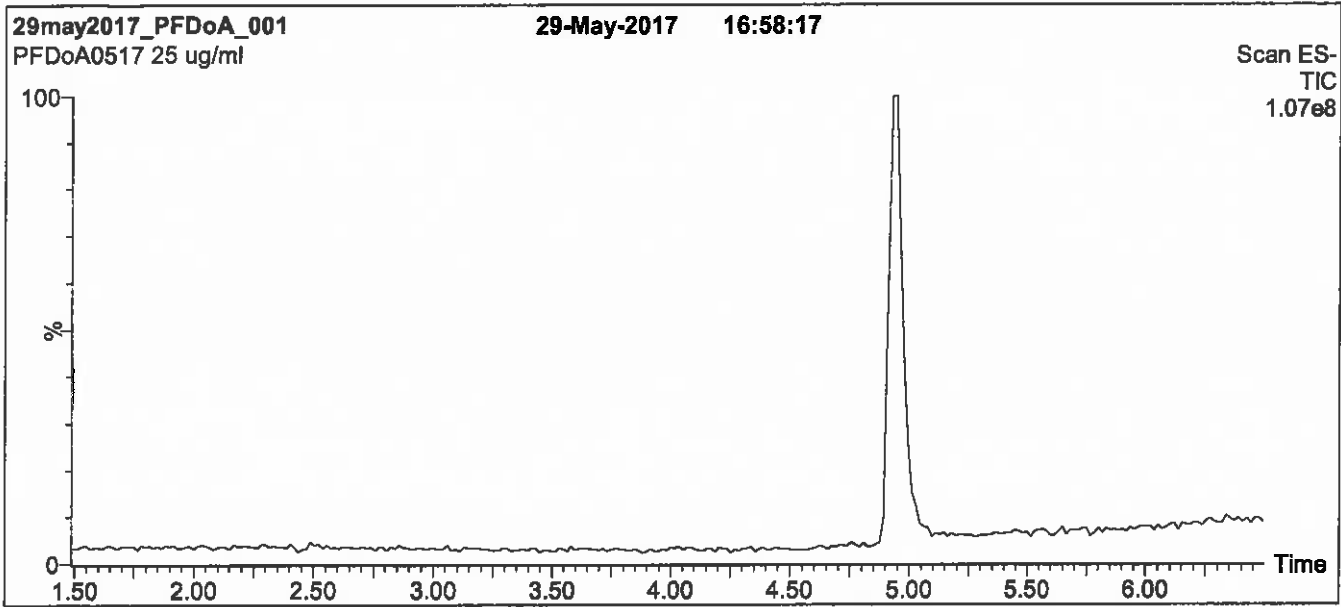
QUALITY MANAGEMENT:

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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: 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

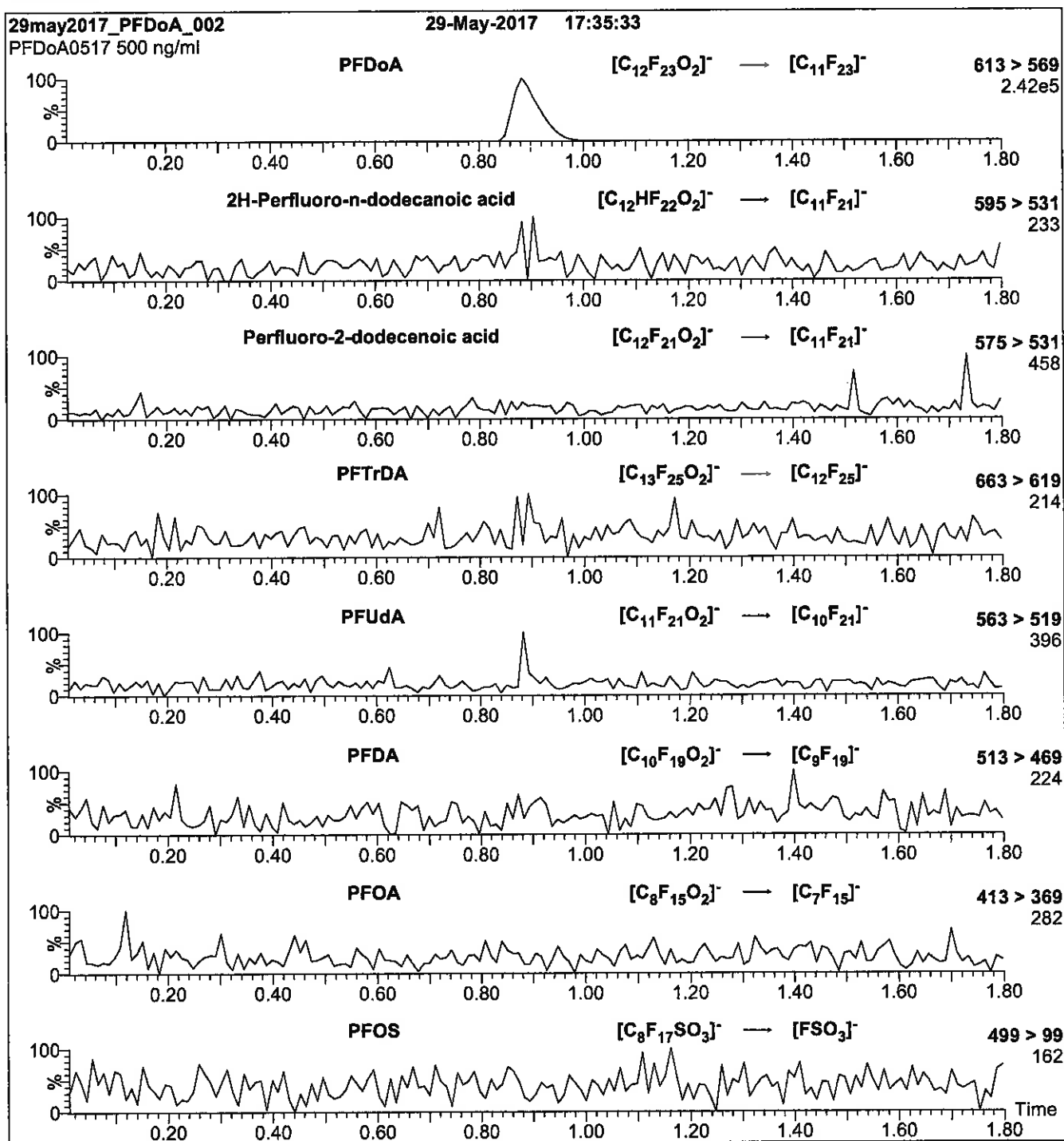
Flow: 300 μ l/min

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: PFDoA; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

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

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

LCPFDS_00008

P: 2/16/18 xj

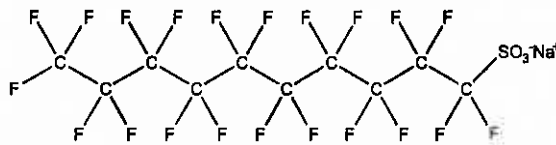


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFDS **LOT NUMBER:** LPFDS1117
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) 11/08/2017
EXPIRY DATE: (mm/dd/yyyy) 11/08/2022
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 ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager **Date:** 11/16/2017
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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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 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:

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LIMITED WARRANTY:

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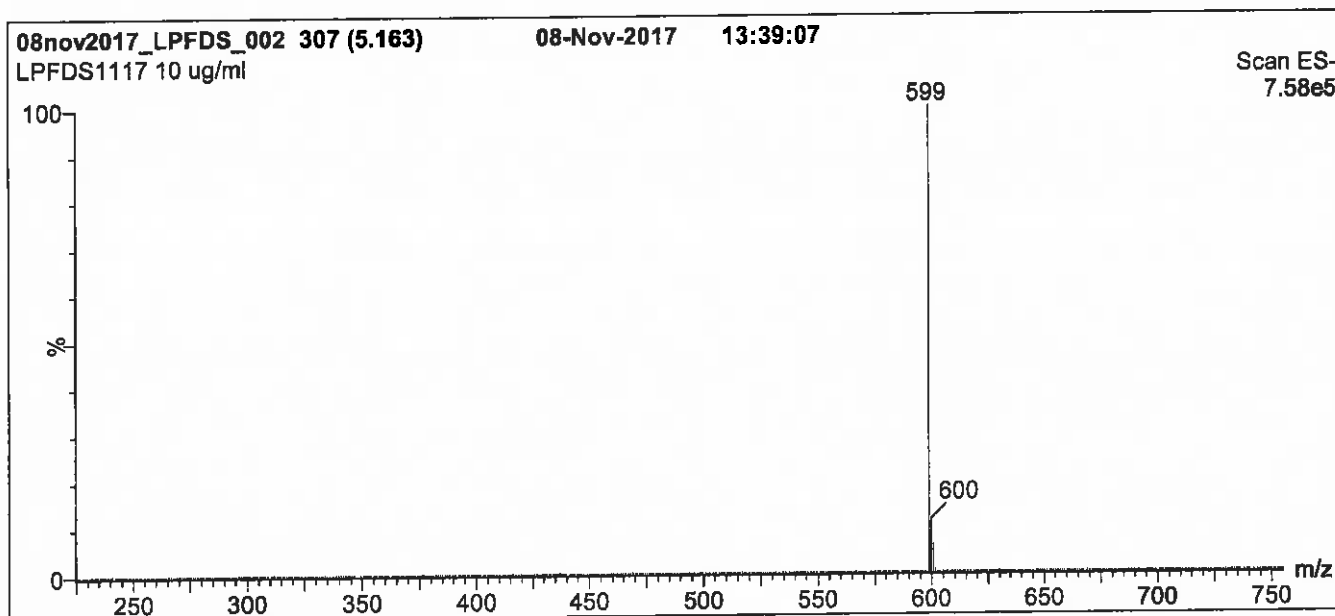
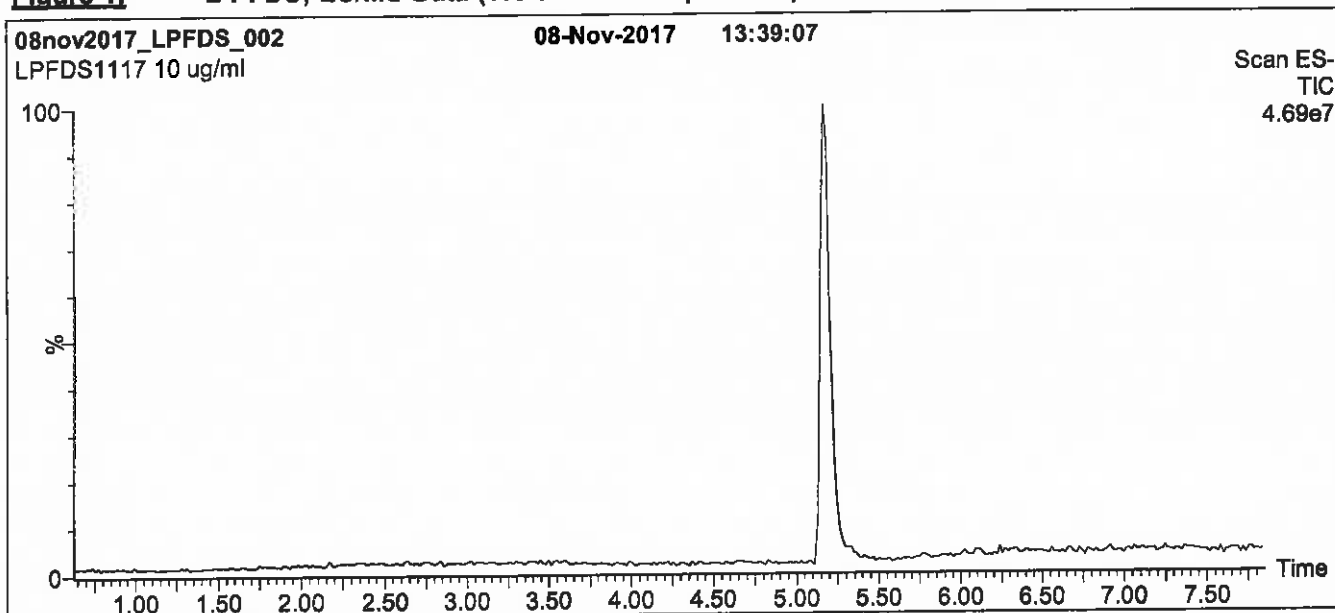
QUALITY MANAGEMENT:

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

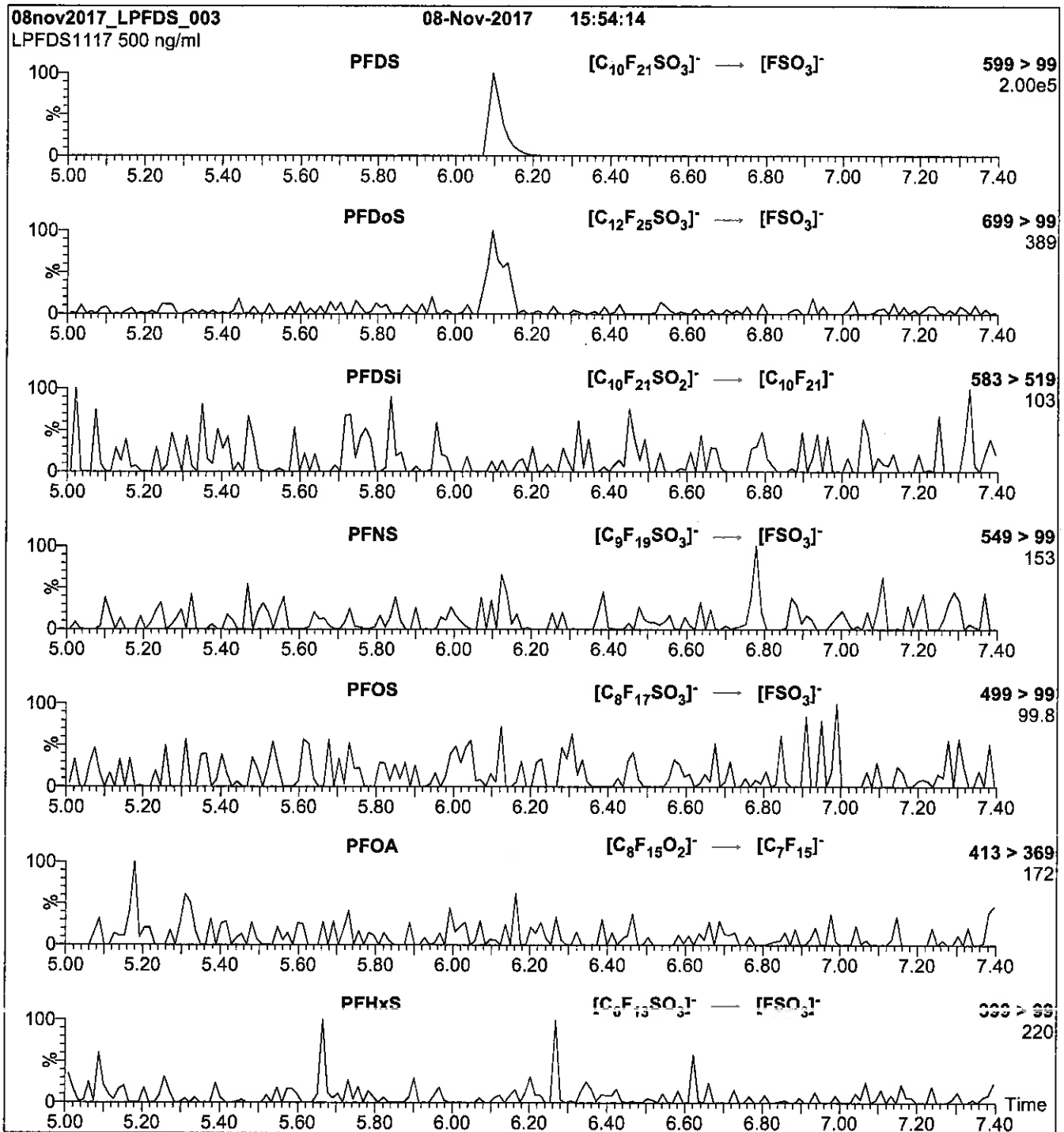
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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) = 3.46e-3
Collision Energy (eV) = 50

Reagent

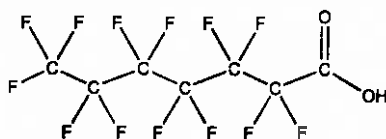
LCPFHpA_00011

P-2/16/18 SPJ

**WELLINGTON
LABORATORIES****CERTIFICATE OF ANALYSIS
DOCUMENTATION**

PRODUCT CODE: PFHpA **LOT NUMBER:** PFHpA0917
COMPOUND: Perfluoro-n-heptanoic acid

STRUCTURE: **CAS #:** 375-85-9



MOLECULAR FORMULA: $C_7HF_{13}O_2$ **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) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 09/29/2017
B.G. Chittim, General Manager (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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LIMITED WARRANTY:

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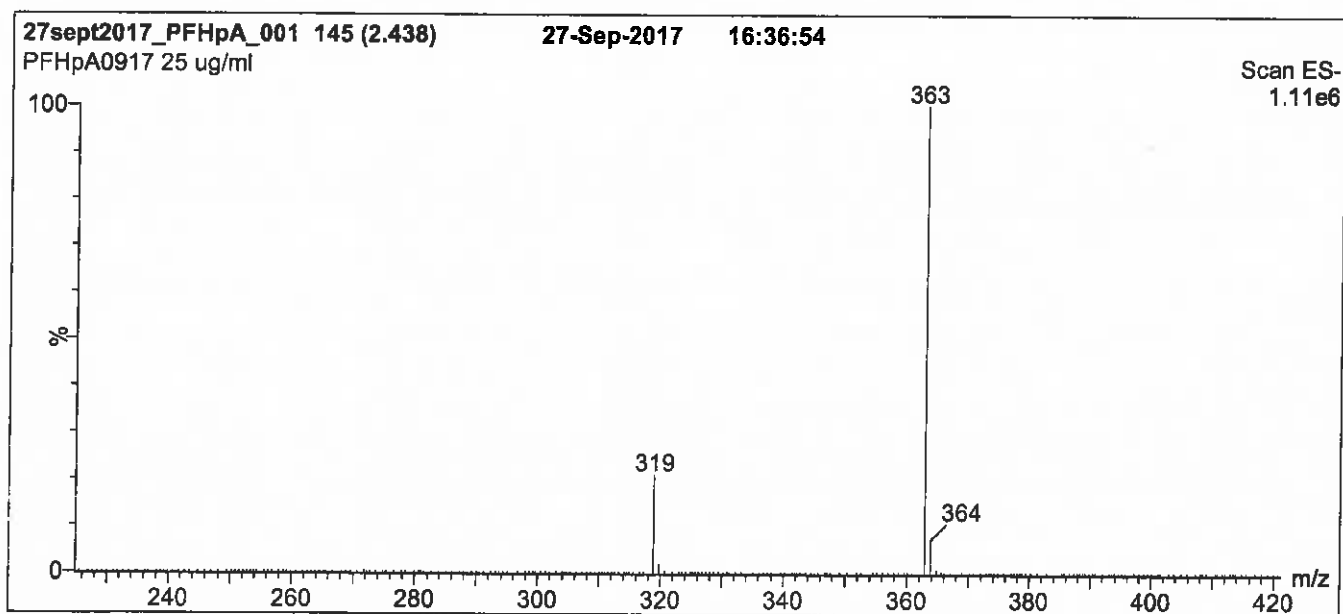
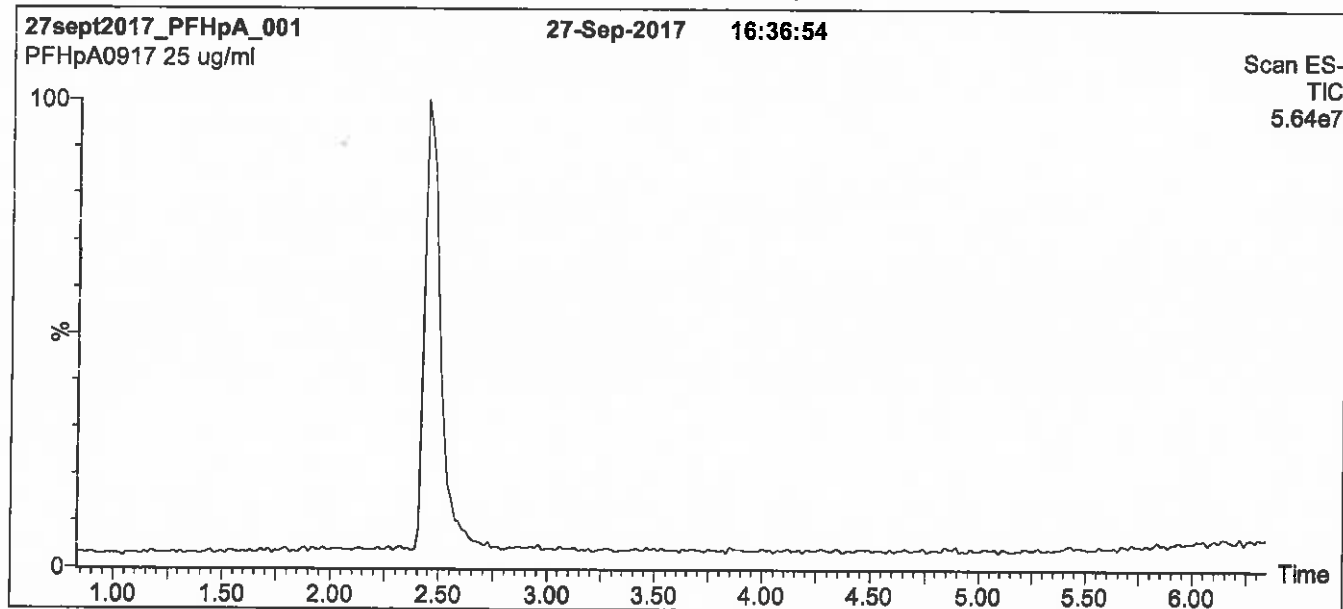
QUALITY MANAGEMENT:

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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

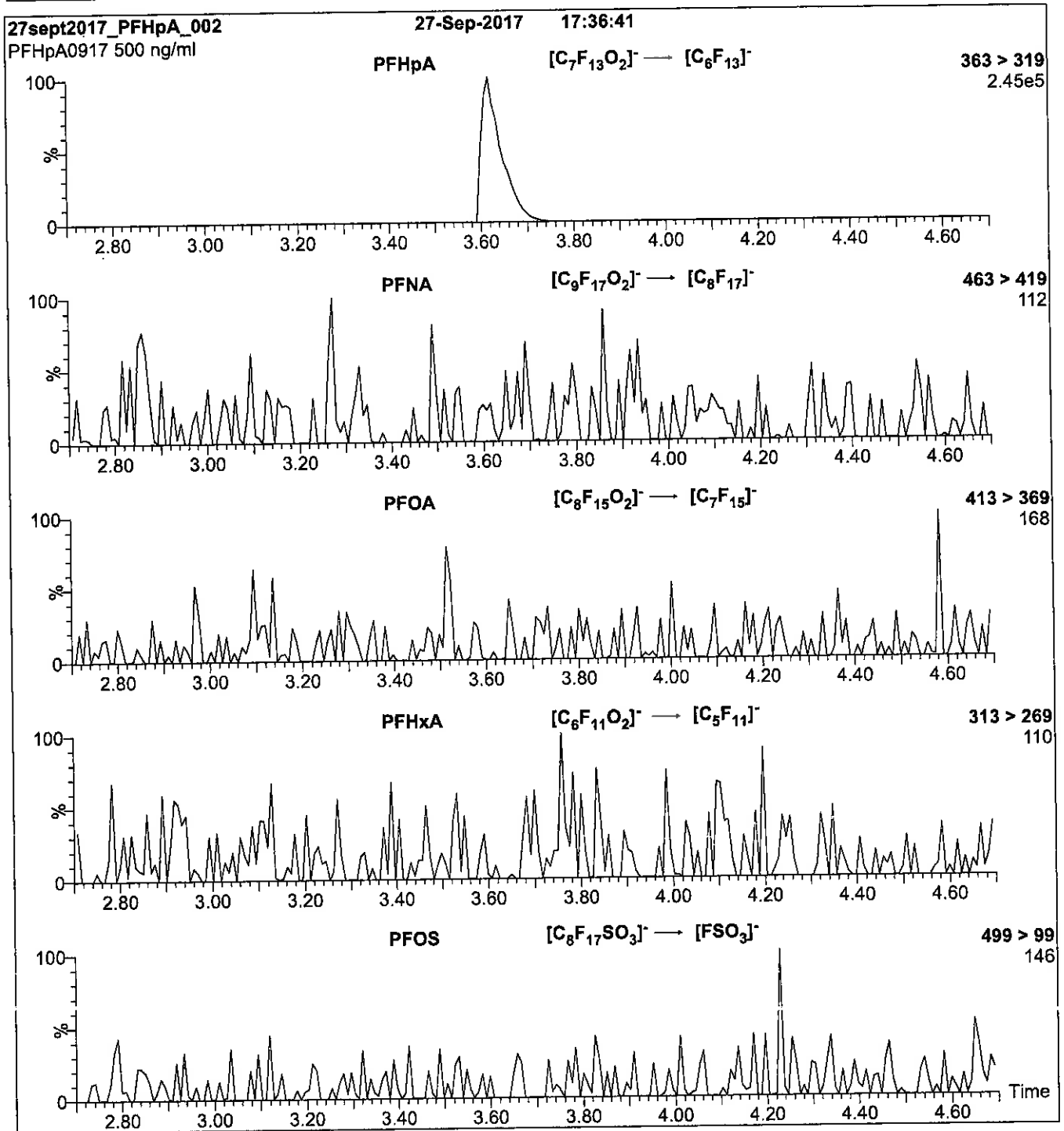
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7 min and hold for
2 min before returning to initial conditions in 0.5 min.
Time: 10 min

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: 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) = 3.43e-3
 Collision Energy (eV) = 11

Reagent

LCPFHpSA_00003

RS 9/21/17 SKV

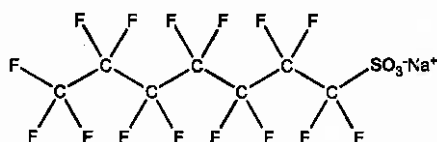


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFHpS **LOT NUMBER:** LPFHpS0817
COMPOUND: Sodium perfluoro-1-heptanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: C₇F₁₅SO₃Na **MOLECULAR WEIGHT:** 472.10
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
47.6 ± 2.4 µg/ml (PFHpS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/01/2017
EXPIRY DATE: (mm/dd/yyyy) 09/01/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.2% of L-PFHxS (C₈F₁₃SO₃Na) and ~ 0.1% of L-PFOS (C₈F₁₇SO₃Na).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 09/07/2017
B.G. Chittim, General Manager (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:

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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 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:

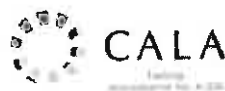
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

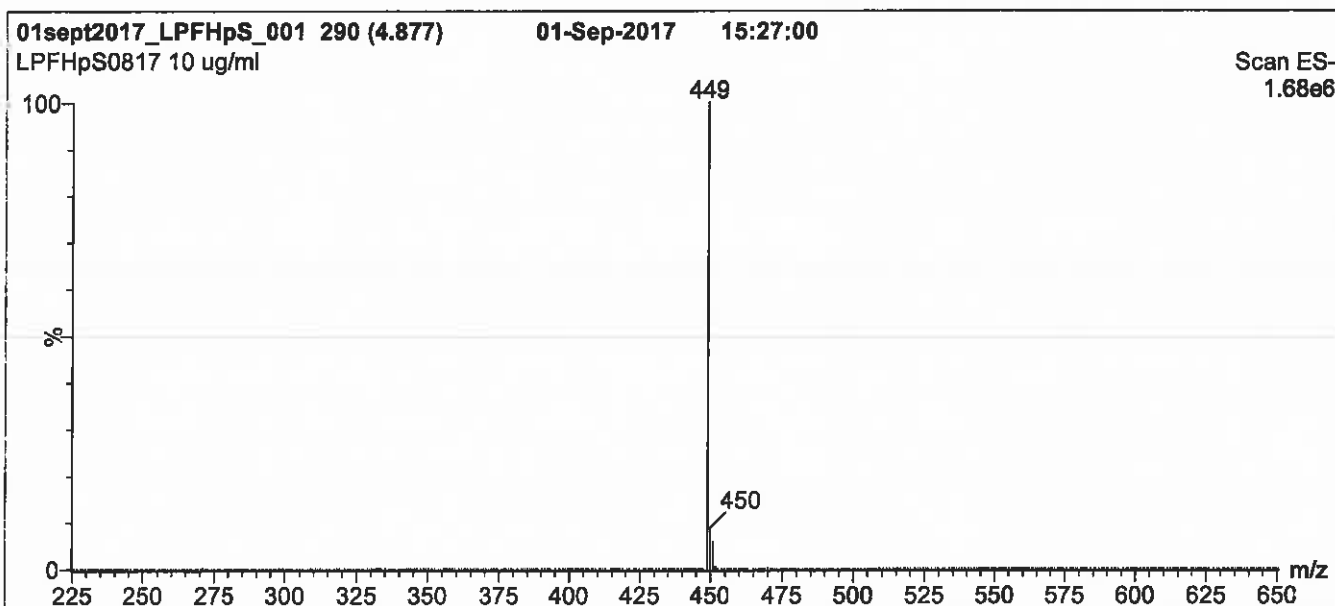
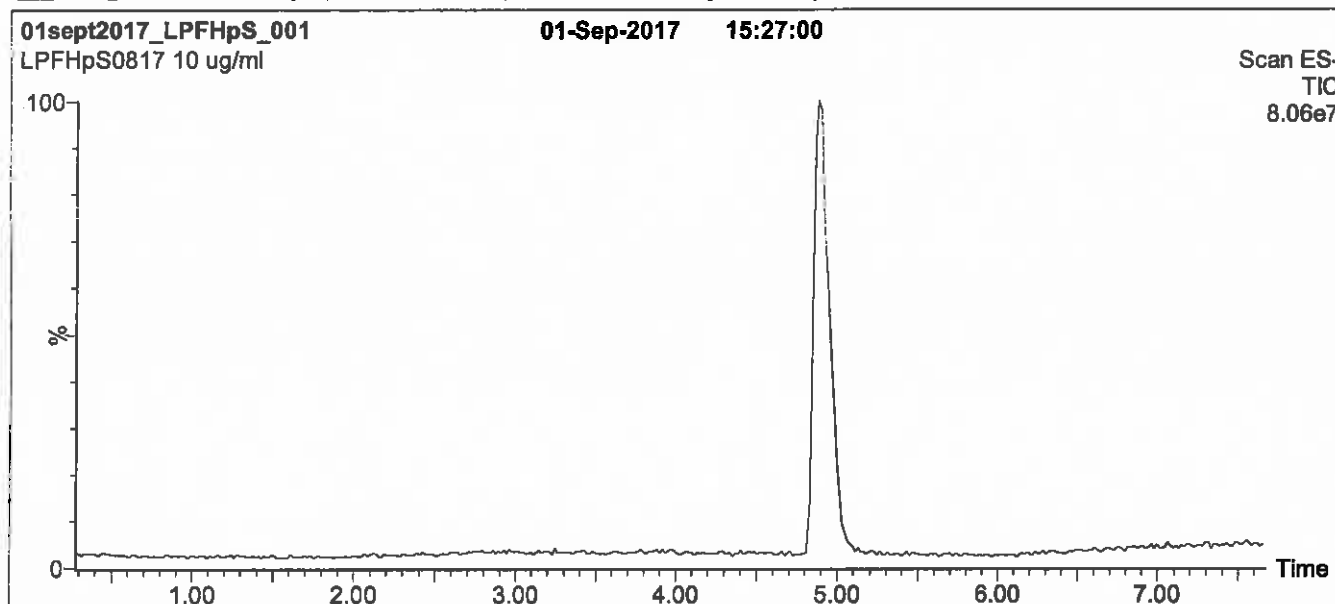
QUALITY MANAGEMENT:

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: L-PFHpS; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

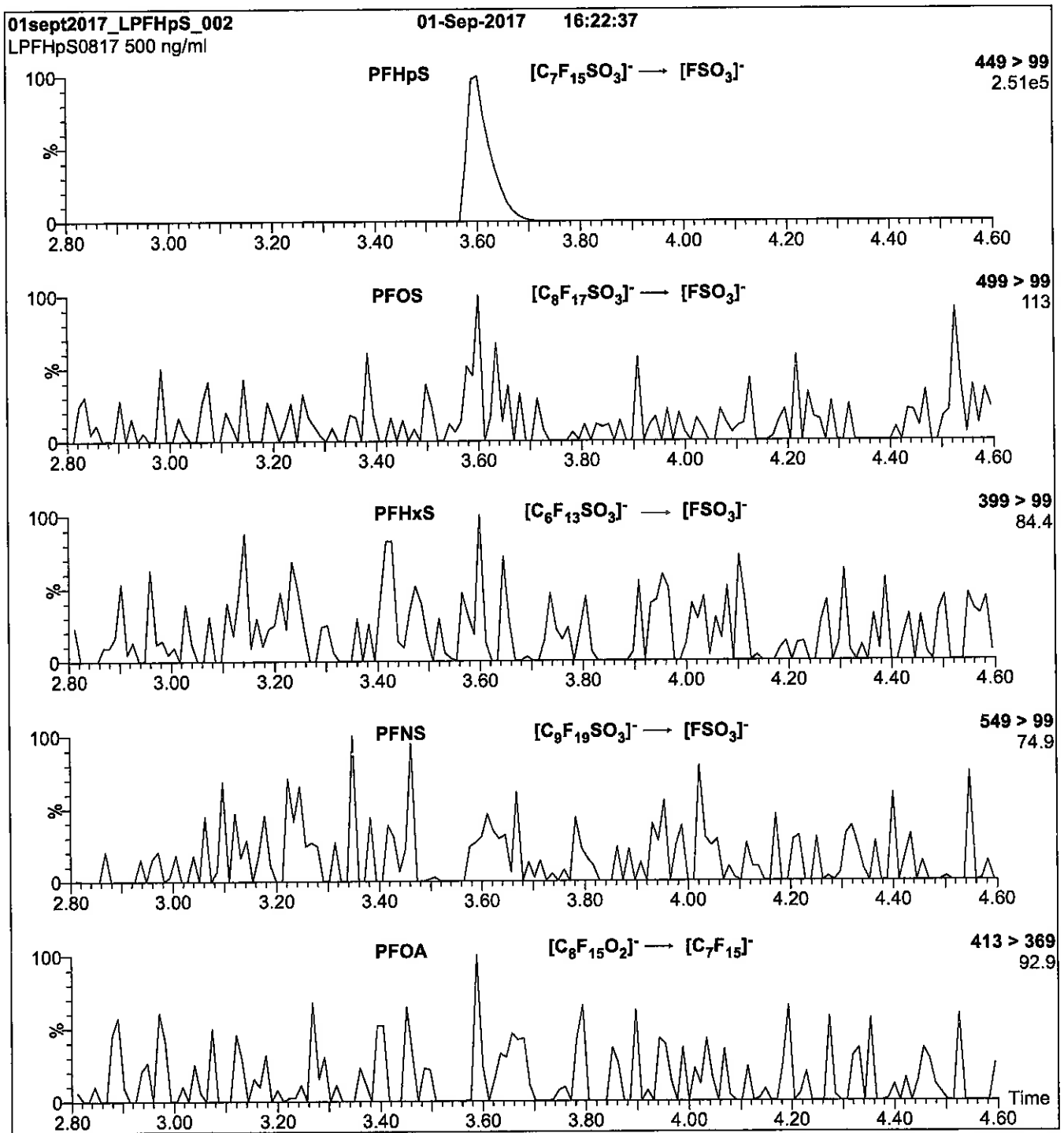
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 60.00
 Cone Gas Flow (l/hr) = 60
 Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFHpS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml L-PFHpS)

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
 Collision Energy (eV) = 35

Reagent

LCPFHxA_00010

r: 2/16/18 Spal



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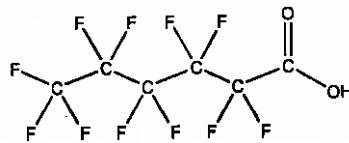
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxA
COMPOUND: Perfluoro-n-hexanoic acid

LOT NUMBER: PFHxA0917

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: C₆HF₁₁O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 314.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 1.0% of branched isomers.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 11/01/2017
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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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:

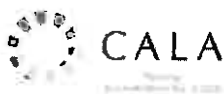
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

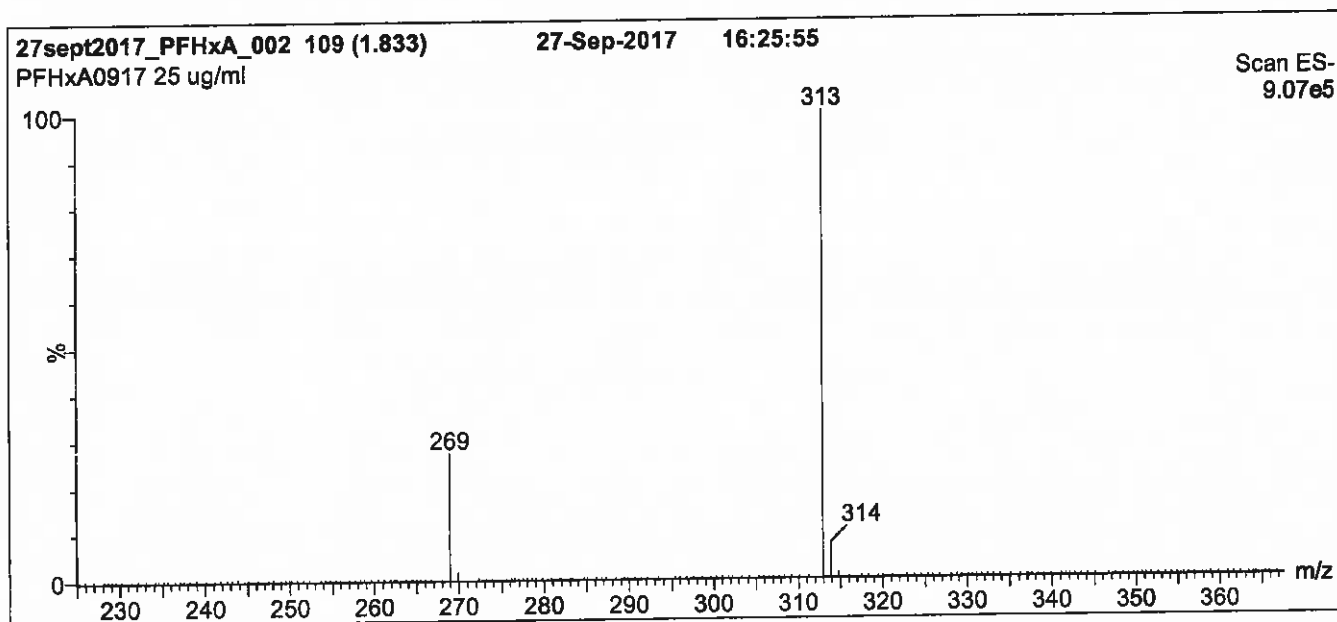
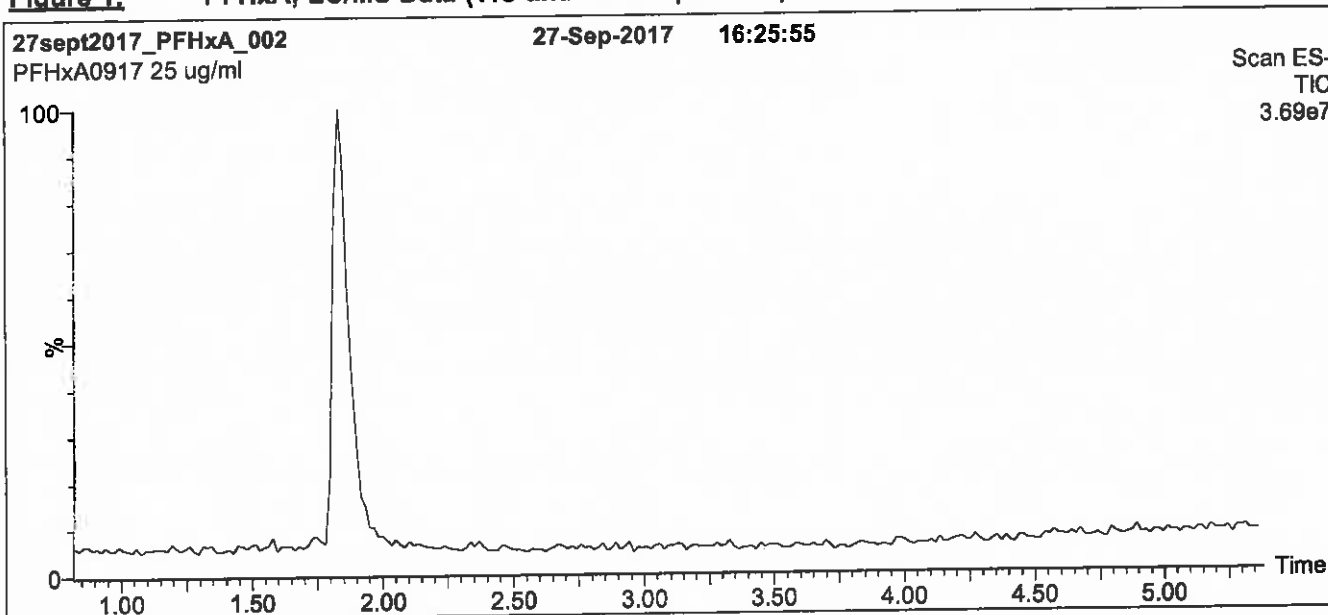
QUALITY MANAGEMENT:

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: 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

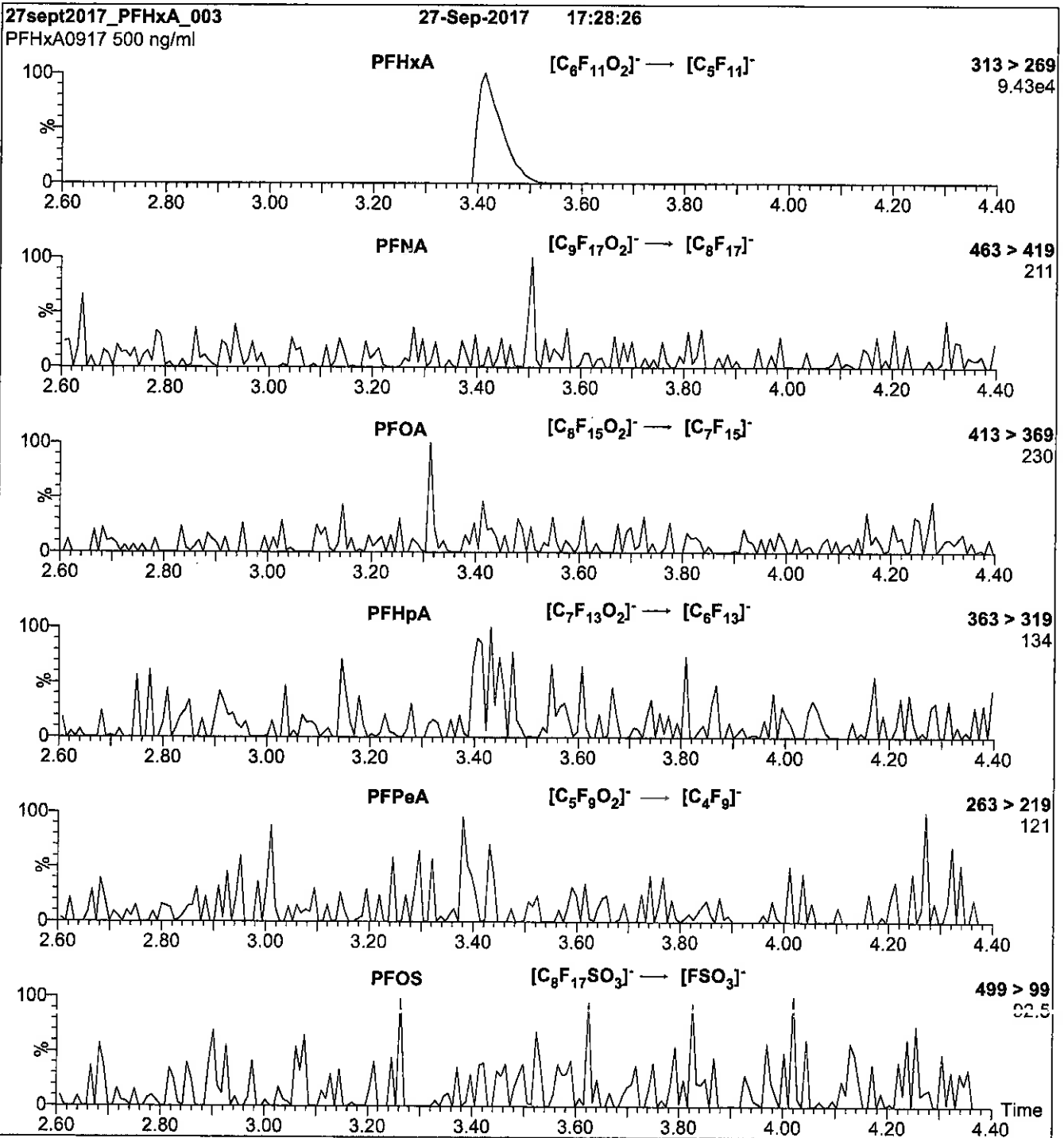
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 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) = 3.46e-3
Collision Energy (eV) = 10

Reagent

LCPFHxDA_00010

r: 9/2/17 sw

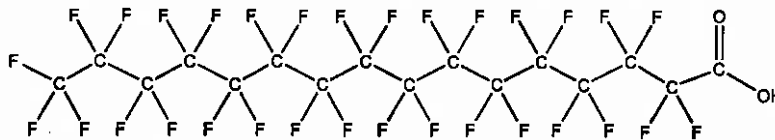


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFHxDA **LOT NUMBER:** PFHxDA0717
COMPOUND: Perfluoro-n-hexadecanoic acid

STRUCTURE: **CAS #:** 67905-19-5



MOLECULAR FORMULA: C₁₆H₃₁O₂ **MOLECULAR WEIGHT:** 814.13
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 08/04/2017
B.G. Chittim, General Manager (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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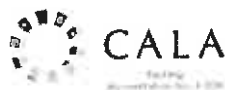
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LIMITED WARRANTY:

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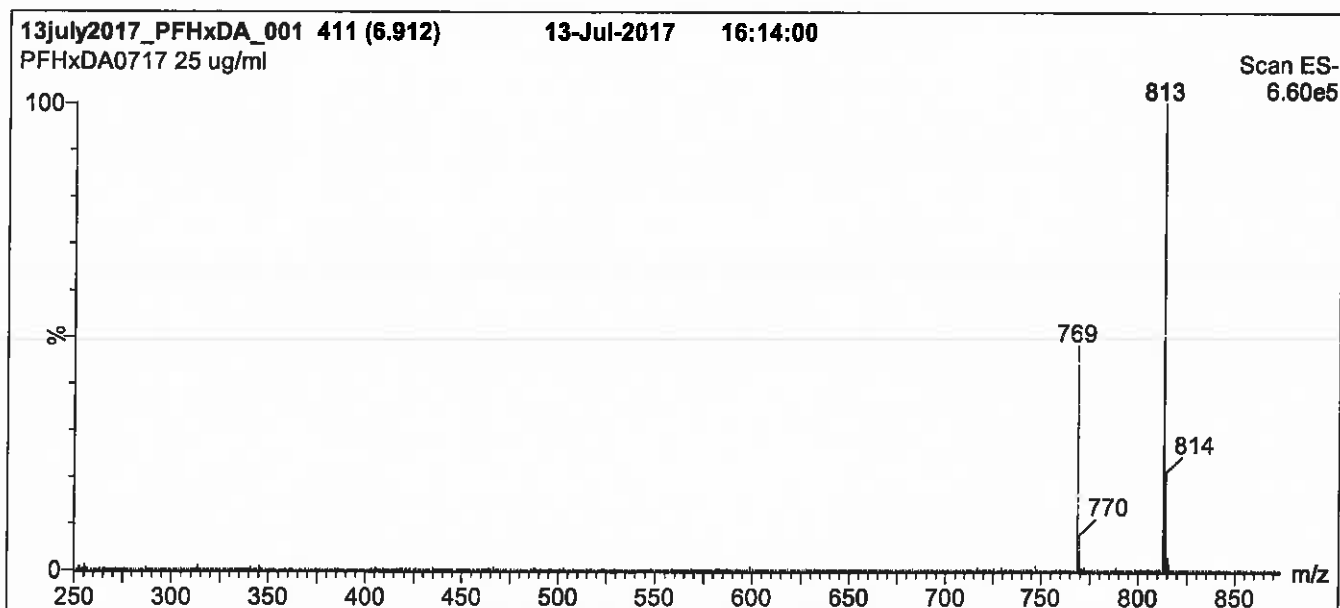
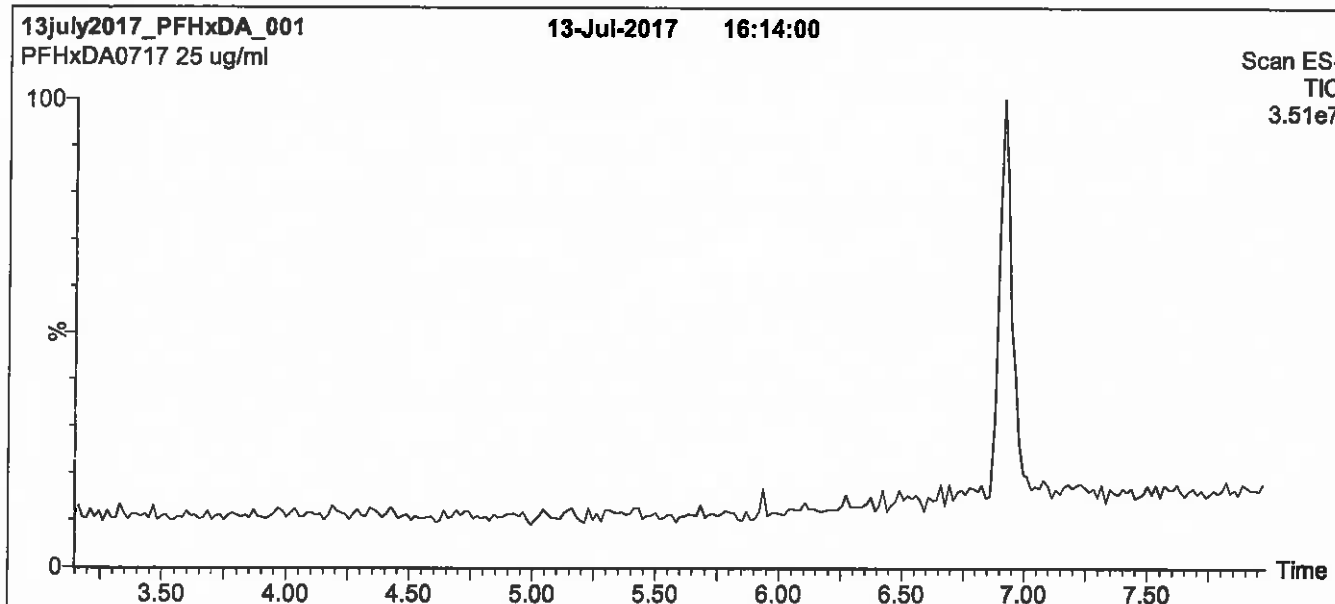
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

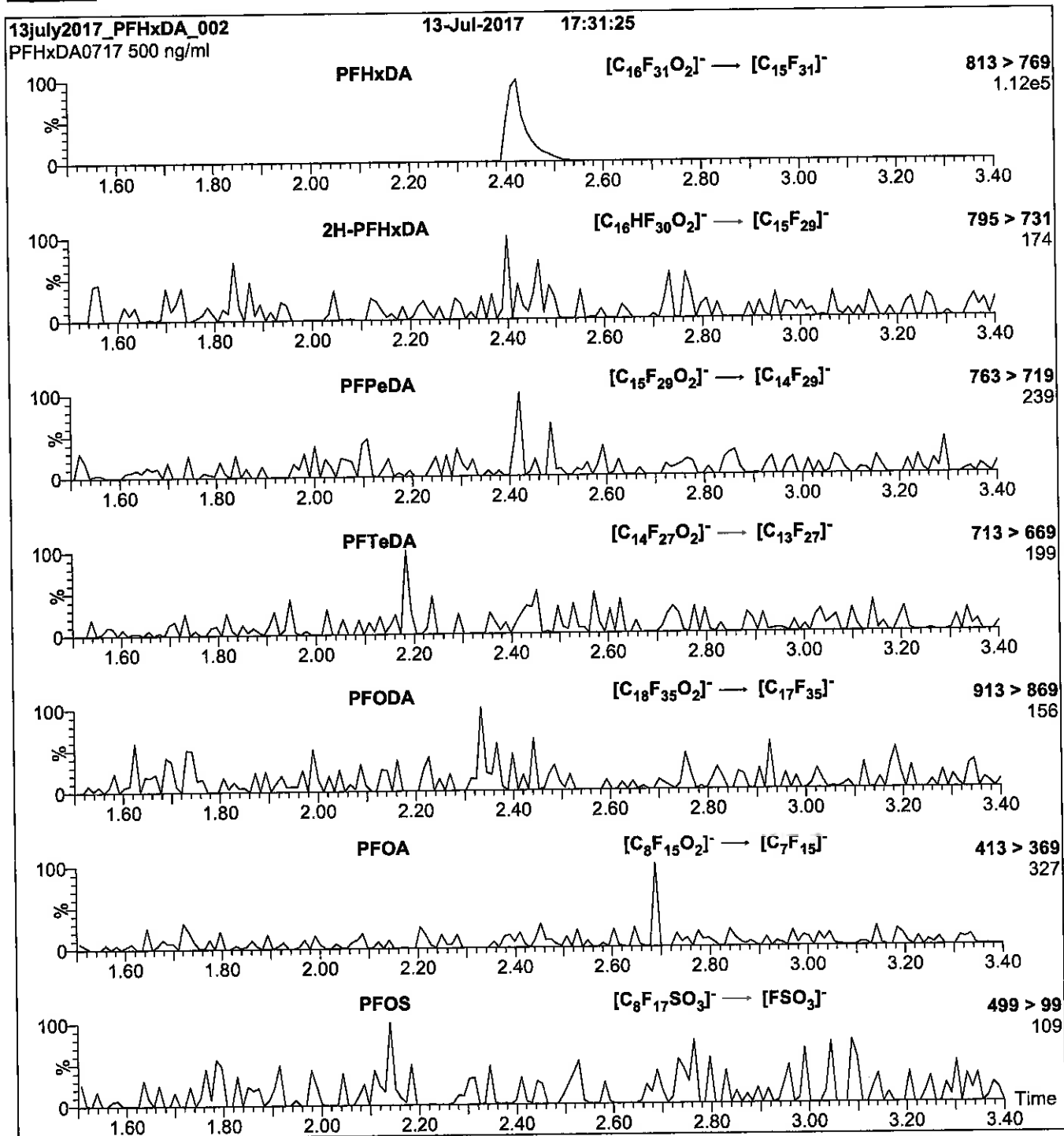
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

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

Figure 2: 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) = 3.13e-3
 Collision Energy (eV) = 15

Reagent

LCPFHxS-br_00006

P: 10/2017 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFHxSK

Potassium Perfluorohexanesulfonate Solution/Mixture of Linear and Branched Isomers

PRODUCT CODE: br-PFHxSK
LOT NUMBER: brPFHxSK0117
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) 01/03/2017
LAST TESTED: (mm/dd/yyyy) 01/04/2017
EXPIRY DATE: (mm/dd/yyyy) 01/04/2022
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 (SIR)
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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519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

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Table A: br-PFHxSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

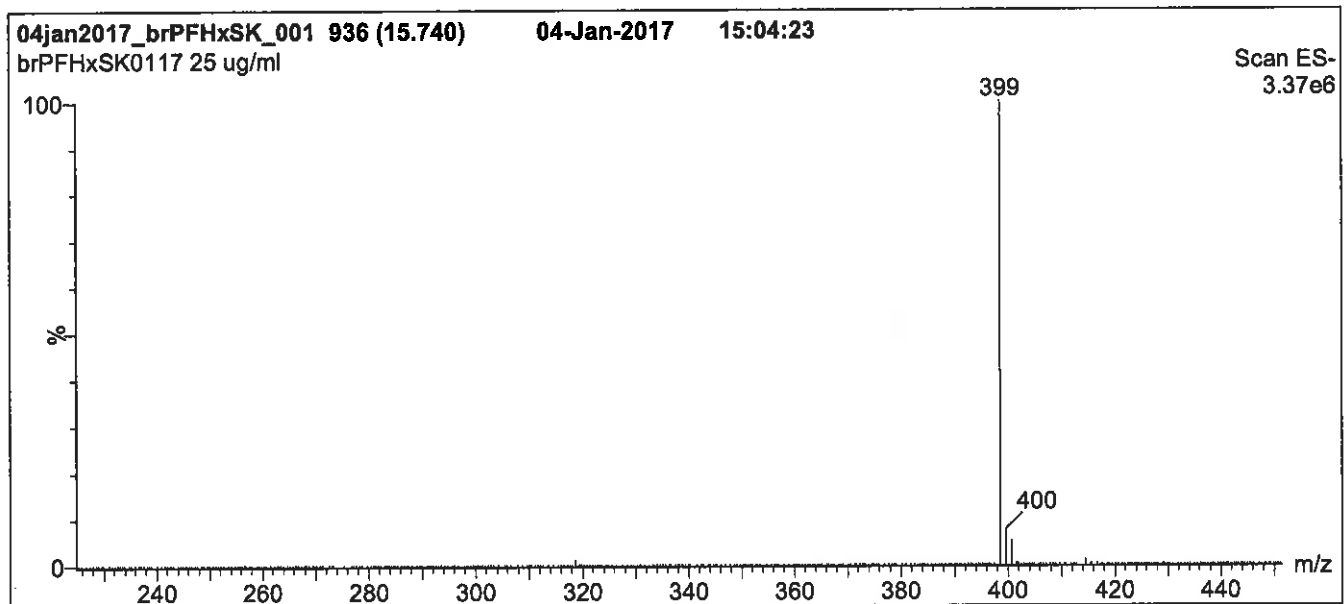
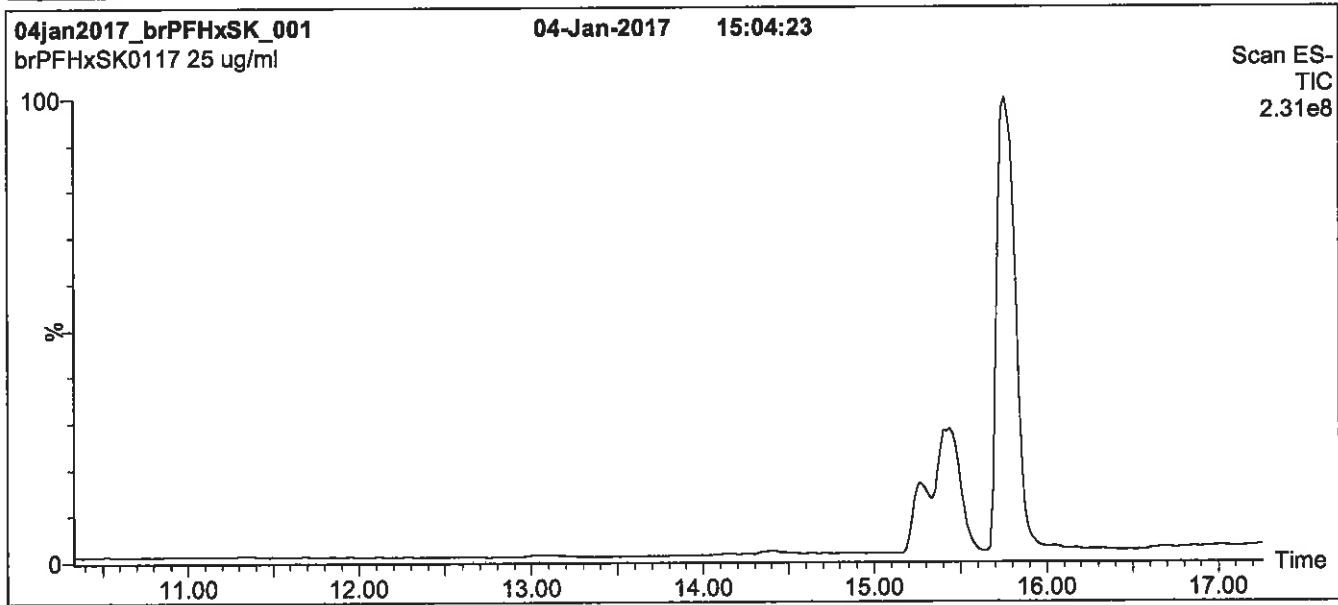
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-hexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF(SO ₃ ⁻)CF ₃ ⁻ K ⁺	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	CF ₃ CF ₂ CF ₂ CF(CF ₃)CF ₂ SO ₃ ⁻ K ⁺	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	CF ₃ CF ₂ CF(CF ₃)CF ₂ CF ₂ SO ₃ ⁻ K ⁺	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	CF ₃ CF(CF ₃)CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	CF ₃ CF(CF ₃)CF(CF ₃)CF ₂ SO ₃ ⁻ K ⁺	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: 01/20/2017
 (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

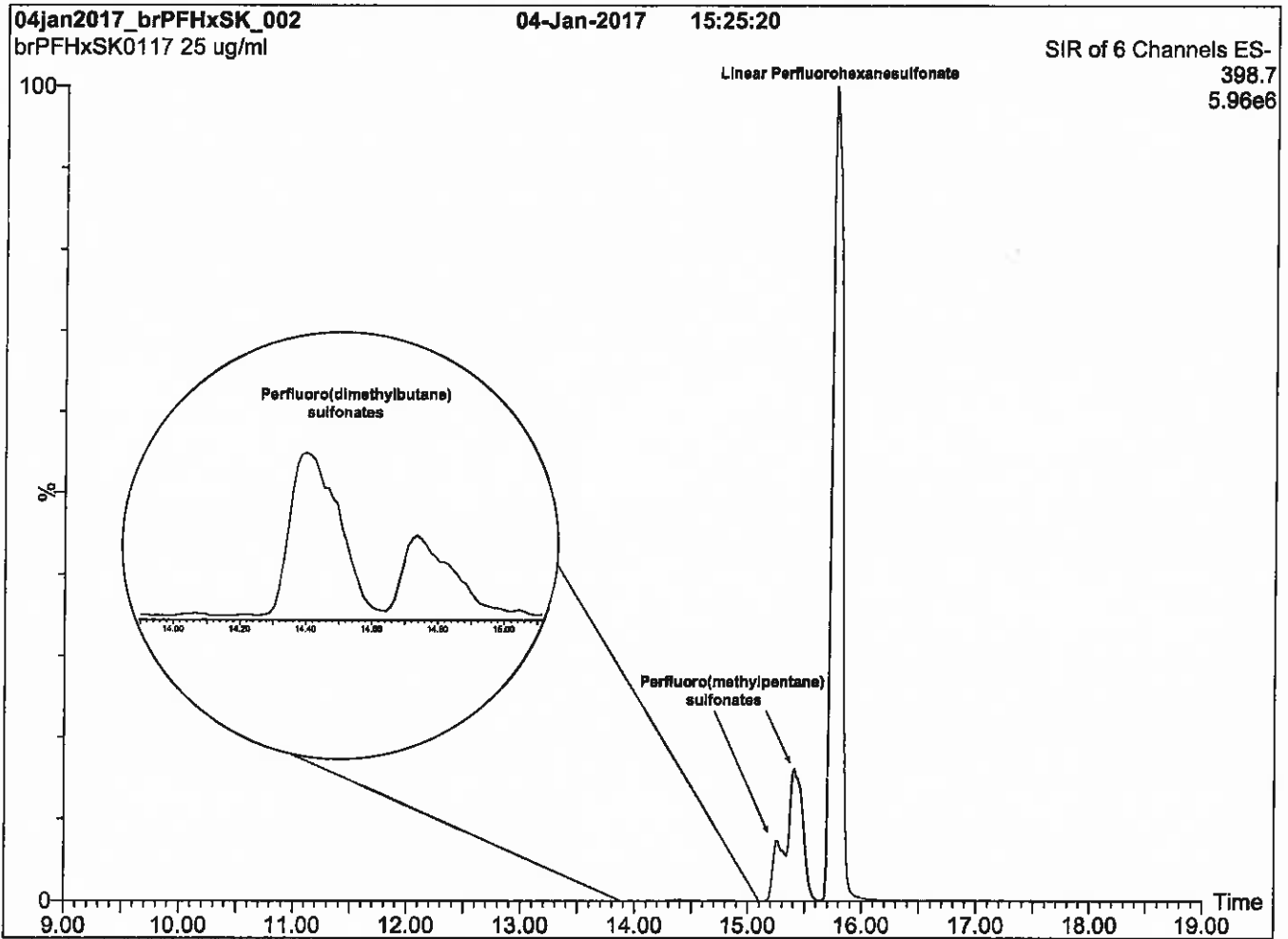
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (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: br-PFHxSK; 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

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

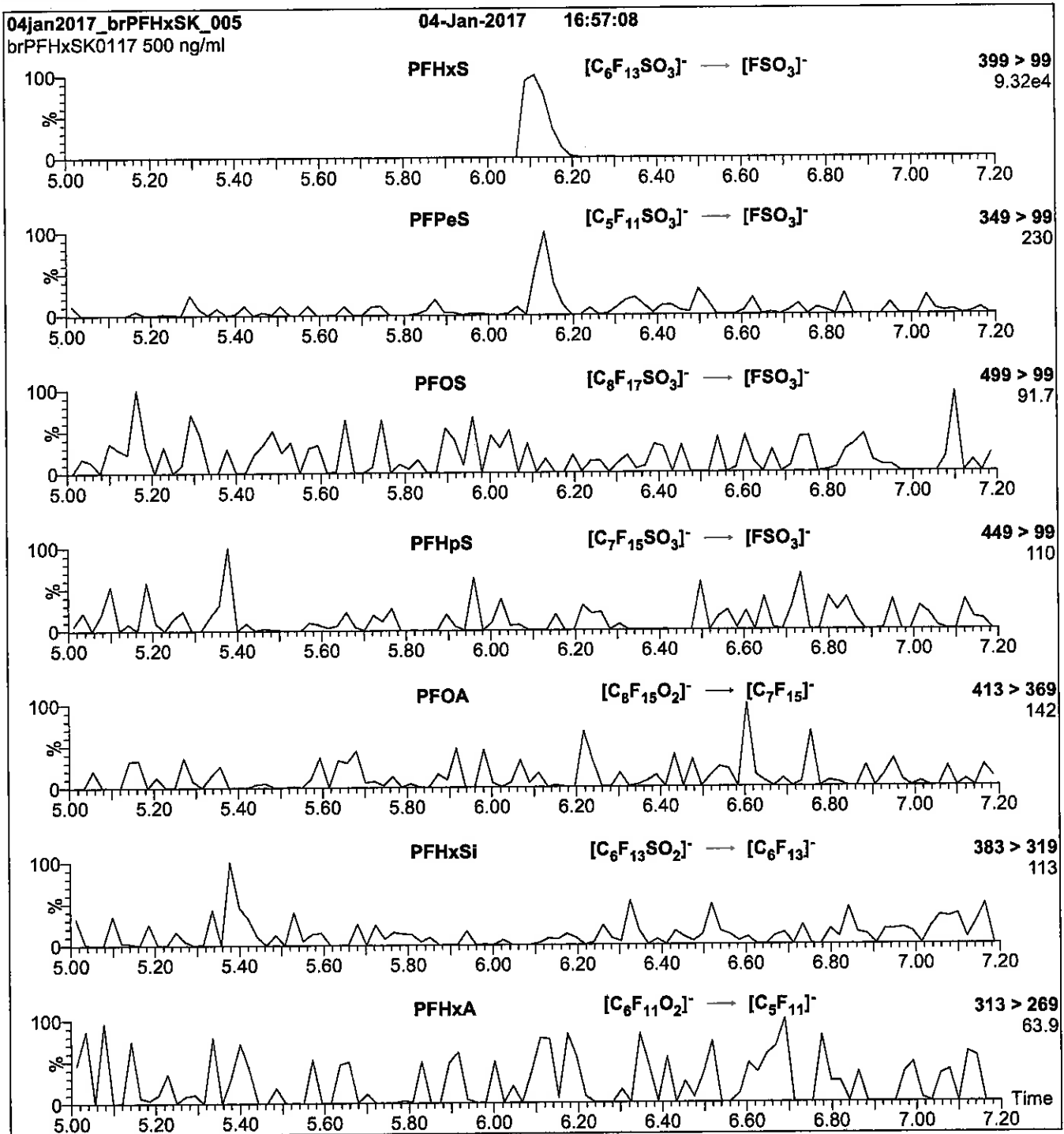
Flow: 300 μ l/min

MS Parameters

Experiment: SIR (6 channels)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (15-62)
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) = 3.35e-3
Collision Energy (eV) = 30

Reagent

LCPFNA_00010

r: 2/16/18 SW



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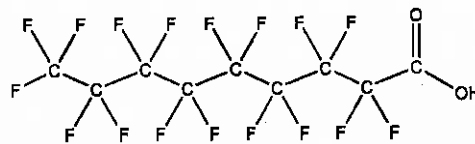
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFNA
COMPOUND: Perfluoro-n-nonanoic acid

LOT NUMBER: PFNA0717

STRUCTURE:

CAS #: 375-95-1



MOLECULAR FORMULA: C₉H_{F₁₇}O₂
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 464.08
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/20/2017
EXPIRY DATE: (mm/dd/yyyy) 07/20/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.1% of perfluoro-n-octanoic acid (PFOA), < 0.1% of perfluoro-n-heptanoic acid (PFHpA), and < 0.1% of perfluoro-n-undecanoic acid (PFUDA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 07/24/2017
(mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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.

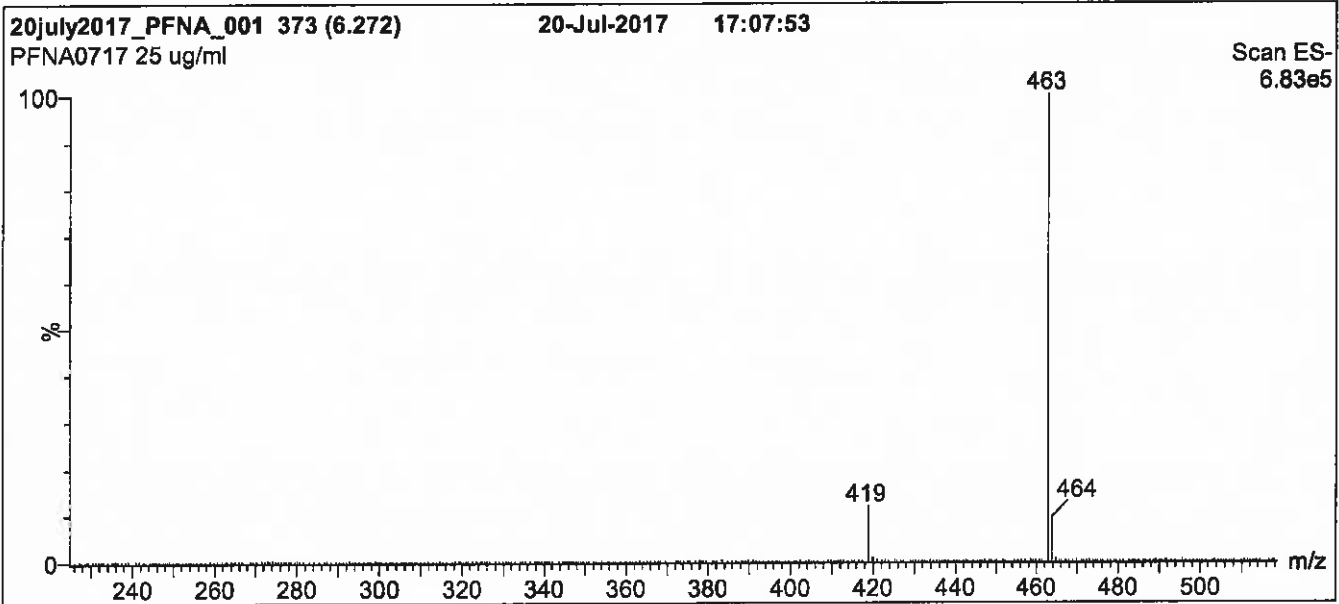
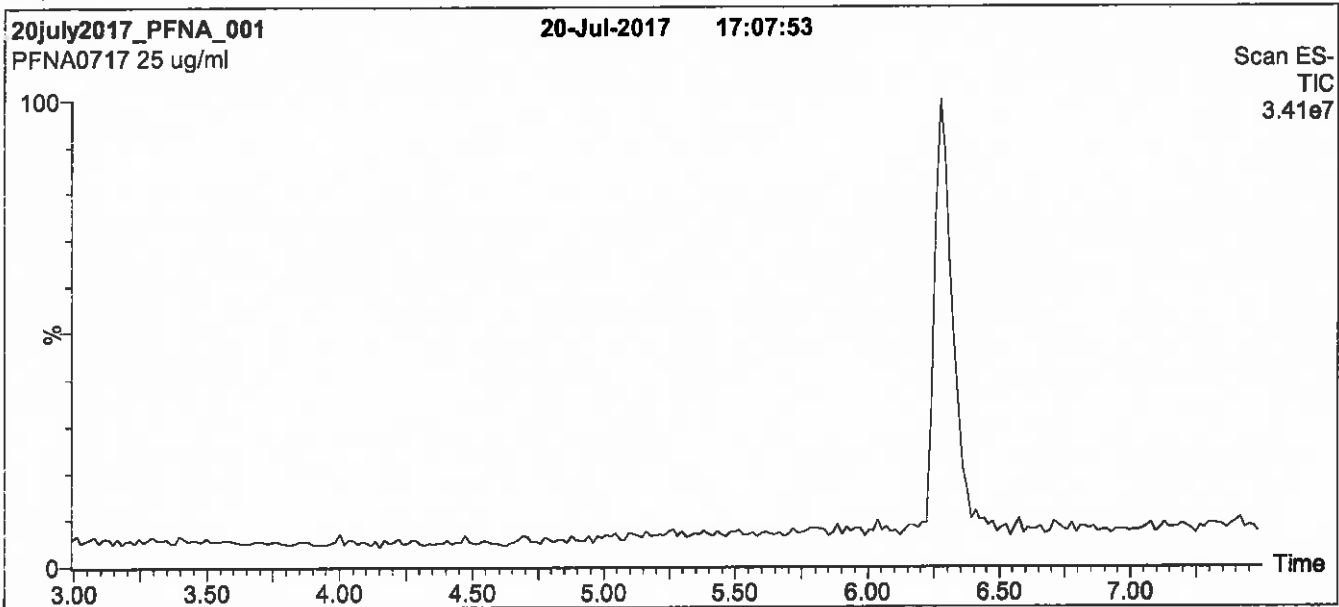
QUALITY MANAGEMENT:

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: PFNA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

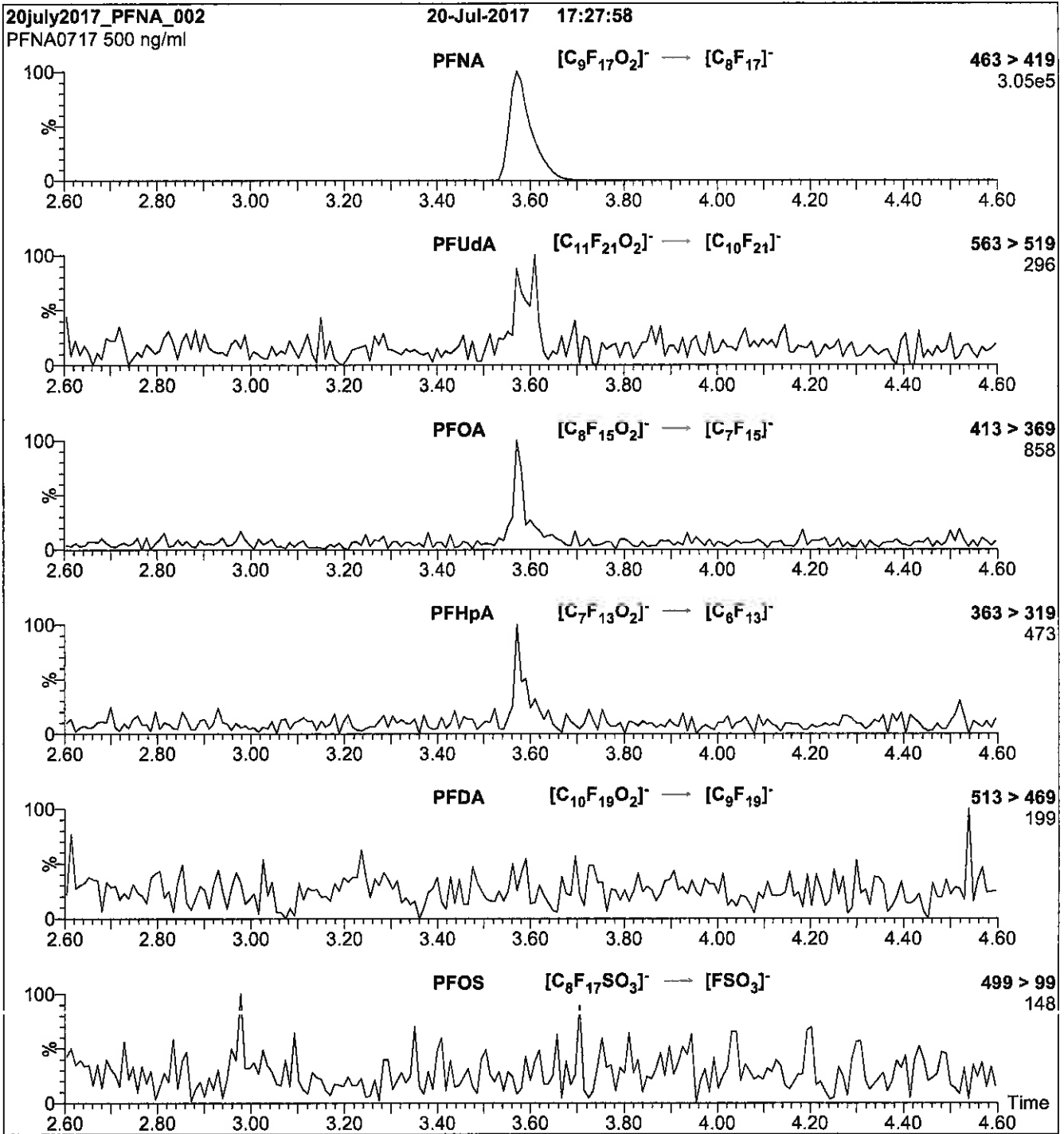
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
 Collision Energy (eV) = 11

Reagent

LCPFNS_00003

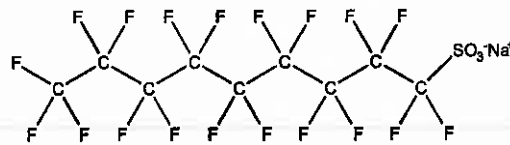
r: 12/4/17 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFNS **LOT NUMBER:** LPFNS0917
COMPOUND: Sodium perfluoro-1-nonanesulfonate
STRUCTURE: **CAS #:** 98789-57-2



MOLECULAR FORMULA: $C_9F_{19}SO_3Na$ **MOLECULAR WEIGHT:** 572.12
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt) **SOLVENT(S):** Methanol
48.0 ± 2.4 µg/ml (PFNS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 09/28/2017
B.G. Chittim, General Manager (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:

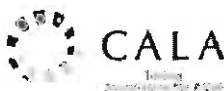
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

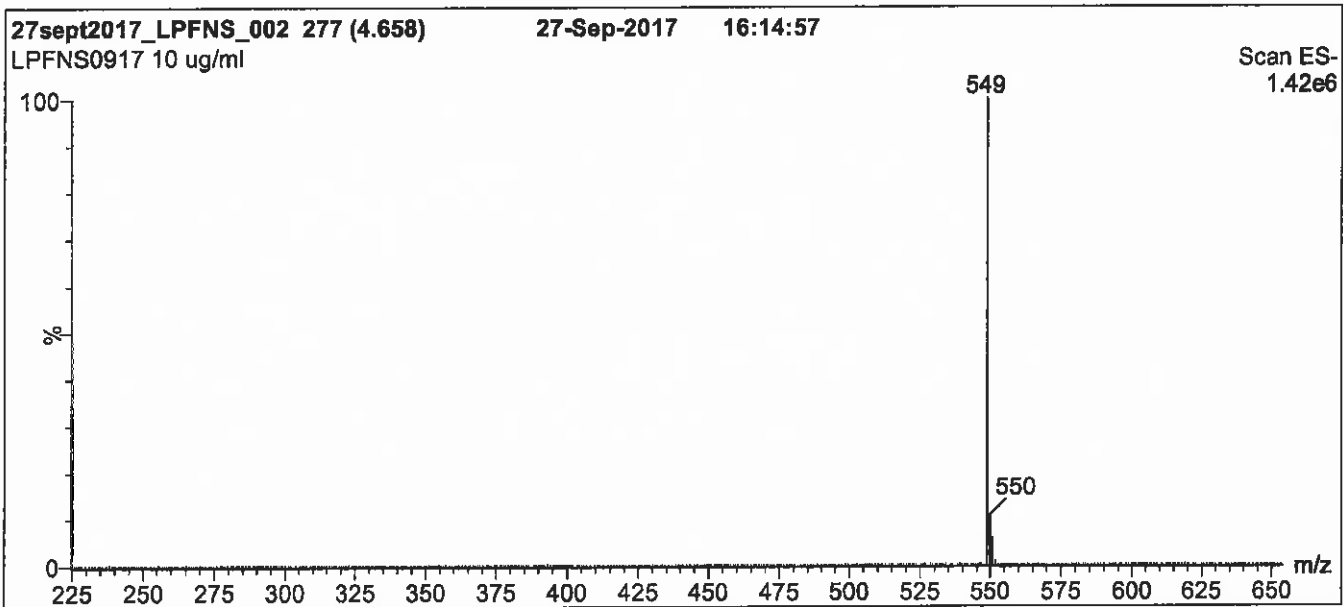
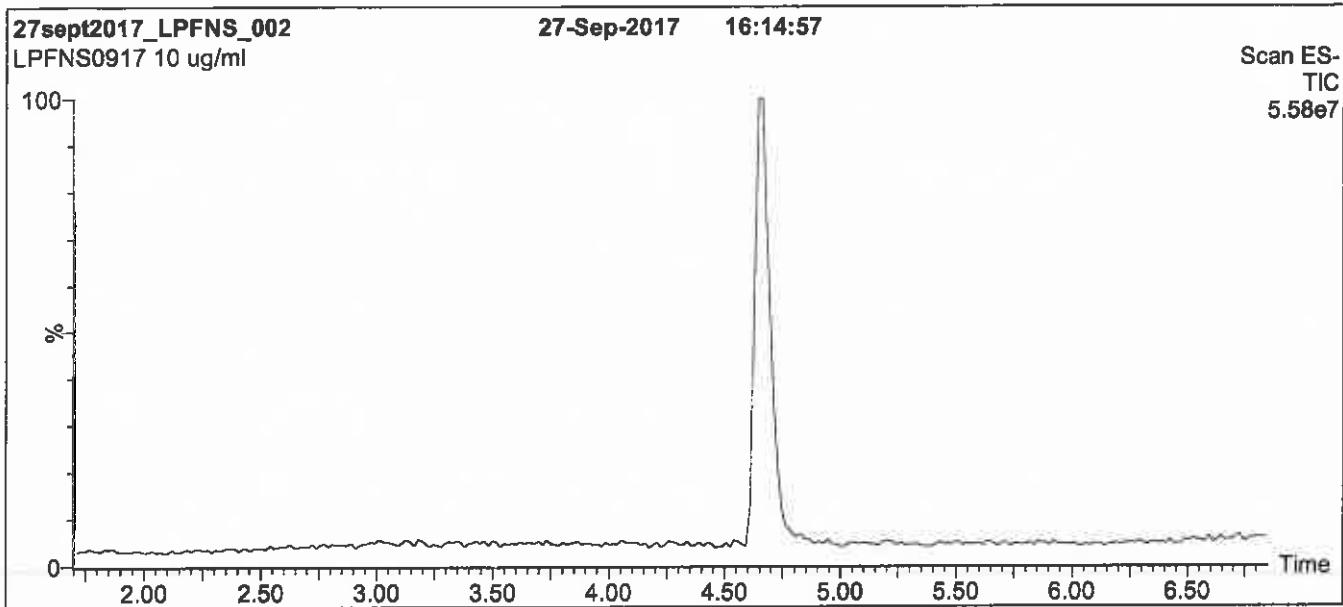
QUALITY MANAGEMENT:

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: L-PFNS; 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

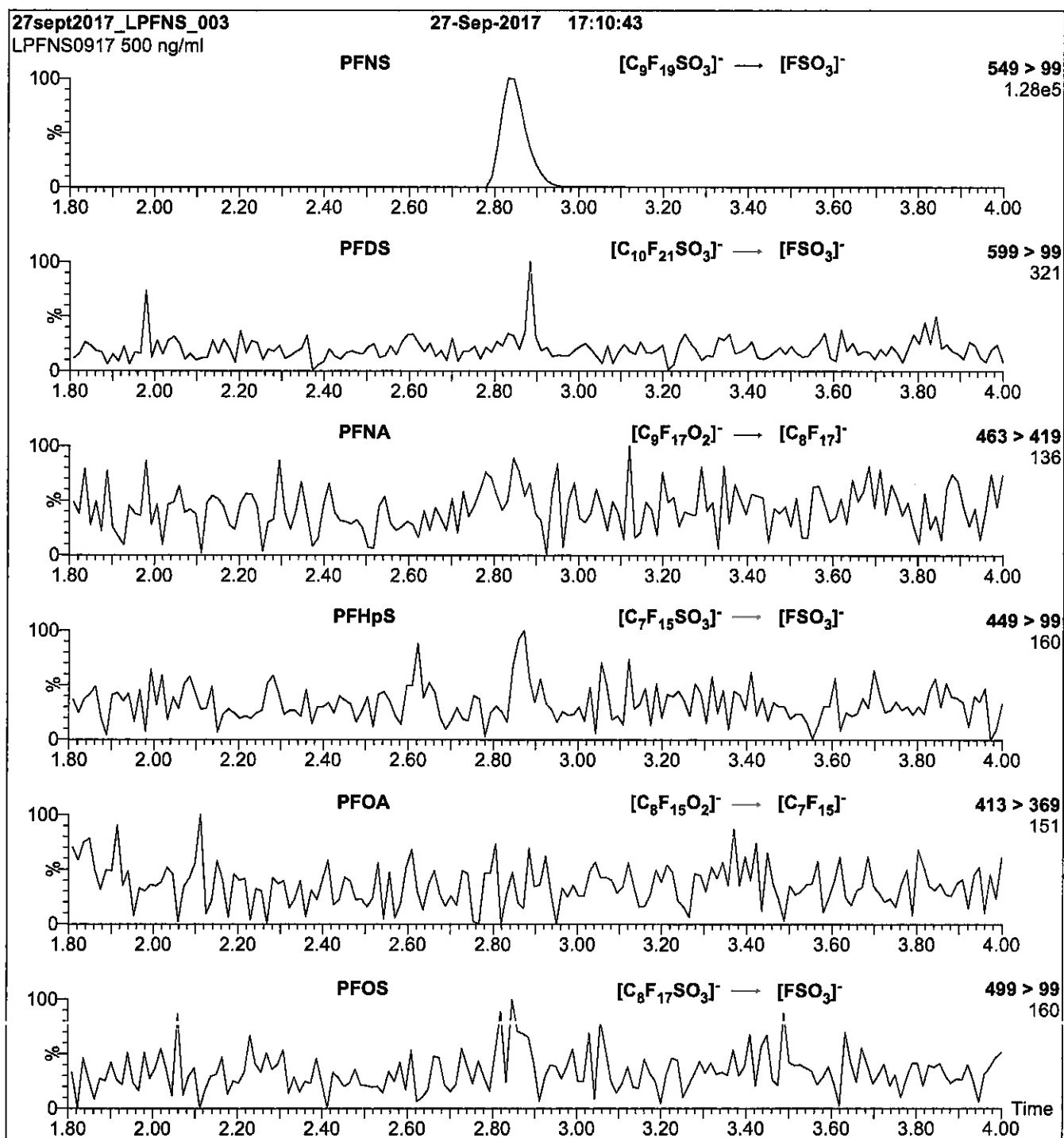
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 2.00
 Cone Voltage (V) = 65.00
 Cone Gas Flow (l/hr) = 50
 Desolvation Gas Flow (l/hr) = 750

Figure 2: L-PFNS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml L-PFNS)

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) = 45

Reagent

LCPFOA_00011

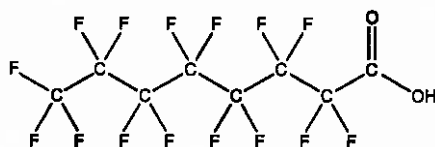
P: 10/2017 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid
LOT NUMBER: PFOA0917
STRUCTURE:
CAS #: 335-67-1



MOLECULAR FORMULA: C₈HF₁₅O₂
CONCENTRATION: 50 ± 2.5 µg/ml
MOLECULAR WEIGHT: 414.07
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 09/27/2017
EXPIRY DATE: (mm/dd/yyyy) 09/27/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager
Date: 09/28/2017
(mm/dd/yyyy)

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

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HAZARDS:

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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:

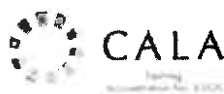
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

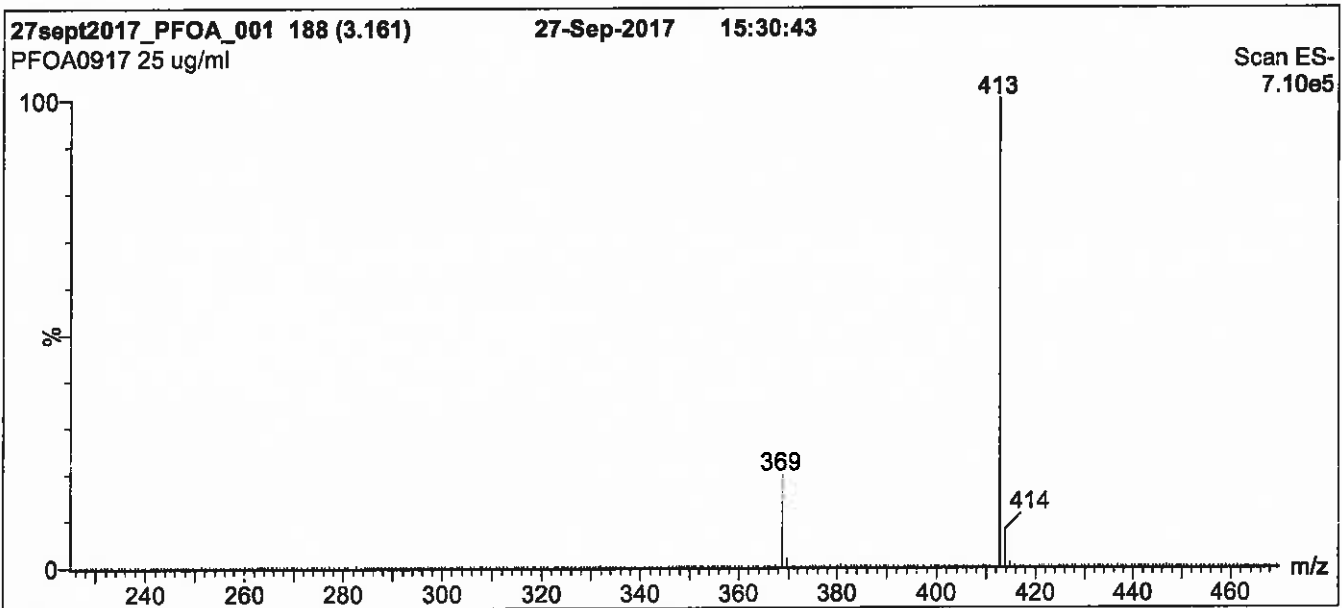
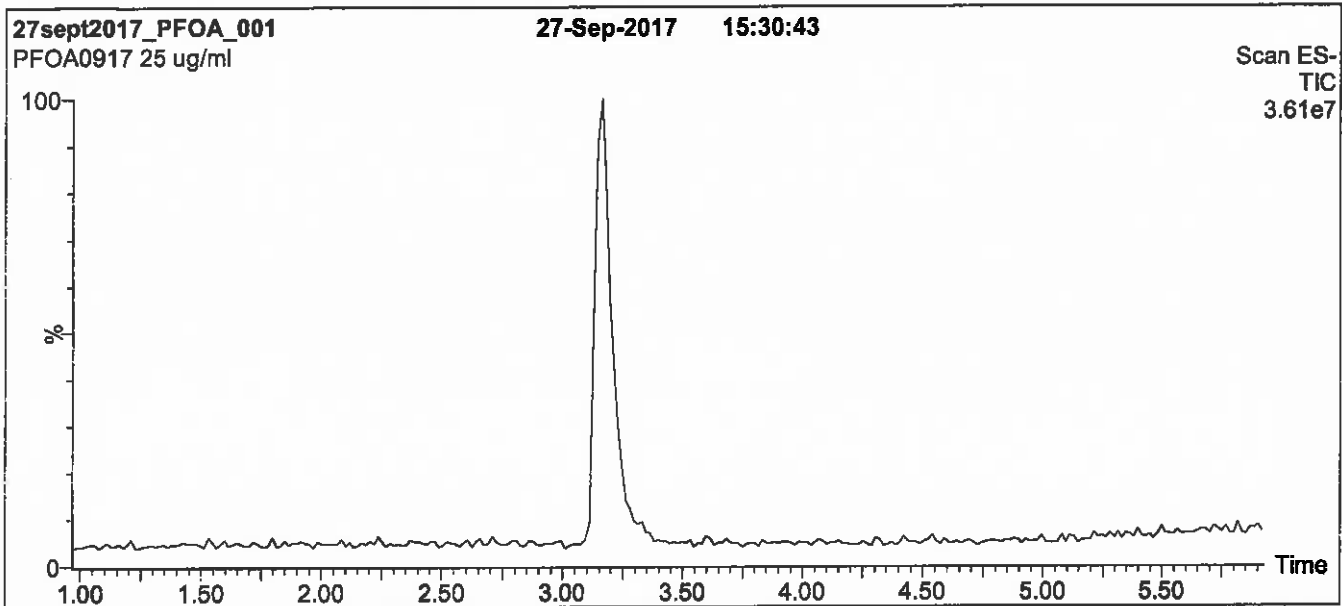
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

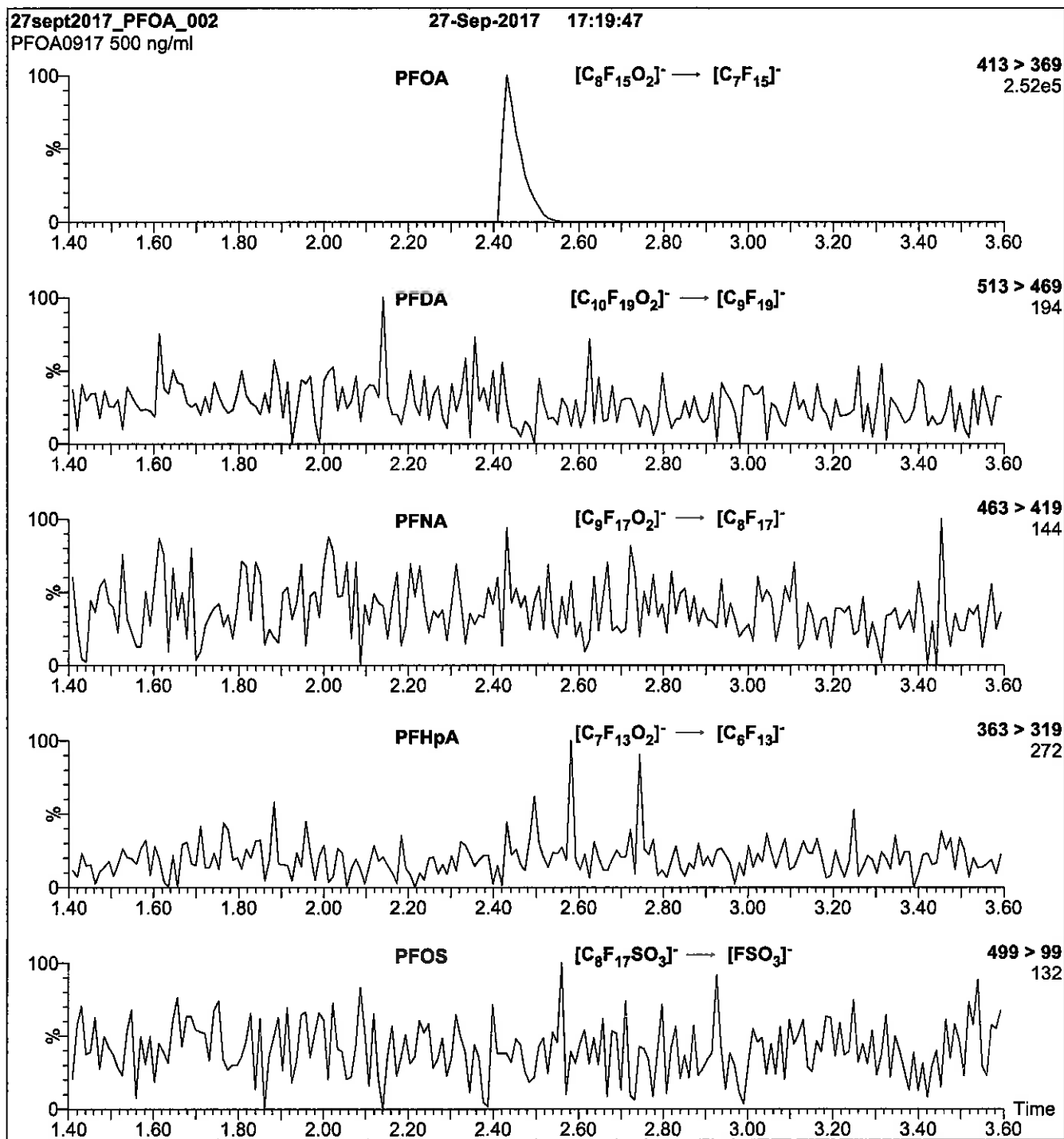
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

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

Reagent

LCPFODA_00010

n. 9/2/17 SW

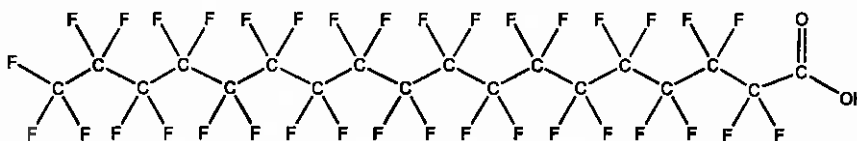


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFODA **LOT NUMBER:** PFODA0717
COMPOUND: Perfluoro-n-octadecanoic acid

STRUCTURE: **CAS #:** 16517-11-6



MOLECULAR FORMULA: C₁₈HF₃₆O₂ **MOLECULAR WEIGHT:** 914.14
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/13/2017
EXPIRY DATE: (mm/dd/yyyy) 07/13/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 07/14/2017
 B.G. Chittim, General Manager (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.

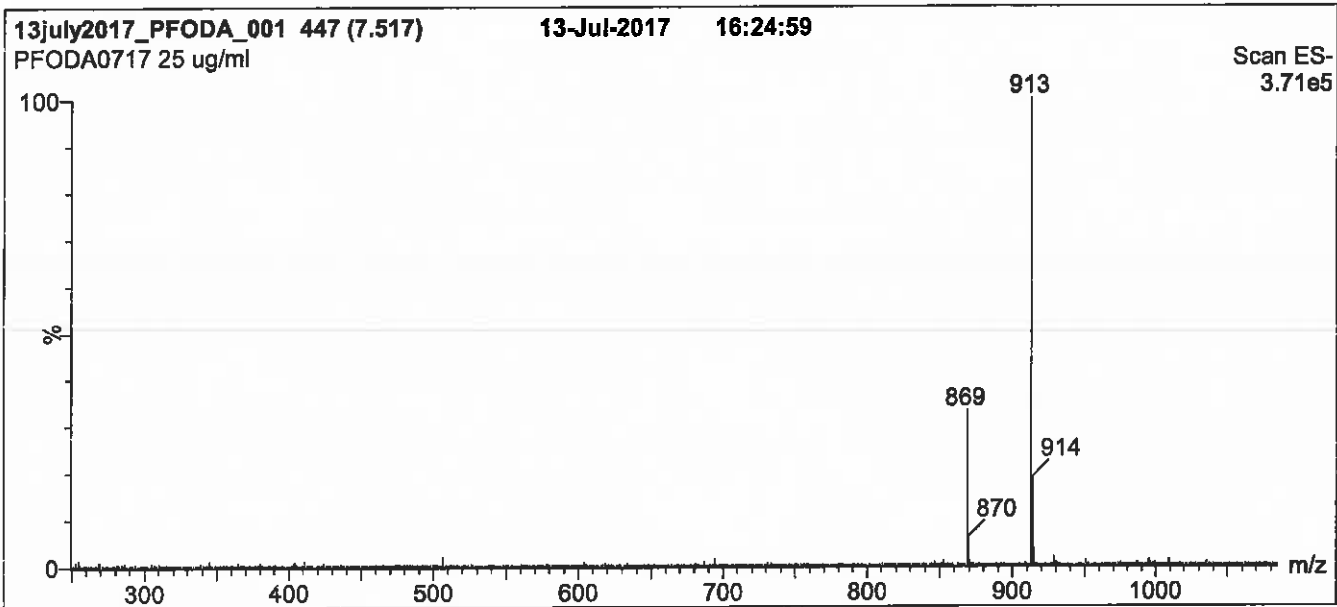
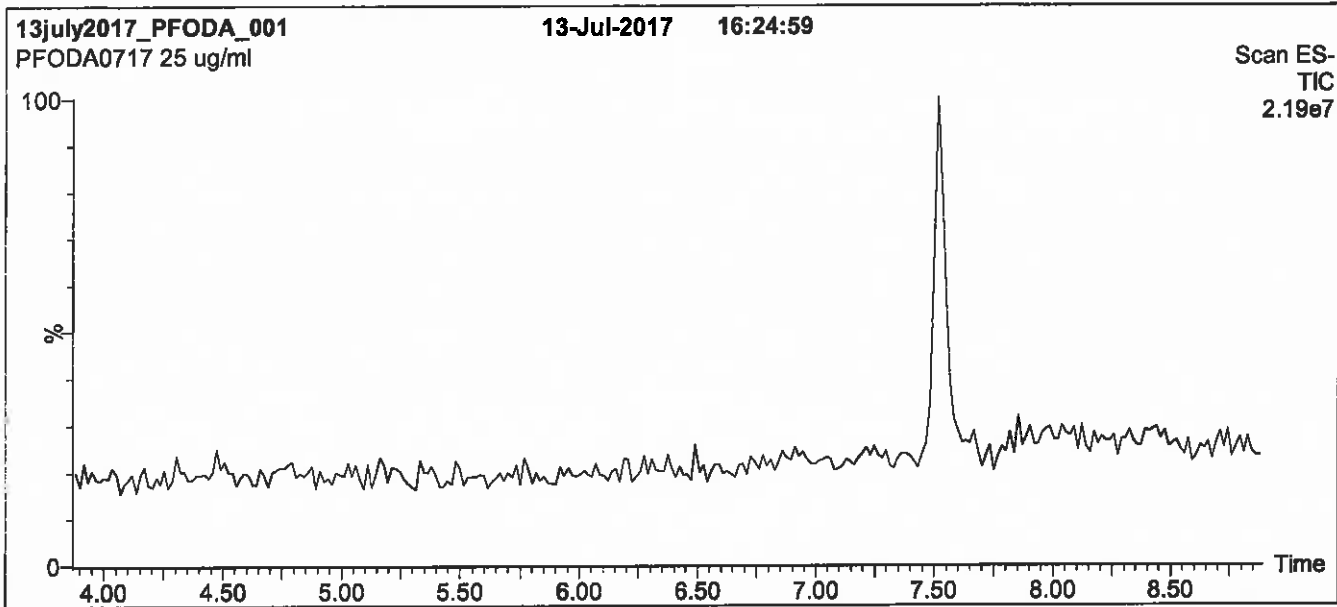
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP₁₈
 1.7 μm, 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

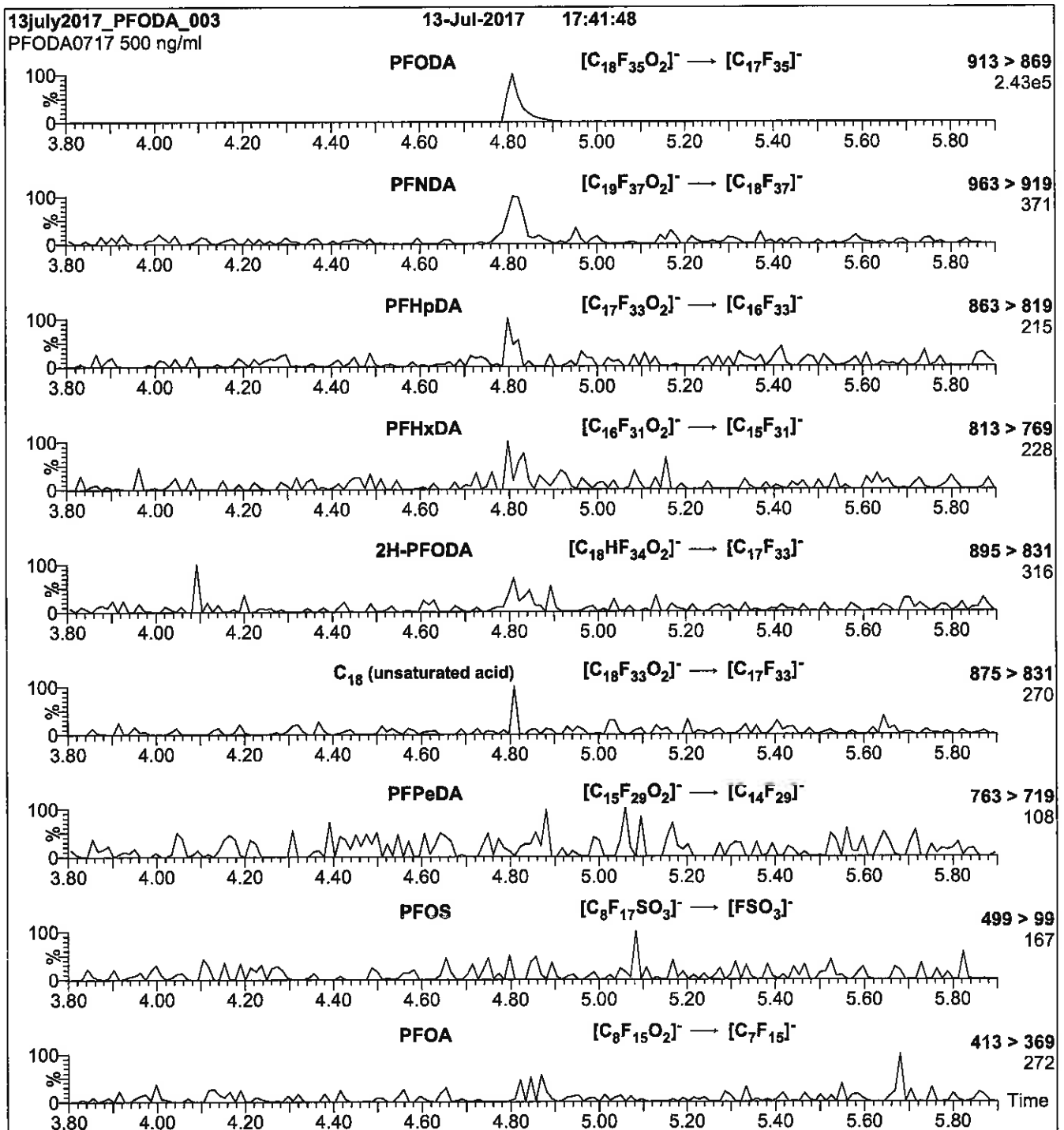
Flow: 300 μl/min

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) = 100
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 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) = 15

Reagent

LCPFOS-br_00007

P: 10/2017 SKV



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate Solution/Mixture of Linear and Branched Isomers

<u>PRODUCT CODE:</u>	br-PFOSK
<u>LOT NUMBER:</u>	brPFOSK0117
<u>CONCENTRATION:</u>	50 ± 2.5 µg/ml (total potassium salt) 46.4 ± 2.3 µg/ml (total PFOS anion)
<u>SOLVENT(S):</u>	Methanol
<u>DATE PREPARED:</u> (mm/dd/yyyy)	01/09/2017
<u>LAST TESTED:</u> (mm/dd/yyyy)	01/12/2017
<u>EXPIRY DATE:</u> (mm/dd/yyyy)	01/12/2022
<u>RECOMMENDED STORAGE:</u>	Store ampoule in a cool, dark place

DESCRIPTION:

The chemical purity has been determined to be ≥98% perfluorooctanesulfonate linear and branched isomers. The full name, structure and percent composition for each of the isomeric components are given in Table A.

DOCUMENTATION/ DATA ATTACHED:

Table A: Isomeric Components and Percent Composition by ¹⁹F-NMR
Figure 1: LC/MS Data (TIC and Mass Spectrum)
Figure 2: LC/MS Data (SIR)
Figure 3: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

- See page 2 for further details.
- A 5-point calibration curve was generated using linear PFOS (potassium salt) and mass-labelled PFOS as an internal standard to enable quantitation of br-PFOSK using isotopic dilution.
- CAS#: 2795-39-3 (for linear isomer; potassium salt).

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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:

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:

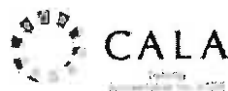
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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Table A: br-PFOSK; Isomeric Components and Percent Composition (by ¹⁹F-NMR)*

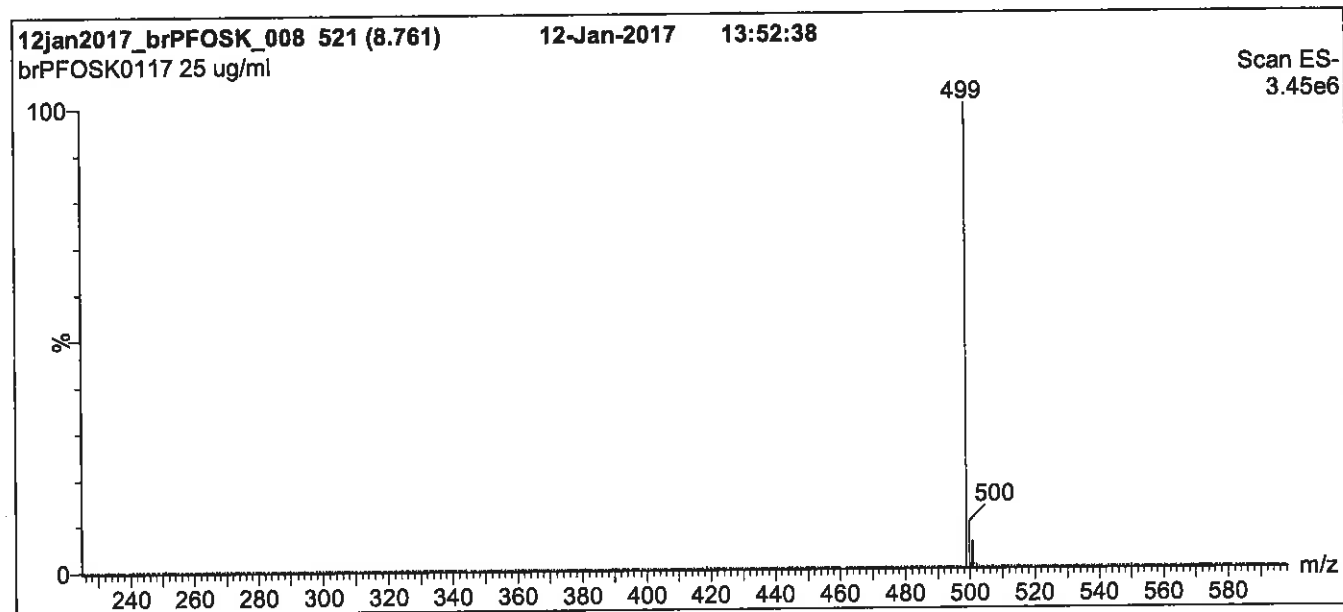
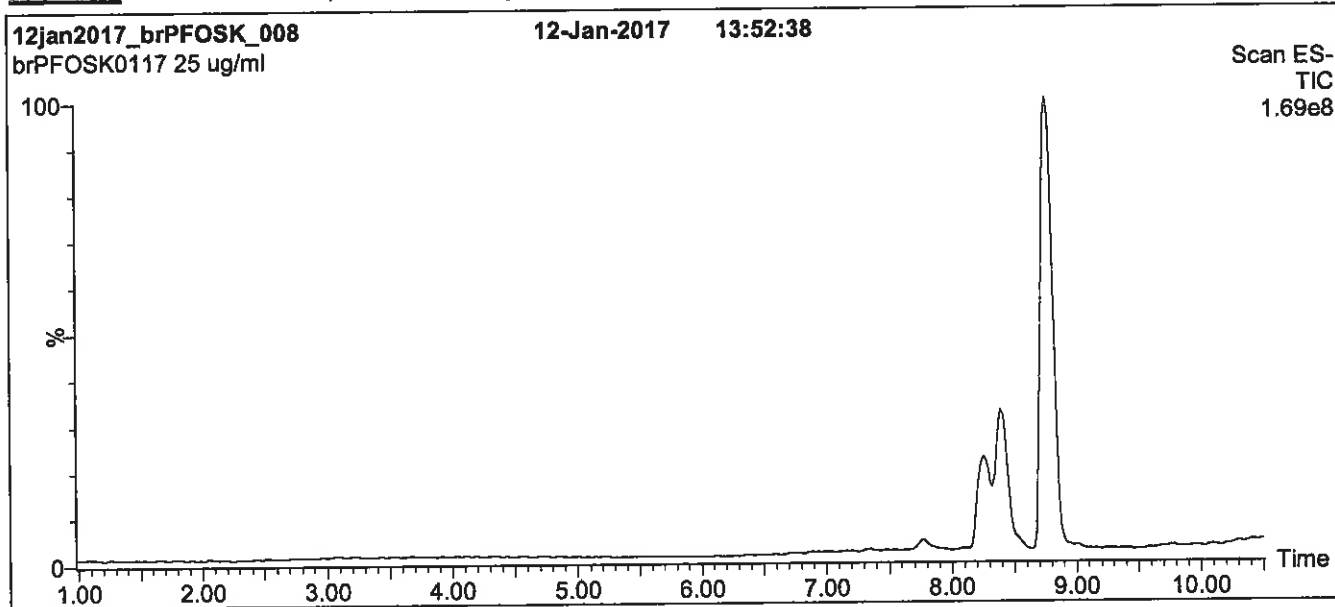
Isomer	Name	Structure	Percent Composition by ¹⁹ F-NMR
1	Potassium perfluoro-1-octanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	CF ₃ CF ₂ CF ₂ CF ₂ CF ₂ CF ₂ SO ₃ ⁻ K ⁺ CF ₃ CF ₃	0.07

* Percent of total perfluorooctanesulfonate isomers only. Isomers are labeled in Figure 2.
 ** Systematic Name: Potassium perfluorooctane-2-sulfonate.

Certified By: 
 B.G. Chittim

Date: 01/20/2017
 (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

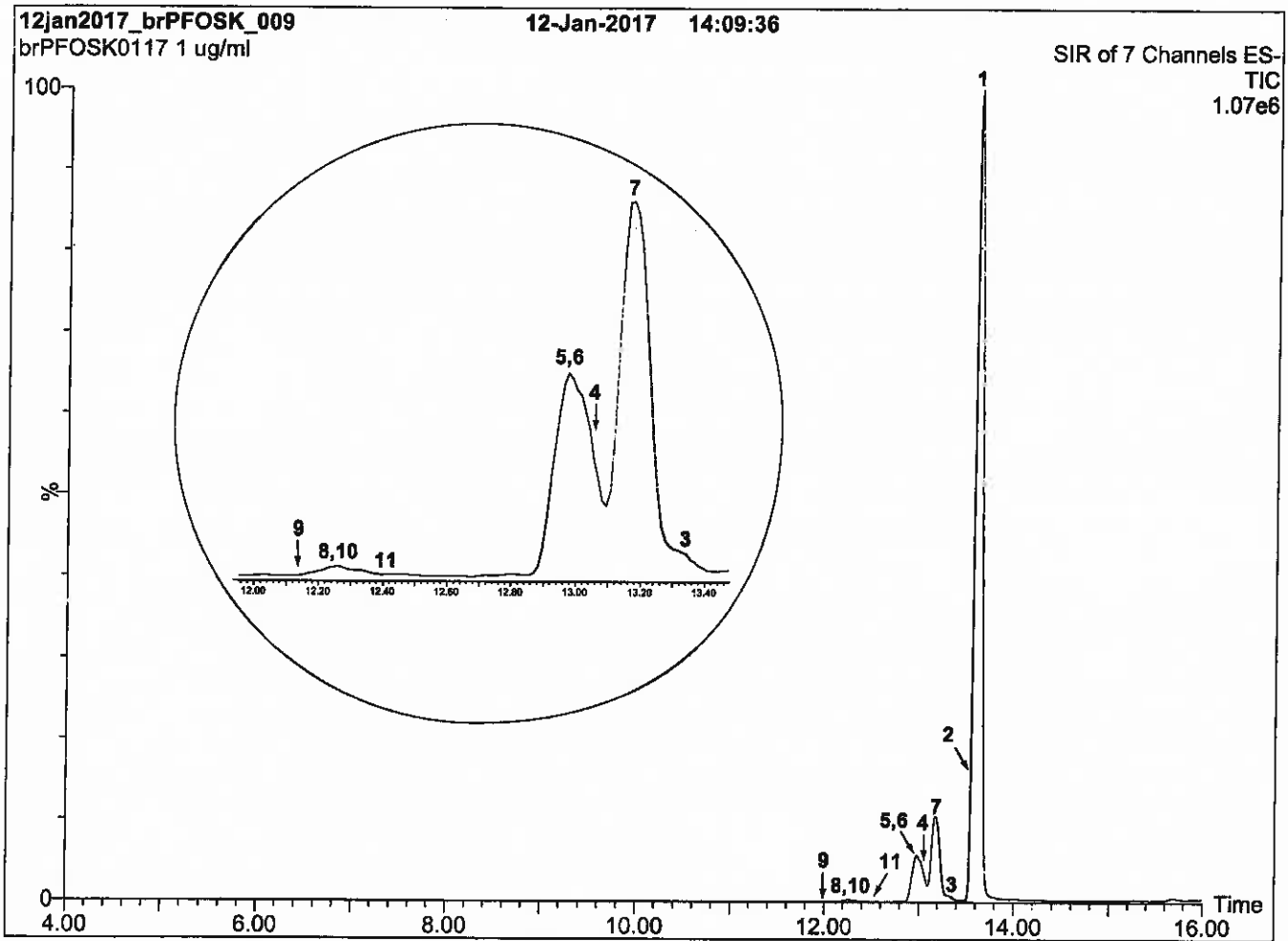
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (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: br-PFOSK; LC/MS Data (SIR)



Conditions for Figure 2:

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

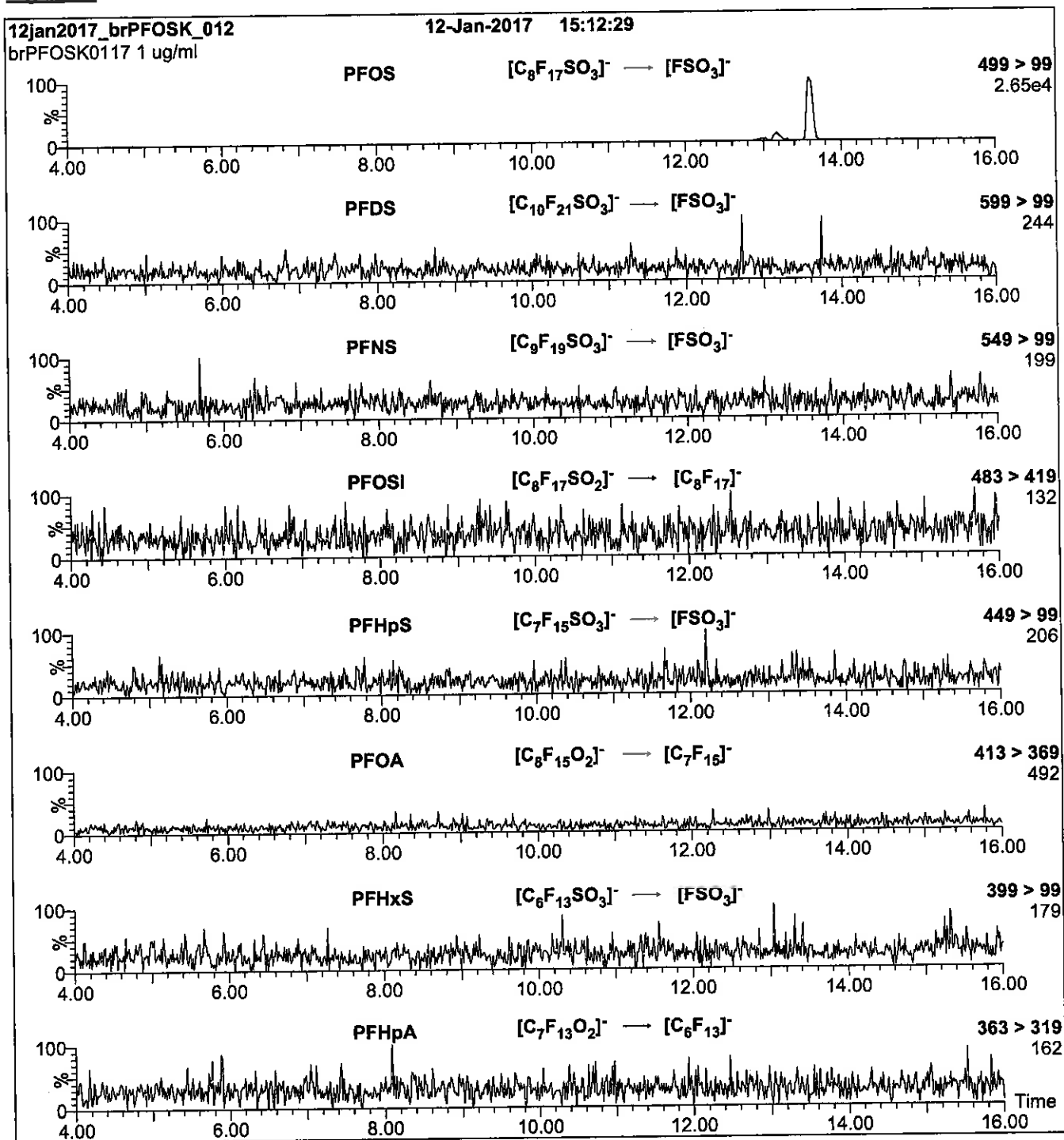
Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP₁₈ (1.7 μ m, 2.1 x 100 mm)
Injection: 1.0 μ g/ml of br-PFOSK
Mobile Phase: Gradient
 45% (80:20 MeOH:ACN) / 55% H₂O (both with 10 mM NH₄OAc buffer)
 Ramp to 90% organic over 15 min and hold for 3 min.
 Return to Initial conditions over 1 min.
 Time: 20 min
Flow: 300 μ l/min

MS Conditions:

SIR (ES)
 Source = 110 °C
 Desolvation = 325 °C
 Cone Voltage = 60V

Figure 3: br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 3:

Injection: On-column

Mobile phase: Same as Figure 2

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 11-50 (variable)

Reagent

LCPFOSA_00013

r: 2/16/16 SKJ

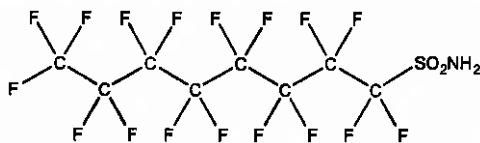


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: FOSA-I **LOT NUMBER:** FOSA0817I
COMPOUND: Perfluoro-1-octanesulfonamide

STRUCTURE: **CAS #:** 754-91-6



MOLECULAR FORMULA:	C ₈ H ₂ F ₁₇ NO ₂ S	MOLECULAR WEIGHT:	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	SOLVENT(S):	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/01/2017		
EXPIRY DATE: (mm/dd/yyyy)	09/01/2022		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:  **Date:** 09/14/2017
B.G. Chittim, General Manager (mm/dd/yyyy)

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

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UNCERTAINTY:

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

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

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EXPIRY DATE / PERIOD OF VALIDITY:

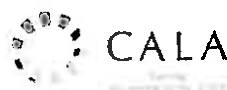
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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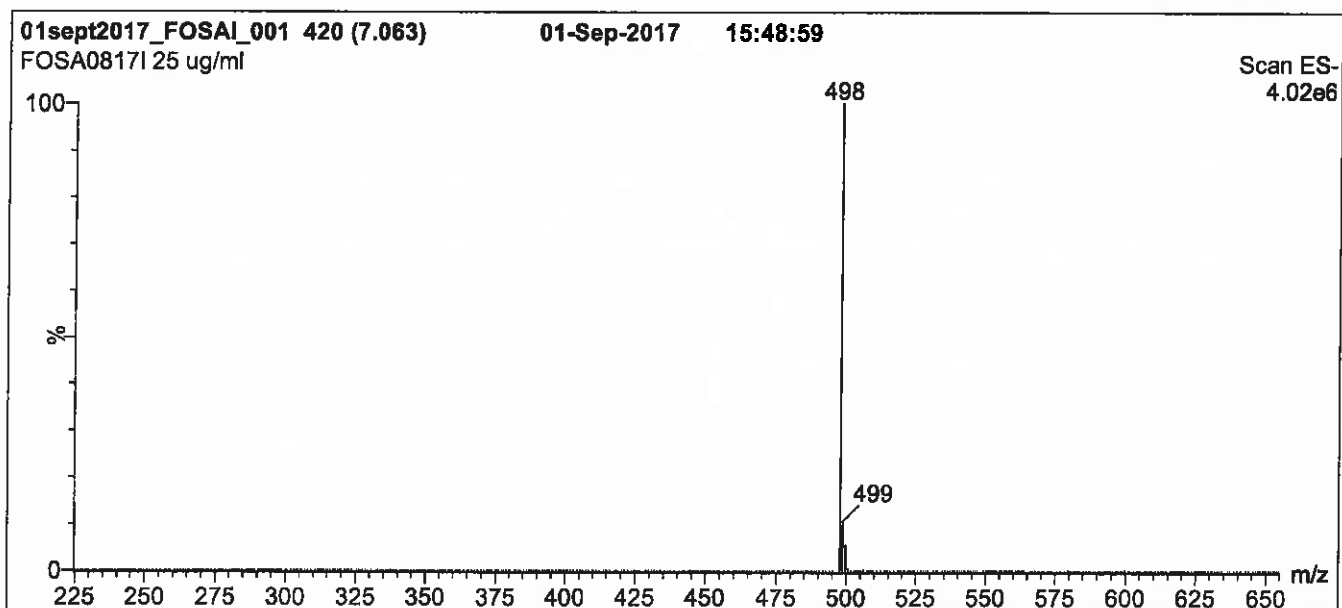
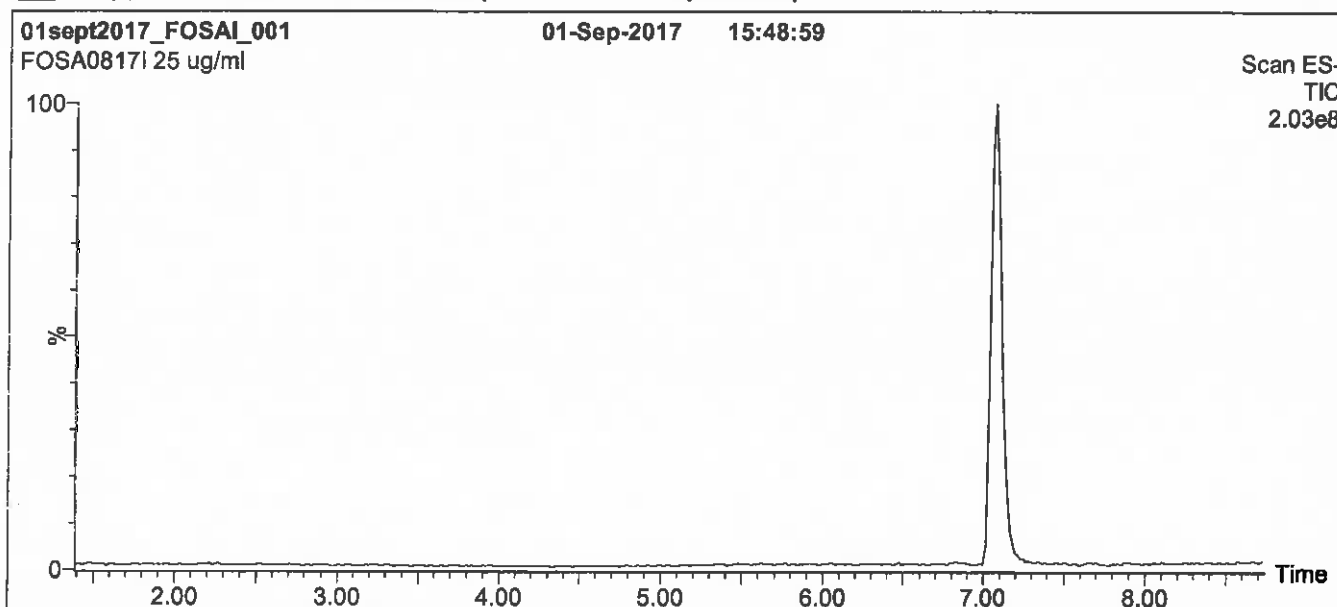
QUALITY MANAGEMENT:

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Figure 1: 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 8 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

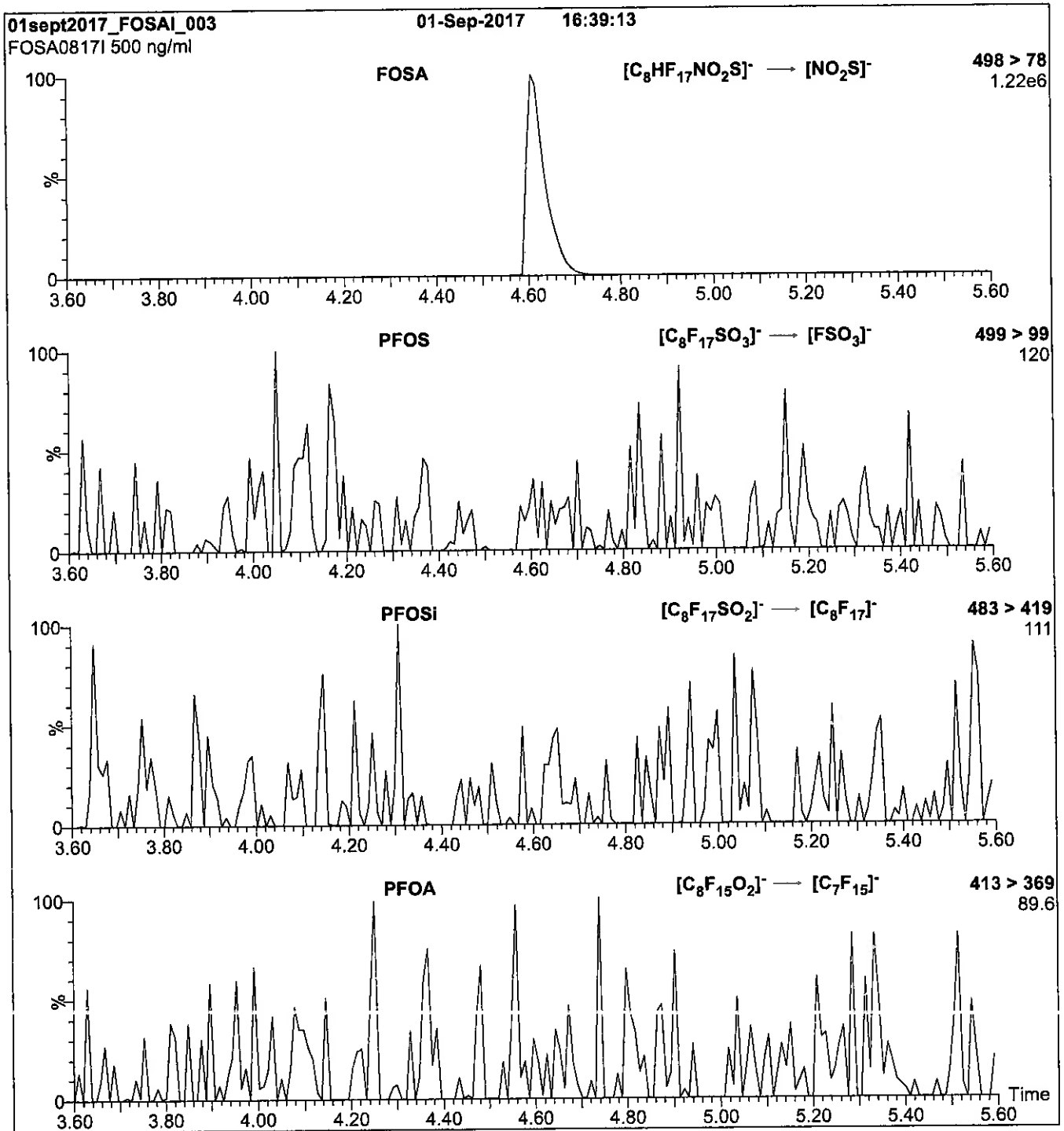
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
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 μ l (500 ng/ml FOSA-I)

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) = 30

Reagent

LCFPeA_00008



**WELLINGTON
LABORATORIES**

**CERTIFICATE OF ANALYSIS
DOCUMENTATION**

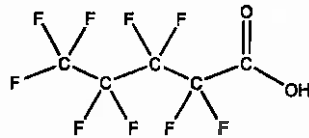
PRODUCT CODE:
COMPOUND:

PFPeA
Perfluoro-n-pentanoic acid

LOT NUMBER: PFPeA0617

STRUCTURE:

CAS #: 2706-90-3



MOLECULAR FORMULA:
CONCENTRATION:

$C_5HF_9O_2$
 $50 \pm 2.5 \mu\text{g/ml}$

MOLECULAR WEIGHT:
SOLVENT(S):

264.05
Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

06/14/2017

EXPIRY DATE: (mm/dd/yyyy)

06/14/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of $C_5H_2F_8O_2$ (hydrido - derivative) as measured by ^{19}F NMR.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
B.G. Chittim, General Manager

Date: 06/16/2017
(mm/dd/yyyy)

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

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

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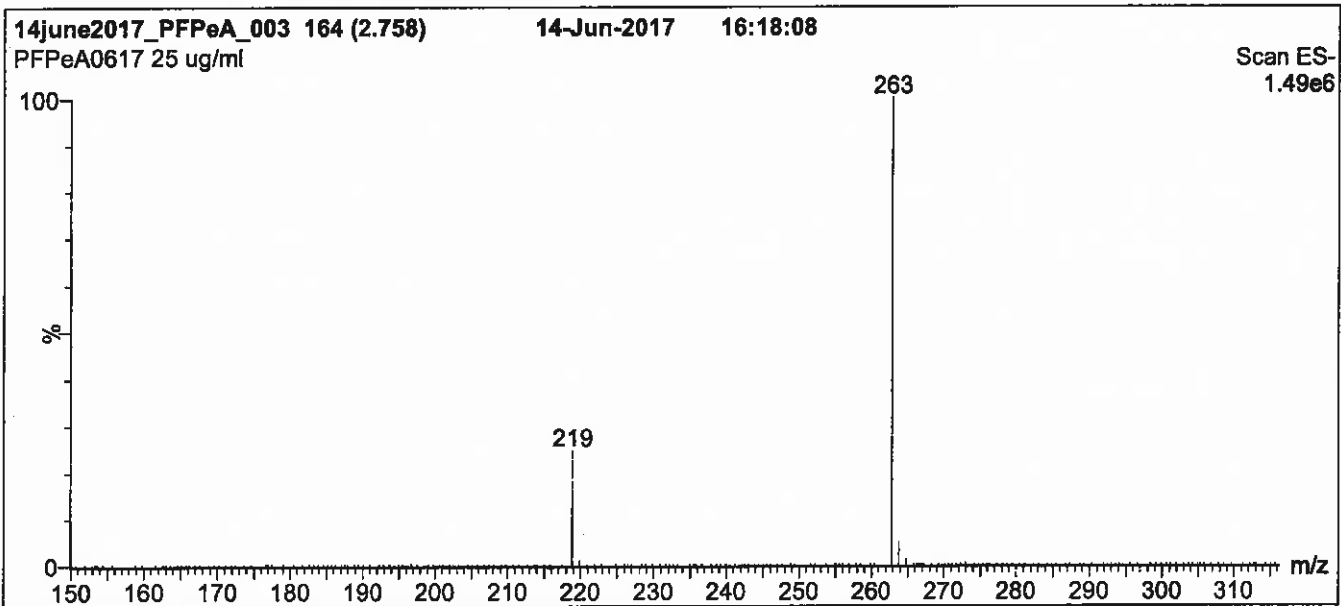
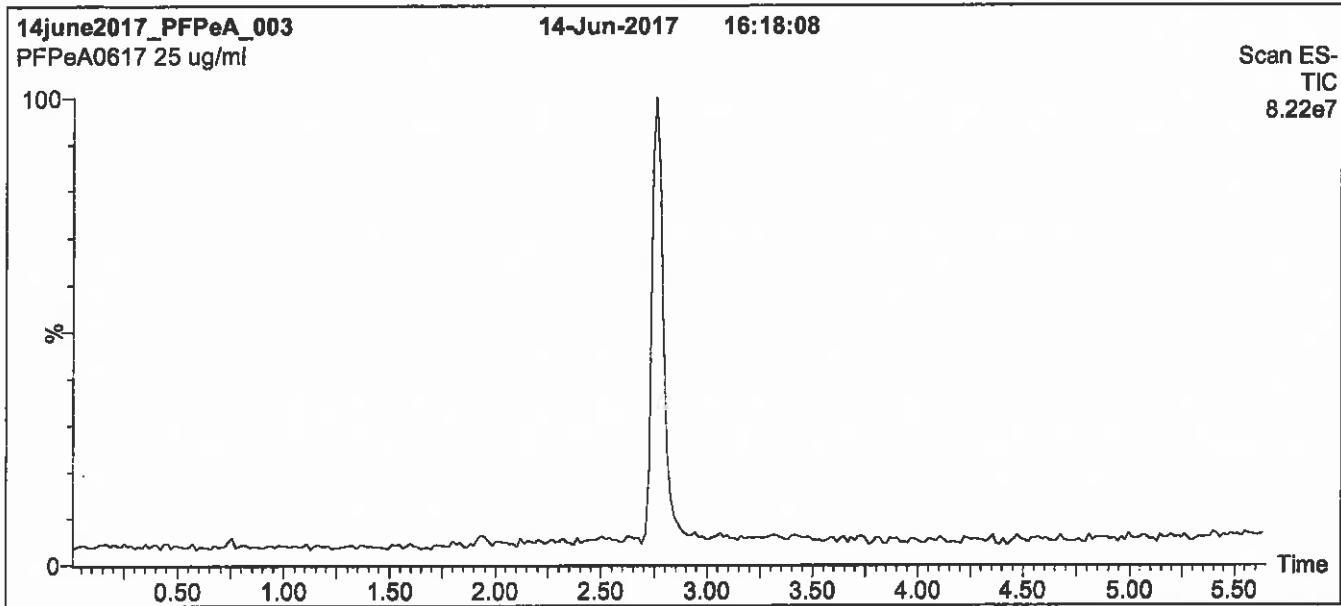
QUALITY MANAGEMENT:

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Figure 1: 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

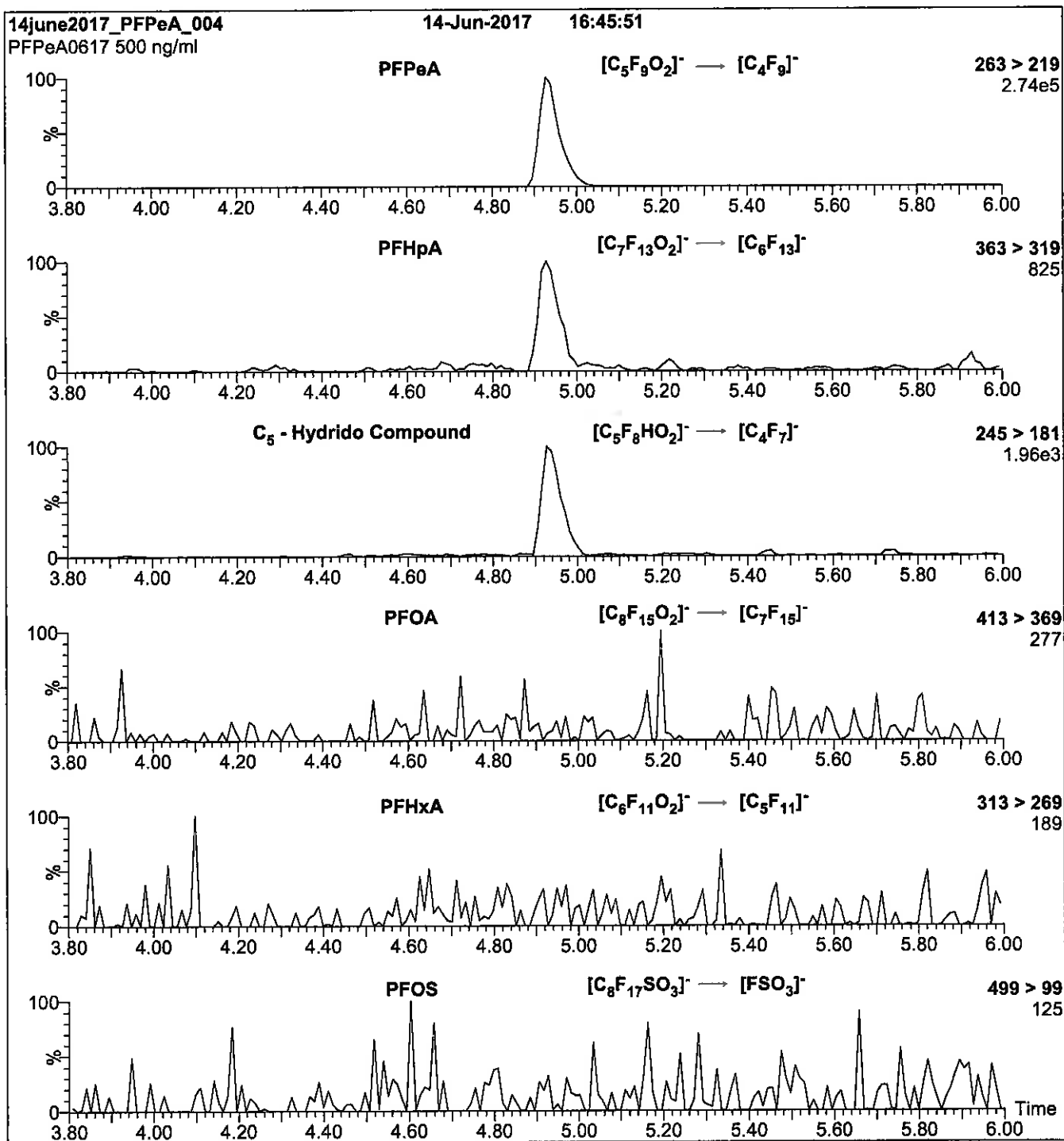
Flow: 300 μ l/min

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) = 3.62e-3
Collision Energy (eV) = 9

Reagent

LCFPeA_00010



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CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:

PFPeA

LOT NUMBER:

PFPeA0617

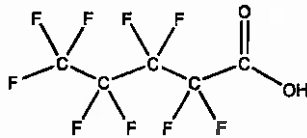
COMPOUND:

Perfluoro-n-pentanoic acid

STRUCTURE:

CAS #:

2706-90-3



MOLECULAR FORMULA:

C₅HF₉O₂

MOLECULAR WEIGHT:

264.05

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol
Water (<1%)

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

06/14/2017

EXPIRY DATE: (mm/dd/yyyy)

06/14/2022

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% of Perfluoro-n-heptanoic acid (PFHpA) and ~ 0.2% of C₅H₂F₈O₂ (hydrido - derivative) as measured by ¹⁹F NMR.

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Certified By:

B.G. Chittim, General Manager

Date: 06/16/2017

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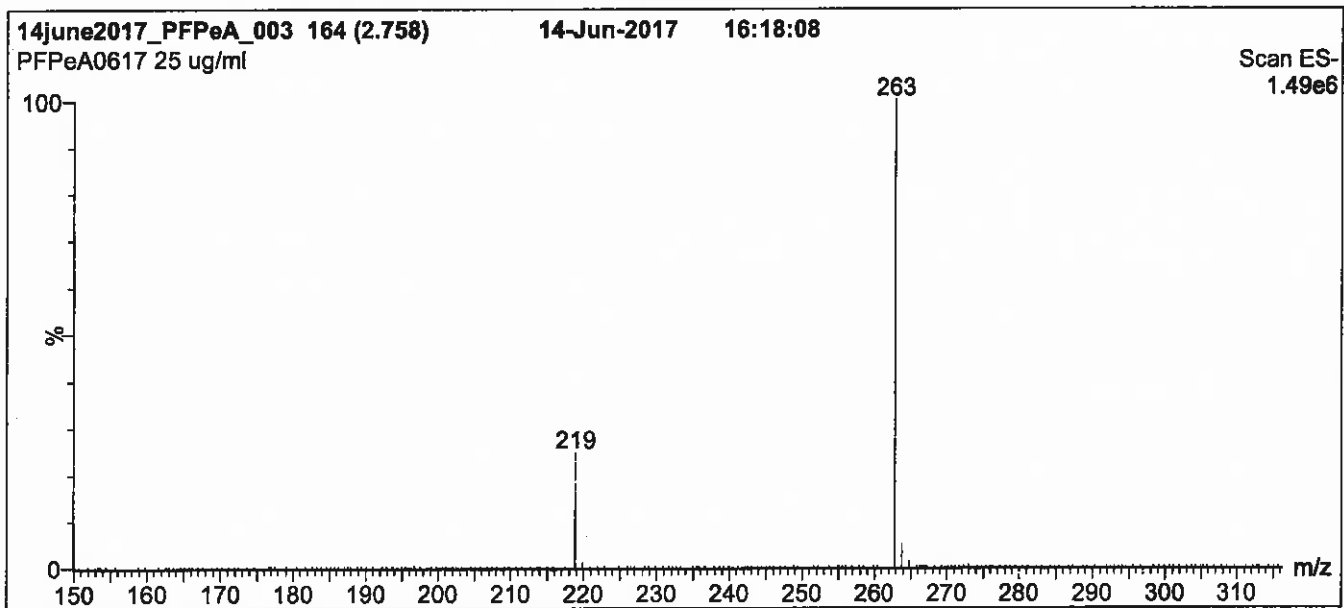
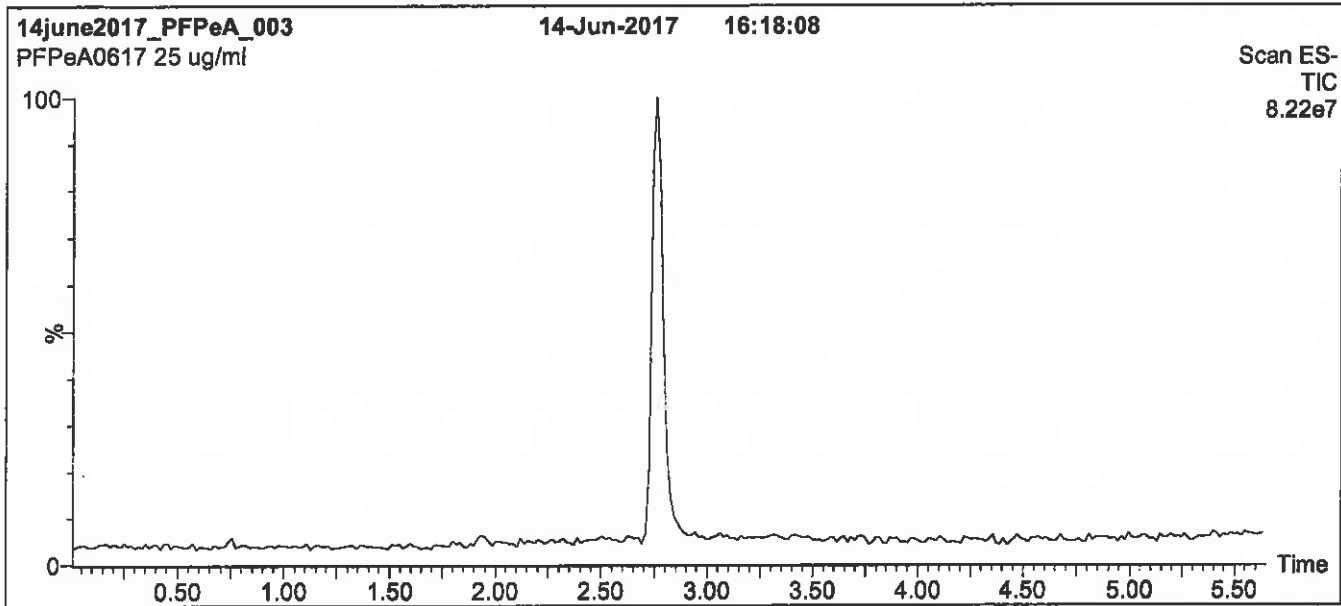
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

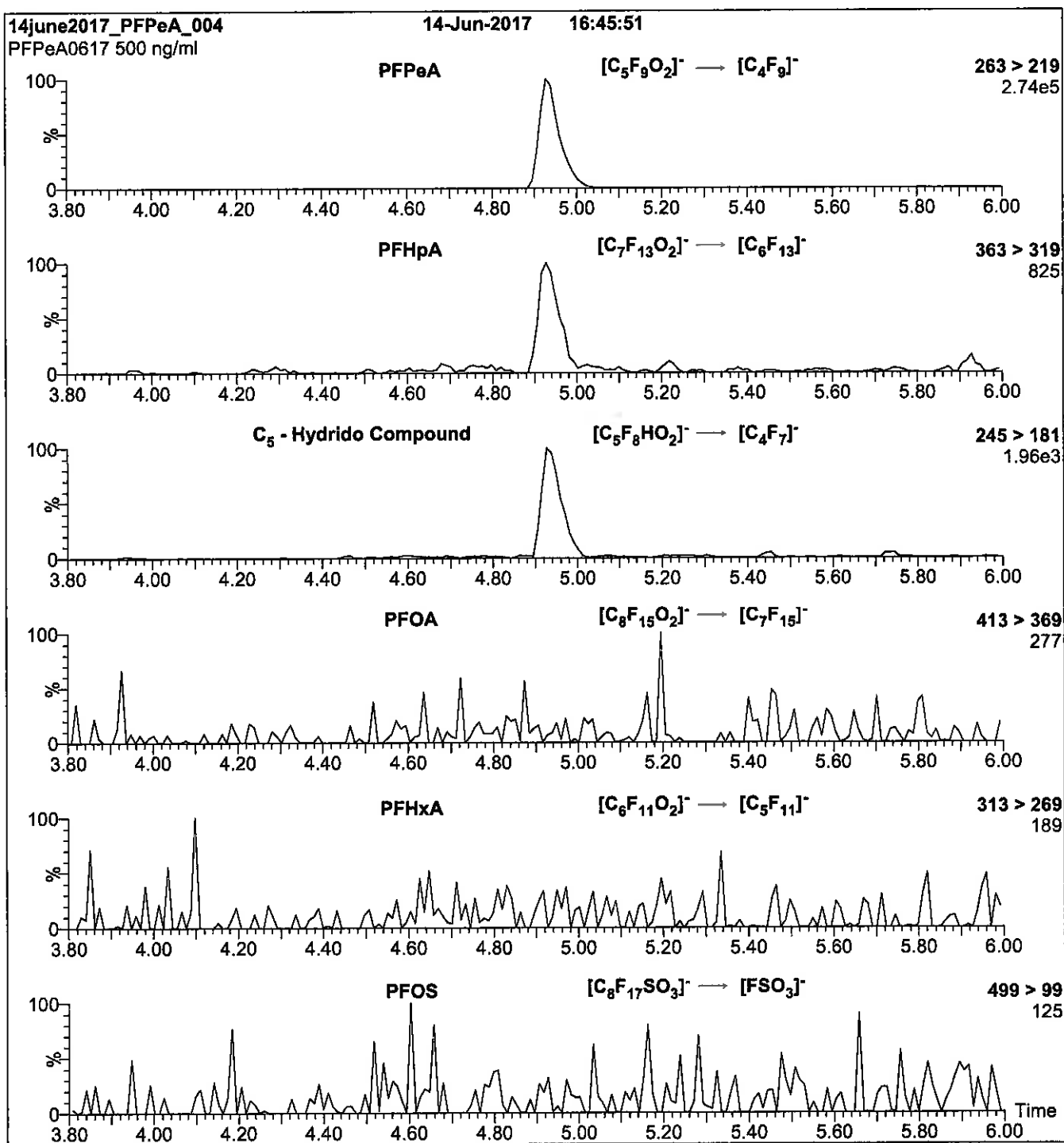
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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) = 3.62e-3
Collision Energy (eV) = 9

Reagent

LCFPeS_00003



1106801
 ID: LCPFPeS_00003
 Exp: 01/11/22 Pppl: SKV
 PF-1-pentanesulfonate Na

P: 12/4/17 SKV



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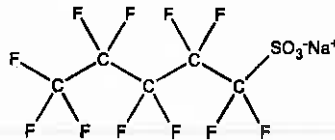
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPeS
COMPOUND: Sodium perfluoro-1-pentanesulfonate

LOT NUMBER: LPFPeS0117

STRUCTURE:

CAS #: 630402-22-1



MOLECULAR FORMULA: C₅F₁₁SO₃Na
CONCENTRATION: 50.0 ± 2.5 µg/ml (Na salt)
 46.9 ± 2.3 µg/ml (PFPeS anion)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/11/2017
EXPIRY DATE: (mm/dd/yyyy) 01/11/2022
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

MOLECULAR WEIGHT: 372.09
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, General Manager
Date: 09/06/2017
 (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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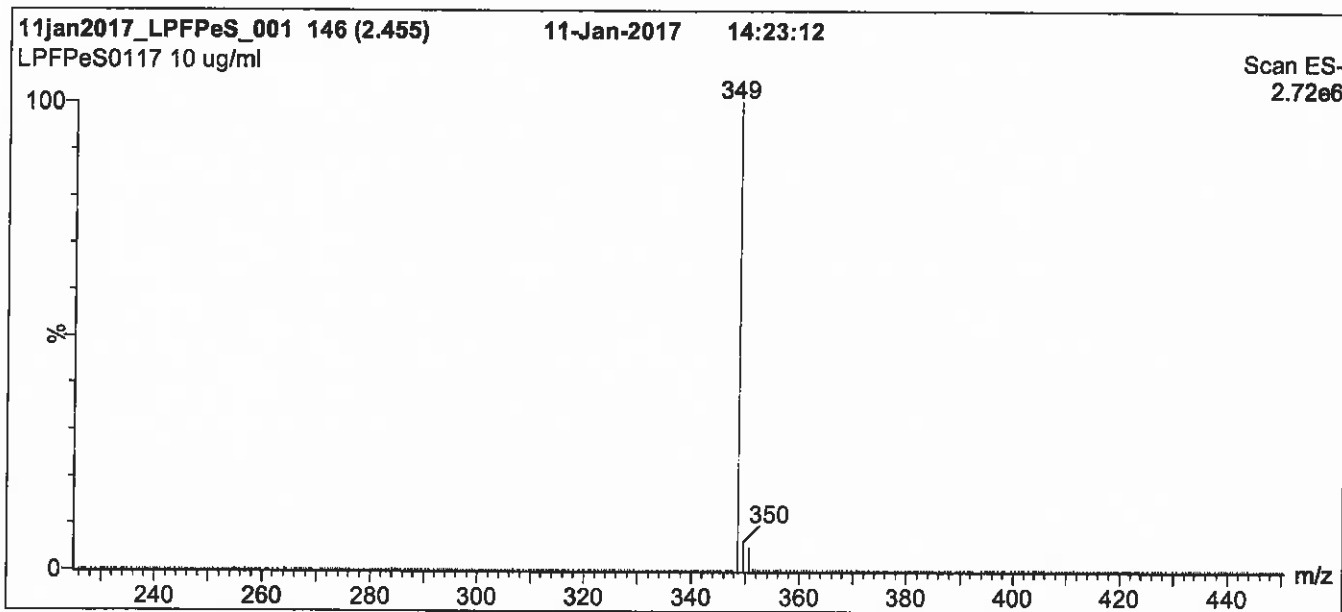
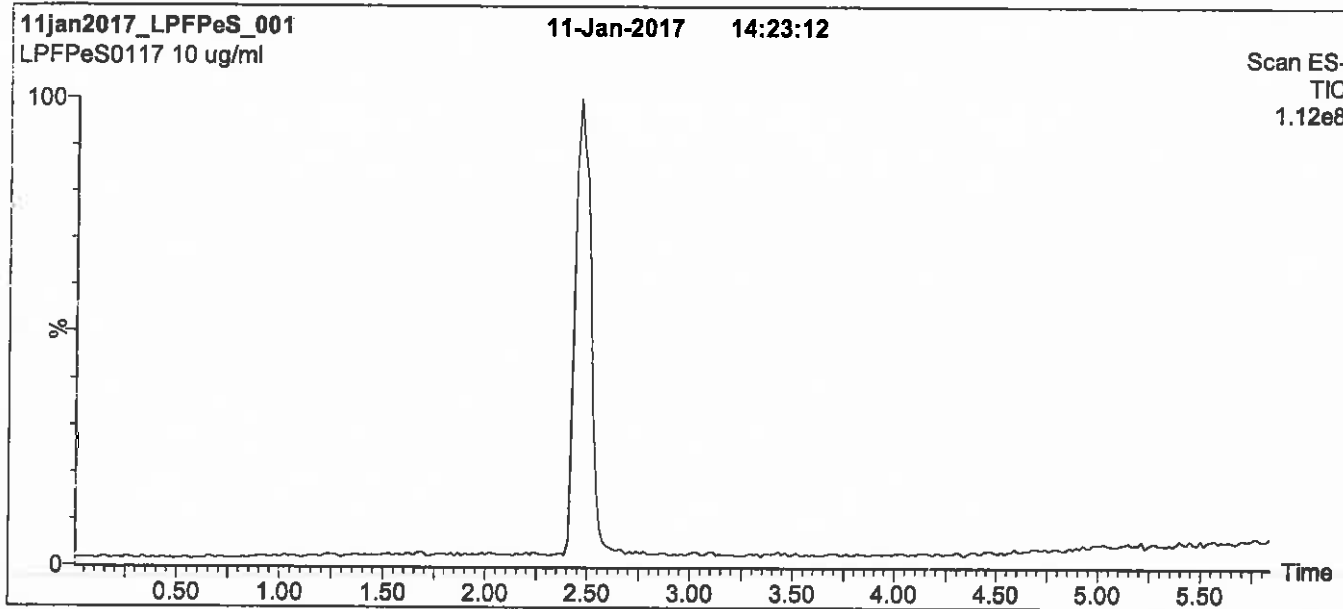
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Figure 1: L-PFPeS; LC/MS Data (TIC and Mass Spectrum)



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 μm, 2.1 x 100 mm

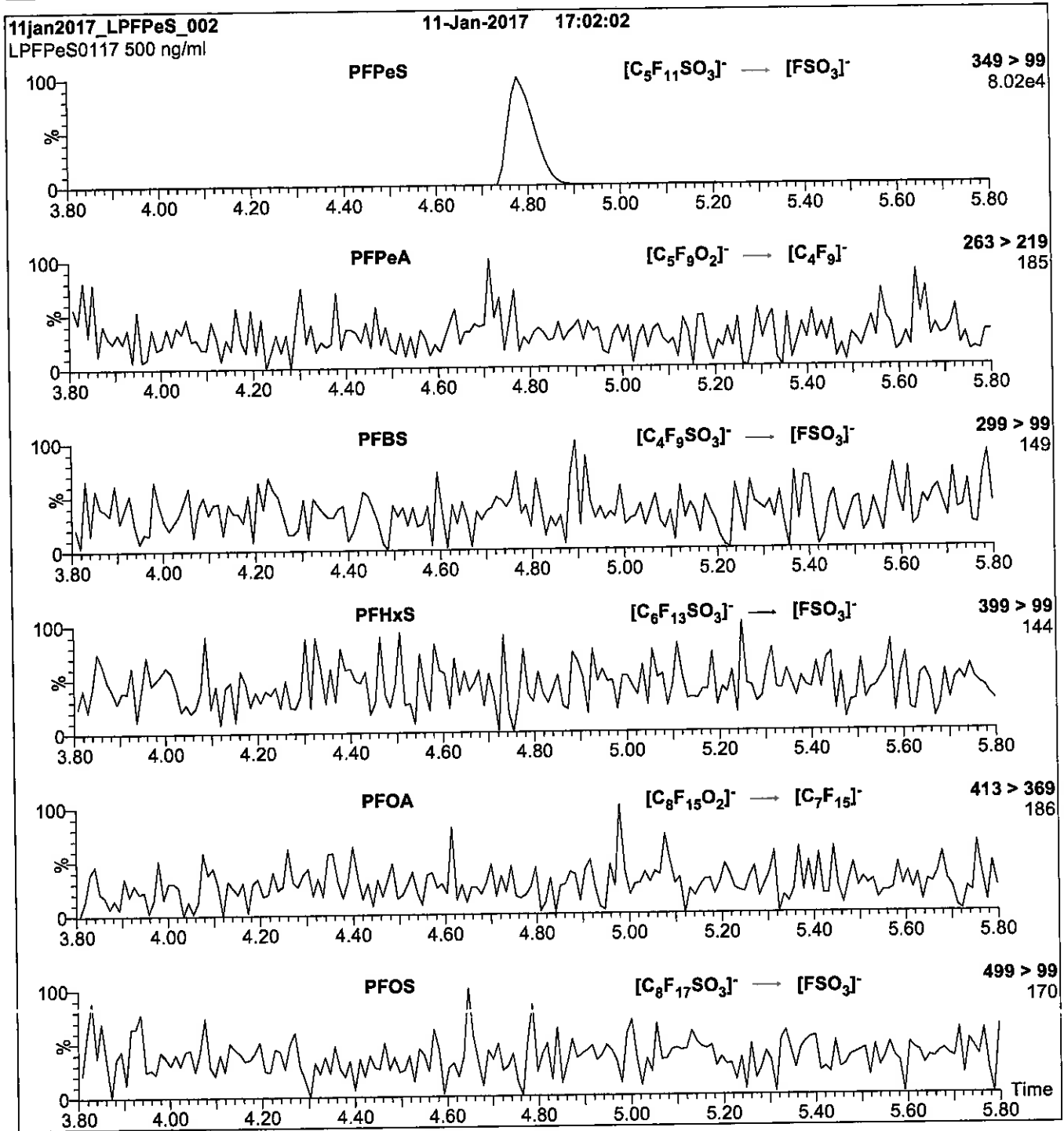
Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H₂O
(both with 10 mM NH₄OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1.5 min
before returning to initial conditions over 0.5 min.
Time: 10 min

Flow: 300 μl/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: L-PFPeS; LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
 10 μ l (500 ng/ml L-PFPeS)

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) = 30

Reagent

LCPFTeDA_00008

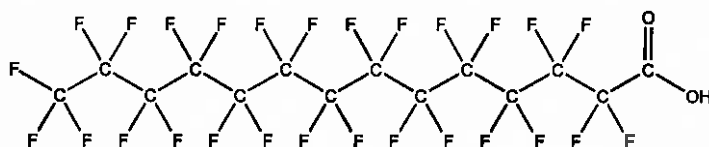


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CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA **LOT NUMBER:** PFTeDA0916
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE: **CAS #:** 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$ **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 PFDcA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

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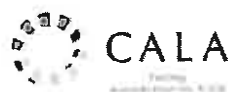
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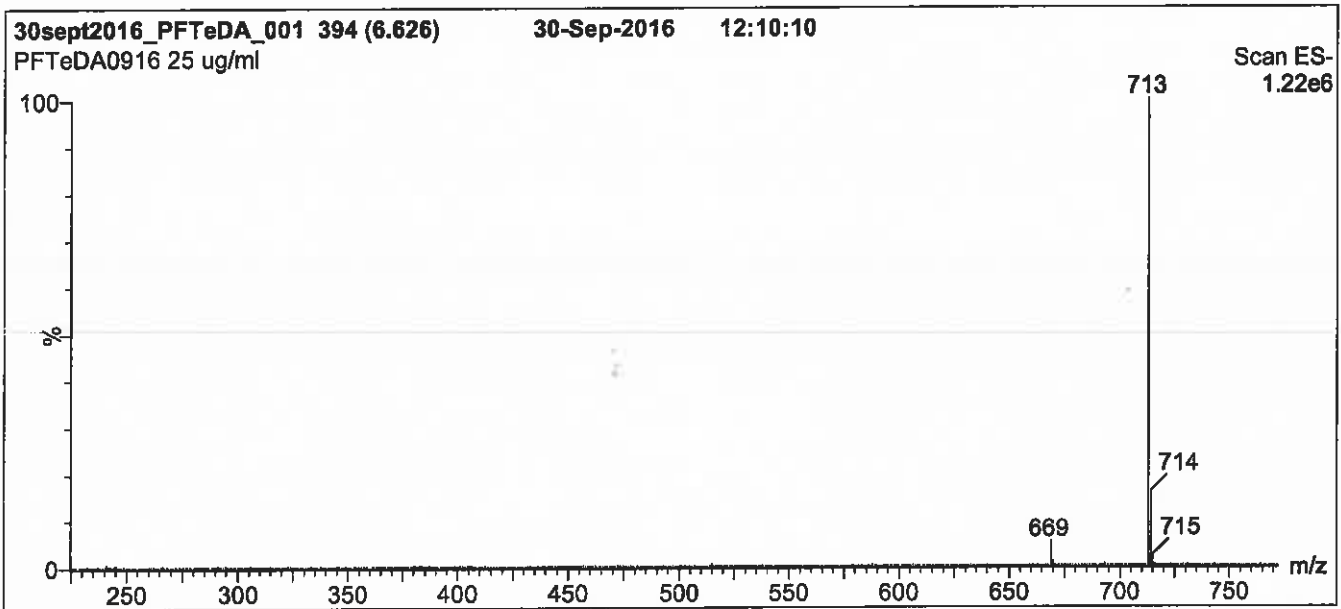
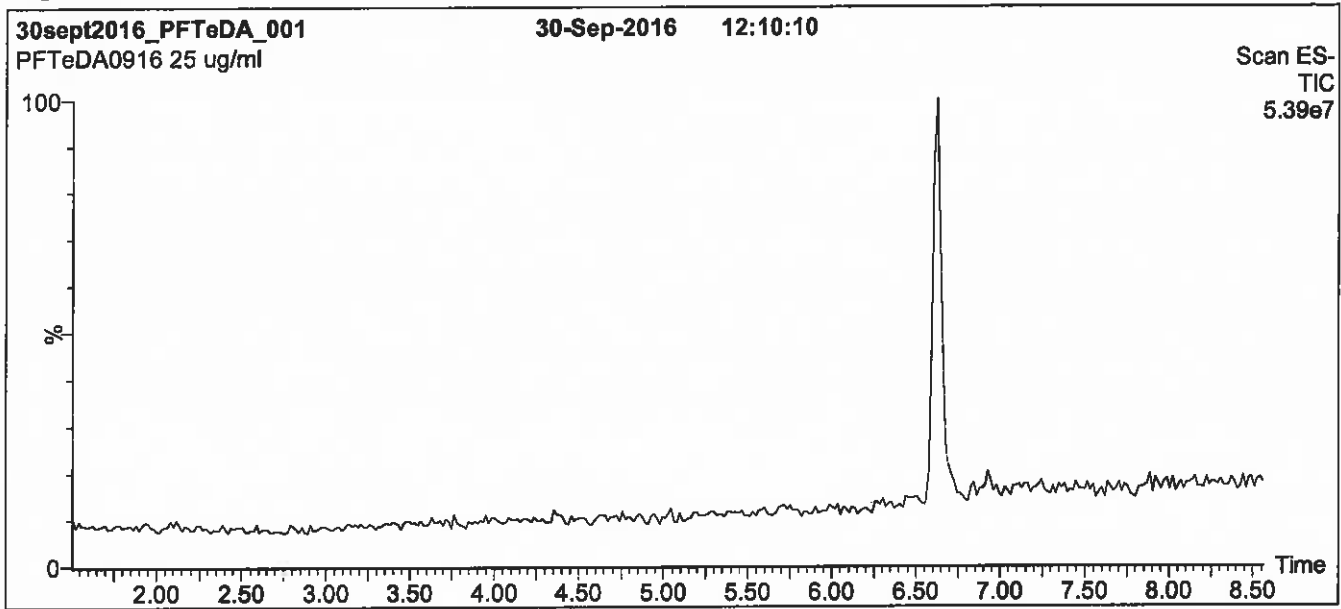
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Figure 1: PFTeDA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

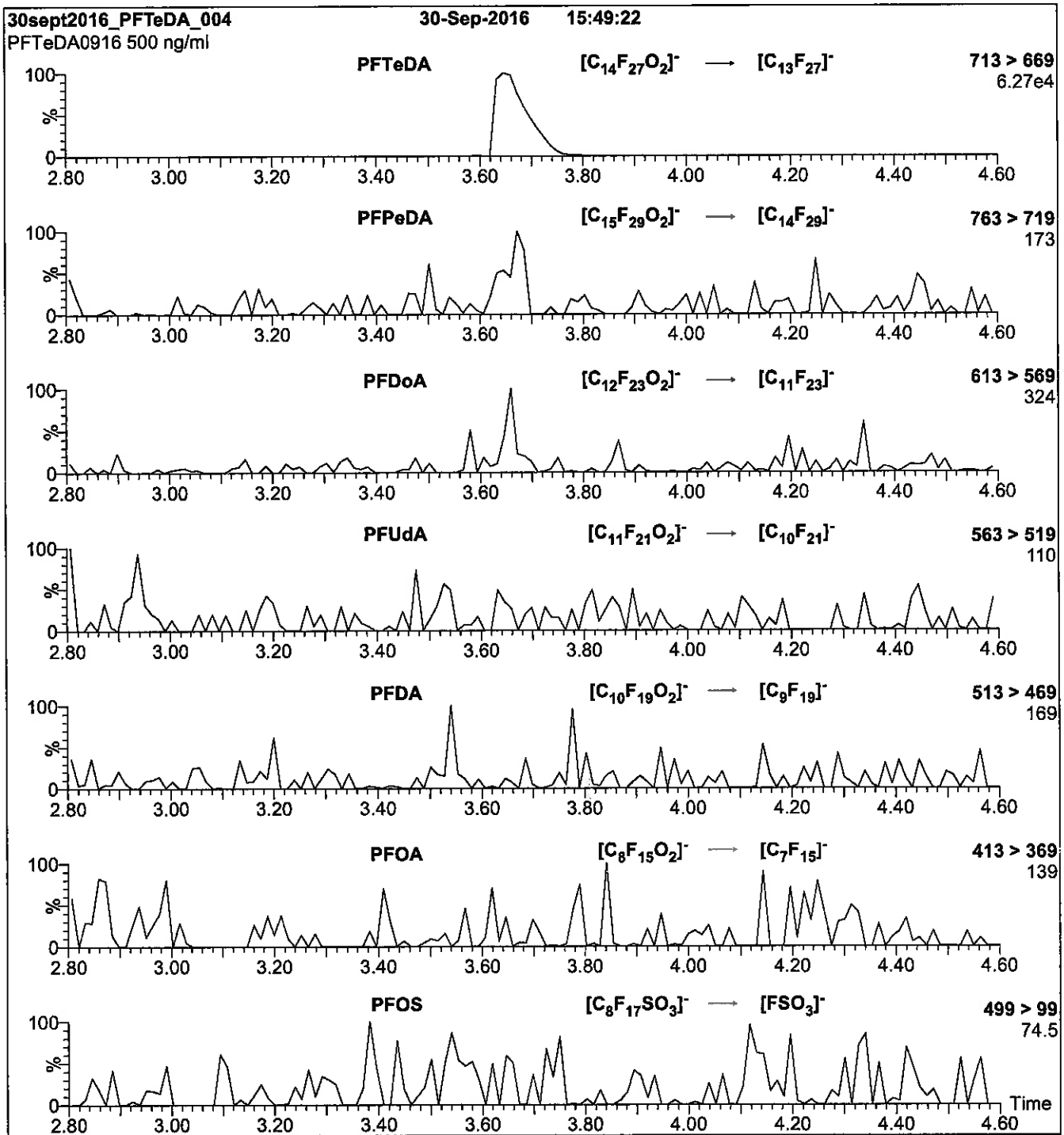
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
 Capillary Voltage (kV) = 3.00
 Cone Voltage (V) = 15.00
 Cone Gas Flow (l/hr) = 60
 Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 14

Reagent

LCPFTeDA_00009

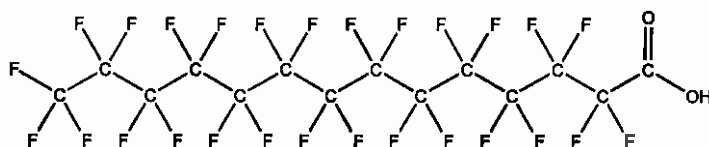


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA **LOT NUMBER:** PFTeDA0916
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE: **CAS #:** 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$ **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 PFDcA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

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:

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.

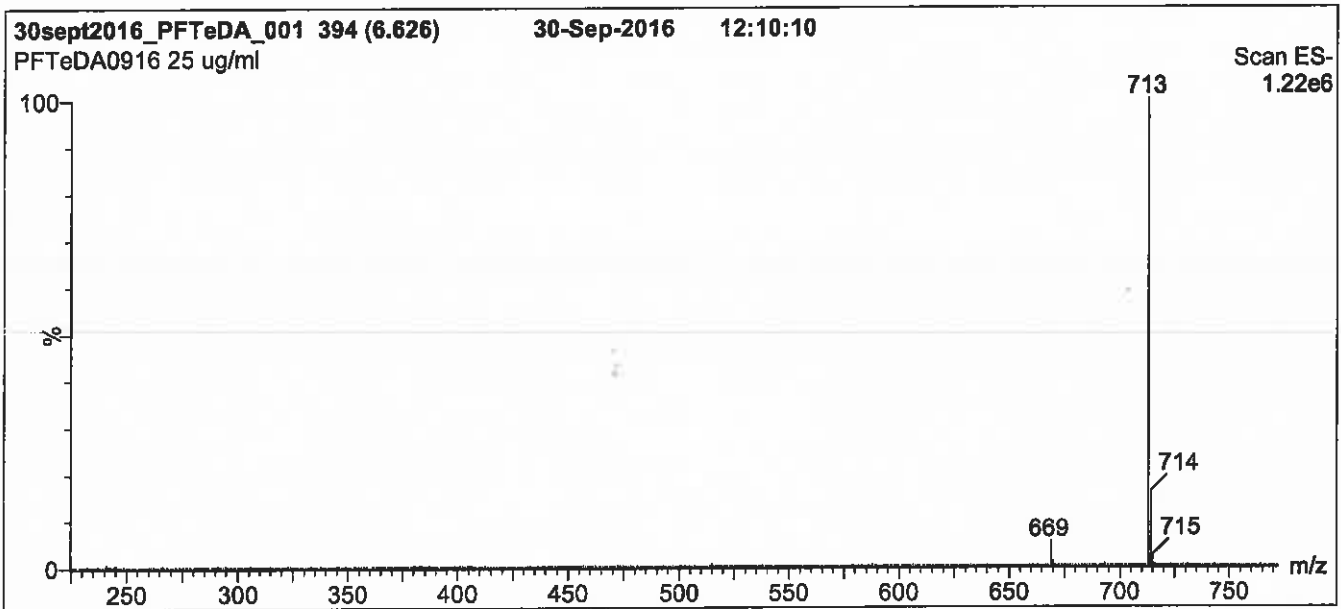
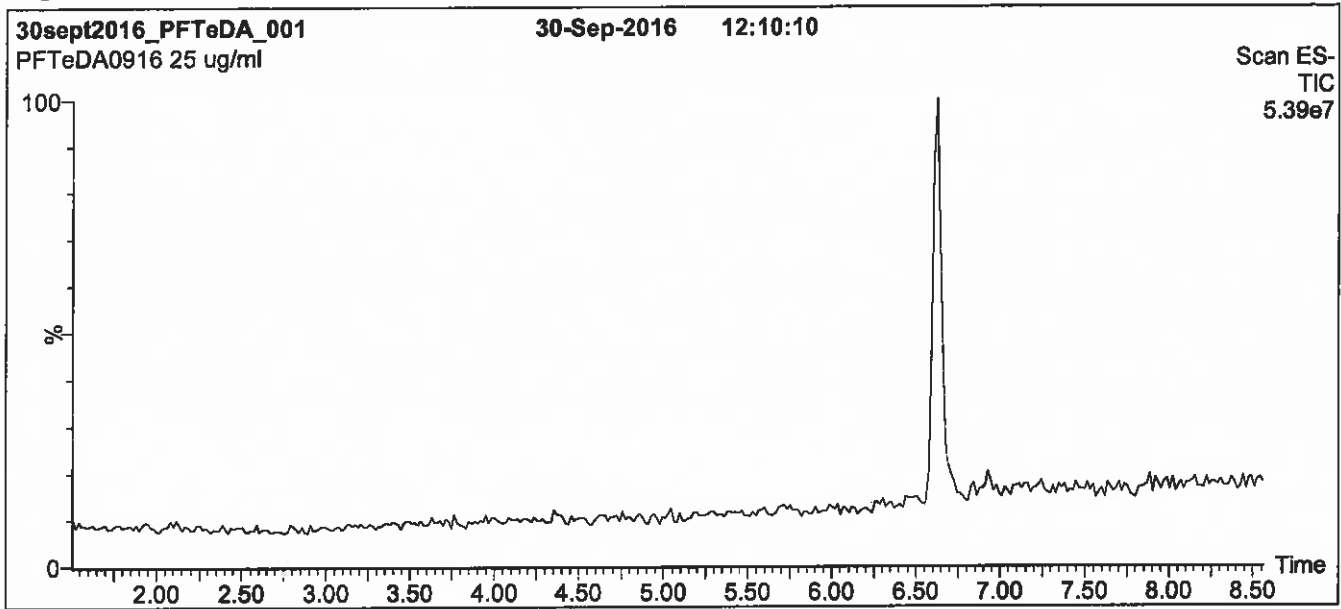
QUALITY MANAGEMENT:

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

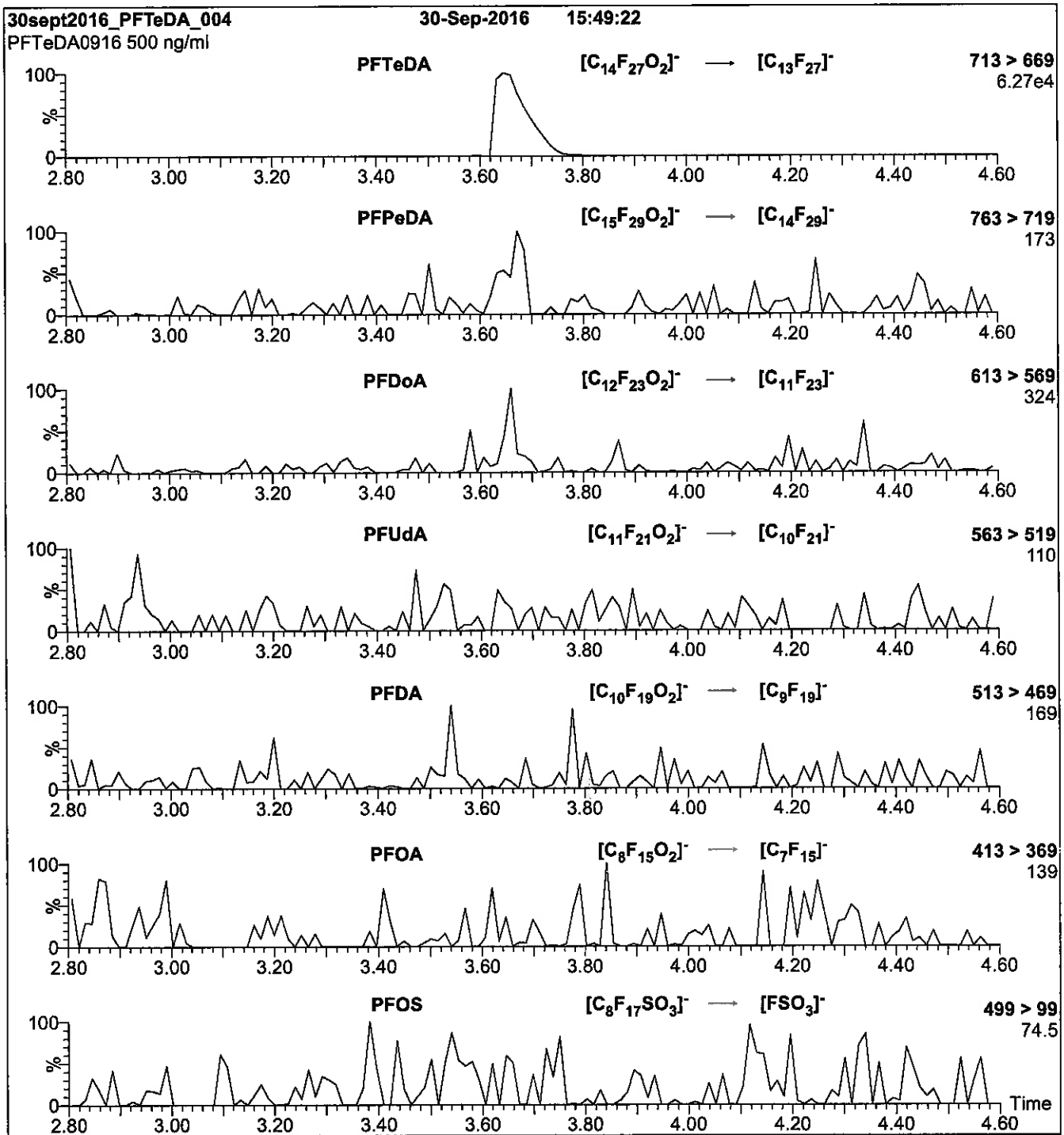
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (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% H₂O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.20e-3
Collision Energy (eV) = 14

Reagent

LCPFT_rDA_00008

P: 9/21/17 SKV

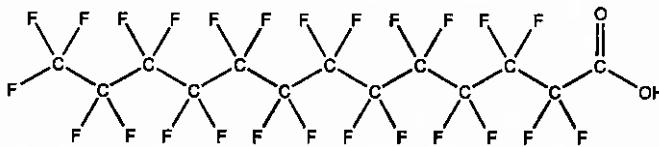


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTrDA **LOT NUMBER:** PFTrDA0517
COMPOUND: Perfluoro-n-tridecanoic acid

STRUCTURE: **CAS #:** 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$ **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) 05/02/2017
EXPIRY DATE: (mm/dd/yyyy) 05/02/2022
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 PFUDA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDoA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

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:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

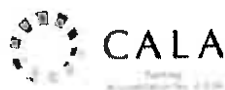
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

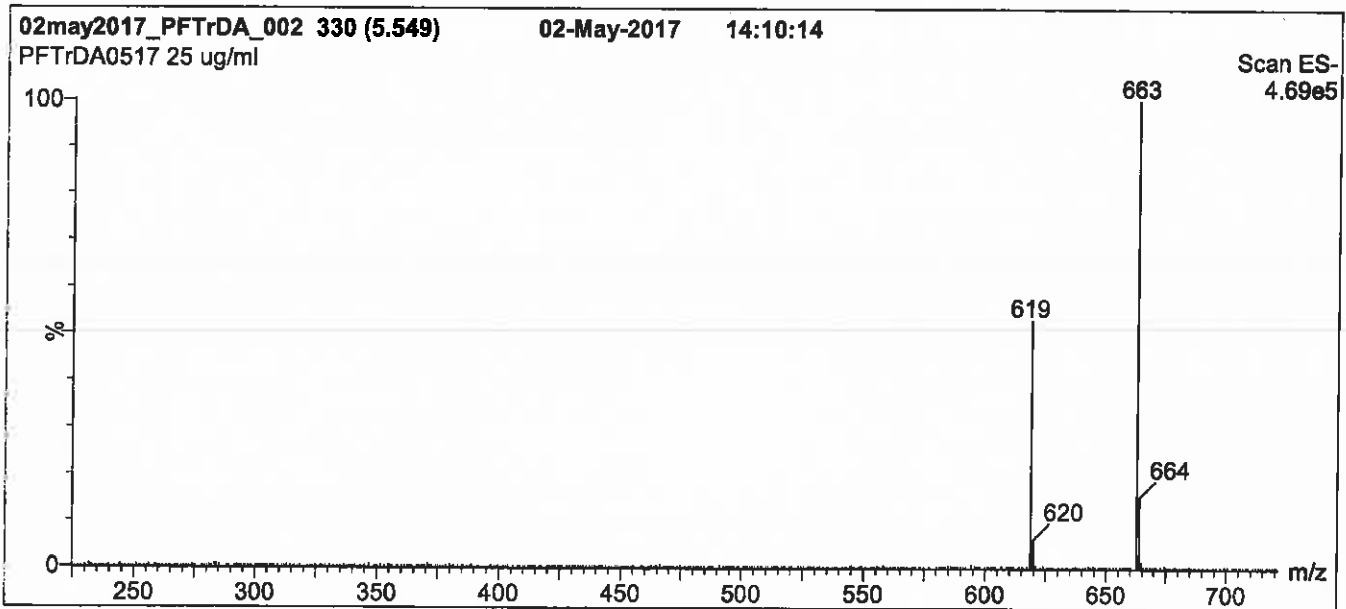
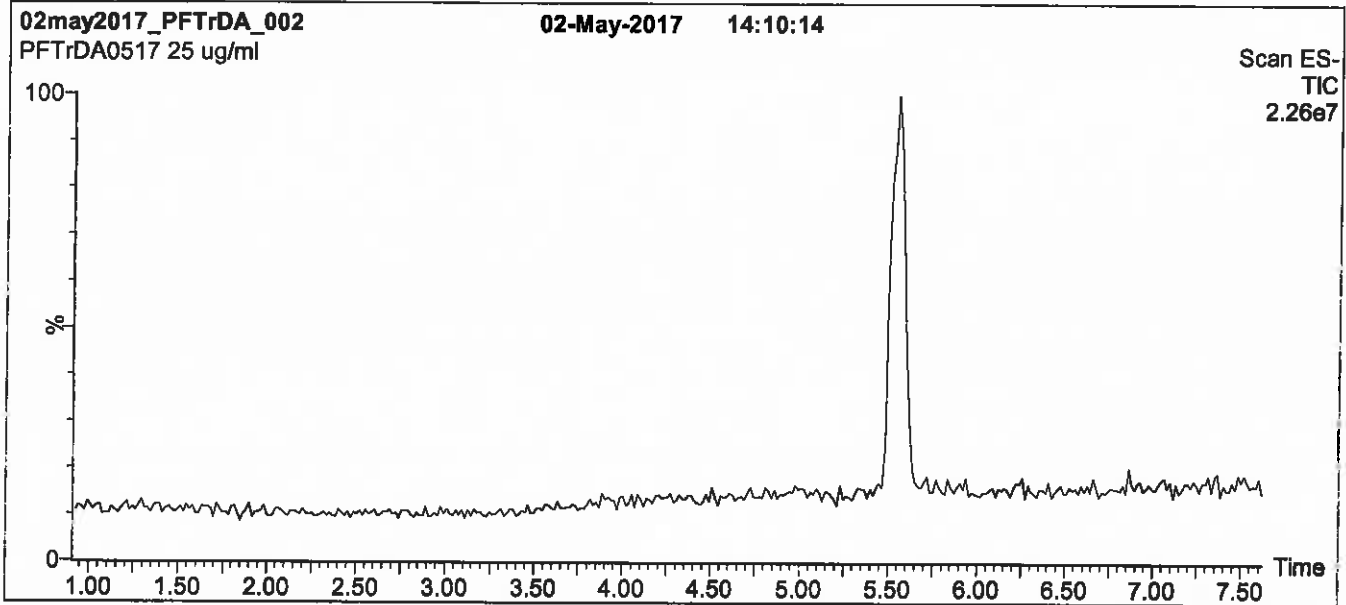
QUALITY MANAGEMENT:

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: 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

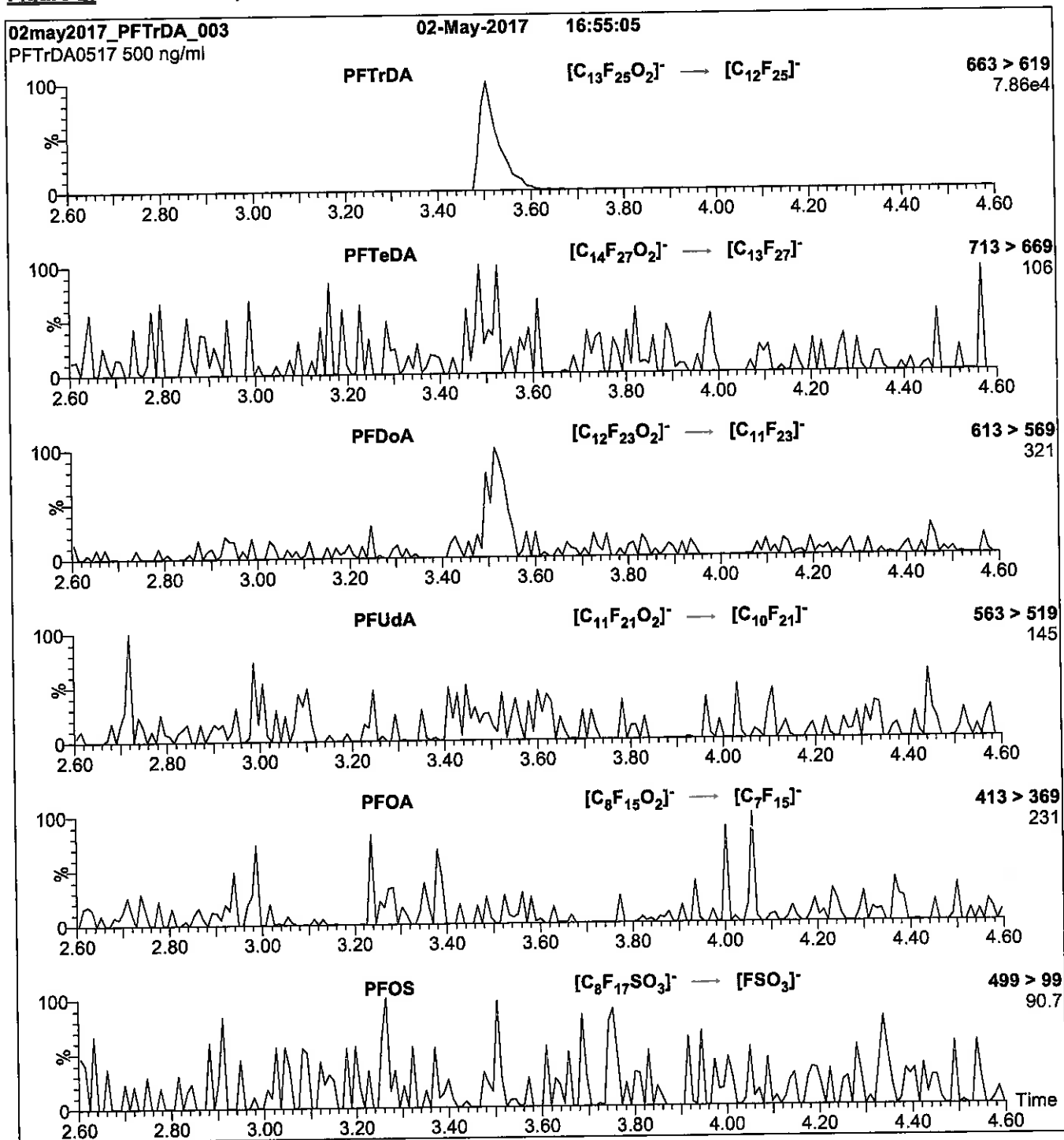
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 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) = 850

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 15

Reagent

LCPFT_rDA_00009

P: 9/21/17 SKV

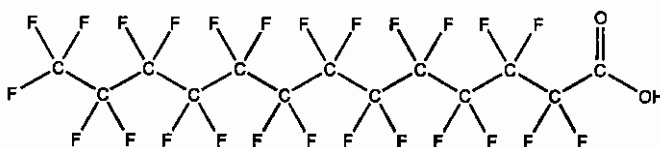


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTTrDA **LOT NUMBER:** PFTTrDA0517
COMPOUND: Perfluoro-n-tridecanoic acid

STRUCTURE: **CAS #:** 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$ **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) 05/02/2017
EXPIRY DATE: (mm/dd/yyyy) 05/02/2022
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 PFUDA ($C_{11}HF_{21}O_2$), ~ 0.4% of PFDaA ($C_{12}HF_{23}O_2$), and ~ 0.1% of PFTeDA ($C_{14}HF_{27}O_2$).

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
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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

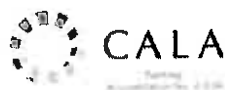
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

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.

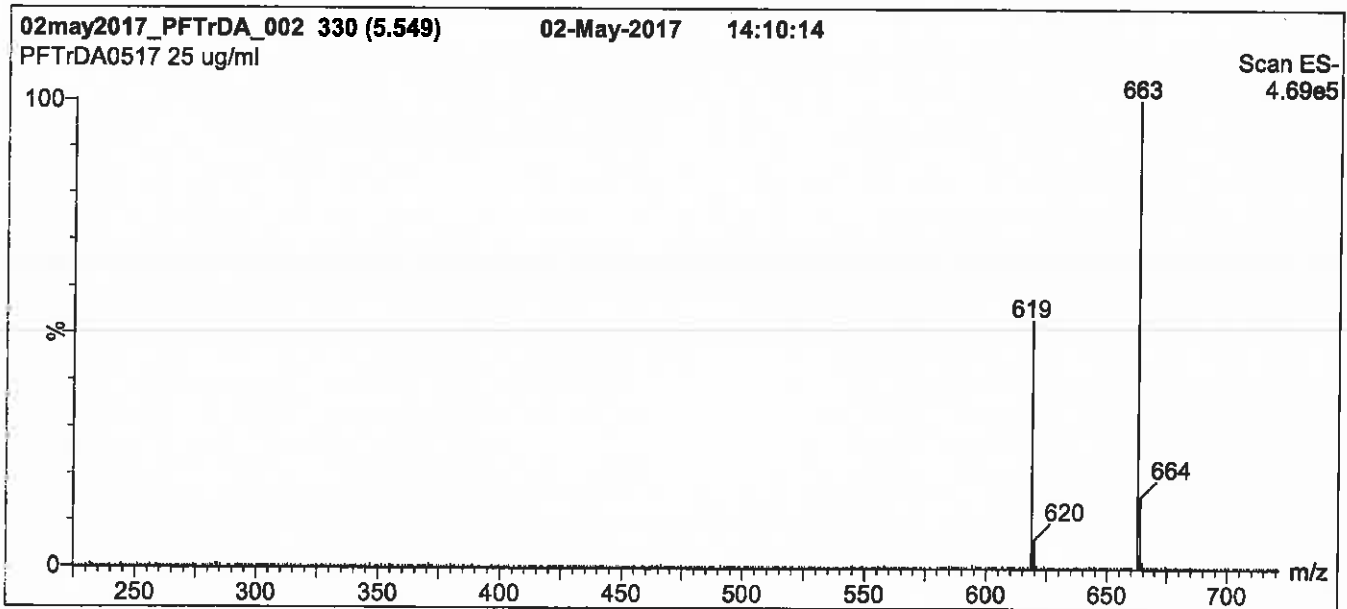
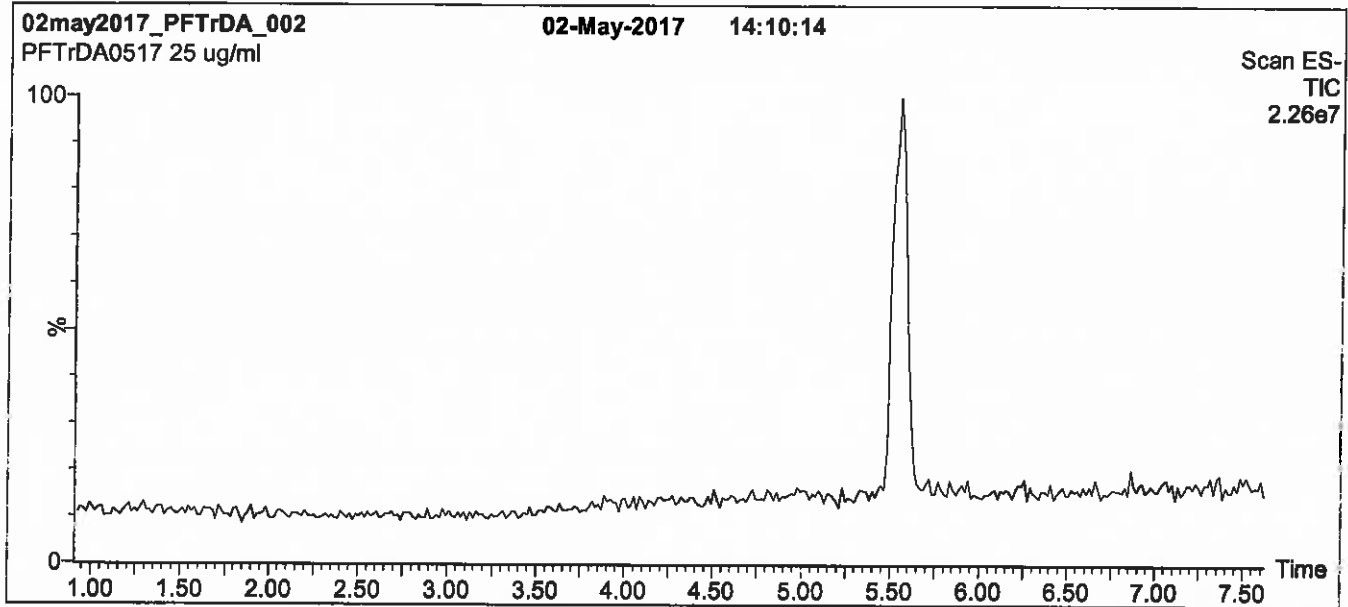
QUALITY MANAGEMENT:

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



Conditions for Figure 1:

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

Chromatographic Conditions

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

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

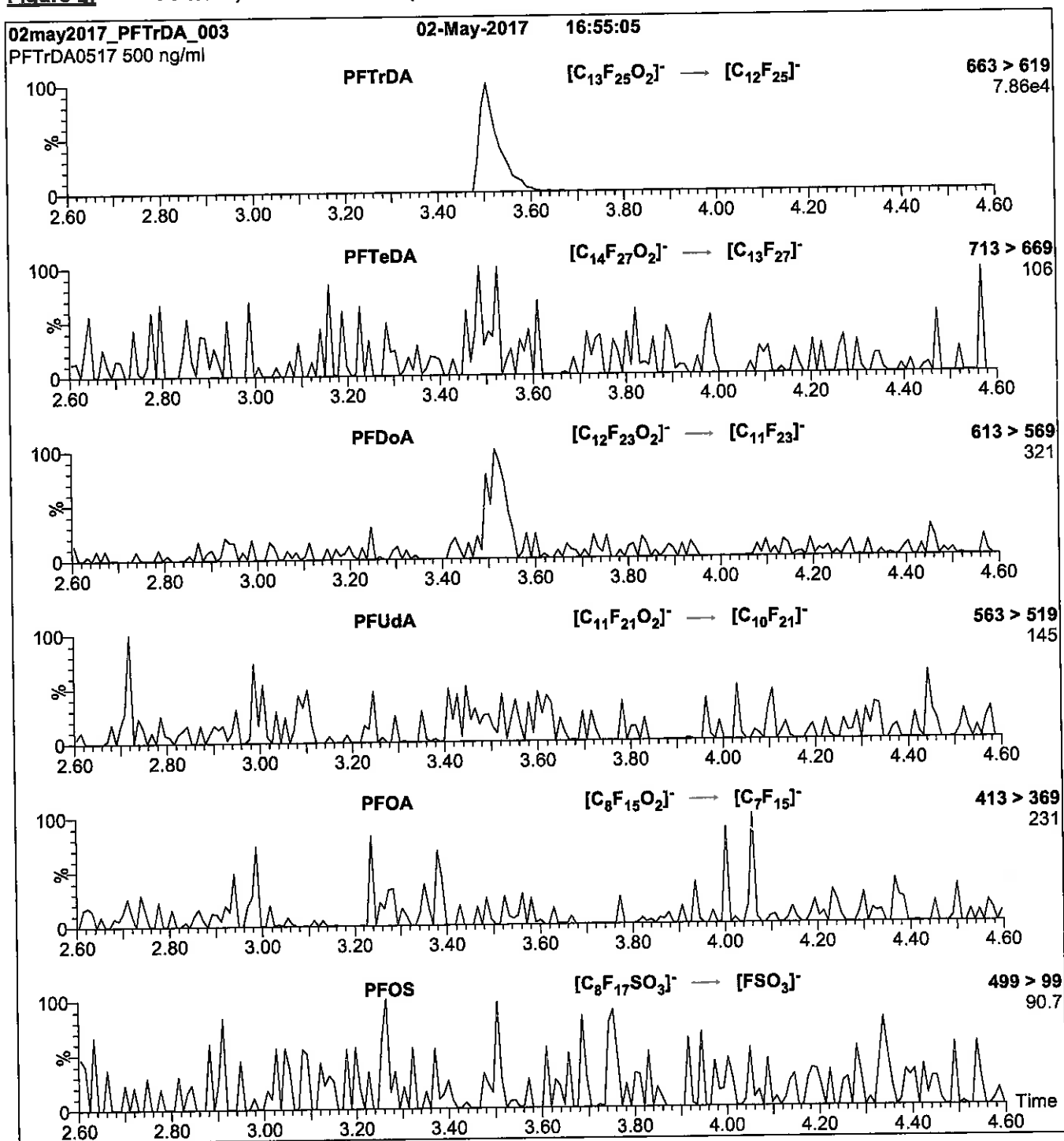
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 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) = 850

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 15

Reagent

LCPFUdA_00008

r: 9/21/17 SW

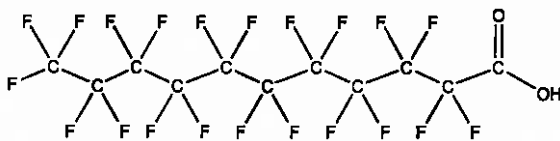


WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFUdA **LOT NUMBER:** PFUdA1016
COMPOUND: Perfluoro-n-undecanoic acid

STRUCTURE: **CAS #:** 2058-94-8



MOLECULAR FORMULA: C₁₁HF₂₁O₂ **MOLECULAR WEIGHT:** 564.09
CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
 Water (<1%)
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/18/2016
EXPIRY DATE: (mm/dd/yyyy) 10/18/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place


DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: 
 B.G. Chittim **Date:** 10/19/2016
 (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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

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

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

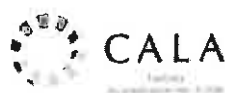
Ongoing stability studies of this product have demonstrated stability in its composition and concentration, until the specified expiry date, in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

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

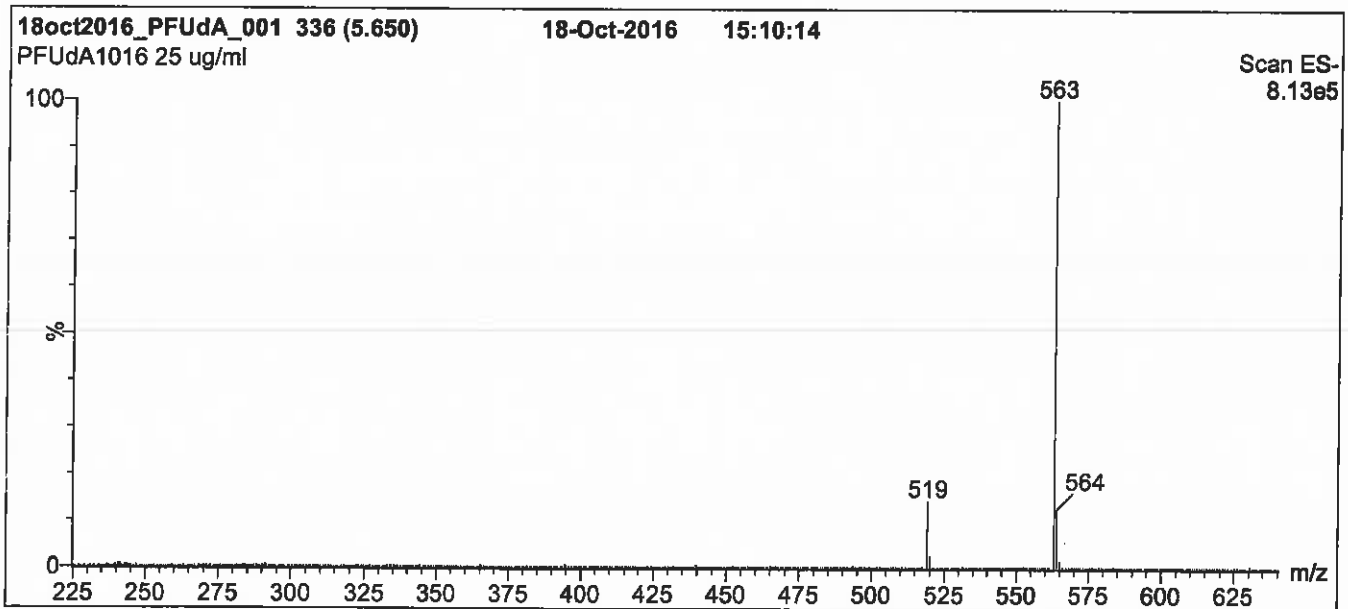
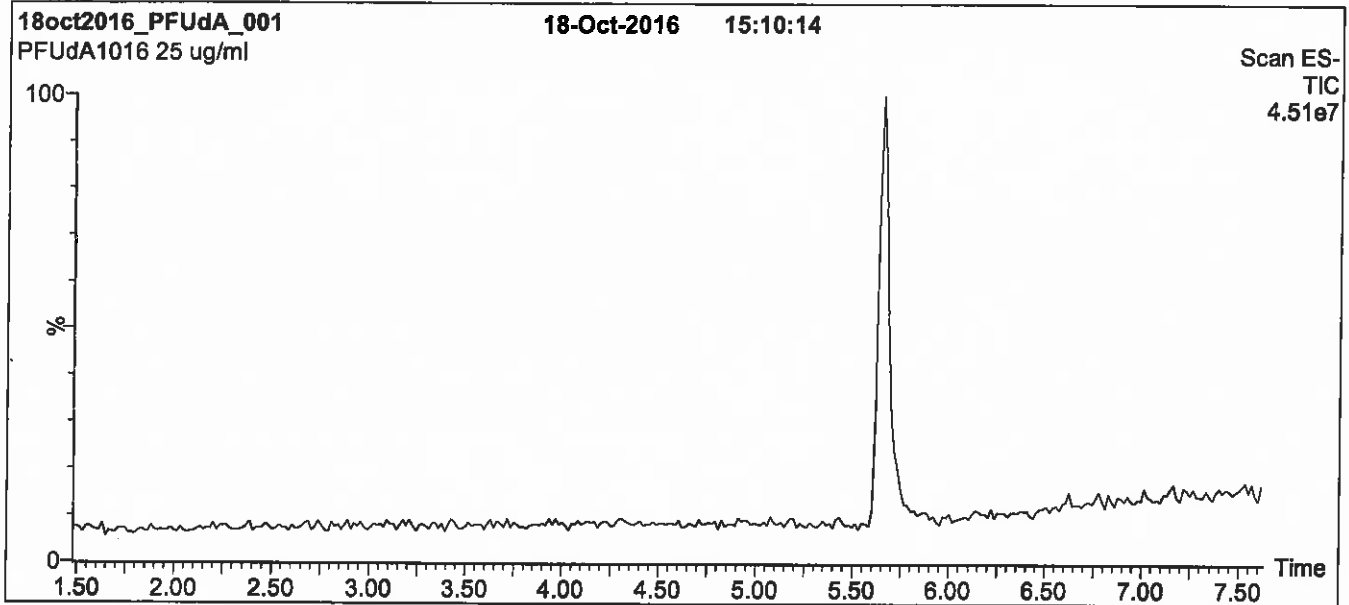
QUALITY MANAGEMENT:

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



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

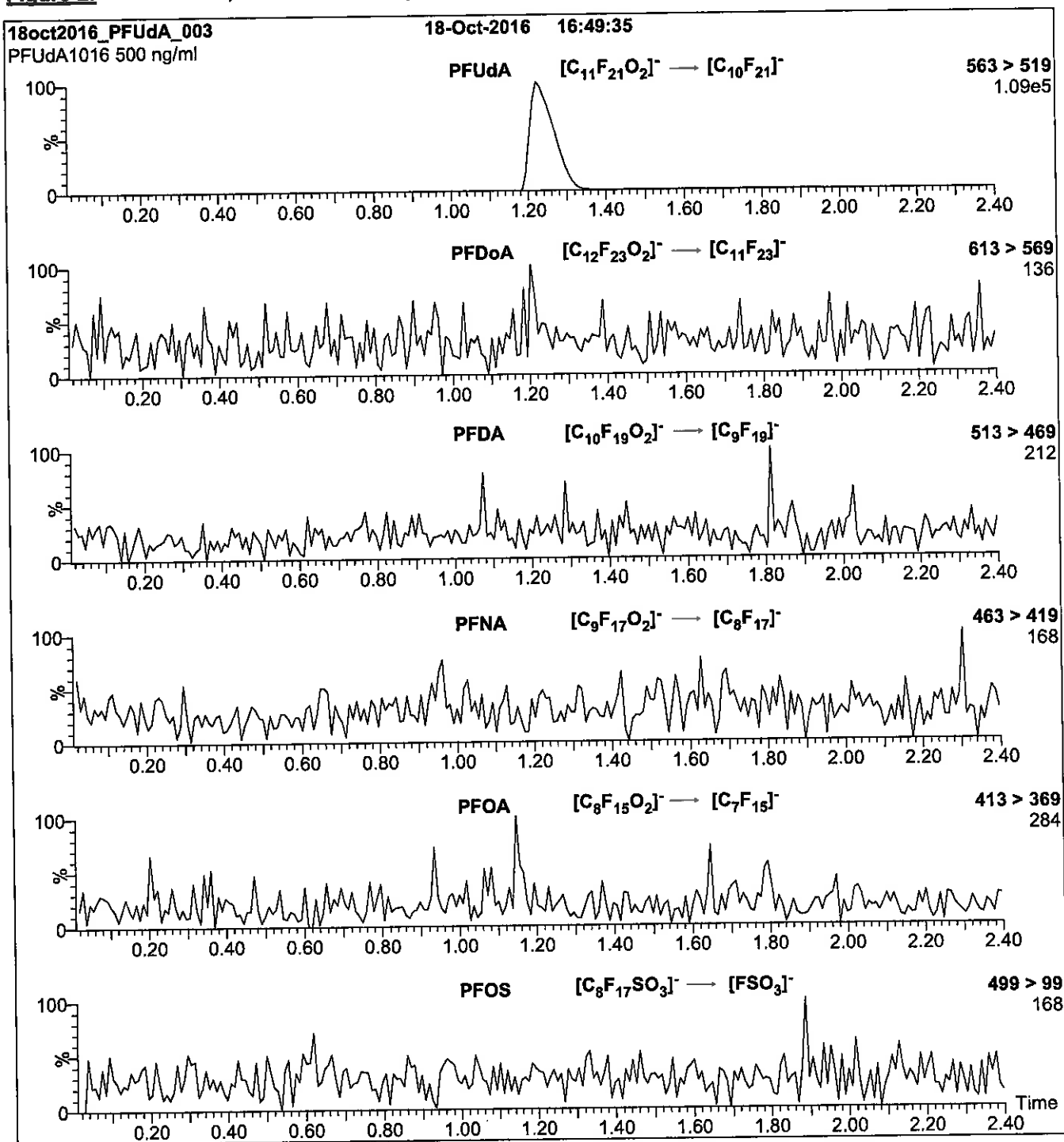
Flow: 300 μ l/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 μ l/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
 Collision Energy (eV) = 11

Method PFC DOD

Fluorinated Hydrocarbons (LC/MS) by
Method PFAS_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFBS #	PFHxA #	PFHpA #	PFHxS #	PFOA #	PFNA #
TP-PFC-031-TPI	320-40917-1	94	98	101	104	105	99	86	99
TP-PFC-031-TPI DL	320-40917-1 DL	94	90	87	85	93	91	87	92
TP-PFC-031-MID CARBON	320-40917-2	89	80	80	88	101	93	94	89
TP-PFC-031-TPE	320-40917-3	83	77	79	83	92	87	89	84
TP-PFC-031-TPE-D	320-40917-4	88	80	81	87	95	90	92	91
	MB 320-233164/1-A	85	80	80	89	97	90	93	91
	LCS 320-233164/2-A	89	84	83	91	97	93	92	91
	LCSD 320-233164/3-A	89	82	83	91	96	96	91	91

	<u>QC LIMITS</u>
PFBA = 13C4 PFBA	50-150
PFPeA = 13C5 PFPeA	50-150
PFBS = 13C3-PFBS	50-150
PFHxA = 13C2 PFHxA	50-150
PFHpA = 13C4-PFHpA	50-150
PFHxS = 1802 PFHxS	50-150
PFOA = 13C4 PFOA	50-150
PFNA = 13C5 PFNA	50-150

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

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-031-TPI	320-40917-1	102	96	107	113	103	95
TP-PFC-031-TPI DL	320-40917-1 DL	86	84	103	91	84	70
TP-PFC-031-MID CARBON	320-40917-2	87	85	91	95	87	79
TP-PFC-031-TPE	320-40917-3	81	82	92	87	81	79
TP-PFC-031-TPE-D	320-40917-4	87	84	90	91	85	77
	MB 320-233164/1-A	84	80	93	93	89	83
	LCS 320-233164/2-A	88	79	92	94	87	77
	LCSD 320-233164/3-A	86	79	94	93	85	78

PFOS = 13C4 PFOS
 PFOSA = 13C8 FOSA
 PFDA = 13C2 PFDA
 PFUnA = 13C2 PFUnA
 PFDoA = 13C2 PFDoA
 PFTDA = 13C2-PFTeDA

QC LIMITS
 50-150
 50-150
 50-150
 50-150
 50-150
 50-150

Column to be used to flag recovery values

FORM II EPA 537 (Mod)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2018.07.18LLB_062.d

Lab ID: LCS 320-233164/2-A

Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	40.0	35.8	89	83-118	M
Perfluoropentanoic acid (PFPeA)	40.0	35.0	88	83-108	
Perfluorohexanoic acid (PFHxA)	40.0	38.0	95	83-109	
Perfluoroheptanoic acid (PFHpA)	40.0	36.8	92	80-113	
Perfluorooctanoic acid (PFOA)	40.0	35.8	89	80-107	
Perfluorononanoic acid (PFNA)	40.0	35.2	88	83-113	
Perfluorodecanoic acid (PFDA)	40.0	36.7	92	85-113	
Perfluoroundecanoic acid (PFUnA)	40.0	32.3	81	76-105	
Perfluorododecanoic acid (PFDoA)	40.0	37.0	92	87-116	
Perfluorotridecanoic Acid (PFTriA)	40.0	36.8	92	75-129	
Perfluorotetradecanoic acid (PFTeA)	40.0	36.8	92	82-115	
Perfluorobutanesulfonic acid (PFBS)	35.4	33.0	93	87-120	
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.9	88	81-106	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	34.9	92	80-117	
Perfluorooctanesulfonic acid (PFOS)	37.1	34.2	92	82-112	
Perfluorodecanesulfonic acid (PFDS)	38.6	33.9	88	81-114	
Perfluorooctane Sulfonamide (FOSA)	40.0	38.6	97	85-114	
13C8 FOSA	100	79.1	79	50-150	
13C4 PFBA	100	89.2	89	50-150	
13C5 PFPeA	100	83.9	84	50-150	
13C2 PFHxA	100	90.9	91	50-150	
13C4-PFHpA	100	97.0	97	50-150	
13C4 PFOA	100	92.4	92	50-150	
13C5 PFNA	100	91.4	91	50-150	
13C2 PFDA	100	92.4	92	50-150	
13C2 PFUnA	100	93.7	94	50-150	
13C2 PFDoA	100	87.0	87	50-150	
18O2 PFHxS	94.6	88.1	93	50-150	
13C2-PFTeDA	100	77.2	77	50-150	
13C4 PFOS	95.6	84.1	88	50-150	
13C3-PFBS	93.0	77.1	83	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2018.07.18LLB_063.d

Lab ID: LCSD 320-233164/3-A

Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutanoic acid (PFBA)	40.0	36.9	92	3	30	83-118	M
Perfluoropentanoic acid (PFPeA)	40.0	37.8	94	8	30	83-108	
Perfluorohexanoic acid (PFHxA)	40.0	38.6	97	2	30	83-109	
Perfluoroheptanoic acid (PFHpA)	40.0	35.5	89	3	30	80-113	
Perfluorooctanoic acid (PFOA)	40.0	36.3	91	1	30	80-107	
Perfluorononanoic acid (PFNA)	40.0	37.2	93	5	30	83-113	
Perfluorodecanoic acid (PFDA)	40.0	38.5	96	5	30	85-113	
Perfluoroundecanoic acid (PFUnA)	40.0	33.1	83	2	30	76-105	
Perfluorododecanoic acid (PFDoA)	40.0	37.8	95	2	30	87-116	
Perfluorotridecanoic Acid (PFTriA)	40.0	39.0	98	6	30	75-129	
Perfluorotetradecanoic acid (PFTeA)	40.0	37.1	93	1	30	82-115	
Perfluorobutanesulfonic acid (PFBS)	35.4	34.0	96	3	30	87-120	
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.1	85	3	30	81-106	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	38.5	101	10	30	80-117	
Perfluorooctanesulfonic acid (PFOS)	37.1	35.7	96	4	30	82-112	
Perfluorodecanesulfonic acid (PFDS)	38.6	34.9	90	3	30	81-114	
Perfluorooctane Sulfonamide (FOSA)	40.0	40.2	101	4	30	85-114	
13C8 FOSA	100	79.4	79			50-150	
13C4 PFBA	100	88.9	89			50-150	
13C5 PFPeA	100	82.0	82			50-150	
13C2 PFHxA	100	90.6	91			50-150	
13C4-PFHpA	100	95.9	96			50-150	
13C4 PFOA	100	91.4	91			50-150	
13C5 PFNA	100	91.3	91			50-150	
13C2 PFDA	100	94.4	94			50-150	
13C2 PFUnA	100	92.8	93			50-150	
13C2 PFDoA	100	85.2	85			50-150	
18O2 PFHxS	94.6	90.4	96			50-150	
13C2-PFTeDA	100	77.9	78			50-150	
13C4 PFOS	95.6	82.4	86			50-150	
13C3-PFBS	93.0	77.4	83			50-150	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab File ID: 2018.07.18LLB_061.d Lab Sample ID: MB 320-233164/1-A
 Matrix: Water Date Extracted: 07/10/2018 08:16
 Instrument ID: A8_N Date Analyzed: 07/18/2018 22:49
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-233164/2-A	2018.07.18L LB 062.d	07/18/2018 22:57
	LCSD 320-233164/3-A	2018.07.18L LB 063.d	07/18/2018 23:05
TP-PFC-031-TPI	320-40917-1	2018.07.18L LB 064.d	07/18/2018 23:13
TP-PFC-031-MID CARBON	320-40917-2	2018.07.18L LB 065.d	07/18/2018 23:20
TP-PFC-031-TPE	320-40917-3	2018.07.18L LB 066.d	07/18/2018 23:28
TP-PFC-031-TPE-D	320-40917-4	2018.07.18L LB 067.d	07/18/2018 23:36
TP-PFC-031-TPI DL	320-40917-1 DL	2018.07.19L LC 065.d	07/20/2018 01:12

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Sample No.: IC 320-233477/5 Date Analyzed: 07/11/2018 15:15
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.07.11LLICALA_0 Heated Purge: (Y/N) N
 Calibration ID: 39999

	13PFOA					
	AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT	4343809	2.67				
UPPER LIMIT	6515714	2.87				
LOWER LIMIT	2171905	2.47				
LAB SAMPLE ID	CLIENT SAMPLE ID					
ICB 320-233477/9		3951281	2.66			
ICV 320-233477/10		4109601	2.67			
CCV 320-234756/3 CCVIS		3893737	2.73			

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Sample No.: CCV 320-234756/3 Date Analyzed: 07/18/2018 16:57
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.07.18LLAA_056. Heated Purge: (Y/N) N
 Calibration ID: 39999

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3893737	2.73				
UPPER LIMIT		5840606	2.93				
LOWER LIMIT		1946869	2.53				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-234756/1		3628230	2.74				
CCVL 320-234756/2		4432604	2.73				
CCV 320-234762/1		3721178	2.71				
MB 320-233164/1-A		4618514	2.72				
LCS 320-233164/2-A		4819931	2.72				
LCSD 320-233164/3-A		4838897	2.72				
320-40917-1	TP-PFC-031-TPI	3977567	2.71				
320-40917-2	TP-PFC-031-MID CARBON	4481355	2.72				
320-40917-3	TP-PFC-031-TPE	4747501	2.72				
320-40917-4	TP-PFC-031-TPE-D	4570877	2.71				
CCV 320-234762/9		3723947	2.71				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Sample No.: IC 320-234930/5 Date Analyzed: 07/19/2018 12:33
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.07.19LLICAL_00 Heated Purge: (Y/N) N
 Calibration ID: 40194

	13PFOA		AREA #	RT #	AREA #	RT #
	AREA #	RT #				
INITIAL CALIBRATION MID-POINT	3899180	2.72				
UPPER LIMIT	5848770	2.92				
LOWER LIMIT	1949590	2.52				
LAB SAMPLE ID	CLIENT SAMPLE ID					
ICB 320-234930/9		4160361	2.72			
ICV 320-234930/10		3999659	2.72			
CCV 320-235044/3 CCVIS		3304797	2.72			

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Sample No.: CCV 320-235044/3 Date Analyzed: 07/19/2018 19:28
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.07.19LLC_021.d Heated Purge: (Y/N) N
 Calibration ID: 40194

	13PFOA					
	AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD	3304797	2.72				
UPPER LIMIT	4957196	2.92				
LOWER LIMIT	1652399	2.52				
LAB SAMPLE ID	CLIENT SAMPLE ID					
CCB 320-235044/1		3759234	2.73			
CCVL 320-235044/2		3942446	2.73			
CCV 320-235047/1		3012998	2.73			
320-40917-1 DL	TP-PFC-031-TPI DL	446861Q	2.73			
CCV 320-235047/4		3384786	2.72			

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPI Lab Sample ID: 320-40917-1
 Matrix: Water Lab File ID: 2018.07.18LLB_064.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:15
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 298.1 (mL) Date Analyzed: 07/18/2018 23:13
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	62	M	1.7	1.3	0.49
2706-90-3	Perfluoropentanoic acid (PFPeA)	180		1.7	0.84	0.36
307-24-4	Perfluorohexanoic acid (PFHxA)	320		1.7	0.84	0.39
375-85-9	Perfluoroheptanoic acid (PFHpA)	65		1.7	1.3	0.51
335-67-1	Perfluorooctanoic acid (PFOA)	1200	M E	1.7	1.3	0.45
375-95-1	Perfluorononanoic acid (PFNA)	2.4		1.7	1.3	0.44
335-76-2	Perfluorodecanoic acid (PFDA)	0.89	J	1.7	0.84	0.40
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.3	U	1.7	1.3	0.60
307-55-1	Perfluorododecanoic acid (PFDoA)	1.3	U	1.7	1.3	0.44
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.5	U	3.4	2.5	0.64
376-06-7	Perfluorotetradecanoic acid (PFTeA)	2.5	U	3.4	2.5	0.70
375-73-5	Perfluorobutanesulfonic acid (PFBS)	45		1.7	0.84	0.39
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	340	E	1.7	0.84	0.32
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	7.0		1.7	0.84	0.31
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	300		3.4	2.5	0.92
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.3	U	1.7	1.3	0.47
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.5	U M	3.4	2.5	1.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPI Lab Sample ID: 320-40917-1
 Matrix: Water Lab File ID: 2018.07.18LLB_064.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:15
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 298.1 (mL) Date Analyzed: 07/18/2018 23:13
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	96		50-150
STL00992	13C4 PFBA	94		50-150
STL01893	13C5 PFPeA	98		50-150
STL00993	13C2 PFHxA	104		50-150
STL01892	13C4-PFHpA	105		50-150
STL00990	13C4 PFOA	86		50-150
STL00995	13C5 PFNA	99		50-150
STL00996	13C2 PFDA	107		50-150
STL00997	13C2 PFUnA	113		50-150
STL00998	13C2 PFDoA	103		50-150
STL00994	18O2 PFHxS	99		50-150
STL02116	13C2-PFTeDA	95		50-150
STL00991	13C4 PFOS	102		50-150
STL02337	13C3-PFBS	101		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_064.d
 Lims ID: 320-40917-A-1-A
 Client ID: TP-PFC-031-TPI
 Sample Type: Client
 Inject. Date: 18-Jul-2018 23:13:02 ALS Bottle#: 48 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-40917-a-1-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 14:19:25 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols Date: 19-Jul-2018 14:19:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.424	1.430	-0.006	1.000	3715480	1.86			650	M
D 1 13C4 PFBA										
217.00 > 172.00	1.424	1.436	-0.012	0.525	5060103	2.35		93.8	61787	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.738	1.748	-0.010	1.000	9547259	5.35			2214	
D 3 13C5-PFPeA										
267.90 > 223.00	1.738	1.748	-0.010	0.641	3677476	2.45		98.1	29126	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.783	1.793	-0.010	1.000	3900269	1.34			5709	
298.90 > 99.00	1.783	1.793	-0.010	1.000	1639128		2.38(1.25-3.74)		5351	
D 47 13C3-PFBS										
301.90 > 83.00	1.783	1.793	-0.010	0.657	88187	2.34		101	383	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.048	2.049	-0.001	1.000	16654796	9.57			24374	
313.00 > 119.00	2.048	2.049	-0.001	1.000	1394410		11.94(5.03-15.10)		21535	
D 7 13C2 PFHxA										
315.00 > 270.00	2.048	2.061	-0.013	0.755	4225910	2.61		104	60203	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.372	2.373	-0.001	1.000	3523386	1.94			3794	
363.00 > 169.00	2.372	2.373	-0.001	1.000	1359889		2.59(1.13-3.40)		8465	
D 9 13C4-PFHpA										
367.00 > 322.00	2.372	2.385	-0.013	0.875	3915704	2.63		105	46762	
8 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.384	2.385	-0.001	1.000	24457005	10.2			37674	E
399.00 > 99.00	2.384	2.385	-0.001	1.000	8472191		2.89(1.50-4.49)		27306	
D 11 18O2 PFHxS										
403.00 > 84.00	2.384	2.396	-0.012	0.879	4960721	2.35		99.3	82800	

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	2.712	2.714	-0.002	3977567	2.50		33910	
D 14 13C4 PFOA	417.00	> 372.00	2.712	2.720	-0.008	1.000	3251593	2.14	85.5	47552
15 Perfluorooctanoic acid	413.00	> 369.00	2.712	2.721	-0.009	1.000	56676987	35.4	22781	EM
413.00 > 169.00	2.712	2.721	-0.009	1.000	39775997		1.42(0.84-2.52)	91479		M
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.719	2.721	-0.002	0.886	434822	0.2096	163	
449.00 > 99.00	2.719	2.721	-0.002	0.886	132888		3.27(1.94-5.82)	329		
D 18 13C4 PFOS	503.00	> 80.00	3.070	3.076	-0.006	1.132	3763041	2.43	102	39572
D 19 13C5 PFNA	468.00	> 423.00	3.076	3.076	0.0	1.134	3360045	2.47	98.8	47648
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.076	3.076	0.0	1.002	15942988	8.94	47592	
499.00 > 99.00	3.070	3.076	-0.006	1.000	3694434		4.32(2.31-6.93)	30675		
20 Perfluorononanoic acid	463.00	> 419.00	3.076	3.076	0.0	1.000	104453	0.0701	108	
463.00 > 169.00	3.076	3.076	0.0	1.000	25345		4.12(1.90-5.69)	99.1		
D 21 13C8 FOSA	506.00	> 78.00	3.404	3.412	-0.008	1.255	5389854	2.41	96.5	55369
24 Perfluorodecanoic acid	513.00	> 469.00	3.422	3.421	0.001	1.000	35701	0.0266	122	R
513.00 > 169.00	3.431	3.421	0.010	1.003	5000		7.14(2.36-7.09)	61.4		R
D 23 13C2 PFDA	515.00	> 470.00	3.422	3.430	-0.008	1.262	3195416	2.68	107	31380
D 30 13C2 PFUnA	565.00	> 520.00	3.748	3.754	-0.006	1.382	2815354	2.82	113	58227
D 36 13C2 PFDoA	615.00	> 570.00	4.027	4.034	-0.007	1.485	2651978	2.57	103	18515
D 43 13C2-PFTeDA	715.00	> 670.00	4.530	4.540	-0.010	1.671	2549622	2.38	95.1	13555

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_064.d

Injection Date: 18-Jul-2018 23:13:02

Instrument ID: A8_N

Lims ID: 320-40917-A-1-A

Lab Sample ID: 320-40917-1

Client ID: TP-PFC-031-TPI

Operator ID: SACINSTLCMS01

ALS Bottle#: 48 Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

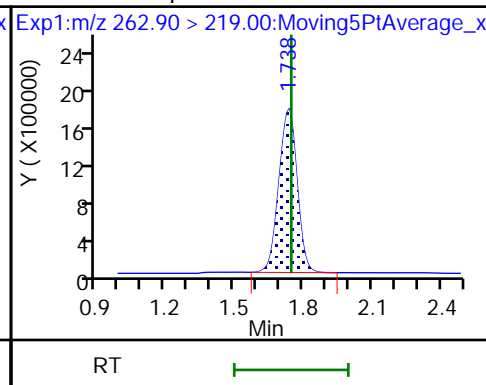
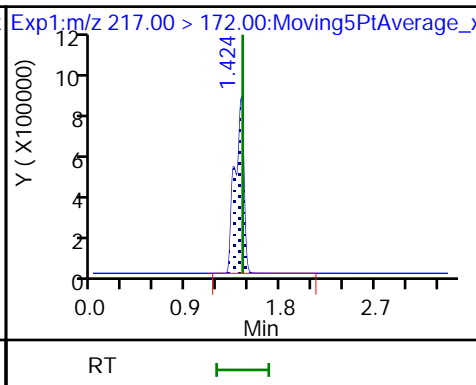
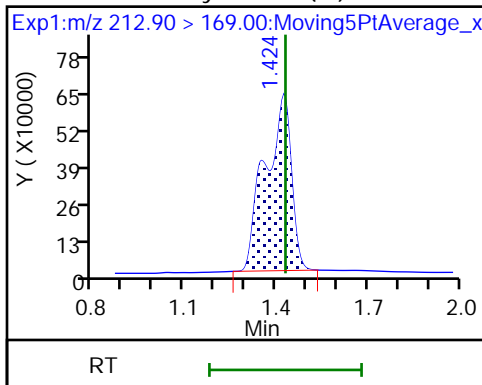
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid (M)

D 1 13C4 PFBA

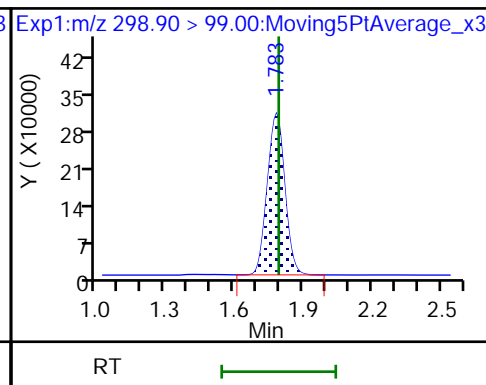
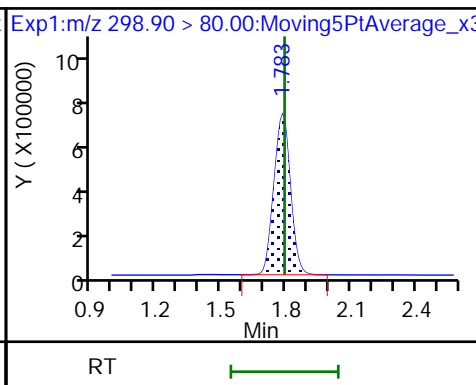
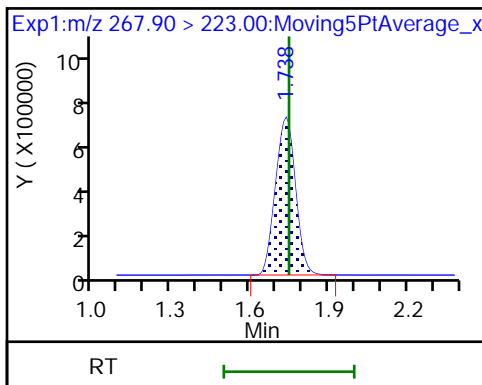
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

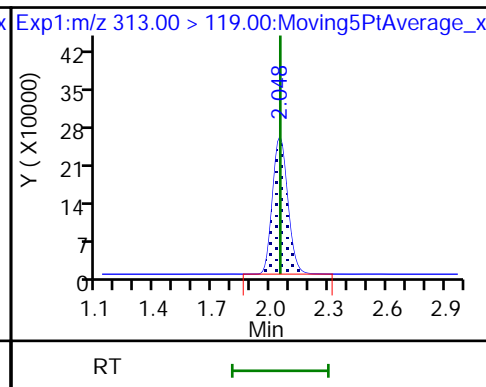
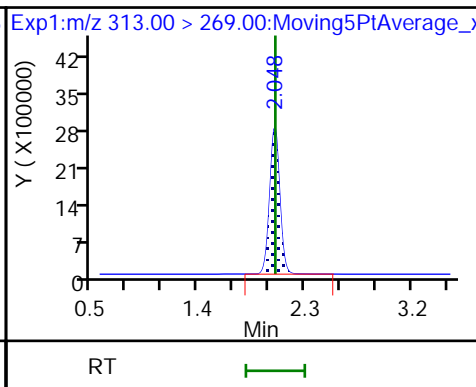
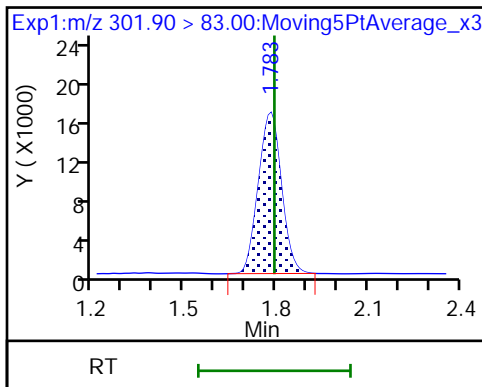
5 Perfluorobutanesulfonic acid



D 47 13C3-PFBS

6 Perfluorohexanoic acid

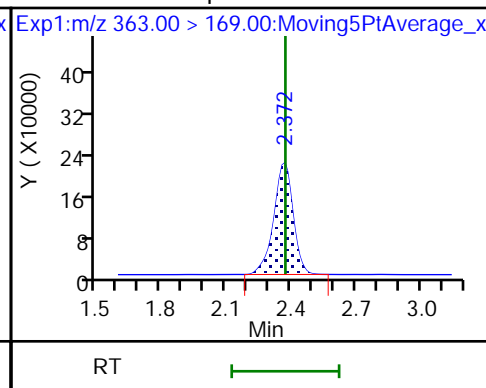
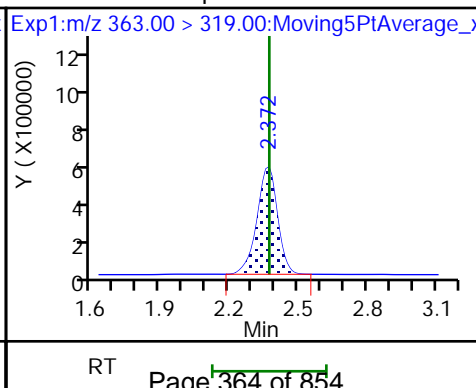
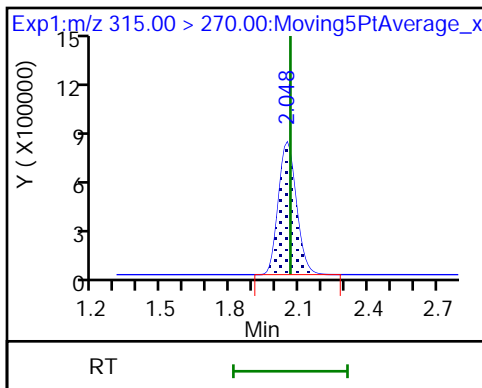
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

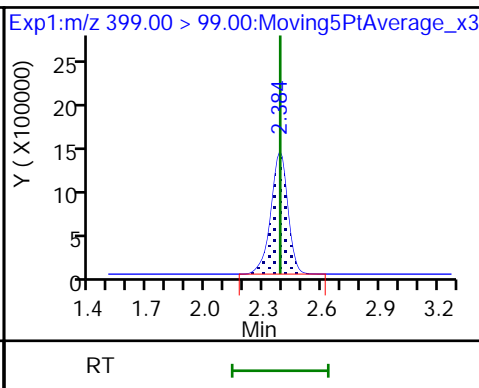
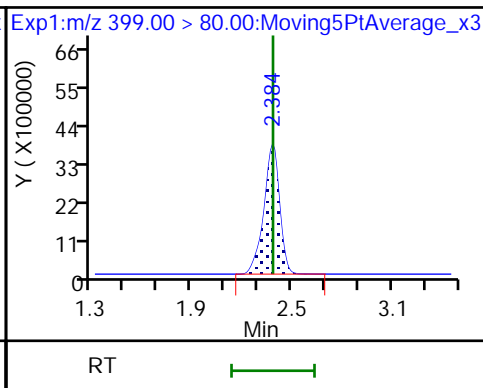
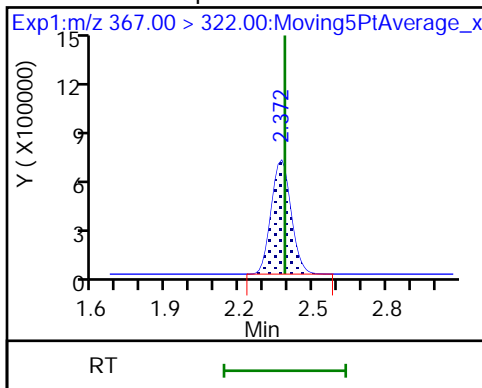
10 Perfluoroheptanoic acid



D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

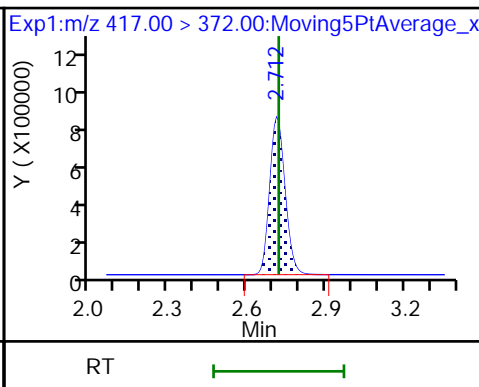
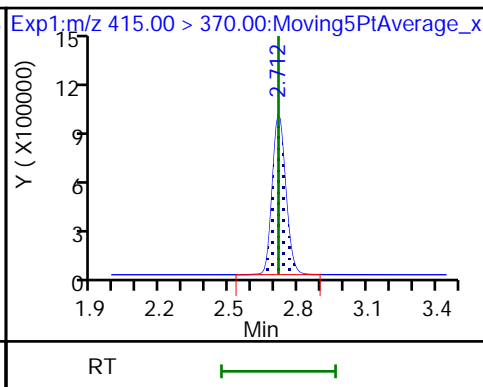
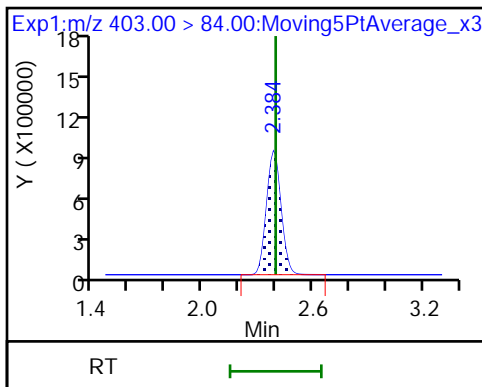
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

* 62 13C2-PFOA

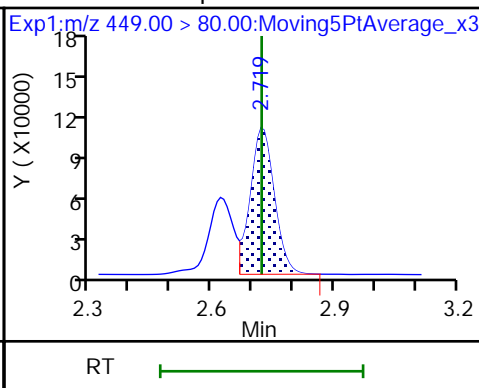
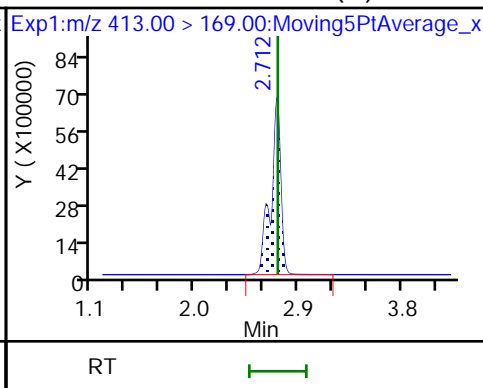
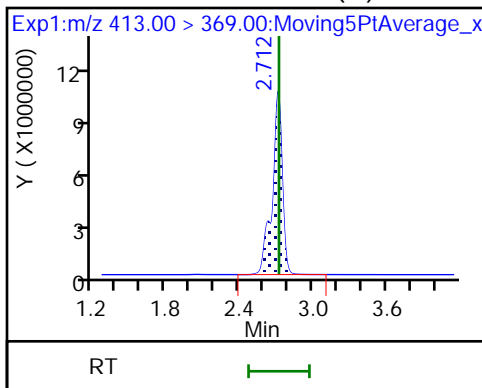
D 14 13C4 PFOA



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

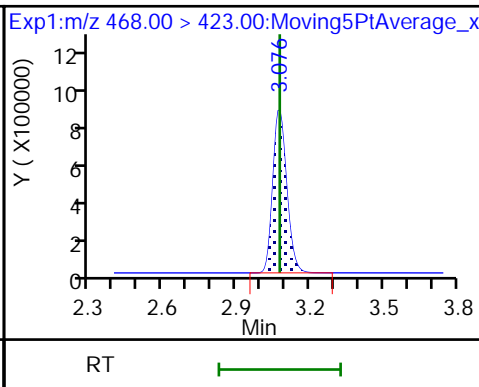
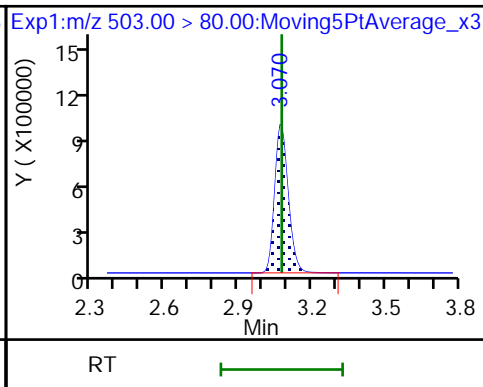
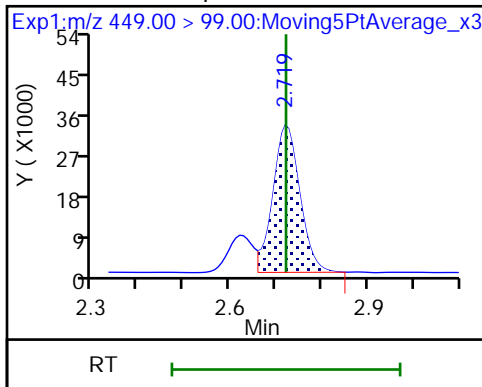
16 Perfluoroheptanesulfonic acid

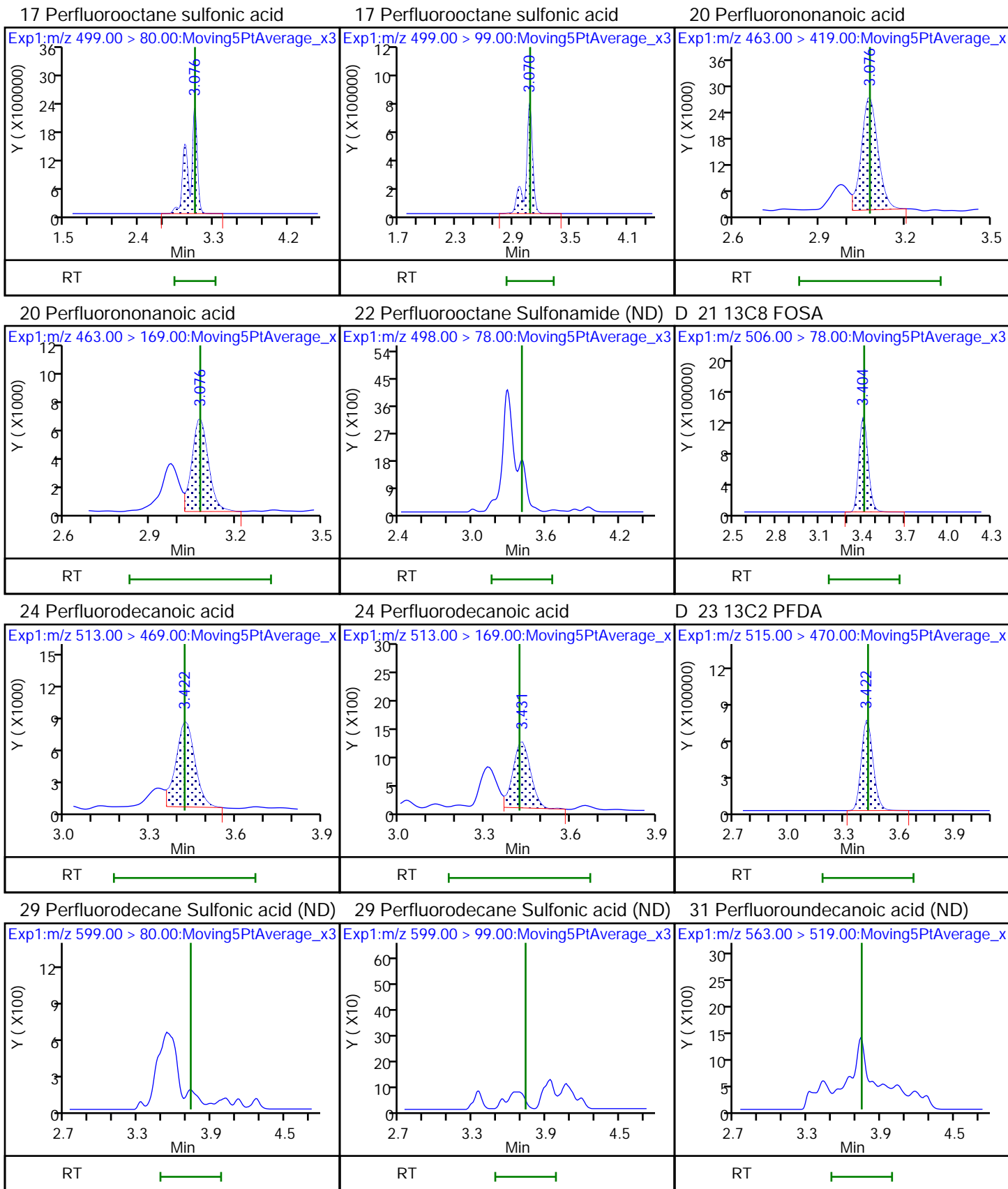


16 Perfluoroheptanesulfonic acid

D 18 13C4 PFOS

D 19 13C5 PFNA

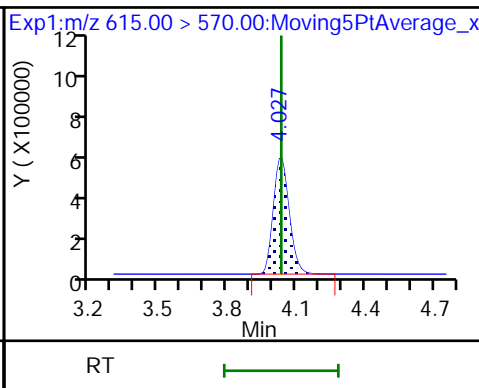
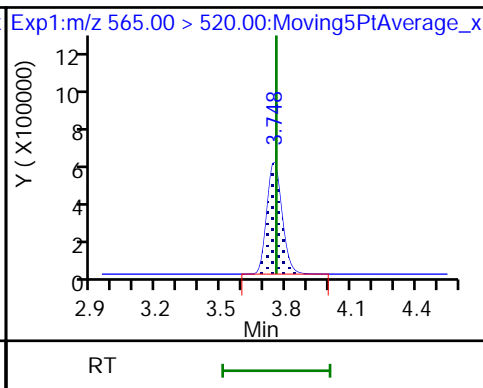
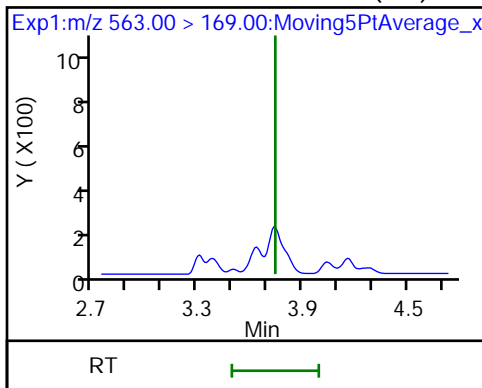




31 Perfluoroundecanoic acid (ND)

D 30 13C2 PFUnA

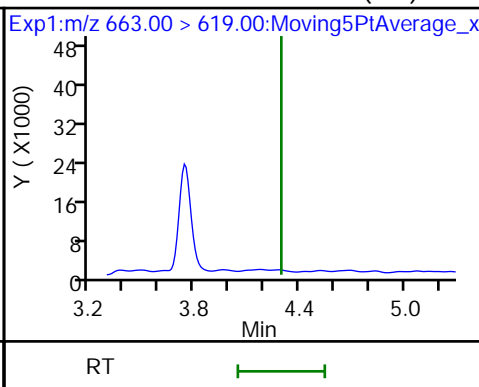
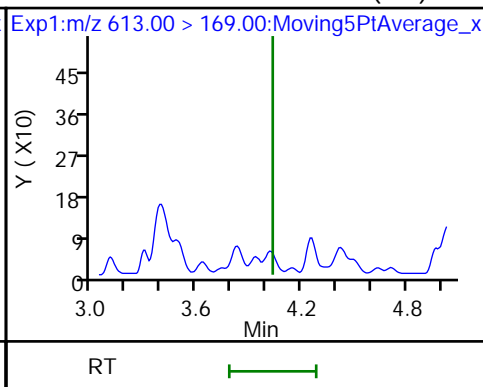
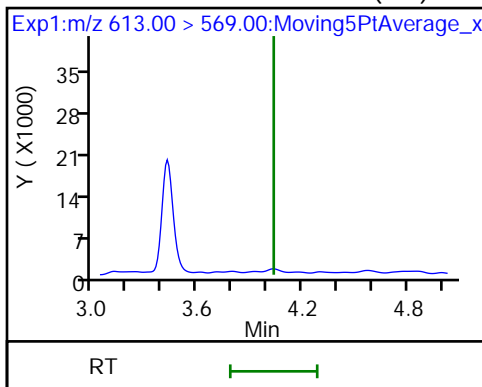
D 36 13C2 PFDoA



37 Perfluorododecanoic acid (ND)

37 Perfluorododecanoic acid (ND)

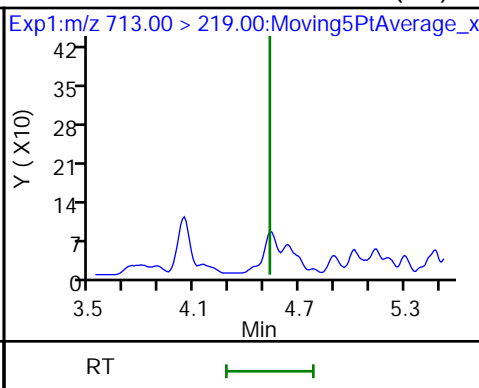
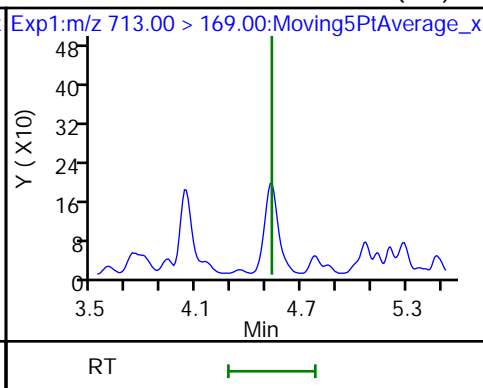
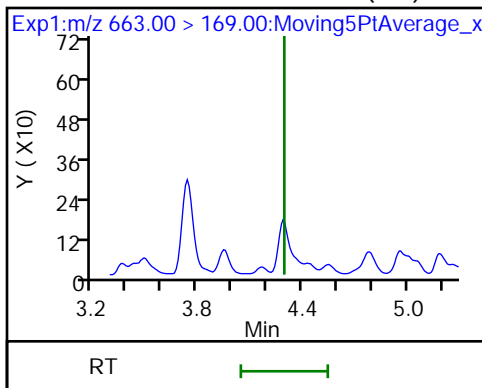
41 Perfluorotridecanoic acid (ND)



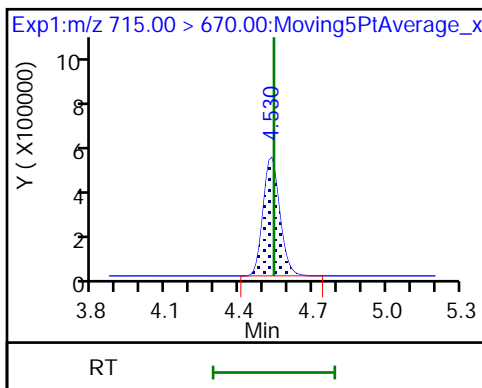
41 Perfluorotridecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



TestAmerica Sacramento

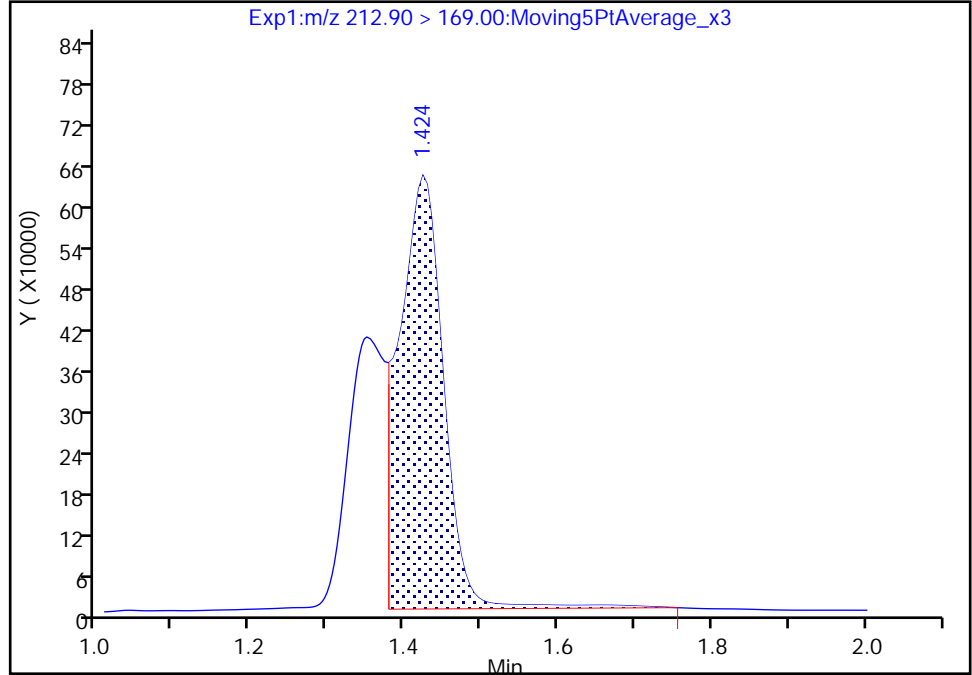
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Injection Date: 18-Jul-2018 23:13:02 Instrument ID: A8_N
Lims ID: 320-40917-A-1-A Lab Sample ID: 320-40917-1
Client ID: TP-PFC-031-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

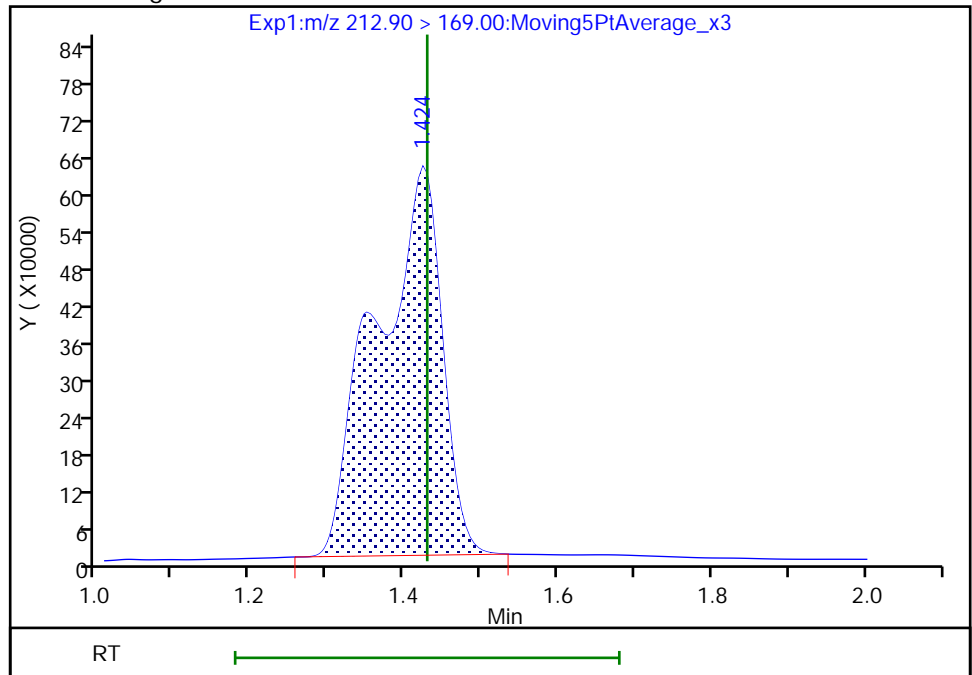
RT: 1.42
Area: 2490739
Amount: 1.248586
Amount Units: ng/ml

Processing Integration Results



RT: 1.42
Area: 3715480
Amount: 1.862539
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 14:18:52
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
Page 368 of 854

TestAmerica Sacramento

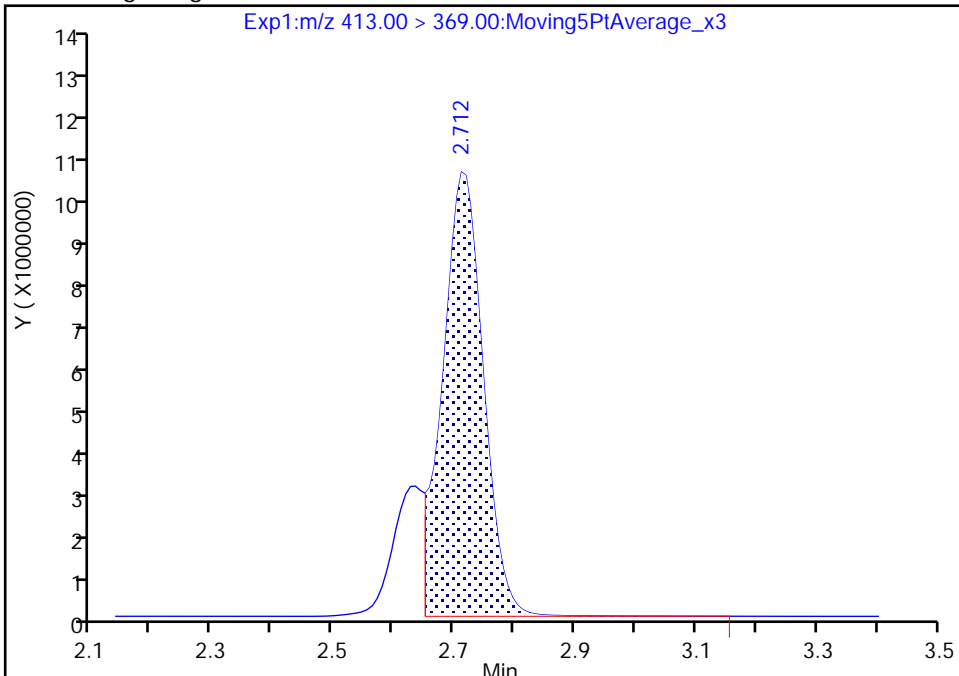
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Injection Date: 18-Jul-2018 23:13:02 Instrument ID: A8_N
Lims ID: 320-40917-A-1-A Lab Sample ID: 320-40917-1
Client ID: TP-PFC-031-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

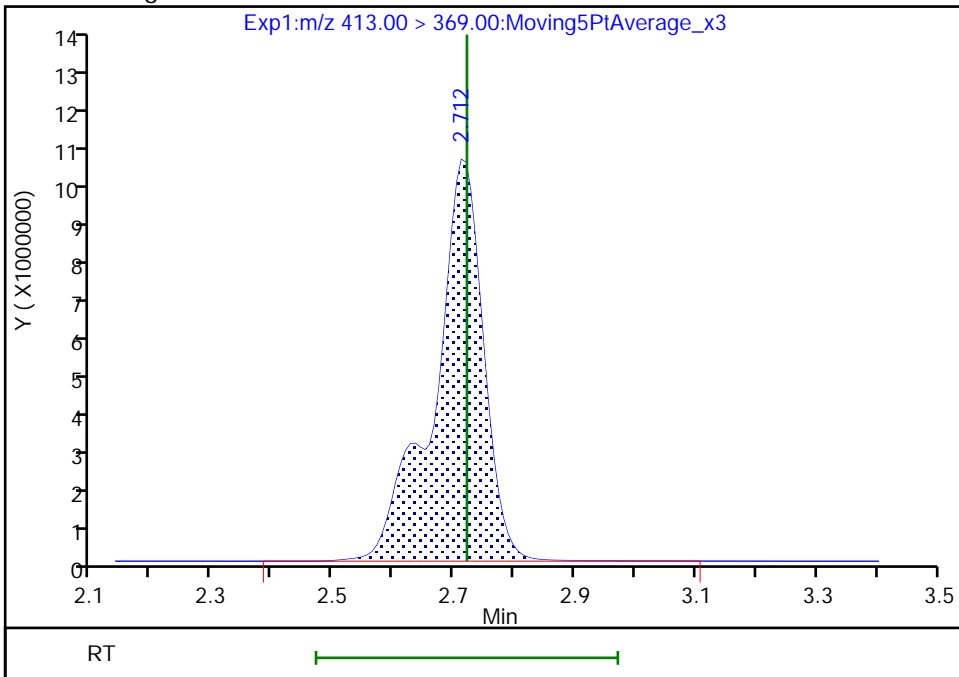
RT: 2.71
Area: 46407732
Amount: 28.972251
Amount Units: ng/ml

Processing Integration Results



RT: 2.71
Area: 56676987
Amount: 35.383326
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

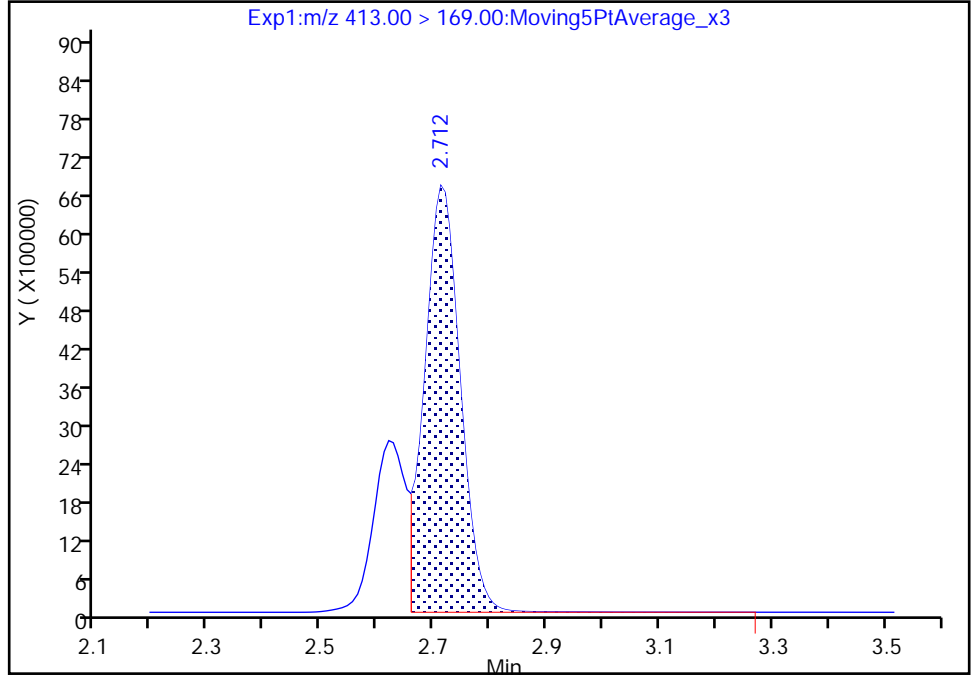
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Injection Date: 18-Jul-2018 23:13:02 Instrument ID: A8_N
Lims ID: 320-40917-A-1-A Lab Sample ID: 320-40917-1
Client ID: TP-PFC-031-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 48 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

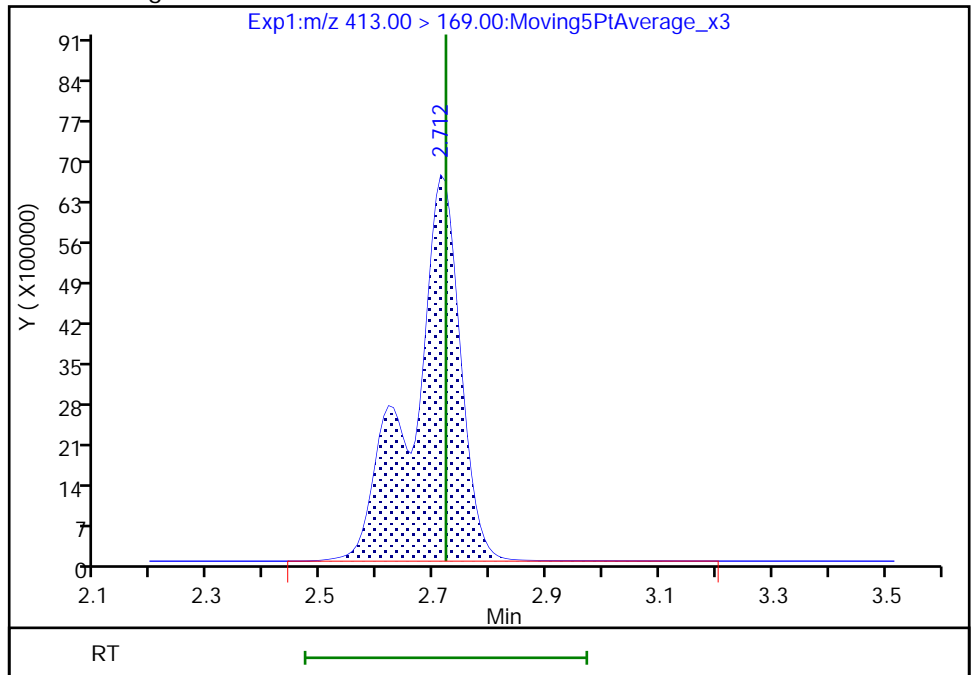
RT: 2.71
Area: 29033453
Amount: 28.972251
Amount Units: ng/ml

Processing Integration Results



RT: 2.71
Area: 39775997
Amount: 35.383326
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 14:19:07

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPI DL Lab Sample ID: 320-40917-1 DL
 Matrix: Water Lab File ID: 2018.07.19LLC_065.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:15
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 298.1(mL) Date Analyzed: 07/20/2018 01:12
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 10
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 235047 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	64	D	17	13	4.9
2706-90-3	Perfluoropentanoic acid (PFPeA)	170	D M	17	8.4	3.6
307-24-4	Perfluorohexanoic acid (PFHxA)	340	D	17	8.4	3.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	64	D	17	13	5.1
335-67-1	Perfluorooctanoic acid (PFOA)	1600	D M	17	13	4.5
375-95-1	Perfluorononanoic acid (PFNA)	13	U M	17	13	4.4
335-76-2	Perfluorodecanoic acid (PFDA)	8.4	U	17	8.4	4.0
2058-94-8	Perfluoroundecanoic acid (PFUnA)	13	U	17	13	6.0
307-55-1	Perfluorododecanoic acid (PFDoA)	13	U	17	13	4.4
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	25	U	34	25	6.4
376-06-7	Perfluorotetradecanoic acid (PFTeA)	25	U	34	25	7.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	55	D	17	8.4	3.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	350	D	17	8.4	3.2
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	7.3	J D	17	8.4	3.1
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	300	D	34	25	9.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	13	U	17	13	4.7
754-91-6	Perfluorooctane Sulfonamide (FOSA)	25	U	34	25	11

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPI DL Lab Sample ID: 320-40917-1 DL
 Matrix: Water Lab File ID: 2018.07.19LLC_065.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:15
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 298.1 (mL) Date Analyzed: 07/20/2018 01:12
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 10
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 235047 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	84		50-150
STL00992	13C4 PFBA	94		50-150
STL01893	13C5 PFPeA	90		50-150
STL00993	13C2 PFHxA	85		50-150
STL01892	13C4-PFHpA	93		50-150
STL00990	13C4 PFOA	87		50-150
STL00995	13C5 PFNA	92		50-150
STL00996	13C2 PFDA	103		50-150
STL00997	13C2 PFUnA	91		50-150
STL00998	13C2 PFDoA	84		50-150
STL00994	18O2 PFHxS	91		50-150
STL02116	13C2-PFTeDA	70		50-150
STL00991	13C4 PFOS	86		50-150
STL02337	13C3-PFBS	87		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61321.b\2018.07.19LLC_065.d
 Lims ID: 320-40917-A-1-A
 Client ID: TP-PFC-031-TPI
 Sample Type: Client
 Inject. Date: 20-Jul-2018 01:12:35 ALS Bottle#: 43 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 10.0000
 Sample Info: 320-40917-a-1-a 10X (233164)
 Misc. Info.: Plate: 1 Rack: 4
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61321.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 20-Jul-2018 16:46:30 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK011

First Level Reviewer: mongkols Date: 20-Jul-2018 16:46:30

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	1.445	1.445	0.0	0.528	528209	0.2361	94.5	6578	
2 Perfluorobutyric acid	212.90 > 169.00	1.445	1.446	-0.001	1.000	403296	0.1901		163	
D 3 13C5-PFPeA	267.90 > 223.00	1.752	1.762	-0.010	0.641	349024	0.2241	89.6	5870	
4 Perfluoropentanoic acid	262.90 > 219.00	1.752	1.765	-0.013	1.000	890462	0.5201		357	M
D 47 13C3-PFBS	301.90 > 83.00	1.798	1.807	-0.009	0.658	8110	0.2015	86.6	46.5	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.807	1.810	-0.003	1.005	441094	0.1634		2960	
	298.90 > 99.00	1.798	1.810	-0.012	1.000	191534	2.30(1.25-3.74)		1966	
6 Perfluorohexanoic acid	313.00 > 269.00	2.056	2.059	-0.003	1.000	1701215	1.02		4930	
	313.00 > 119.00	2.056	2.059	-0.003	1.000	131760	12.91(5.03-15.10)		1981	
D 7 13C2 PFHxA	315.00 > 270.00	2.056	2.068	-0.012	0.752	384925	0.2115	84.6	8600	
D 9 13C4-PFHpA	367.00 > 322.00	2.381	2.381	0.0	0.871	407373	0.2313	92.5	12124	
10 Perfluoroheptanoic acid	363.00 > 319.00	2.381	2.384	-0.003	1.000	355508	0.1904		792	
	363.00 > 169.00	2.381	2.384	-0.003	1.000	136406	2.61(1.13-3.40)		1470	
D 11 18O2 PFHxS	403.00 > 84.00	2.403	2.392	0.011	0.879	510277	0.2163	91.5	18587	
8 Perfluorohexanesulfonic acid	399.00 > 80.00	2.392	2.395	-0.003	0.995	2595842	1.05		16003	
	399.00 > 99.00	2.392	2.395	-0.003	0.995	859569	3.02(1.50-4.49)		6761	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.733	2.726	0.007	1.000	369939	0.2174		86.9	12987	
* 62 13C2-PFOA										
415.00 > 370.00	2.733	2.727	0.006		446861	0.2500			12316	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.733	2.727	0.006	1.000	8672695	4.76			4811	M
413.00 > 169.00	2.733	2.727	0.006	1.000	5318195		1.63(0.84-2.52)		21798	M
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.741	2.735	0.006	0.887	42650	0.0219			142	
449.00 > 99.00	2.741	2.735	0.006	0.887	12162		3.51(1.94-5.82)		142	
D 18 13C4 PFOS										
503.00 > 80.00	3.090	3.076	0.014	1.130	346998	0.2051		85.8	8844	
D 19 13C5 PFNA										
468.00 > 423.00	3.090	3.083	0.007	1.130	330854	0.2300		92.0	9234	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.090	3.092	-0.002	1.000	1523301	0.8864			14051	
499.00 > 99.00	3.090	3.092	-0.002	1.000	350529		4.35(2.31-6.93)		7412	
D 21 13C8 FOSA										
506.00 > 78.00	3.427	3.410	0.017	1.254	527242	0.2100		84.0	10746	
D 23 13C2 PFDA										
515.00 > 470.00	3.445	3.429	0.016	1.260	332577	0.2564		103	5325	
D 30 13C2 PFUnA										
565.00 > 520.00	3.773	3.753	0.020	1.380	257859	0.2274		90.9	13488	
D 36 13C2 PFDoA										
615.00 > 570.00	4.061	4.051	0.010	1.486	242759	0.2103		84.1	3019	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.552	4.544	0.008	1.665	192437	0.1739		69.6	1727	

QC Flag Legend

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61321.b\2018.07.19LLC_065.d

Injection Date: 20-Jul-2018 01:12:35

Instrument ID: A8_N

Lims ID: 320-40917-A-1-A

Lab Sample ID: 320-40917-1

Client ID: TP-PFC-031-TPI

Operator ID: SACINSTLCMS01

ALS Bottle#: 43 Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 10.0000

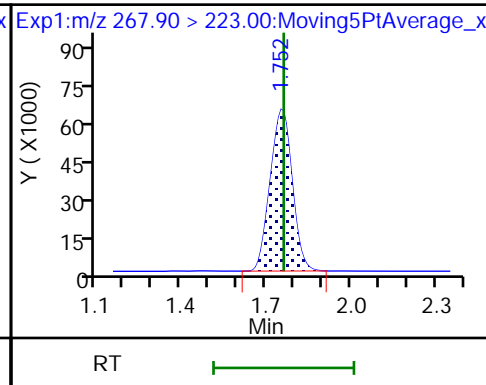
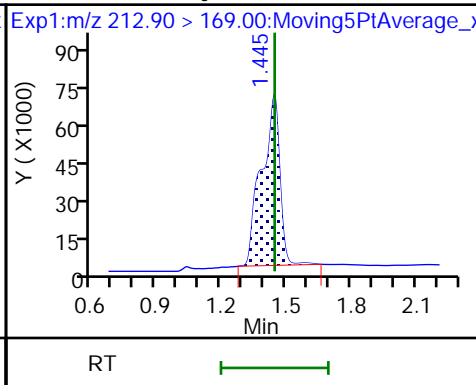
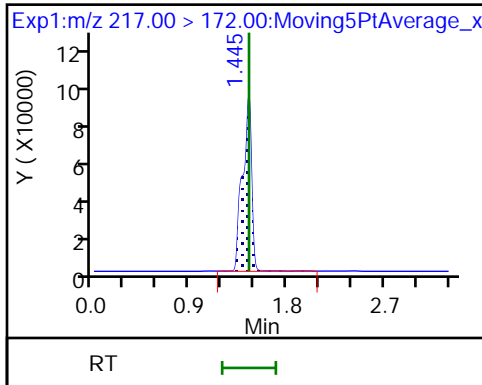
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

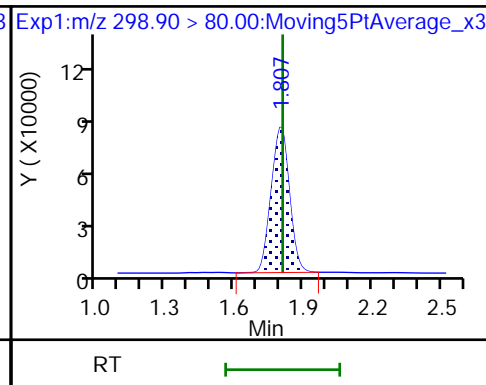
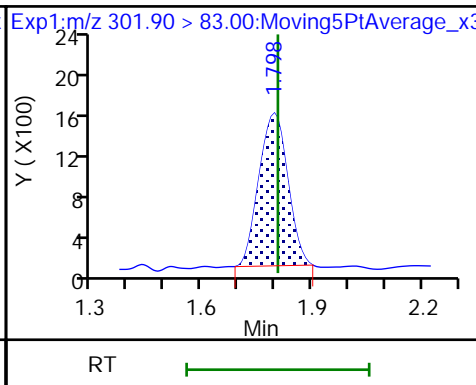
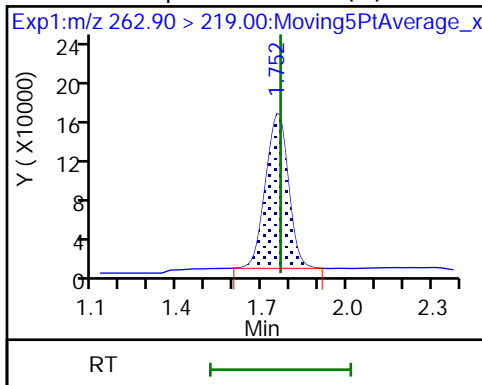
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (M)

D 47 13C3-PFBS

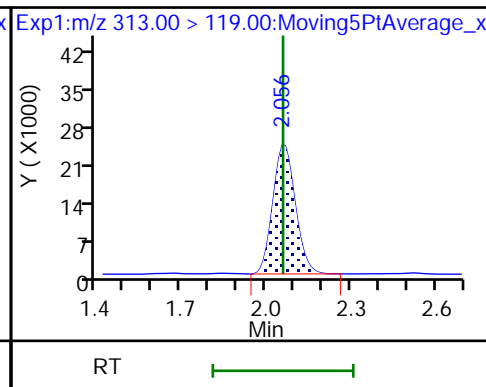
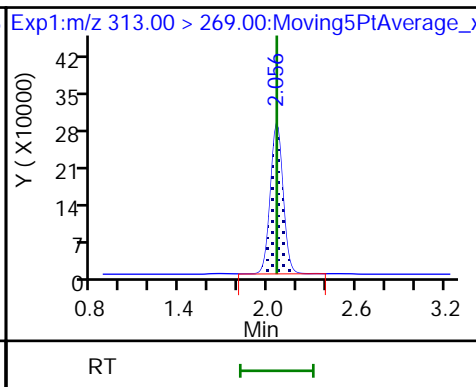
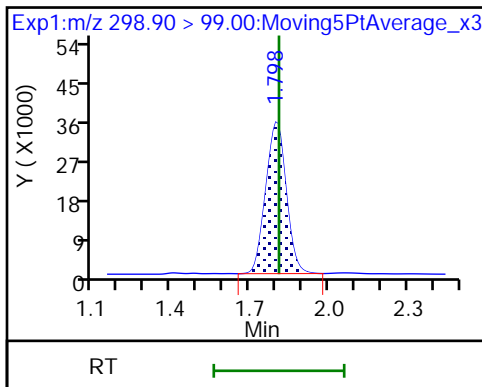
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

6 Perfluorohexanoic acid

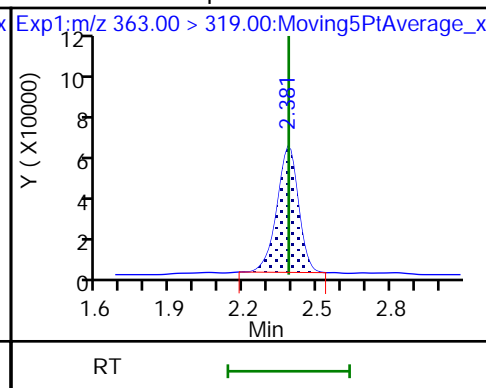
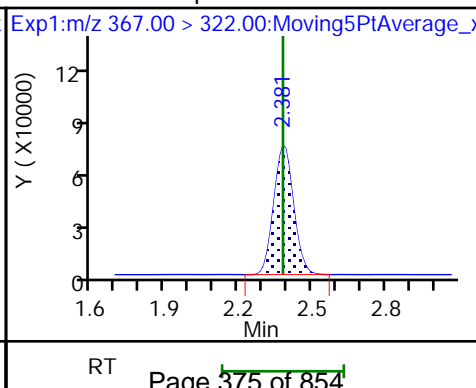
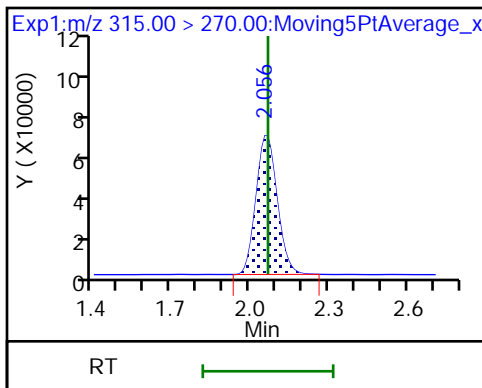
6 Perfluorohexanoic acid

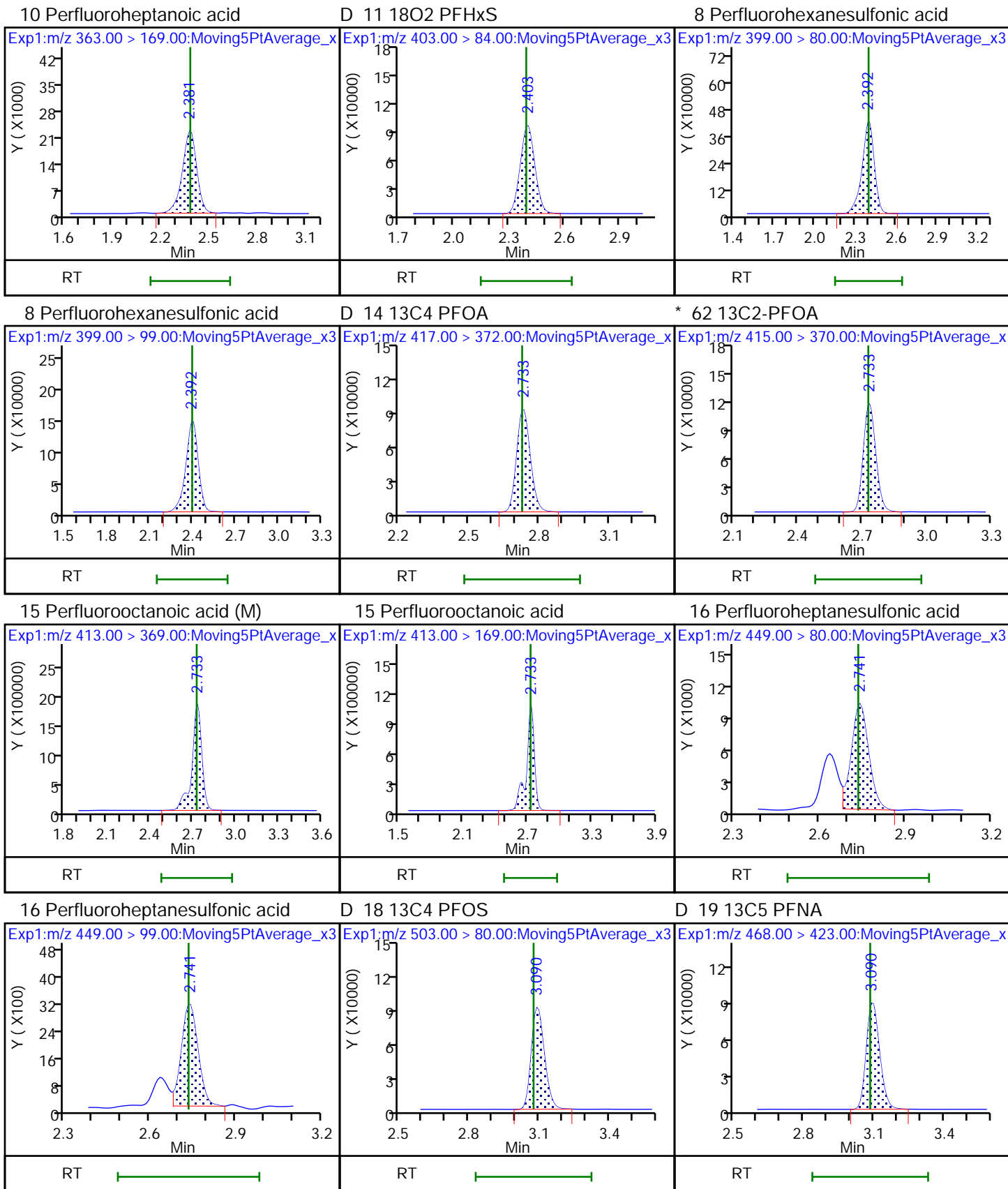


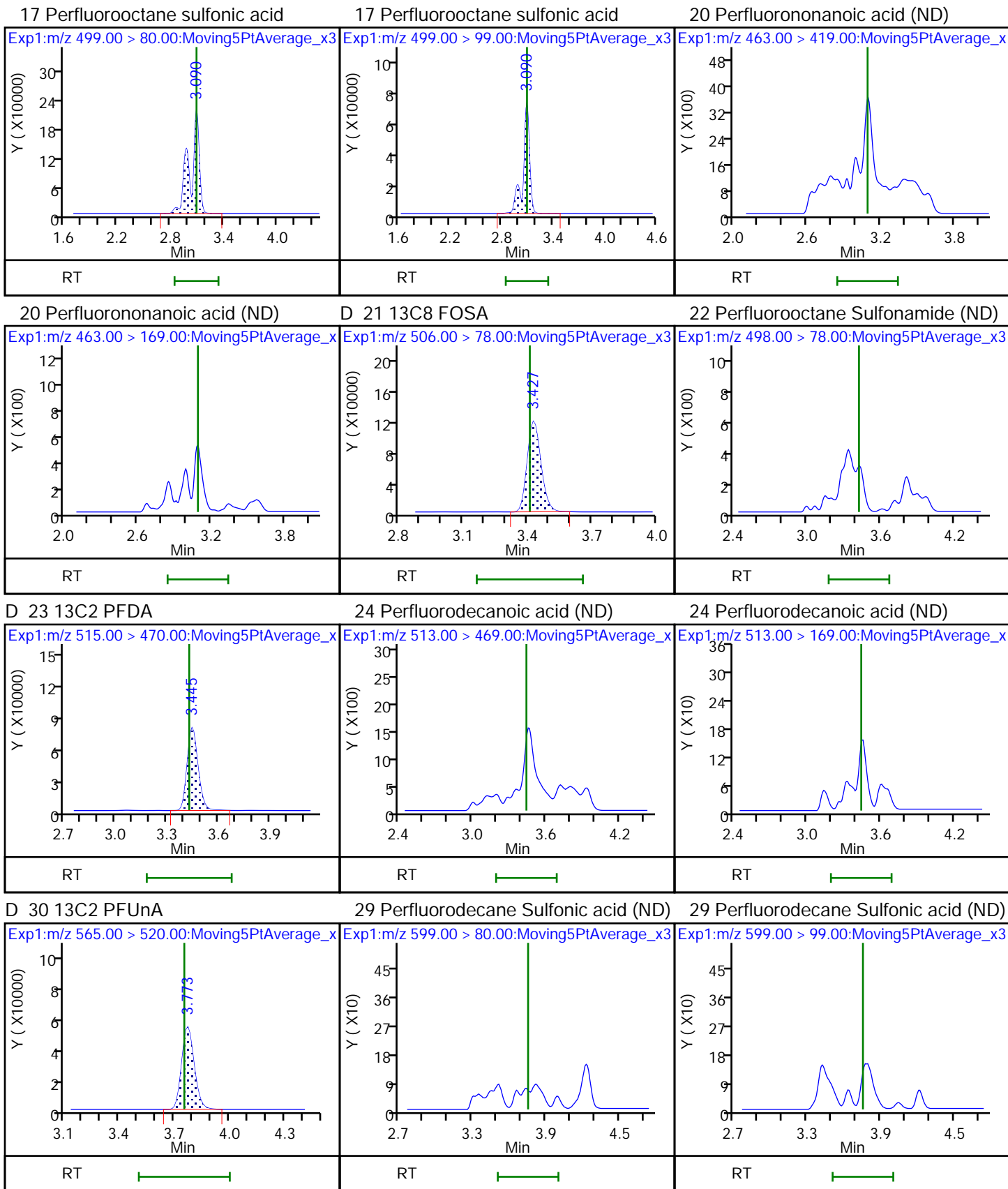
D 7 13C2 PFHxA

D 9 13C4-PFHpA

10 Perfluoroheptanoic acid



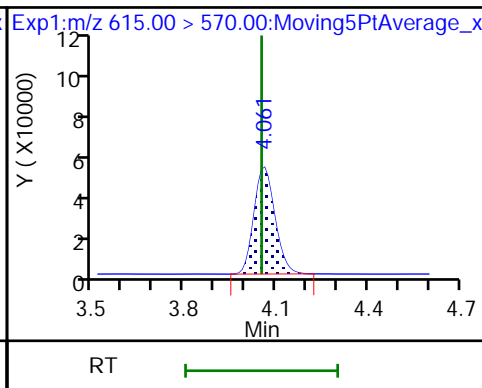
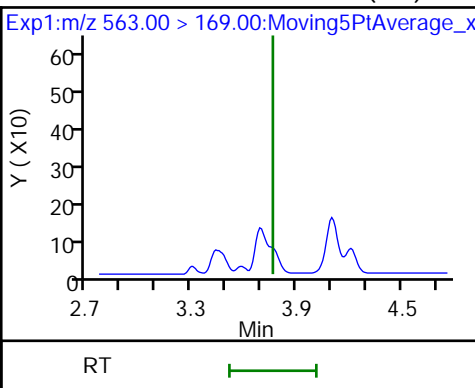
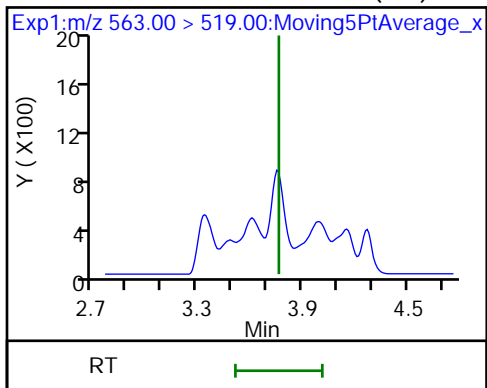




31 Perfluoroundecanoic acid (ND)

31 Perfluoroundecanoic acid (ND)

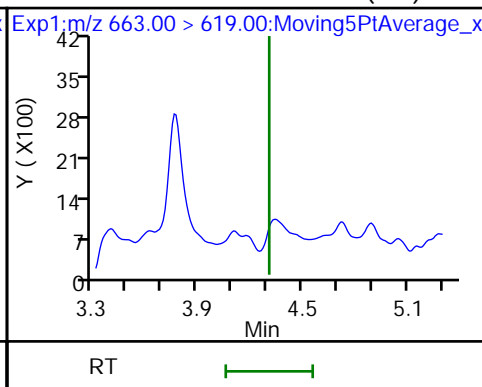
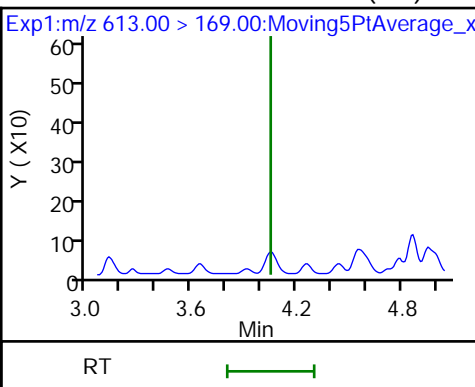
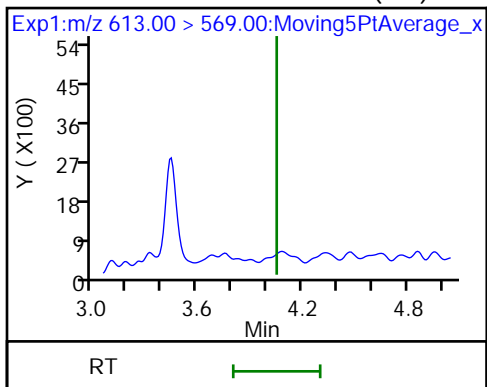
D 36 13C2 PFDaA



37 Perfluorododecanoic acid (ND)

37 Perfluorododecanoic acid (ND)

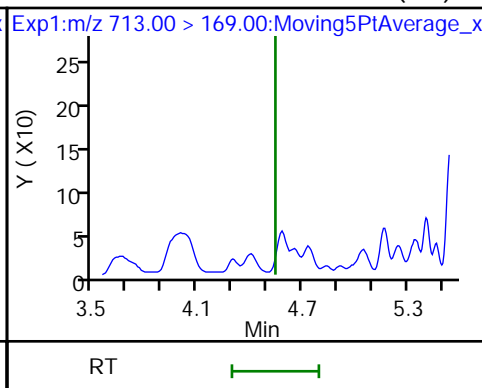
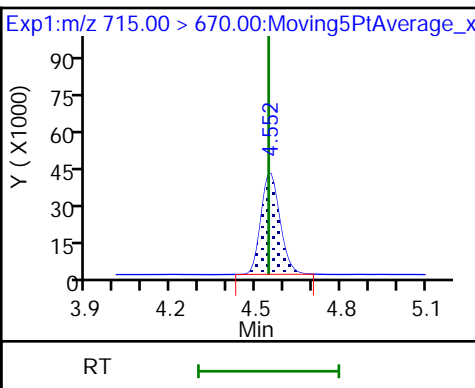
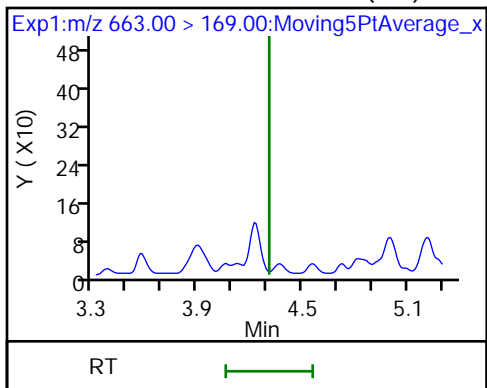
41 Perfluorotridecanoic acid (ND)



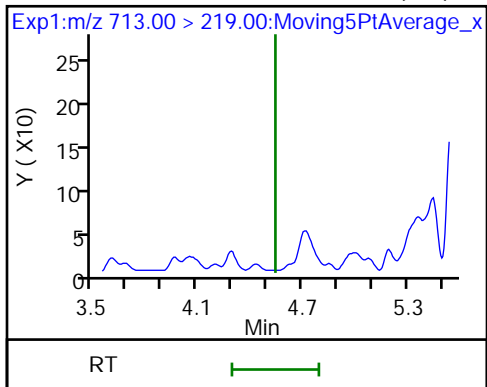
41 Perfluorotridecanoic acid (ND)

D 43 13C2-PFTeDA

42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)



TestAmerica Sacramento

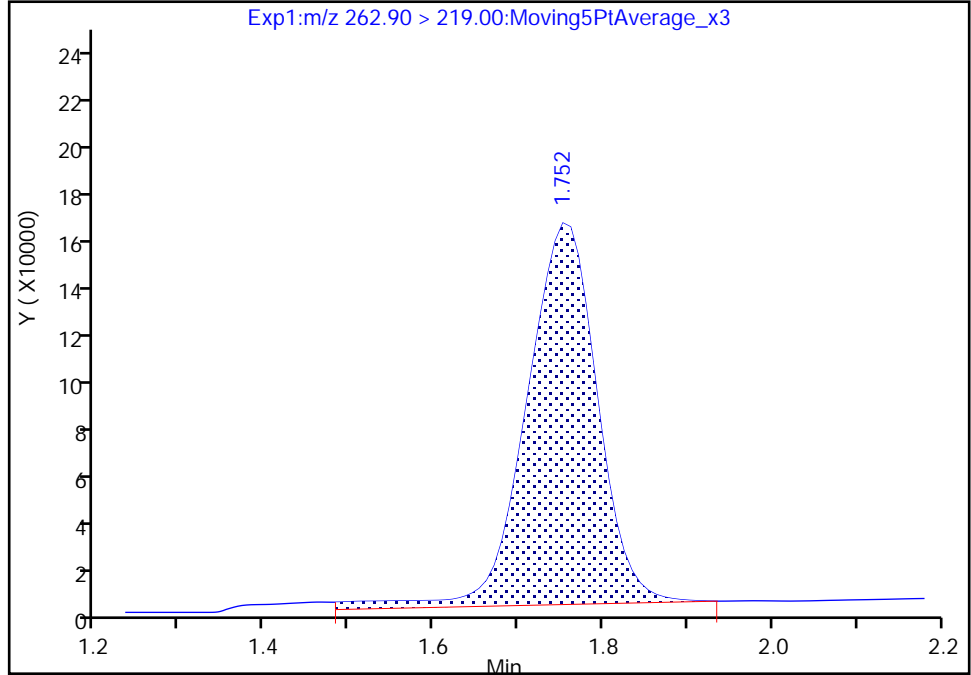
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61321.b\2018.07.19LLC_065.d
Injection Date: 20-Jul-2018 01:12:35 Instrument ID: A8_N
Lims ID: 320-40917-A-1-A Lab Sample ID: 320-40917-1
Client ID: TP-PFC-031-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 43 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

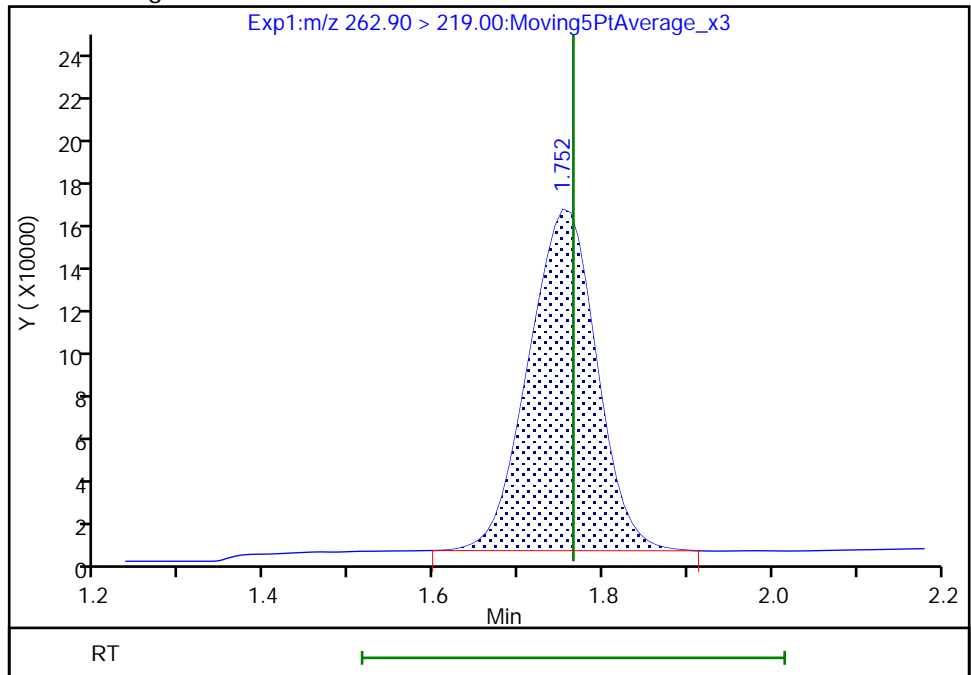
RT: 1.75
Area: 942620
Amount: 0.550566
Amount Units: ng/ml

Processing Integration Results



RT: 1.75
Area: 890462
Amount: 0.520102
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

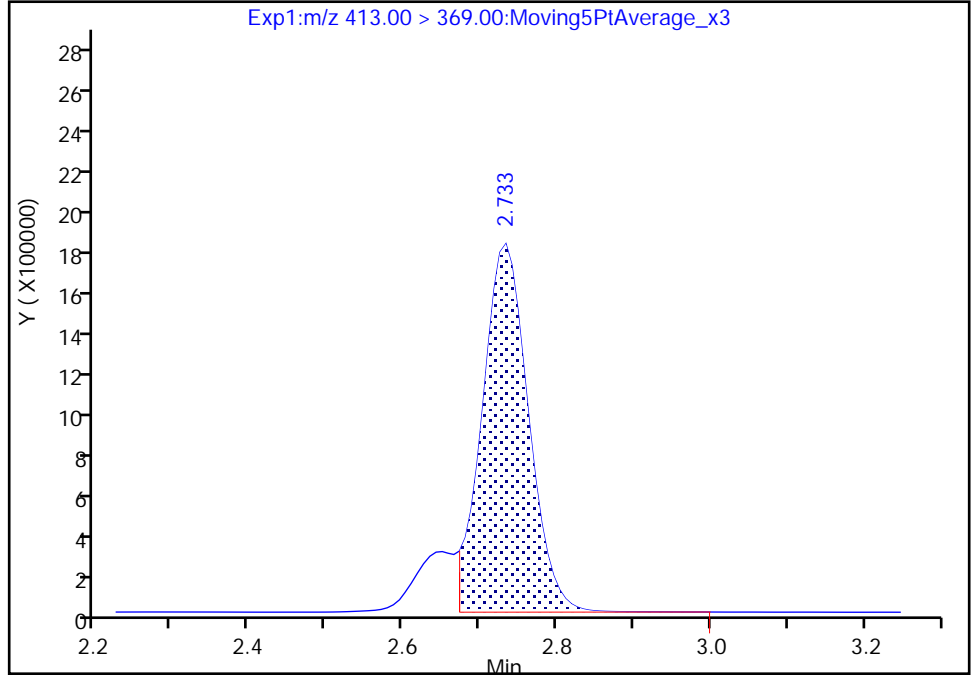
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61321.b\2018.07.19LLC_065.d
Injection Date: 20-Jul-2018 01:12:35 Instrument ID: A8_N
Lims ID: 320-40917-A-1-A Lab Sample ID: 320-40917-1
Client ID: TP-PFC-031-TPI
Operator ID: SACINSTLCMS01 ALS Bottle#: 43 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

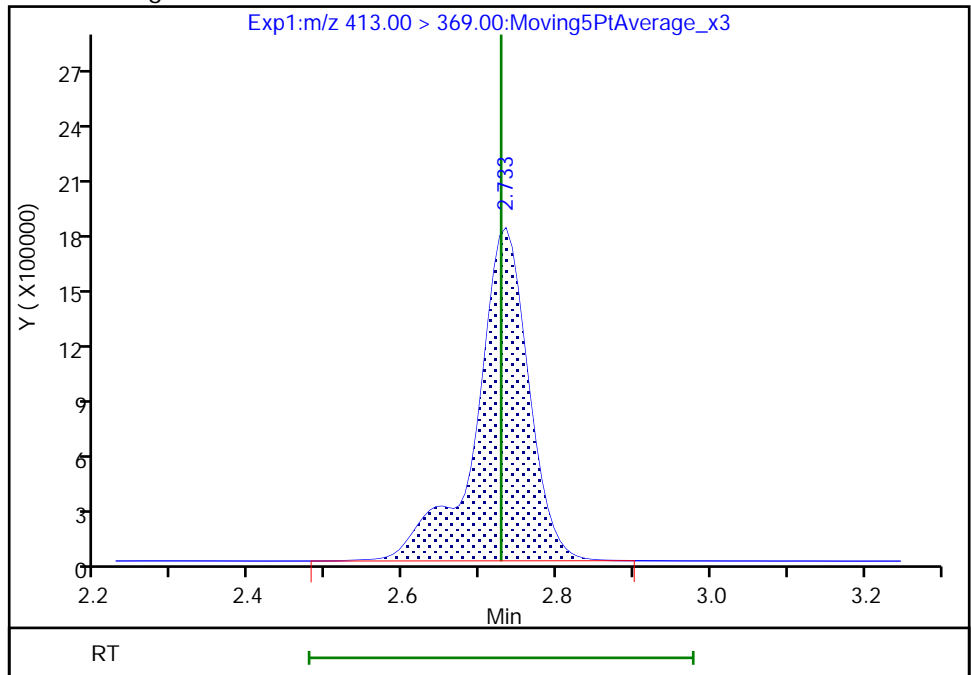
RT: 2.73
Area: 7555544
Amount: 4.147649
Amount Units: ng/ml

Processing Integration Results



RT: 2.73
Area: 8672695
Amount: 4.760914
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 20-Jul-2018 16:46:19
Audit Action: Manually Integrated

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-MID CARBON Lab Sample ID: 320-40917-2
 Matrix: Water Lab File ID: 2018.07.18LLB_065.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:20
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 295.7 (mL) Date Analyzed: 07/18/2018 23:20
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	110	M	1.7	1.3	0.50
2706-90-3	Perfluoropentanoic acid (PFPeA)	260		1.7	0.85	0.36
307-24-4	Perfluorohexanoic acid (PFHxA)	200		1.7	0.85	0.40
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.1		1.7	1.3	0.52
335-67-1	Perfluorooctanoic acid (PFOA)	29	M	1.7	1.3	0.46
375-95-1	Perfluorononanoic acid (PFNA)	1.3	U	1.7	1.3	0.44
335-76-2	Perfluorodecanoic acid (PFDA)	0.85	U	1.7	0.85	0.41
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.3	U M	1.7	1.3	0.61
307-55-1	Perfluorododecanoic acid (PFDoA)	1.3	U	1.7	1.3	0.44
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.5	U	3.4	2.5	0.64
376-06-7	Perfluorotetradecanoic acid (PFTeA)	2.5	U	3.4	2.5	0.70
375-73-5	Perfluorobutanesulfonic acid (PFBS)	7.1		1.7	0.85	0.39
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.1		1.7	0.85	0.32
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.85	U	1.7	0.85	0.31
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.5	U	3.4	2.5	0.93
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.3	U	1.7	1.3	0.47
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.5	U	3.4	2.5	1.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-MID CARBON Lab Sample ID: 320-40917-2
 Matrix: Water Lab File ID: 2018.07.18LLB_065.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:20
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 295.7 (mL) Date Analyzed: 07/18/2018 23:20
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	85		50-150
STL00992	13C4 PFBA	89		50-150
STL01893	13C5 PFPeA	80		50-150
STL00993	13C2 PFHxA	88		50-150
STL01892	13C4-PFHpA	101		50-150
STL00990	13C4 PFOA	94		50-150
STL00995	13C5 PFNA	89		50-150
STL00996	13C2 PFDA	91		50-150
STL00997	13C2 PFUnA	95		50-150
STL00998	13C2 PFDoA	87		50-150
STL00994	18O2 PFHxS	93		50-150
STL02116	13C2-PFTeDA	79		50-150
STL00991	13C4 PFOS	87		50-150
STL02337	13C3-PFBS	80		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_065.d
 Lims ID: 320-40917-A-2-A
 Client ID: TP-PFC-031-MID CARBON
 Sample Type: Client
 Inject. Date: 18-Jul-2018 23:20:50 ALS Bottle#: 49 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-40917-a-2-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 14:24:57 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols Date: 19-Jul-2018 14:24:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.430	0.005	1.004	6848867	3.22			2223	M
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.436	-0.006	0.526	5398222	2.22		88.8	44446	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.747	1.748	-0.001	1.000	12400638	7.55			5783	
D 3 13C5-PFPeA										
267.90 > 223.00	1.747	1.748	-0.001	0.642	3386873	2.00		80.2	48592	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.792	1.793	-0.001	1.000	544005	0.2102			5222	
298.90 > 99.00	1.792	1.793	-0.001	1.000	250644		2.17(1.25-3.74)		3740	
D 47 13C3-PFBS										
301.90 > 83.00	1.792	1.793	-0.001	0.659	78670	1.85		79.7	593	
6 Perfluorohexanoic acid										R
313.00 > 269.00	2.049	2.049	-0.001	0.995	9718267	5.90			20519	R
313.00 > 119.00	2.060	2.049	0.011	1.000	630835		15.41(5.03-15.10)		19224	
D 7 13C2 PFHxA										
315.00 > 270.00	2.060	2.061	-0.001	0.757	4003442	2.20		87.8	81334	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.372	2.373	-0.001	0.995	357341	0.1818			623	
363.00 > 169.00	2.372	2.373	-0.001	0.995	148531		2.41(1.13-3.40)		1186	
D 9 13C4-PFHpA										
367.00 > 322.00	2.385	2.385	-0.001	0.877	4249464	2.53		101	69419	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.385	2.385	-0.001	0.995	156225	0.0616			1017	
399.00 > 99.00	2.385	2.385	-0.001	0.995	52976		2.95(1.50-4.49)		440	
D 11 18O2 PFHxS										
403.00 > 84.00	2.396	2.396	0.0	0.881	5226921	2.20		92.9	97451	

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	2.720	2.714	0.006	4481355	2.50		63139	
D 14 13C4 PFOA	417.00	> 372.00	2.720	2.720	0.0	1.000	4043163	2.36	94.4	38002
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.720	2.721	-0.001	1.000	1701044	0.8540		605	M	
413.00 > 169.00	2.628	2.721	-0.093	0.966	1140541		1.49(0.84-2.52)	2941	M	
D 18 13C4 PFOS	503.00	> 80.00	3.077	3.076	0.001	1.131	3620525	2.07	86.8	45398
D 19 13C5 PFNA	468.00	> 423.00	3.077	3.076	0.001	1.131	3408223	2.22	89.0	35667
D 21 13C8 FOSA	506.00	> 78.00	3.405	3.412	-0.007	1.252	5332931	2.12	84.7	50170
D 23 13C2 PFDA	515.00	> 470.00	3.423	3.430	-0.007	1.258	3045256	2.26	90.6	29917
D 30 13C2 PFUnA	565.00	> 520.00	3.748	3.754	-0.006	1.378	2665209	2.37	94.9	46398
D 36 13C2 PFDoA	615.00	> 570.00	4.037	4.034	0.003	1.484	2533969	2.18	87.0	19014
D 43 13C2-PFTeDA	715.00	> 670.00	4.530	4.540	-0.010	1.665	2390057	1.98	79.1	12443

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_065.d

Injection Date: 18-Jul-2018 23:20:50

Instrument ID: A8_N

Lims ID: 320-40917-A-2-A

Lab Sample ID: 320-40917-2

Client ID: TP-PFC-031-MID CARBON

Operator ID: SACINSTLCMS01

ALS Bottle#: 49

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

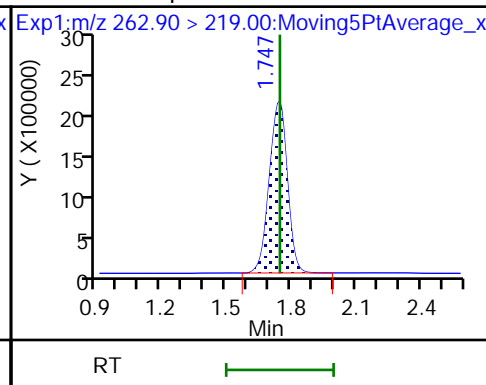
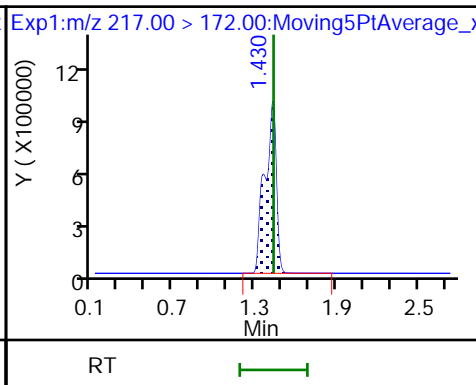
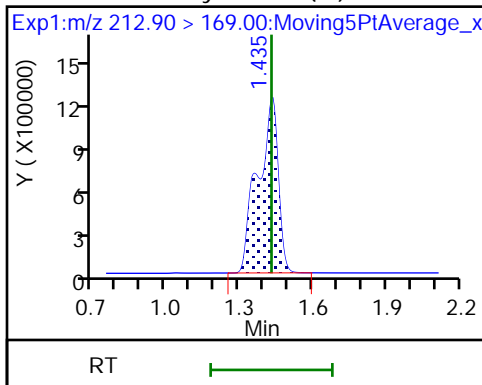
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid (M)

D 1 13C4 PFBA

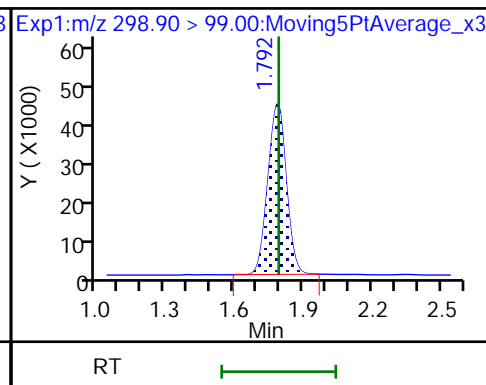
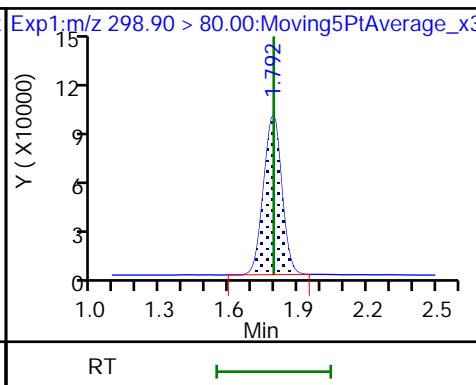
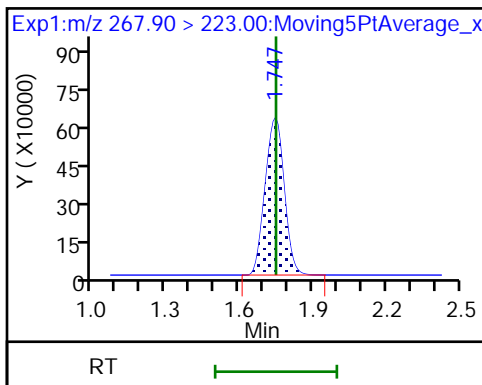
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

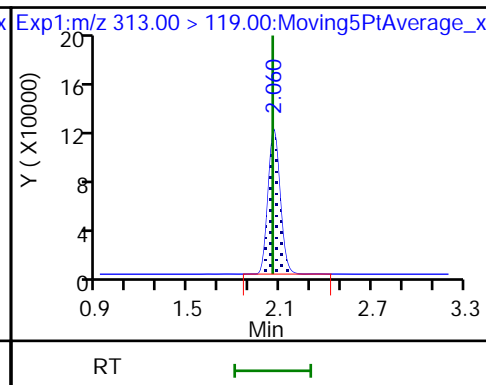
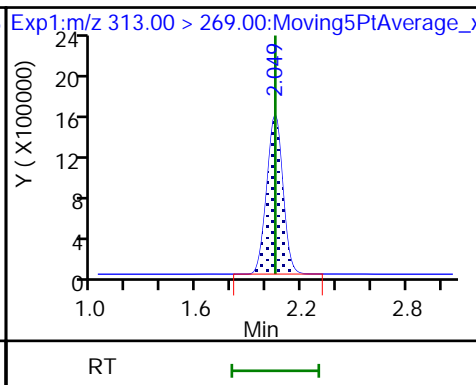
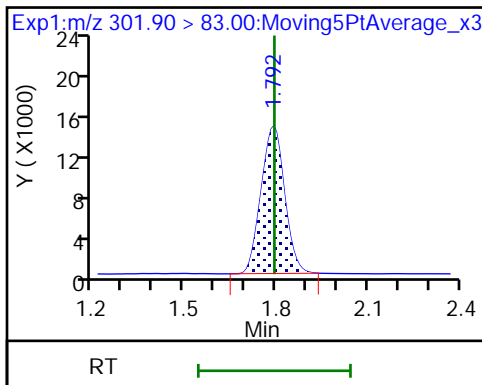
5 Perfluorobutanesulfonic acid



D 47 13C3-PFBS

6 Perfluorohexanoic acid

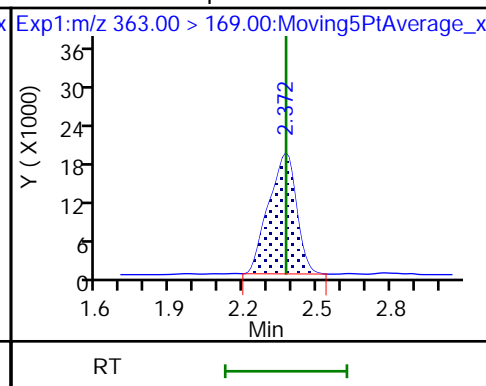
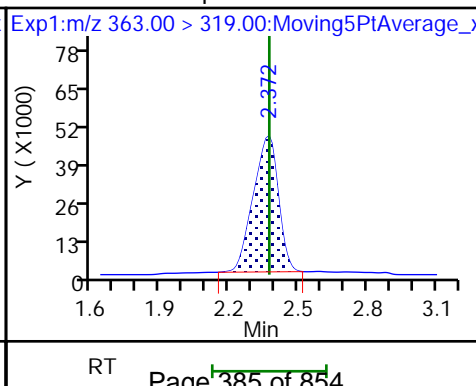
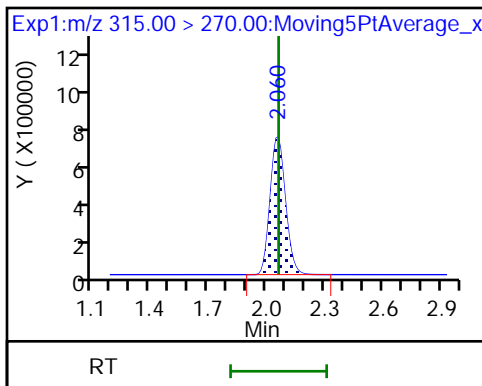
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

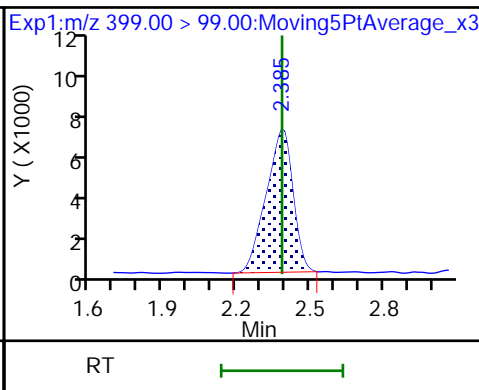
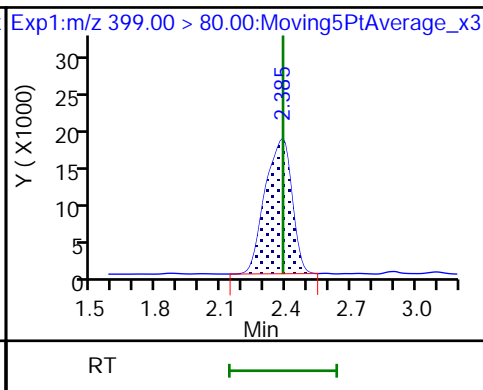
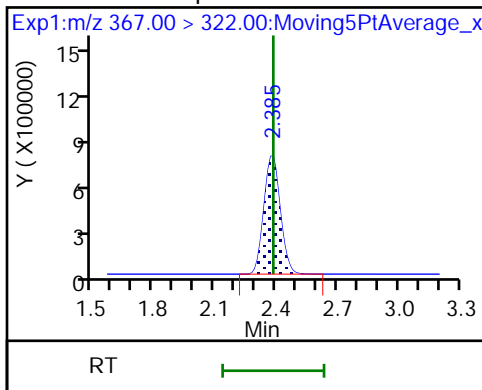
10 Perfluoroheptanoic acid



D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

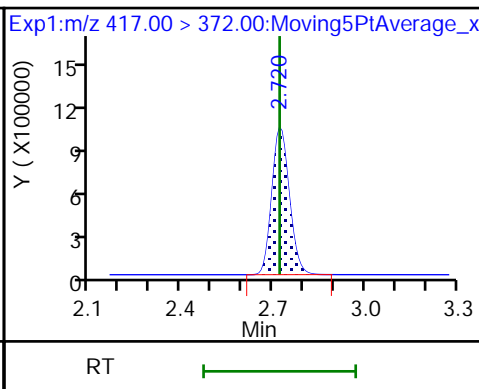
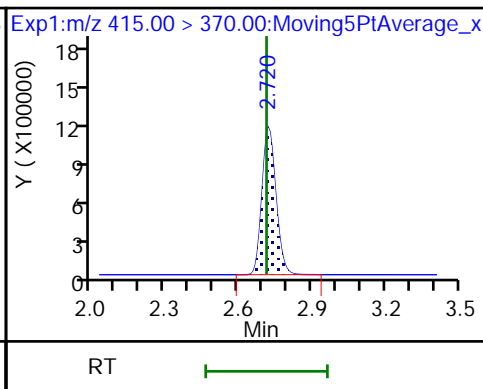
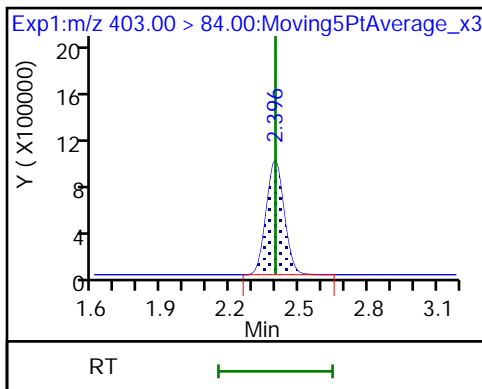
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

* 62 13C2-PFOA

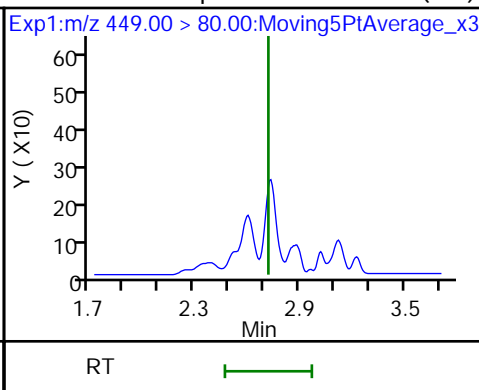
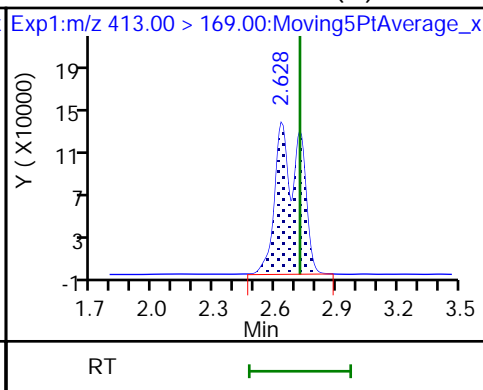
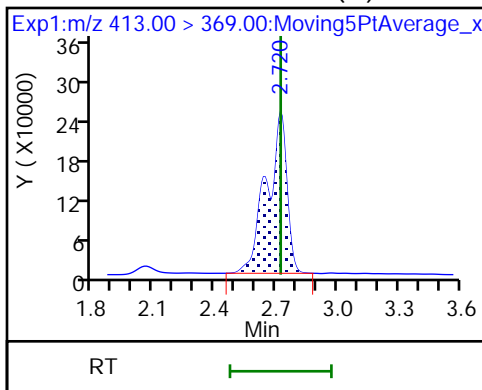
D 14 13C4 PFOA



15 Perfluorooctanoic acid (M)

15 Perfluorooctanoic acid (M)

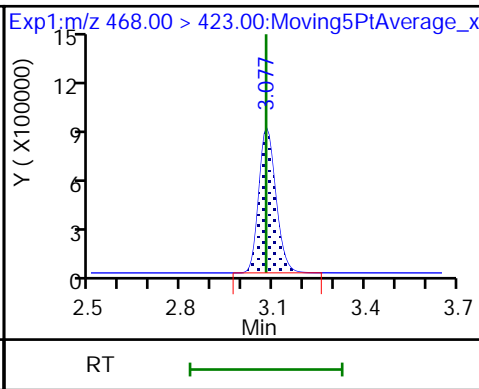
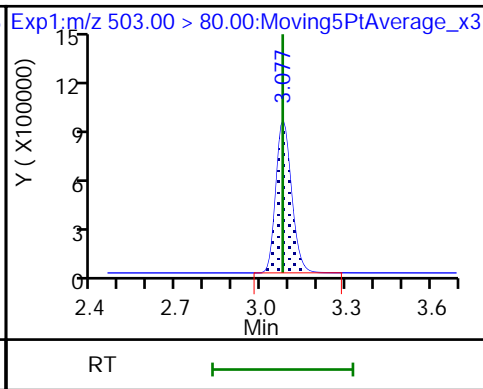
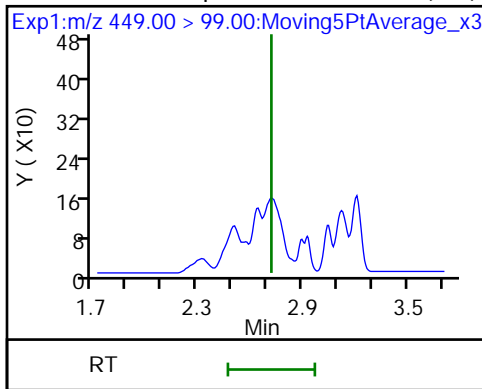
16 Perfluoroheptanesulfonic acid (ND)



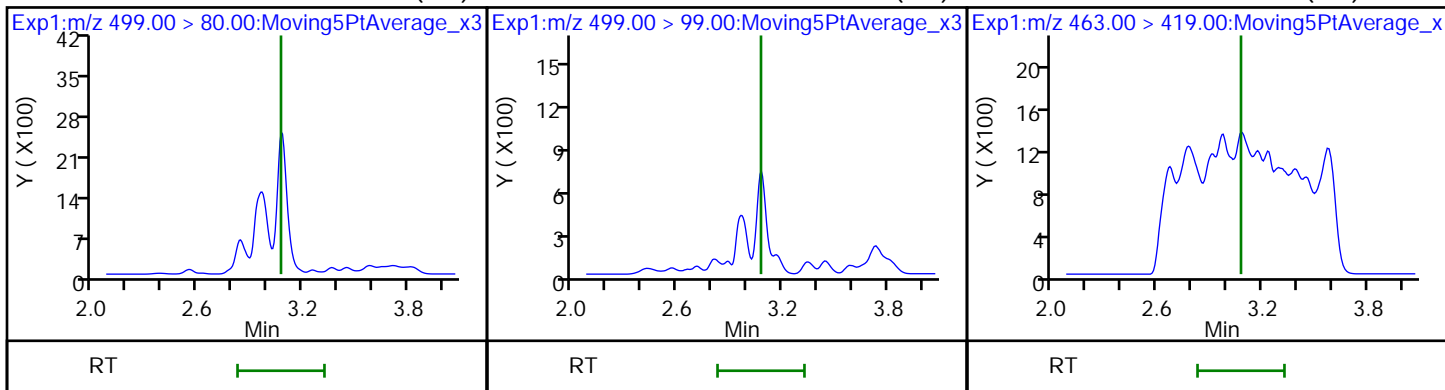
16 Perfluoroheptanesulfonic acid (ND)

D 18 13C4 PFOS

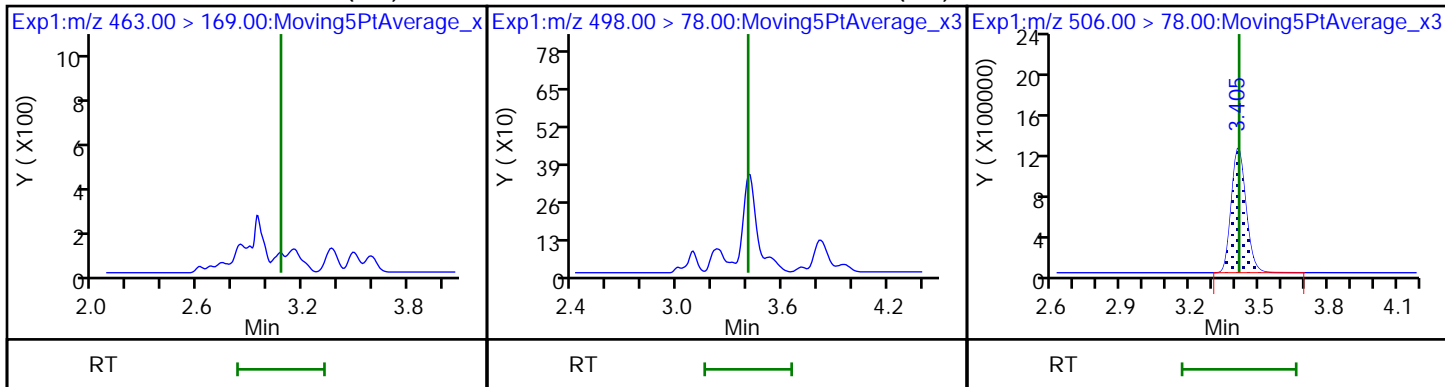
D 19 13C5 PFNA



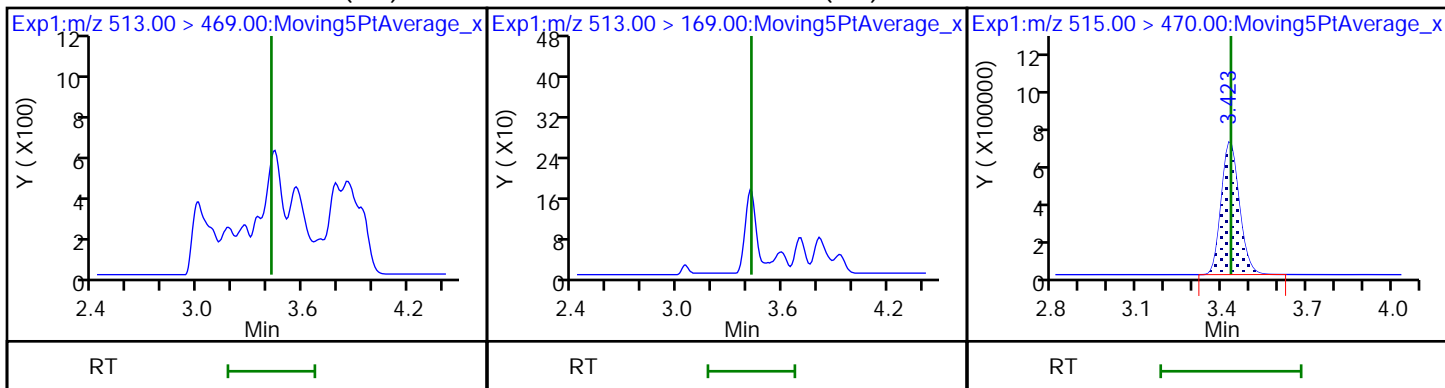
17 Perfluorooctane sulfonic acid (ND) 17 Perfluorooctane sulfonic acid (ND) 20 Perfluorononanoic acid (ND)



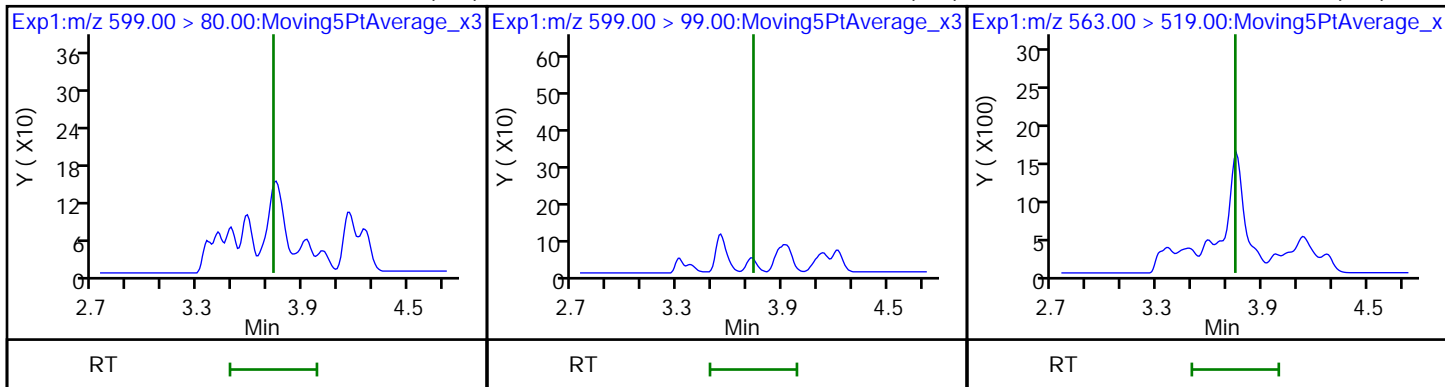
20 Perfluorononanoic acid (ND) 22 Perfluorooctane Sulfonamide (ND) D 21 13C8 FOSA



24 Perfluorodecanoic acid (ND) 24 Perfluorodecanoic acid (ND) D 23 13C2 PFDA



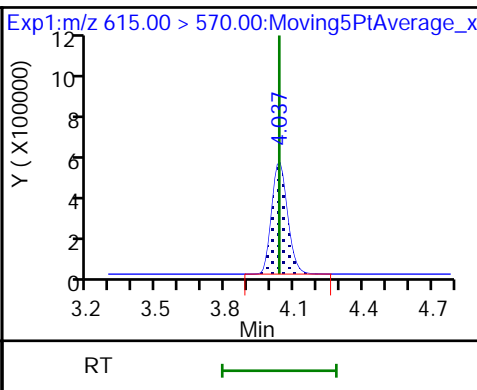
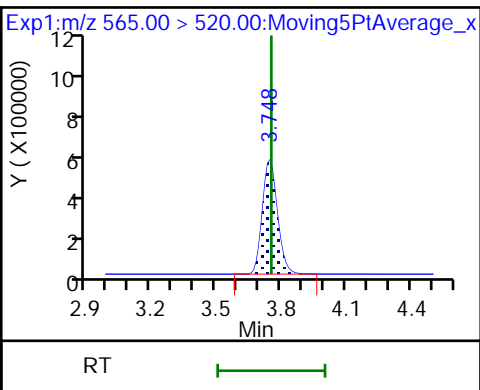
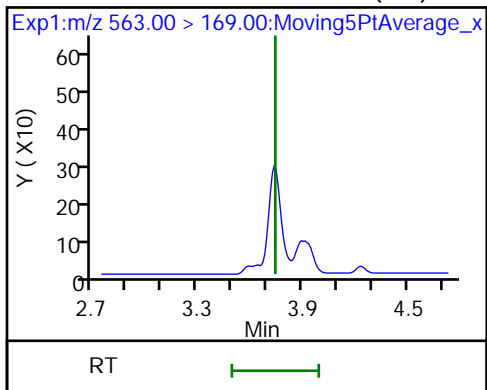
29 Perfluorodecane Sulfonic acid (ND) 29 Perfluorodecane Sulfonic acid (ND) 31 Perfluoroundecanoic acid (ND)



31 Perfluoroundecanoic acid (ND)

D 30 13C2 PFUnA

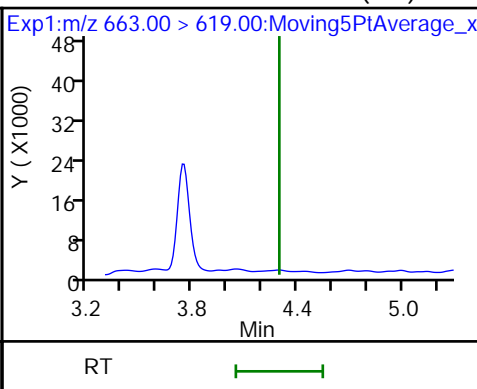
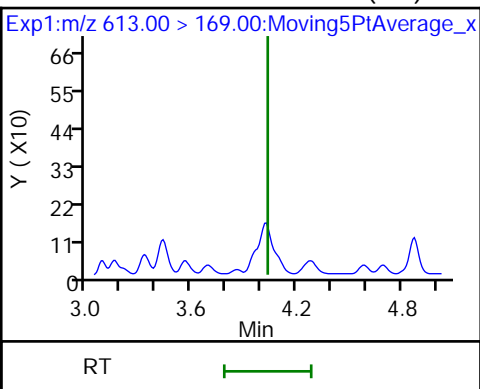
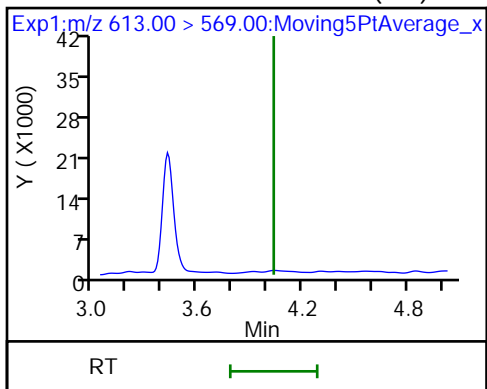
D 36 13C2 PFDaA



37 Perfluorododecanoic acid (ND)

37 Perfluorododecanoic acid (ND)

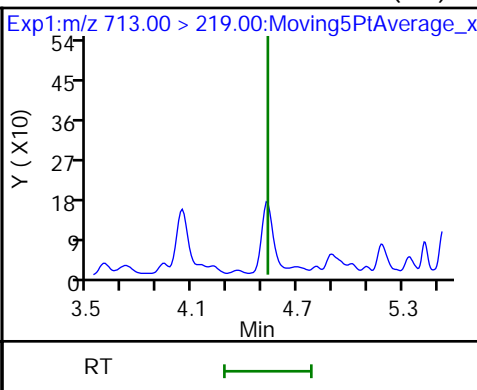
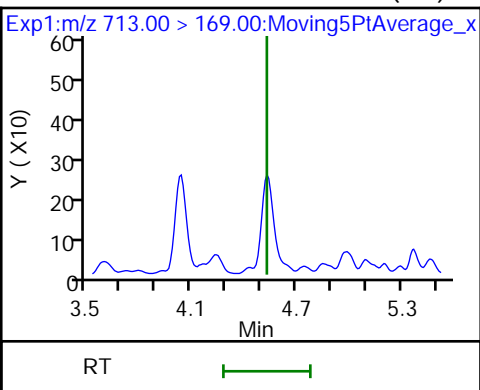
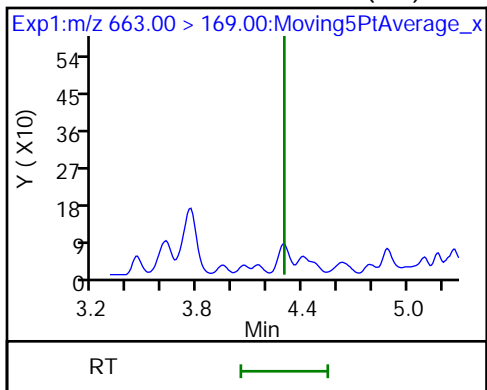
41 Perfluorotridecanoic acid (ND)



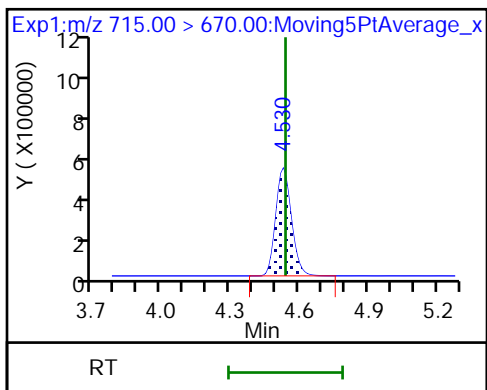
41 Perfluorotridecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



TestAmerica Sacramento

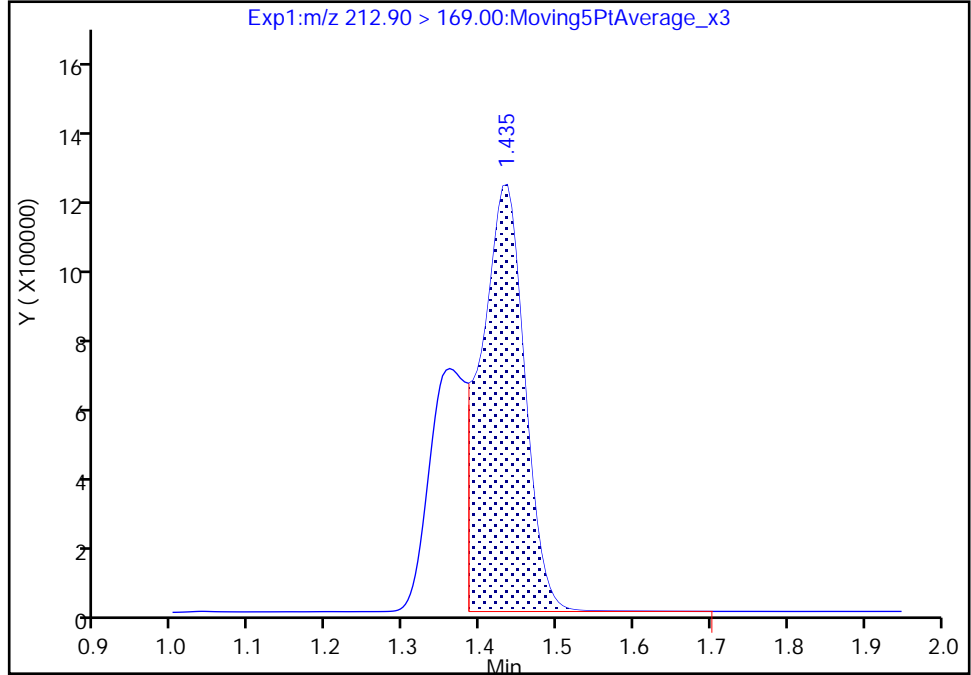
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_065.d
Injection Date: 18-Jul-2018 23:20:50 Instrument ID: A8_N
Lims ID: 320-40917-A-2-A Lab Sample ID: 320-40917-2
Client ID: TP-PFC-031-MID CARBON
Operator ID: SACINSTLCMS01 ALS Bottle#: 49 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

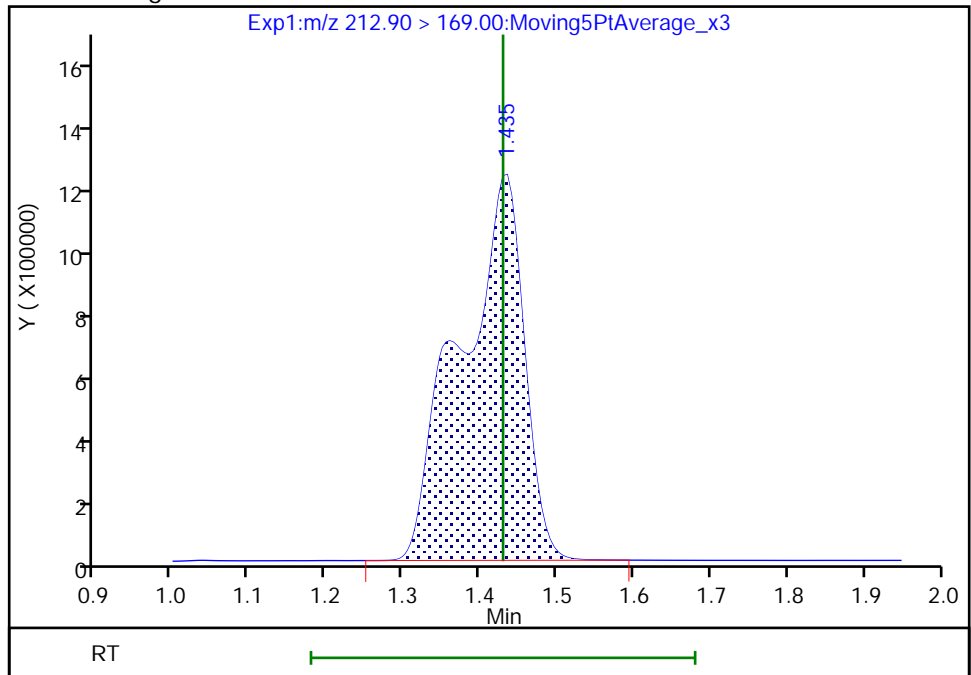
RT: 1.44
Area: 4616046
Amount: 2.169048
Amount Units: ng/ml

Processing Integration Results



RT: 1.44
Area: 6848867
Amount: 3.218234
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 14:19:47
Audit Action: Manually Integrated

TestAmerica Sacramento

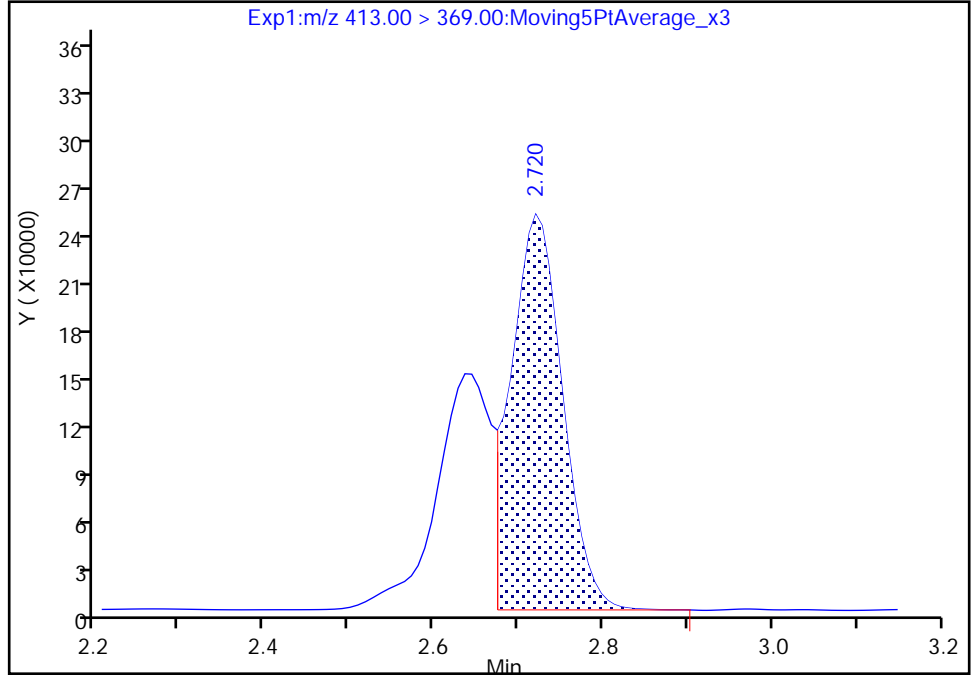
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Injection Date: 18-Jul-2018 23:20:50 Instrument ID: A8_N
Lims ID: 320-40917-A-2-A Lab Sample ID: 320-40917-2
Client ID: TP-PFC-031-MID CARBON
Operator ID: SACINSTLCMS01 ALS Bottle#: 49 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

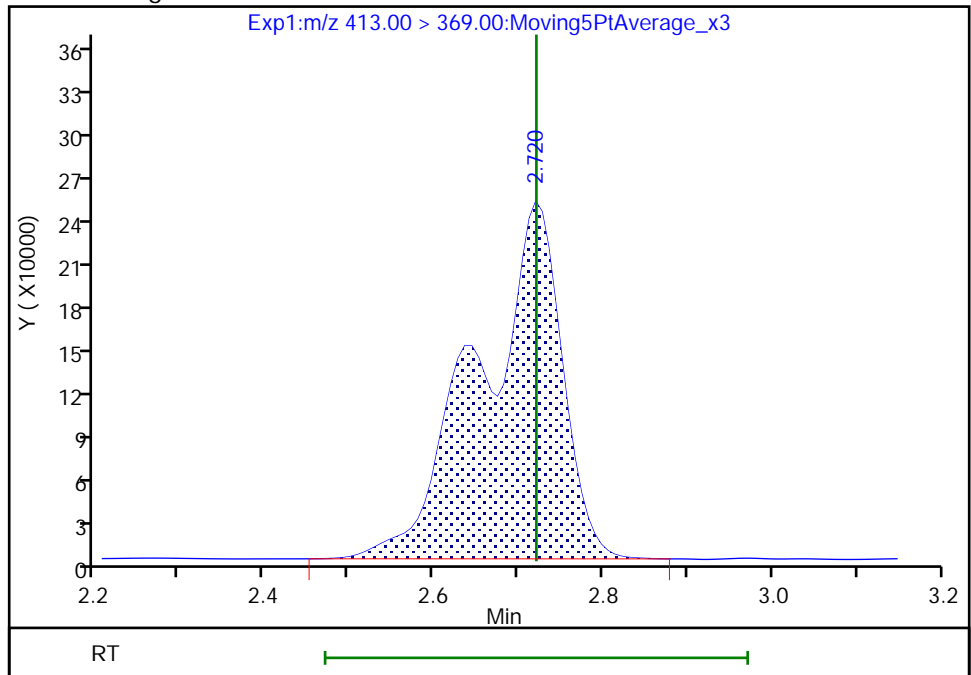
RT: 2.72
Area: 1037075
Amount: 0.520687
Amount Units: ng/ml

Processing Integration Results



RT: 2.72
Area: 1701044
Amount: 0.854048
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 14:21:35
Audit Action: Manually Integrated

TestAmerica Sacramento

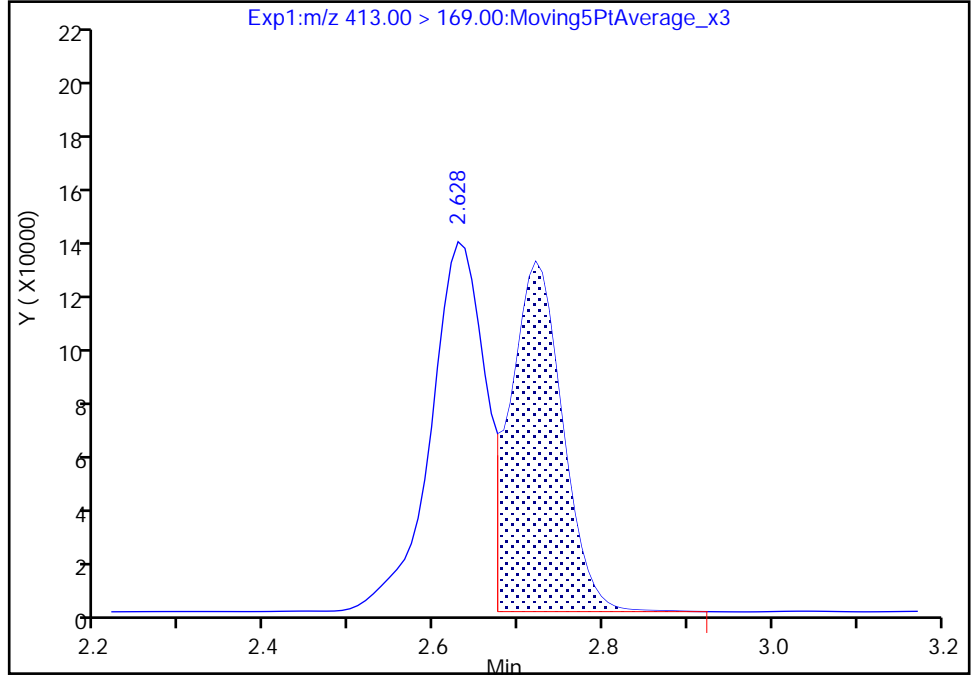
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Injection Date: 18-Jul-2018 23:20:50 Instrument ID: A8_N
Lims ID: 320-40917-A-2-A Lab Sample ID: 320-40917-2
Client ID: TP-PFC-031-MID CARBON
Operator ID: SACINSTLCMS01 ALS Bottle#: 49 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

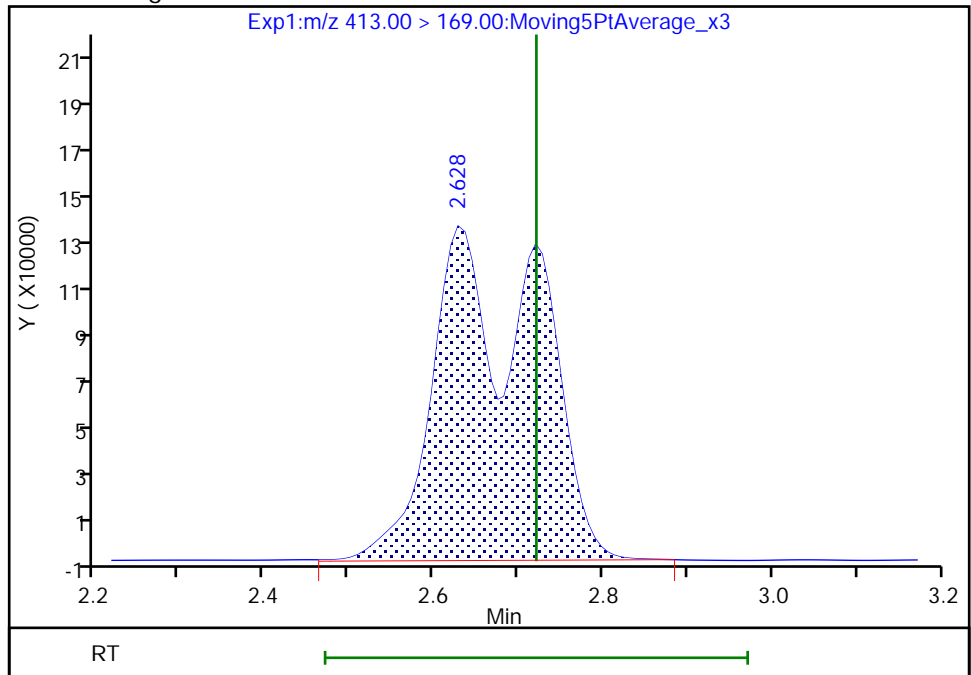
RT: 2.63
Area: 537161
Amount: 0.520687
Amount Units: ng/ml

Processing Integration Results



RT: 2.63
Area: 1140541
Amount: 0.854048
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 14:23:30

Audit Action: Manually Integrated

Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPE Lab Sample ID: 320-40917-3
 Matrix: Water Lab File ID: 2018.07.18LLB_066.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:25
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 286.7 (mL) Date Analyzed: 07/18/2018 23:28
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	120	M	1.7	1.3	0.51
2706-90-3	Perfluoropentanoic acid (PFPeA)	220		1.7	0.87	0.37
307-24-4	Perfluorohexanoic acid (PFHxA)	110		1.7	0.87	0.41
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0		1.7	1.3	0.53
335-67-1	Perfluorooctanoic acid (PFOA)	4.1	M	1.7	1.3	0.47
375-95-1	Perfluorononanoic acid (PFNA)	1.3	U M	1.7	1.3	0.45
335-76-2	Perfluorodecanoic acid (PFDA)	0.87	U	1.7	0.87	0.42
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.3	U M	1.7	1.3	0.63
307-55-1	Perfluorododecanoic acid (PFDoA)	1.3	U	1.7	1.3	0.45
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.6	U	3.5	2.6	0.66
376-06-7	Perfluorotetradecanoic acid (PFTeA)	2.6	U	3.5	2.6	0.72
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.4		1.7	0.87	0.40
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.53	J	1.7	0.87	0.33
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.87	U	1.7	0.87	0.32
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	0.96
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.3	U	1.7	1.3	0.49
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.6	U M	3.5	2.6	1.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPE Lab Sample ID: 320-40917-3
 Matrix: Water Lab File ID: 2018.07.18LLB_066.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:25
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 286.7(mL) Date Analyzed: 07/18/2018 23:28
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	82		50-150
STL00992	13C4 PFBA	83		50-150
STL01893	13C5 PFPeA	77		50-150
STL00993	13C2 PFHxA	83		50-150
STL01892	13C4-PFHpA	92		50-150
STL00990	13C4 PFOA	89		50-150
STL00995	13C5 PFNA	84		50-150
STL00996	13C2 PFDA	92		50-150
STL00997	13C2 PFUnA	87		50-150
STL00998	13C2 PFDoA	81		50-150
STL00994	18O2 PFHxS	87		50-150
STL02116	13C2-PFTeDA	79		50-150
STL00991	13C4 PFOS	81		50-150
STL02337	13C3-PFBS	79		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_066.d
 Lims ID: 320-40917-A-3-A
 Client ID: TP-PFC-031-TPE
 Sample Type: Client
 Inject. Date: 18-Jul-2018 23:28:40 ALS Bottle#: 50 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-40917-a-3-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 14:26:12 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols Date: 19-Jul-2018 14:26:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.429	1.430	-0.001	1.000	6941162	3.30			2291	M
D 1 13C4 PFBA										
217.00 > 172.00	1.429	1.436	-0.007	0.526	5329180	2.07		82.8	42345	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.746	1.748	-0.002	1.000	10702876	6.40			5608	
D 3 13C5-PFPeA										
267.90 > 223.00	1.746	1.748	-0.002	0.642	3448724	1.93		77.1	45342	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.791	1.793	-0.002	1.000	185815	0.0685			1668	
298.90 > 99.00	1.782	1.793	-0.011	0.995	95063		1.95(1.25-3.74)		1663	
D 47 13C3-PFBS										
301.90 > 83.00	1.791	1.793	-0.002	0.659	82447	1.83		78.8	620	
6 Perfluorohexanoic acid										R
313.00 > 269.00	2.048	2.049	-0.001	0.995	5355757	3.23			11456	R
313.00 > 119.00	2.059	2.049	0.010	1.000	311686		17.18(5.03-15.10)		6320	
D 7 13C2 PFHxA										
315.00 > 270.00	2.059	2.061	-0.002	0.757	4031196	2.09		83.5	91924	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.345	2.373	-0.028	0.989	107124	0.0568			152	
363.00 > 169.00	2.332	2.373	-0.041	0.983	39878		2.69(1.13-3.40)		220	
D 9 13C4-PFHpA										
367.00 > 322.00	2.372	2.385	-0.013	0.872	4073732	2.29		91.6	45667	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.384	2.385	-0.001	0.995	37845	0.0151			257	
399.00 > 99.00	2.384	2.385	-0.001	0.995	10738		3.52(1.50-4.49)		88.5	
D 11 18O2 PFHxS										
403.00 > 84.00	2.395	2.396	-0.001	0.881	5173216	2.05		86.8	53101	

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	2.719	2.714	0.005		4747501	2.50		49900	
D 14 13C4 PFOA	417.00 > 372.00	2.719	2.720	-0.001	1.000	4031097	2.22	88.8	51419	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.636	2.721	-0.085	0.969	232994	0.1173		66.0		M
413.00 > 169.00	2.628	2.721	-0.093	0.966	177343		1.31(0.84-2.52)	728		
D 18 13C4 PFOS	503.00 > 80.00	3.076	3.076	0.0	1.131	3595482	1.94	81.3	46876	
D 19 13C5 PFNA	468.00 > 423.00	3.076	3.076	0.0	1.131	3395737	2.09	83.7	38271	
D 21 13C8 FOSA	506.00 > 78.00	3.403	3.412	-0.009	1.251	5471090	2.05	82.0	53551	
D 23 13C2 PFDA	515.00 > 470.00	3.422	3.430	-0.008	1.258	3264186	2.29	91.6	41070	
D 30 13C2 PFUnA	565.00 > 520.00	3.747	3.754	-0.007	1.378	2585931	2.17	86.9	41624	
D 36 13C2 PFDoA	615.00 > 570.00	4.036	4.034	0.002	1.484	2484381	2.01	80.6	18895	
D 43 13C2-PFTeDA	715.00 > 670.00	4.529	4.540	-0.011	1.666	2517780	1.97	78.7	14126	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_066.d

Injection Date: 18-Jul-2018 23:28:40

Instrument ID: A8_N

Lims ID: 320-40917-A-3-A

Lab Sample ID: 320-40917-3

Client ID: TP-PFC-031-TPE

Operator ID: SACINSTLCMS01

ALS Bottle#: 50

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

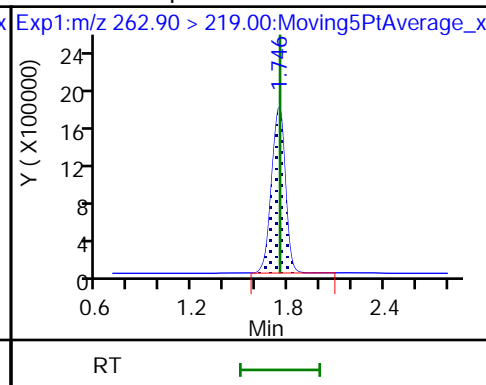
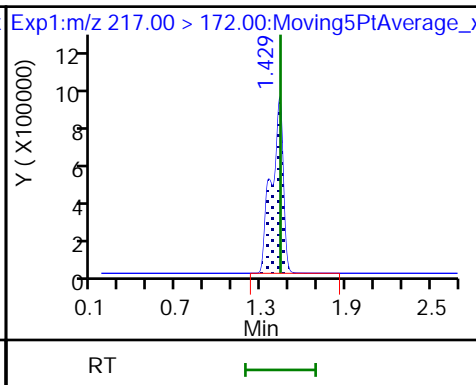
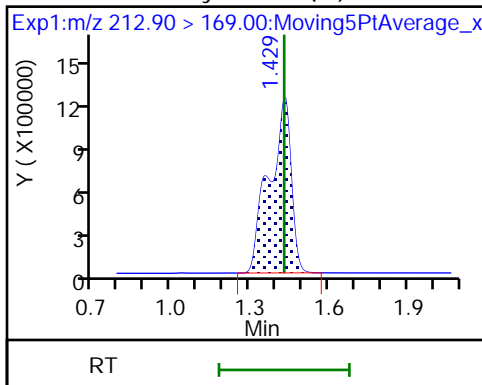
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid (M)

D 1 13C4 PFBA

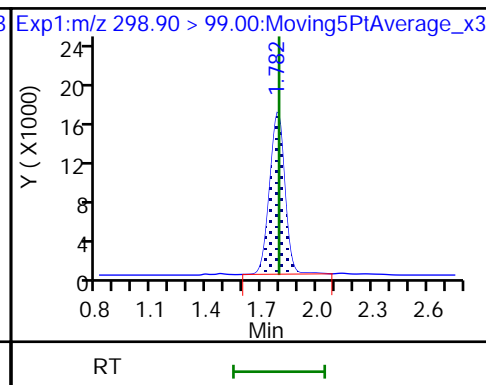
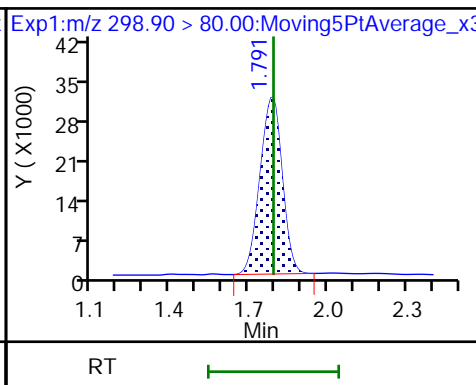
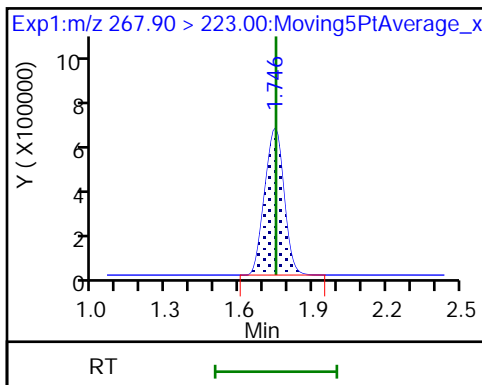
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

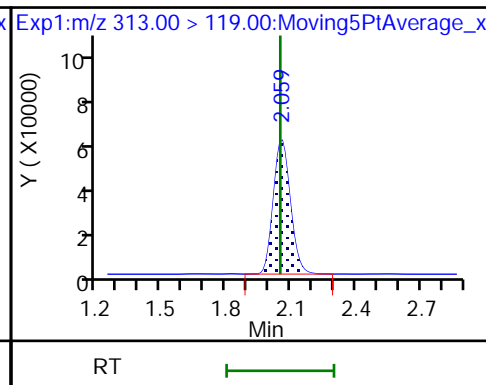
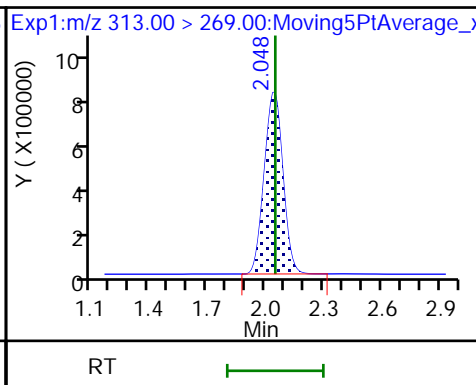
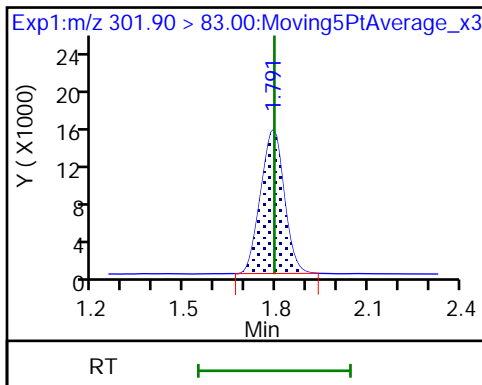
5 Perfluorobutanesulfonic acid



D 47 13C3-PFBS

6 Perfluorohexanoic acid

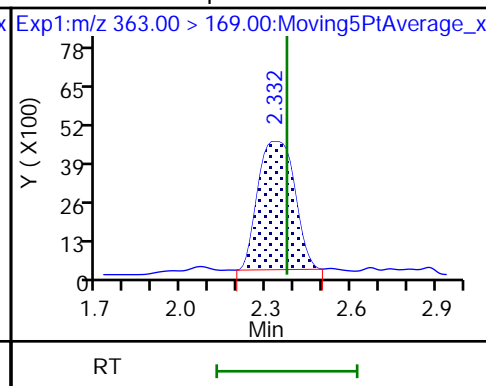
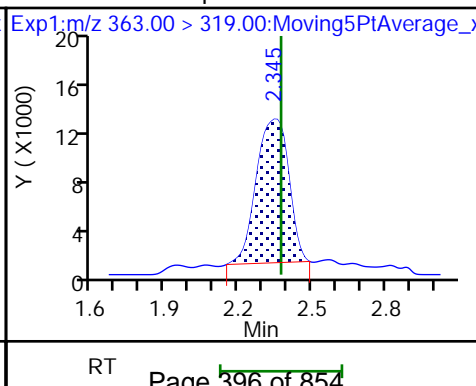
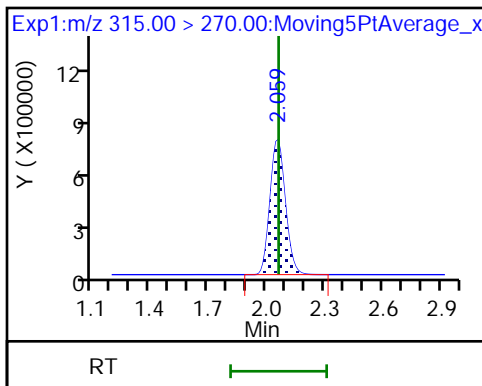
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

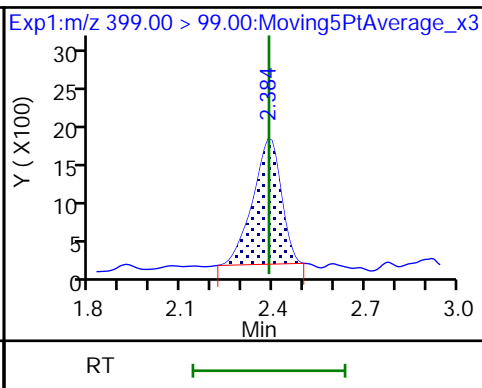
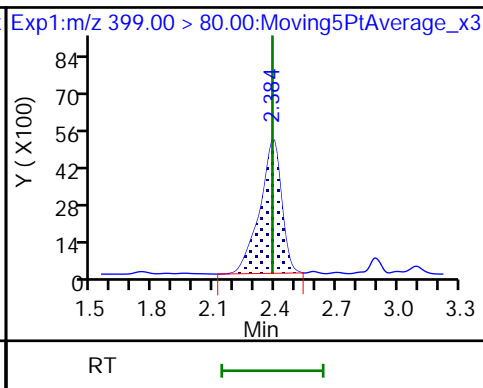
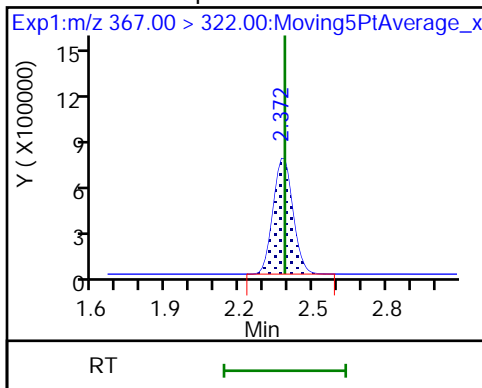
10 Perfluoroheptanoic acid



D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

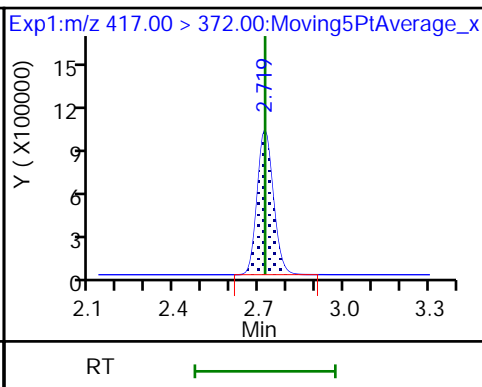
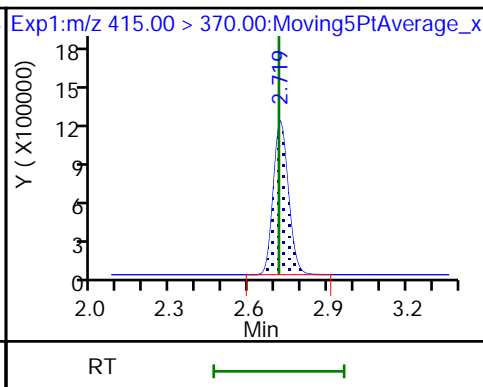
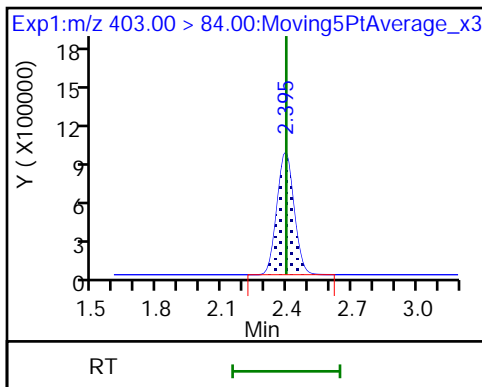
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

* 62 13C2-PFOA

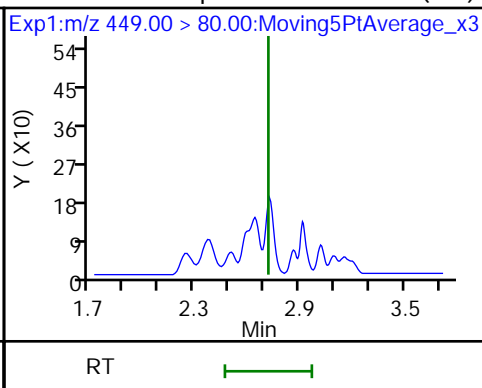
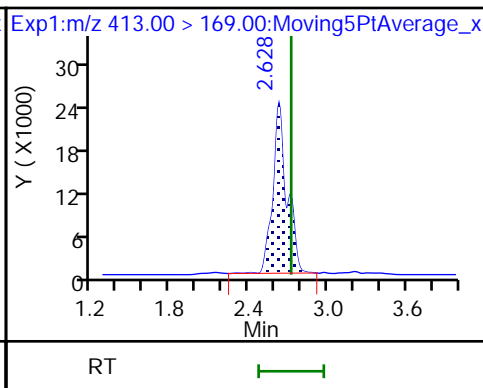
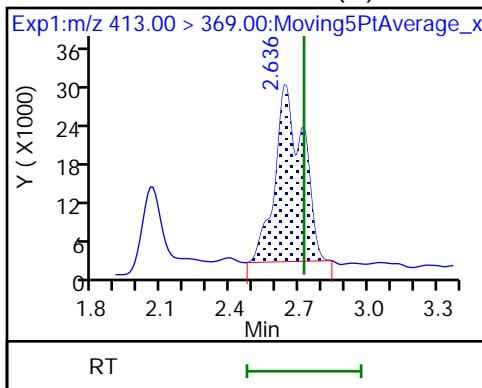
D 14 13C4 PFOA



15 Perfluorooctanoic acid (M)

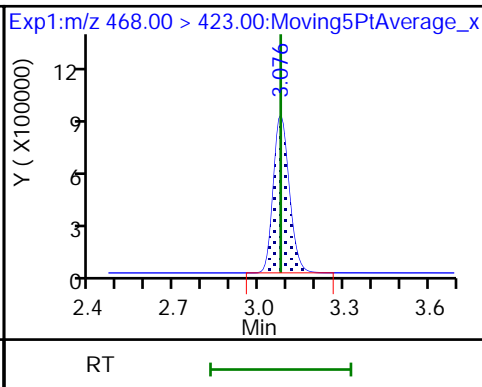
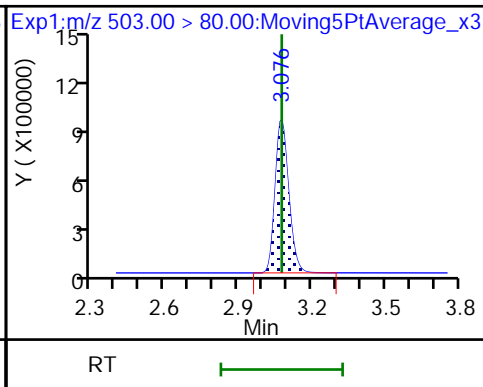
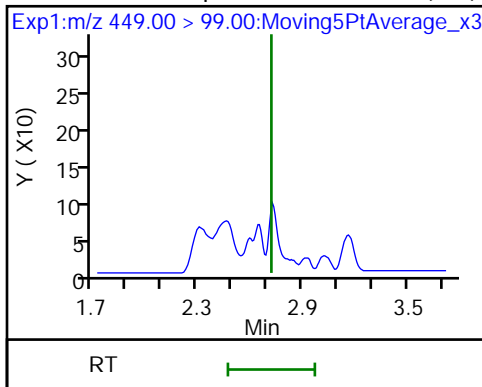
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic acid (ND)

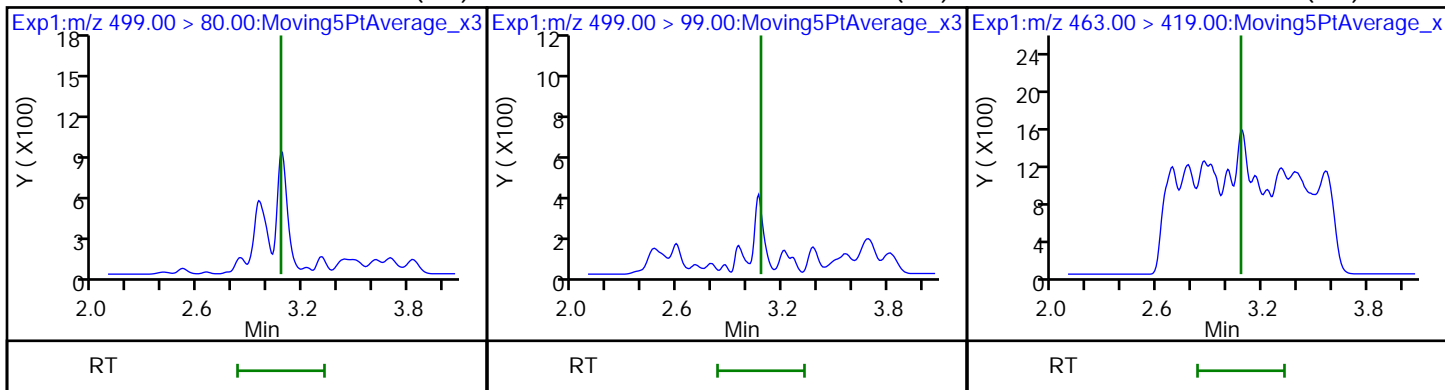


16 Perfluoroheptanesulfonic acid (ND) D 18 13C4 PFOS

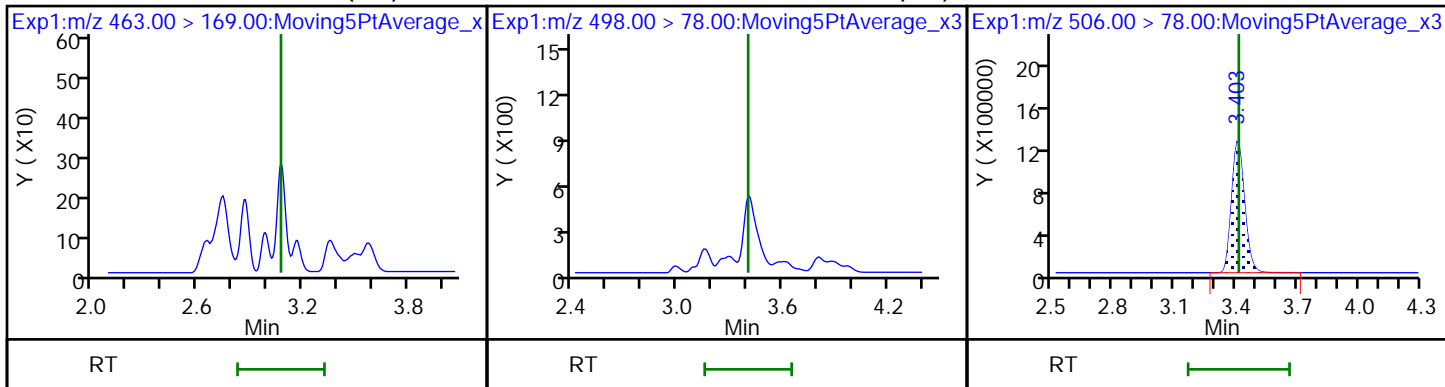
D 19 13C5 PFNA



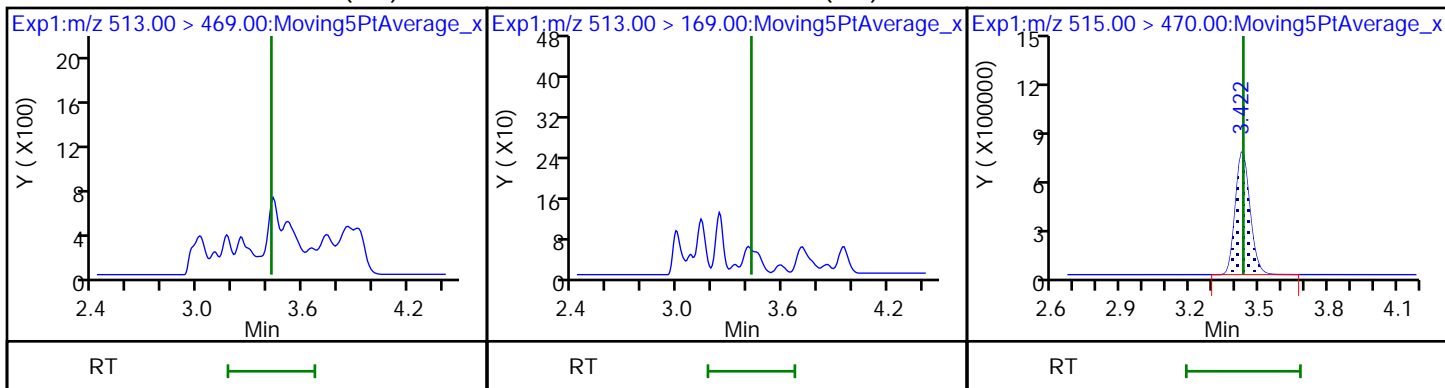
17 Perfluorooctane sulfonic acid (ND) 17 Perfluorooctane sulfonic acid (ND) 20 Perfluorononanoic acid (ND)



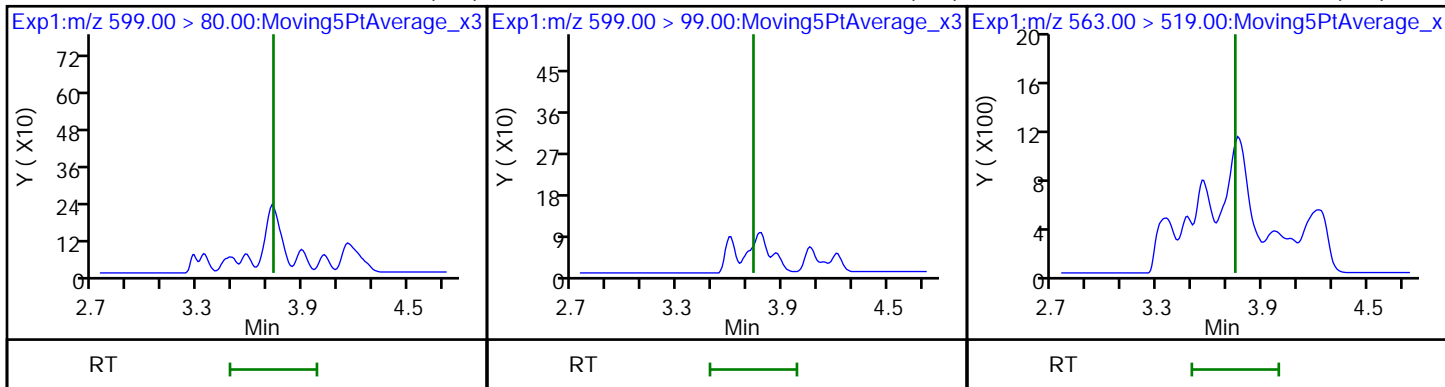
20 Perfluorononanoic acid (ND) 22 Perfluorooctane Sulfonamide (ND) D 21 13C8 FOSA



24 Perfluorodecanoic acid (ND) 24 Perfluorodecanoic acid (ND) D 23 13C2 PFDA



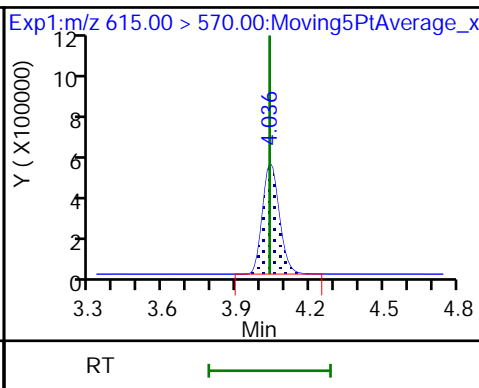
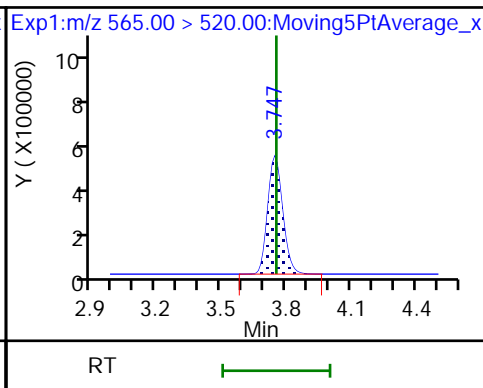
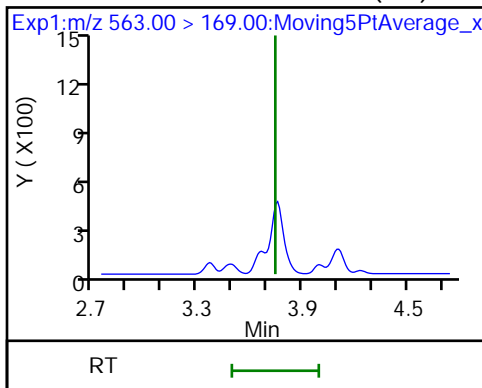
29 Perfluorodecane Sulfonic acid (ND) 29 Perfluorodecane Sulfonic acid (ND) 31 Perfluoroundecanoic acid (ND)



31 Perfluoroundecanoic acid (ND)

D 30 13C2 PFUnA

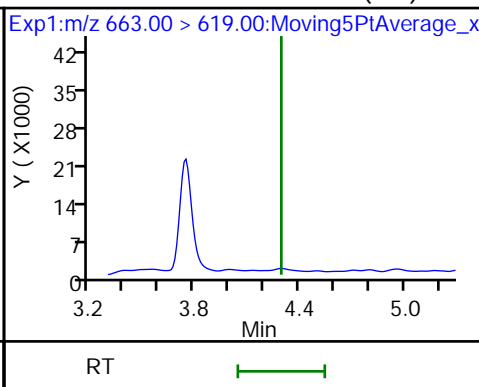
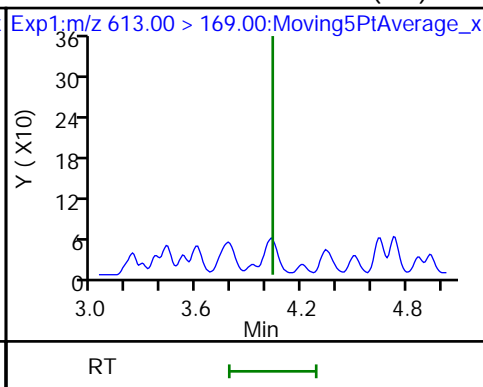
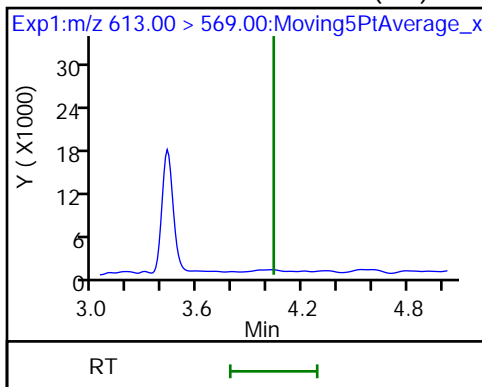
D 36 13C2 PFDaA



37 Perfluorododecanoic acid (ND)

37 Perfluorododecanoic acid (ND)

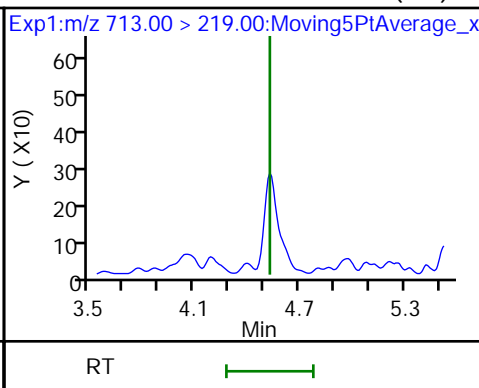
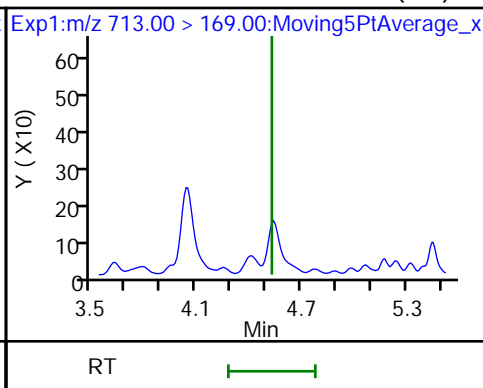
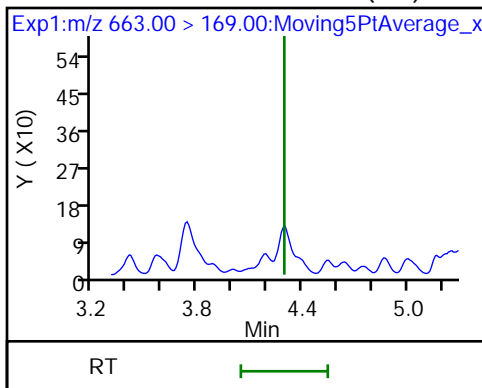
41 Perfluorotridecanoic acid (ND)



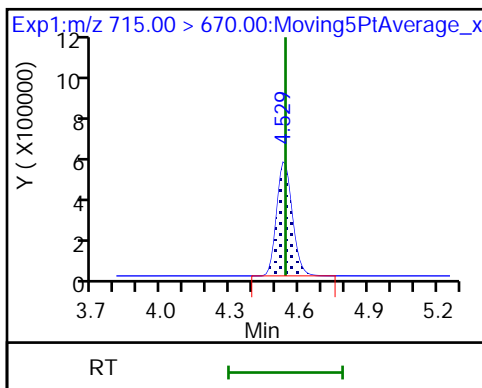
41 Perfluorotridecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



TestAmerica Sacramento

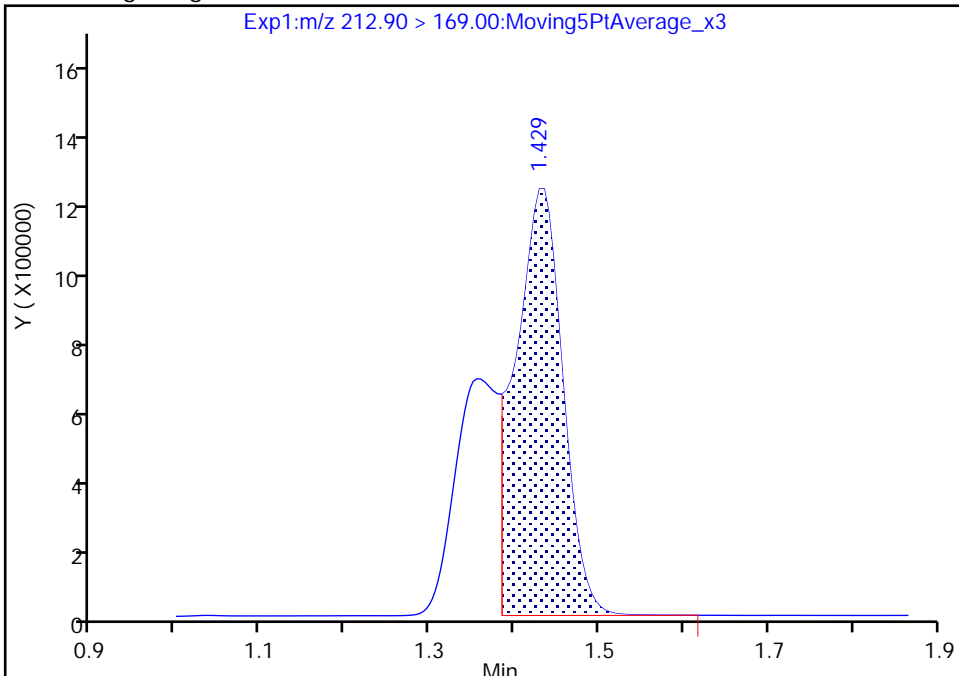
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_066.d
Injection Date: 18-Jul-2018 23:28:40 Instrument ID: A8_N
Lims ID: 320-40917-A-3-A Lab Sample ID: 320-40917-3
Client ID: TP-PFC-031-TPE
Operator ID: SACINSTLCMS01 ALS Bottle#: 50 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

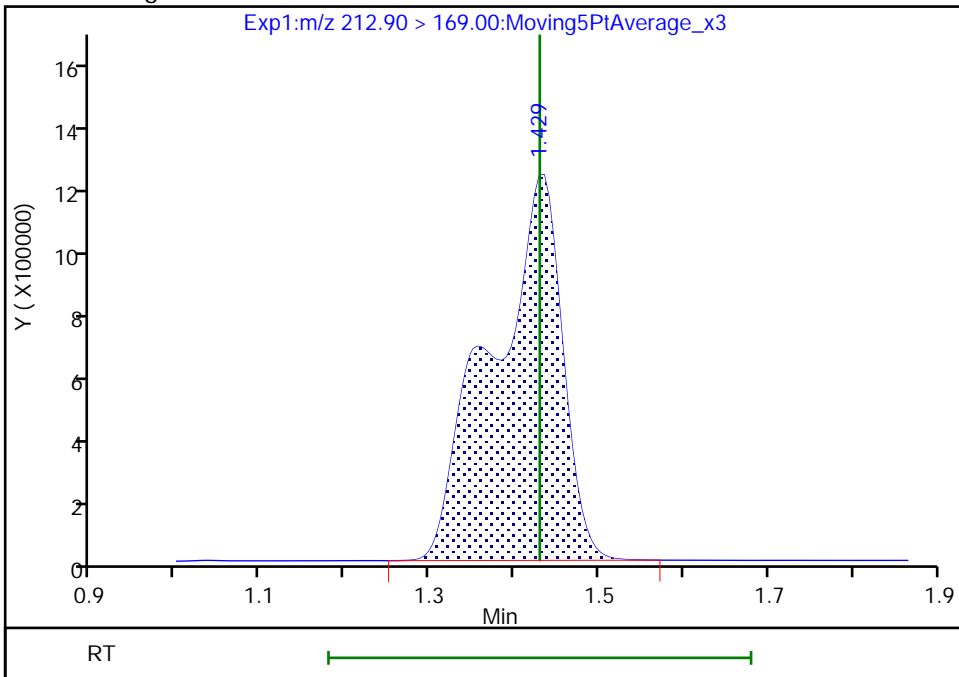
RT: 1.43
Area: 4578924
Amount: 2.179479
Amount Units: ng/ml

Processing Integration Results



RT: 1.43
Area: 6941162
Amount: 3.303859
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 14:25:41
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
Page 400 of 854

TestAmerica Sacramento

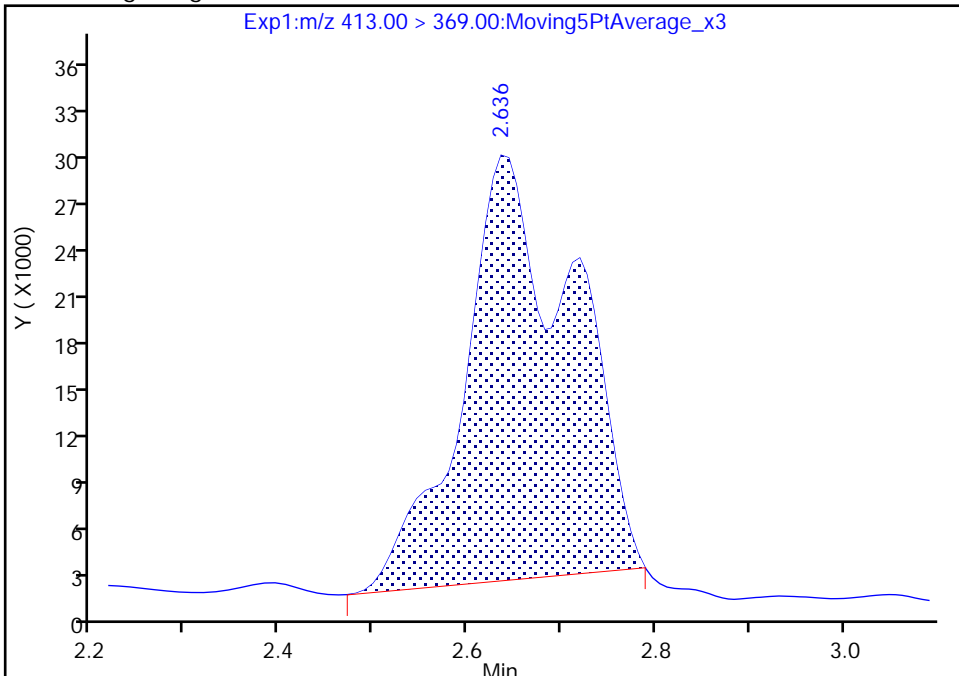
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Injection Date: 18-Jul-2018 23:28:40 Instrument ID: A8_N
Lims ID: 320-40917-A-3-A Lab Sample ID: 320-40917-3
Client ID: TP-PFC-031-TPE
Operator ID: SACINSTLCMS01 ALS Bottle#: 50 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

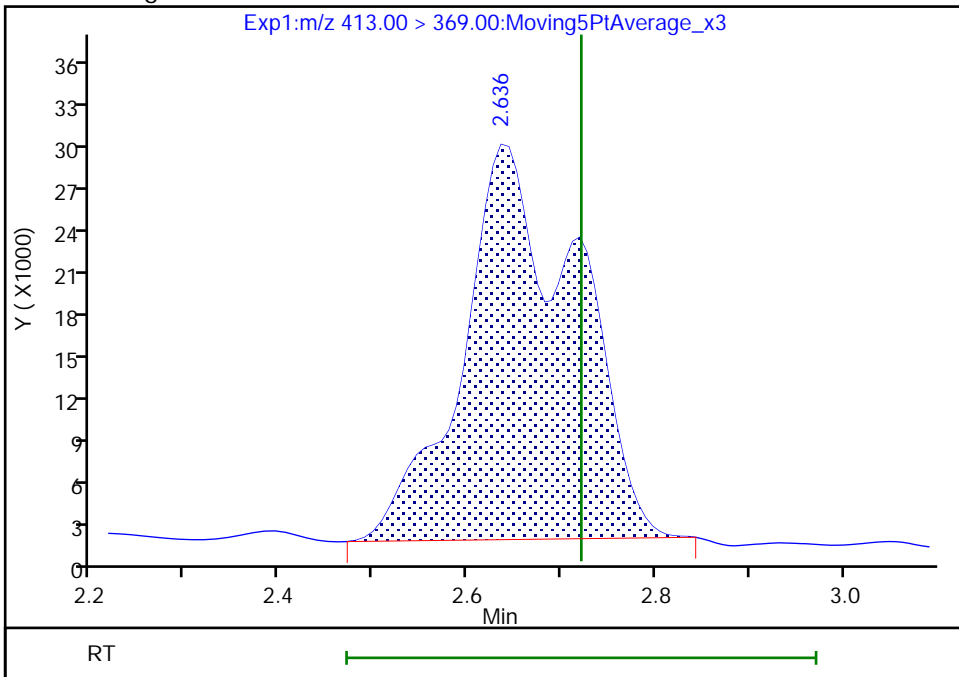
RT: 2.64
Area: 218341
Amount: 0.109951
Amount Units: ng/ml

Processing Integration Results



RT: 2.64
Area: 232994
Amount: 0.117330
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 14:25:54
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
Page 401 of 854

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPE-D Lab Sample ID: 320-40917-4
 Matrix: Water Lab File ID: 2018.07.18LLB_067.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 00:00
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 307.3 (mL) Date Analyzed: 07/18/2018 23:36
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	110	M	1.6	1.2	0.48
2706-90-3	Perfluoropentanoic acid (PFPeA)	220		1.6	0.81	0.35
307-24-4	Perfluorohexanoic acid (PFHxA)	110		1.6	0.81	0.38
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.1		1.6	1.2	0.50
335-67-1	Perfluorooctanoic acid (PFOA)	4.2	M	1.6	1.2	0.44
375-95-1	Perfluorononanoic acid (PFNA)	1.2	U M	1.6	1.2	0.42
335-76-2	Perfluorodecanoic acid (PFDA)	0.81	U	1.6	0.81	0.39
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.2	U	1.6	1.2	0.59
307-55-1	Perfluorododecanoic acid (PFDoA)	1.2	U	1.6	1.2	0.42
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.4	U	3.3	2.4	0.62
376-06-7	Perfluorotetradecanoic acid (PFTeA)	2.4	U	3.3	2.4	0.68
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.4		1.6	0.81	0.37
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.44	J	1.6	0.81	0.31
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.81	U	1.6	0.81	0.30
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.4	U	3.3	2.4	0.89
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.2	U	1.6	1.2	0.46
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.4	U	3.3	2.4	1.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPE-D Lab Sample ID: 320-40917-4
 Matrix: Water Lab File ID: 2018.07.18LLB_067.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 00:00
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 307.3 (mL) Date Analyzed: 07/18/2018 23:36
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	84		50-150
STL00992	13C4 PFBA	88		50-150
STL01893	13C5 PFPeA	80		50-150
STL00993	13C2 PFHxA	87		50-150
STL01892	13C4-PFHpA	95		50-150
STL00990	13C4 PFOA	92		50-150
STL00995	13C5 PFNA	91		50-150
STL00996	13C2 PFDA	90		50-150
STL00997	13C2 PFUnA	91		50-150
STL00998	13C2 PFDoA	85		50-150
STL00994	18O2 PFHxS	90		50-150
STL02116	13C2-PFTeDA	77		50-150
STL00991	13C4 PFOS	87		50-150
STL02337	13C3-PFBS	81		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_067.d
 Lims ID: 320-40917-A-4-A
 Client ID: TP-PFC-031-TPI-D
 Sample Type: Client
 Inject. Date: 18-Jul-2018 23:36:28 ALS Bottle#: 51 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-40917-a-4-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 14:26:58 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols Date: 19-Jul-2018 14:26:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.430	1.430	0.0	1.000	7426793	3.47			2617	M
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.436	-0.006	0.527	5426199	2.19		87.6	95692	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.739	1.748	-0.009	1.000	11275877	6.77			5774	
D 3 13C5-PFPeA										
267.90 > 223.00	1.739	1.748	-0.009	0.641	3430497	1.99		79.6	46259	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.784	1.793	-0.009	1.000	199467	0.0740			1973	
298.90 > 99.00	1.784	1.793	-0.009	1.000	102995		1.94(1.25-3.74)		1123	
D 47 13C3-PFBS										
301.90 > 83.00	1.784	1.793	-0.009	0.658	81934	1.89		81.4	539	
6 Perfluorohexanoic acid										R
313.00 > 269.00	2.038	2.049	-0.011	0.994	5602227	3.37			16113	R
313.00 > 119.00	2.050	2.049	0.001	1.000	323600		17.31(5.03-15.10)		5474	
D 7 13C2 PFHxA										
315.00 > 270.00	2.050	2.061	-0.011	0.756	4041623	2.17		86.9	74813	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.373	-0.052	0.978	123581	0.0653			174	
363.00 > 169.00	2.347	2.373	-0.026	0.989	47306		2.61(1.13-3.40)		350	
D 9 13C4-PFHpA										
367.00 > 322.00	2.372	2.385	-0.013	0.875	4089195	2.39		95.5	53449	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.384	2.385	-0.001	1.000	33941	0.0135			351	
399.00 > 99.00	2.384	2.385	-0.001	1.000	8910		3.81(1.50-4.49)		84.2	
D 11 18O2 PFHxS										
403.00 > 84.00	2.384	2.396	-0.012	0.879	5164630	2.13		90.0	80144	

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	2.712	2.714	-0.002					
					4570877	2.50			50561	
D 14 13C4 PFOA	417.00	> 372.00	2.712	2.720	-0.008	1.000				
					4027028	2.30		92.2	60949	
15 Perfluorooctanoic acid										M
	413.00	> 369.00	2.636	2.721	-0.085	0.972			73.3	M
	413.00	> 169.00	2.620	2.721	-0.101	0.966	201745	1.28(0.84-2.52)	812	
D 18 13C4 PFOS	503.00	> 80.00	3.070	3.076	-0.006	1.132				
					3695364	2.07		86.8	42803	
D 19 13C5 PFNA	468.00	> 423.00	3.070	3.076	-0.006	1.132				
					3539271	2.27		90.6	42643	
D 21 13C8 FOSA	506.00	> 78.00	3.404	3.412	-0.008	1.255				
					5403942	2.10		84.2	61293	
D 23 13C2 PFDA	515.00	> 470.00	3.422	3.430	-0.008	1.262				
					3091860	2.25		90.2	36478	
D 30 13C2 PFUnA	565.00	> 520.00	3.737	3.754	-0.017	1.378				
					2611845	2.28		91.2	41494	
D 36 13C2 PFDoA	615.00	> 570.00	4.026	4.034	-0.008	1.484				
					2530520	2.13		85.2	19792	
D 43 13C2-PFTeDA	715.00	> 670.00	4.530	4.540	-0.010	1.670				
					2382862	1.93		77.3	13252	

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_067.d

Injection Date: 18-Jul-2018 23:36:28

Instrument ID: A8_N

Lims ID: 320-40917-A-4-A

Lab Sample ID: 320-40917-4

Client ID: TP-PFC-031-TPI-D

Operator ID: SACINSTLCMS01

ALS Bottle#: 51 Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

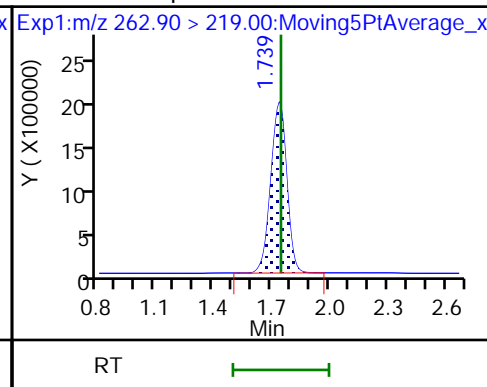
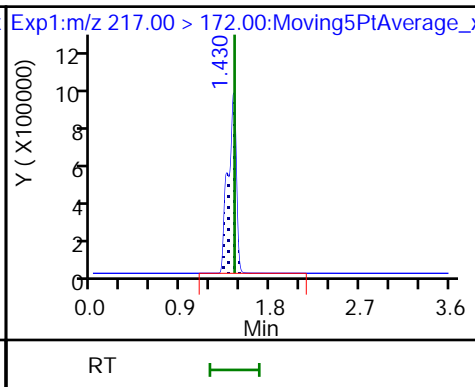
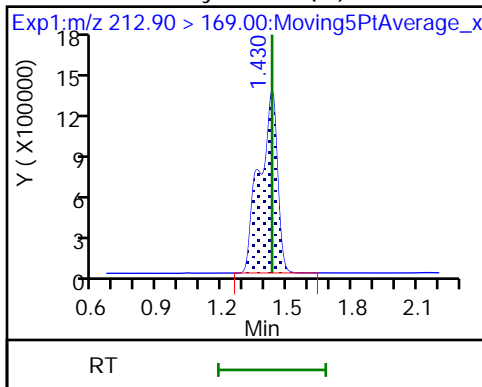
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid (M)

D 1 13C4 PFBA

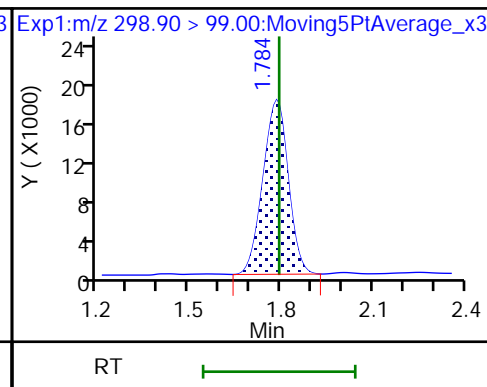
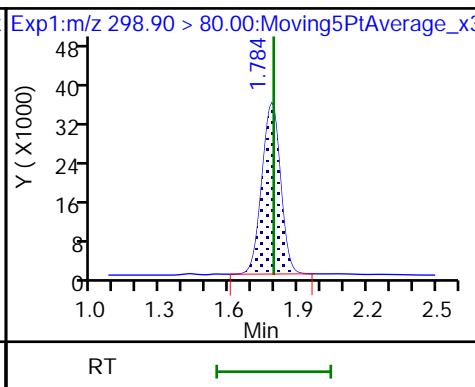
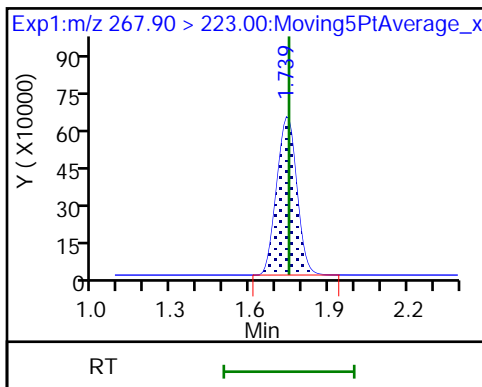
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

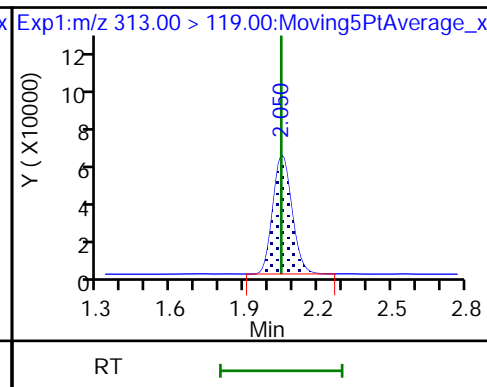
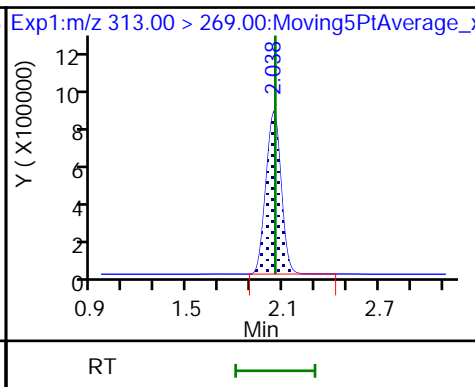
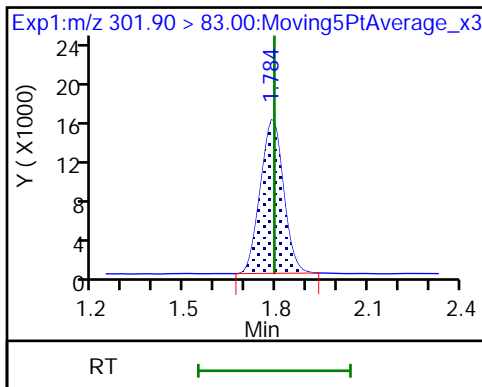
5 Perfluorobutanesulfonic acid



D 47 13C3-PFBS

6 Perfluorohexanoic acid

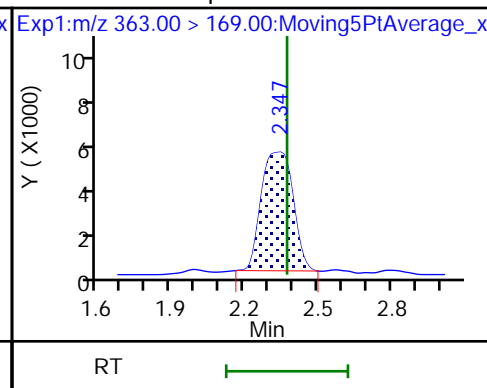
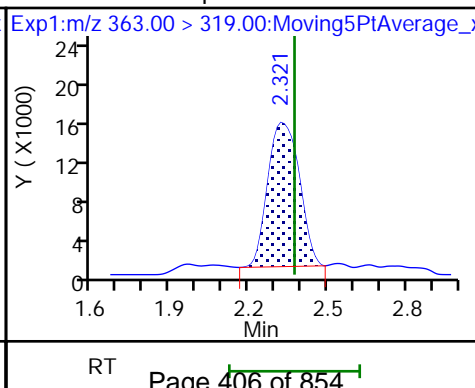
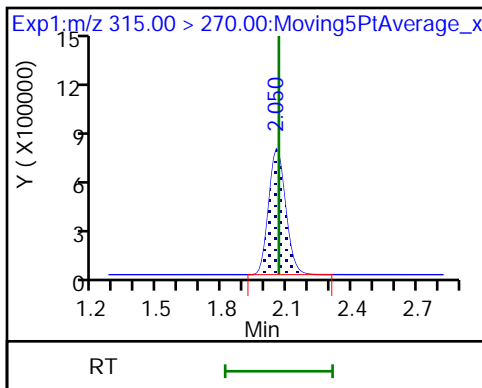
6 Perfluorohexanoic acid



D 7 13C2 PFHxA

10 Perfluoroheptanoic acid

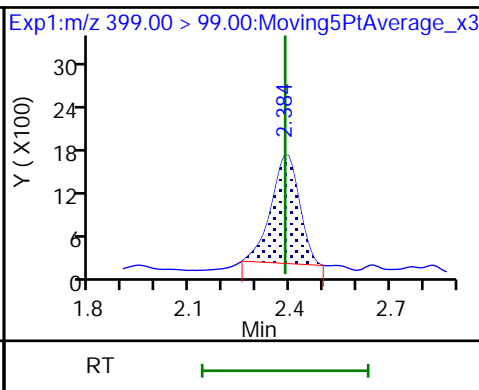
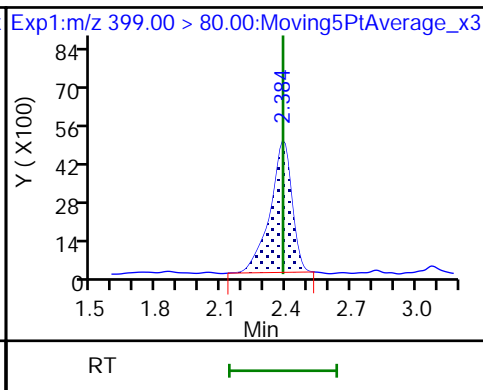
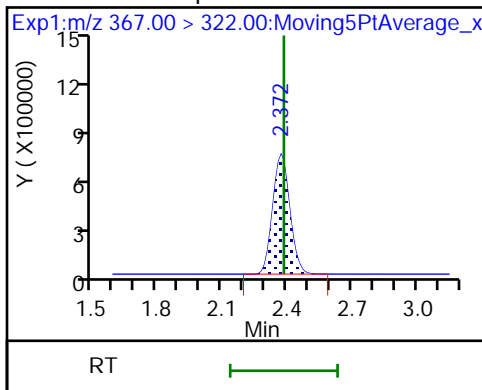
10 Perfluoroheptanoic acid



D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

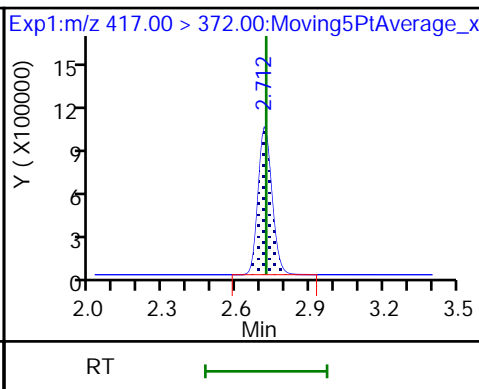
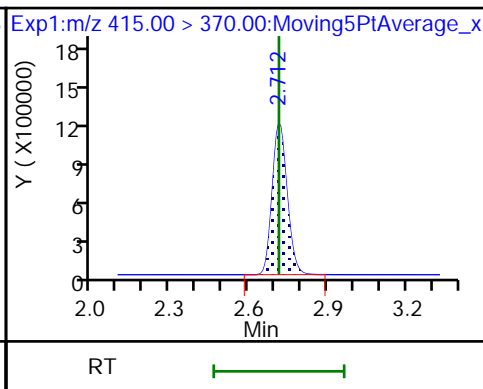
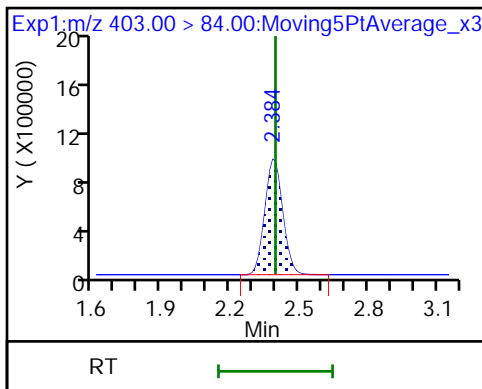
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

* 62 13C2-PFOA

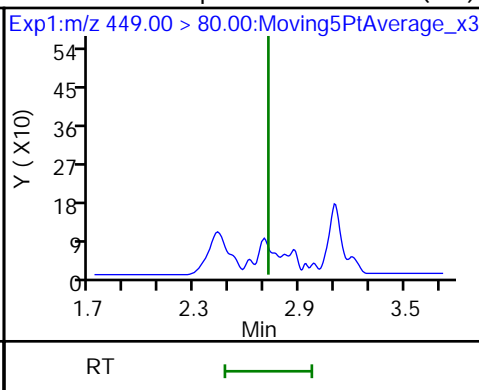
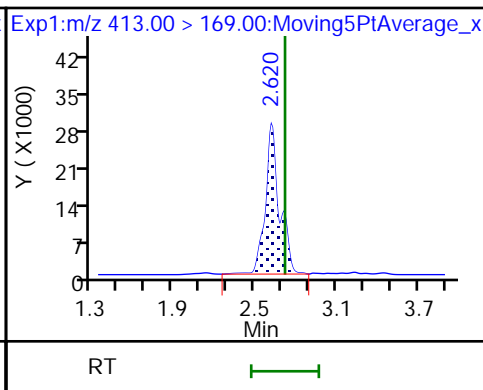
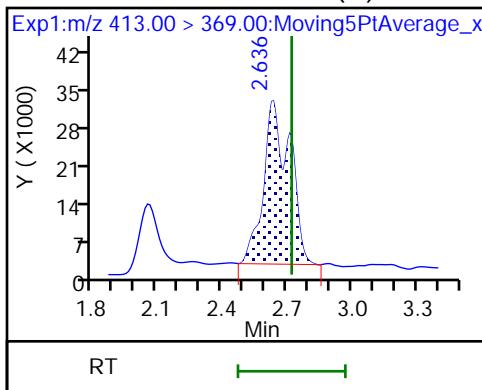
D 14 13C4 PFOA



15 Perfluorooctanoic acid (M)

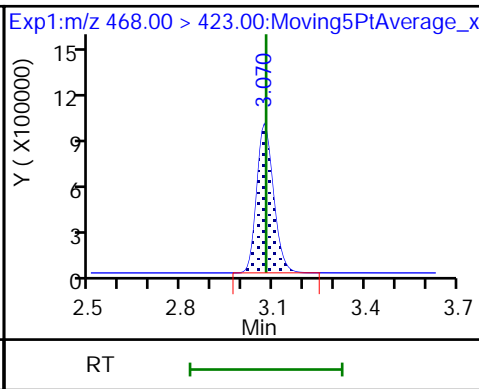
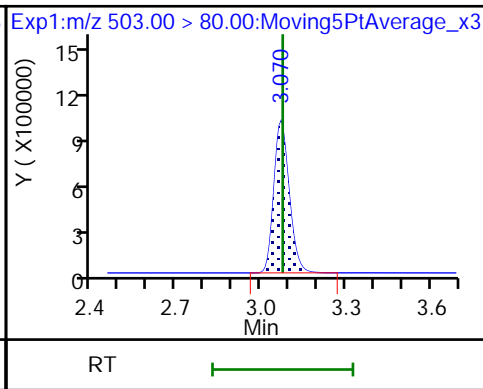
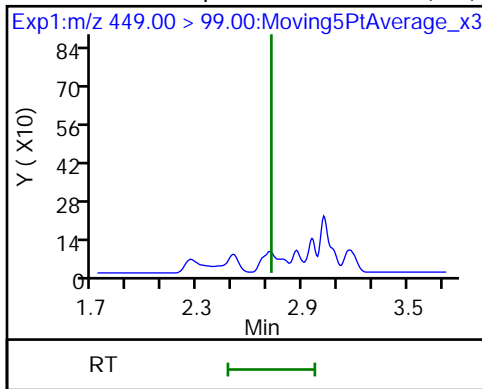
15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic acid (ND)

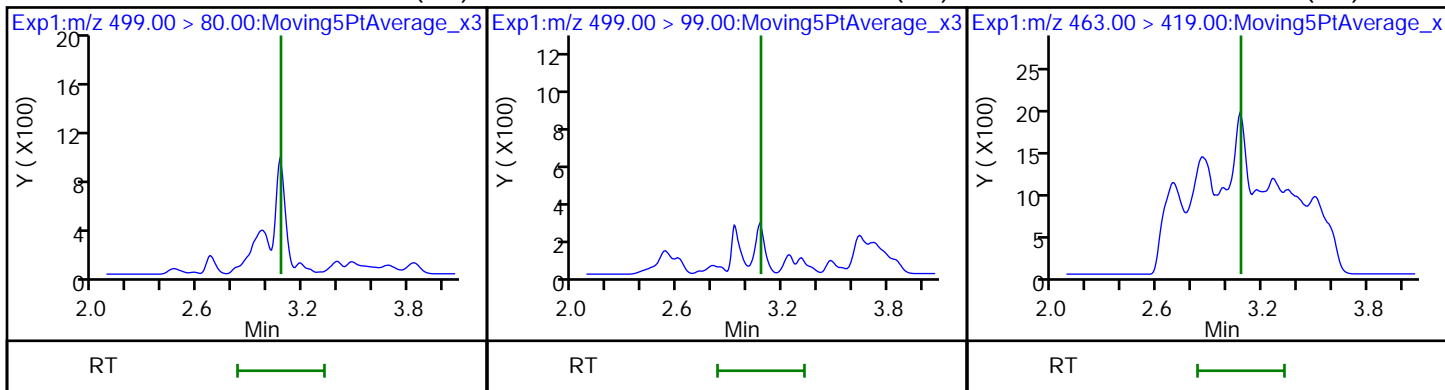


16 Perfluoroheptanesulfonic acid (ND) D 18 13C4 PFOS

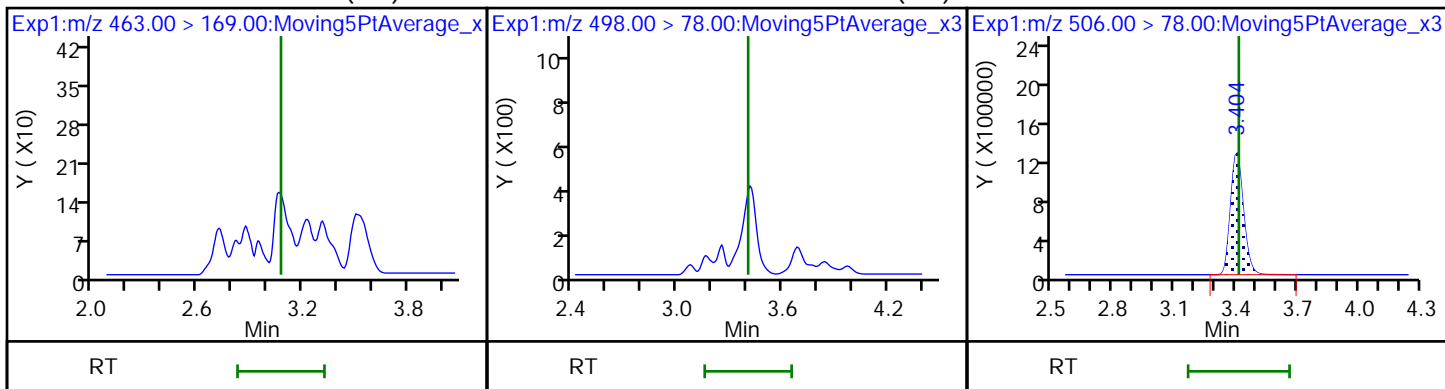
D 19 13C5 PFNA



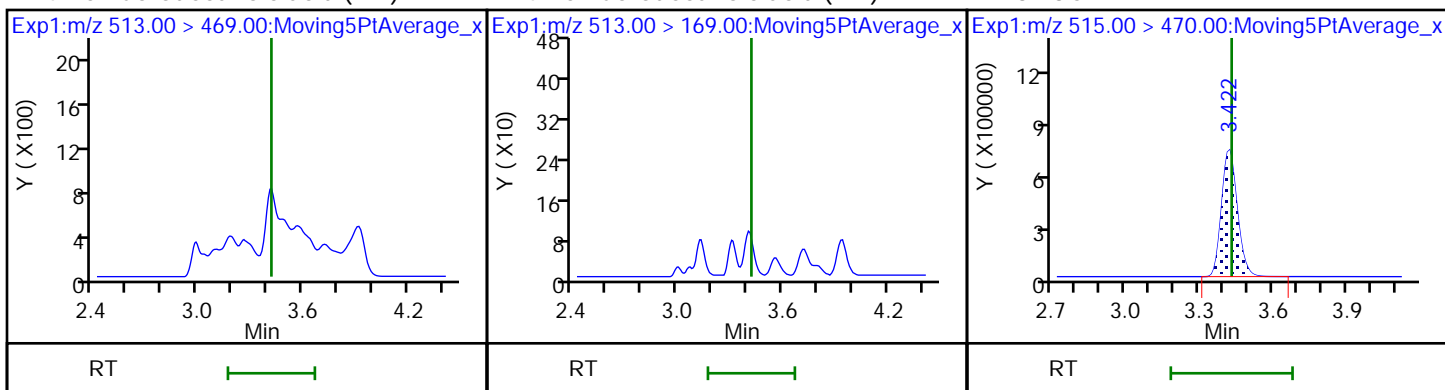
17 Perfluorooctane sulfonic acid (ND) 17 Perfluorooctane sulfonic acid (ND) 20 Perfluorononanoic acid (ND)



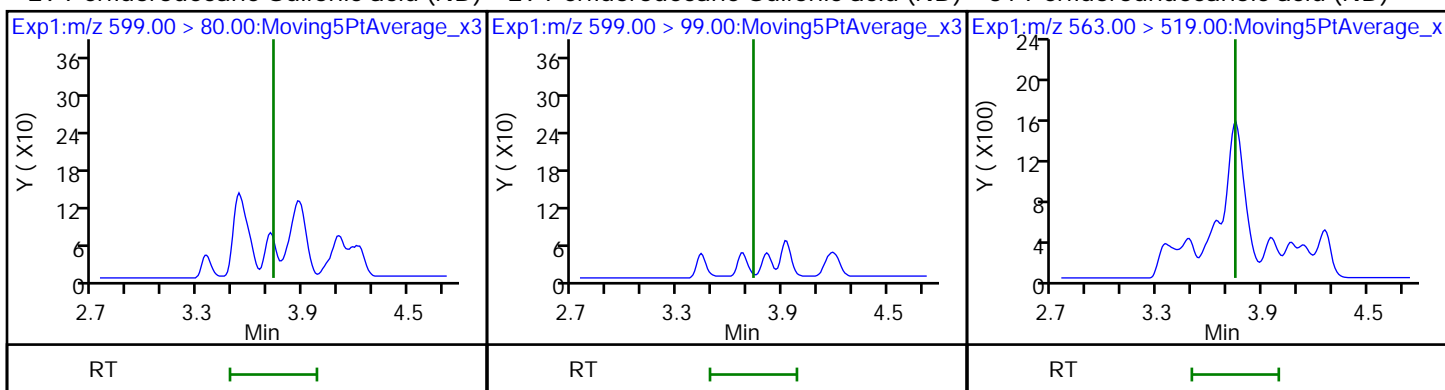
20 Perfluorononanoic acid (ND) 22 Perfluorooctane Sulfonamide (ND) D 21 13C8 FOSA



24 Perfluorodecanoic acid (ND) 24 Perfluorodecanoic acid (ND) D 23 13C2 PFDA



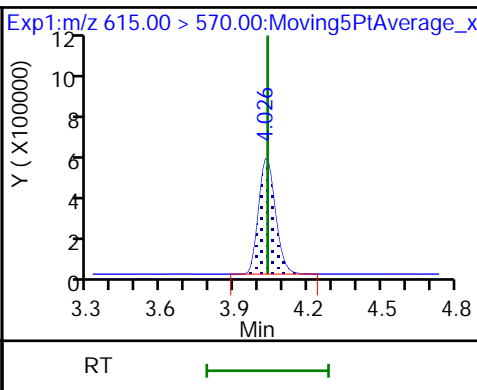
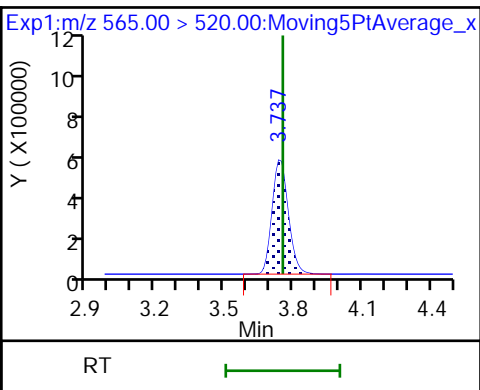
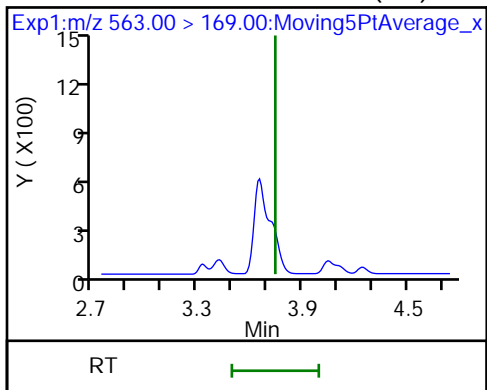
29 Perfluorodecane Sulfonic acid (ND) 29 Perfluorodecane Sulfonic acid (ND) 31 Perfluoroundecanoic acid (ND)



31 Perfluoroundecanoic acid (ND)

D 30 13C2 PFUnA

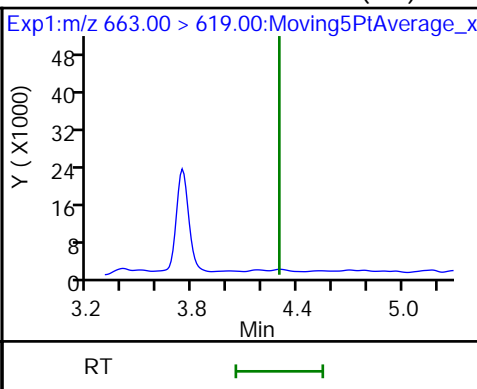
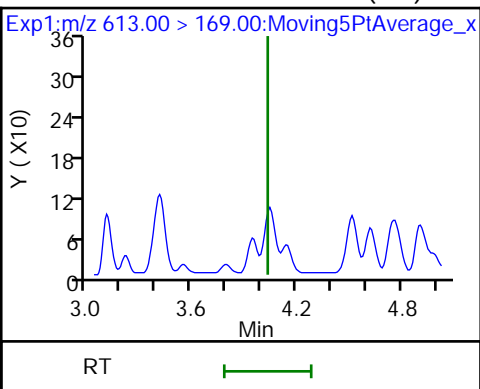
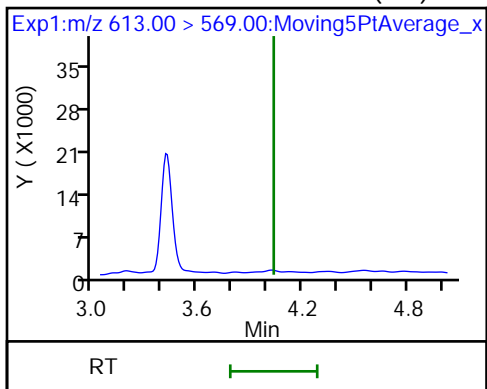
D 36 13C2 PFDoA



37 Perfluorododecanoic acid (ND)

37 Perfluorododecanoic acid (ND)

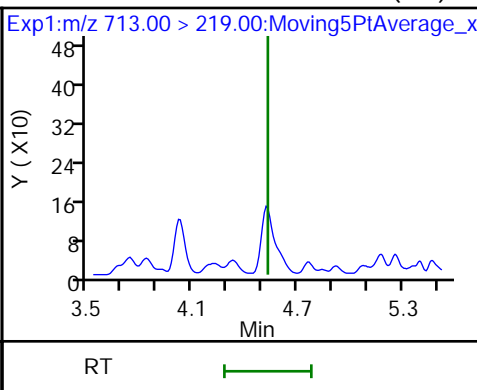
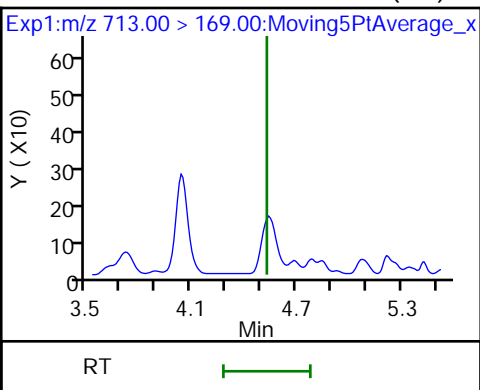
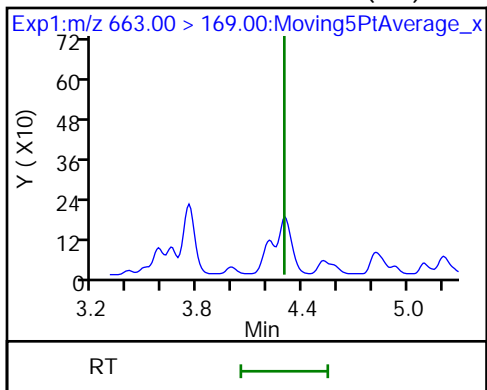
41 Perfluorotridecanoic acid (ND)



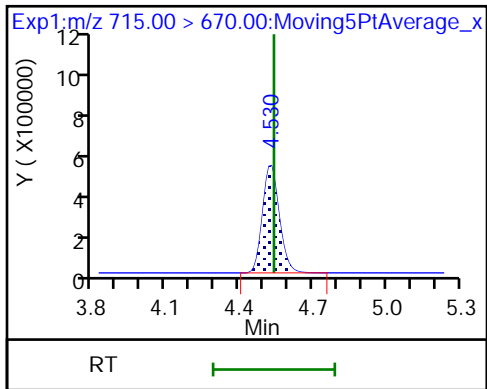
41 Perfluorotridecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)



D 43 13C2-PFTeDA



TestAmerica Sacramento

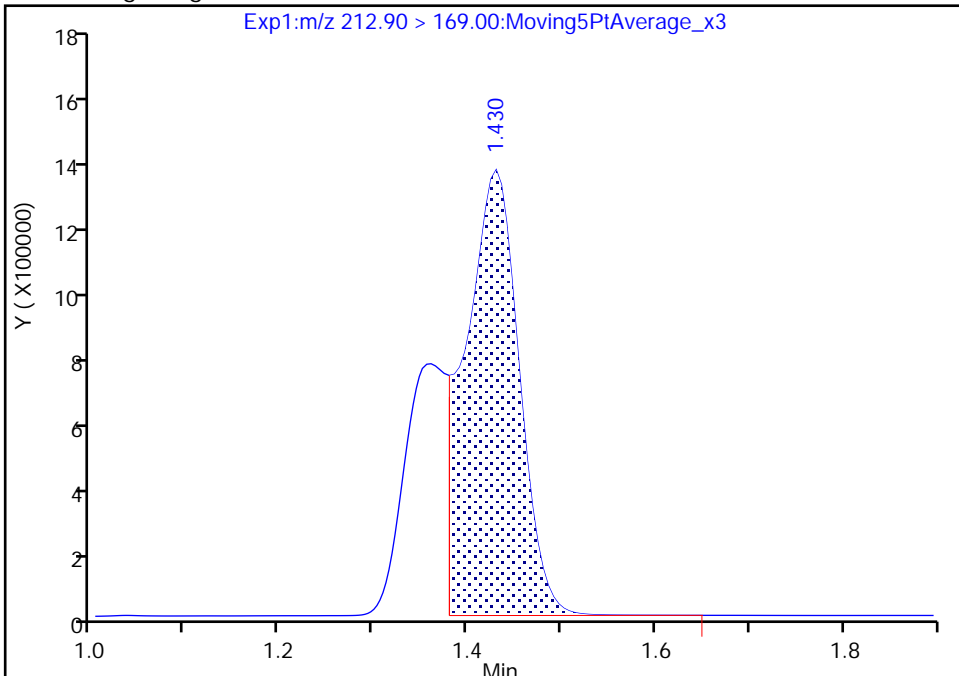
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Injection Date: 18-Jul-2018 23:36:28 Instrument ID: A8_N
Lims ID: 320-40917-A-4-A Lab Sample ID: 320-40917-4
Client ID: TP-PFC-031-TPI-D
Operator ID: SACINSTLCMS01 ALS Bottle#: 51 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

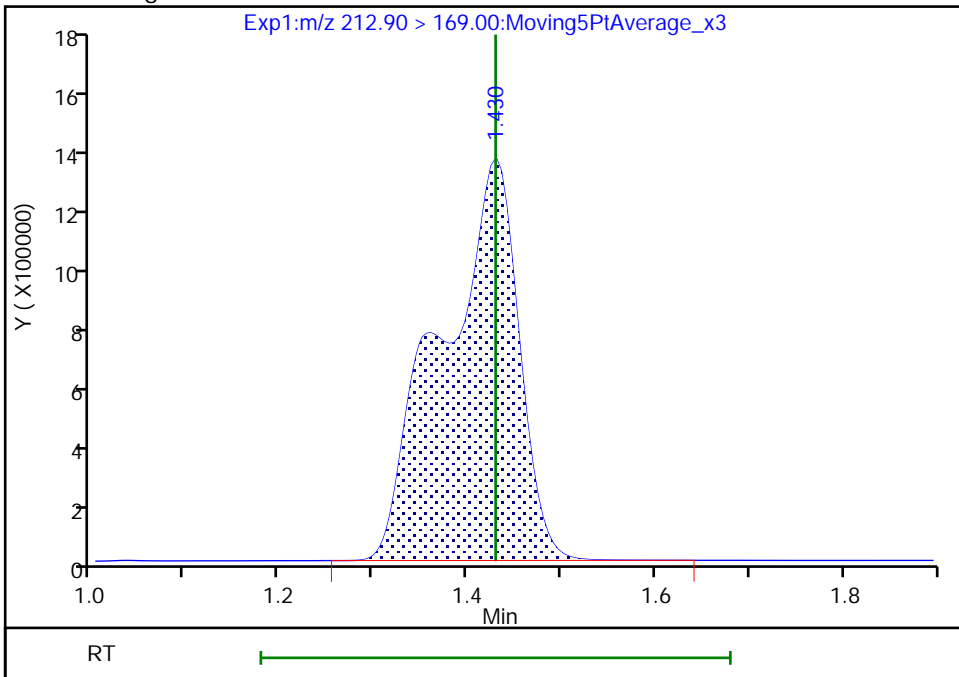
RT: 1.43
Area: 5132828
Amount: 2.399444
Amount Units: ng/ml

Processing Integration Results



RT: 1.43
Area: 7426793
Amount: 3.471805
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 14:26:27
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
Page 410 of 854

TestAmerica Sacramento

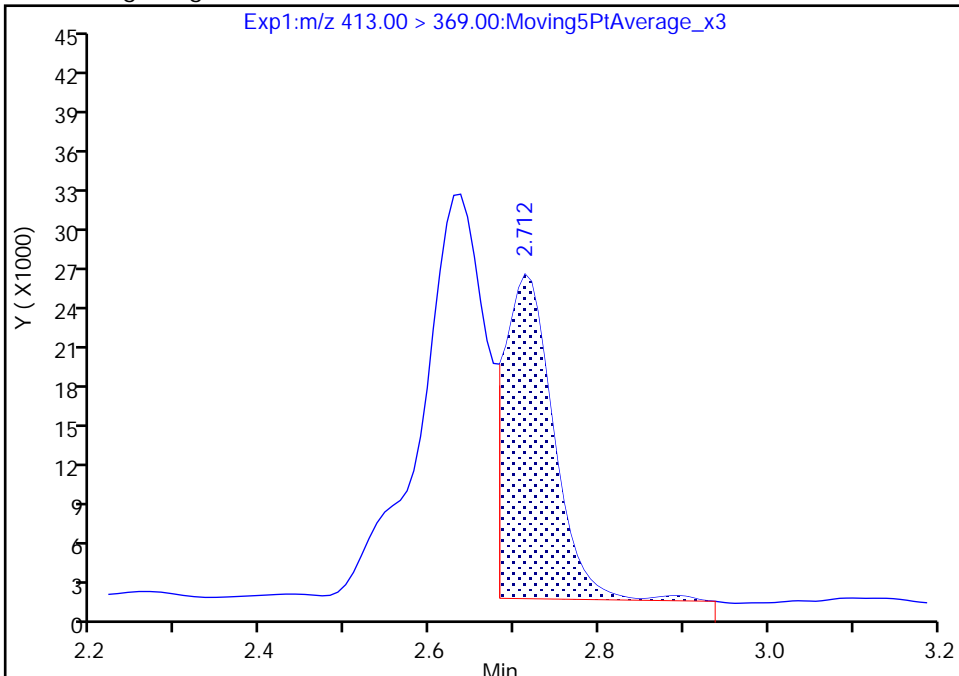
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Injection Date: 18-Jul-2018 23:36:28 Instrument ID: A8_N
Lims ID: 320-40917-A-4-A Lab Sample ID: 320-40917-4
Client ID: TP-PFC-031-TPI-D
Operator ID: SACINSTLCMS01 ALS Bottle#: 51 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

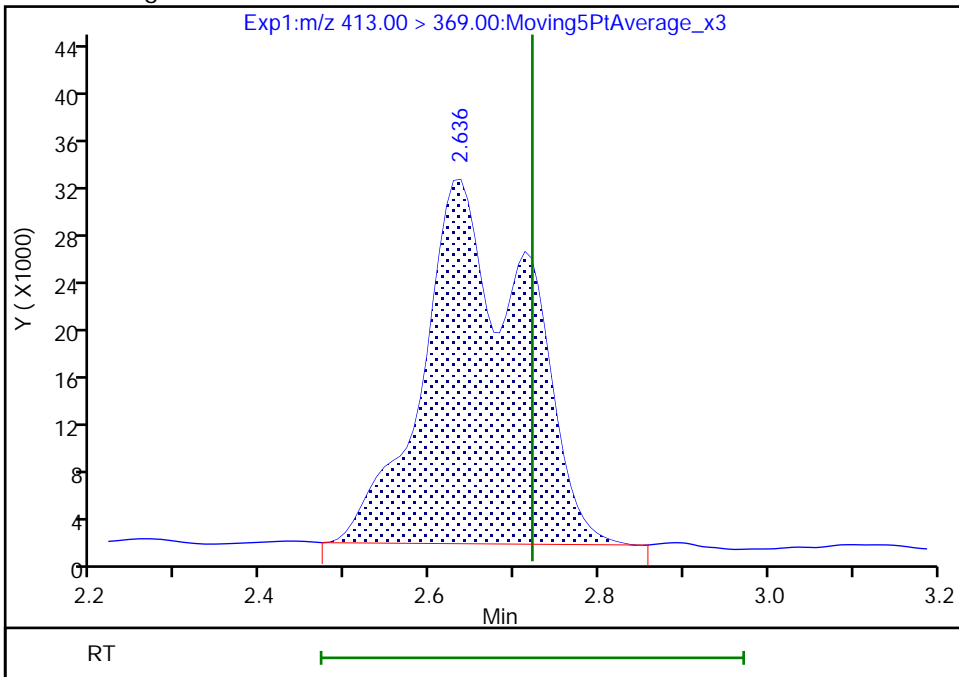
RT: 2.71
Area: 96952
Amount: 0.048872
Amount Units: ng/ml

Processing Integration Results



RT: 2.64
Area: 258273
Amount: 0.130191
Amount Units: ng/ml

Manual Integration Results



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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477

SDG No.: _____

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

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-233477/2	2018.07.11LLICALA_002.d
Level 2	IC 320-233477/3	2018.07.11LLICALA_003.d
Level 3	IC 320-233477/4	2018.07.11LLICALA_004.d
Level 4	IC 320-233477/5	2018.07.11LLICALA_005.d
Level 5	IC 320-233477/6	2018.07.11LLICALA_006.d
Level 6	IC 320-233477/7	2018.07.11LLICALA_007.d
Level 7	IC 320-233477/8	2018.07.11LLICALA_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
Perfluorobutanoic acid (PFBA)	++++ 1.0129	0.9718 0.9875	0.9741	0.9685	0.9987	AveID		0.9856			1.8		20.0				
Perfluoropentanoic acid (PFPeA)	1.3707 1.1646	1.3311 1.1446	1.1808	1.1434	1.1567	AveID		1.2131			7.9		20.0				
Perfluorobutanesulfonic acid (PFBS)	79.113 76.960	76.692 70.480	75.620	75.784	80.820	AveID		76.496			4.2		20.0				
4:2 FTS	13.538 13.122	12.667 12.442	13.653	12.881	12.690	AveID		12.999			3.5		20.0				
Perfluorohexanoic acid (PFHxA)	1.0307 1.0261	1.1305 0.9984	0.9842	1.0000	1.0353	AveID		1.0293			4.7		20.0				
Perfluoropentanesulfonic acid	73.006 70.441	70.339 63.345	65.432	72.240	73.667	AveID		69.781			5.6		20.0				
Perfluoroheptanoic acid (PFHpA)	1.2918 1.1087	1.2500 1.0814	1.1033	1.0989	1.1620	AveID		1.1566			7.2		20.0				
Perfluorohexanesulfonic acid (PFHxS)	1.3490 1.1211	1.1536 1.1001	1.1020	1.0938	1.1158	AveID		1.1479			7.9		20.0				
6:2 FTS	1.4307 1.5705	1.5312 1.6799	1.5392	1.5534	1.6458	AveID		1.5644			5.2		20.0				
Perfluorooctanoic acid (PFOA)	1.4929 1.1887	1.3327 1.1135	1.2003	1.1335	1.1592	AveID		1.2315			11.0		20.0				
Perfluoroheptanesulfonic Acid (PFHpS)	1.3509 1.3688	1.2372 1.2042	1.2775	1.3810	1.4032	AveID		1.3175			5.9		20.0				
Perfluorooctanesulfonic acid (PFOS)	1.1761 1.1316	1.1320 1.0970	1.1094	1.1393	1.1467	AveID		1.1332			2.3		20.0				
Perfluorononanoic acid (PFNA)	1.1492 1.1085	1.1038 1.0564	1.1540	1.0890	1.1045	AveID		1.1093			3.0		20.0				
Perfluorooctane Sulfonamide (FOSA)	0.9447 1.0010	1.0015 0.9523	0.9424	1.0155	1.0419	AveID		0.9856			4.0		20.0				

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

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

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

Analy Batch No.: 233477

SDG No.: _____

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/11/2018 14:48

Calibration End Date: 07/11/2018 15:38

Calibration ID: 39999

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
Perfluorononanesulfonic acid	0.8131 0.8121	0.7419 0.7503	0.7613	0.7781	0.7695	AveID		0.7752			3.6		20.0				
8:2 FTS	1.4047 1.2898	1.2049 1.3194	1.2351	1.2424	1.3334	AveID		1.2900			5.3		20.0				
Perfluorodecanoic acid (PFDA)	0.9467 1.0931	1.1302 1.0145	1.0491	1.0636	1.0484	AveID		1.0494			5.6		20.0				
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	1.0236 0.9755	0.9472 1.0328	0.9128	0.9868	1.0221	AveID		0.9858			4.5		20.0				
Perfluorodecanesulfonic acid (PFDS)	0.6225 0.6912	0.6387 0.6423	0.6832	0.7141	0.7080	AveID		0.6714			5.4		20.0				
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.6464 0.9255	0.9301 0.9261	1.0028	0.8322	0.9253	AveID		0.8840			13.1		20.0				
Perfluoroundecanoic acid (PFUnA)	0.9434 0.7821	0.8699 0.8018	0.7503	0.7522	0.8365	AveID		0.8195			8.5		20.0				
Perfluorododecanoic acid (PFDoA)	1.1376 1.0839	0.9975 1.0907	1.0746	1.1154	1.1433	AveID		1.0919			4.5		20.0				
Perfluorotridecanoic Acid (PFTriA)	0.9687 1.0789	1.0292 1.0500	1.0796	1.0816	1.1857	AveID		1.0677			6.2		20.0				
Perfluorotetradecanoic acid (PFTeA)	0.2555 0.2589	0.2919 0.2636	0.2453	0.2569	0.2491	AveID		0.2602			5.9		20.0				
13C4 PFBA	++++ 1.4117	1.2696 1.5420	1.3076	1.2987	1.3059	Ave		1.3559			7.6		20.0				
13C5 PFPeA	0.9124 1.0054	0.8821 1.0349	0.9316	0.8944	0.9368	Ave		0.9425			6.0		20.0				
13C3-PFBS	0.0220 0.0248	0.0229 0.0269	0.0230	0.0231	0.0231	Ave		0.0237			6.9		20.0				
13C2 PFHxA	0.9821 1.0465	0.9787 1.1049	0.9969	1.0174	0.9938	Ave		1.0172			4.4		20.0				
13C4-PFHpA	0.9006 0.9748	0.8952 0.9872	0.9277	0.9373	0.9365	Ave		0.9371			3.7		20.0				
18O2 PFHxS	1.3480 1.3594	1.2940 1.3736	1.3258	1.2974	1.2946	Ave		1.3275			2.5		20.0				
M2-6:2FTS	0.2035 0.2073	0.1985 0.1979	0.2090	0.1987	0.1914	Ave		0.2009			3.0		20.0				
13C4 PFOA	0.9476 0.9571	0.9504 0.9746	0.9553	0.9586	0.9488	Ave		0.9560			1.0		20.0				
13C4 PFOS	0.9448 1.0026	0.9615 1.0887	0.9374	0.9230	0.9612	Ave		0.9742			5.8		20.0				
13C5 PFNA	0.8507 0.8495	0.8673 0.8781	0.8351	0.8465	0.8552	Ave		0.8546			1.7		20.0				

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
13C8 FOSA	1.4178 1.4370	1.3891 1.3807	1.4145	1.3980	1.3958	Ave		1.4047			1.4		20.0				
M2-8:2FTS	0.3145 0.2790	0.3204 0.2470	0.3241	0.2983	0.2738	Ave		0.2939			9.7		20.0				
13C2 PFDA	0.7752 0.7109	0.7395 0.7327	0.7855	0.7427	0.7657	Ave		0.7503			3.5		20.0				
d3-NMeFOSAA	0.2939 0.3280	0.2883 0.3404	0.2973	0.3039	0.3008	Ave		0.3075			6.3		20.0				
d5-NEtFOSAA	0.3122 0.3175	0.3225 0.3114	0.3121	0.3252	0.3044	Ave		0.3150			2.3		20.0				
13C2 PUnA	0.6068 0.6358	0.6382 0.6158	0.6383	0.6306	0.6206	Ave		0.6266			2.0		20.0				
13C2 PFDoA	0.6316 0.6752	0.6317 0.6905	0.6629	0.6311	0.6243	Ave		0.6496			4.0		20.0				
13C2-PFTeDA	0.6485 0.6992	0.6025 0.7344	0.7008	0.6559	0.6769	Ave		0.6740			6.4		20.0				
13C2-PFHxDA	1.0898 1.0988	0.9225 1.1203	1.0956	1.0747	1.1137	Ave		1.0736			6.4		20.0				

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477

SDG No.: _____

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

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-233477/2	2018.07.11LLICALA_002.d
Level 2	IC 320-233477/3	2018.07.11LLICALA_003.d
Level 3	IC 320-233477/4	2018.07.11LLICALA_004.d
Level 4	IC 320-233477/5	2018.07.11LLICALA_005.d
Level 5	IC 320-233477/6	2018.07.11LLICALA_006.d
Level 6	IC 320-233477/7	2018.07.11LLICALA_007.d
Level 7	IC 320-233477/8	2018.07.11LLICALA_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5
Perfluorobutanoic acid (PFBA)		AveID	++++ 10623913	109256 22835400	529569	2185459	5273443	++++ 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	51727 8699476	103977 17766142	457354	1776986	4381627	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	63723 12546505	137206 25119744	638814	2692471	6674181	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	11521 2260293	23943 4685101	121859	483517	1107254	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	41864 7978958	97977 16543784	407905	1767805	4160132	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanesulfonic acid		AveID	62396 12185262	133528 23955798	586514	2723317	6455101	0.0235 4.69	0.0469 9.38	0.235	0.938	2.35
Perfluoroheptanoic acid (PFHpA)		AveID	48115 8030466	99091 16011091	425549	1789760	4400212	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	68440 10305090	120291 20622639	552716	2243830	5315063	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
6:2 FTS		AveID	11415 2292840	25517 4726825	126798	508387	1207511	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	58566 8461263	112267 16291262	477183	1889955	4451468	0.0250 5.01	0.0501 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	50252 9707552	100280 18718055	473940	2108438	5191820	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorooctanesulfonic acid (PFOS)		AveID	42647 7822689	89440 16622900	401226	1695511	4135858	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)		AveID	40436 6996919	84772 13910795	400644	1601728	3819652	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctane Sulfonamide (FOSA)		AveID	55398 10688141	123192 19718955	554186	2466657	5880155	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorononanesulfonic acid		AveID	30501 5807858	60641 11760635	284813	1198001	2871112	0.0240 4.80	0.0480 9.60	0.240	0.960	2.40

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

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

Analy Batch No.: 233477

SDG No.: _____

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/11/2018 14:48

Calibration End Date: 07/11/2018 15:38

Calibration ID: 39999

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
8:2 FTS		AveID	17506 2561237	32747 4682146	159408	616956	1414341	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorodecanoic acid (PFDA)		AveID	30353 5773802	74013 11148372	342607	1372481	3246129	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	12441 2377396	24180 5272635	112830	521077	1243187	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	23450 4963395	52427 10109747	256645	1104012	2652406	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	8347 2183486	26557 4325460	130099	470221	1138694	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	23675 3694320	49158 7405393	199100	824114	2099121	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid (PFDoA)		AveID	29719 5437907	55796 11295646	296160	1222974	2886271	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	25307 5412702	57570 10874073	297546	1185888	2993320	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	6854 1344804	15573 2903345	71477	292793	681755	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	++++ 5244451	5621166 5781235	5436336	5641372	5280540	++++ 2.50	2.50 2.50	2.50	2.50	2.50
13C5 PFPeA	13PF OA	Ave	3773636 3734969	3905774 3880280	3873105	3885306	3788119	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	84738 85755	94108 93739	88873	93442	86878	2.33 2.33	2.33 2.33	2.33	2.33	2.33
13C2 PFHxA	13PF OA	Ave	4061845 3887868	4333312 4142603	4144632	4419532	4018475	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PF OA	Ave	3724726 3621431	3963601 3701454	3856910	4071620	3786835	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5274150 4777689	5419785 4872001	5214223	5331177	4952007	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	799554 731524	834970 704932	825525	819911	735229	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	3919080 3555536	4207903 3653899	3971401	4164105	3836329	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	3735610 3560852	4069838 3902400	3725581	3832872	3715442	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	3518663 3155893	3839924 3292167	3471672	3677166	3458178	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	5863894 5338756	6150410 5176580	5880733	6072674	5643811	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	1246262 992916	1358867 887172	1290698	1241456	1060685	2.40 2.40	2.40 2.40	2.40	2.40	2.40

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477

SDG No.: _____

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

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7				LVL 6	LVL 7			
13C2 PFDA	13PF OA	Ave	3206069 2641138	3274309 2747254	3265845	3225992	3096188	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	1215393 1218514	1276369 1276287	1236119	1320092	1216339	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d5-NEtFOSAA	13PF OA	Ave	1291362 1179674	1427681 1167600	1297377	1412562	1230676	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFunA	13PF OA	Ave	2509506 2361908	2825527 2308936	2653699	2739039	2509304	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDoA	13PF OA	Ave	2612394 2508500	2796780 2588991	2756034	2741167	2524421	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	2682209 2597628	2667637 2753301	2913500	2848985	2737226	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	4507577 4082261	4084288 4200183	4554944	4668246	4503233	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477

SDG No.: _____

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

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-233477/2	2018.07.11LLICALA_002.d
Level 2	IC 320-233477/3	2018.07.11LLICALA_003.d
Level 3	IC 320-233477/4	2018.07.11LLICALA_004.d
Level 4	IC 320-233477/5	2018.07.11LLICALA_005.d
Level 5	IC 320-233477/6	2018.07.11LLICALA_006.d
Level 6	IC 320-233477/7	2018.07.11LLICALA_007.d
Level 7	IC 320-233477/8	2018.07.11LLICALA_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid (PFBA)	++++ 0.2	-1.4	-1.2	-1.7	1.3	2.8	30	30	30	30	30	30
Perfluoropentanoic acid (PFPeA)	13.0 -5.6	9.7	-2.7	-5.7	-4.7	-4.0	30 30	30	30	30	30	30
Perfluorobutanesulfonic acid (PFBS)	3.4 -7.9	0.3	-1.1	-0.9	5.7	0.6	30 30	30	30	30	30	30
4:2 FTS	4.1 -4.3	-2.6	5.0	-0.9	-2.4	0.9	30 30	30	30	30	30	30
Perfluorohexanoic acid (PFHxA)	0.1 -3.0	9.8	-4.4	-2.8	0.6	-0.3	30 30	30	30	30	30	30
Perfluoropentanesulfonic acid	4.6 -9.2	0.8	-6.2	3.5	5.6	0.9	30 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	11.7 -6.5	8.1	-4.6	-5.0	0.5	-4.1	30 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	17.5 -4.2	0.5	-4.0	-4.7	-2.8	-2.3	30 30	30	30	30	30	30
6:2 FTS	-8.5 7.4	-2.1	-1.6	-0.7	5.2	0.4	30 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	21.2 -9.6	8.2	-2.5	-8.0	-5.9	-3.5	30 30	30	30	30	30	30
Perfluoroheptanesulfonic Acid (PFHpS)	2.5 -8.6	-6.1	-3.0	4.8	6.5	3.9	30 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	3.8 -3.2	-0.1	-2.1	0.5	1.2	-0.1	30 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	3.6 -4.8	-0.5	4.0	-1.8	-0.4	-0.1	30 30	30	30	30	30	30
Perfluorooctane Sulfonamide (FOSA)	-4.1 -3.4	1.6	-4.4	3.0	5.7	1.6	30 30	30	30	30	30	30
Perfluorononanesulfonic acid	4.9 -3.2	-4.3	-1.8	0.4	-0.7	4.8	30 30	30	30	30	30	30

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477

SDG No.: _____

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

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

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
8:2 FTS	8.9 2.3	-6.6	-4.3	-3.7	3.4	0.0	30 30	30	30	30	30	30
Perfluorodecanoic acid (PFDA)	-9.8 -3.3	7.7	0.0	1.4	-0.1	4.2	30 30	30	30	30	30	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	3.8 4.8	-3.9	-7.4	0.1	3.7	-1.0	30 30	30	30	30	30	30
Perfluorodecanesulfonic acid (PFDS)	-7.3 -4.3	-4.9	1.7	6.4	5.4	2.9	30 30	30	30	30	30	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	-26.9 4.8	5.2	13.4	-5.9	4.7	4.7	30 30	30	30	30	30	30
Perfluoroundecanoic acid (PFUnA)	15.1 -2.2	6.2	-8.4	-8.2	2.1	-4.6	30 30	30	30	30	30	30
Perfluorododecanoic acid (PFDoA)	4.2 -0.1	-8.6	-1.6	2.2	4.7	-0.7	30 30	30	30	30	30	30
Perfluorotridecanoic Acid (PFTriA)	-9.3 -1.7	-3.6	1.1	1.3	11.1	1.0	30 30	30	30	30	30	30
Perfluorotetradecanoic acid (PFTeA)	-1.8 1.3	12.2	-5.7	-1.2	-4.3	-0.5	30 30	30	30	30	30	30

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_002.d
 Lims ID: IC L1 Full
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 11-Jul-2018 14:48:59 ALS Bottle#: 10 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 11-Jul-2018 16:33:18 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:13:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.625	1.702	-0.077	1.000	51727	0.0282		113	15.3	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.625	1.702	-0.077	0.607	3773636	2.42		96.8	38740	
D 47 13C3-PFBS										
301.90 > 83.00	1.712	1.748	-0.036	0.640	84738	2.16		93.0	494	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.721	1.751	-0.030	1.005	63723	0.0229		103	788	
298.90 > 99.00	1.721	1.751	-0.030	1.005	27608		2.31(1.25-3.74)	103	308	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	1.949	1.962	-0.013	1.139	11521	0.0243		104	1016	
D 60 M2-4:2FTS										
329.00 > 81.00	1.949	1.962	-0.013	0.728	513760	NC			5378	
D 7 13C2 PFHxA										
315.00 > 270.00	1.982	1.996	-0.014	0.741	4061845	2.41		96.5	70891	
6 Perfluorohexanoic acid										M
313.00 > 269.00	1.982	1.998	-0.016	1.000	41864	0.0250		100	67.8	
313.00 > 119.00	1.971	1.998	-0.027	0.995	4020		10.41(5.03-15.10)	100	87.3	M
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.016	2.022	-0.006	1.178	62396	0.0245		105	1542	
349.00 > 99.00	2.016	2.022	-0.006	1.178	24140		2.58(1.36-4.07)	105	480	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.083	2.093	-0.010	0.779	278389	NC			7110	
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.083	2.095	-0.012	1.000	7091	NC			35.0	
D 9 13C4-PFHpA										
367.00 > 322.00	2.321	2.319	0.002	0.867	3724726	2.40		96.1	36311	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.321	2.319	0.002	1.000	48115	0.0279		112	80.2	
363.00 > 169.00	2.321	2.319	0.002	1.000	20821		2.31(1.13-3.40)	112	195	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.334	2.332	0.002	1.000	68440	0.0267		118	687	
399.00 > 99.00	2.334	2.332	0.002	1.000	26424		2.59(1.50-4.49)	118	180	
D 11 18O2 PFHxS										
403.00 > 84.00	2.334	2.334	0.0	0.872	5274150	2.40		102	31468	
65 Adona										
377.00 > 251.00	2.360	2.360	0.0	0.775	122149	NC			1762	
377.00 > 85.00	2.360	2.360	0.0	0.775	66967		1.82(0.84-2.53)		350	
D 12 M2-6:2FTS										
429.00 > 81.00	2.654	2.645	0.009	0.992	799554	2.41		101	15699	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.654	2.648	0.006	1.000	11415	0.0217		91.5	214	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.676	2.672	0.004	1.000	58566	0.0303		121	42.3	
413.00 > 169.00	2.676	2.672	0.004	1.000	29579		1.98(0.84-2.52)	121	150	
* 62 13C2-PFOA										
415.00 > 370.00	2.676	2.672	0.004		4135961	2.50			25214	
D 14 13C4 PFOA										
417.00 > 372.00	2.676	2.672	0.004	1.000	3919080	2.48		99.1	39083	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.684	2.678	0.006	0.882	50252	0.0244		103	1356	
449.00 > 99.00	2.684	2.678	0.006	0.882	13998		3.59(1.94-5.82)	103	336	
D 18 13C4 PFOS										
503.00 > 80.00	3.044	3.034	0.010	1.137	3735610	2.32		97.0	38404	
D 19 13C5 PFNA										
468.00 > 423.00	3.044	3.035	0.009	1.137	3518663	2.49		99.5	37505	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.044	3.035	0.009	1.000	42647	0.0241		104	1040	M
499.00 > 99.00	3.044	3.035	0.009	1.000	6341		6.73(2.31-6.93)	104	76.8	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.044	3.036	0.008	1.000	40436	0.0259		104	86.6	
463.00 > 169.00	3.044	3.036	0.008	1.000	8246		4.90(1.90-5.69)	104	386	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.252	3.245	0.007	1.068	64507	NC			738	
D 21 13C8 FOSA										
506.00 > 78.00	3.368	3.367	0.001	1.259	5863894	2.52		101	37744	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.378	3.371	0.007	1.003	55398	0.0240		95.9	895	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.387	3.377	0.010	1.113	30501	0.0252		105	977	
549.00 > 99.00	3.387	3.377	0.010	1.113	11187		2.73(1.33-3.97)	105	183	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.387	3.380	0.007	1.000	17506	0.0261		109	392	
D 26 M2-8:2FTS										
529.00 > 81.00	3.387	3.380	0.007	1.266	1246262	2.56		107	13304	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.396	3.391	0.005	1.269	3206069	2.58		103	42082	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.396	3.392	0.004	1.000	30353	0.0226		90.2	167	
513.00 > 169.00	3.406	3.392	0.014	1.003	5842		5.20(2.36-7.09)	90.2	176	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.555	3.544	0.011	1.328	1215393	2.39		95.6	18900	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.555	3.548	0.007	1.000	12441	0.0260		104	107	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.707	3.701	0.006	1.218	23450	0.0223		92.7	612	
599.00 > 99.00	3.707	3.701	0.006	1.218	7239		3.24(1.39-4.16)	92.7	219	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.717	3.710	0.007	1.389	1291362	2.48		99.1	3190	
D 30 13C2 PFUnA										
565.00 > 520.00	3.728	3.716	0.012	1.393	2509506	2.42		96.8	51439	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.728	3.718	0.010	1.003	8347	0.0183		73.1	145	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.728	3.718	0.010	1.000	23675	0.0288		115	106	
563.00 > 169.00	3.717	3.718	-0.001	0.997	8021		2.95(2.12-6.36)	115	436	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.885	3.874	0.011	1.276	99455	NC			2626	
D 36 13C2 PFDaA										
615.00 > 570.00	4.018	4.009	0.009	1.501	2612394	2.43		97.2	20487	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.018	4.011	0.007	1.000	29719	0.0260		104	16.6	
613.00 > 169.00	4.018	4.011	0.007	1.000	7194		4.13(2.13-6.40)	104	142	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.280	4.273	0.007	1.065	25307	0.0227		90.7	12.3	
663.00 > 169.00	4.280	4.273	0.007	1.065	8824		2.87(1.25-3.76)	90.7	172	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.520	4.508	0.012	1.689	2682209	2.41		96.2	12372	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.520	4.508	0.012	1.000	6854	0.0246		98.2	111	
713.00 > 219.00	4.520	4.508	0.012	1.000	5713		1.20(0.71-2.13)	98.2	153	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.930	4.918	0.012	1.842	4507577	2.54		102	13270	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.930	4.918	0.012	1.000	79574	NC			20.2	
813.00 > 169.00	4.930	4.918	0.012	1.000	12790		6.22(2.86-8.58)		144	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.283	5.271	0.012	1.072	51724	NC			11.3	
913.00 > 169.00	5.283	5.271	0.012	1.072	7005		7.38(3.83-11.48)		122	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL1_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_002.d

Injection Date: 11-Jul-2018 14:48:59

Instrument ID: A8_N

Lims ID: IC L1 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 10

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

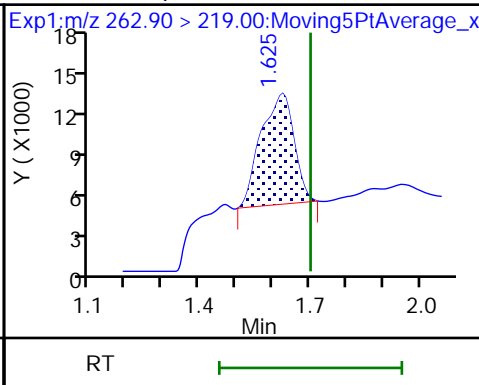
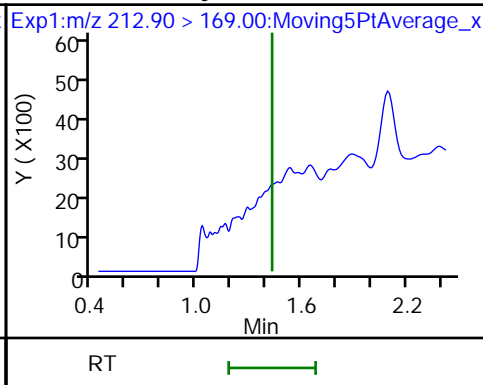
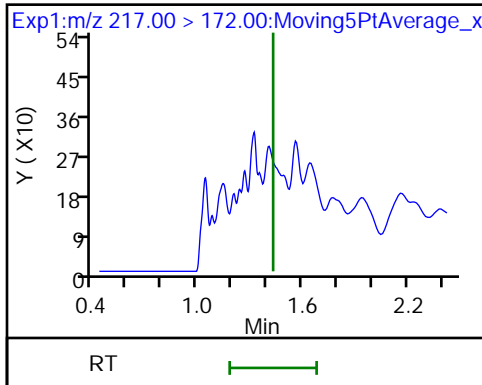
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA (ND)

2 Perfluorobutyric acid (ND)

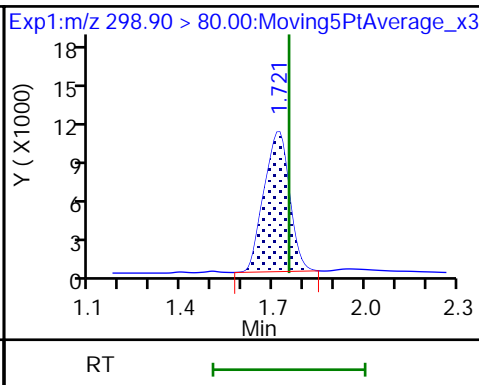
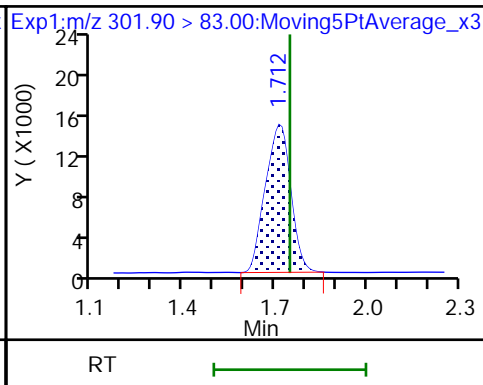
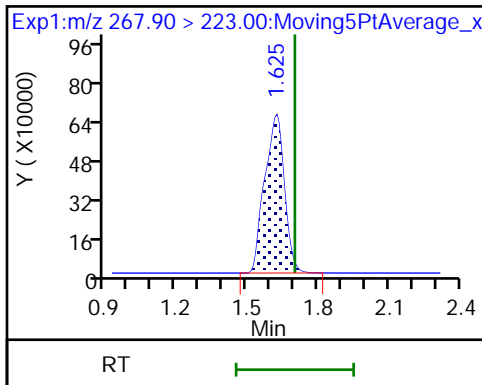
4 Perfluoropentanoic acid (M)



D 3 13C5-PFPeA

D 47 13C3-PFBS

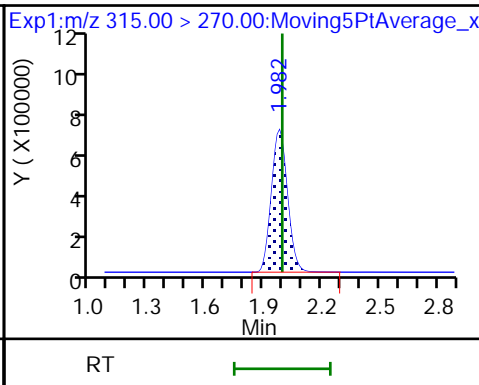
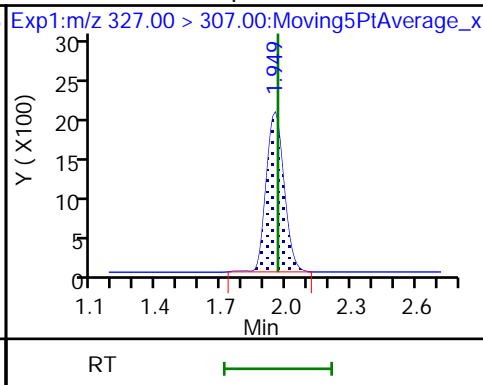
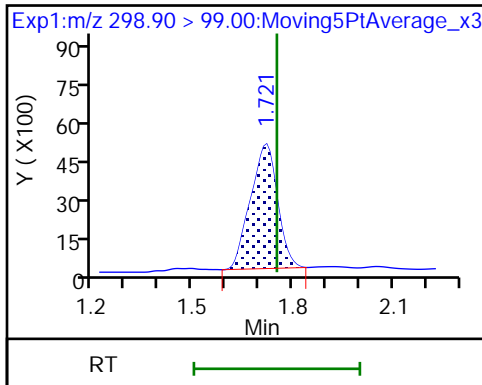
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfon

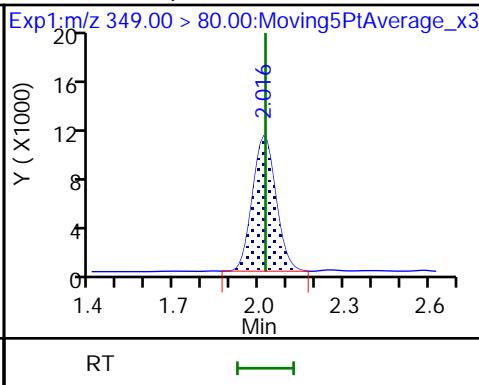
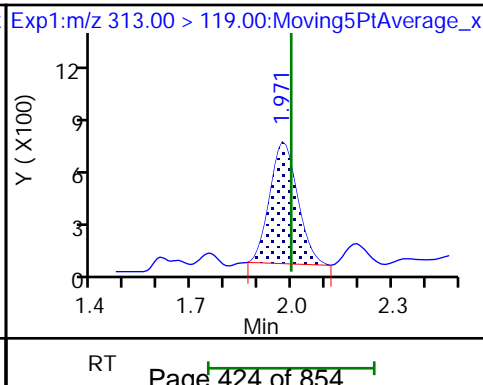
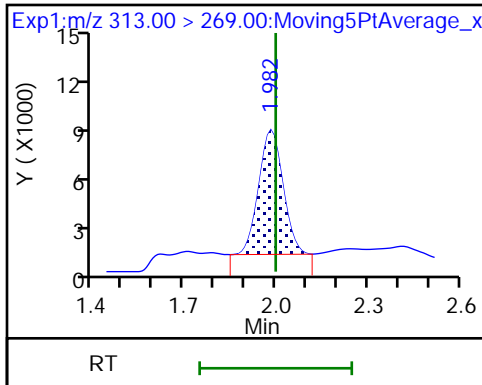
D 7 13C2 PFHxA



6 Perfluorohexanoic acid (M)

6 Perfluorohexanoic acid (M)

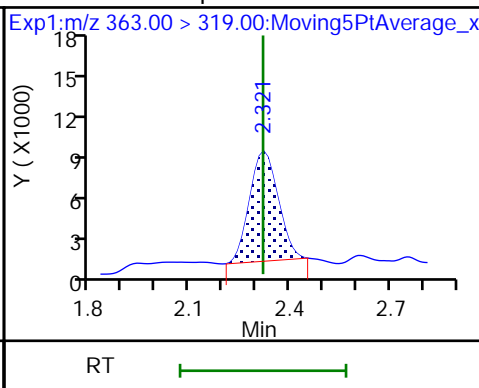
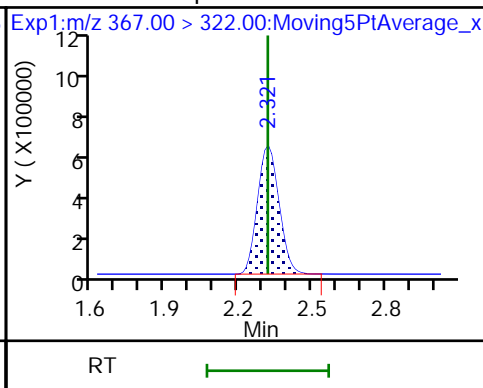
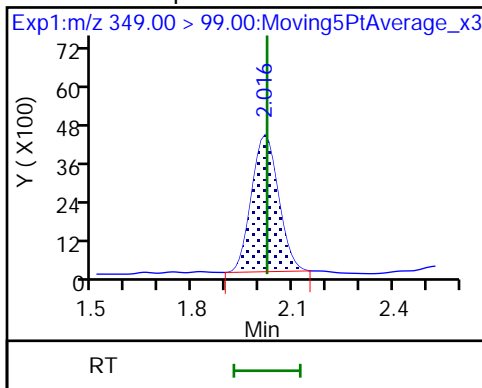
70 Perfluoropentanesulfonic acid



70 Perfluoropentanesulfonic acid

D 9 13C4-PFHpA

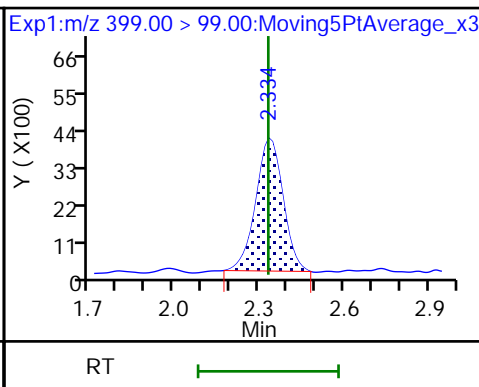
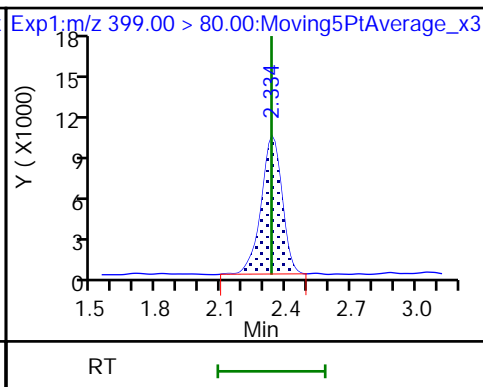
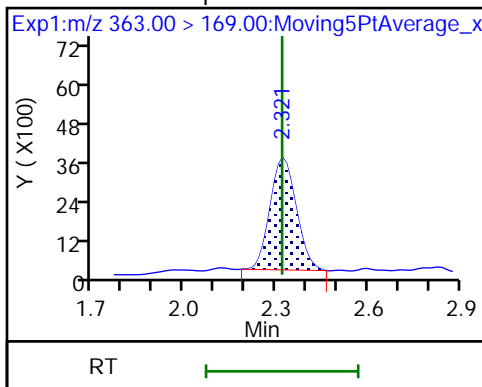
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

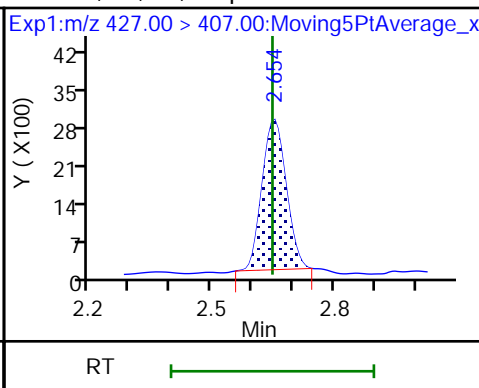
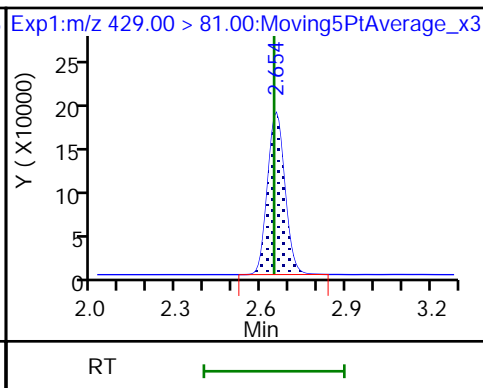
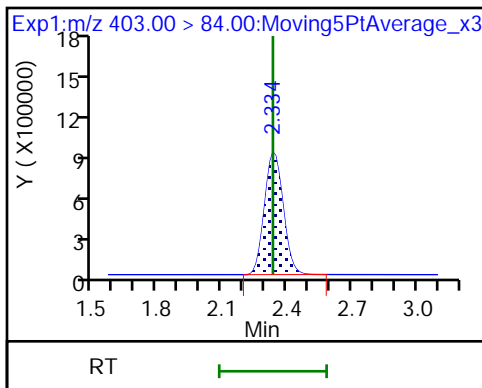
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

D 12 M2-6:2FTS

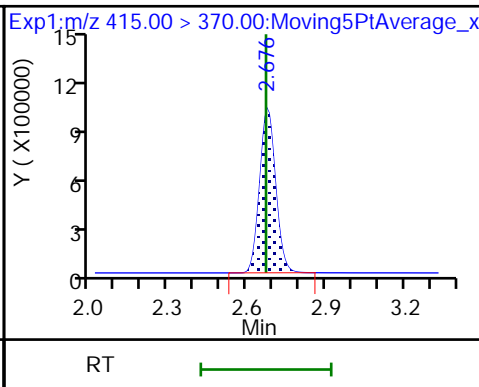
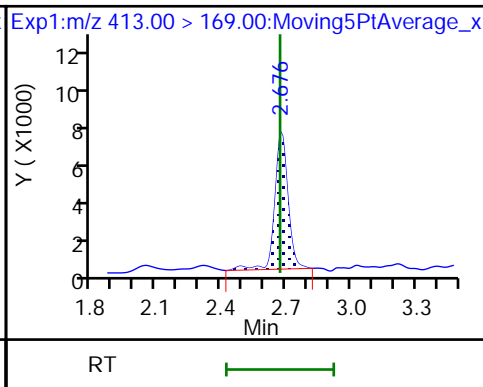
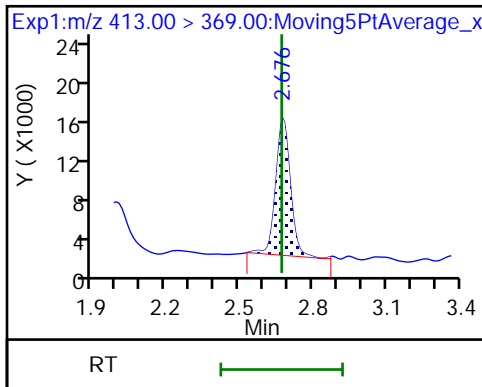
13 1H,1H,2H,2H-perfluorooctanesulfoni



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

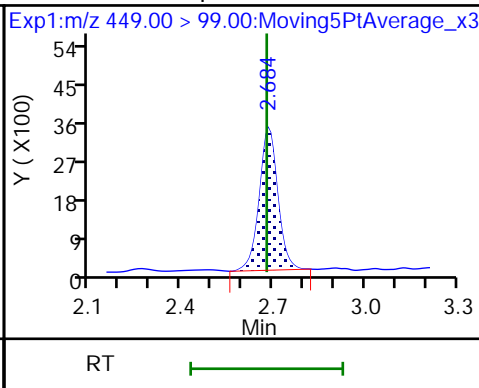
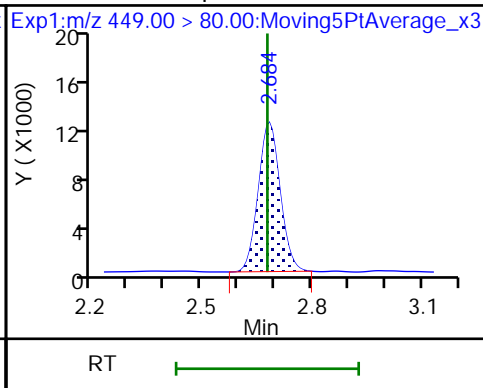
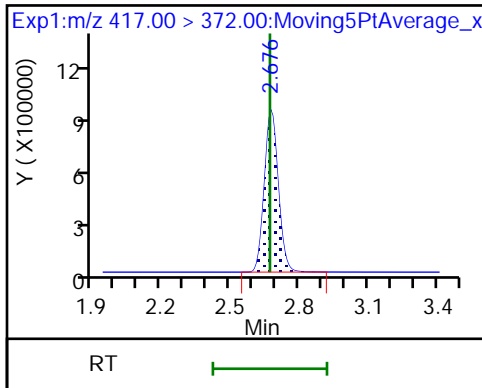
* 62 13C2-PFOA



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

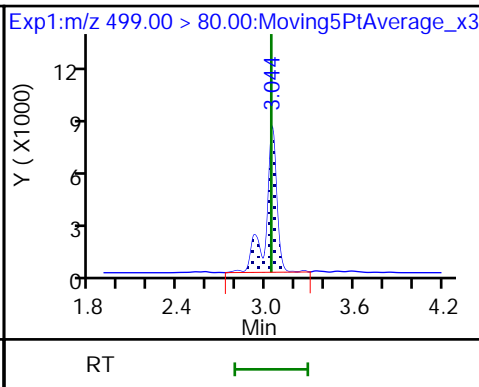
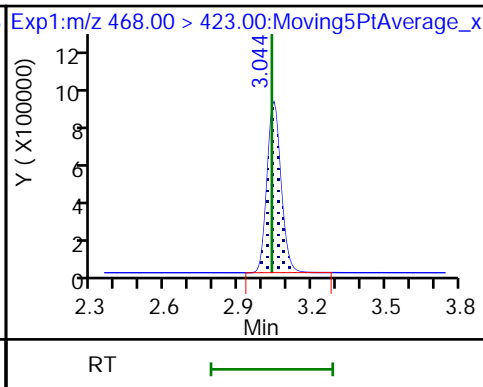
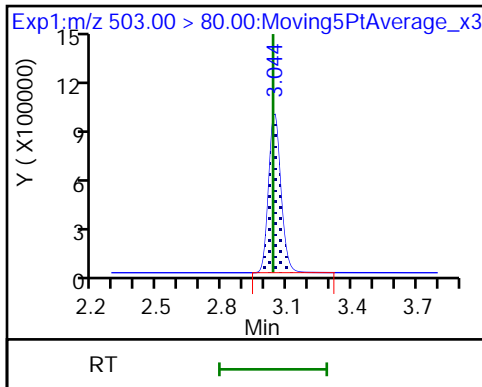
16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS

D 19 13C5 PFNA

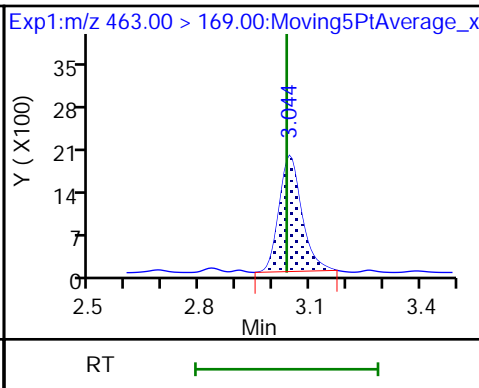
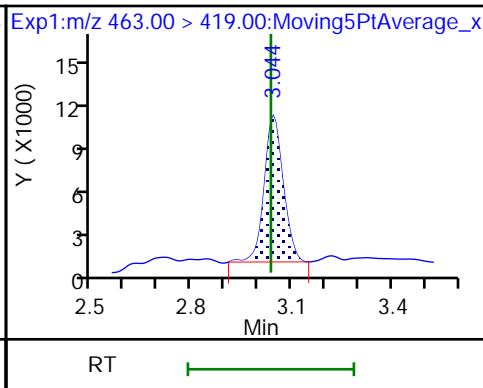
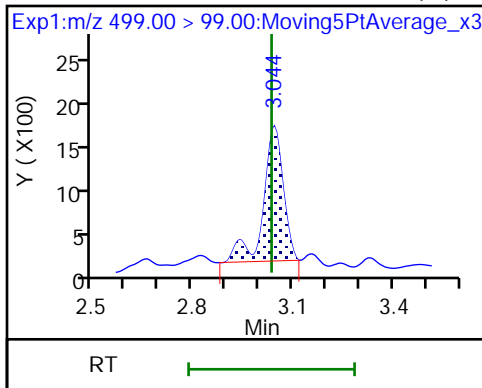
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid (M)

20 Perfluorononanoic acid

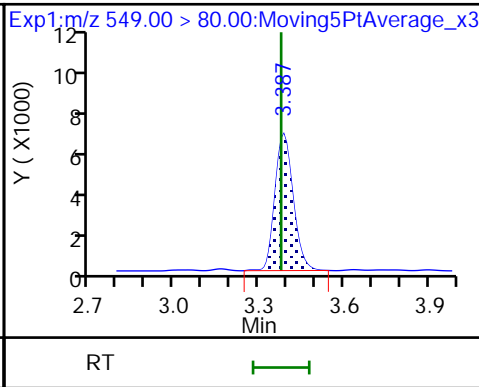
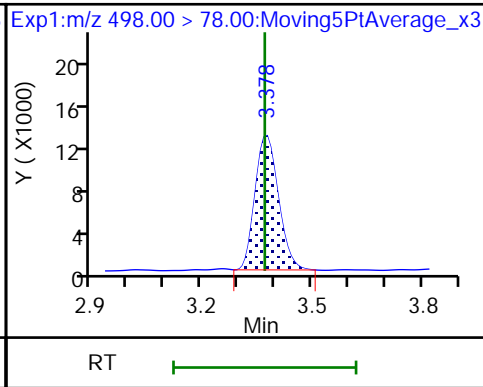
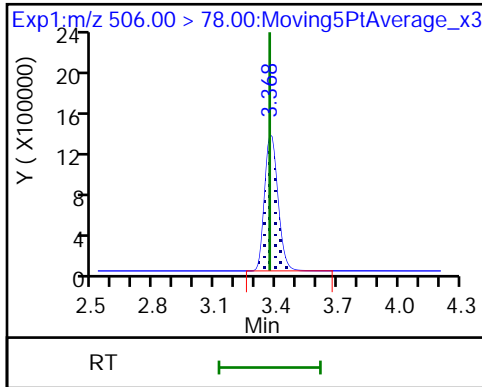
20 Perfluorononanoic acid



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

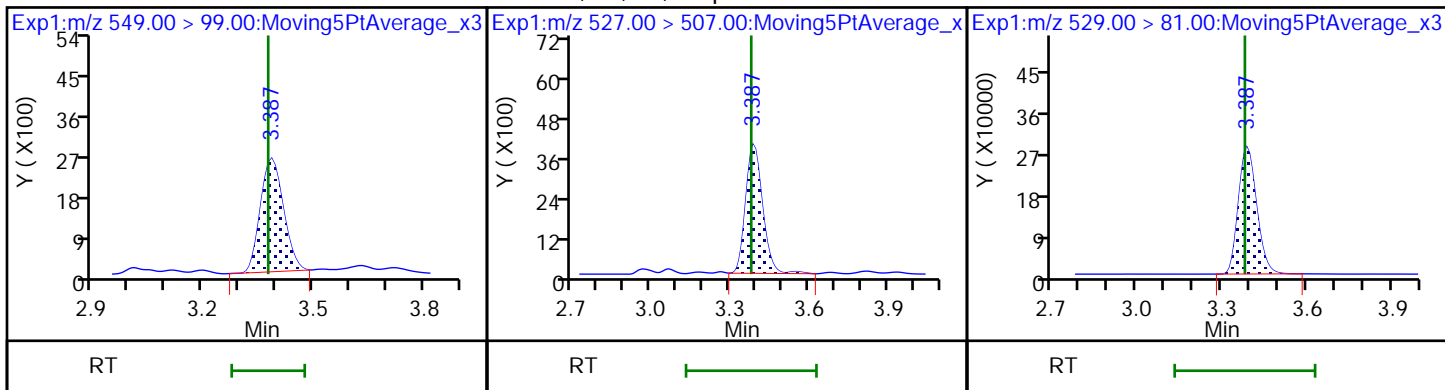
68 Perfluorononanesulfonic acid



68 Perfluorononanesulfonic acid

25 1H,1H,2H,2H-perfluorodecanesulfonate

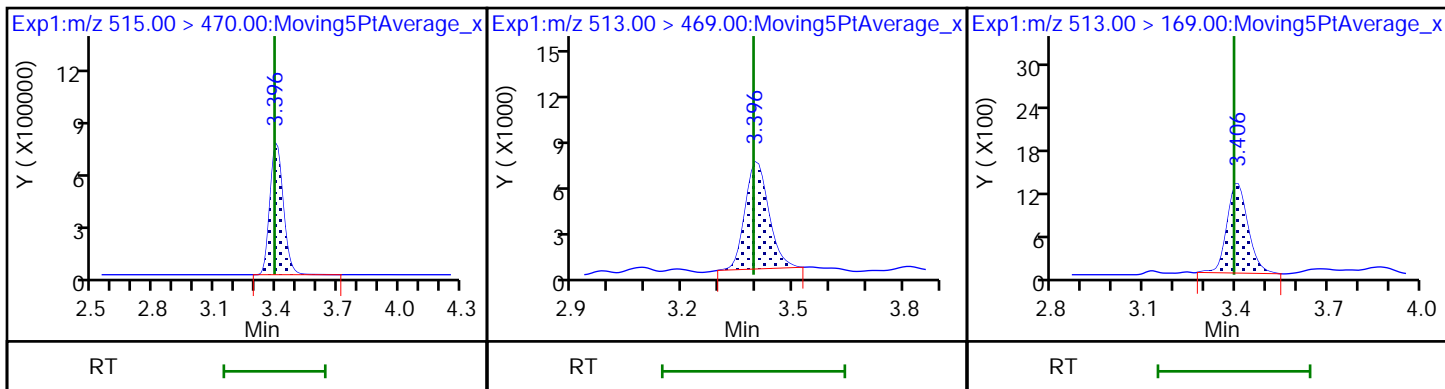
26 M2-8:2FTS



D 23 13C2 PFDA

24 Perfluorodecanoic acid

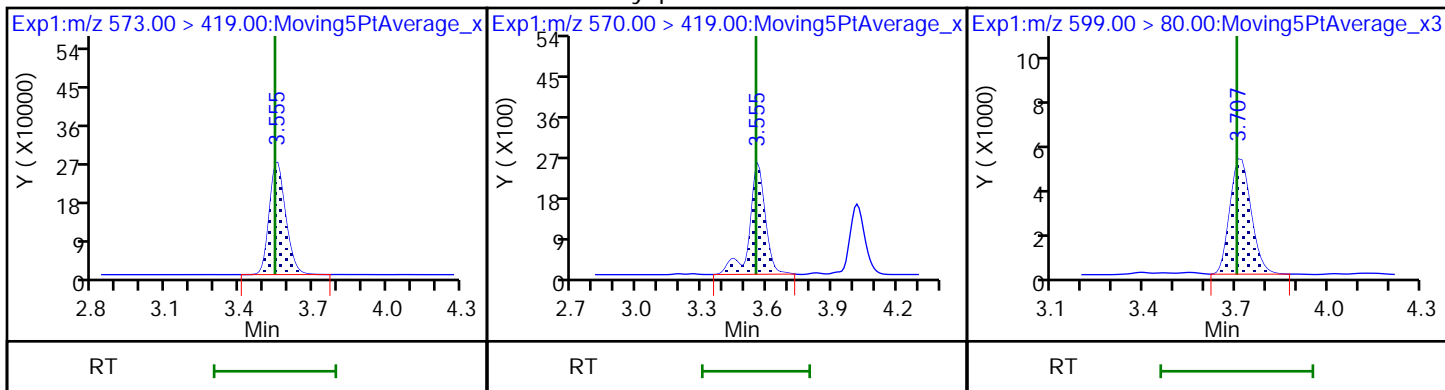
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonamide

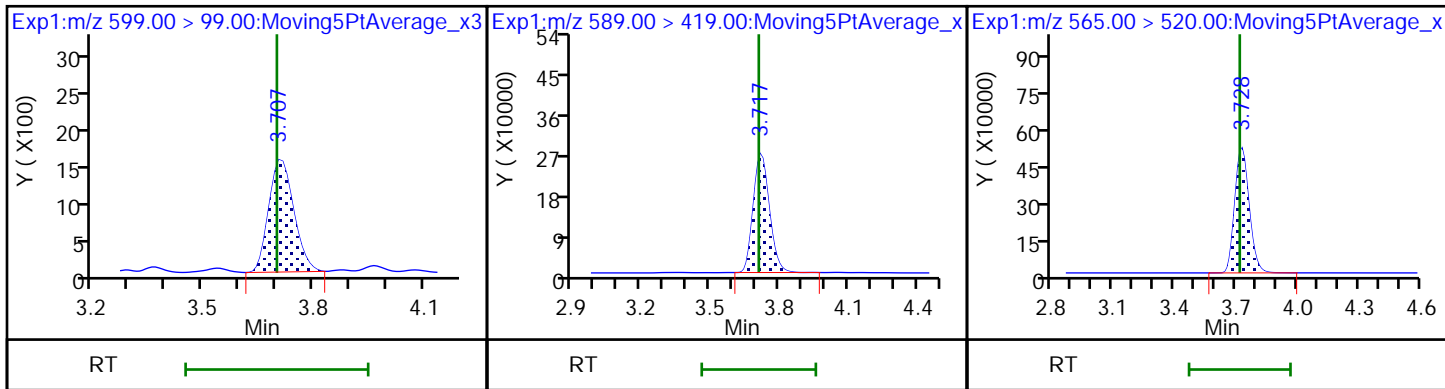
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

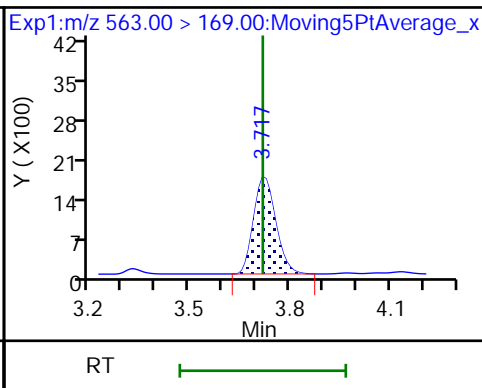
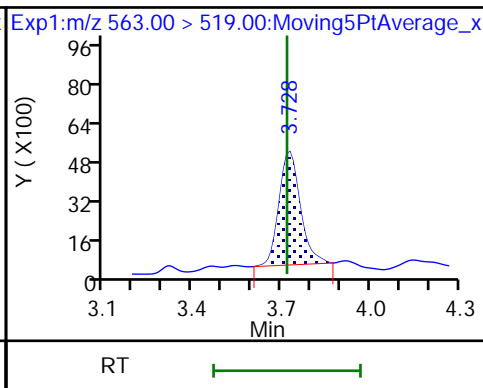
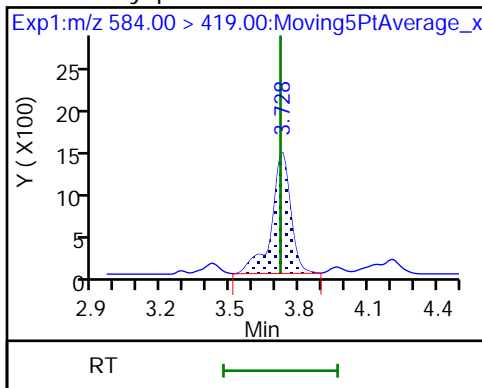
D 30 13C2 PFUnA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

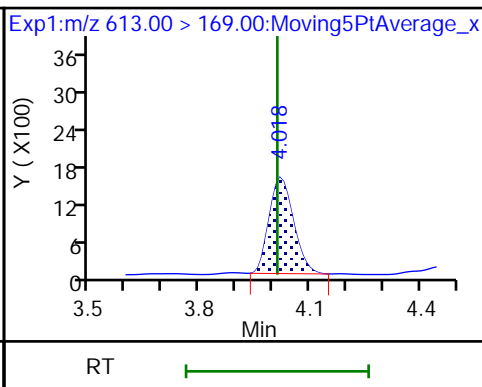
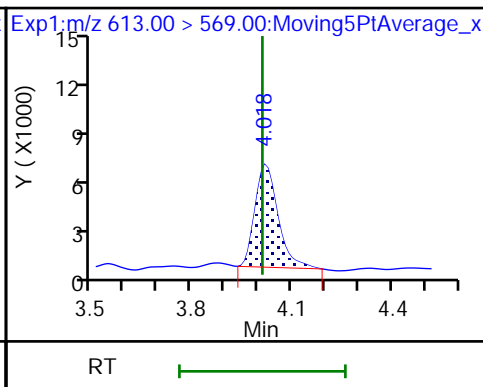
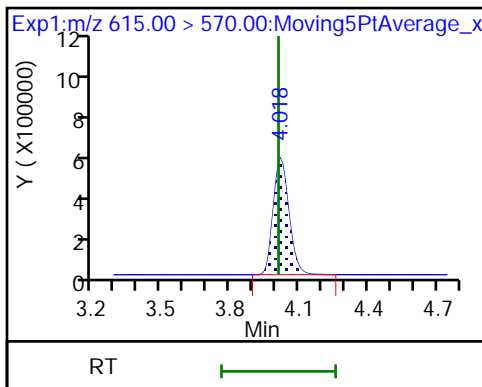
31 Perfluoroundecanoic acid



D 36 13C2 PFDoA

37 Perfluorododecanoic acid

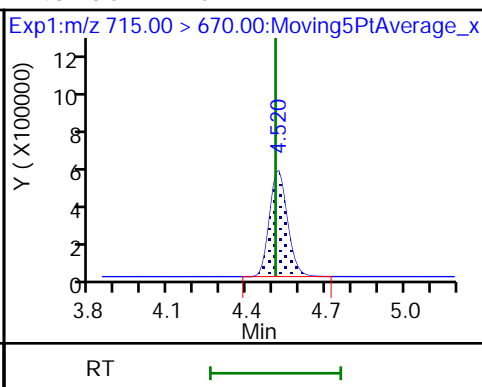
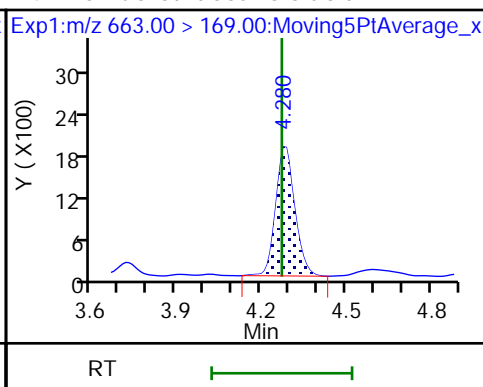
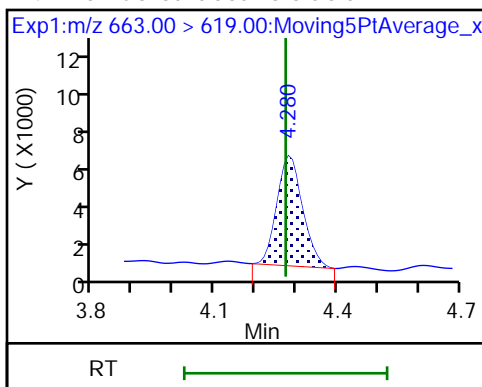
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

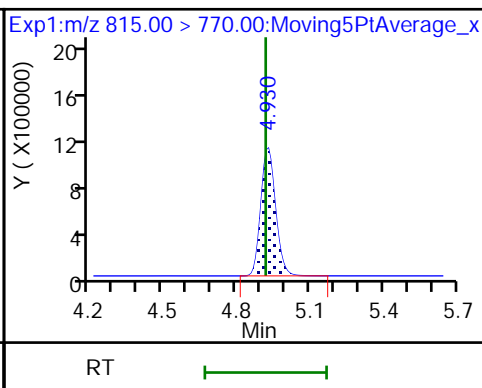
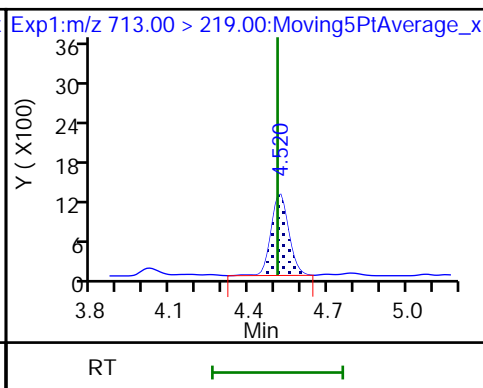
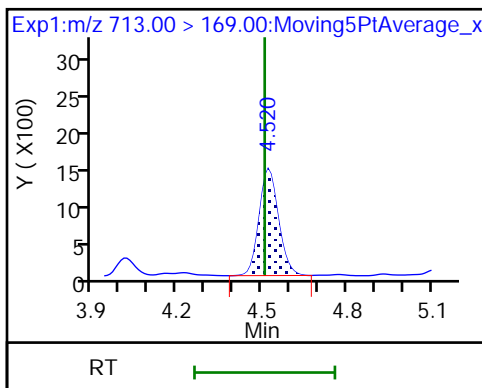
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA



TestAmerica Sacramento

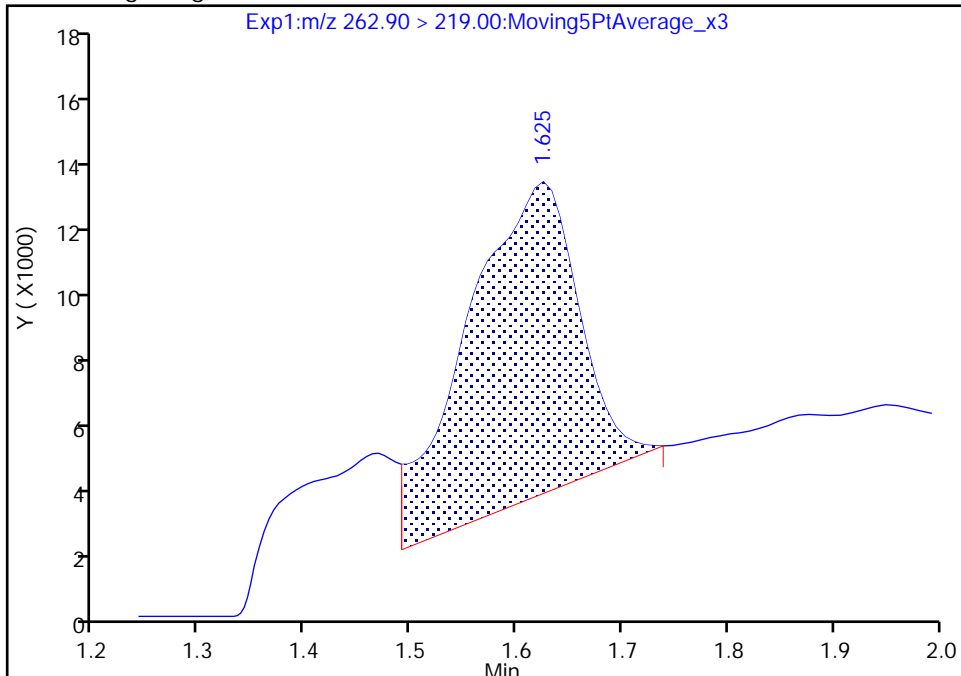
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Injection Date: 11-Jul-2018 14:48:59 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

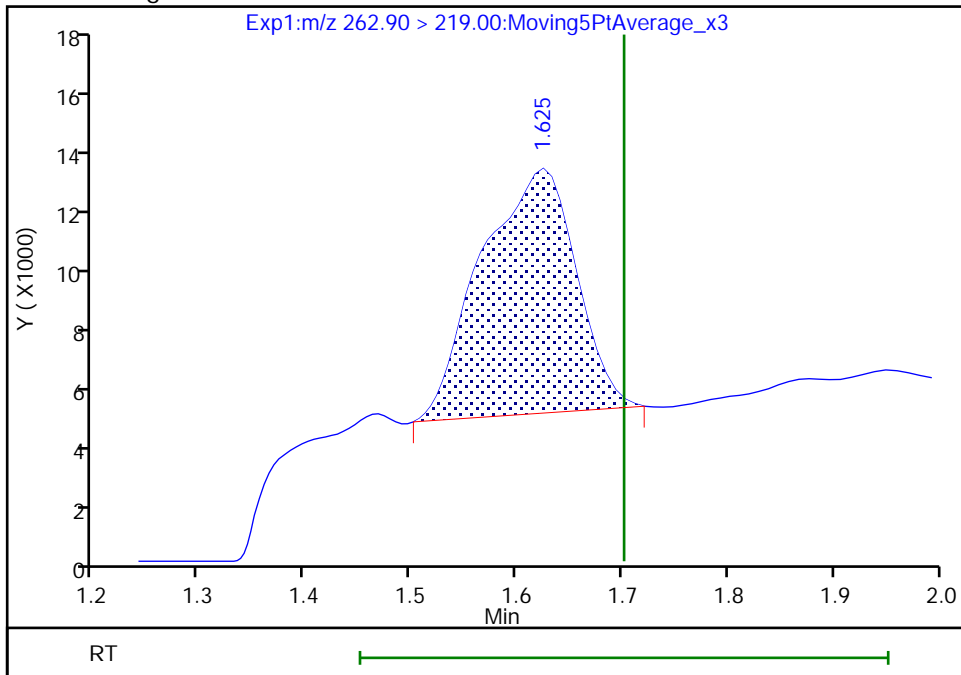
RT: 1.63
Area: 71978
Amount: 0.036924
Amount Units: ng/ml

Processing Integration Results



RT: 1.63
Area: 51727
Amount: 0.028248
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 11-Jul-2018 16:13:06
Audit Action: Manually Integrated

TestAmerica Sacramento

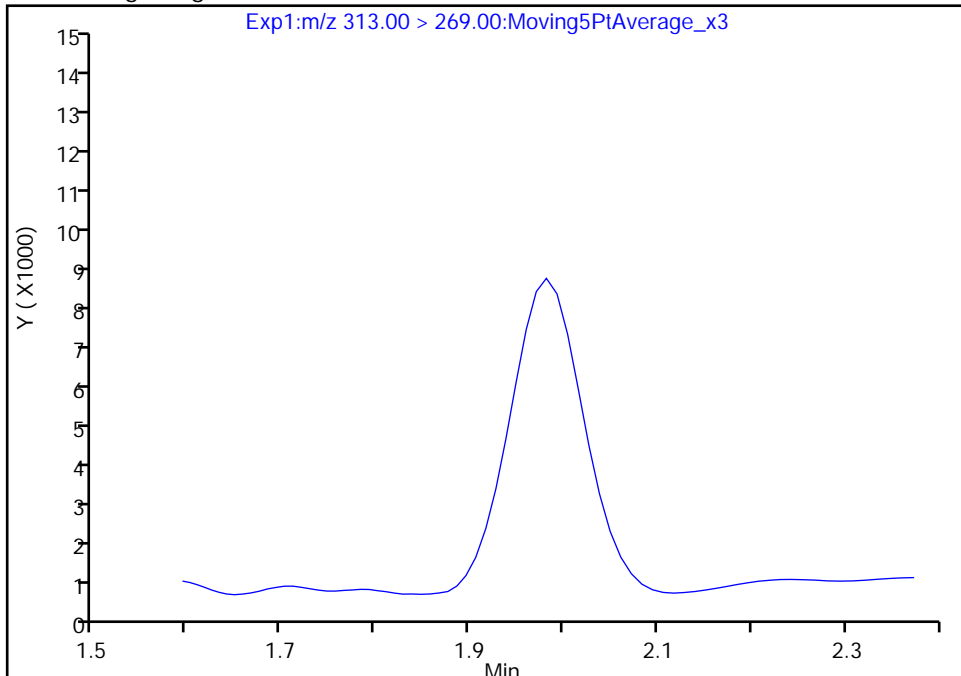
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Injection Date: 11-Jul-2018 14:48:59 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

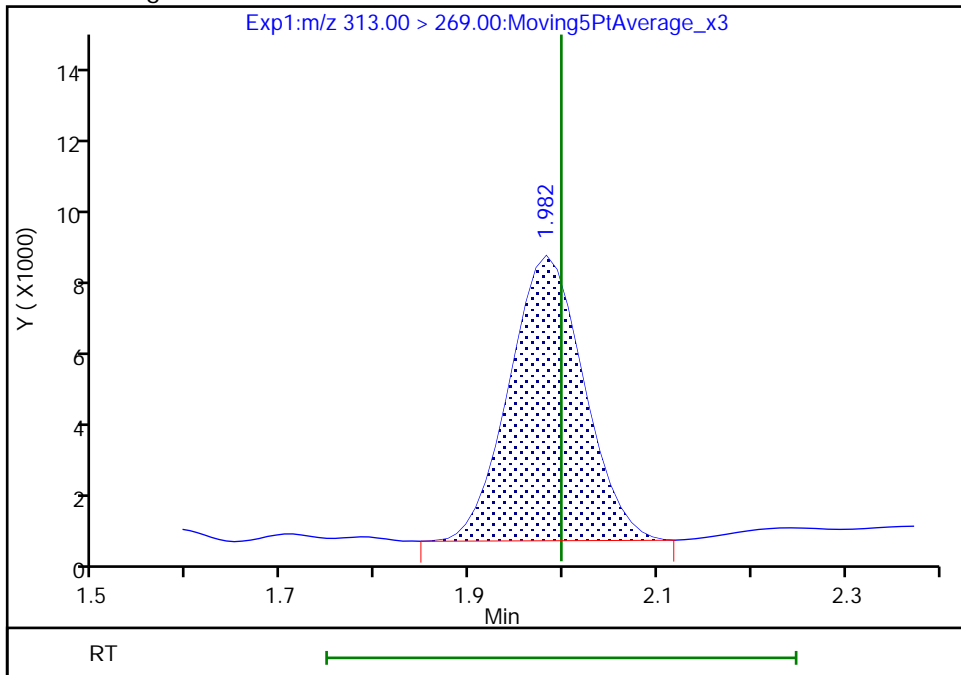
Not Detected
Expected RT: 2.00

Processing Integration Results



RT: 1.98
Area: 41864
Amount: 0.025033
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento

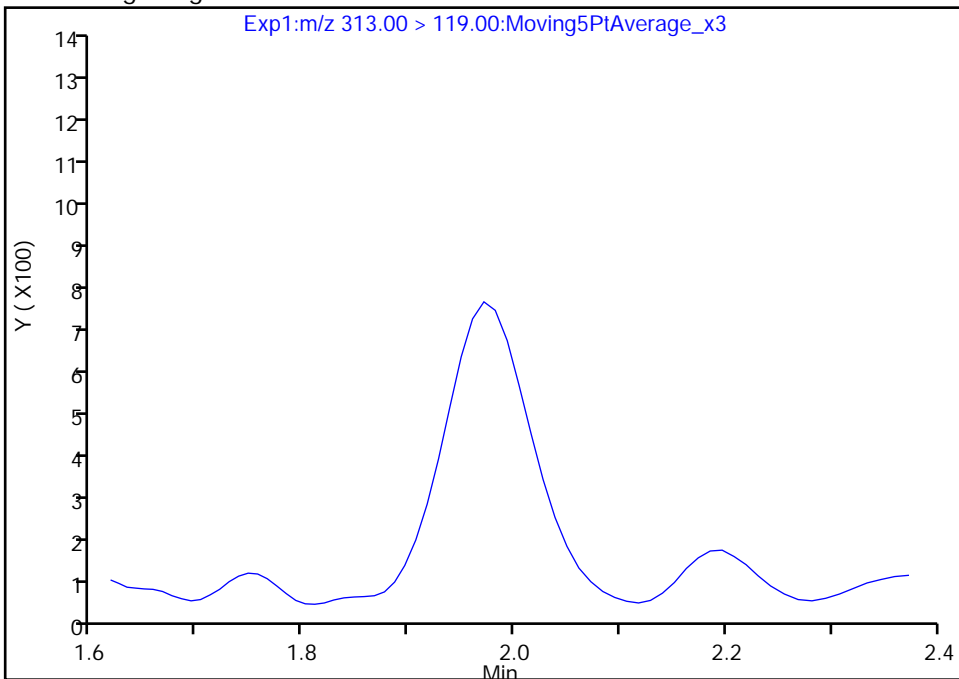
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Injection Date: 11-Jul-2018 14:48:59 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 2

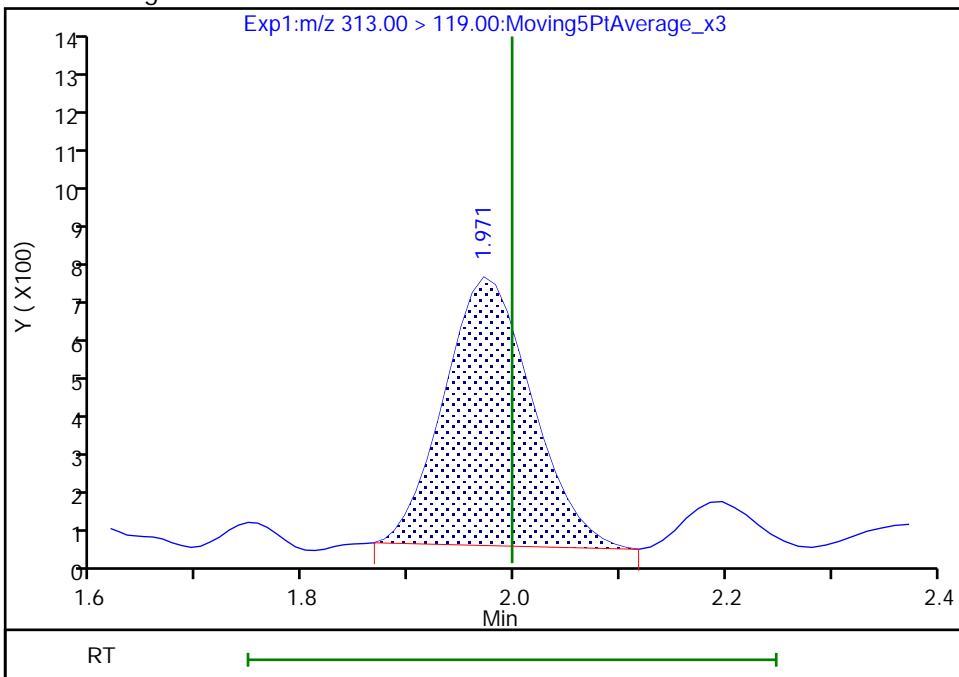
Not Detected
Expected RT: 2.00

Processing Integration Results



Manual Integration Results

RT: 1.97
Area: 4020
Amount: 0.025033
Amount Units: ng/ml



TestAmerica Sacramento

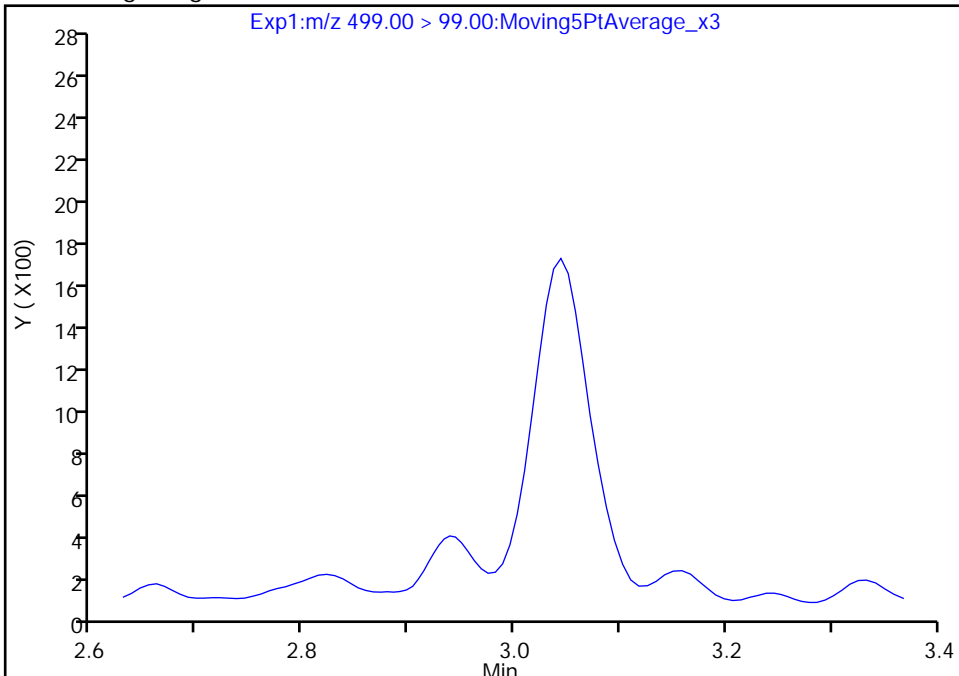
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_002.d
Injection Date: 11-Jul-2018 14:48:59 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

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

Signal: 2

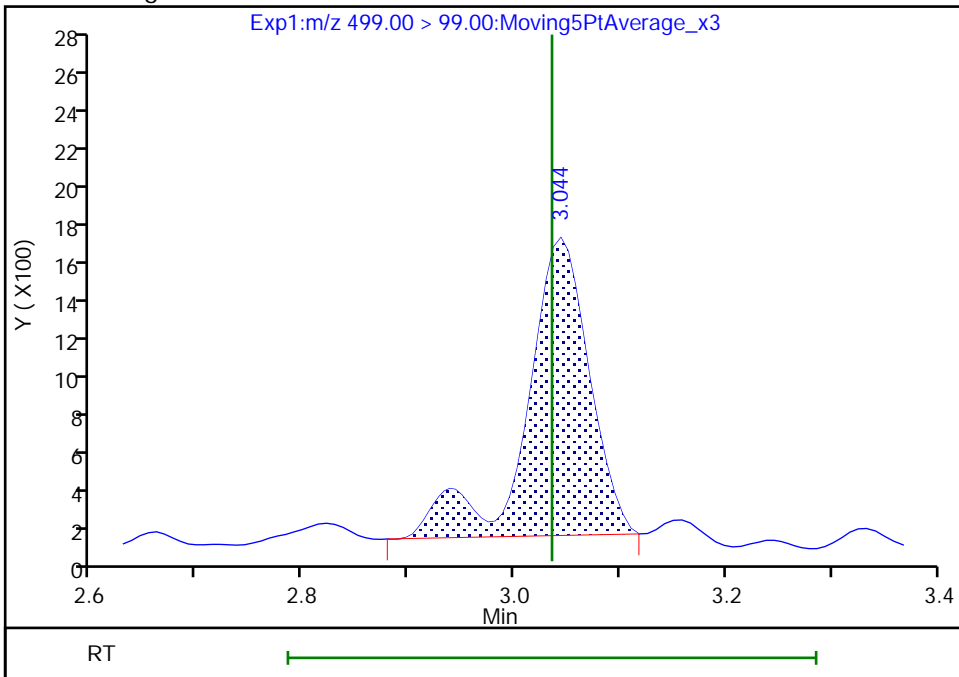
RT: 3.03
Area: 0
Amount: 0.025719
Amount Units: ng/ml

Processing Integration Results



RT: 3.04
Area: 6341
Amount: 0.024079
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_003.d
 Lims ID: IC L2 Full
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 11-Jul-2018 14:59:35 ALS Bottle#: 11 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 11-Jul-2018 16:33:24 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:14:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.00 > 172.00	1.428	1.431	-0.003	0.534	5621166	2.34	93.6	27203	
2 Perfluorobutyric acid	212.90 > 169.00	1.428	1.431	-0.003	1.000	109256	0.0493	98.6	39.2	
4 Perfluoropentanoic acid	262.90 > 219.00	1.716	1.702	0.014	1.005	103977	0.0549	110	36.1	
D 3 13C5-PFPeA	267.90 > 223.00	1.707	1.702	0.005	0.639	3905774	2.34	93.6	45504	
D 47 13C3-PFBS	301.90 > 83.00	1.752	1.748	0.004	0.656	94108	2.24	96.5	592	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.752	1.751	0.001	1.000	137206	0.0443	100	2151	
	298.90 > 99.00	1.752	1.751	0.001	1.000	53563	2.56(1.25-3.74)	100	710	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	1.966	1.962	0.004	1.122	23943	0.0455	97.4	1421	
D 60 M2-4:2FTS	329.00 > 81.00	1.966	1.962	0.004	0.736	509407	NC		8344	
D 7 13C2 PFHxA	315.00 > 270.00	1.999	1.996	0.003	0.748	4333312	2.41	96.2	64902	
6 Perfluorohexanoic acid	313.00 > 269.00	1.999	1.998	0.001	1.000	97977	0.0549	110	183	M
	313.00 > 119.00	1.999	1.998	0.001	1.000	6918	14.16(5.03-15.10)	110	125	M
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.022	2.022	0.0	1.154	133528	0.0473	101	2986	
	349.00 > 99.00	2.022	2.022	0.0	1.154	49366	2.70(1.36-4.07)	101	988	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.090	2.093	-0.003	0.782	284852	NC		8528	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.090	2.095	-0.005	1.000	15816	NC	83.0	M
D 9 13C4-PFHpA	367.00	> 322.00	2.315	2.319	-0.004	0.866	3963601	2.39	95.5	39266
10 Perfluoroheptanoic acid	363.00	> 319.00	2.315	2.319	-0.004	1.000	99091	0.0540	108	190
	363.00	> 169.00	2.315	2.319	-0.004	1.000	33565	2.95(1.13-3.40)	108	294
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.329	2.332	-0.004	1.000	120291	0.0457	100	1829
	399.00	> 99.00	2.329	2.332	-0.004	1.000	39862	3.02(1.50-4.49)	100	297
D 11 18O2 PFHxS	403.00	> 84.00	2.329	2.334	-0.006	0.871	5419785	2.31	97.5	38199
65 Adona	377.00	> 251.00	2.355	2.360	-0.005	0.777	258910	NC	3460	
	377.00	> 85.00	2.355	2.360	-0.005	0.777	138046	1.88(0.84-2.53)	781	
D 12 M2-6:2FTS	429.00	> 81.00	2.642	2.645	-0.003	0.989	834970	2.35	98.8	12376
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.650	2.648	0.002	1.003	25517	0.0464	97.9	550
15 Perfluorooctanoic acid	413.00	> 369.00	2.673	2.672	0.001	1.000	112267	0.0542	108	71.2
	413.00	> 169.00	2.665	2.672	-0.007	0.997	54050	2.08(0.84-2.52)	108	261
* 62 13C2-PFOA	415.00	> 370.00	2.673	2.672	0.001		4427596	2.50	33183	
D 14 13C4 PFOA	417.00	> 372.00	2.673	2.672	0.001	1.000	4207903	2.49	99.4	45634
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.673	2.678	-0.005	0.882	100280	0.0447	93.9	3509
	449.00	> 99.00	2.673	2.678	-0.005	0.882	27817	3.60(1.94-5.82)	93.9	749
D 18 13C4 PFOS	503.00	> 80.00	3.032	3.034	-0.002	1.134	4069838	2.36	98.7	38607
D 19 13C5 PFNA	468.00	> 423.00	3.032	3.035	-0.003	1.134	3839924	2.54	101	39904
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.032	3.035	-0.003	1.000	89440	0.0464	99.9	2154
	499.00	> 99.00	3.032	3.035	-0.003	1.000	18719	4.78(2.31-6.93)	99.9	310
20 Perfluorononanoic acid	463.00	> 419.00	3.039	3.036	0.003	1.002	84772	0.0498	99.5	213
	463.00	> 169.00	3.032	3.036	-0.004	1.000	19632	4.32(1.90-5.69)	99.5	740
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.247	3.245	0.002	1.071	146856	NC	1774	
D 21 13C8 FOSA	506.00	> 78.00	3.370	3.367	0.003	1.261	6150410	2.47	98.9	32394
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.370	3.371	-0.001	1.000	123192	0.0508	102	2778
68 Perfluorononanesulfonic acid	549.00	> 80.00	3.379	3.377	0.002	1.114	60641	0.0459	95.7	2262
	549.00	> 99.00	3.379	3.377	0.002	1.114	24151	2.51(1.33-3.97)	95.7	351

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.379	3.380	-0.001	1.000	32747	0.0447	93.4	733
D 26 M2-8:2FTS	529.00	> 81.00	3.379	3.380	-0.001	1.264	1358867	2.61	109	17826
D 23 13C2 PFDA	515.00	> 470.00	3.388	3.391	-0.003	1.268	3274309	2.46	98.6	32070
24 Perfluorodecanoic acid	513.00	> 469.00	3.388	3.392	-0.004	1.000	74013	0.0539	108	406
	513.00	> 169.00	3.388	3.392	-0.004	1.000	10870	6.81(2.36-7.09)	108	412
D 27 d3-NMeFOSAA	573.00	> 419.00	3.547	3.544	0.003	1.327	1276369	2.34	93.7	19760
28 N-methyl perfluorooctane sulfonami	570.00	> 419.00	3.547	3.548	-0.001	1.000	24180	0.0480	96.1	215
29 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.697	3.701	-0.004	1.219	52427	0.0459	95.1	1367
	599.00	> 99.00	3.697	3.701	-0.004	1.219	18077	2.90(1.39-4.16)	95.1	758
D 32 d5-NEtFOSAA	589.00	> 419.00	3.708	3.710	-0.002	1.387	1427681	2.56	102	4014
D 30 13C2 PFUnA	565.00	> 520.00	3.719	3.716	0.003	1.391	2825527	2.55	102	42065
33 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.719	3.718	0.001	1.003	26557	0.0526	105	439
31 Perfluoroundecanoic acid	563.00	> 519.00	3.719	3.718	0.001	1.000	49158	0.0531	106	200
	563.00	> 169.00	3.719	3.718	0.001	1.000	14212	3.46(2.12-6.36)	106	596
66 11-Chloroeicosafuoro-3-oxaundecan	631.00	> 451.00	3.876	3.874	0.002	1.278	209574	NC		6254
D 36 13C2 PFDaA	615.00	> 570.00	4.008	4.009	-0.001	1.500	2796780	2.43	97.2	22020
37 Perfluorododecanoic acid	613.00	> 569.00	4.008	4.011	-0.003	1.000	55796	0.0457	91.4	28.2
	613.00	> 169.00	4.008	4.011	-0.003	1.000	12342	4.52(2.13-6.40)	91.4	363
41 Perfluorotridecanoic acid	663.00	> 619.00	4.271	4.273	-0.002	1.066	57570	0.0482	96.4	22.2
	663.00	> 169.00	4.271	4.273	-0.002	1.066	17855	3.22(1.25-3.76)	96.4	396
D 43 13C2-PFTeDA	715.00	> 670.00	4.511	4.508	0.003	1.688	2667637	2.23	89.4	13833
42 Perfluorotetradecanoic acid	713.00	> 169.00	4.511	4.508	0.003	1.000	15573	0.0561	112	297
	713.00	> 219.00	4.500	4.508	-0.008	0.998	10316	1.51(0.71-2.13)	112	235
D 44 13C2-PFHxDA	815.00	> 770.00	4.921	4.918	0.003	1.841	4084288	2.15	85.9	10856
45 Perfluorohexadecanoic acid	813.00	> 769.00	4.921	4.918	0.003	1.000	111481	NC		26.1
	813.00	> 169.00	4.921	4.918	0.003	1.000	18505	6.02(2.86-8.58)		203
46 Perfluorooctadecanoic acid	913.00	> 869.00	5.276	5.271	0.005	1.072	97895	NC		20.7
	913.00	> 169.00	5.269	5.271	-0.002	1.071	11669	8.39(3.83-11.48)		192

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

[Reagents:](#)

LCPFC_LL2_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_003.d

Injection Date: 11-Jul-2018 14:59:35

Instrument ID: A8_N

Lims ID: IC L2 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 11

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

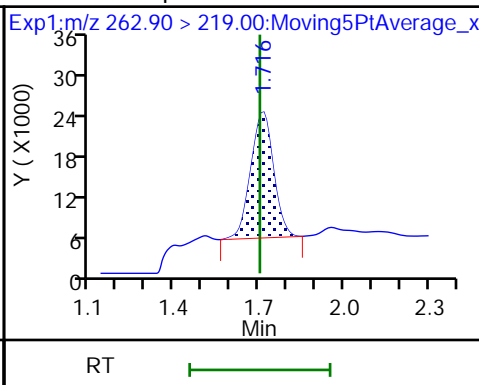
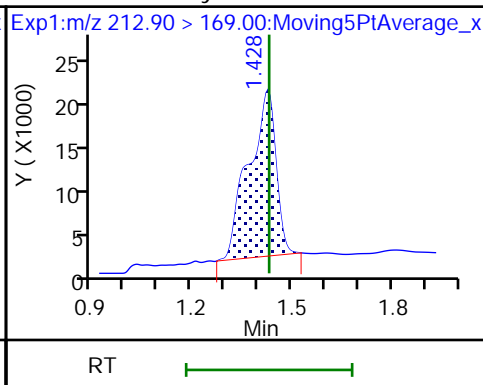
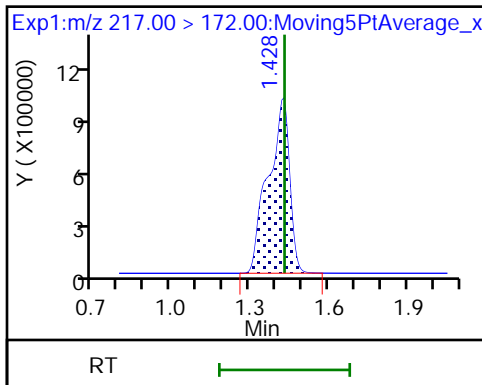
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

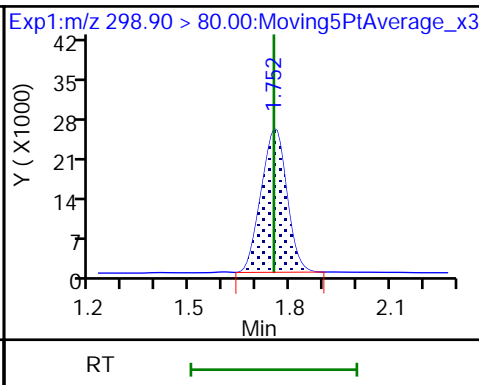
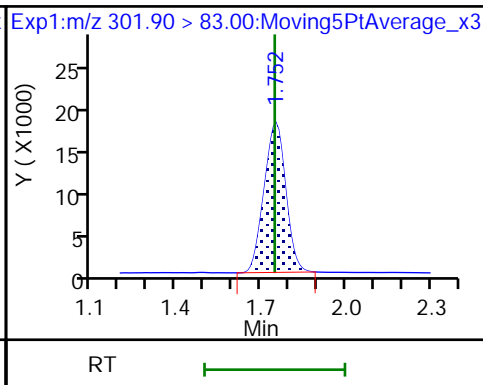
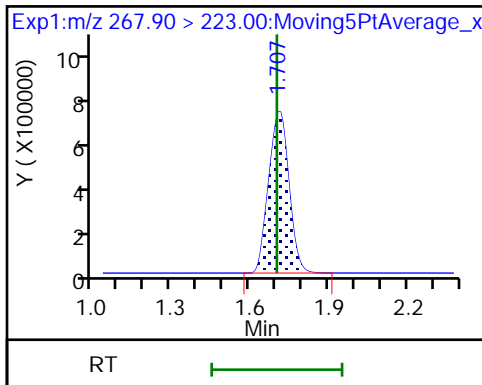
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

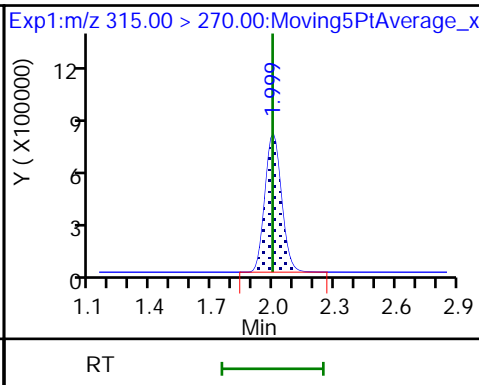
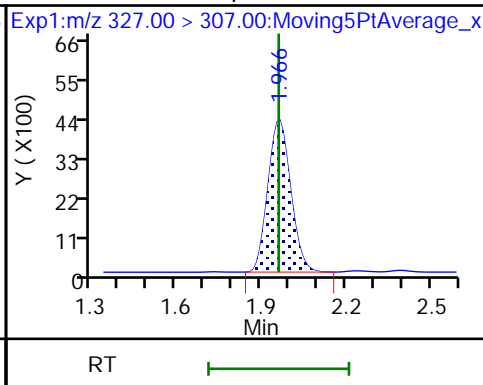
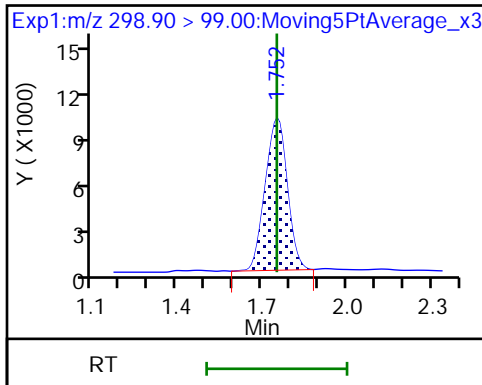
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

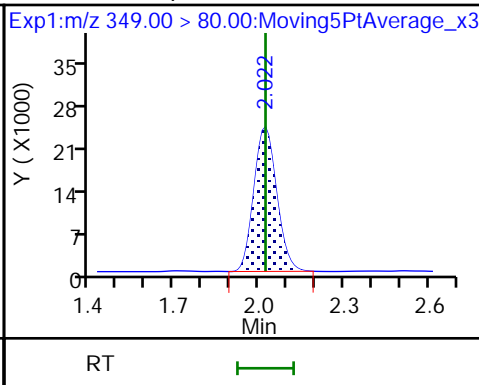
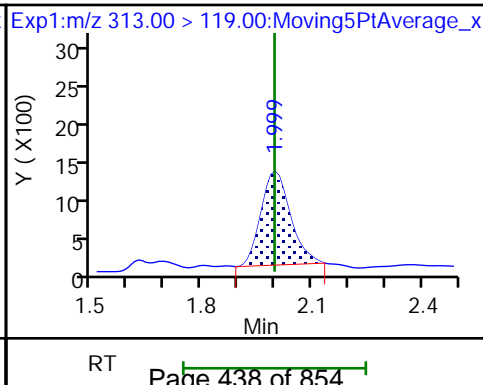
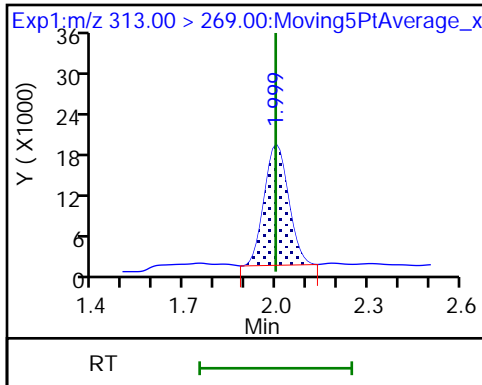
D 7 13C2 PFHxA



6 Perfluorohexanoic acid (M)

6 Perfluorohexanoic acid

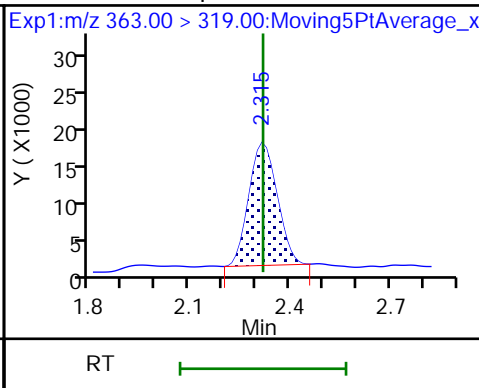
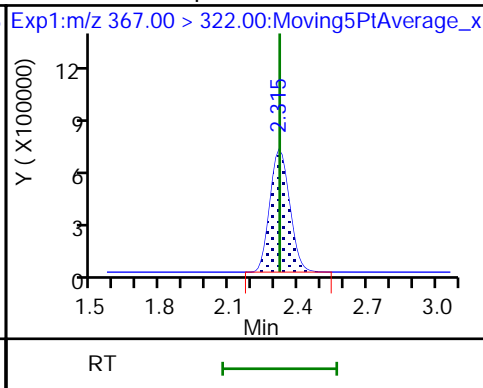
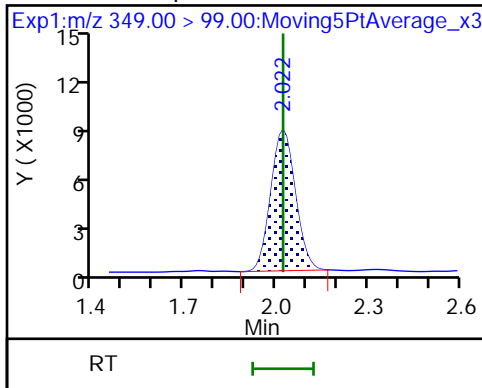
70 Perfluoropentanesulfonic acid



70 Perfluoropentanesulfonic acid

D 9 13C4-PFHpA

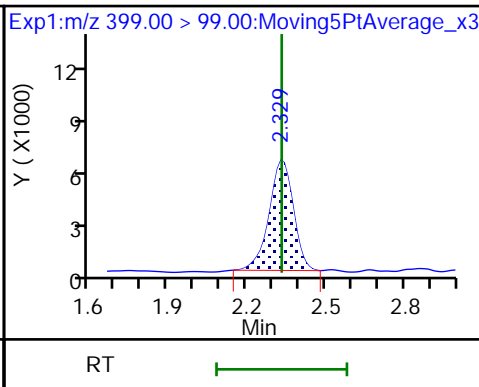
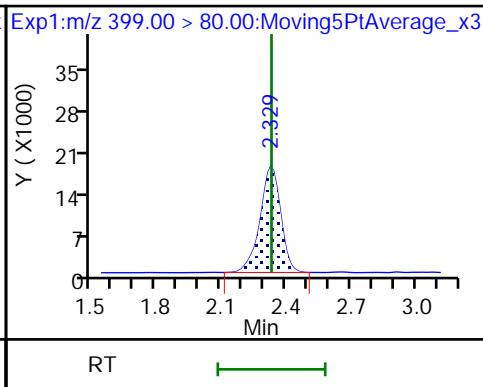
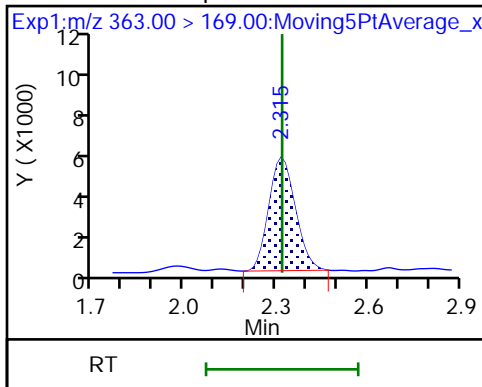
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

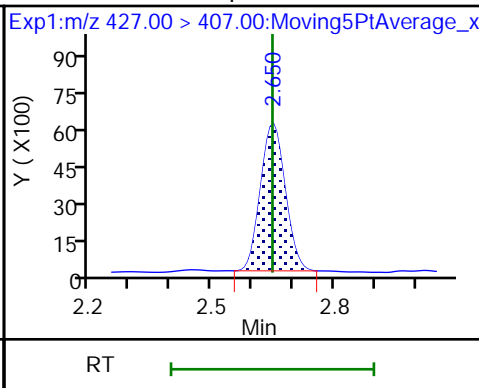
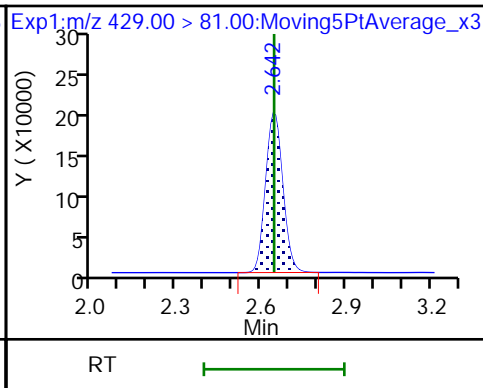
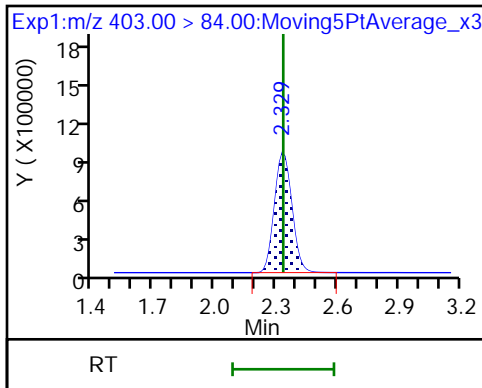
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

D 12 M2-6:2FTS

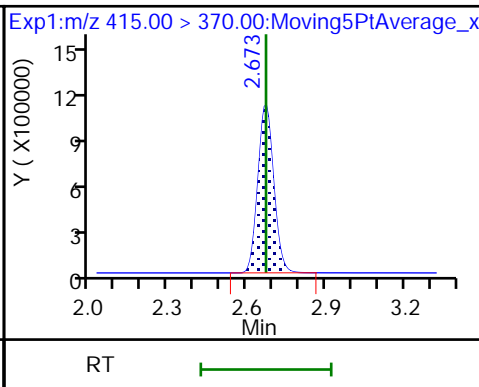
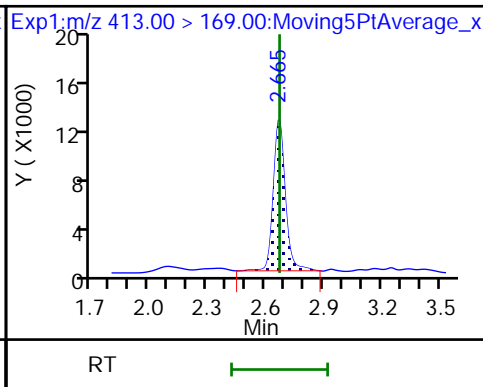
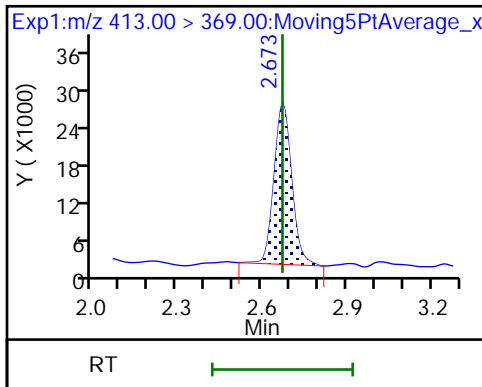
13 1H,1H,2H,2H-perfluorooctanesulfoni



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

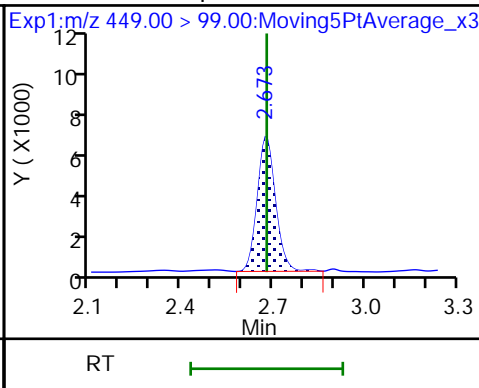
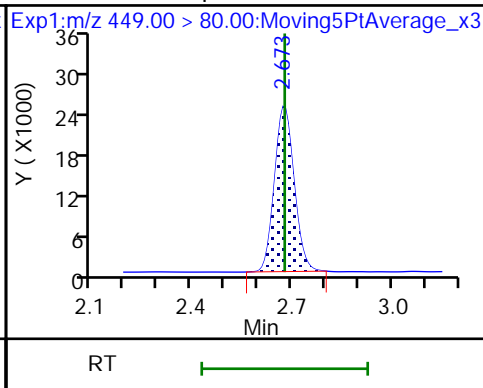
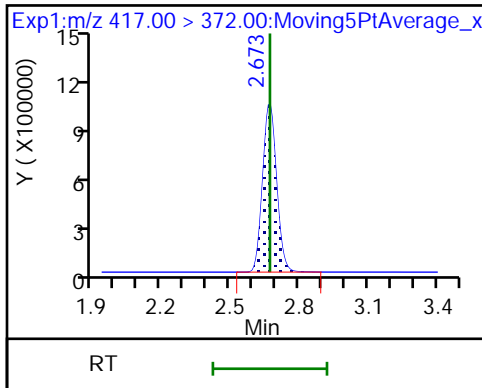
* 62 13C2-PFOA



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

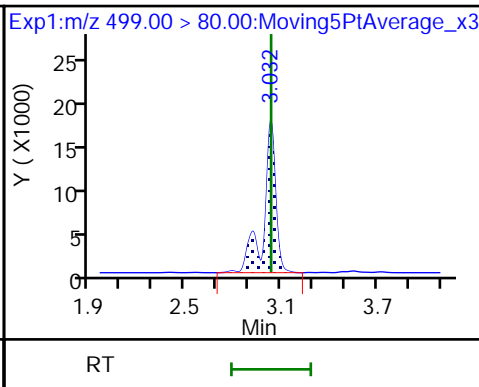
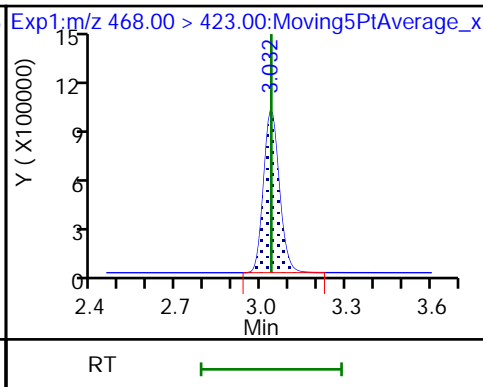
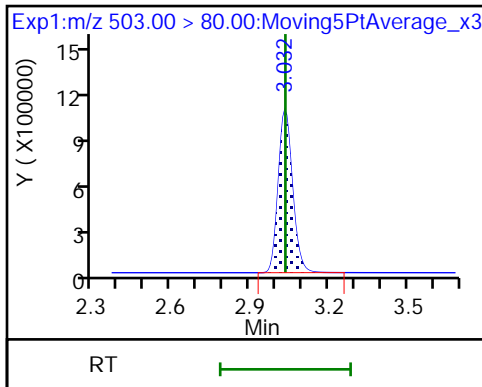
16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS

D 19 13C5 PFNA

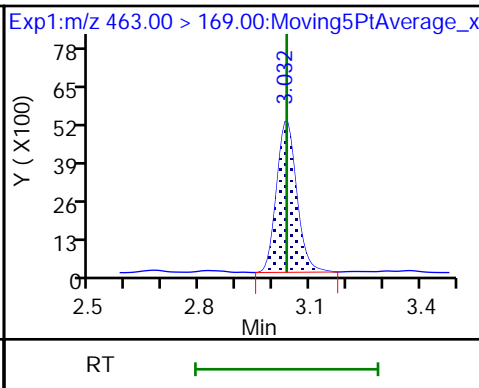
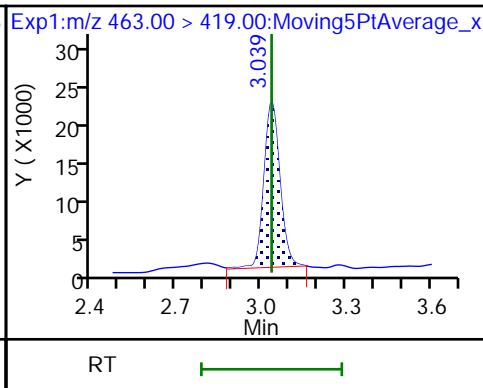
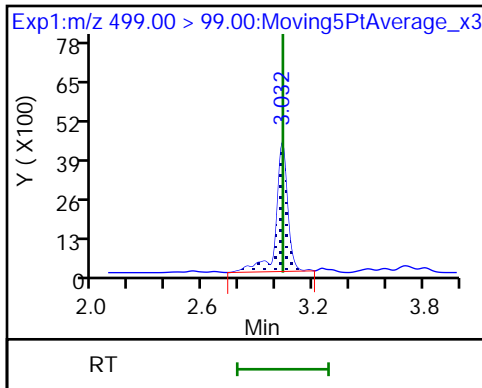
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

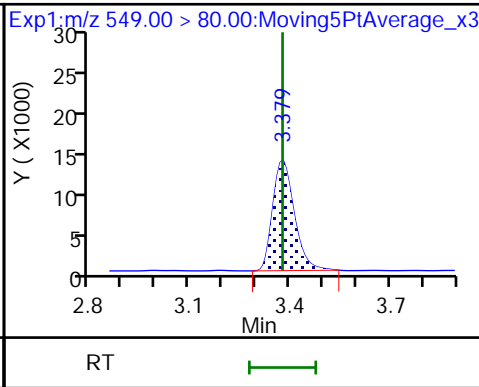
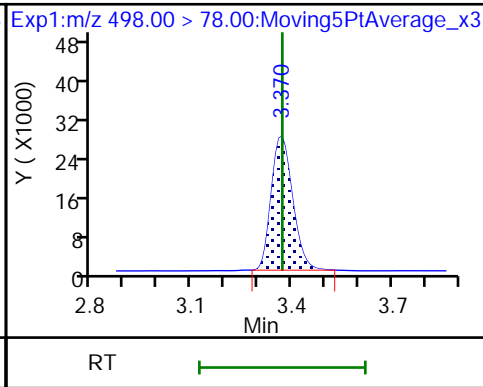
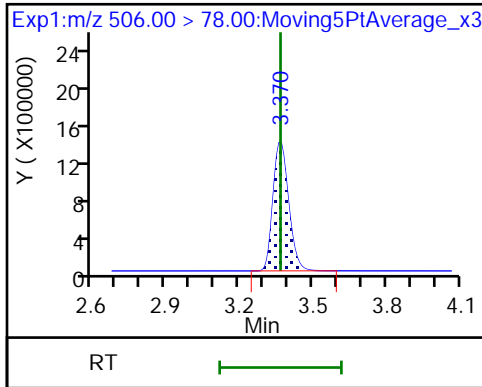
20 Perfluorononanoic acid



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

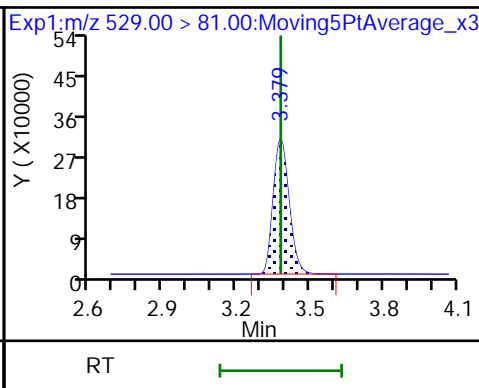
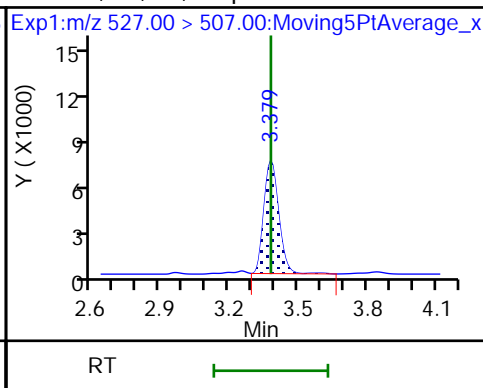
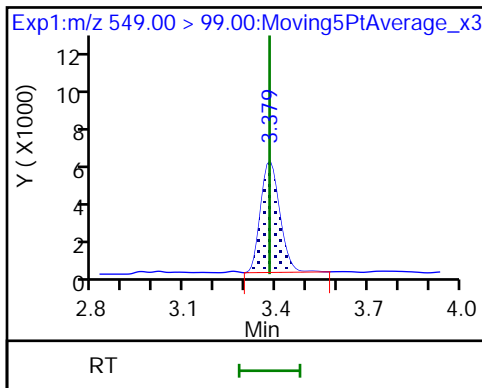
68 Perfluorononanesulfonic acid



68 Perfluorononanesulfonic acid

25 1H,1H,2H,2H-perfluorodecanesulfonate

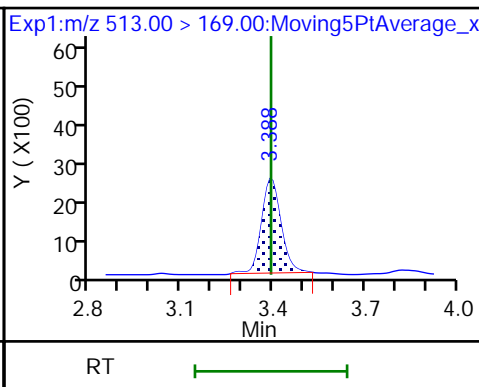
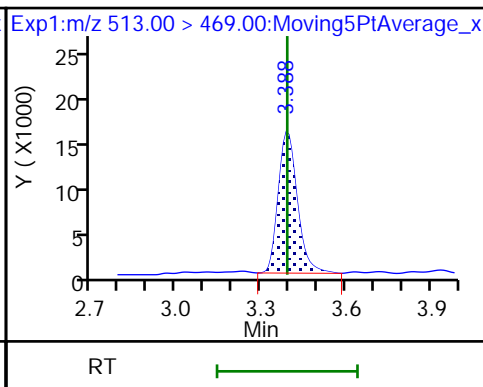
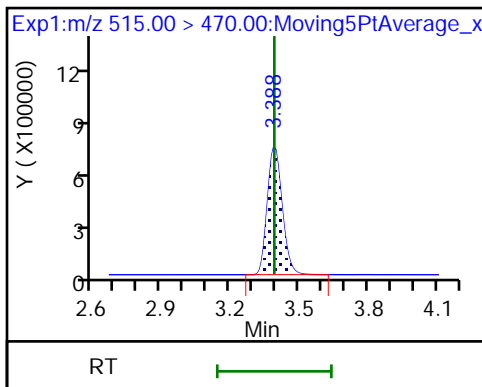
D 26 M2-8:2FTS



D 23 13C2 PFDA

24 Perfluorodecanoic acid

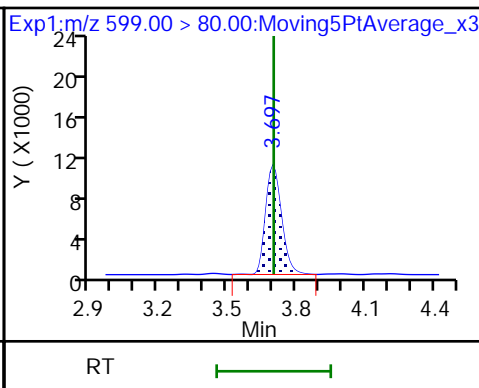
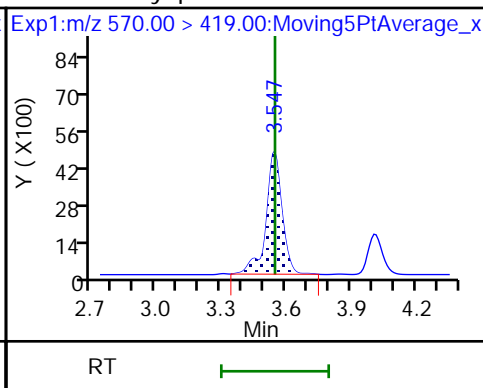
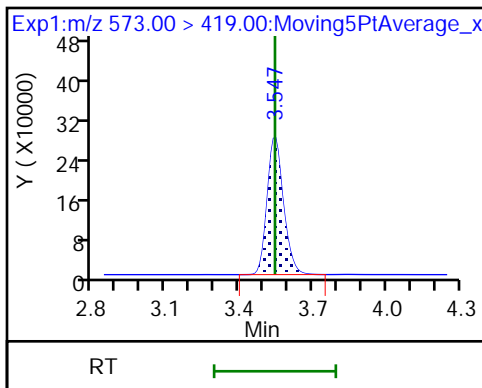
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonamide

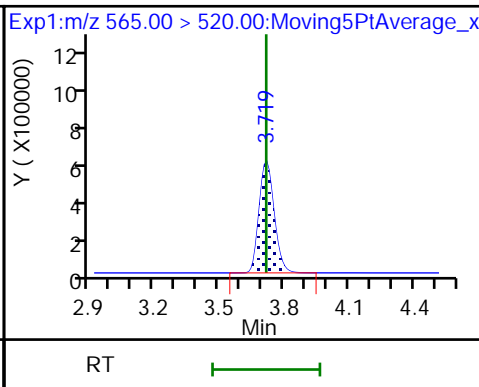
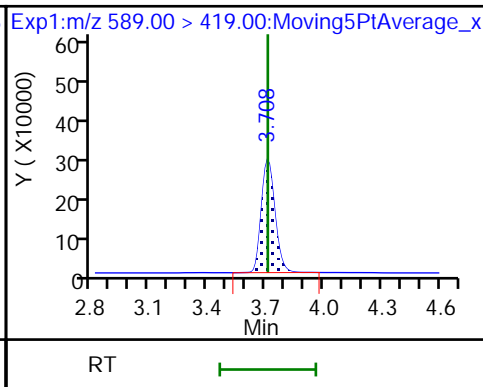
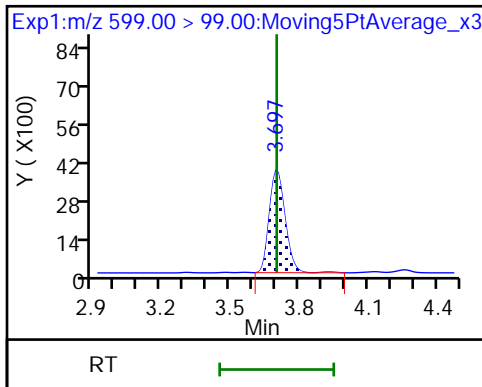
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

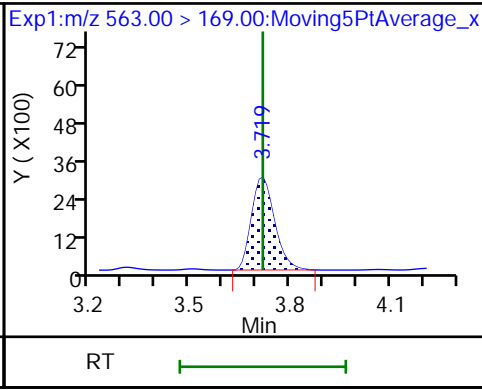
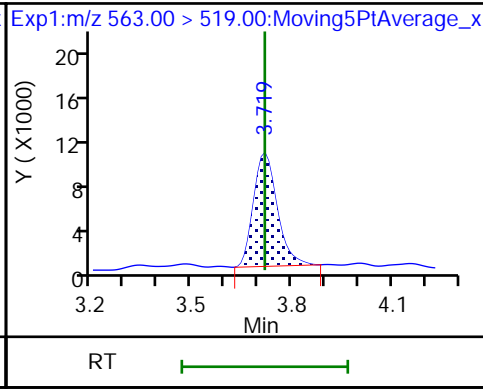
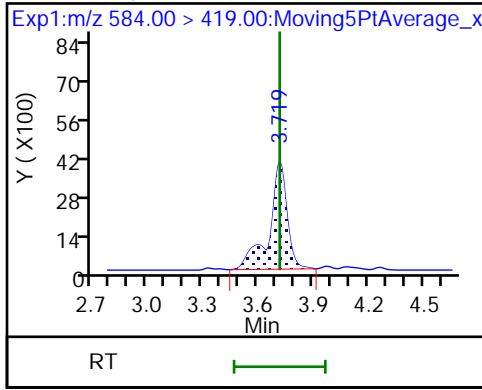
D 30 13C2 PFUnA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

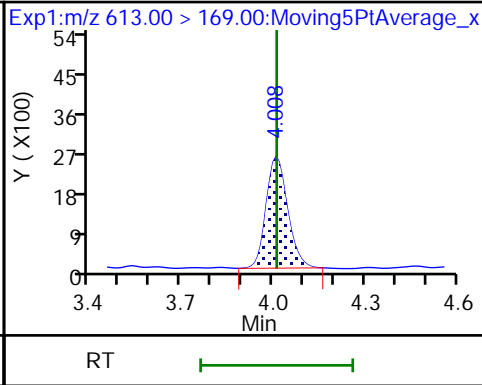
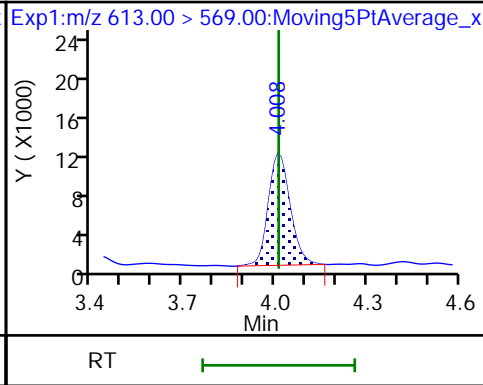
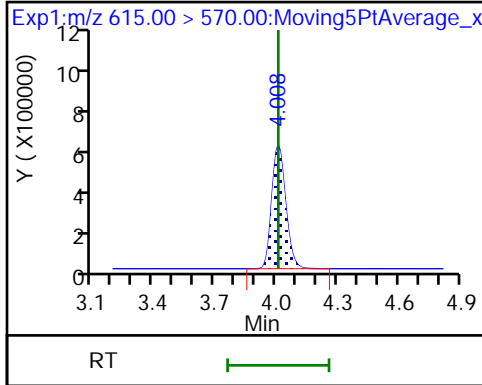
31 Perfluoroundecanoic acid



D 36 13C2 PFDoA

37 Perfluorododecanoic acid

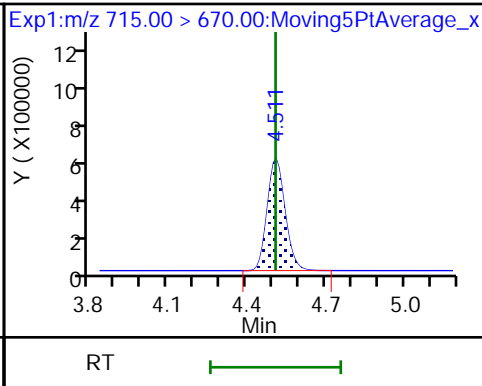
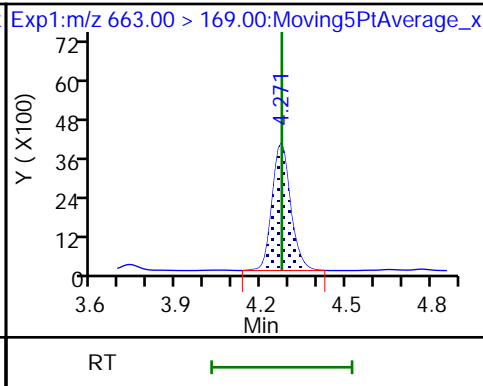
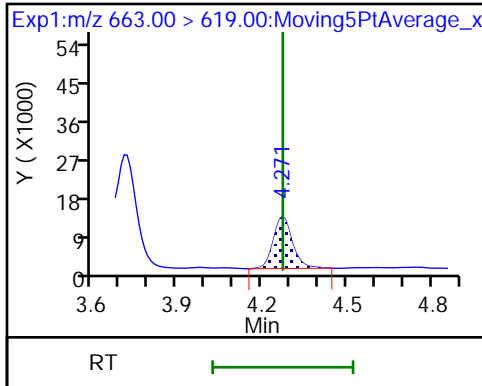
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

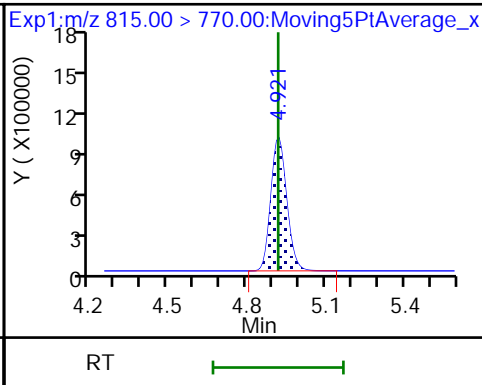
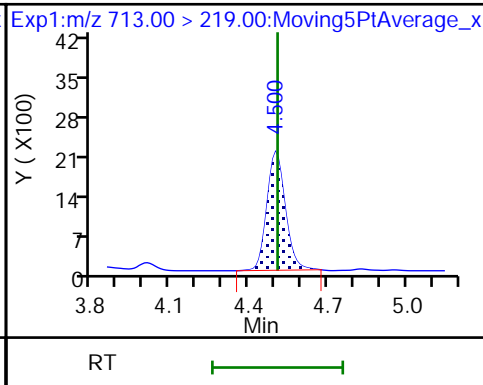
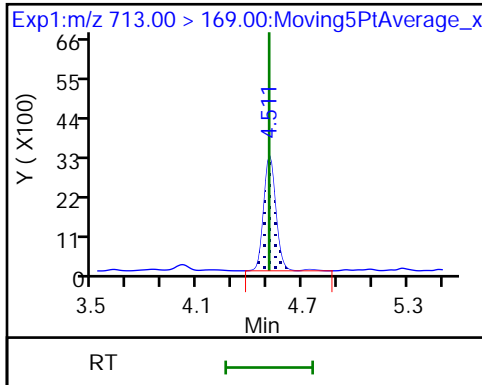
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA



TestAmerica Sacramento

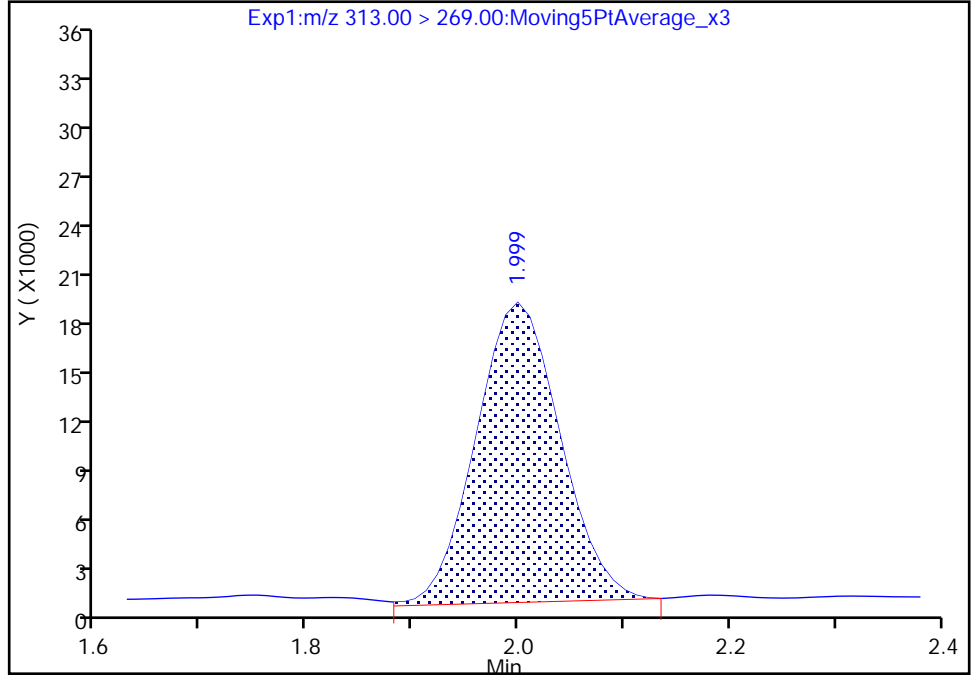
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_003.d
Injection Date: 11-Jul-2018 14:59:35 Instrument ID: A8_N
Lims ID: IC L2 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

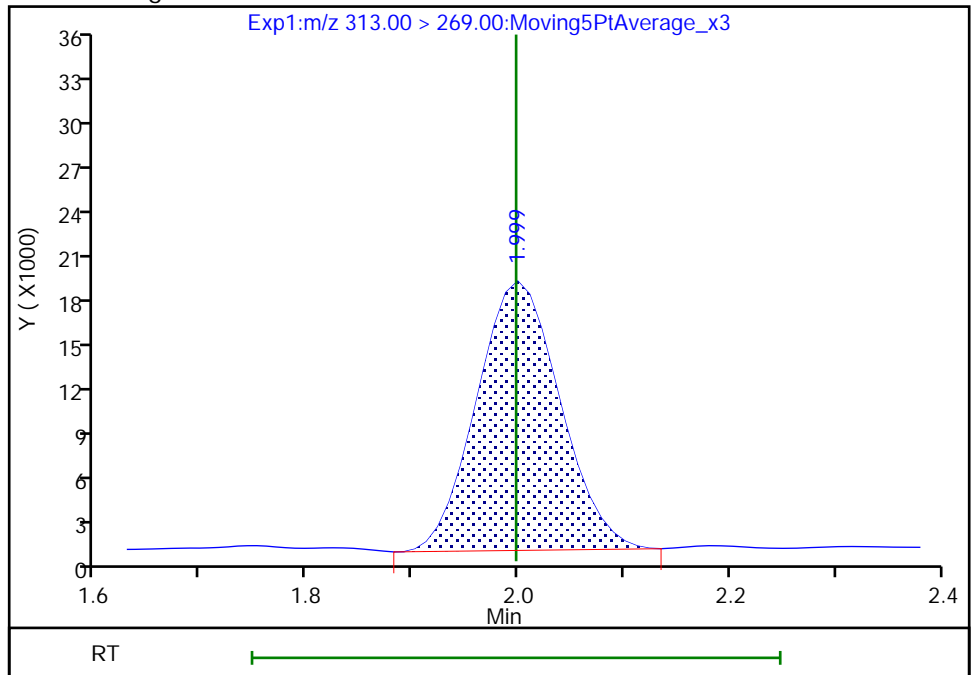
RT: 2.00
Area: 99760
Amount: 0.055756
Amount Units: ng/ml

Processing Integration Results



RT: 2.00
Area: 97977
Amount: 0.054916
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_004.d
 Lims ID: IC L3 Full
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 11-Jul-2018 15:07:23 ALS Bottle#: 12 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 11-Jul-2018 16:33:30 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:15:40

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	1.433	1.431	0.002	0.536	5436336	2.41	96.4	24567	
2 Perfluorobutyric acid	212.90 > 169.00	1.433	1.431	0.002	1.000	529569	0.2471	98.8	202	
4 Perfluoropentanoic acid	262.90 > 219.00	1.717	1.702	0.015	1.000	457354	0.2433	97.3	160	M
D 3 13C5-PFPeA	267.90 > 223.00	1.717	1.702	0.015	0.642	3873105	2.47	98.8	42101	
D 47 13C3-PFBS	301.90 > 83.00	1.753	1.748	0.005	0.656	88873	2.26	97.0	524	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.762	1.751	0.011	1.005	638814	0.2185	98.9	8863	
	298.90 > 99.00	1.762	1.751	0.011	1.005	266379	2.40(1.25-3.74)	98.9	3761	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	1.967	1.962	0.005	1.122	121859	0.2452	105	7228	
D 60 M2-4:2FTS	329.00 > 81.00	1.967	1.962	0.005	0.736	453992	NC		6280	
D 7 13C2 PFHxA	315.00 > 270.00	2.000	1.996	0.004	0.748	4144632	2.45	98.0	56089	
6 Perfluorohexanoic acid	313.00 > 269.00	2.000	1.998	0.002	1.000	407905	0.2390	95.6	865	
	313.00 > 119.00	2.011	1.998	0.013	1.006	41779	9.76(5.03-15.10)	95.6	715	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.022	2.022	0.0	1.154	586514	0.2199	93.8	12660	
	349.00 > 99.00	2.022	2.022	0.0	1.154	229923	2.55(1.36-4.07)	93.8	4978	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.101	2.093	0.008	0.786	281279	NC		7182	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.101	2.095	0.006	1.000	79161	NC	493	
D 9 13C4-PFHpA	367.00	> 322.00	2.316	2.319	-0.003	0.866	3856910	2.48	99.0	30519
10 Perfluoroheptanoic acid	363.00	> 319.00	2.316	2.319	-0.003	1.000	425549	0.2385	95.4	899
	363.00	> 169.00	2.329	2.319	0.010	1.006	165310	2.57(1.13-3.40)	95.4	1725
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.329	2.332	-0.003	0.994	552716	0.2184	96.0	6193
	399.00	> 99.00	2.329	2.332	-0.003	0.994	175761	3.14(1.50-4.49)	96.0	1241
D 11 18O2 PFHxS	403.00	> 84.00	2.342	2.334	0.008	0.876	5214223	2.36	99.9	45677
65 Adona	377.00	> 251.00	2.369	2.360	0.009	0.779	1281398	NC		20243
	377.00	> 85.00	2.369	2.360	0.009	0.779	705403	1.82(0.84-2.53)		4501
D 12 M2-6:2FTS	429.00	> 81.00	2.651	2.645	0.006	0.992	825525	2.47	104	16673
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.651	2.648	0.003	1.000	126798	0.2332	98.4	3070
15 Perfluorooctanoic acid	413.00	> 369.00	2.673	2.672	0.001	1.000	477183	0.2439	97.5	300
	413.00	> 169.00	2.673	2.672	0.001	1.000	243974	1.96(0.84-2.52)	97.5	1162
* 62 13C2-PFOA	415.00	> 370.00	2.673	2.672	0.001		4157437	2.50		35542
D 14 13C4 PFOA	417.00	> 372.00	2.673	2.672	0.001	1.000	3971401	2.50	99.9	35256
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.681	2.678	0.003	0.882	473940	0.2308	97.0	10273
	449.00	> 99.00	2.681	2.678	0.003	0.882	132840	3.57(1.94-5.82)	97.0	3201
D 18 13C4 PFOS	503.00	> 80.00	3.041	3.034	0.006	1.137	3725581	2.30	96.2	37410
D 19 13C5 PFNA	468.00	> 423.00	3.041	3.035	0.005	1.137	3471672	2.44	97.7	33386
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.041	3.035	0.005	1.000	401226	0.2271	97.9	16115
	499.00	> 99.00	3.041	3.035	0.005	1.000	96776	4.15(2.31-6.93)	97.9	1665
20 Perfluorononanoic acid	463.00	> 419.00	3.041	3.036	0.004	1.000	400644	0.2601	104	1028
	463.00	> 169.00	3.041	3.036	0.004	1.000	95787	4.18(1.90-5.69)	104	4136
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.248	3.245	0.003	1.068	651675	NC		6549
D 21 13C8 FOSA	506.00	> 78.00	3.372	3.367	0.005	1.261	5880733	2.52	101	49438
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.372	3.371	0.001	1.000	554186	0.2390	95.6	12564
68 Perfluorononanesulfonic acid	549.00	> 80.00	3.382	3.377	0.005	1.112	284813	0.2357	98.2	7165
	549.00	> 99.00	3.382	3.377	0.005	1.112	107969	2.64(1.33-3.97)	98.2	2059

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.382	3.380	0.002	1.000	159408	0.2293	95.7	3552
D 26 M2-8:2FTS	529.00	> 81.00	3.382	3.380	0.002	1.265	1290698	2.64	110	16986
D 23 13C2 PFDA	515.00	> 470.00	3.391	3.391	0.0	1.268	3265845	2.62	105	29557
24 Perfluorodecanoic acid	513.00	> 469.00	3.400	3.392	0.008	1.003	342607	0.2499	100.0	1591
	513.00	> 169.00	3.391	3.392	-0.001	1.000	61738	5.55(2.36-7.09)	100.0	2779
D 27 d3-NMeFOSAA	573.00	> 419.00	3.549	3.544	0.005	1.328	1236119	2.42	96.7	19234
28 N-methyl perfluorooctane sulfonami	570.00	> 419.00	3.549	3.548	0.001	1.000	112830	0.2315	92.6	886
29 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.711	3.701	0.010	1.220	256645	0.2452	102	8829
	599.00	> 99.00	3.711	3.701	0.010	1.220	89186	2.88(1.39-4.16)	102	1861
D 32 d5-NEtFOSAA	589.00	> 419.00	3.711	3.710	0.001	1.388	1297377	2.48	99.1	3280
D 30 13C2 PFUnA	565.00	> 520.00	3.721	3.716	0.005	1.392	2653699	2.55	102	34580
33 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.721	3.718	0.003	1.003	130099	0.2836	113	3716
31 Perfluoroundecanoic acid	563.00	> 519.00	3.721	3.718	0.003	1.000	199100	0.2289	91.6	1135
	563.00	> 169.00	3.721	3.718	0.003	1.000	53794	3.70(2.12-6.36)	91.6	2788
66 11-Chloroeicosafuoro-3-oxaundecan	631.00	> 451.00	3.878	3.874	0.004	1.275	1059951	NC		31878
D 36 13C2 PFDaA	615.00	> 570.00	4.009	4.009	0.0	1.500	2756034	2.55	102	18796
37 Perfluorododecanoic acid	613.00	> 569.00	4.019	4.011	0.008	1.003	296160	0.2460	98.4	160
	613.00	> 169.00	4.019	4.011	0.008	1.003	71984	4.11(2.13-6.40)	98.4	2474
41 Perfluorotridecanoic acid	663.00	> 619.00	4.272	4.273	-0.001	1.066	297546	0.2528	101	132
	663.00	> 169.00	4.272	4.273	-0.001	1.066	94397	3.15(1.25-3.76)	101	1582
D 43 13C2-PFTeDA	715.00	> 670.00	4.511	4.508	0.003	1.687	2913500	2.60	104	13512
42 Perfluorotetradecanoic acid	713.00	> 169.00	4.511	4.508	0.003	1.000	71477	0.2357	94.3	1159
	713.00	> 219.00	4.511	4.508	0.003	1.000	50792	1.41(0.71-2.13)	94.3	1208
D 44 13C2-PFHxDA	815.00	> 770.00	4.922	4.918	0.004	1.841	4554944	2.55	102	11164
45 Perfluorohexadecanoic acid	813.00	> 769.00	4.922	4.918	0.004	1.000	477512	NC		115
	813.00	> 169.00	4.922	4.918	0.004	1.000	73483	6.50(2.86-8.58)		773
46 Perfluorooctadecanoic acid	913.00	> 869.00	5.276	5.271	0.005	1.072	536098	NC		109
	913.00	> 169.00	5.276	5.271	0.005	1.072	65383	8.20(3.83-11.48)		956

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

[Reagents:](#)

LCPFC_LL3_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_004.d

Injection Date: 11-Jul-2018 15:07:23

Instrument ID: A8_N

Lims ID: IC L3 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 12

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

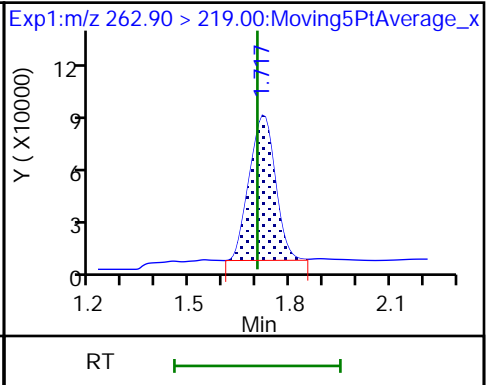
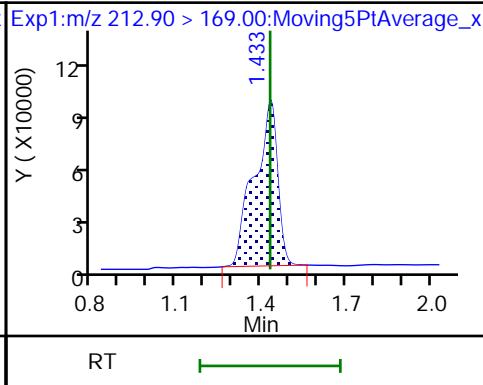
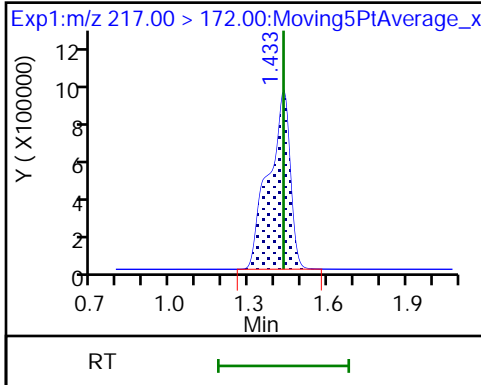
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

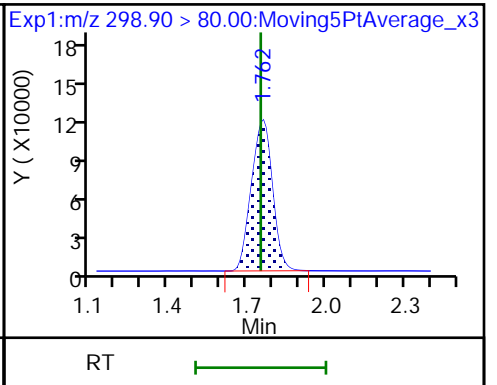
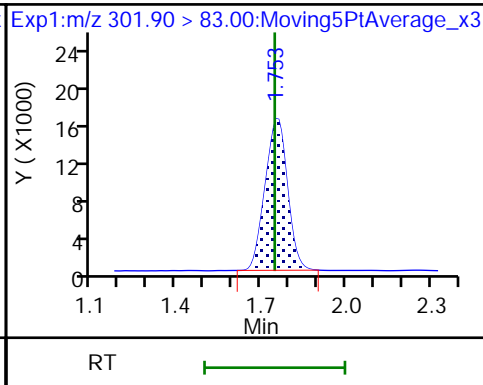
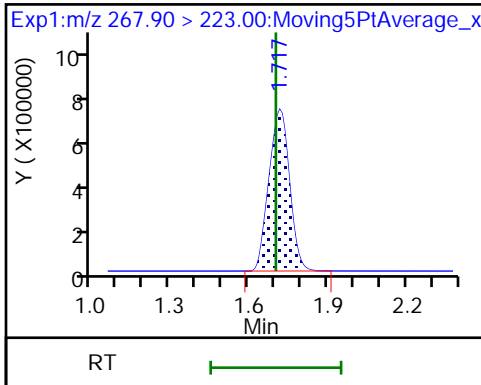
4 Perfluoropentanoic acid (M)



D 3 13C5-PFPeA

D 47 13C3-PFBS

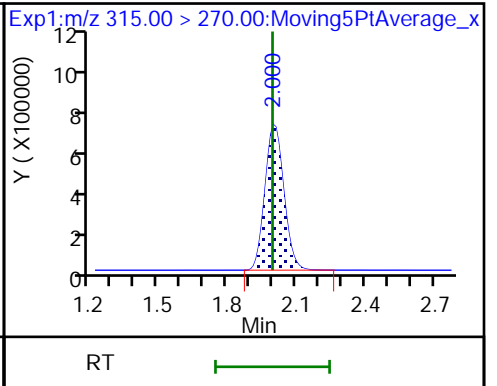
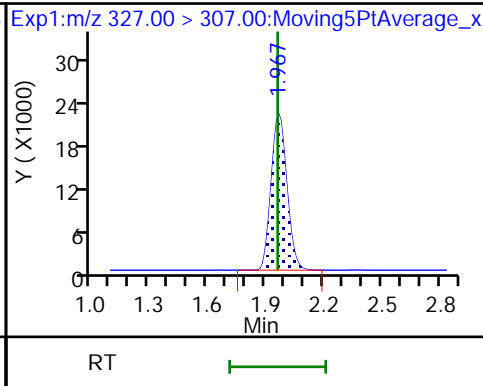
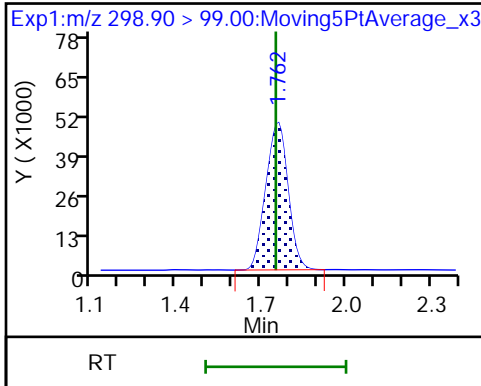
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

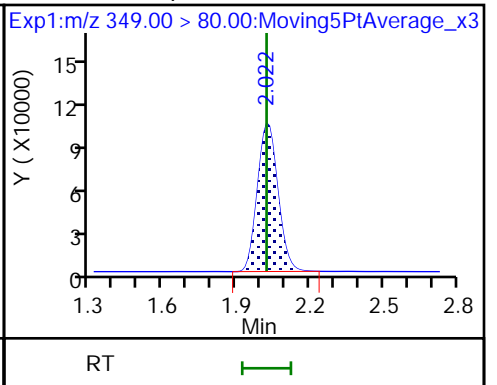
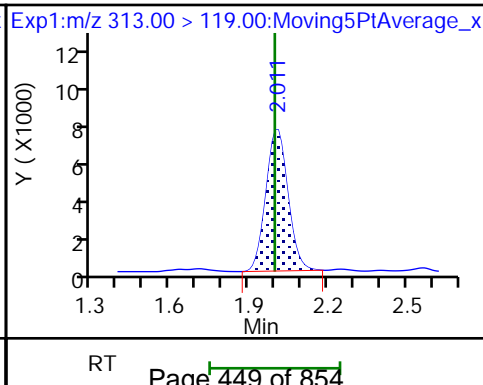
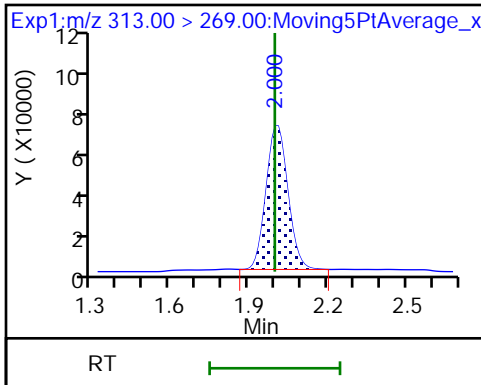
D 7 13C2 PFHxA

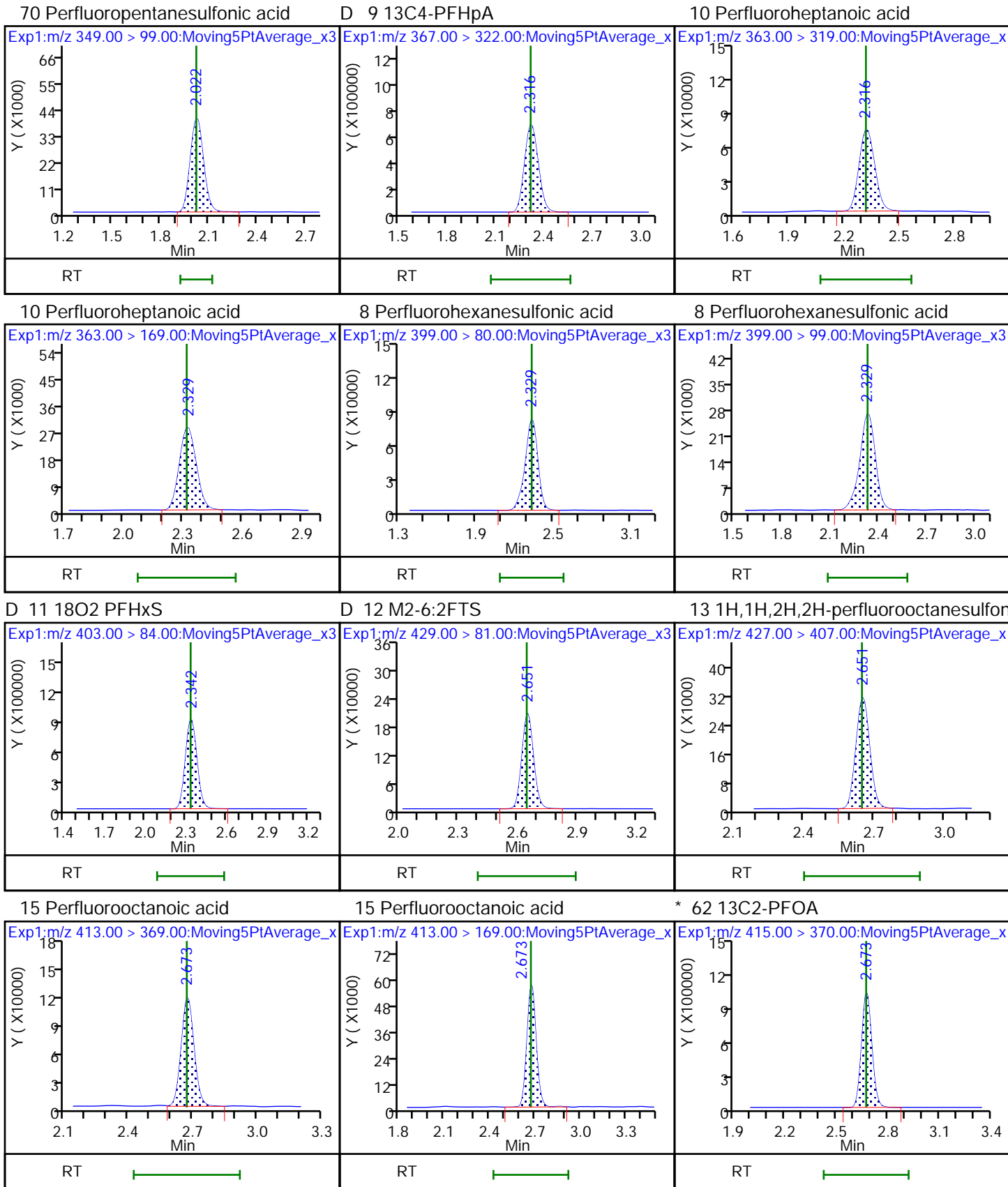


6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

70 Perfluoropentanesulfonic acid

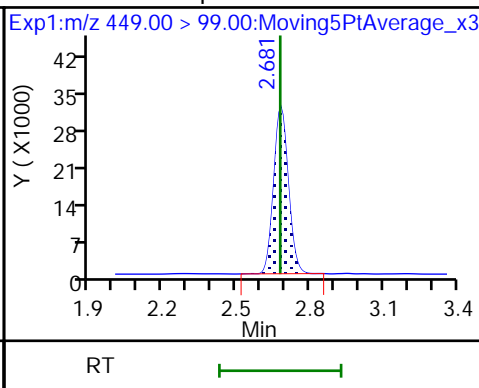
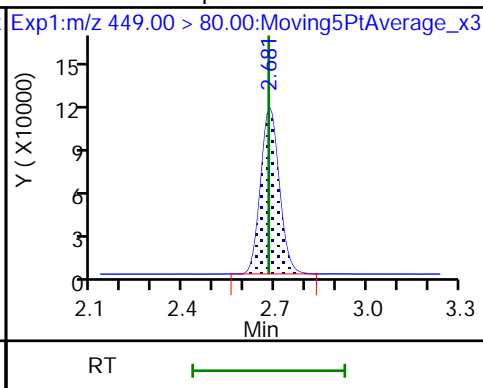
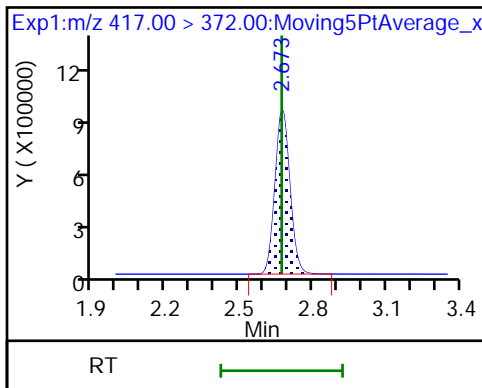




D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

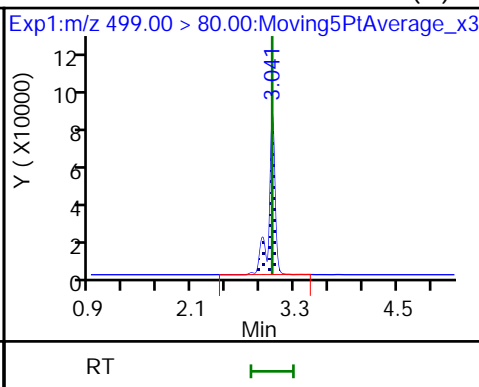
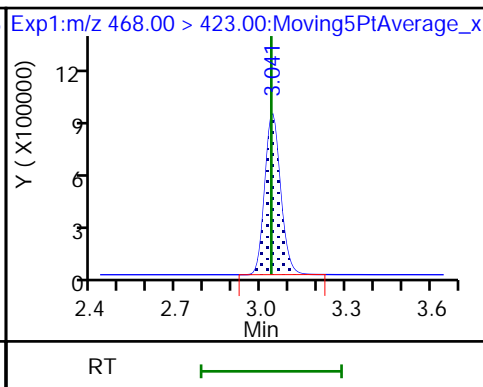
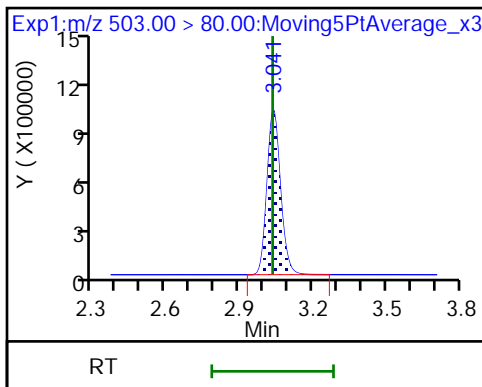
16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS

D 19 13C5 PFNA

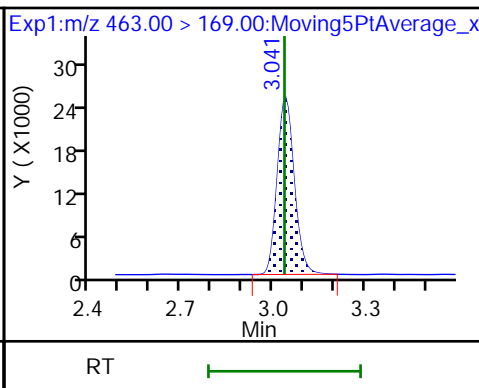
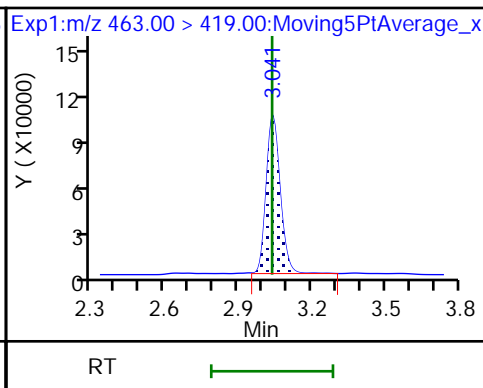
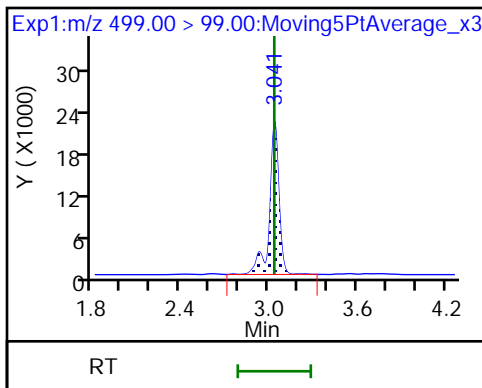
17 Perfluorooctane sulfonic acid (M)



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

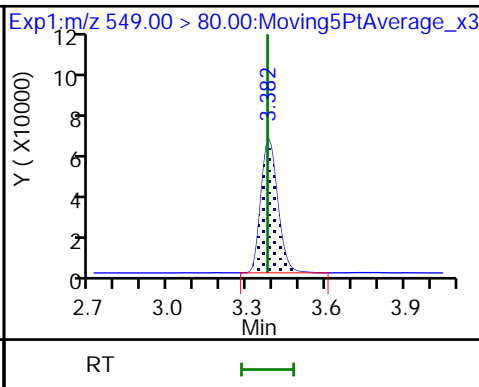
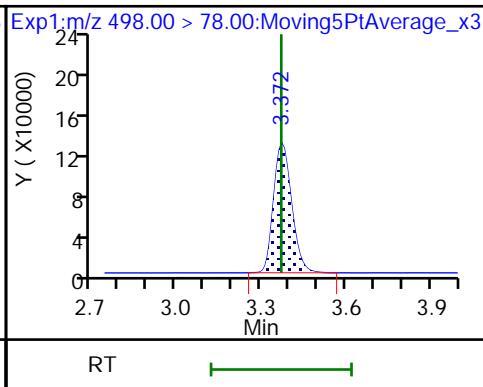
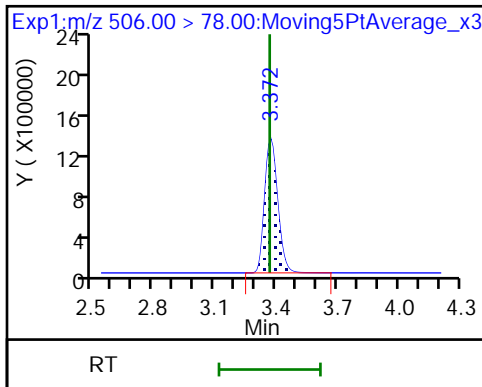
20 Perfluorononanoic acid



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

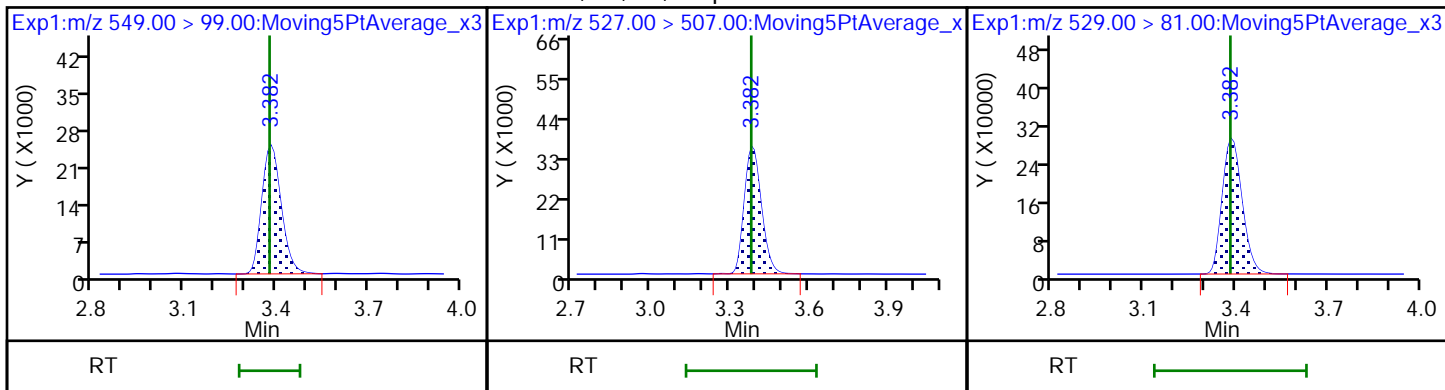
68 Perfluorononanesulfonic acid



68 Perfluorononanesulfonic acid

25 1H,1H,2H,2H-perfluorodecanesulfonate

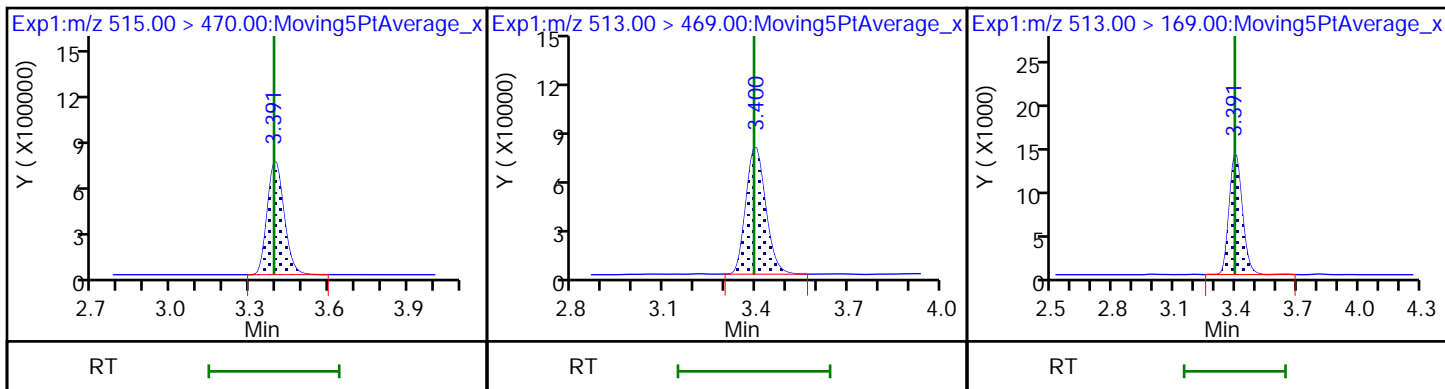
26 M2-8:2FTS



D 23 13C2 PFDA

24 Perfluorodecanoic acid

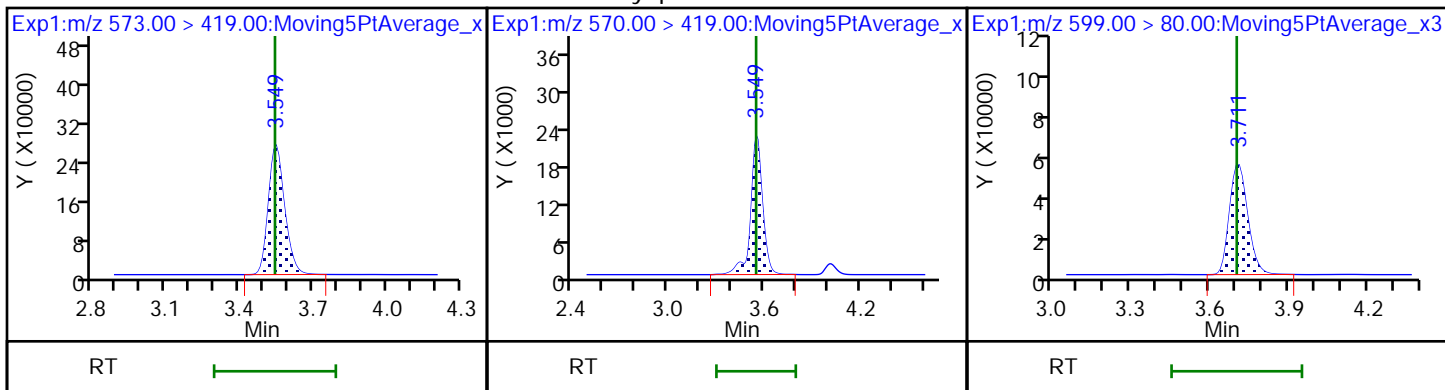
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonamide

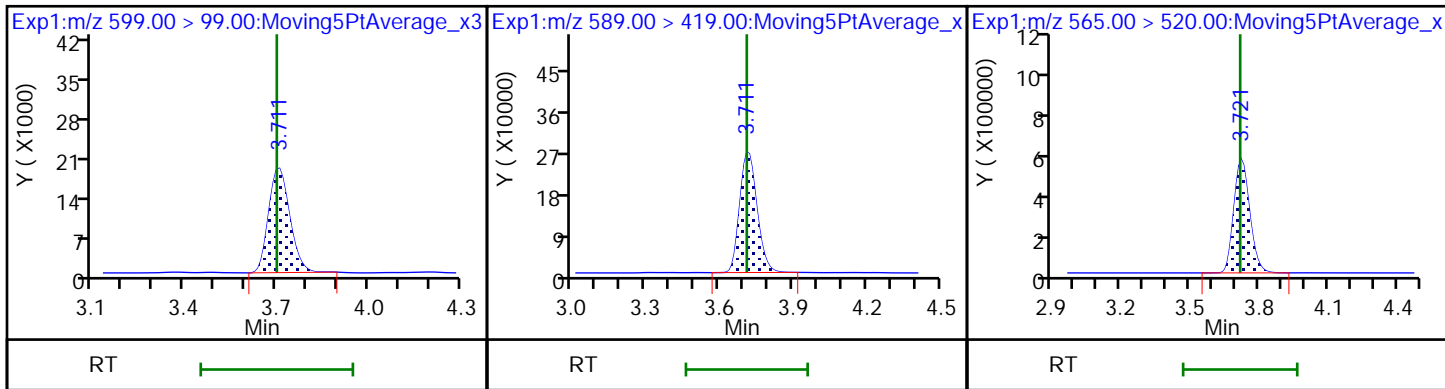
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

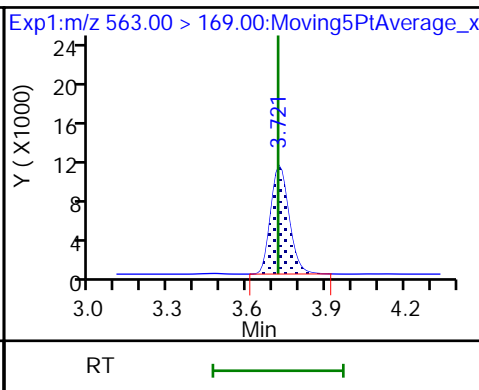
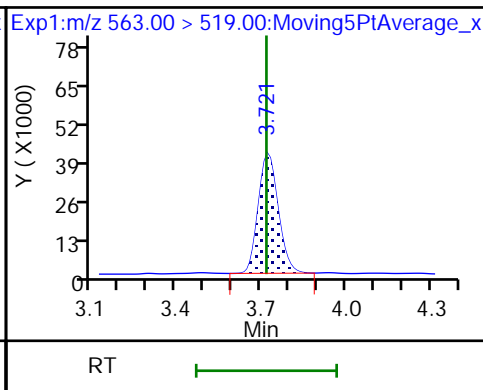
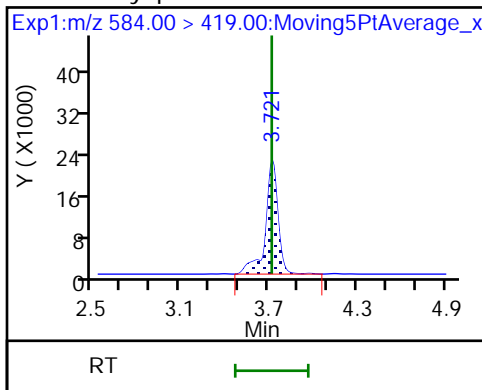
D 30 13C2 PFUnA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

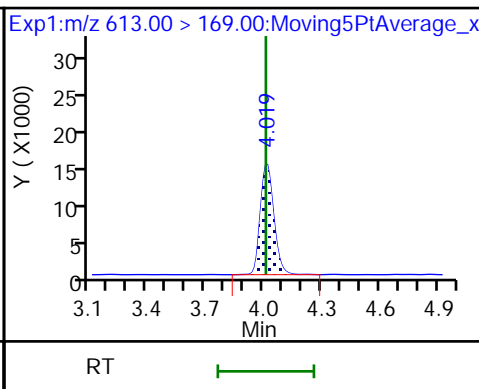
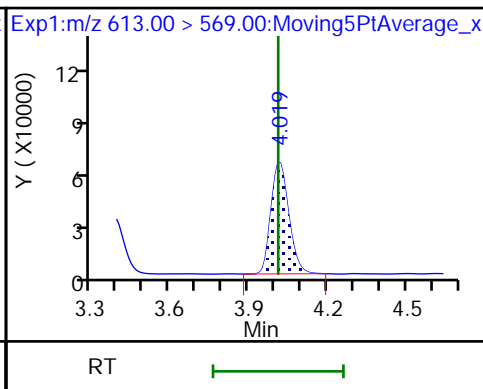
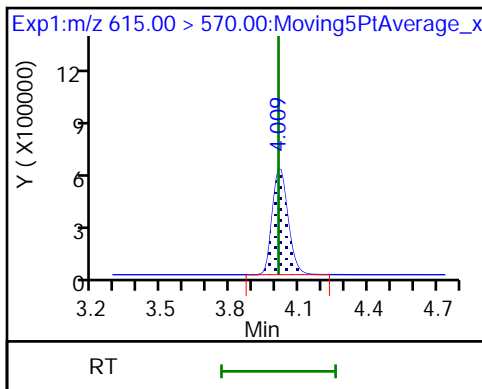
31 Perfluoroundecanoic acid



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

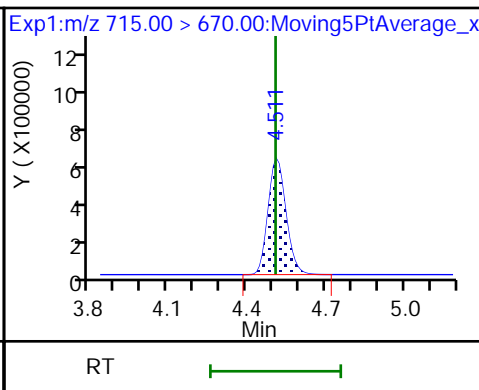
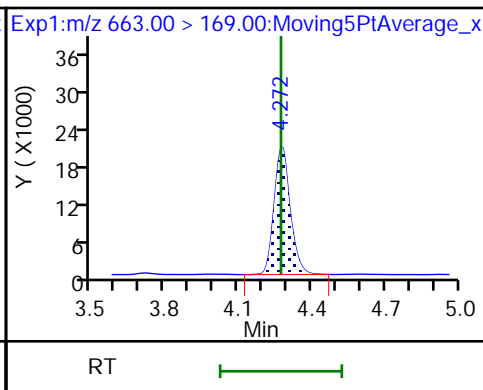
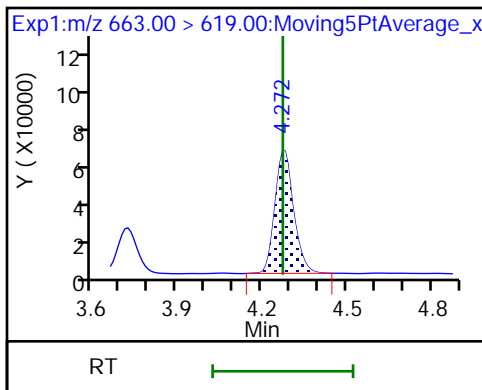
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

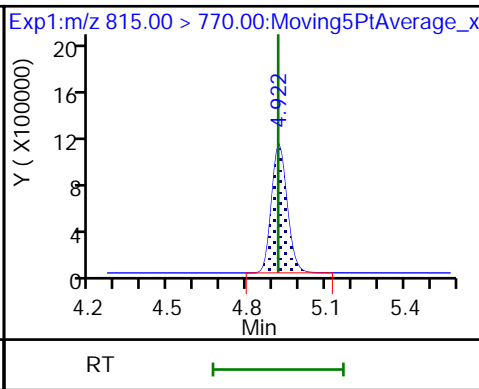
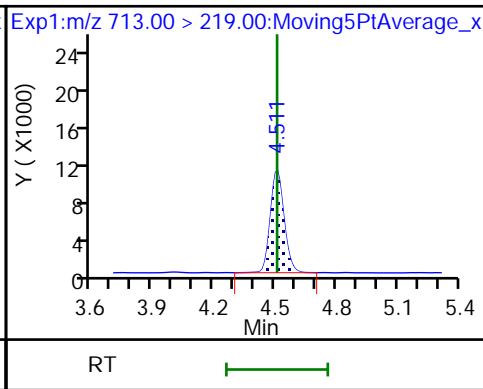
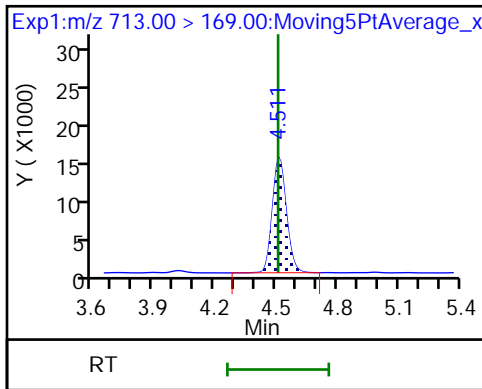
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA



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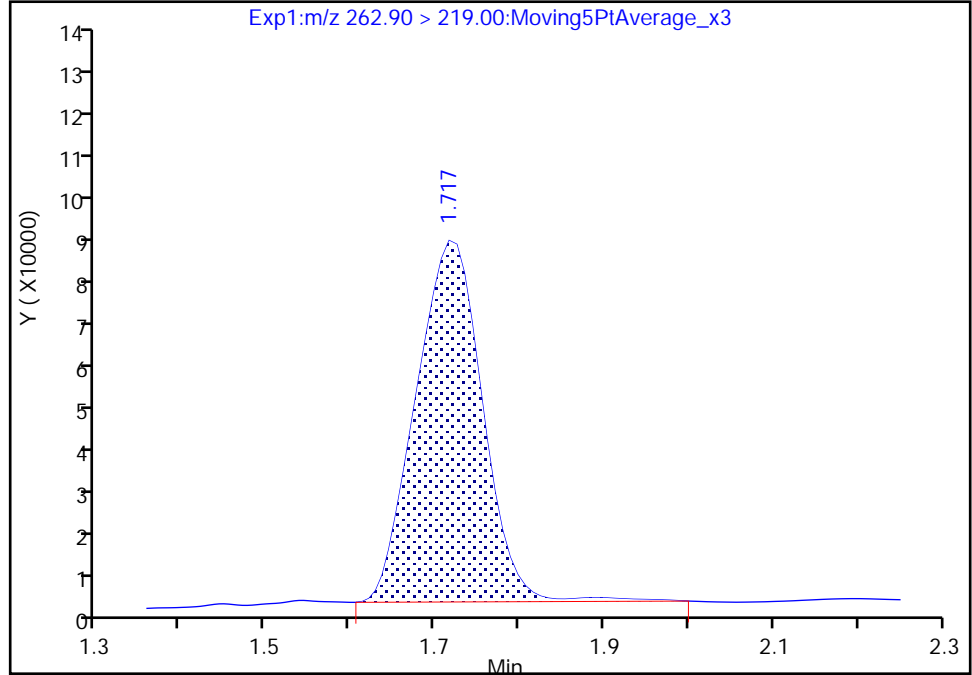
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_004.d
Injection Date: 11-Jul-2018 15:07:23 Instrument ID: A8_N
Lims ID: IC L3 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

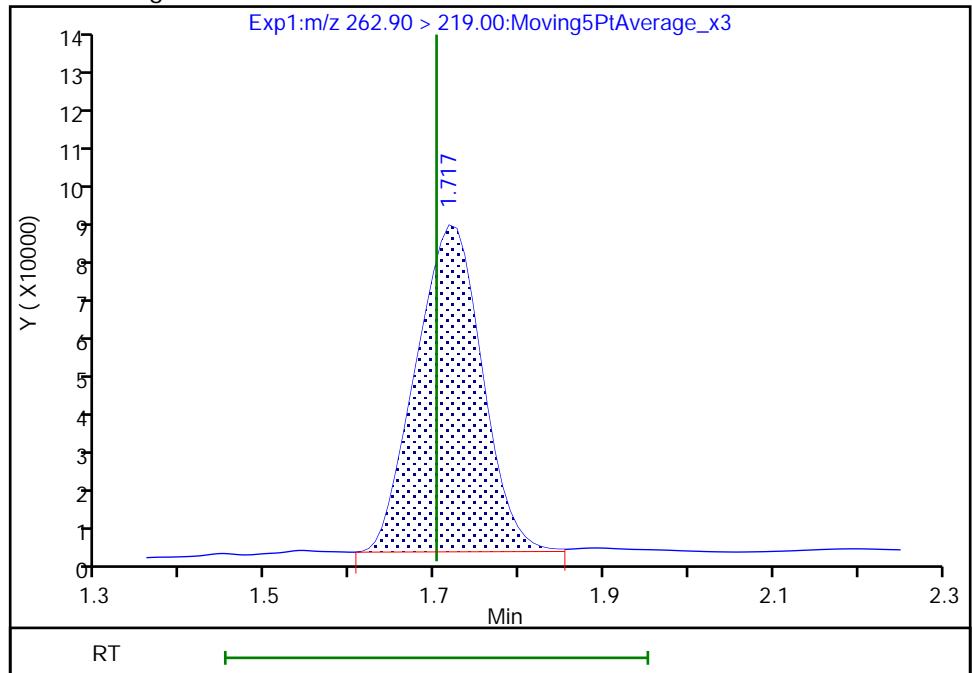
RT: 1.72
Area: 461795
Amount: 0.245377
Amount Units: ng/ml

Processing Integration Results



RT: 1.72
Area: 457354
Amount: 0.243345
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 11-Jul-2018 16:15:17
Audit Action: Manually Integrated

Audit Reason: Split Peak

TestAmerica Sacramento

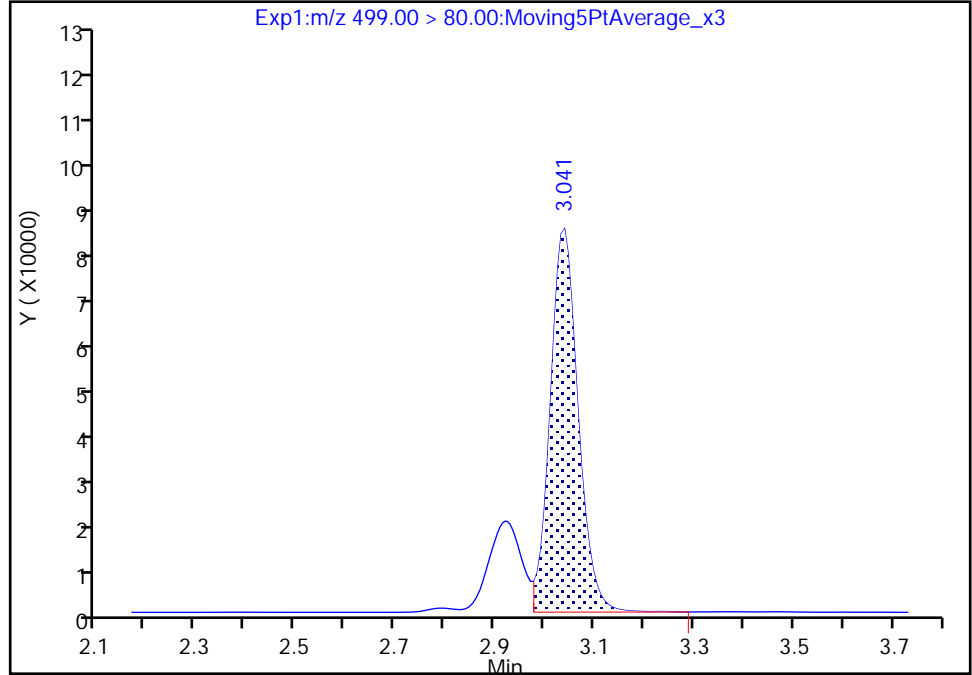
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_004.d
Injection Date: 11-Jul-2018 15:07:23 Instrument ID: A8_N
Lims ID: IC L3 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

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

Signal: 1

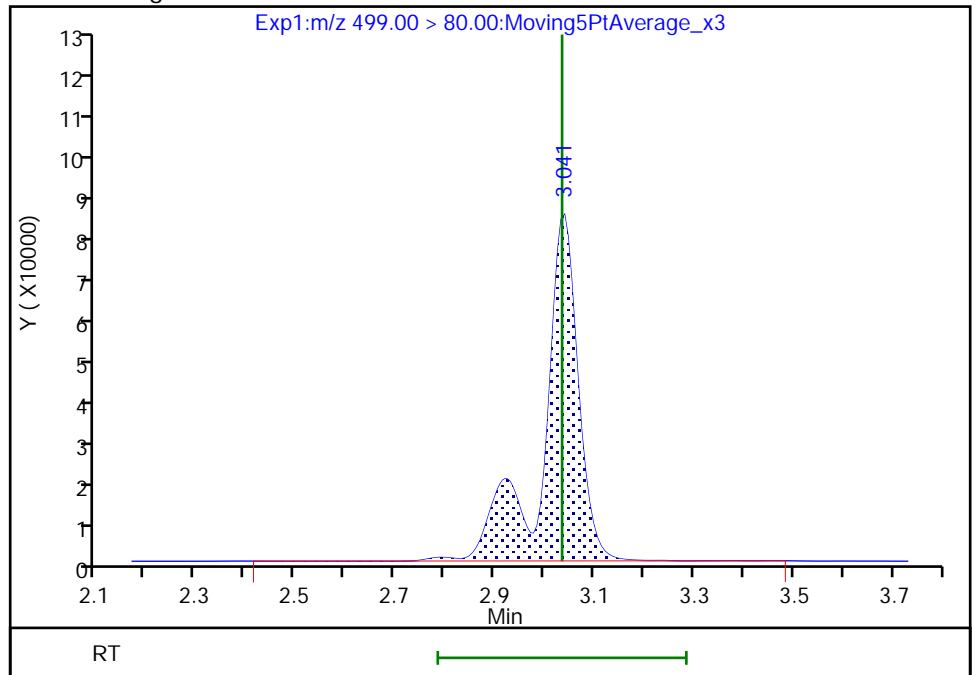
RT: 3.04
Area: 311512
Amount: 0.188367
Amount Units: ng/ml

Processing Integration Results



RT: 3.04
Area: 401226
Amount: 0.227144
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_005.d
 Lims ID: IC L4 Full
 Client ID:
 Sample Type: ICIS Calib Level: 4
 Inject. Date: 11-Jul-2018 15:15:12 ALS Bottle#: 13 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 11-Jul-2018 16:33:36 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:24:01

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	1.430	1.431	-0.001	0.536	5641372	2.39	95.8	40771	M
2 Perfluorobutyric acid	212.90 > 169.00	1.430	1.431	-0.001	1.000	2185459	0.9827	98.3	851	
4 Perfluoropentanoic acid	262.90 > 219.00	1.711	1.702	0.009	1.000	1776986	0.9425	94.3	671	
D 3 13C5-PFPeA	267.90 > 223.00	1.711	1.702	0.009	0.641	3885306	2.37	94.9	40286	
D 47 13C3-PFBS	301.90 > 83.00	1.747	1.748	-0.001	0.655	93442	2.27	97.7	588	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.756	1.751	0.005	1.005	2692471	0.8758	99.1	30936	
	298.90 > 99.00	1.756	1.751	0.005	1.005	1106046	2.43(1.25-3.74)	99.1	13599	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	1.959	1.962	-0.003	1.122	483517	0.9255	99.1	21926	
D 60 M2-4:2FTS	329.00 > 81.00	1.959	1.962	-0.003	0.735	514423	NC		6719	
D 7 13C2 PFHxA	315.00 > 270.00	1.992	1.996	-0.004	0.747	4419532	2.50	100	65585	
6 Perfluorohexanoic acid	313.00 > 269.00	2.003	1.998	0.005	1.006	1767805	0.9715	97.2	3644	
	313.00 > 119.00	1.992	1.998	-0.006	1.000	160752	11.00(5.03-15.10)	97.2	3583	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.014	2.022	-0.008	1.153	2723317	0.9710	104	43344	
	349.00 > 99.00	2.014	2.022	-0.008	1.153	946475	2.88(1.36-4.07)	104	15143	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.093	2.093	0.0	0.785	319484	NC		9570	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.093	2.095	-0.002	1.000	316075	NC		2022
D 9 13C4-PFHpA	367.00	> 322.00	2.319	2.319	0.0	0.870	4071620	2.50	100	45788
10 Perfluoroheptanoic acid	363.00	> 319.00	2.319	2.319	0.0	1.000	1789760	0.9501	95.0	3577
	363.00	> 169.00	2.319	2.319	0.0	1.000	672034	2.66(1.13-3.40)	95.0	5658
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.332	2.332	0.0	1.000	2243830	0.8671	95.3	14079
	399.00	> 99.00	2.332	2.332	0.0	1.000	719470	3.12(1.50-4.49)	95.3	5193
D 11 18O2 PFHxS	403.00	> 84.00	2.332	2.334	-0.002	0.874	5331177	2.31	97.7	64328
65 Adona	377.00	> 251.00	2.358	2.360	-0.002	0.778	5276511	NC		43654
	377.00	> 85.00	2.358	2.360	-0.002	0.778	3115019	1.69(0.84-2.53)		15440
D 12 M2-6:2FTS	429.00	> 81.00	2.644	2.645	-0.001	0.991	819911	2.35	98.9	15077
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.644	2.648	-0.004	1.000	508387	0.9413	99.3	9201
15 Perfluorooctanoic acid	413.00	> 369.00	2.667	2.672	-0.005	1.000	1889955	0.9213	92.0	1333
	413.00	> 169.00	2.667	2.672	-0.005	1.000	984662	1.92(0.84-2.52)	92.0	4771
* 62 13C2-PFOA	415.00	> 370.00	2.667	2.672	-0.005		4343809	2.50		41821
D 14 13C4 PFOA	417.00	> 372.00	2.667	2.672	-0.005	1.000	4164105	2.51	100	36459
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.675	2.678	-0.003	0.882	2108438	1.00	105	20636
	449.00	> 99.00	2.675	2.678	-0.003	0.882	541631	3.89(1.94-5.82)	105	8815
D 18 13C4 PFOS	503.00	> 80.00	3.032	3.034	-0.002	1.137	3832872	2.26	94.7	26005
D 19 13C5 PFNA	468.00	> 423.00	3.032	3.035	-0.003	1.137	3677166	2.48	99.1	48144
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.032	3.035	-0.003	1.000	1695511	0.9330	101	22959
	499.00	> 99.00	3.032	3.035	-0.003	1.000	381272	4.45(2.31-6.93)	101	5451
20 Perfluorononanoic acid	463.00	> 419.00	3.032	3.036	-0.004	1.000	1601728	0.9816	98.2	3653
	463.00	> 169.00	3.032	3.036	-0.004	1.000	393341	4.07(1.90-5.69)	98.2	12806
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.240	3.245	-0.005	1.069	2898434	NC		26398
D 21 13C8 FOSA	506.00	> 78.00	3.361	3.367	-0.007	1.260	6072674	2.49	99.5	32206
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.370	3.371	-0.001	1.003	2466657	1.03	103	23348
68 Perfluorononanesulfonic acid	549.00	> 80.00	3.370	3.377	-0.007	1.111	1198001	0.9637	100	24931
	549.00	> 99.00	3.370	3.377	-0.007	1.111	448683	2.67(1.33-3.97)	100	5683

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.379	3.380	-0.001	1.000	616956	0.9227	96.3	9759
D 26 M2-8:2FTS	529.00	> 81.00	3.379	3.380	-0.001	1.267	1241456	2.43	102	20973
D 23 13C2 PFDA	515.00	> 470.00	3.388	3.391	-0.003	1.270	3225992	2.47	99.0	36283
24 Perfluorodecanoic acid	513.00	> 469.00	3.388	3.392	-0.004	1.000	1372481	1.01	101	7780
	513.00	> 169.00	3.388	3.392	-0.004	1.000	234993	5.84(2.36-7.09)	101	7483
D 27 d3-NMeFOSAA	573.00	> 419.00	3.538	3.544	-0.006	1.326	1320092	2.47	98.8	18113
28 N-methyl perfluorooctane sulfonami	570.00	> 419.00	3.547	3.548	-0.001	1.003	521077	1.00	100	4163
29 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.697	3.701	-0.004	1.219	1104012	1.03	106	33210
	599.00	> 99.00	3.697	3.701	-0.004	1.219	381155	2.90(1.39-4.16)	106	11450
D 32 d5-NEtFOSAA	589.00	> 419.00	3.708	3.710	-0.002	1.390	1412562	2.58	103	3578
D 30 13C2 PFUnA	565.00	> 520.00	3.708	3.716	-0.008	1.390	2739039	2.52	101	37242
33 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.708	3.718	-0.010	1.000	470221	0.9414	94.1	11298
31 Perfluoroundecanoic acid	563.00	> 519.00	3.708	3.718	-0.010	1.000	824114	0.9179	91.8	4935
	563.00	> 169.00	3.708	3.718	-0.010	1.000	230560	3.57(2.12-6.36)	91.8	9451
66 11-Chloroeicosafuoro-3-oxaundecan	631.00	> 451.00	3.865	3.874	-0.009	1.275	4328485	NC		56110
D 36 13C2 PFDaA	615.00	> 570.00	4.009	4.009	0.0	1.503	2741167	2.43	97.1	17529
37 Perfluorododecanoic acid	613.00	> 569.00	4.009	4.011	-0.002	1.000	1222974	1.02	102	655
	613.00	> 169.00	4.009	4.011	-0.002	1.000	295938	4.13(2.13-6.40)	102	6196
41 Perfluorotridecanoic acid	663.00	> 619.00	4.272	4.273	-0.001	1.066	1185888	1.01	101	495
	663.00	> 169.00	4.272	4.273	-0.001	1.066	360583	3.29(1.25-3.76)	101	5237
D 43 13C2-PFTeDA	715.00	> 670.00	4.501	4.508	-0.007	1.688	2848985	2.43	97.3	14593
42 Perfluorotetradecanoic acid	713.00	> 169.00	4.501	4.508	-0.007	1.000	292793	0.9875	98.8	5119
	713.00	> 219.00	4.501	4.508	-0.007	1.000	204434	1.43(0.71-2.13)	98.8	4812
D 44 13C2-PFHxDA	815.00	> 770.00	4.913	4.918	-0.005	1.842	4668246	2.50	100	12029
45 Perfluorohexadecanoic acid	813.00	> 769.00	4.913	4.918	-0.005	1.000	1859123	NC		407
	813.00	> 169.00	4.913	4.918	-0.005	1.000	288685	6.44(2.86-8.58)		2770
46 Perfluorooctadecanoic acid	913.00	> 869.00	5.269	5.271	-0.002	1.072	2109156	NC		376
	913.00	> 169.00	5.262	5.271	-0.009	1.071	260420	8.10(3.83-11.48)		3637

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

[Reagents:](#)

LCPFC_LL4_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_005.d

Injection Date: 11-Jul-2018 15:15:12

Instrument ID: A8_N

Lims ID: IC L4 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

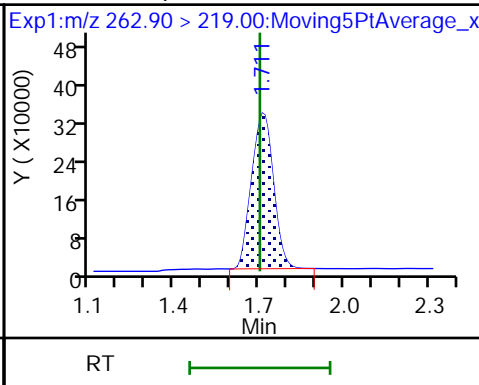
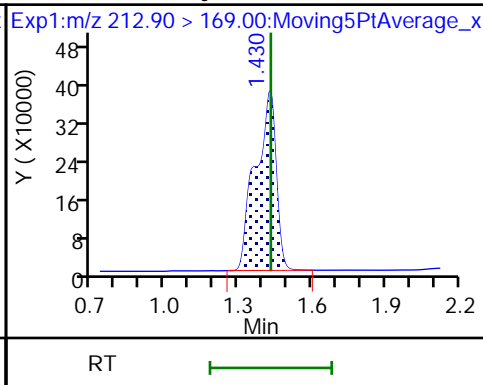
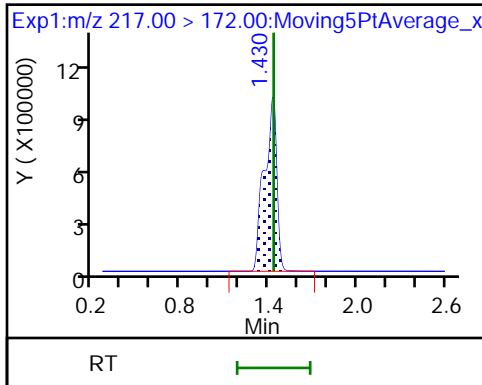
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA (M)

2 Perfluorobutyric acid

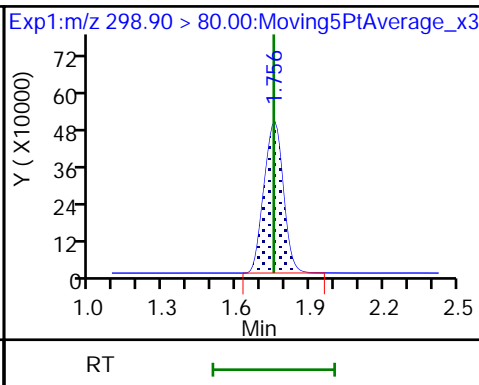
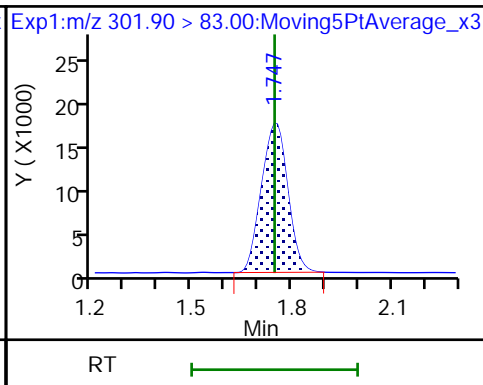
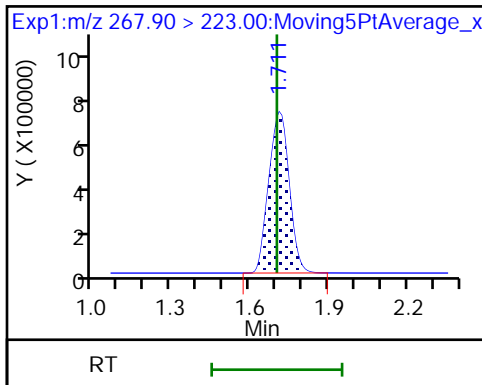
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

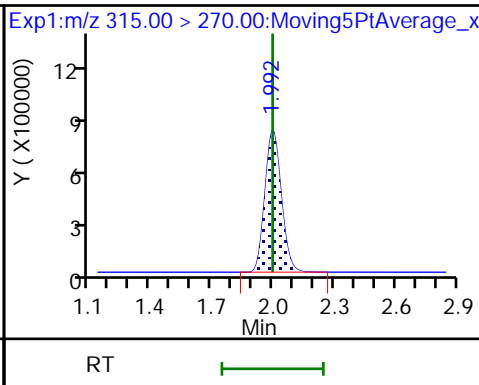
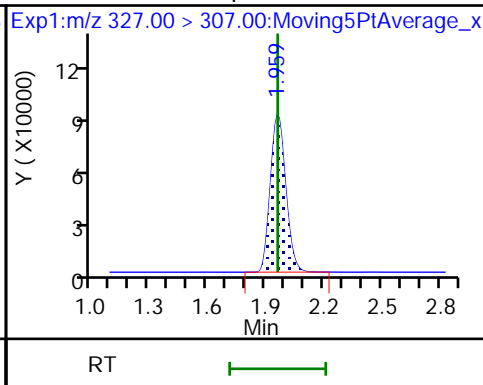
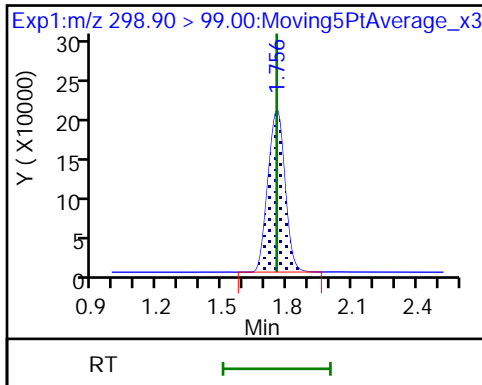
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

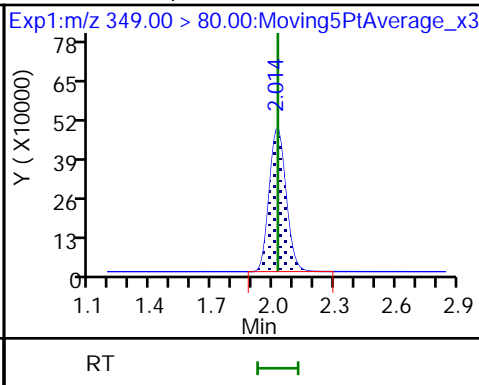
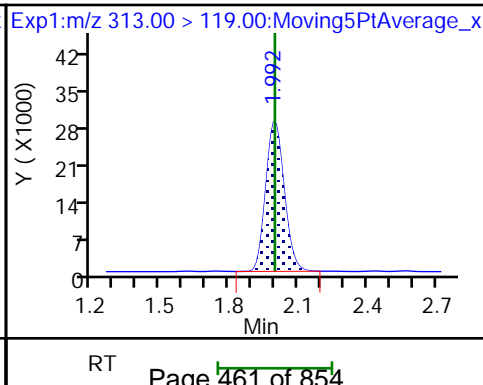
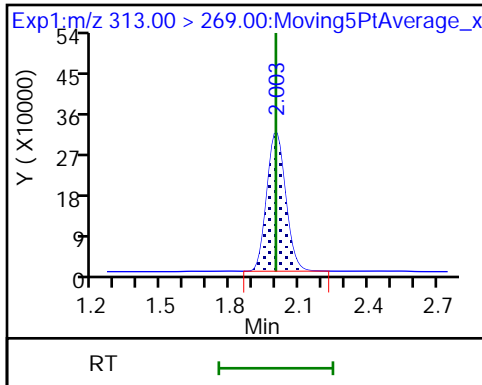
D 7 13C2 PFHxA



6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

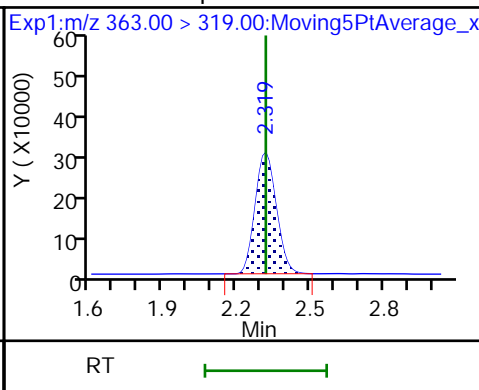
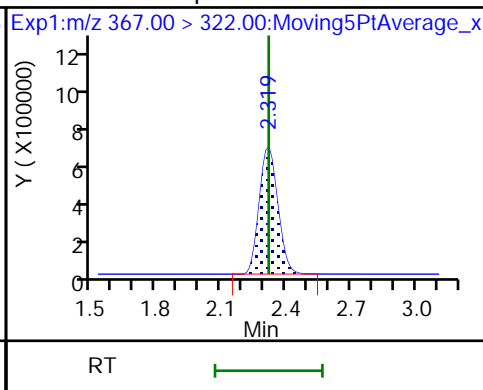
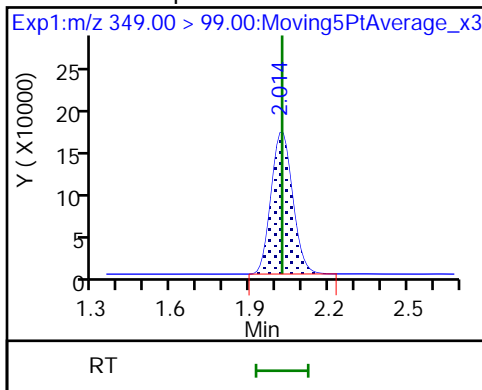
70 Perfluoropentanesulfonic acid



70 Perfluoropentanesulfonic acid

D 9 13C4-PFHpA

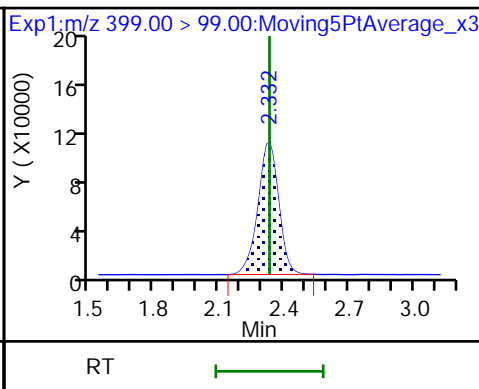
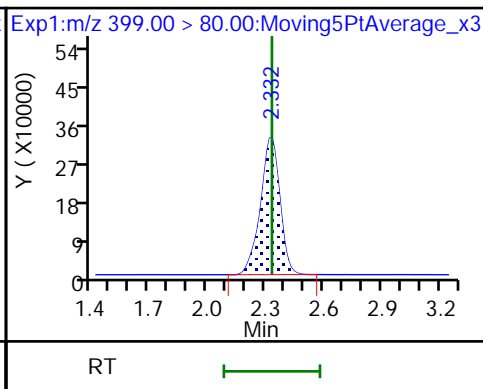
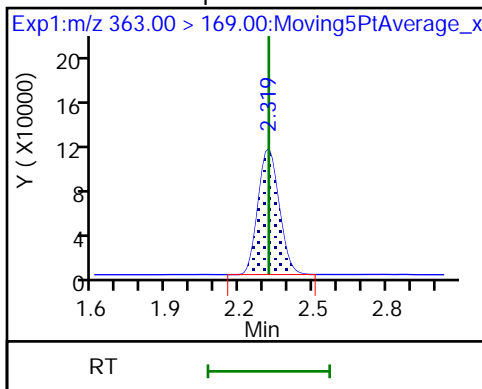
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

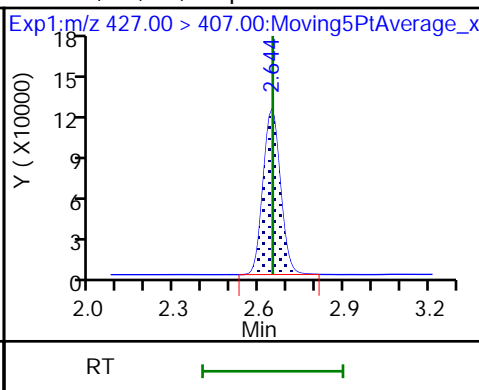
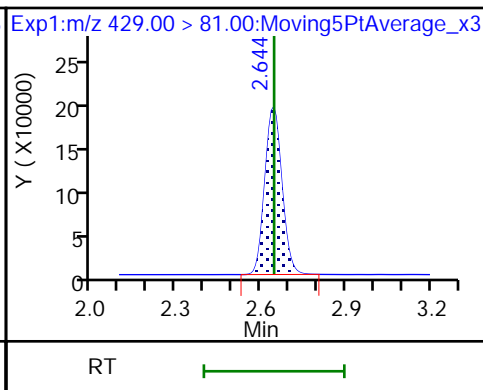
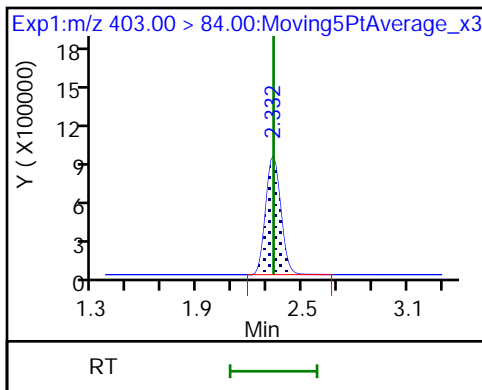
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

D 12 M2-6:2FTS

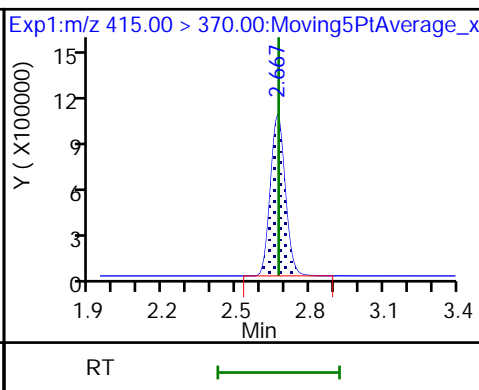
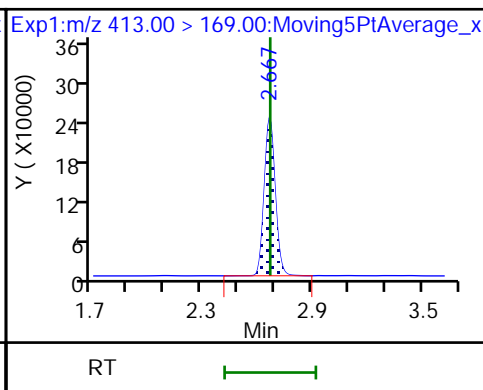
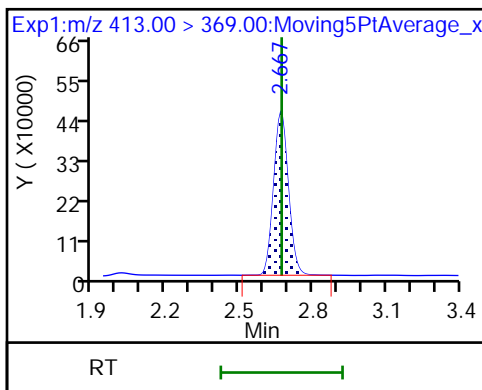
13 1H,1H,2H,2H-perfluorooctanesulfoni



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

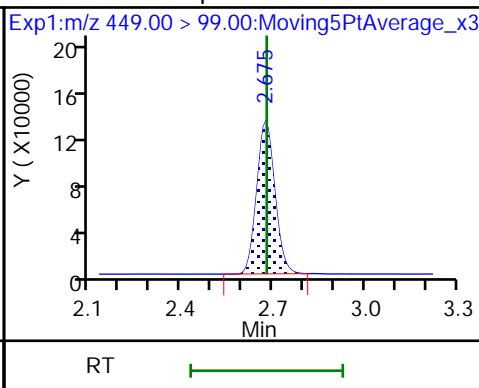
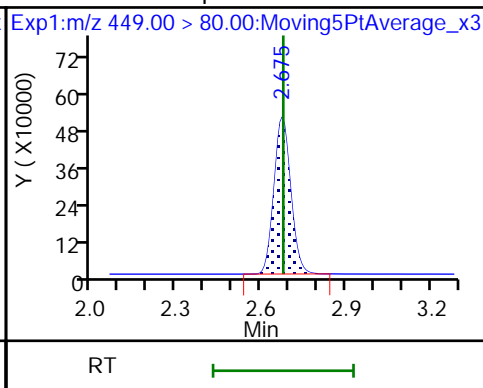
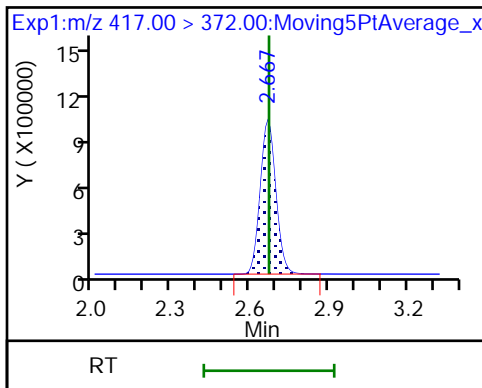
* 62 13C2-PFOA



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

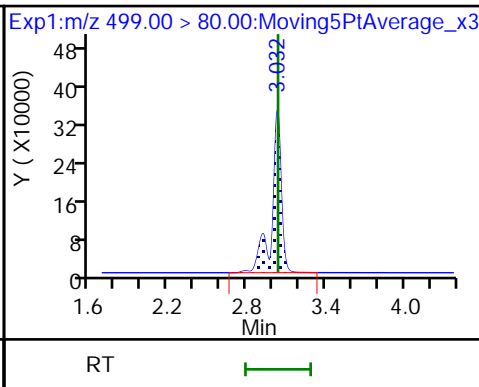
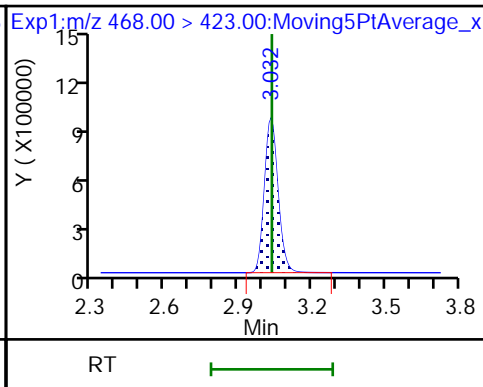
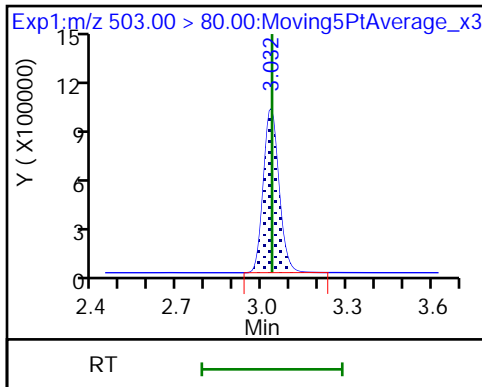
16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS

D 19 13C5 PFNA

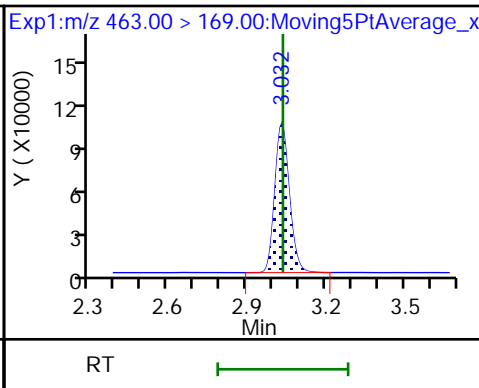
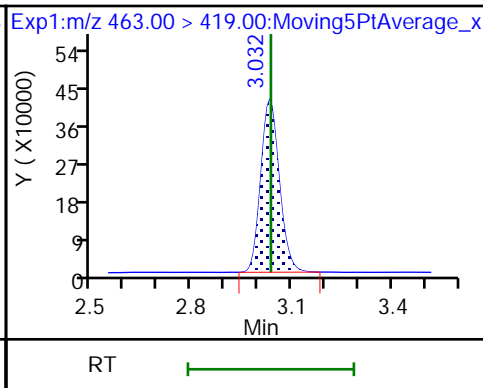
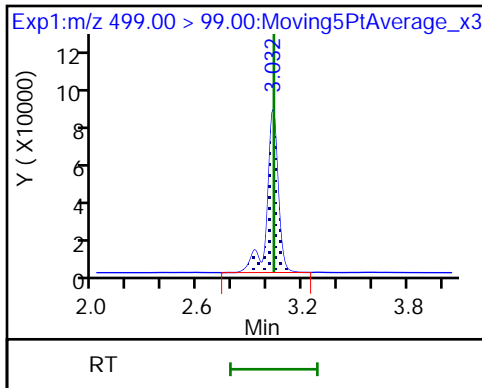
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

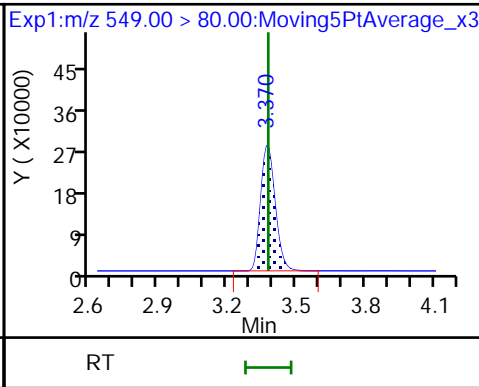
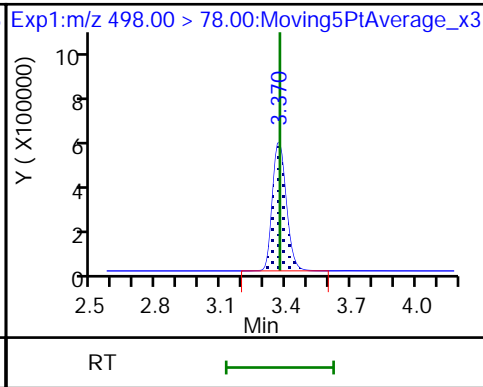
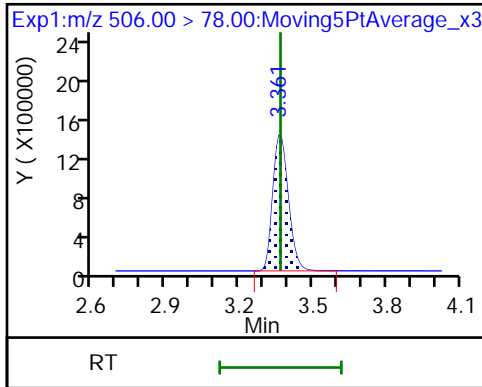
20 Perfluorononanoic acid



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

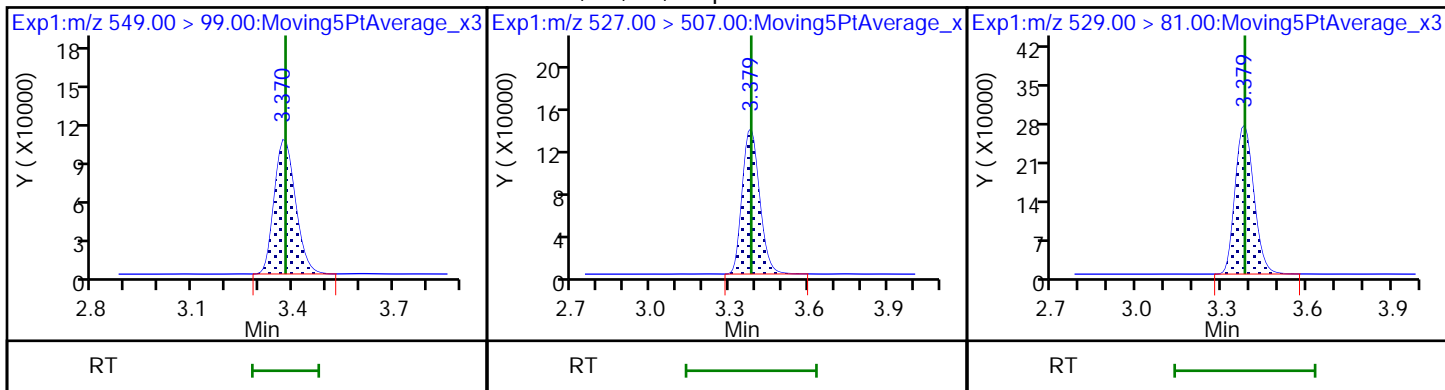
68 Perfluorononanesulfonic acid



68 Perfluorononanesulfonic acid

25 1H,1H,2H,2H-perfluorodecanesulfonate

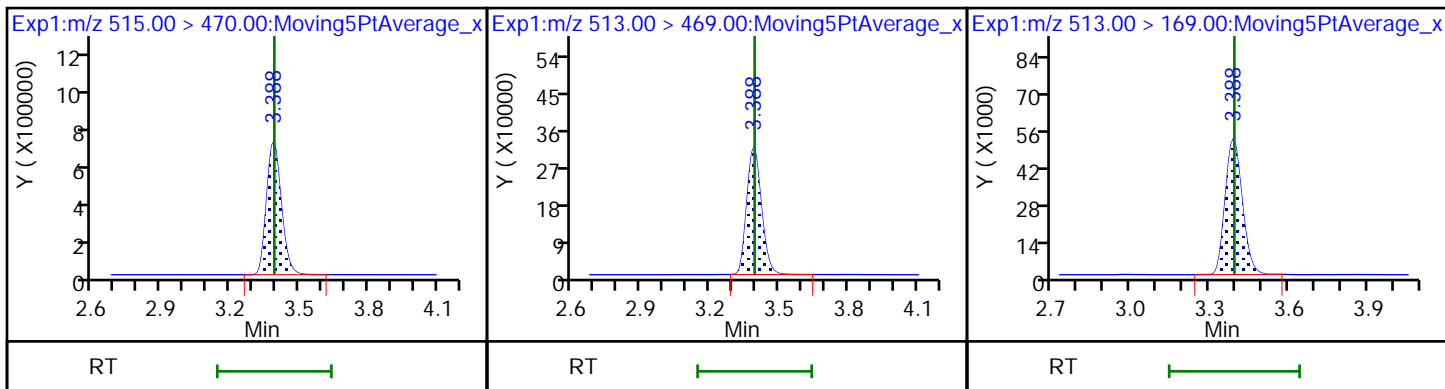
26 M2-8:2FTS



D 23 13C2 PFDA

24 Perfluorodecanoic acid

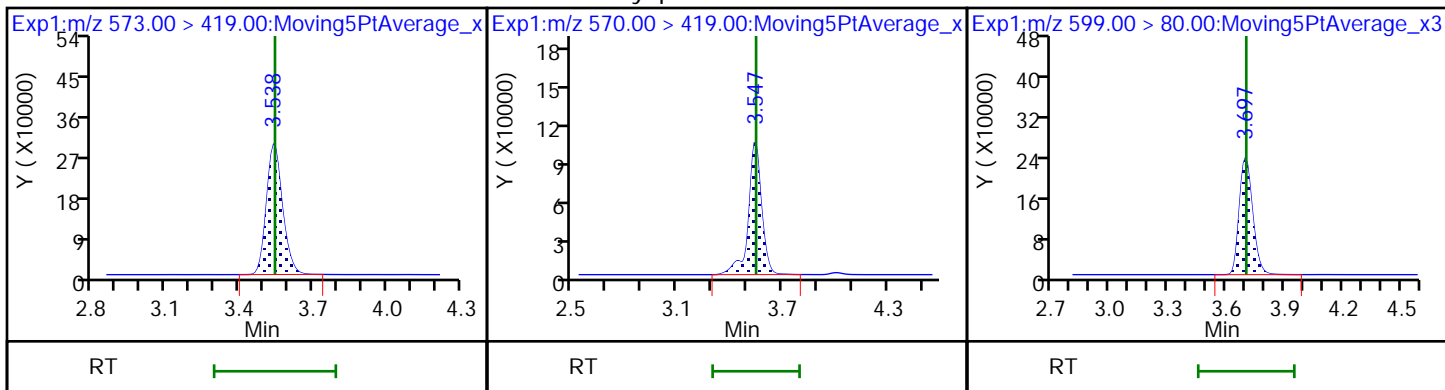
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonamide

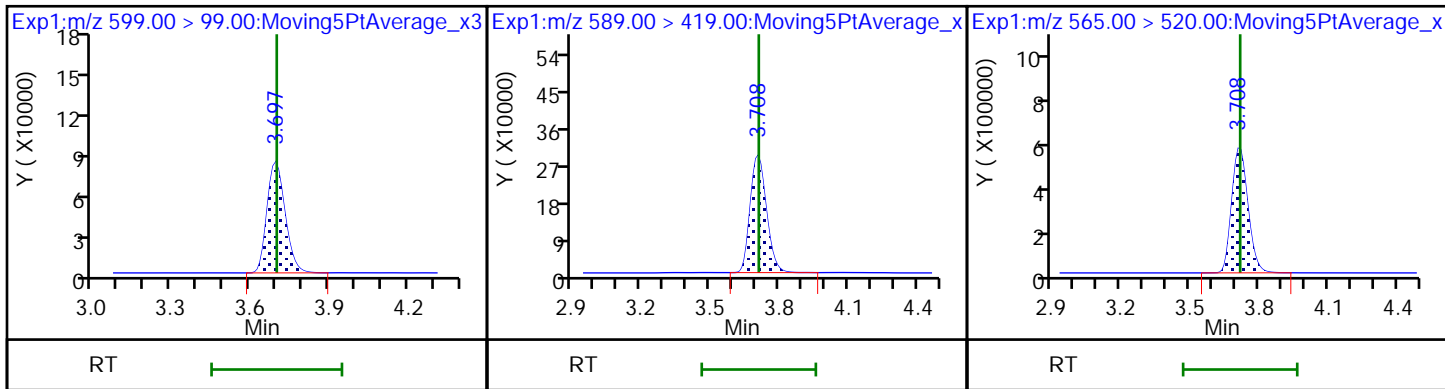
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

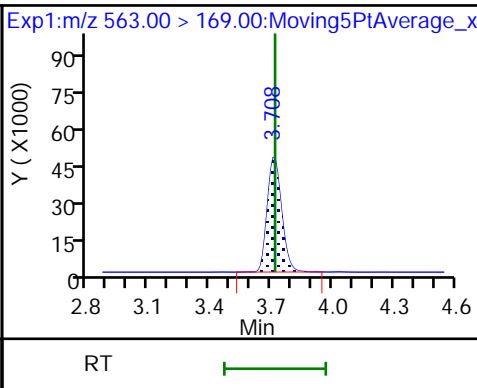
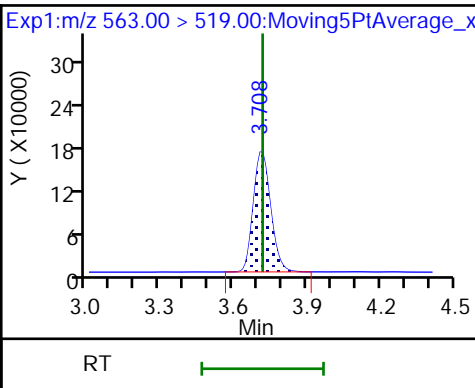
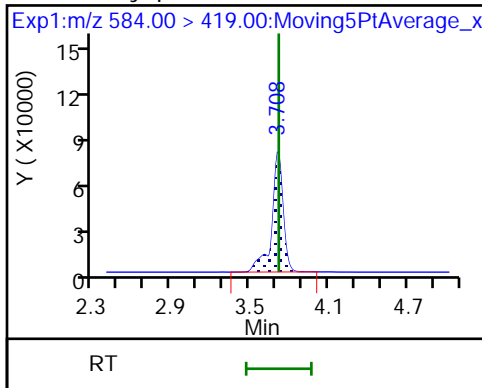
D 30 13C2 PFUnA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

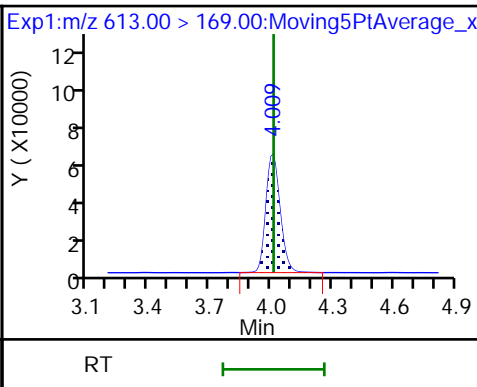
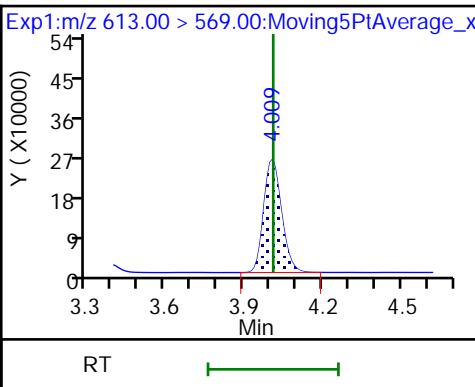
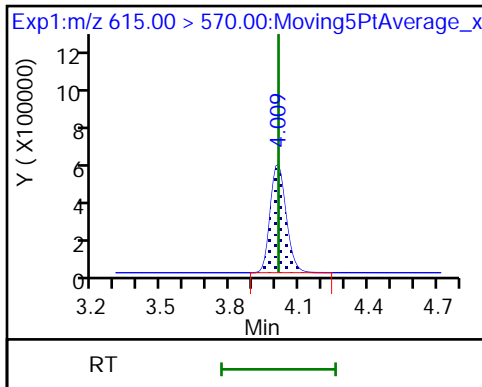
31 Perfluoroundecanoic acid



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

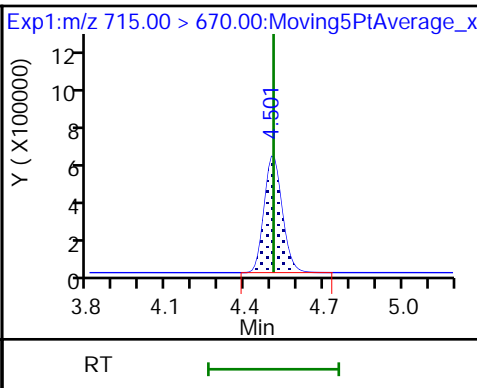
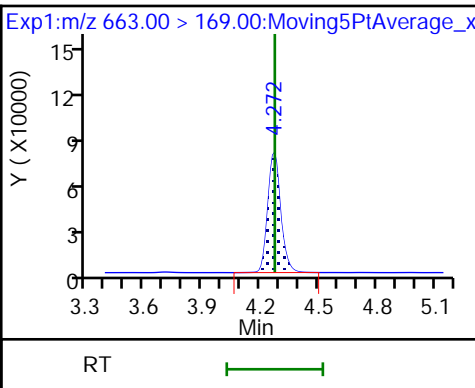
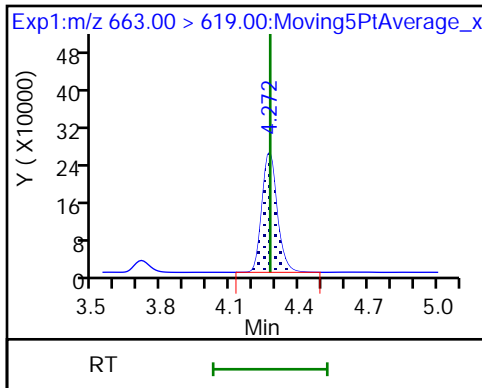
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

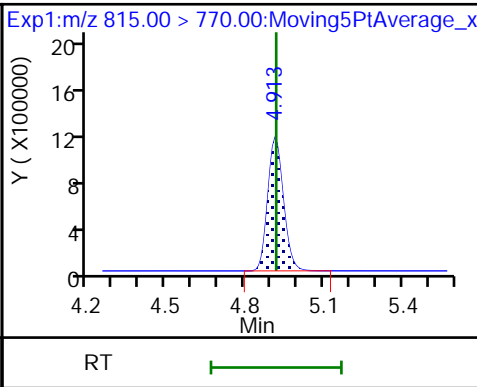
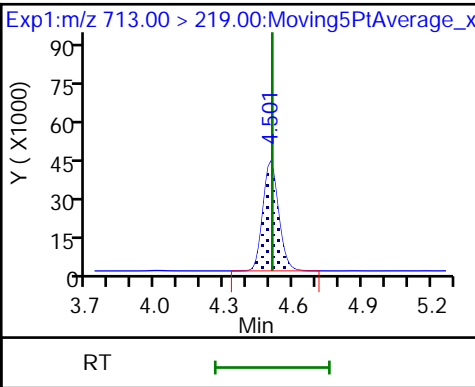
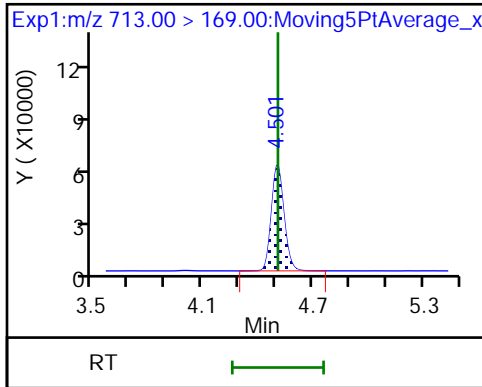
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA



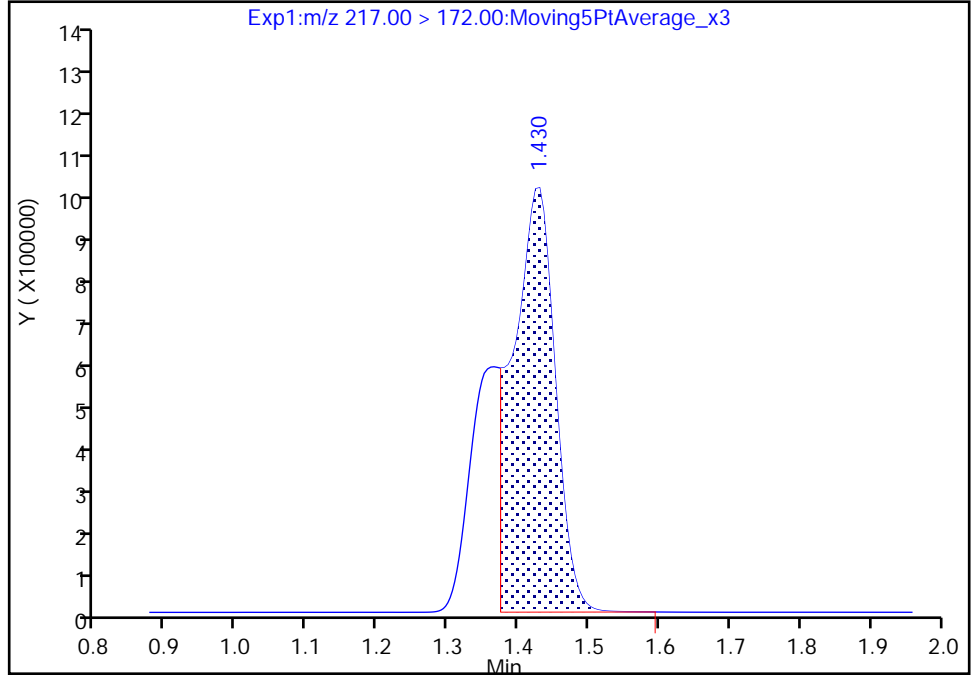
TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_005.d
Injection Date: 11-Jul-2018 15:15:12 Instrument ID: A8_N
Lims ID: IC L4 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

D 1 13C4 PFBA, CAS: STL00992
Signal: 1

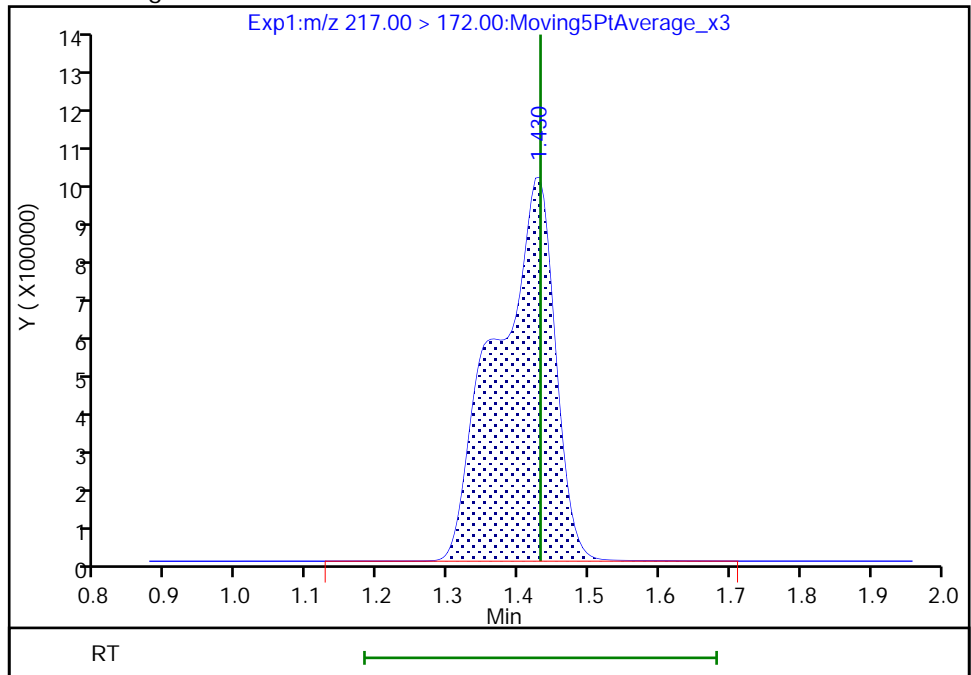
RT: 1.43
Area: 3994583
Amount: 1.883793
Amount Units: ng/ml

Processing Integration Results



RT: 1.43
Area: 5641372
Amount: 2.394547
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 11-Jul-2018 16:16:12
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
Page 467 of 854

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_006.d
 Lims ID: IC L5 Full
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 11-Jul-2018 15:23:01 ALS Bottle#: 14 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L5-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 11-Jul-2018 16:33:43 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:16:35

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	1.435	1.431	0.004	0.537	5280540	2.41	96.3	25331	
2 Perfluorobutyric acid	212.90 > 169.00	1.435	1.431	0.004	1.000	5273443	2.53	101	2281	
4 Perfluoropentanoic acid	262.90 > 219.00	1.719	1.702	0.017	1.000	4381627	2.38	95.3	2113	
D 3 13C5-PFPeA	267.90 > 223.00	1.719	1.702	0.017	0.643	3788119	2.48	99.4	51157	
D 47 13C3-PFBS	301.90 > 83.00	1.755	1.748	0.007	0.656	86878	2.27	97.5	540	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.755	1.751	0.004	1.000	6674181	2.33	106	61281	
	298.90 > 99.00	1.764	1.751	0.013	1.005	2645946	2.52(1.25-3.74)	106	30456	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	1.969	1.962	0.007	1.122	1107254	2.28	97.6	50198	
D 60 M2-4:2FTS	329.00 > 81.00	1.969	1.962	0.007	0.737	473738	NC		7088	
D 7 13C2 PFHxA	315.00 > 270.00	2.002	1.996	0.006	0.749	4018475	2.44	97.7	79463	
6 Perfluorohexanoic acid	313.00 > 269.00	2.002	1.998	0.004	1.000	4160132	2.51	101	10856	
	313.00 > 119.00	2.002	1.998	0.004	1.000	388380	10.71(5.03-15.10)	101	9906	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.025	2.022	0.003	1.154	6455101	2.48	106	54556	
	349.00 > 99.00	2.025	2.022	0.003	1.154	2229345	2.90(1.36-4.07)	106	35942	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.093	2.093	0.0	0.783	311580	NC		7946	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.104	2.095	0.009	1.005	778109	NC		4944
D 9 13C4-PFHpA	367.00	> 322.00	2.319	2.319	0.0	0.867	3786835	2.50	99.9	33591
10 Perfluoroheptanoic acid	363.00	> 319.00	2.319	2.319	0.0	1.000	4400212	2.51	100	8612
	363.00	> 169.00	2.319	2.319	0.0	1.000	1670402	2.63(1.13-3.40)	100	14099
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.332	2.332	0.0	1.000	5315063	2.21	97.2	20906
	399.00	> 99.00	2.332	2.332	0.0	1.000	1742127	3.05(1.50-4.49)	97.2	10227
D 11 18O2 PFHxS	403.00	> 84.00	2.332	2.334	-0.002	0.872	4952007	2.31	97.5	38010
65 Adona	377.00	> 251.00	2.358	2.360	-0.002	0.777	12756974	NC		64864
	377.00	> 85.00	2.358	2.360	-0.002	0.777	7312674	1.74(0.84-2.53)		31574
D 12 M2-6:2FTS	429.00	> 81.00	2.643	2.645	-0.002	0.989	735229	2.26	95.3	14601
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.651	2.648	0.003	1.003	1207511	2.49	105	19337
15 Perfluorooctanoic acid	413.00	> 369.00	2.674	2.672	0.002	1.000	4451468	2.36	94.1	3343
	413.00	> 169.00	2.674	2.672	0.002	1.000	2330707	1.91(0.84-2.52)	94.1	9438
* 62 13C2-PFOA	415.00	> 370.00	2.674	2.672	0.002		4043518	2.50		48829
D 14 13C4 PFOA	417.00	> 372.00	2.674	2.672	0.002	1.000	3836329	2.48	99.2	36799
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.682	2.678	0.004	0.884	5191820	2.53	107	34935
	449.00	> 99.00	2.682	2.678	0.004	0.884	1323329	3.92(1.94-5.82)	107	17676
D 18 13C4 PFOS	503.00	> 80.00	3.034	3.034	0.0	1.135	3715442	2.36	98.7	27307
D 19 13C5 PFNA	468.00	> 423.00	3.034	3.035	-0.001	1.135	3458178	2.50	100	35610
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.034	3.035	-0.001	1.000	4135858	2.35	101	37972
	499.00	> 99.00	3.034	3.035	-0.001	1.000	892390	4.63(2.31-6.93)	101	14610
20 Perfluorononanoic acid	463.00	> 419.00	3.034	3.036	-0.002	1.000	3819652	2.49	99.6	8703
	463.00	> 169.00	3.034	3.036	-0.002	1.000	918661	4.16(1.90-5.69)	99.6	19742
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.248	3.245	0.003	1.071	7252582	NC		52779
D 21 13C8 FOSA	506.00	> 78.00	3.372	3.367	0.005	1.261	5643811	2.48	99.4	47295
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.372	3.371	0.001	1.000	5880155	2.64	106	55445
68 Perfluorononanesulfonic acid	549.00	> 80.00	3.382	3.377	0.005	1.115	2871112	2.38	99.3	46492
	549.00	> 99.00	3.372	3.377	-0.005	1.112	1101132	2.61(1.33-3.97)	99.3	15623

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.382	3.380	0.002	1.000	1414341	2.48	103	28571
D 26 M2-8:2FTS	529.00	> 81.00	3.382	3.380	0.002	1.265	1060685	2.23	93.2	19616
D 23 13C2 PFDA	515.00	> 470.00	3.391	3.391	0.0	1.268	3096188	2.55	102	36882
24 Perfluorodecanoic acid	513.00	> 469.00	3.391	3.392	-0.001	1.000	3246129	2.50	99.9	19256
	513.00	> 169.00	3.391	3.392	-0.001	1.000	556303	5.84(2.36-7.09)	99.9	17777
D 27 d3-NMeFOSAA	573.00	> 419.00	3.540	3.544	-0.004	1.324	1216339	2.45	97.8	19061
28 N-methyl perfluorooctane sulfonami	570.00	> 419.00	3.550	3.548	0.002	1.003	1243187	2.59	104	9167
29 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.700	3.701	-0.001	1.220	2652406	2.54	105	55532
	599.00	> 99.00	3.700	3.701	-0.001	1.220	845113	3.14(1.39-4.16)	105	44197
D 32 d5-NEtFOSAA	589.00	> 419.00	3.711	3.710	0.001	1.388	1230676	2.42	96.6	2971
D 30 13C2 PFUnA	565.00	> 520.00	3.711	3.716	-0.005	1.388	2509304	2.48	99.0	34202
33 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.721	3.718	0.003	1.003	1138694	2.62	105	27224
31 Perfluoroundecanoic acid	563.00	> 519.00	3.721	3.718	0.003	1.003	2099121	2.55	102	10965
	563.00	> 169.00	3.721	3.718	0.003	1.003	516328	4.07(2.12-6.36)	102	21072
66 11-Chloroeicosafuoro-3-oxaundecan	631.00	> 451.00	3.879	3.874	0.005	1.279	10147290	NC		87741
D 36 13C2 PFDoA	615.00	> 570.00	4.010	4.009	0.001	1.500	2524421	2.40	96.1	15731
37 Perfluorododecanoic acid	613.00	> 569.00	4.010	4.011	-0.001	1.000	2886271	2.62	105	1721
	613.00	> 169.00	4.010	4.011	-0.001	1.000	674369	4.28(2.13-6.40)	105	13057
41 Perfluorotridecanoic acid	663.00	> 619.00	4.273	4.273	0.0	1.066	2993320	2.78	111	1323
	663.00	> 169.00	4.273	4.273	0.0	1.066	854966	3.50(1.25-3.76)	111	11132
D 43 13C2-PFTeDA	715.00	> 670.00	4.513	4.508	0.005	1.688	2737226	2.51	100	14031
42 Perfluorotetradecanoic acid	713.00	> 169.00	4.513	4.508	0.005	1.000	681755	2.39	95.7	9488
	713.00	> 219.00	4.502	4.508	-0.006	0.998	464264	1.47(0.71-2.13)	95.7	8850
D 44 13C2-PFHxDA	815.00	> 770.00	4.915	4.918	-0.003	1.838	4503233	2.59	104	13280
45 Perfluorohexadecanoic acid	813.00	> 769.00	4.915	4.918	-0.003	1.000	4281172	NC		858
	813.00	> 169.00	4.915	4.918	-0.003	1.000	687117	6.23(2.86-8.58)		5691
46 Perfluorooctadecanoic acid	913.00	> 869.00	5.270	5.271	-0.001	1.072	5144900	NC		916
	913.00	> 169.00	5.270	5.271	-0.001	1.072	608942	8.45(3.83-11.48)		5777

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC_LL5_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_006.d

Injection Date: 11-Jul-2018 15:23:01

Instrument ID: A8_N

Lims ID: IC L5 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

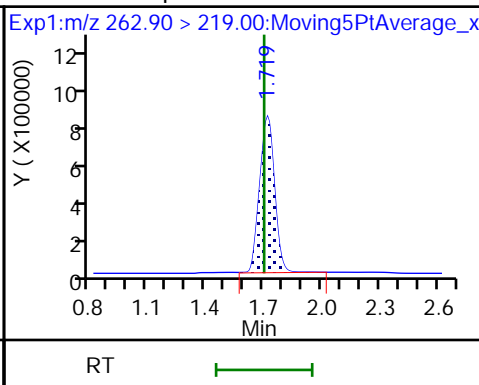
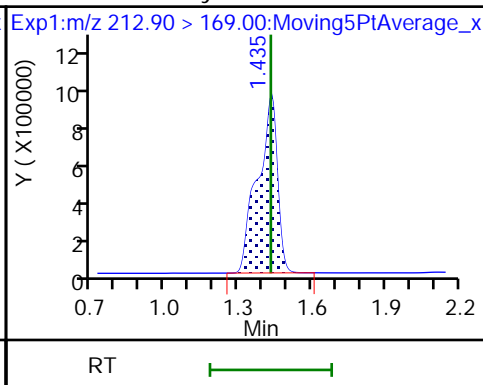
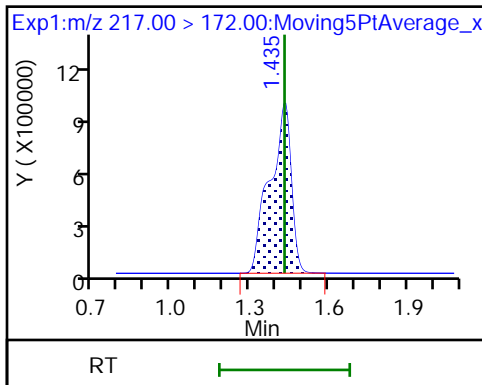
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

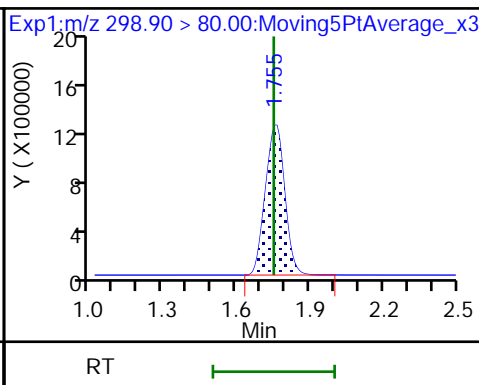
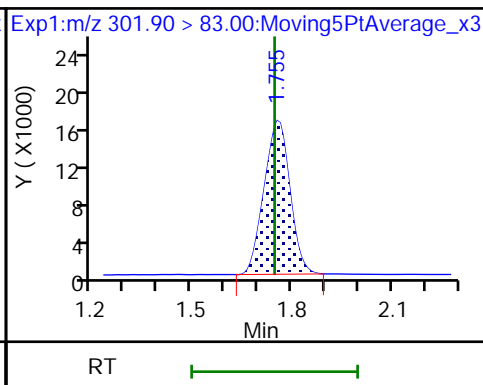
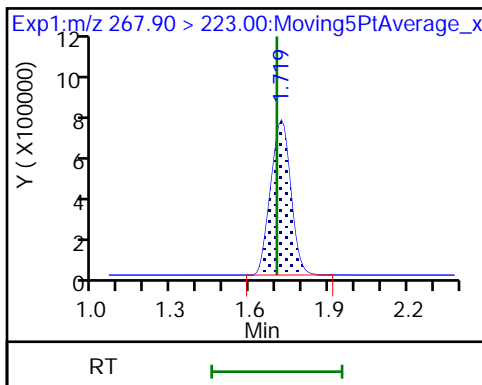
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

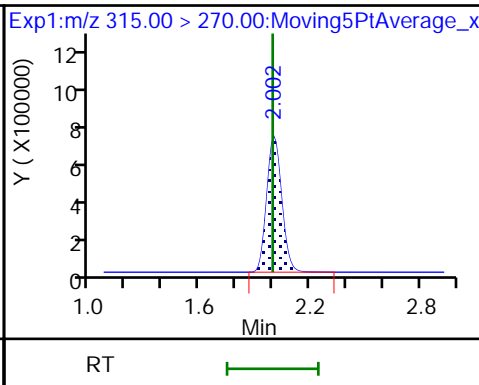
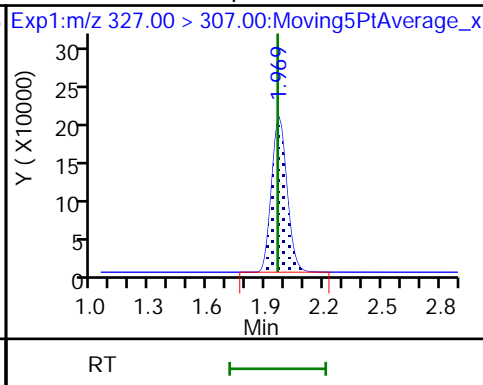
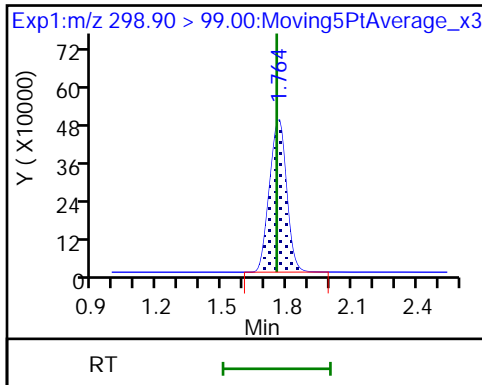
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

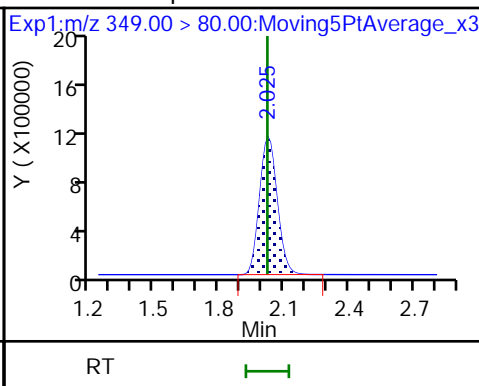
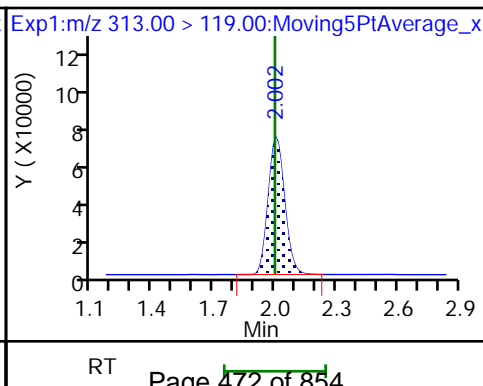
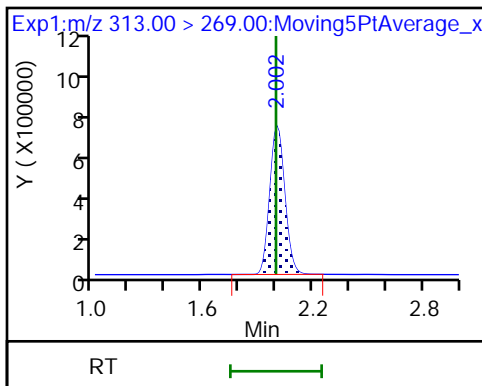
D 7 13C2 PFHxA

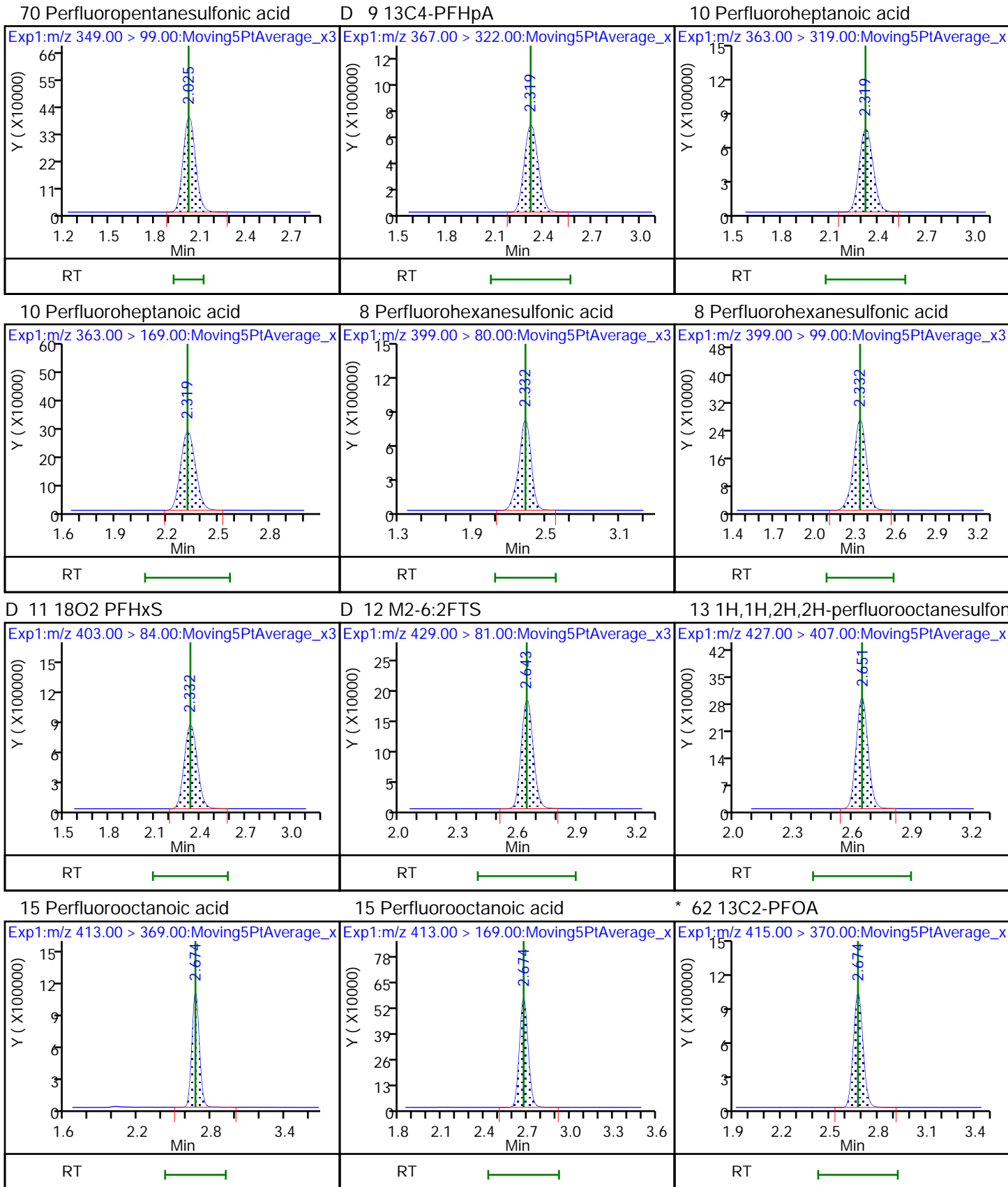


6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

70 Perfluoropentanesulfonic acid

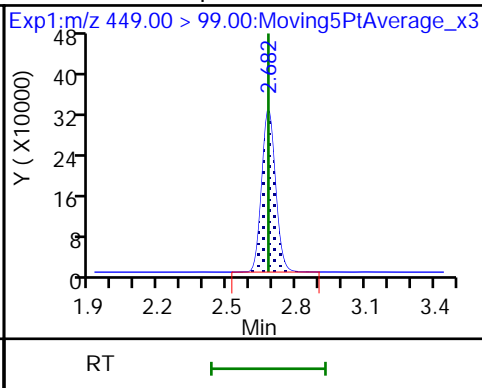
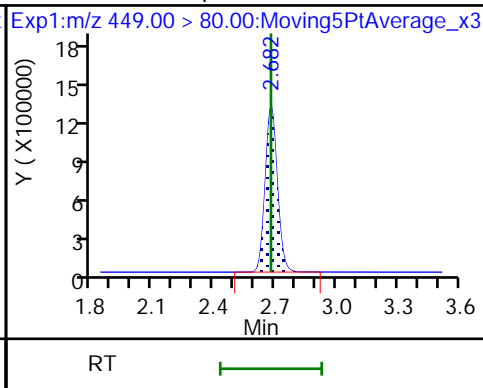
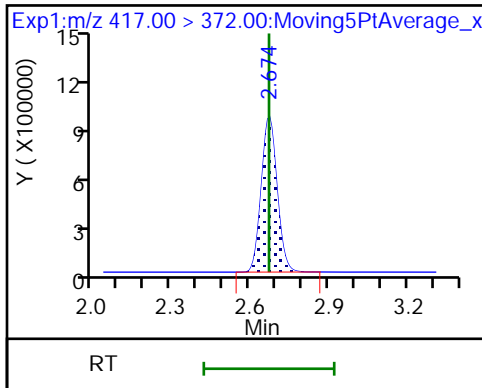




D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

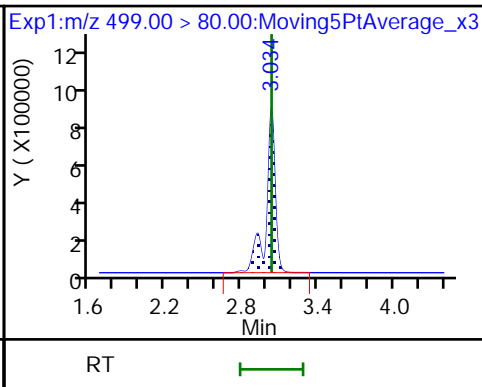
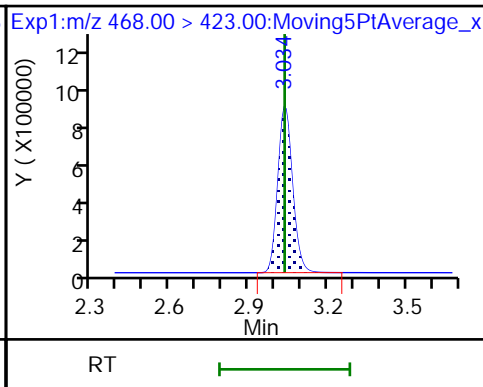
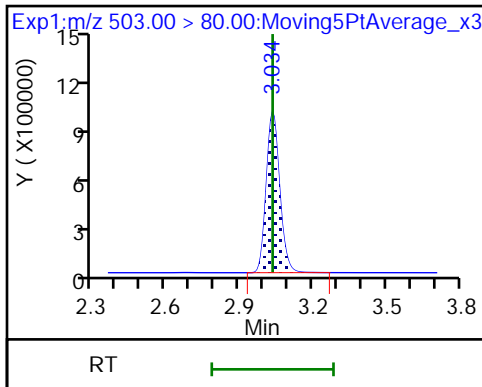
16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS

D 19 13C5 PFNA

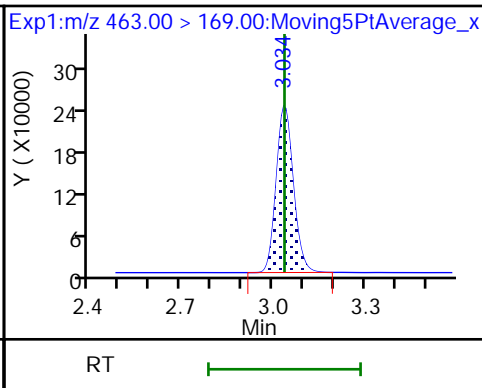
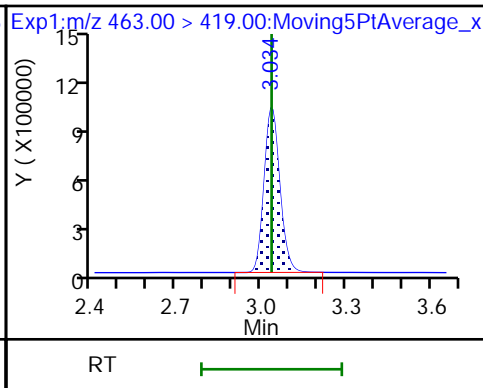
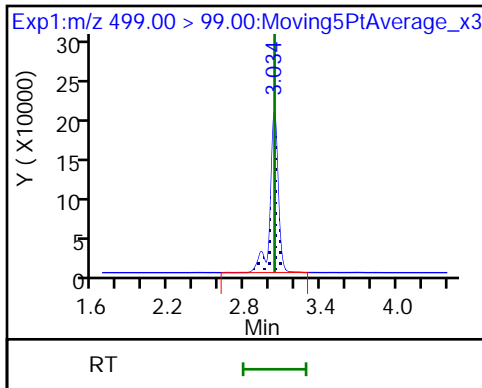
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

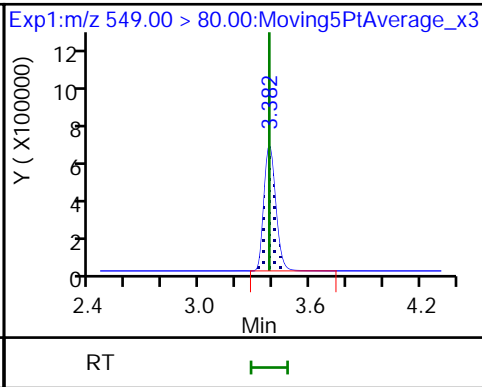
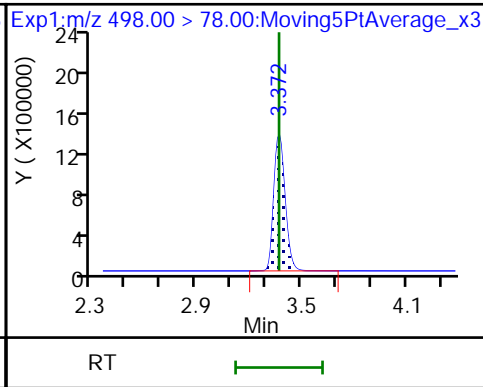
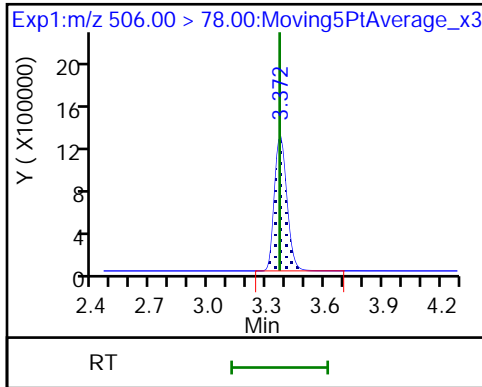
20 Perfluorononanoic acid



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

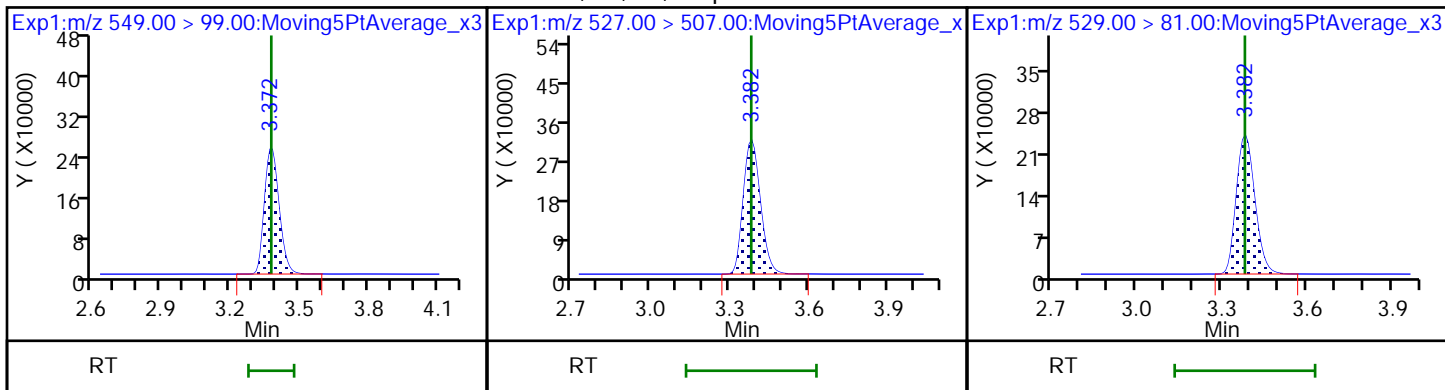
68 Perfluorononanesulfonic acid



68 Perfluorononanesulfonic acid

25 1H,1H,2H,2H-perfluorodecanesulfonate

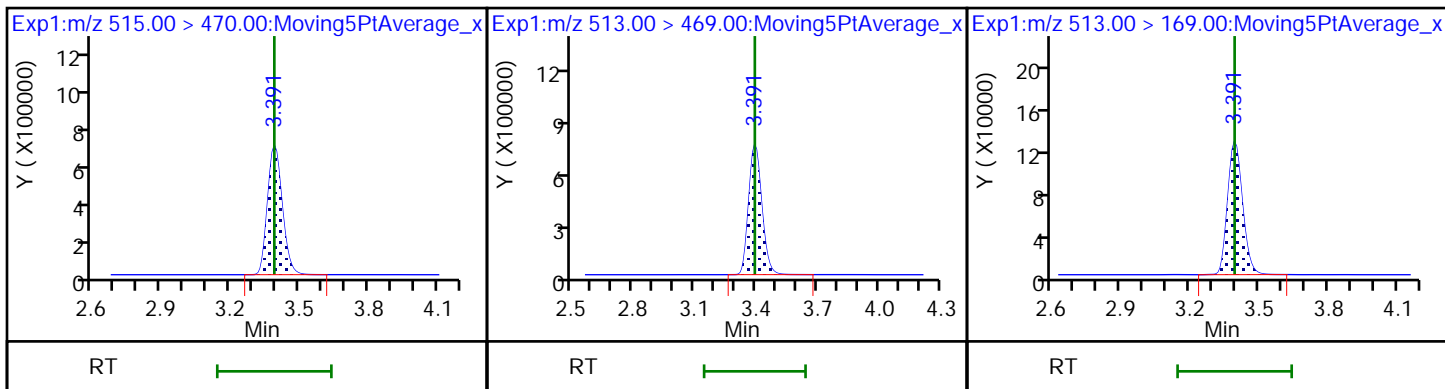
26 M2-8:2FTS



D 23 13C2 PFDA

24 Perfluorodecanoic acid

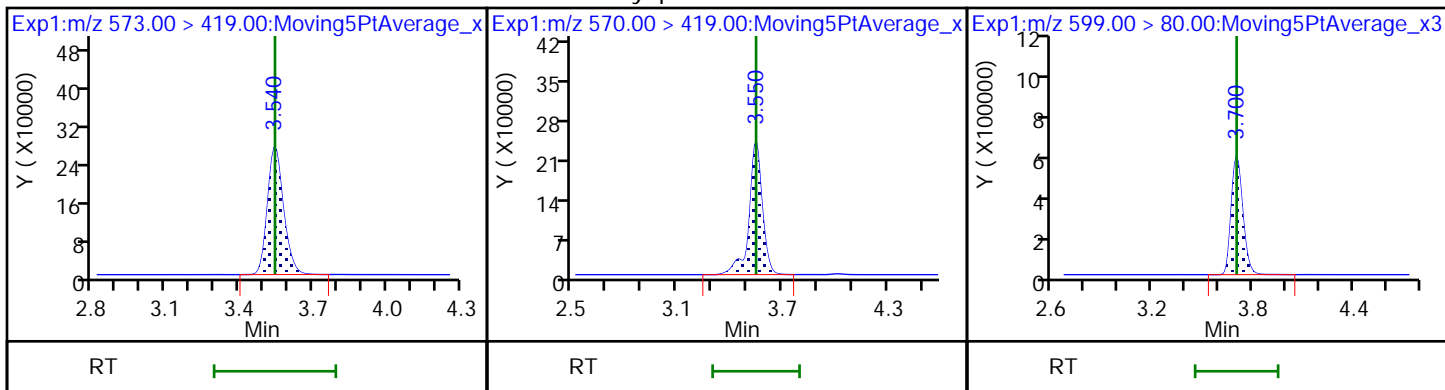
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonamide

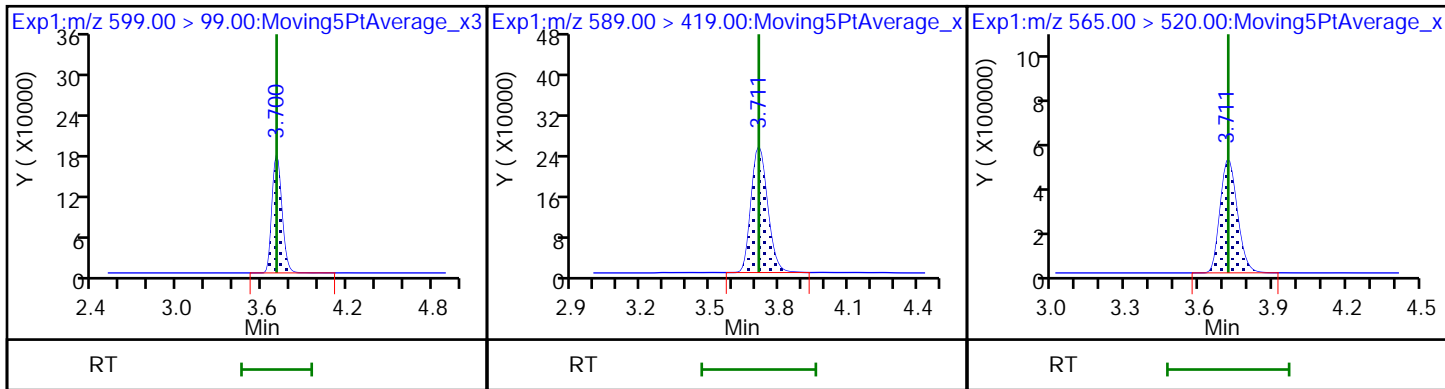
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

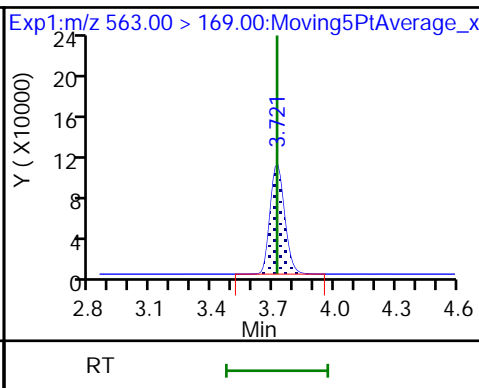
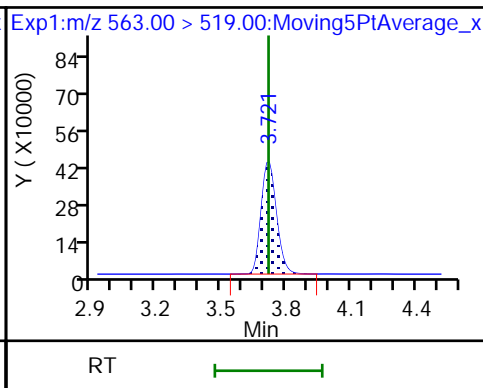
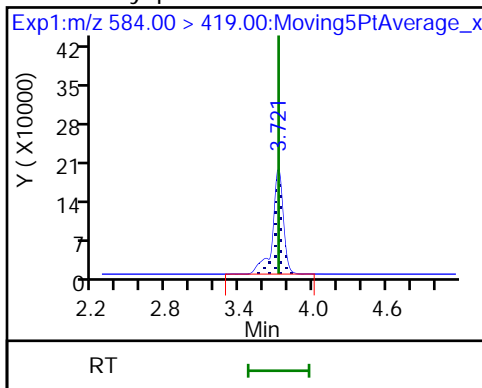
D 30 13C2 PFUnA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

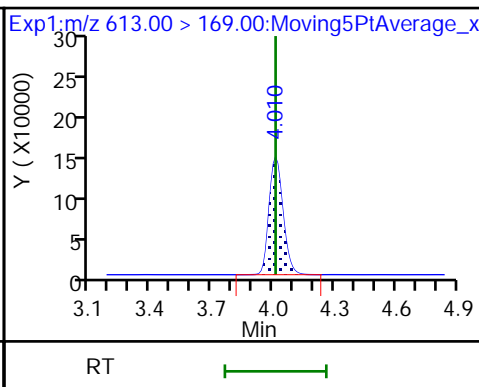
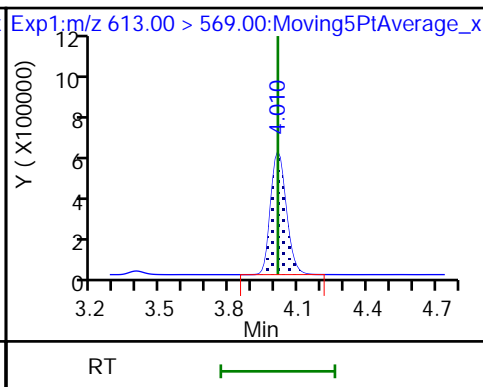
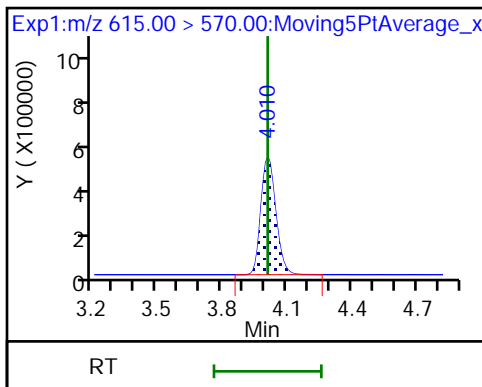
31 Perfluoroundecanoic acid



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

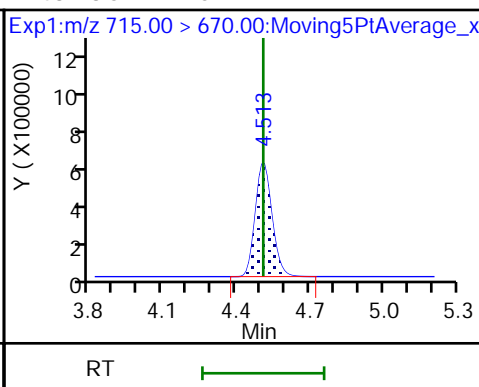
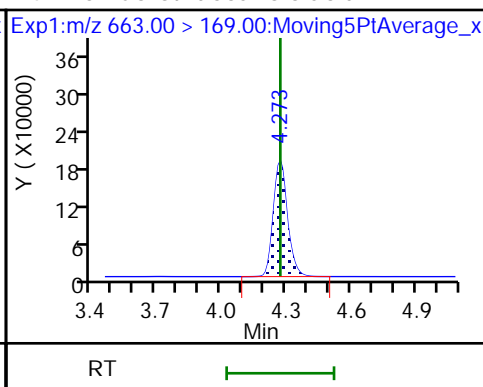
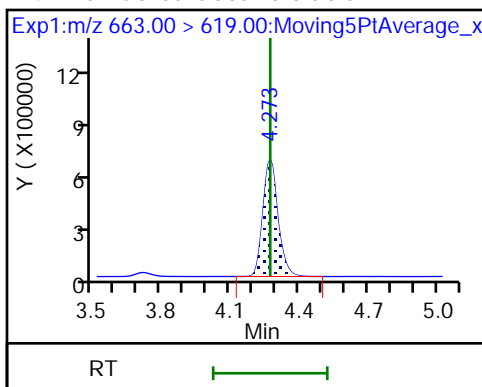
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

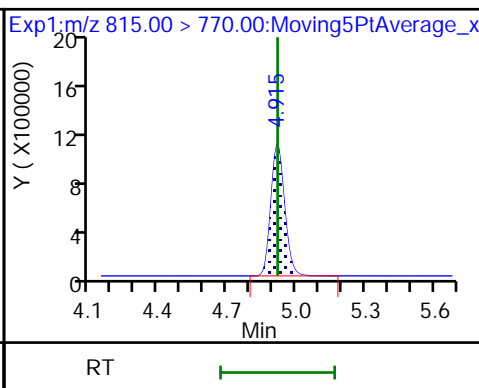
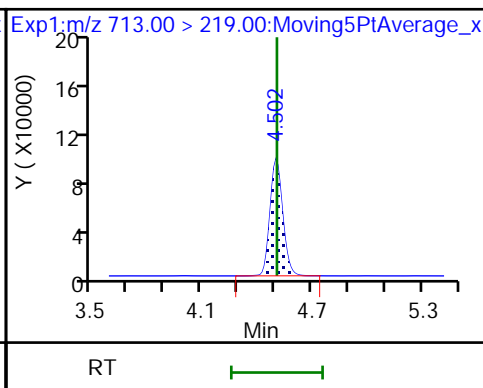
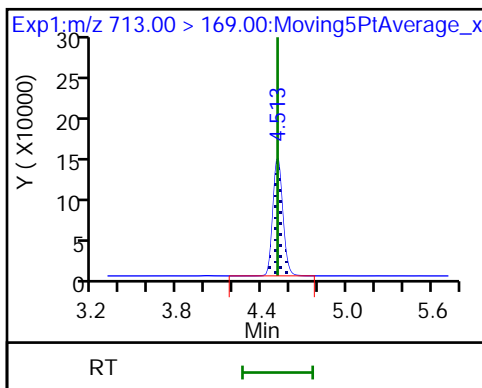
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_007.d
 Lims ID: IC L6 Full
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 11-Jul-2018 15:30:51 ALS Bottle#: 15 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 11-Jul-2018 16:33:48 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:16:59

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	1.430	1.431	-0.001	0.536	5244451	2.60	104	26067	
2 Perfluorobutyric acid	212.90 > 169.00	1.430	1.431	-0.001	1.000	10623913	5.14	103	4269	
4 Perfluoropentanoic acid	262.90 > 219.00	1.712	1.702	0.010	0.995	8699476	4.80	96.0	3536	
D 3 13C5-PFPeA	267.90 > 223.00	1.721	1.702	0.019	0.645	3734969	2.67	107	45652	
D 47 13C3-PFBS	301.90 > 83.00	1.757	1.748	0.009	0.659	85755	2.44	105	556	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.757	1.751	0.006	1.000	12546505	4.45	101	80798	
	298.90 > 99.00	1.757	1.751	0.006	1.000	5222453	2.40(1.25-3.74)	101	56269	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	1.960	1.962	-0.002	1.116	2260293	4.71	101	66860	
D 60 M2-4:2FTS	329.00 > 81.00	1.960	1.962	-0.002	0.735	448621	NC		7916	
D 7 13C2 PFHxA	315.00 > 270.00	2.005	1.996	0.009	0.751	3887868	2.57	103	56861	
6 Perfluorohexanoic acid	313.00 > 269.00	2.005	1.998	0.007	1.000	7978958	4.98	99.7	16483	
	313.00 > 119.00	2.005	1.998	0.007	1.000	733692	10.88(5.03-15.10)	99.7	14111	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.027	2.022	0.005	1.154	12185262	4.73	101	130724	
	349.00 > 99.00	2.027	2.022	0.005	1.154	4447227	2.74(1.36-4.07)	101	59105	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.095	2.093	0.002	0.785	274060	NC		6131	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.095	2.095	0.0	1.000	1554085	NC	9565	
D 9 13C4-PFHpA	367.00	> 322.00	2.321	2.319	0.002	0.870	3621431	2.60	104	50151
10 Perfluoroheptanoic acid	363.00	> 319.00	2.321	2.319	0.002	1.000	8030466	4.79	95.9	13754
	363.00	> 169.00	2.321	2.319	0.002	1.000	3099430	2.59(1.13-3.40)	95.9	28534
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.334	2.332	0.002	1.000	10305090	4.44	97.7	24644
	399.00	> 99.00	2.334	2.332	0.002	1.000	3360883	3.07(1.50-4.49)	97.7	16838
D 11 18O2 PFHxS	403.00	> 84.00	2.334	2.334	0.0	0.875	4777689	2.42	102	31887
65 Adona	377.00	> 251.00	2.360	2.360	0.0	0.779	21793498	NC	93035	
	377.00	> 85.00	2.360	2.360	0.0	0.779	13380474	1.63(0.84-2.53)	38099	
D 12 M2-6:2FTS	429.00	> 81.00	2.645	2.645	0.0	0.991	731524	2.45	103	13338
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.645	2.648	-0.003	1.000	2292840	4.76	100	23614
15 Perfluorooctanoic acid	413.00	> 369.00	2.668	2.672	-0.004	1.000	8461263	4.83	96.5	5834
	413.00	> 169.00	2.668	2.672	-0.004	1.000	4348670	1.95(0.84-2.52)	96.5	14778
* 62 13C2-PFOA	415.00	> 370.00	2.668	2.672	-0.004		3715082	2.50	46614	
D 14 13C4 PFOA	417.00	> 372.00	2.668	2.672	-0.004	1.000	3555536	2.50	100	32718
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.675	2.678	-0.003	0.883	9707552	4.95	104	57797
	449.00	> 99.00	2.675	2.678	-0.003	0.883	2601931	3.73(1.94-5.82)	104	34929
D 18 13C4 PFOS	503.00	> 80.00	3.028	3.034	-0.006	1.135	3560852	2.46	103	16573
D 19 13C5 PFNA	468.00	> 423.00	3.035	3.035	0.0	1.138	3155893	2.48	99.4	35122
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.035	3.035	0.0	1.002	7822689	4.63	99.9	47978
	499.00	> 99.00	3.028	3.035	-0.007	1.000	1713466	4.57(2.31-6.93)	99.9	18530
20 Perfluorononanoic acid	463.00	> 419.00	3.035	3.036	-0.001	1.000	6996919	5.00	99.9	14728
	463.00	> 169.00	3.035	3.036	-0.001	1.000	1776453	3.94(1.90-5.69)	99.9	57242
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.244	3.245	-0.001	1.071	12796083	NC	60061	
D 21 13C8 FOSA	506.00	> 78.00	3.365	3.367	-0.002	1.261	5338756	2.56	102	42112
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.365	3.371	-0.006	1.000	10688141	5.08	102	53820
68 Perfluorononanesulfonic acid	549.00	> 80.00	3.374	3.377	-0.003	1.114	5807858	5.03	105	55859
	549.00	> 99.00	3.374	3.377	-0.003	1.114	2044157	2.84(1.33-3.97)	105	26141

M
M

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.374	3.380	-0.006	1.000	2561237	4.79	100.0	42774
D 26 M2-8:2FTS	529.00	> 81.00	3.374	3.380	-0.006	1.265	992916	2.27	94.9	10859
D 23 13C2 PFDA	515.00	> 470.00	3.393	3.391	0.002	1.272	2641138	2.37	94.7	24430
24 Perfluorodecanoic acid	513.00	> 469.00	3.393	3.392	0.001	1.000	5773802	5.21	104	35658
	513.00	> 169.00	3.393	3.392	0.001	1.000	975368	5.92(2.36-7.09)	104	36128
D 27 d3-NMeFOSAA	573.00	> 419.00	3.542	3.544	-0.002	1.328	1218514	2.67	107	18907
28 N-methyl perfluorooctane sulfonami	570.00	> 419.00	3.542	3.548	-0.006	1.000	2377396	4.95	99.0	15134
29 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.701	3.701	0.0	1.222	4963395	4.96	103	171868
	599.00	> 99.00	3.701	3.701	0.0	1.222	1591413	3.12(1.39-4.16)	103	25545
D 32 d5-NEtFOSAA	589.00	> 419.00	3.712	3.710	0.002	1.391	1179674	2.52	101	2782
D 30 13C2 PFUnA	565.00	> 520.00	3.712	3.716	-0.004	1.391	2361908	2.54	101	30441
33 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.712	3.718	-0.006	1.000	2183486	5.23	105	52082
31 Perfluoroundecanoic acid	563.00	> 519.00	3.712	3.718	-0.006	1.000	3694320	4.77	95.4	15018
	563.00	> 169.00	3.712	3.718	-0.006	1.000	987463	3.74(2.12-6.36)	95.4	29138
66 11-Chloroeicosafuoro-3-oxaundecan	631.00	> 451.00	3.869	3.874	-0.005	1.278	18152128	NC		108382
D 36 13C2 PFDaA	615.00	> 570.00	4.002	4.009	-0.007	1.500	2508500	2.60	104	17566
37 Perfluorododecanoic acid	613.00	> 569.00	4.002	4.011	-0.009	1.000	5437907	4.96	99.3	3341
	613.00	> 169.00	4.002	4.011	-0.009	1.000	1255499	4.33(2.13-6.40)	99.3	21823
41 Perfluorotridecanoic acid	663.00	> 619.00	4.271	4.273	-0.002	1.067	5412702	5.05	101	2553
	663.00	> 169.00	4.271	4.273	-0.002	1.067	1682812	3.22(1.25-3.76)	101	21504
D 43 13C2-PFTeDA	715.00	> 670.00	4.501	4.508	-0.007	1.687	2597628	2.59	104	14814
42 Perfluorotetradecanoic acid	713.00	> 169.00	4.501	4.508	-0.007	1.000	1344804	4.97	99.5	16596
	713.00	> 219.00	4.501	4.508	-0.007	1.000	959226	1.40(0.71-2.13)	99.5	12659
D 44 13C2-PFHxDA	815.00	> 770.00	4.914	4.918	-0.004	1.842	4082261	2.56	102	14471
45 Perfluorohexadecanoic acid	813.00	> 769.00	4.914	4.918	-0.004	1.000	7932024	NC		1899
	813.00	> 169.00	4.914	4.918	-0.004	1.000	1261923	6.29(2.86-8.58)		9525
46 Perfluorooctadecanoic acid	913.00	> 869.00	5.262	5.271	-0.009	1.071	9282794	NC		1626
	913.00	> 169.00	5.262	5.271	-0.009	1.071	1136842	8.17(3.83-11.48)		7354

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

[Reagents:](#)

LCPFC_LL6_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_007.d

Injection Date: 11-Jul-2018 15:30:51

Instrument ID: A8_N

Lims ID: IC L6 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

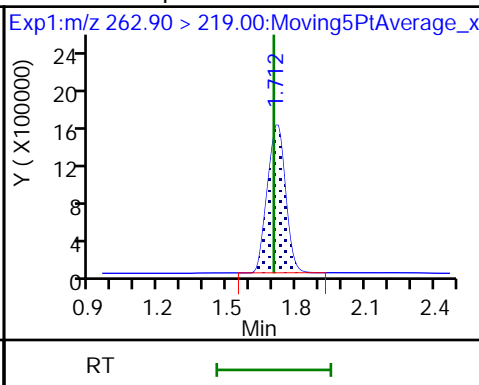
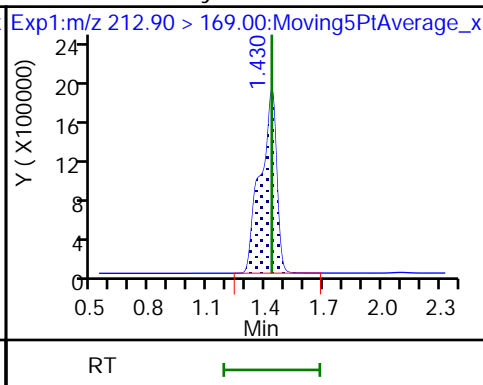
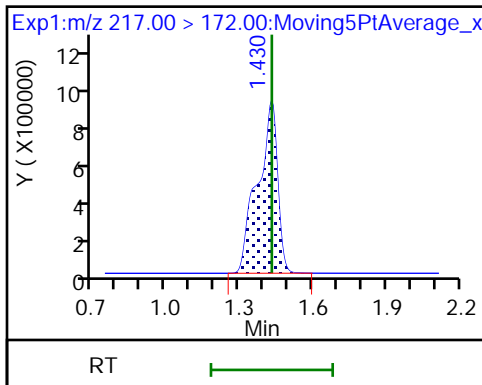
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

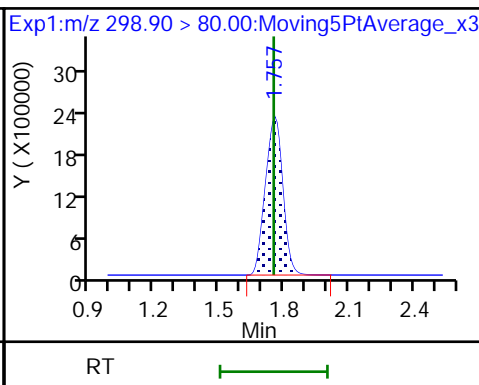
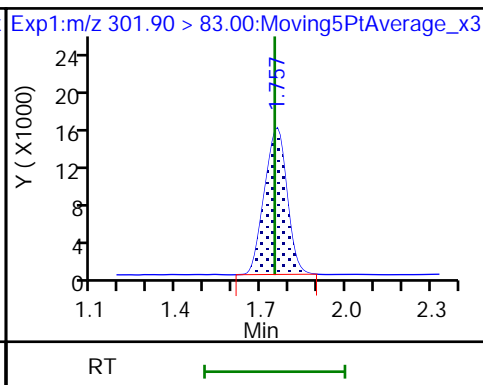
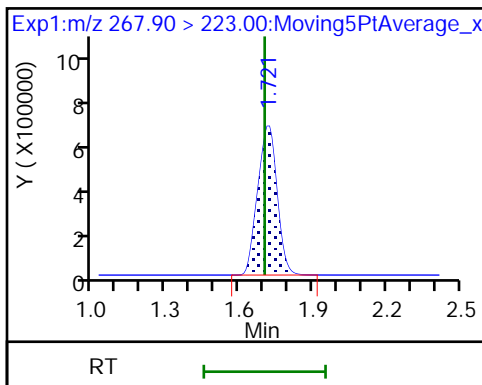
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

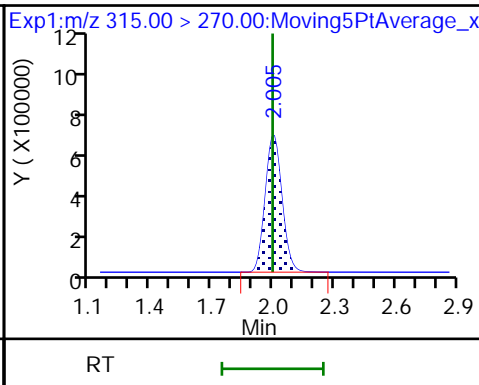
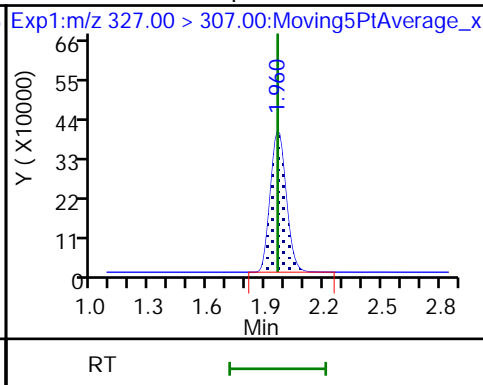
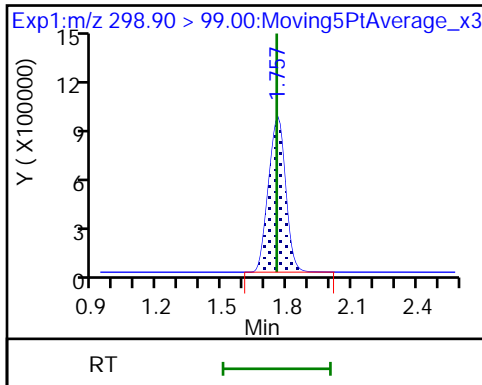
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

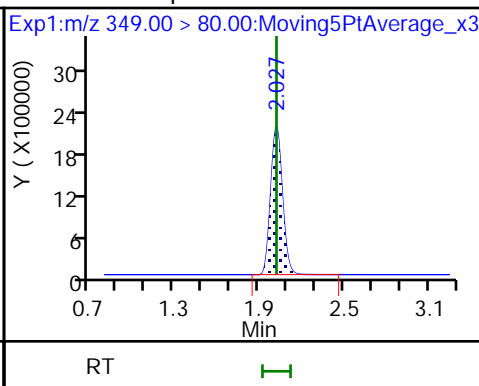
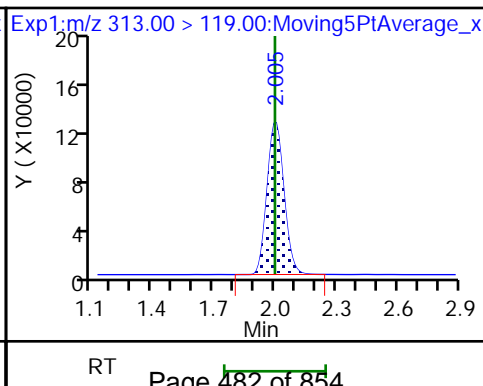
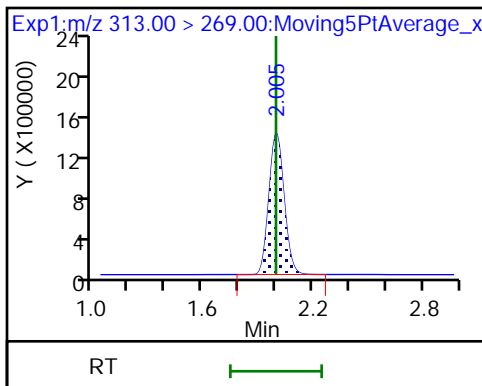
D 7 13C2 PFHxA

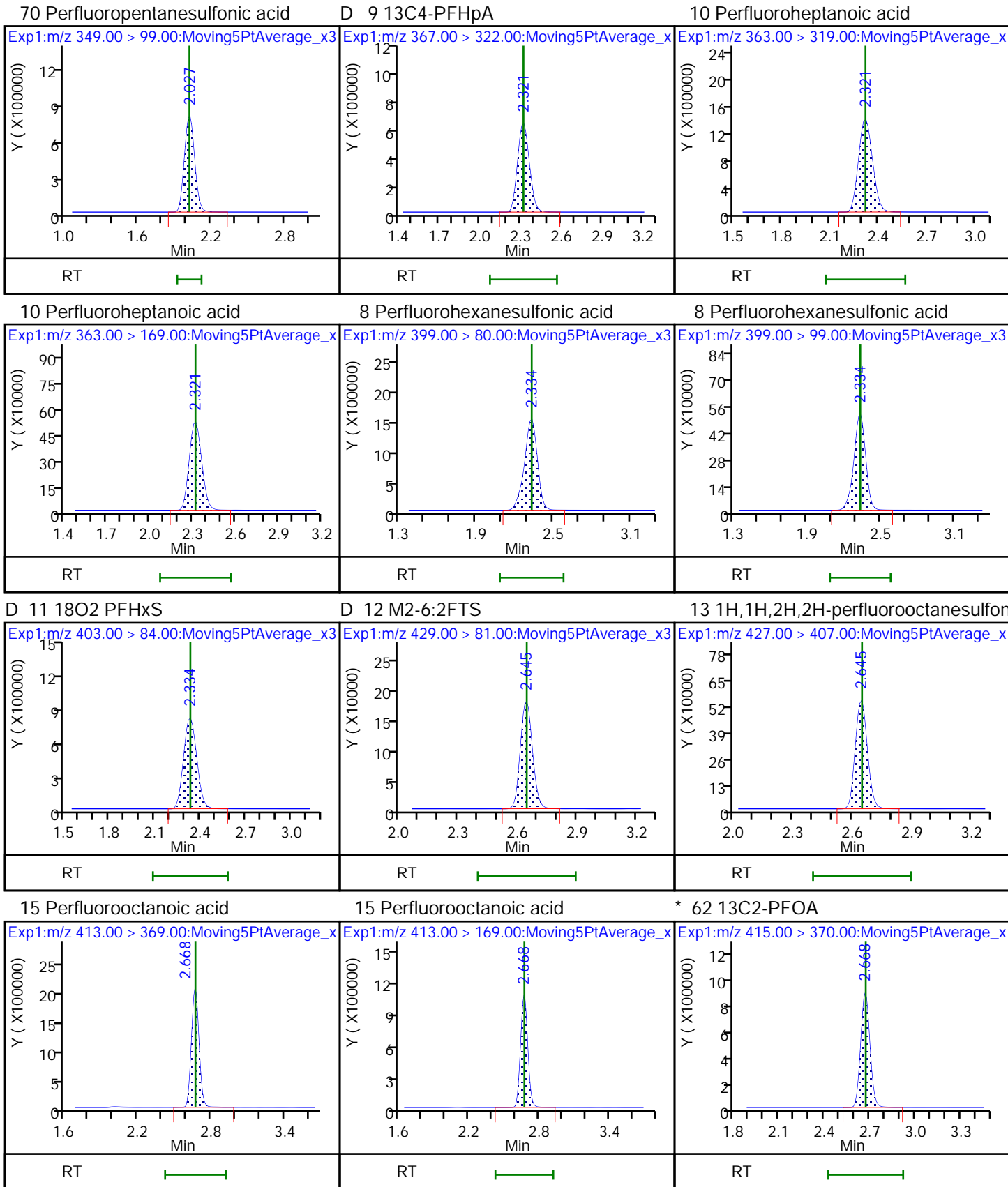


6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

70 Perfluoropentanesulfonic acid

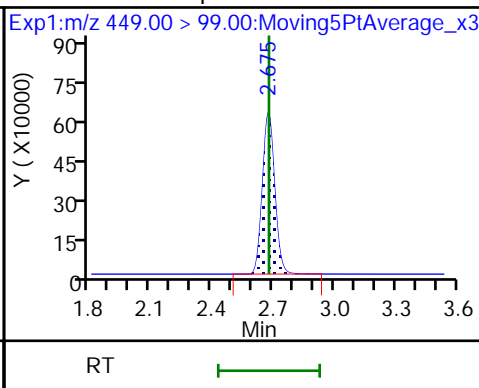
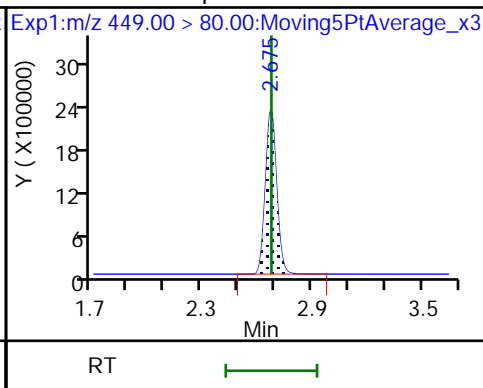
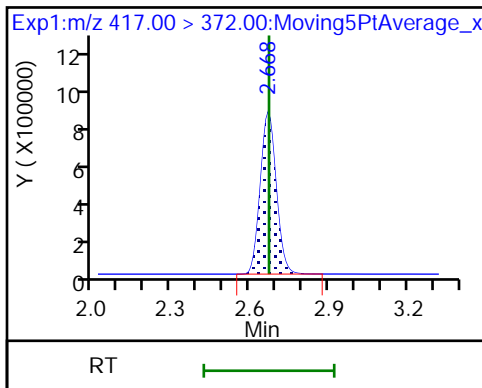




D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

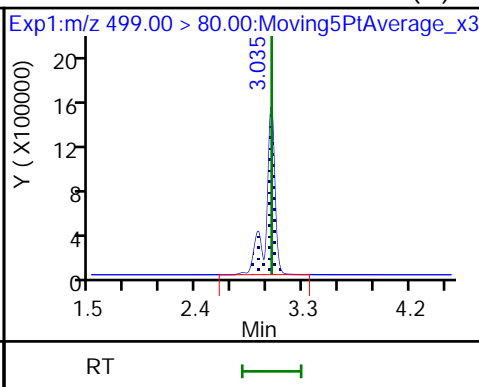
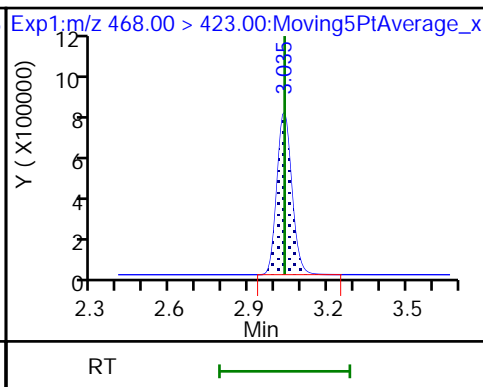
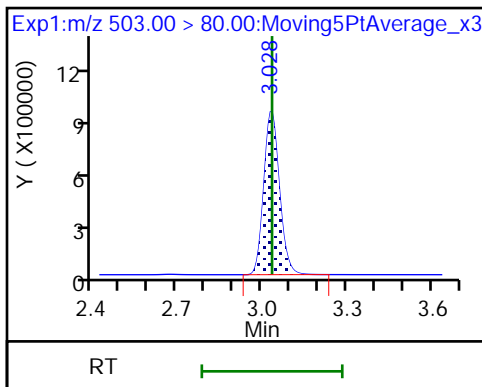
16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS

D 19 13C5 PFNA

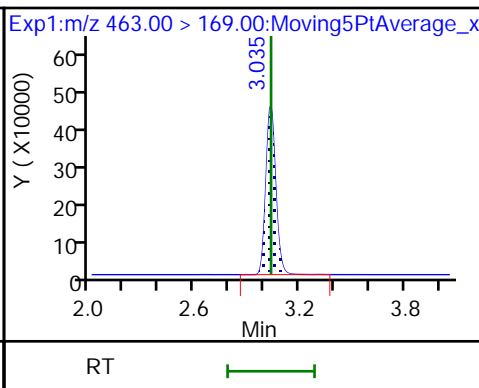
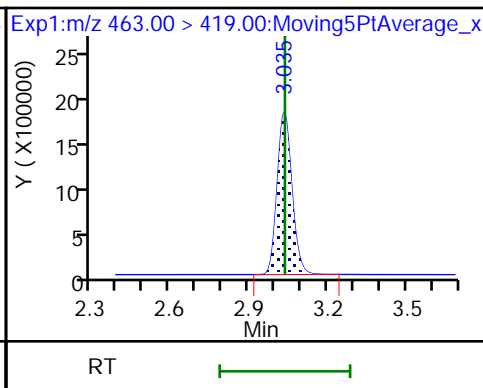
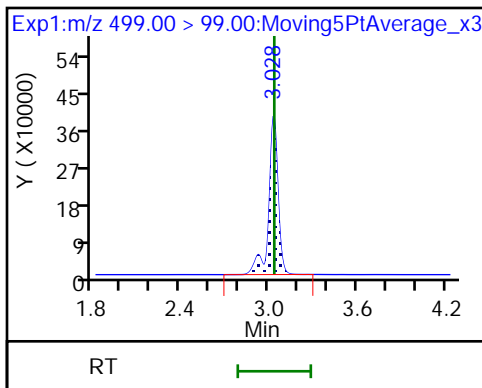
17 Perfluorooctane sulfonic acid (M)



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

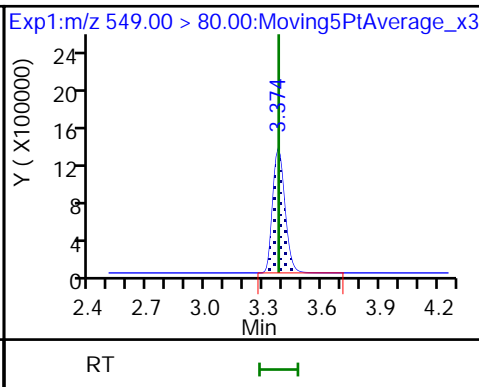
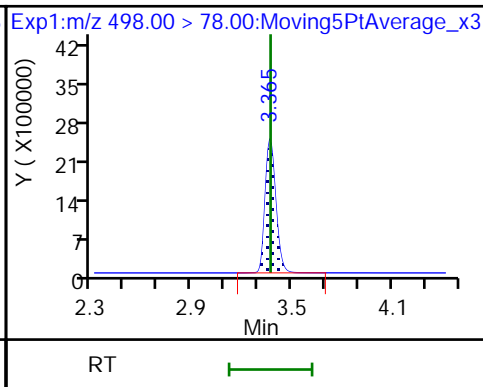
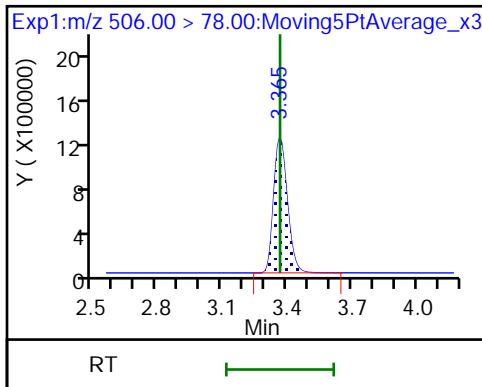
20 Perfluorononanoic acid



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

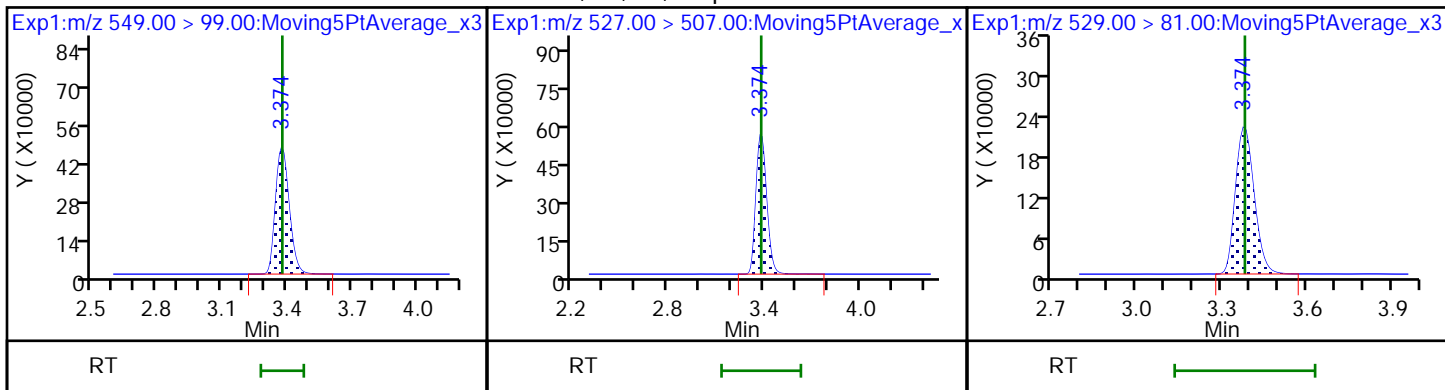
68 Perfluorononanesulfonic acid



68 Perfluorononanesulfonic acid

25 1H,1H,2H,2H-perfluorodecanesulfonate

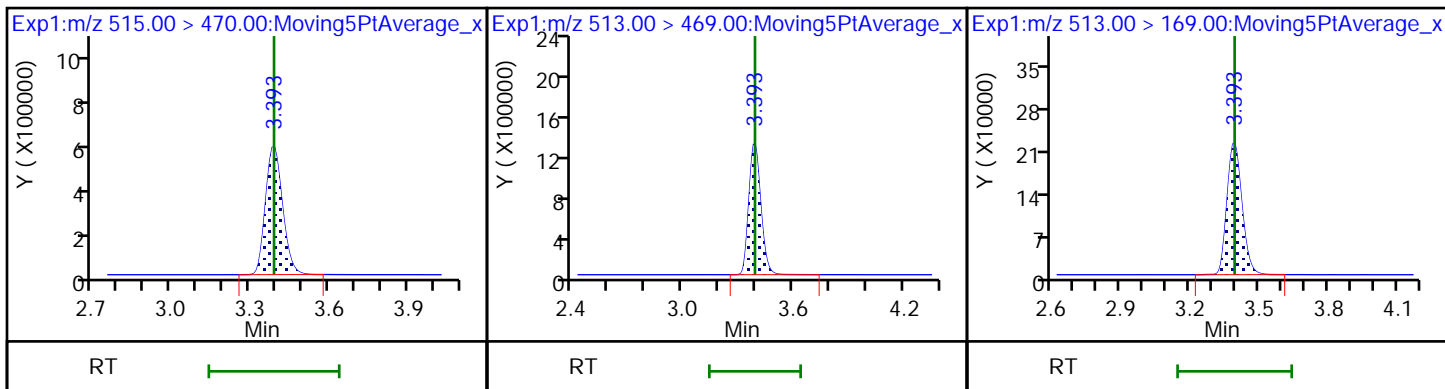
D 26 M2-8:2FTS



D 23 13C2 PFDA

24 Perfluorodecanoic acid

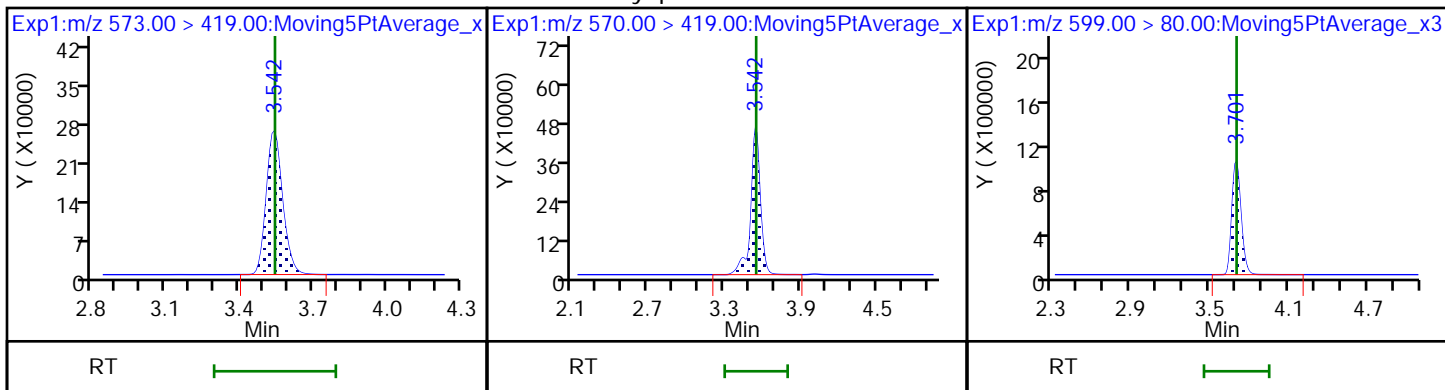
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonamide

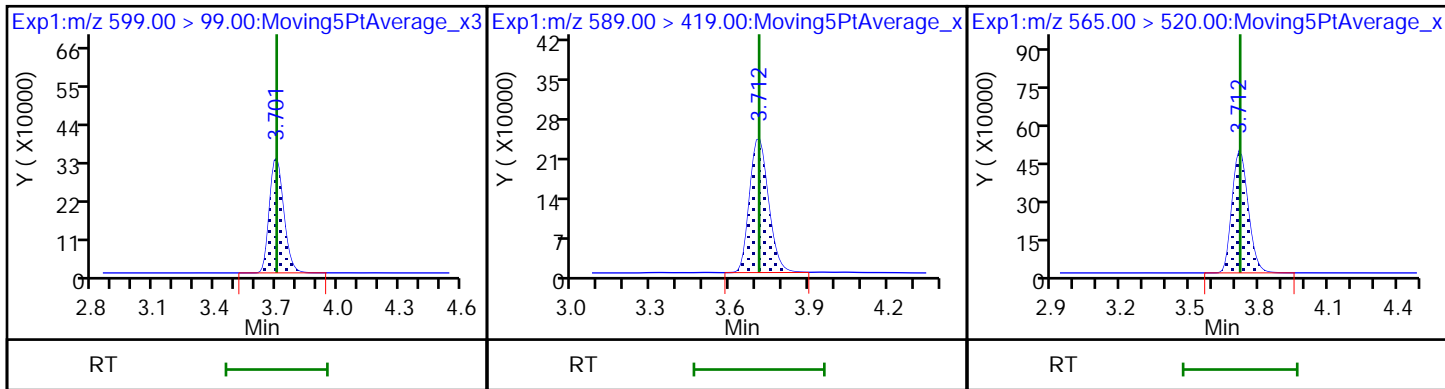
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

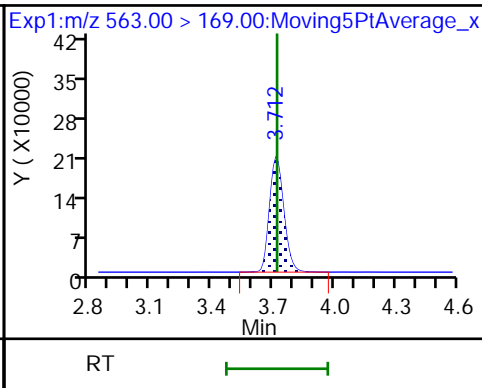
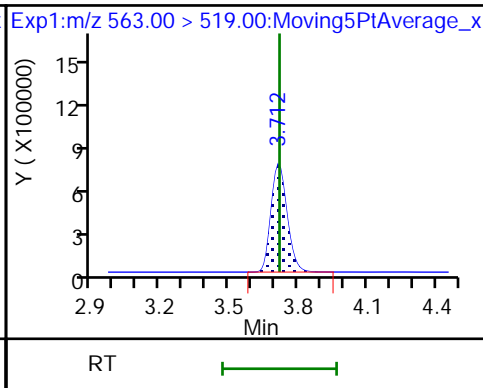
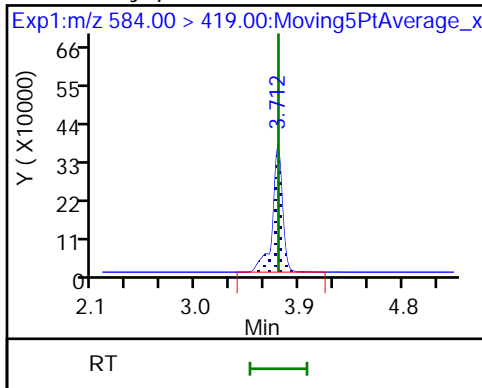
D 30 13C2 PFUnA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

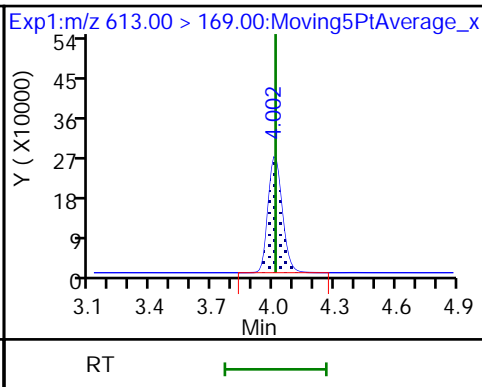
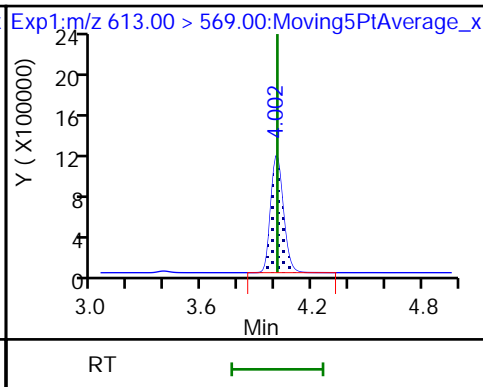
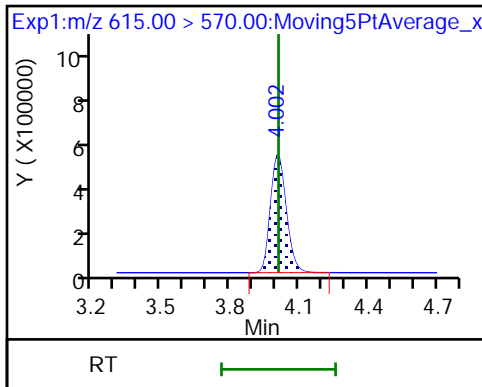
31 Perfluoroundecanoic acid



D 36 13C2 PFDoA

37 Perfluorododecanoic acid

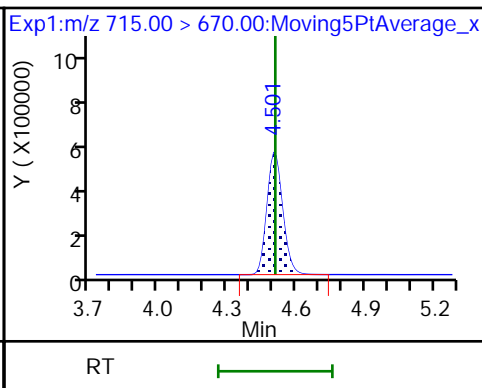
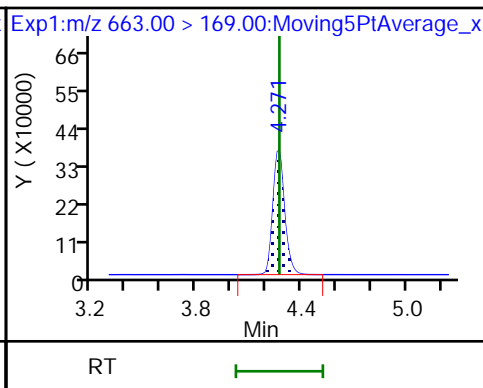
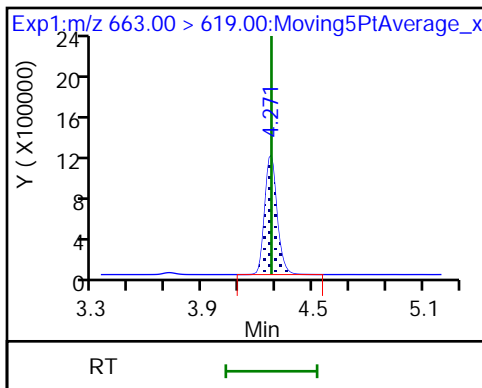
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

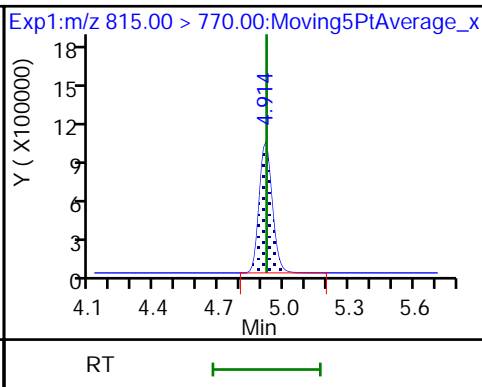
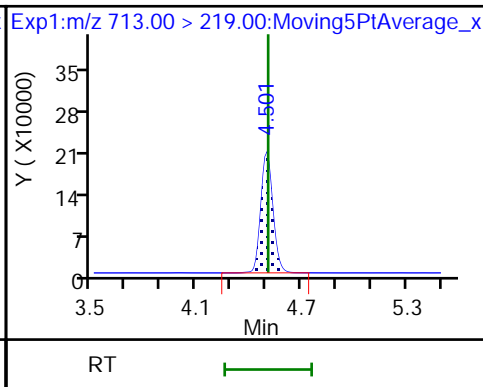
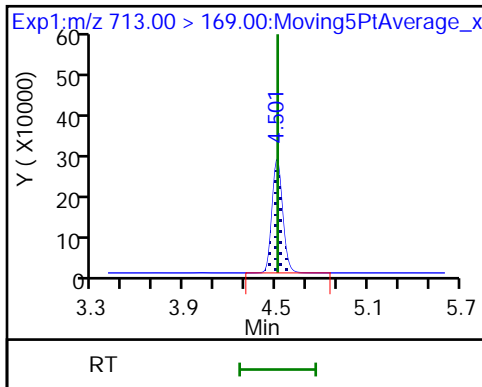
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA



TestAmerica Sacramento

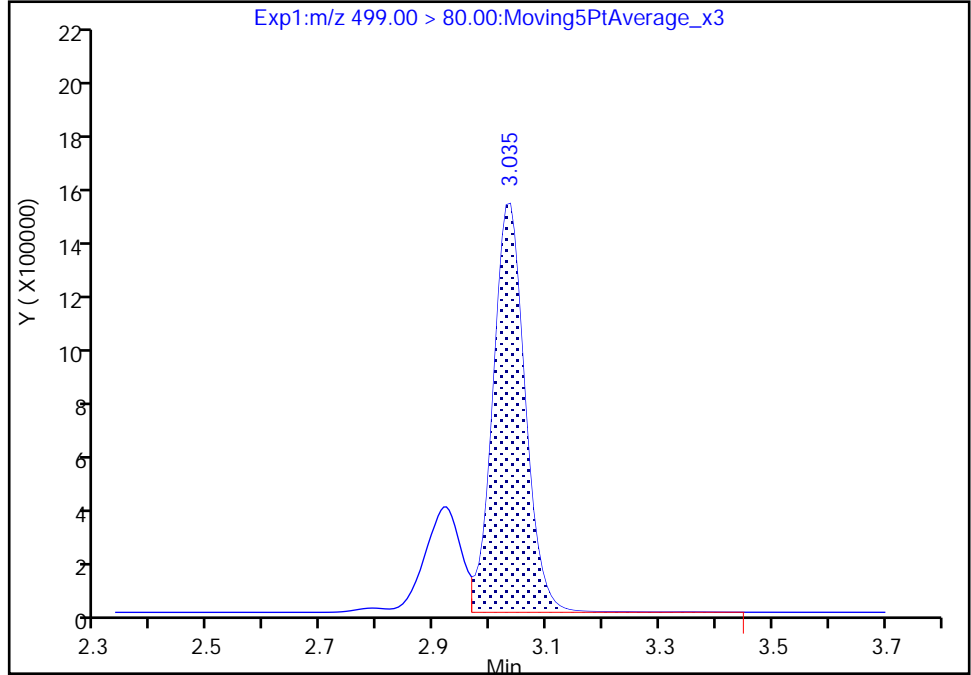
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Injection Date: 11-Jul-2018 15:30:51 Instrument ID: A8_N
Lims ID: IC L6 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 15 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

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

Signal: 1

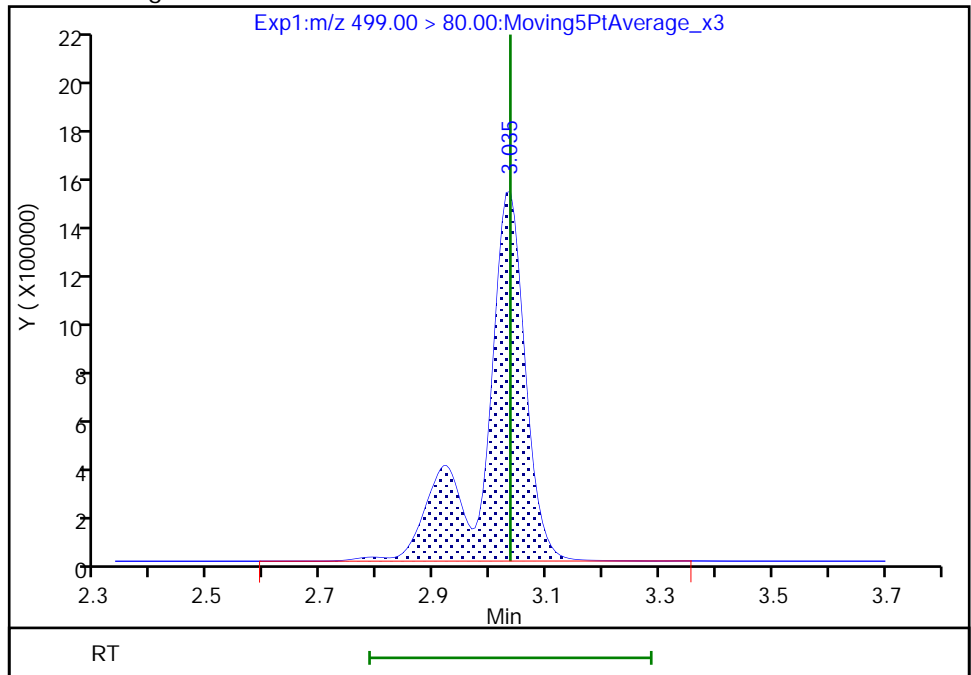
RT: 3.04
Area: 6040692
Amount: 3.698173
Amount Units: ng/ml

Processing Integration Results



RT: 3.04
Area: 7822689
Amount: 4.633497
Amount Units: ng/ml

Manual Integration Results



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
 Lims ID: IC L7 Full
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 11-Jul-2018 15:38:42 ALS Bottle#: 16 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L7-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 11-Jul-2018 16:33:54 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:17:28

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	1.430	1.431	-0.001	0.536	5781235	2.84	114	46738	M
2 Perfluorobutyric acid	212.90 > 169.00	1.430	1.431	-0.001	1.000	22835400	10.0	100	8382	
4 Perfluoropentanoic acid	262.90 > 219.00	1.712	1.702	0.010	1.000	17766142	9.44	94.4	8701	
D 3 13C5-PFPeA	267.90 > 223.00	1.712	1.702	0.010	0.641	3880280	2.75	110	51803	
D 47 13C3-PFBS	301.90 > 83.00	1.757	1.748	0.009	0.658	93739	2.64	113	603	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.757	1.751	0.006	1.000	25119744	8.14	92.1	143878	
	298.90 > 99.00	1.757	1.751	0.006	1.000	11268668	2.23(1.25-3.74)	92.1	90842	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	1.960	1.962	-0.002	1.116	4685101	8.94	95.7	120229	
D 60 M2-4:2FTS	329.00 > 81.00	1.960	1.962	-0.002	0.734	476788	NC		7861	
D 7 13C2 PFHxA	315.00 > 270.00	1.993	1.996	-0.003	0.747	4142603	2.72	109	52582	
6 Perfluorohexanoic acid	313.00 > 269.00	1.993	1.998	-0.005	1.000	16543784	9.70	97.0	39030	
	313.00 > 119.00	1.993	1.998	-0.005	1.000	1555324	10.64(5.03-15.10)	97.0	39292	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.027	2.022	0.005	1.154	23955798	8.51	90.8	231016	
	349.00 > 99.00	2.016	2.022	-0.006	1.147	9657203	2.48(1.36-4.07)	90.8	85549	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.095	2.093	0.002	0.785	310846	NC		9564	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.095	2.095	0.0	1.000	3276527	NC		16809
D 9 13C4-PFHpA	367.00	> 322.00	2.321	2.319	0.002	0.869	3701454	2.63		105 41327
10 Perfluoroheptanoic acid	363.00	> 319.00	2.321	2.319	0.002	1.000	16011091	9.35		93.5 22967
	363.00	> 169.00	2.321	2.319	0.002	1.000	6469605	2.47(1.13-3.40)		93.5 37203
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.334	2.332	0.002	1.000	20622639	8.72		95.8 27789
	399.00	> 99.00	2.334	2.332	0.002	1.000	7136072	2.89(1.50-4.49)		95.8 21998
D 11 18O2 PFHxS	403.00	> 84.00	2.334	2.334	0.0	0.874	4872001	2.45		103 48134
65 Adona	377.00	> 251.00	2.360	2.360	0.0	0.779	37073934	NC		260552
	377.00	> 85.00	2.360	2.360	0.0	0.779	24804188	1.49(0.84-2.53)		72896
D 12 M2-6:2FTS	429.00	> 81.00	2.638	2.645	-0.007	0.988	704932	2.34		98.5 9224
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.638	2.648	-0.010	1.000	4726825	10.2		107 43601
15 Perfluorooctanoic acid	413.00	> 369.00	2.670	2.672	-0.002	1.000	16291262	9.05		90.4 9267
	413.00	> 169.00	2.670	2.672	-0.002	1.000	8897459	1.83(0.84-2.52)		90.4 24139
* 62 13C2-PFOA	415.00	> 370.00	2.670	2.672	-0.002		3749283	2.50		40966
D 14 13C4 PFOA	417.00	> 372.00	2.670	2.672	-0.002	1.000	3653899	2.55		102 33275
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.677	2.678	-0.001	0.883	18718055	8.70		91.4 123136
	449.00	> 99.00	2.677	2.678	-0.001	0.883	5255453	3.56(1.94-5.82)		91.4 44840
D 18 13C4 PFOS	503.00	> 80.00	3.030	3.034	-0.004	1.135	3902400	2.67		112 14520
D 19 13C5 PFNA	468.00	> 423.00	3.030	3.035	-0.005	1.135	3292167	2.57		103 44769
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.030	3.035	-0.005	1.000	16622900	8.98		96.8 45805
	499.00	> 99.00	3.030	3.035	-0.005	1.000	3752707	4.43(2.31-6.93)		96.8 30387
20 Perfluorononanoic acid	463.00	> 419.00	3.030	3.036	-0.006	1.000	13910795	9.52		95.2 26218
	463.00	> 169.00	3.030	3.036	-0.006	1.000	3390503	4.10(1.90-5.69)		95.2 43123
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.239	3.245	-0.006	1.069	25098628	NC		130574
D 21 13C8 FOSA	506.00	> 78.00	3.359	3.367	-0.008	1.258	5176580	2.46		98.3 36605
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.369	3.371	-0.002	1.003	19718955	9.66		96.6 48650
68 Perfluorononanesulfonic acid	549.00	> 80.00	3.369	3.377	-0.008	1.112	11760635	9.29		96.8 59229
	549.00	> 99.00	3.369	3.377	-0.008	1.112	4506833	2.61(1.33-3.97)		96.8 46788

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.378	3.380	-0.002	1.000	4682146	9.80	102	45616
D 26 M2-8:2FTS	529.00	> 81.00	3.378	3.380	-0.002	1.265	887172	2.01	84.1	13566
D 23 13C2 PFDA	515.00	> 470.00	3.387	3.391	-0.004	1.269	2747254	2.44	97.7	29354
24 Perfluorodecanoic acid	513.00	> 469.00	3.387	3.392	-0.005	1.000	11148372	9.67	96.7	46551
	513.00	> 169.00	3.387	3.392	-0.005	1.000	2093801	5.32(2.36-7.09)	96.7	35818
D 27 d3-NMeFOSAA	573.00	> 419.00	3.537	3.544	-0.007	1.325	1276287	2.77	111	18519
28 N-methyl perfluorooctane sulfonami	570.00	> 419.00	3.546	3.548	-0.002	1.003	5272635	10.5	105	26104
29 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.696	3.701	-0.005	1.220	10109747	9.22	95.7	233743
	599.00	> 99.00	3.696	3.701	-0.005	1.220	3655780	2.77(1.39-4.16)	95.7	30607
D 32 d5-NEtFOSAA	589.00	> 419.00	3.707	3.710	-0.003	1.389	1167600	2.47	98.9	3307
D 30 13C2 PFUnA	565.00	> 520.00	3.718	3.716	0.002	1.393	2308936	2.46	98.3	35962
33 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.718	3.718	0.0	1.003	4325460	10.5	105	77837
31 Perfluoroundecanoic acid	563.00	> 519.00	3.718	3.718	0.0	1.000	7405393	9.78	97.8	31141
	563.00	> 169.00	3.718	3.718	0.0	1.000	1896631	3.90(2.12-6.36)	97.8	38242
66 11-Chloroeicosafuoro-3-oxaundecan	631.00	> 451.00	3.865	3.874	-0.009	1.275	33050828	NC		319283
D 36 13C2 PFDaA	615.00	> 570.00	4.008	4.009	-0.001	1.501	2588991	2.66	106	20112
37 Perfluorododecanoic acid	613.00	> 569.00	4.008	4.011	-0.003	1.000	11295646	9.99	99.9	7110
	613.00	> 169.00	4.008	4.011	-0.003	1.000	2749190	4.11(2.13-6.40)	99.9	27189
41 Perfluorotridecanoic acid	663.00	> 619.00	4.271	4.273	-0.002	1.066	10874073	9.83	98.3	5262
	663.00	> 169.00	4.271	4.273	-0.002	1.066	3405769	3.19(1.25-3.76)	98.3	29341
D 43 13C2-PFTeDA	715.00	> 670.00	4.501	4.508	-0.007	1.686	2753301	2.72	109	11657
42 Perfluorotetradecanoic acid	713.00	> 169.00	4.501	4.508	-0.007	1.000	2903345	10.1	101	18043
	713.00	> 219.00	4.501	4.508	-0.007	1.000	2052712	1.41(0.71-2.13)	101	16519
D 44 13C2-PFHxDA	815.00	> 770.00	4.914	4.918	-0.004	1.841	4200183	2.61	104	13126
45 Perfluorohexadecanoic acid	813.00	> 769.00	4.914	4.918	-0.004	1.000	15144158	NC		3241
	813.00	> 169.00	4.914	4.918	-0.004	1.000	2640854	5.73(2.86-8.58)		12585
46 Perfluorooctadecanoic acid	913.00	> 869.00	5.263	5.271	-0.008	1.071	17950029	NC		2884
	913.00	> 169.00	5.263	5.271	-0.008	1.071	2356290	7.62(3.83-11.48)		10762

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

[Reagents:](#)

LCPFC_LL7_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Injection Date: 11-Jul-2018 15:38:42

Instrument ID: A8_N

Lims ID: IC L7 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

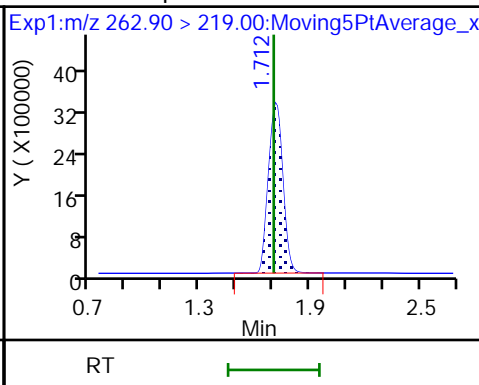
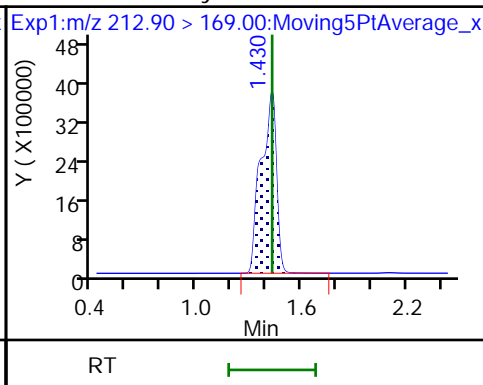
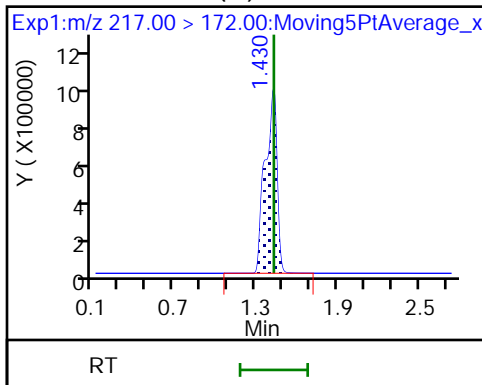
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA (M)

2 Perfluorobutyric acid

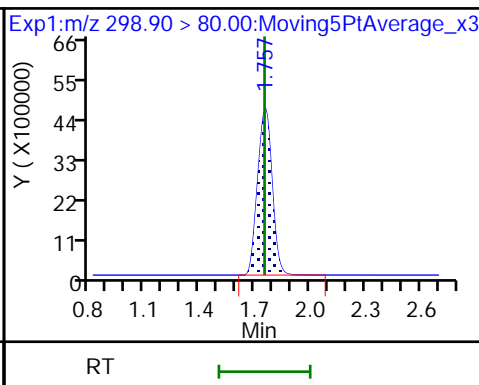
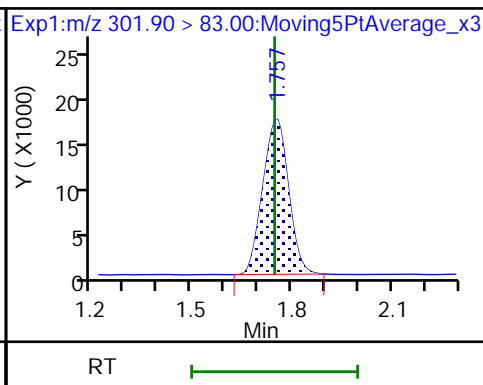
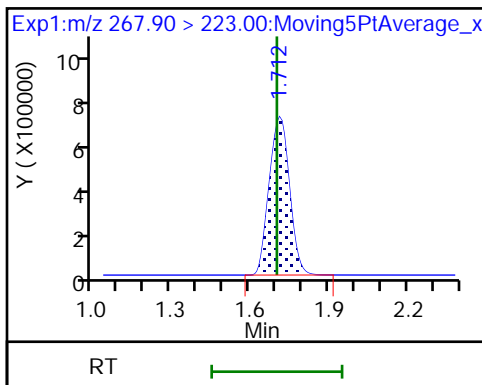
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

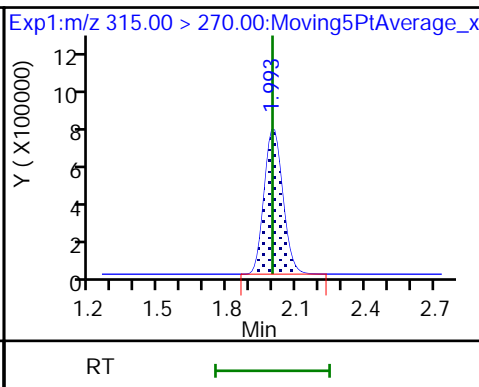
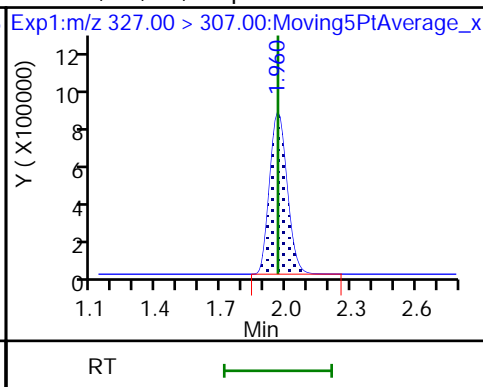
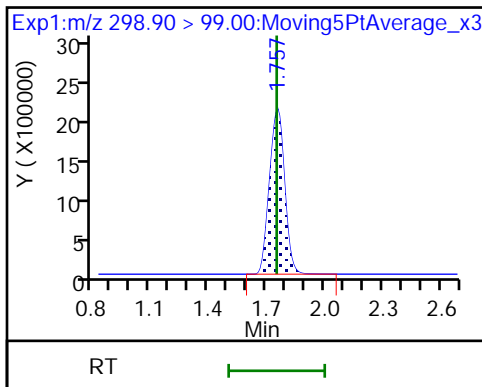
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

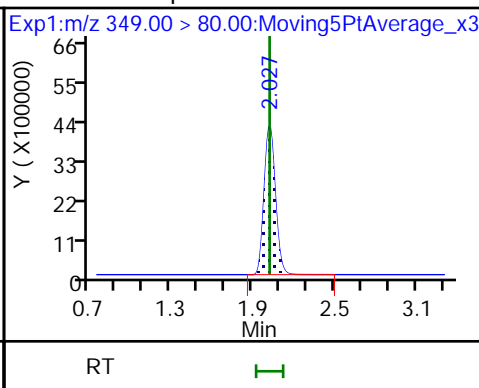
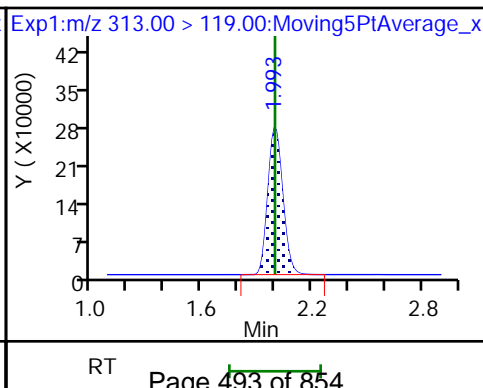
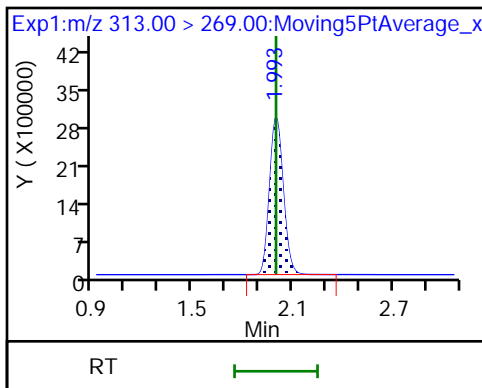
D 7 13C2 PFHxA

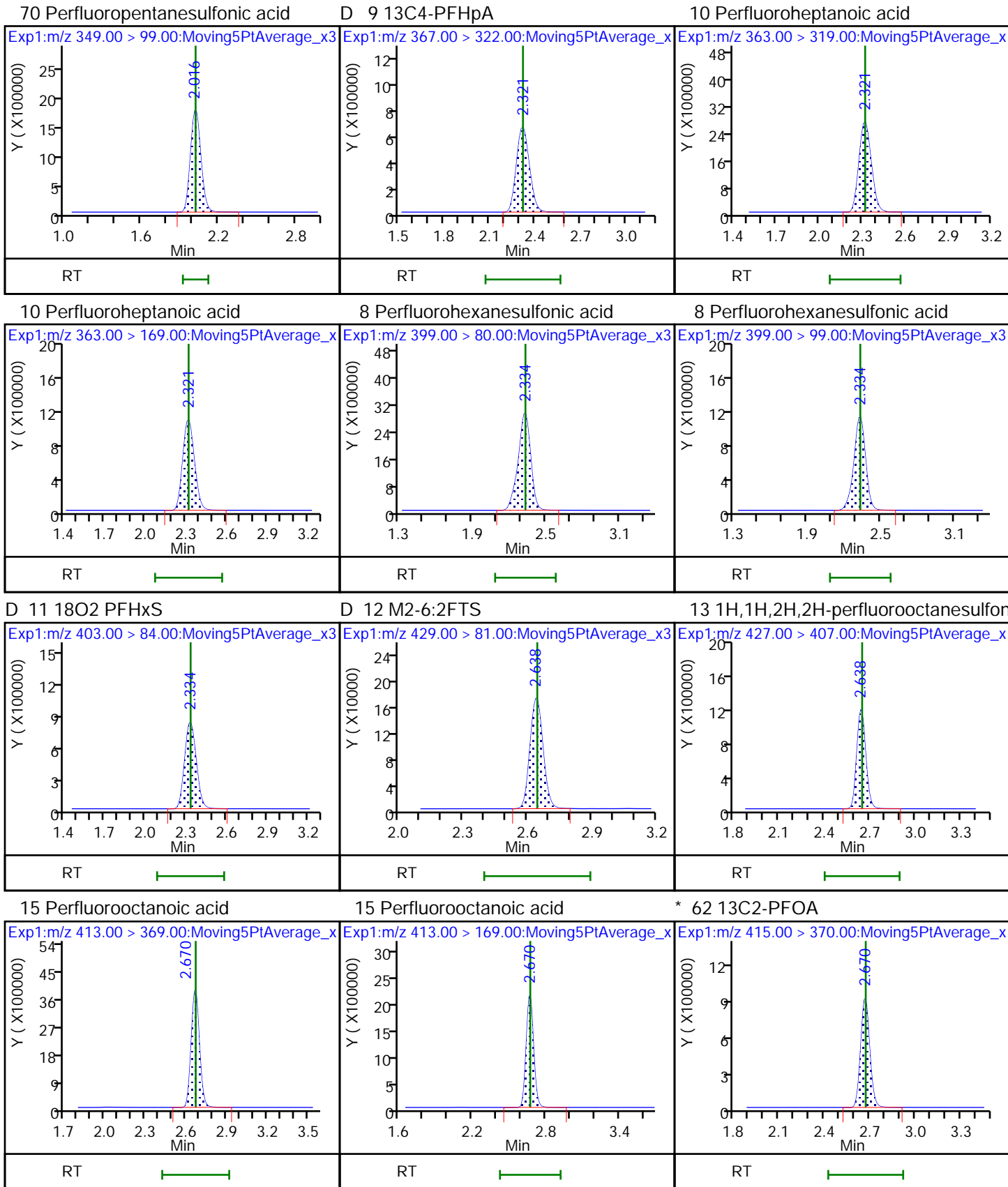


6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

70 Perfluoropentanesulfonic acid

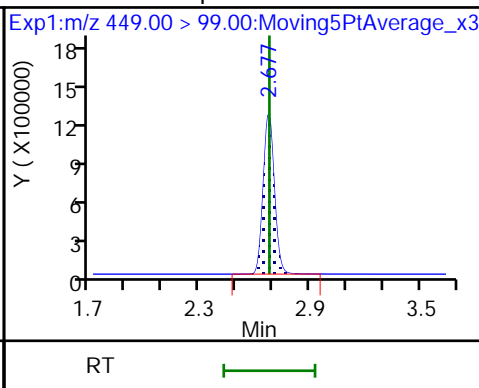
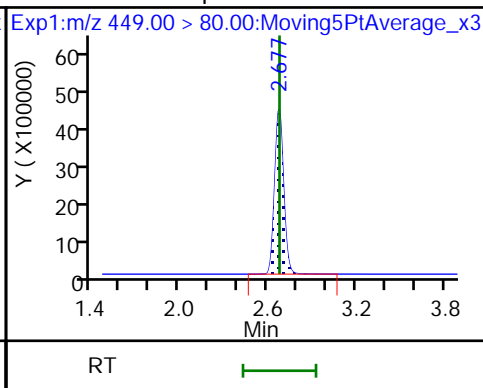
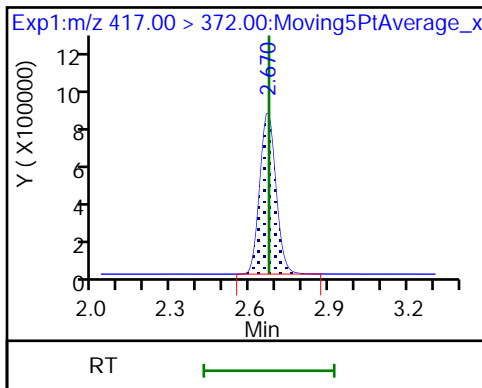




D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

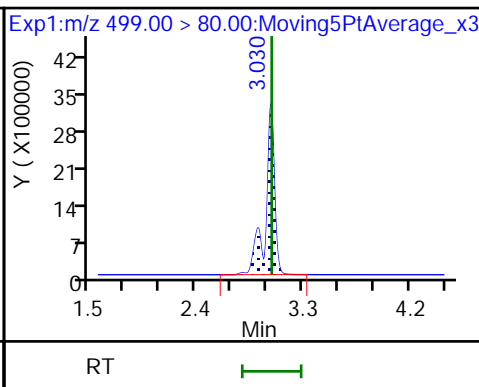
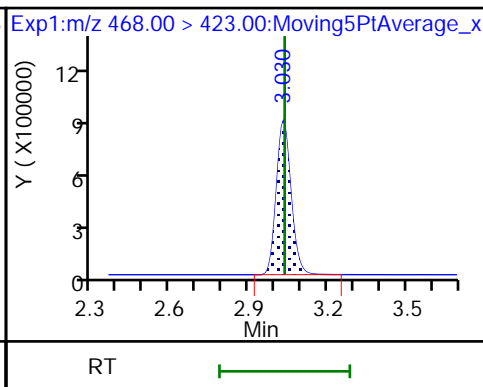
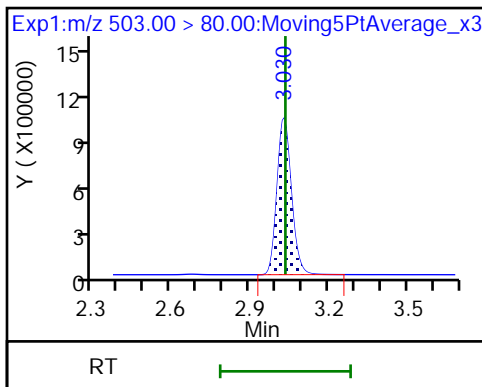
16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS

D 19 13C5 PFNA

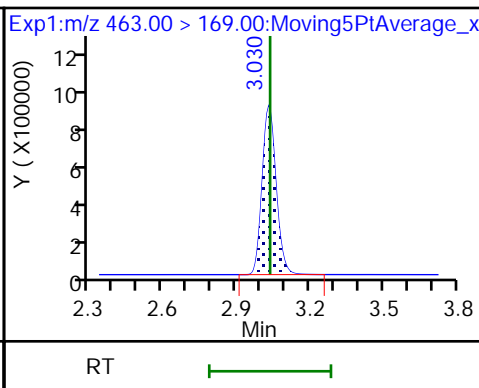
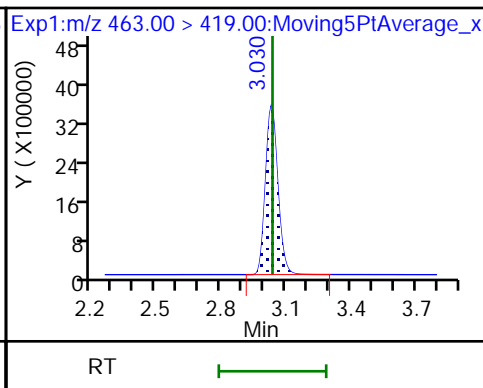
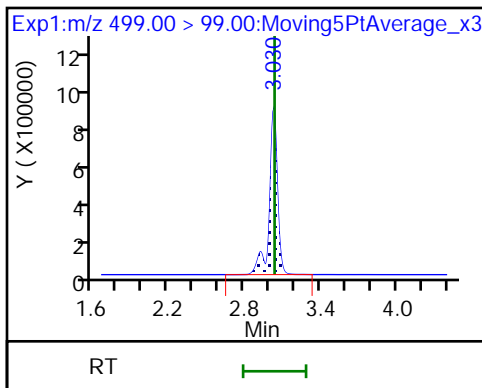
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

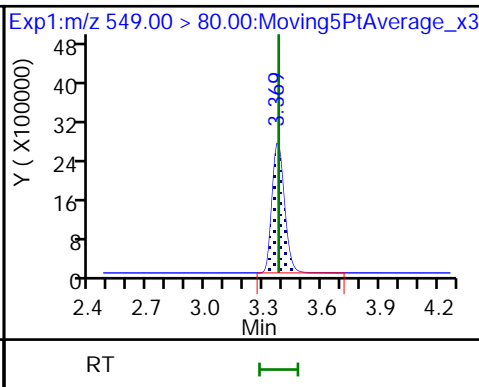
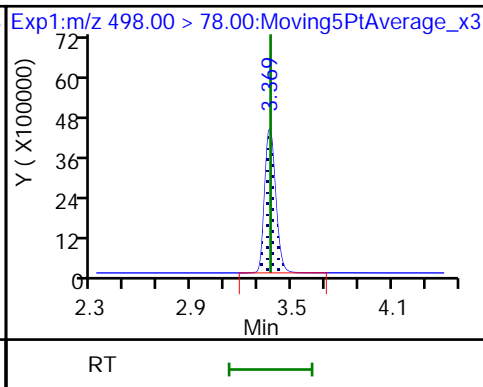
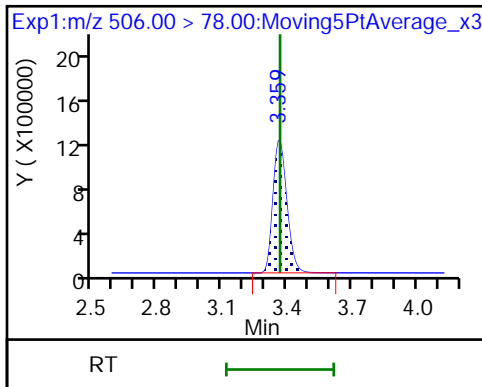
20 Perfluorononanoic acid



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

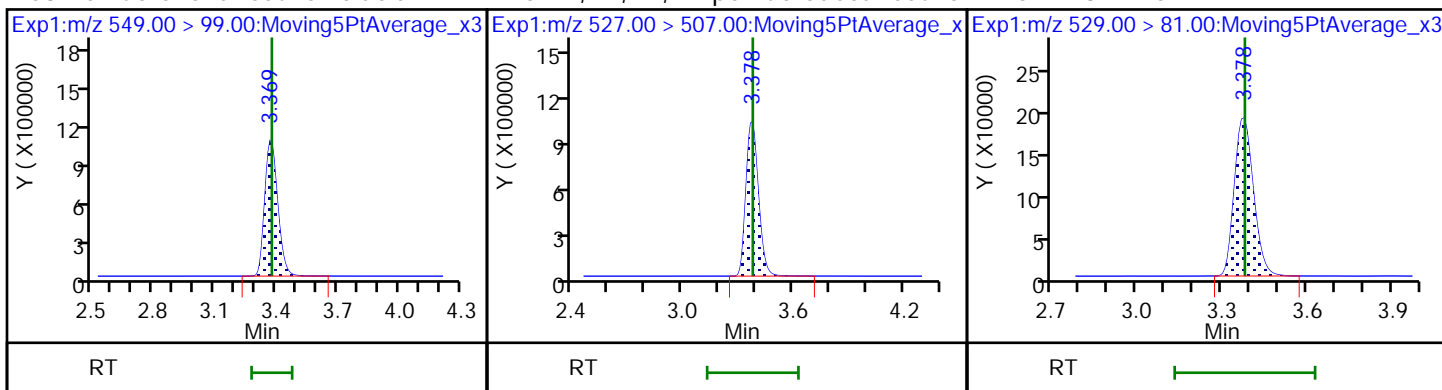
68 Perfluorononanesulfonic acid



68 Perfluorononanesulfonic acid

25 1H,1H,2H,2H-perfluorodecanesulfonate

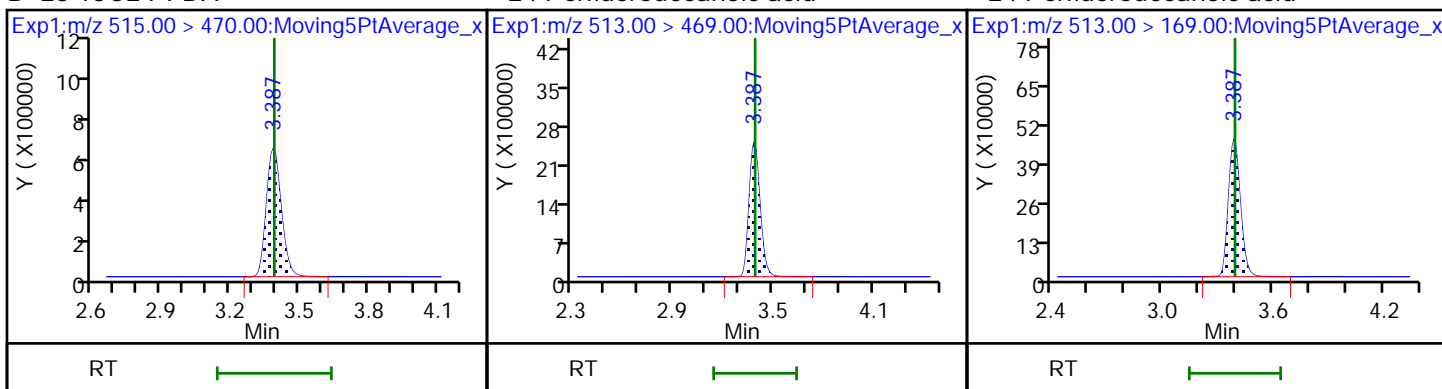
26 M2-8:2FTS



D 23 13C2 PFDA

24 Perfluorodecanoic acid

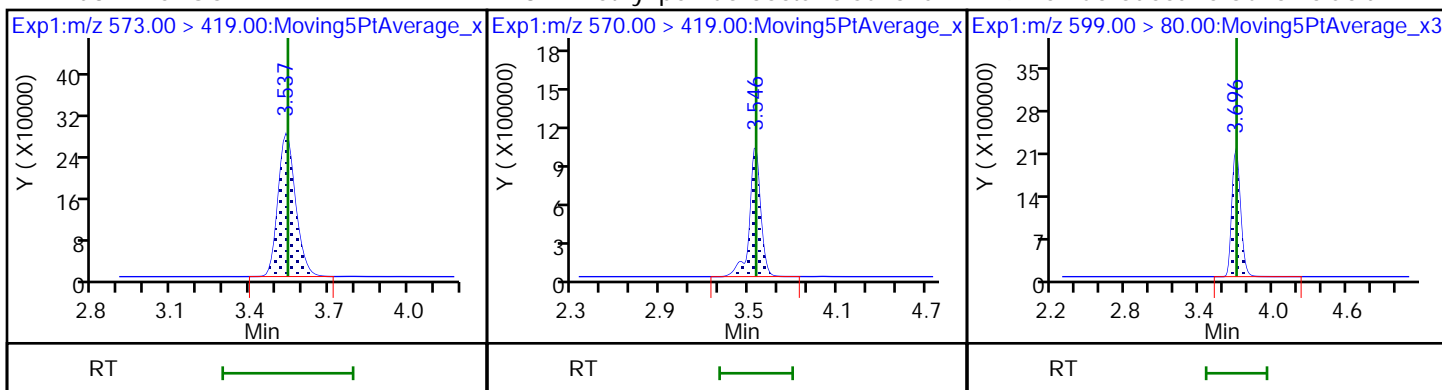
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonamide

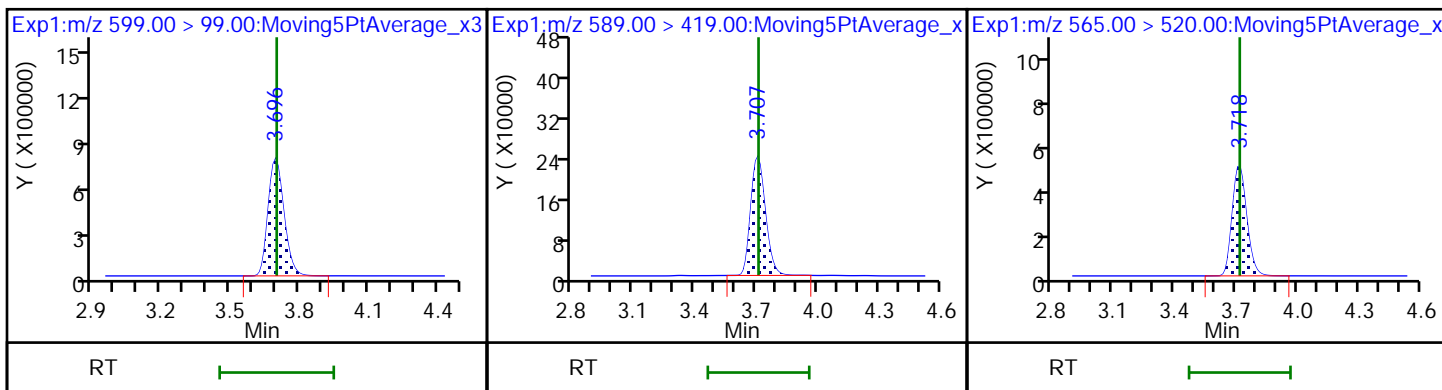
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

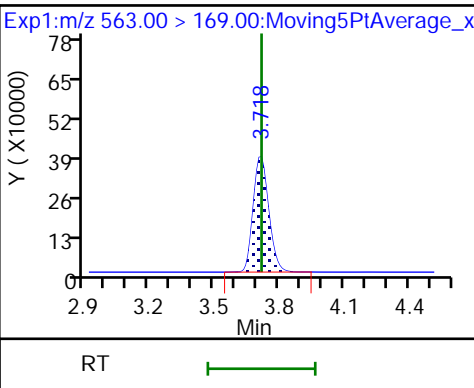
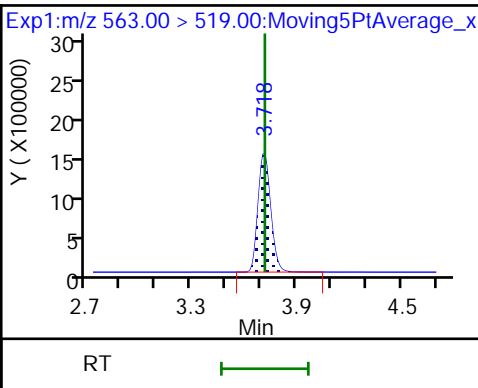
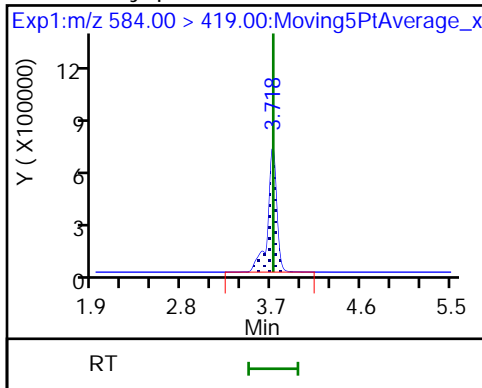
D 30 13C2 PFUnA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

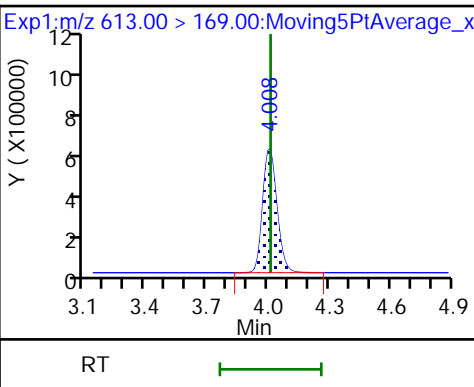
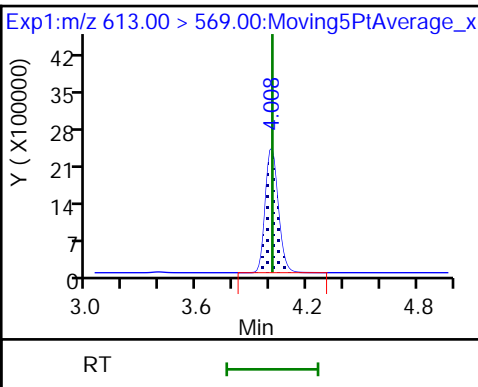
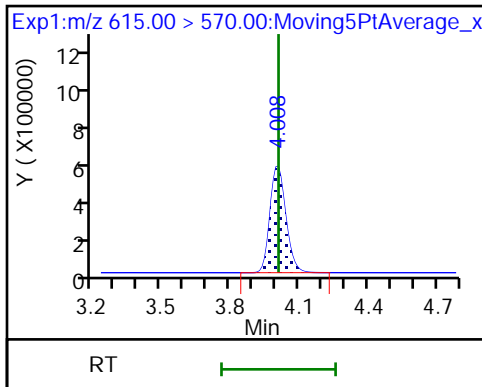
31 Perfluoroundecanoic acid



D 36 13C2 PFDoA

37 Perfluorododecanoic acid

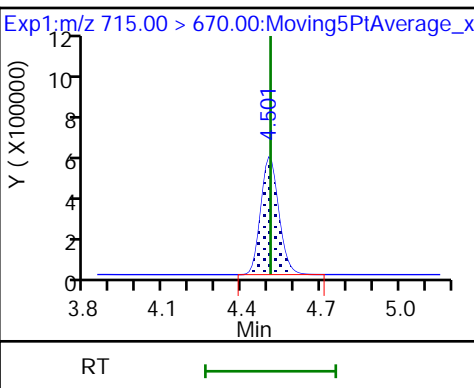
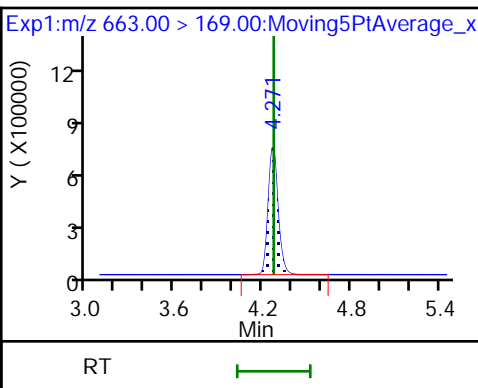
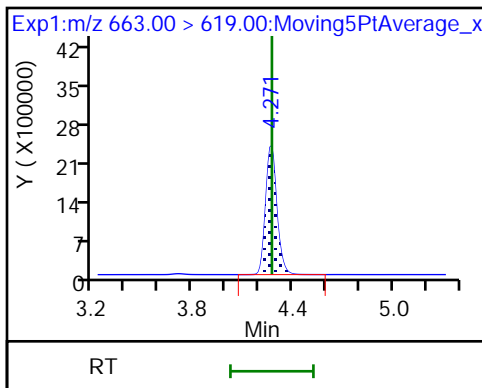
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

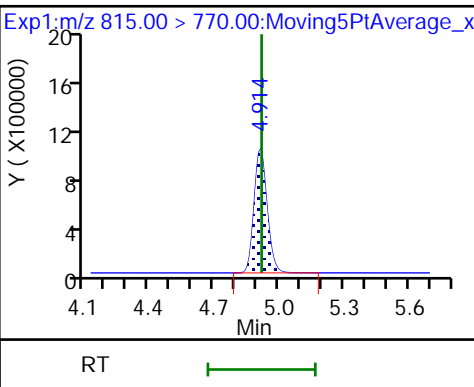
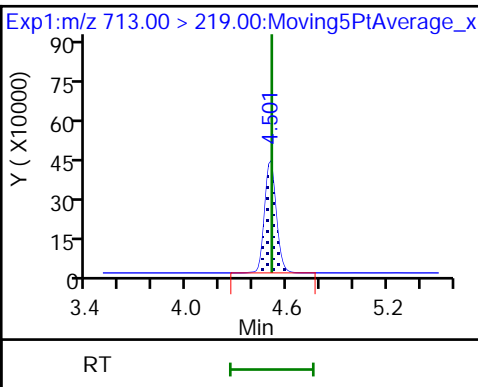
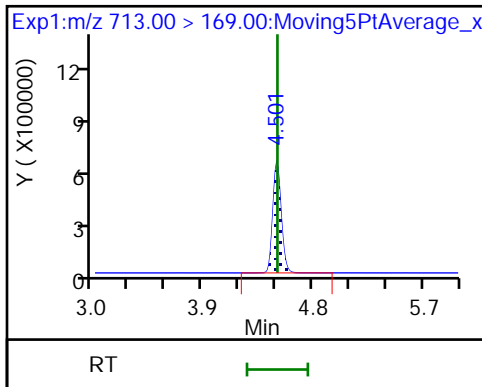
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA



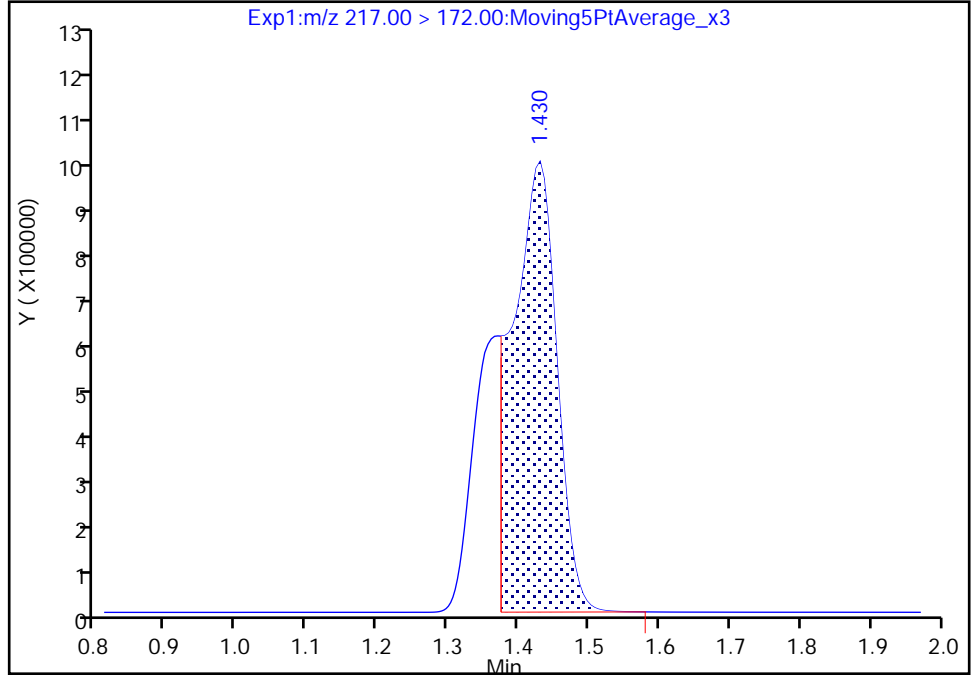
TestAmerica Sacramento

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Injection Date: 11-Jul-2018 15:38:42 Instrument ID: A8_N
Lims ID: IC L7 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 16 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

D 1 13C4 PFBA, CAS: STL00992
Signal: 1

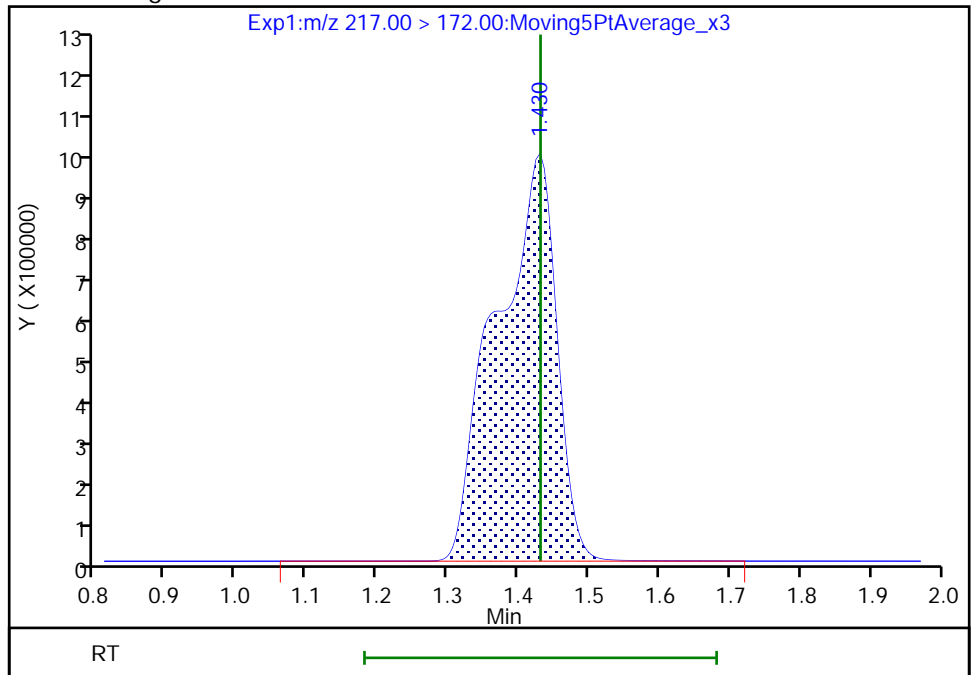
RT: 1.43
Area: 4154586
Amount: 2.158190
Amount Units: ng/ml

Processing Integration Results



RT: 1.43
Area: 5781235
Amount: 2.843032
Amount Units: ng/ml

Manual Integration Results



Reviewer: westendorfc, 11-Jul-2018 16:17:11
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
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Calibration

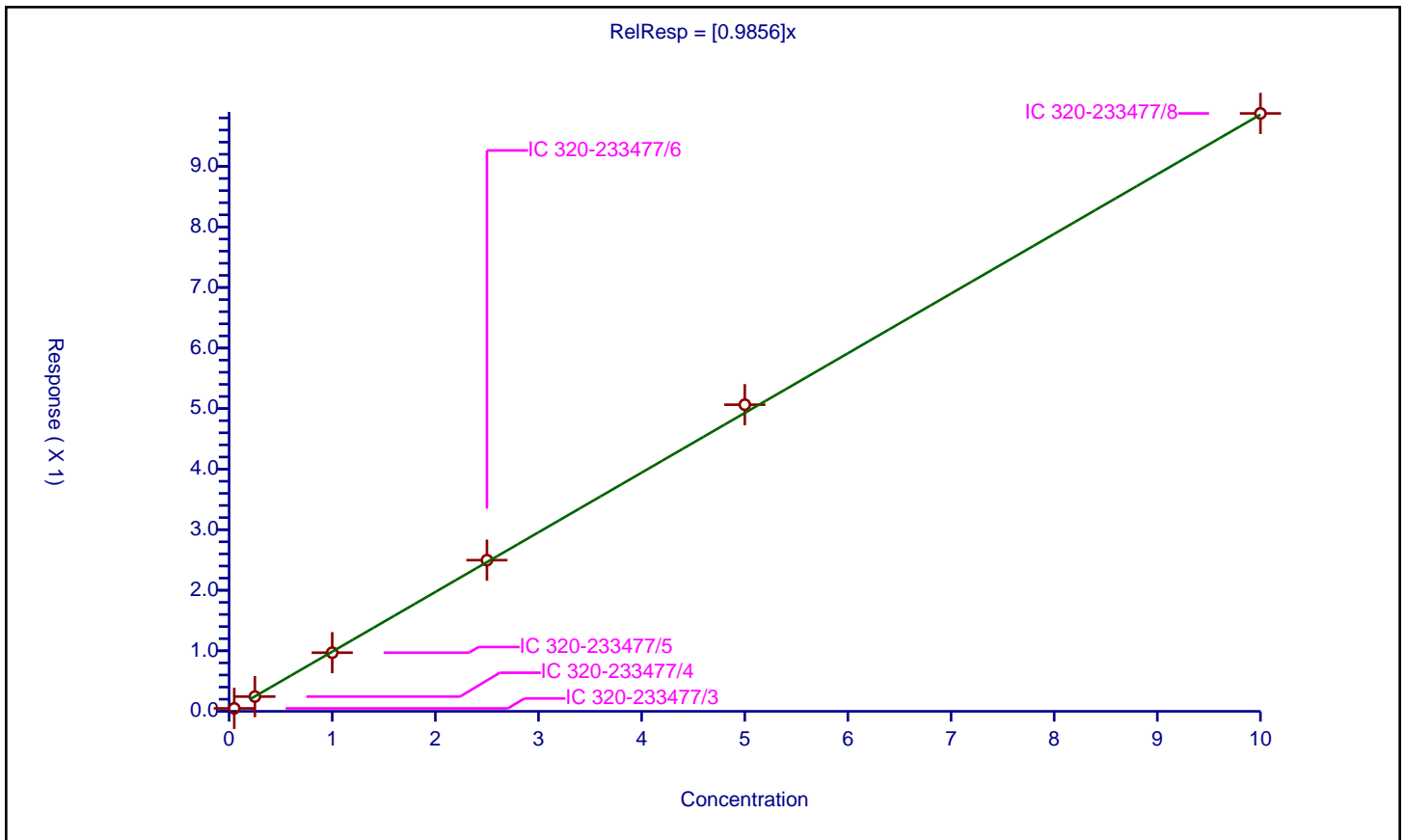
/ Perfluorobutyric acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.9856

Error Coefficients	
Standard Error:	11600000
Relative Standard Error:	1.8
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/3	0.05	0.048591	2.5	5621166.0	0.971827	Y
2	IC 320-233477/4	0.25	0.243532	2.5	5436336.0	0.974129	Y
3	IC 320-233477/5	1.0	0.968496	2.5	5641372.0	0.968496	Y
4	IC 320-233477/6	2.5	2.49664	2.5	5280540.0	0.998656	Y
5	IC 320-233477/7	5.0	5.064359	2.5	5244451.0	1.012872	Y
6	IC 320-233477/8	10.0	9.874793	2.5	5781235.0	0.987479	Y



Calibration

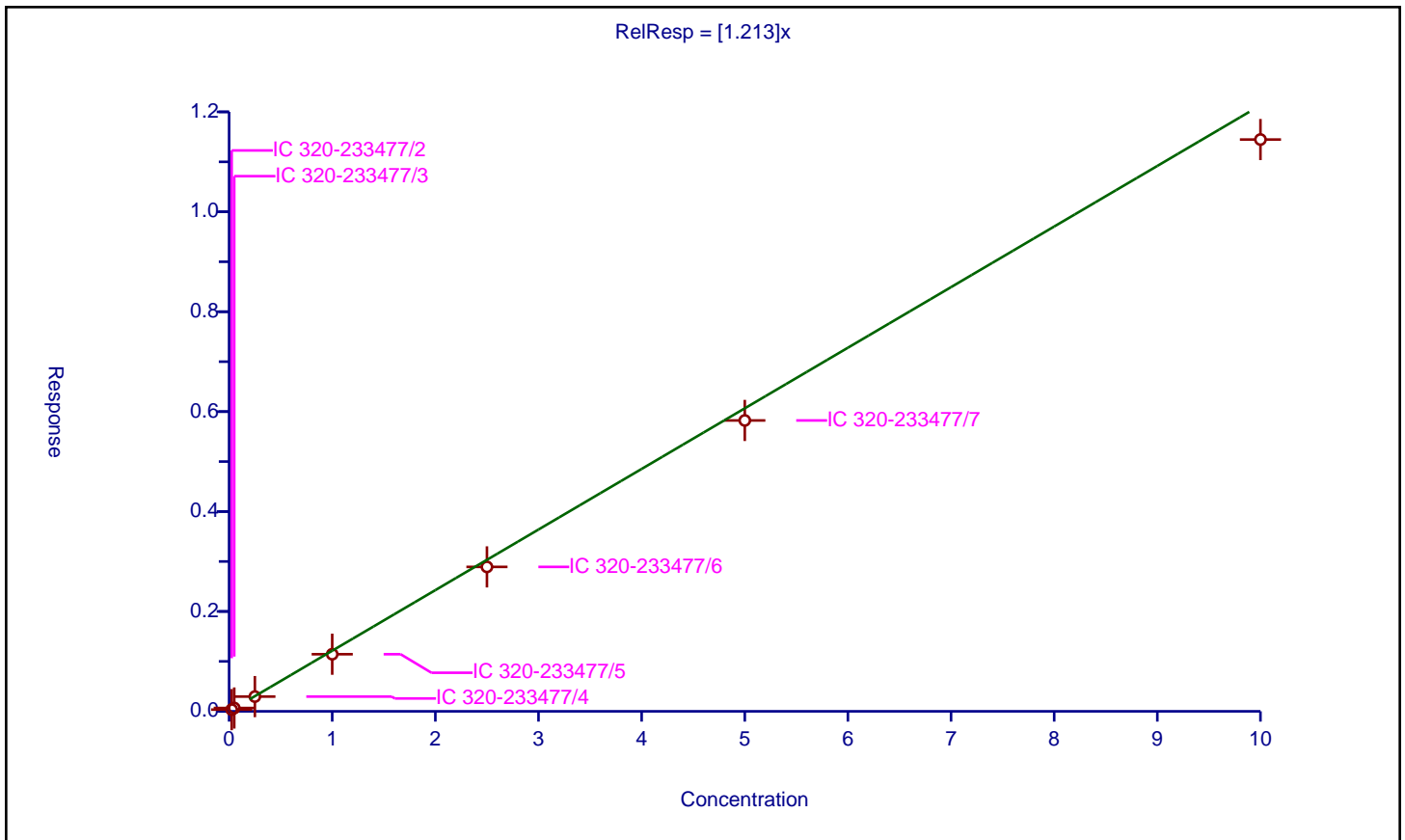
/ Perfluoropentanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.213

Error Coefficients	
Standard Error:	8310000
Relative Standard Error:	7.9
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.034269	2.5	3773636.0	1.370747	Y
2	IC 320-233477/3	0.05	0.066553	2.5	3905774.0	1.331068	Y
3	IC 320-233477/4	0.25	0.295211	2.5	3873105.0	1.180846	Y
4	IC 320-233477/5	1.0	1.143402	2.5	3885306.0	1.143402	Y
5	IC 320-233477/6	2.5	2.89169	2.5	3788119.0	1.156676	Y
6	IC 320-233477/7	5.0	5.822991	2.5	3734969.0	1.164598	Y
7	IC 320-233477/8	10.0	11.44643	2.5	3880280.0	1.144643	Y



Calibration

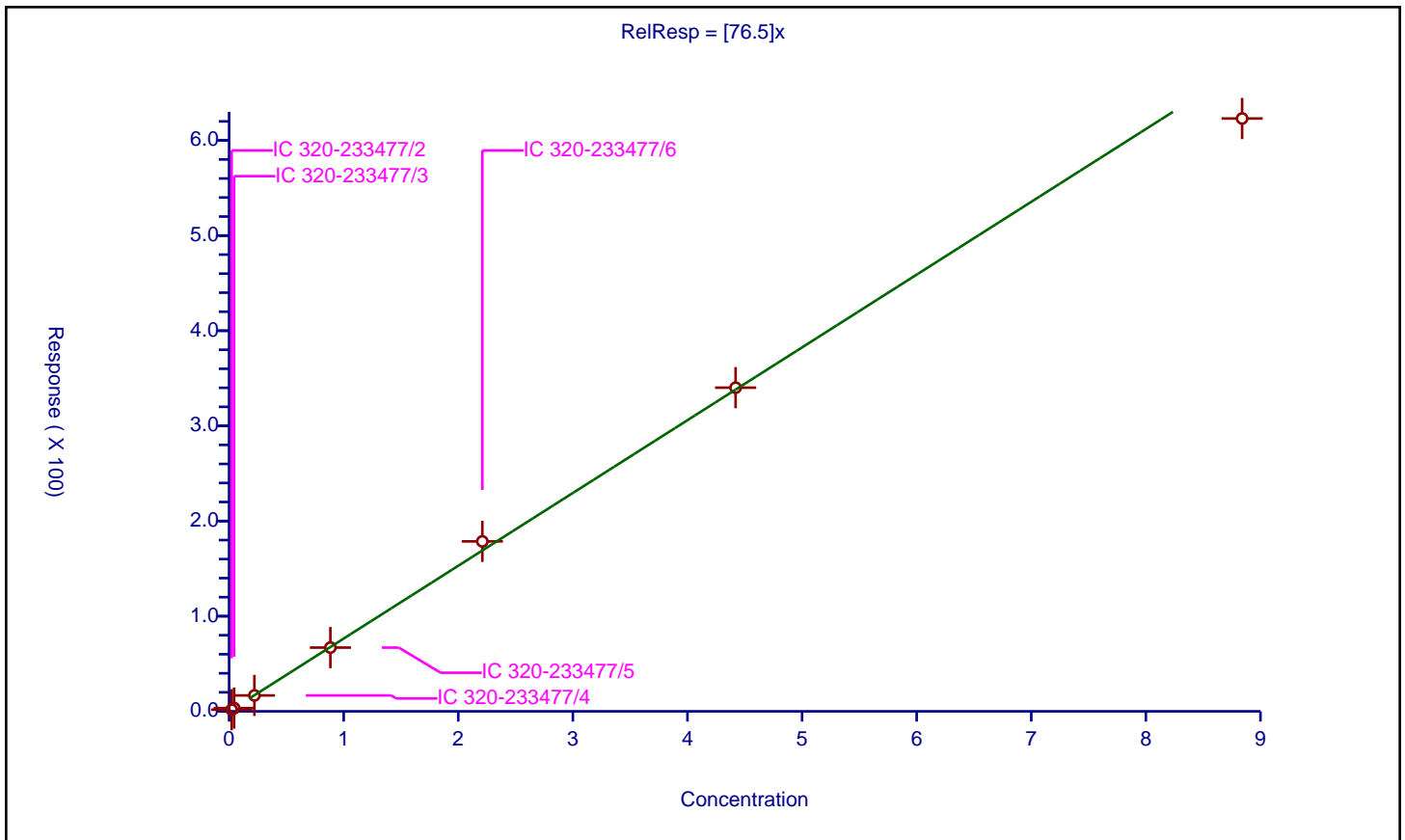
/ Perfluorobutanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	76.5

Error Coefficients	
Standard Error:	11800000
Relative Standard Error:	4.2
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.0221	1.748401	2.325	84738.0	79.113152	Y
2	IC 320-233477/3	0.0442	3.389764	2.325	94108.0	76.691503	Y
3	IC 320-233477/4	0.221	16.711966	2.325	88873.0	75.619755	Y
4	IC 320-233477/5	0.884	66.993376	2.325	93442.0	75.784362	Y
5	IC 320-233477/6	2.21	178.612201	2.325	86878.0	80.820001	Y
6	IC 320-233477/7	4.42	340.162371	2.325	85755.0	76.959812	Y
7	IC 320-233477/8	8.84	623.042755	2.325	93739.0	70.47995	Y



Calibration

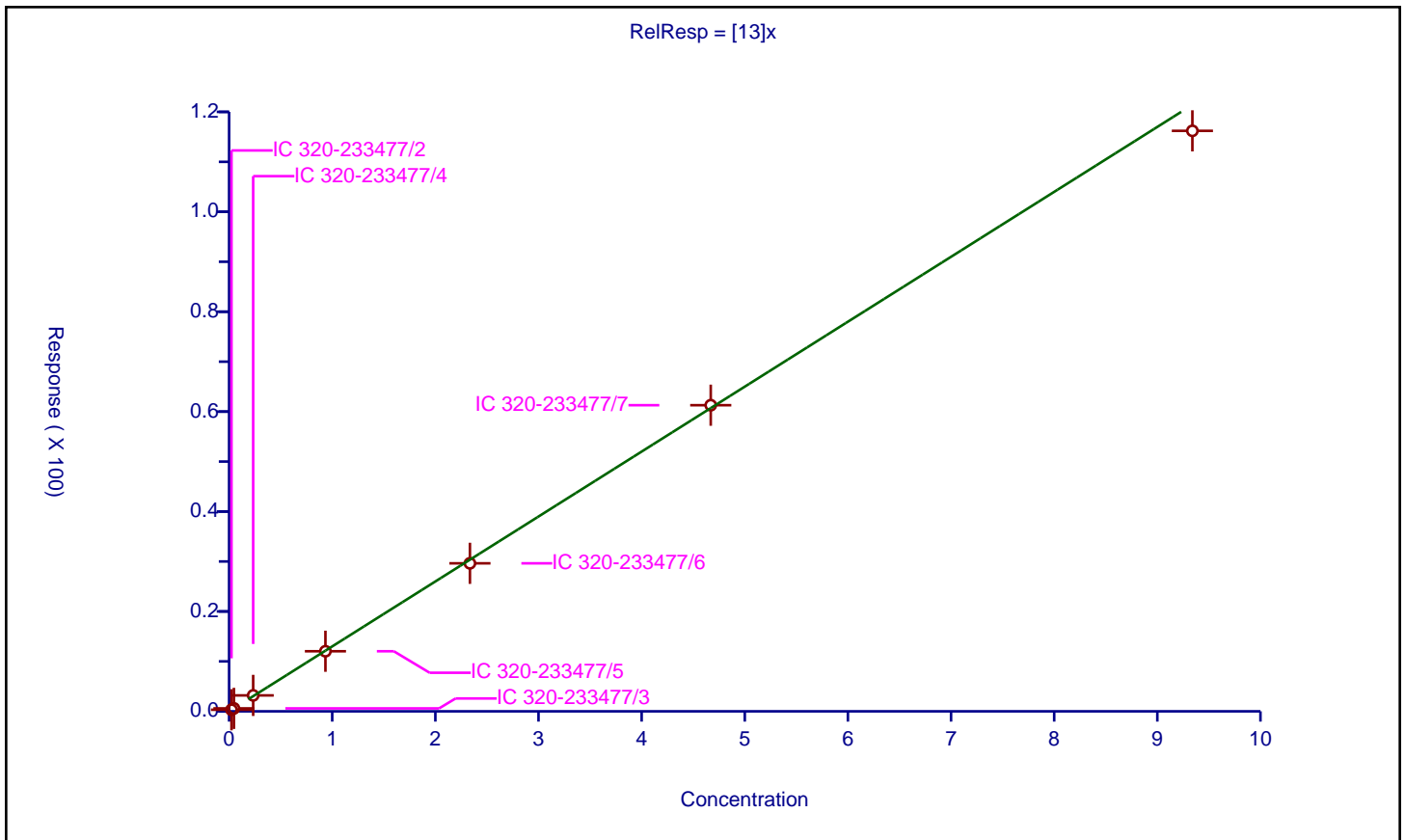
/ 1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	13

Error Coefficients	
Standard Error:	2180000
Relative Standard Error:	3.5
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.02335	0.316108	2.325	84738.0	13.537798	Y
2	IC 320-233477/3	0.0467	0.591528	2.325	94108.0	12.666543	Y
3	IC 320-233477/4	0.2335	3.187944	2.325	88873.0	13.652866	Y
4	IC 320-233477/5	0.934	12.030747	2.325	93442.0	12.880885	Y
5	IC 320-233477/6	2.335	29.631961	2.325	86878.0	12.690348	Y
6	IC 320-233477/7	4.67	61.281339	2.325	85755.0	13.122342	Y
7	IC 320-233477/8	9.34	116.204139	2.325	93739.0	12.441557	Y



Calibration

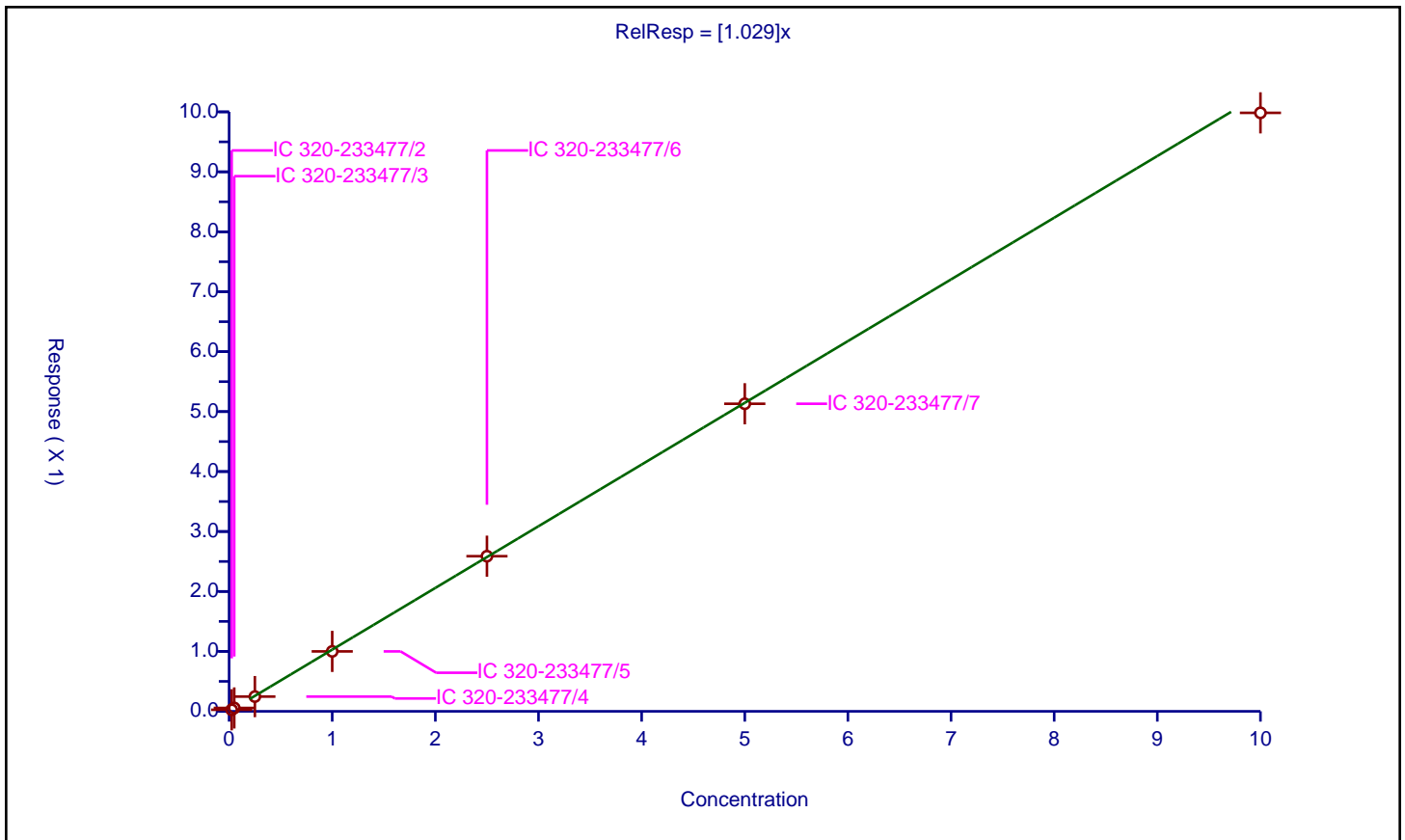
/ Perfluorohexanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.029

Error Coefficients	
Standard Error:	7720000
Relative Standard Error:	4.7
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.025767	2.5	4061845.0	1.030665	Y
2	IC 320-233477/3	0.05	0.056525	2.5	4333312.0	1.130509	Y
3	IC 320-233477/4	0.25	0.246044	2.5	4144632.0	0.984177	Y
4	IC 320-233477/5	1.0	0.999996	2.5	4419532.0	0.999996	Y
5	IC 320-233477/6	2.5	2.588129	2.5	4018475.0	1.035251	Y
6	IC 320-233477/7	5.0	5.130677	2.5	3887868.0	1.026135	Y
7	IC 320-233477/8	10.0	9.98393	2.5	4142603.0	0.998393	Y



Calibration

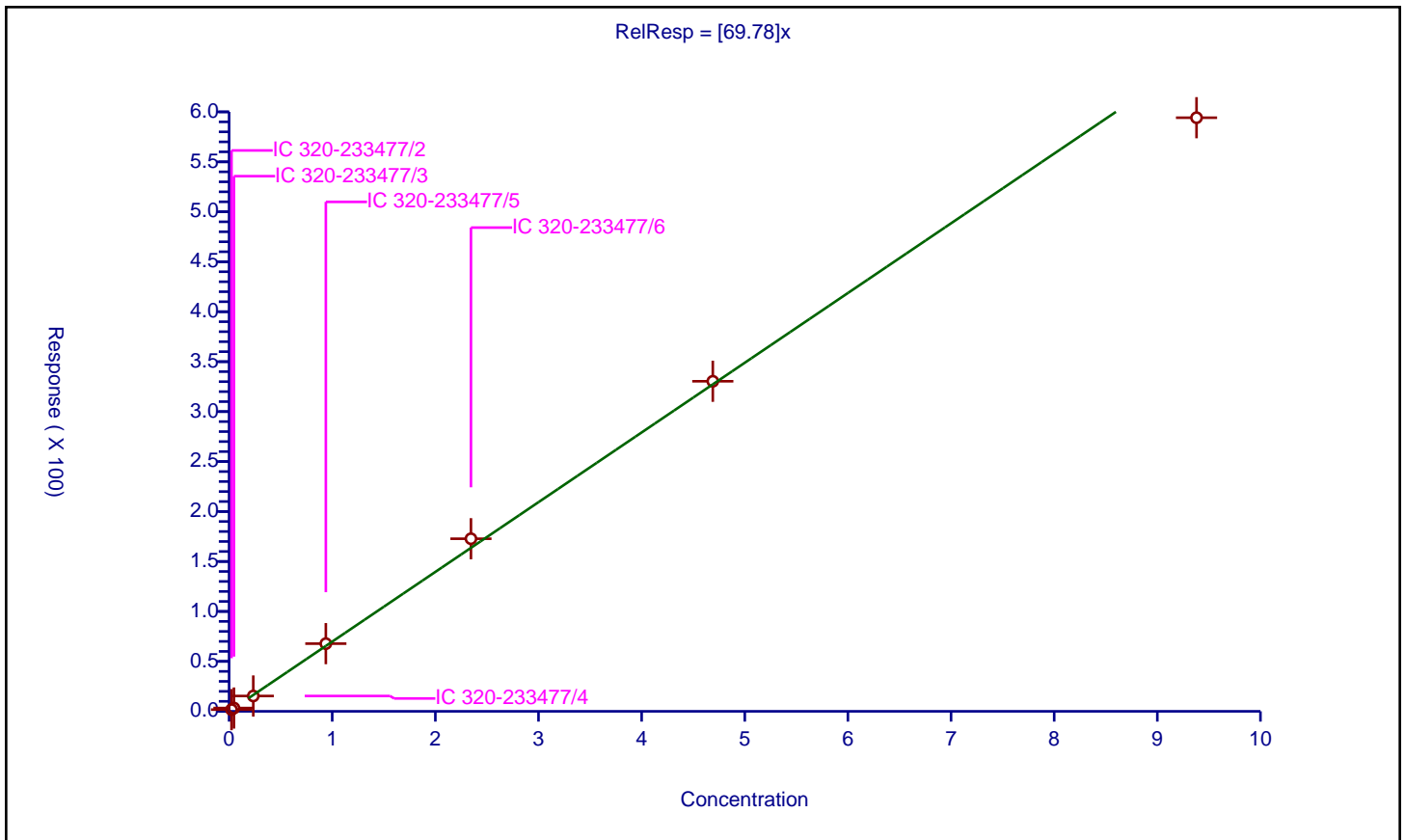
/ Perfluoropentanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	69.78

Error Coefficients	
Standard Error:	11300000
Relative Standard Error:	5.6
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.02345	1.711991	2.325	84738.0	73.006016	Y
2	IC 320-233477/3	0.0469	3.298897	2.325	94108.0	70.338955	Y
3	IC 320-233477/4	0.2345	15.34375	2.325	88873.0	65.431768	Y
4	IC 320-233477/5	0.938	67.760879	2.325	93442.0	72.239743	Y
5	IC 320-233477/6	2.345	172.749256	2.325	86878.0	73.66706	Y
6	IC 320-233477/7	4.69	330.368307	2.325	85755.0	70.441004	Y
7	IC 320-233477/8	9.38	594.173507	2.325	93739.0	63.344724	Y



Calibration

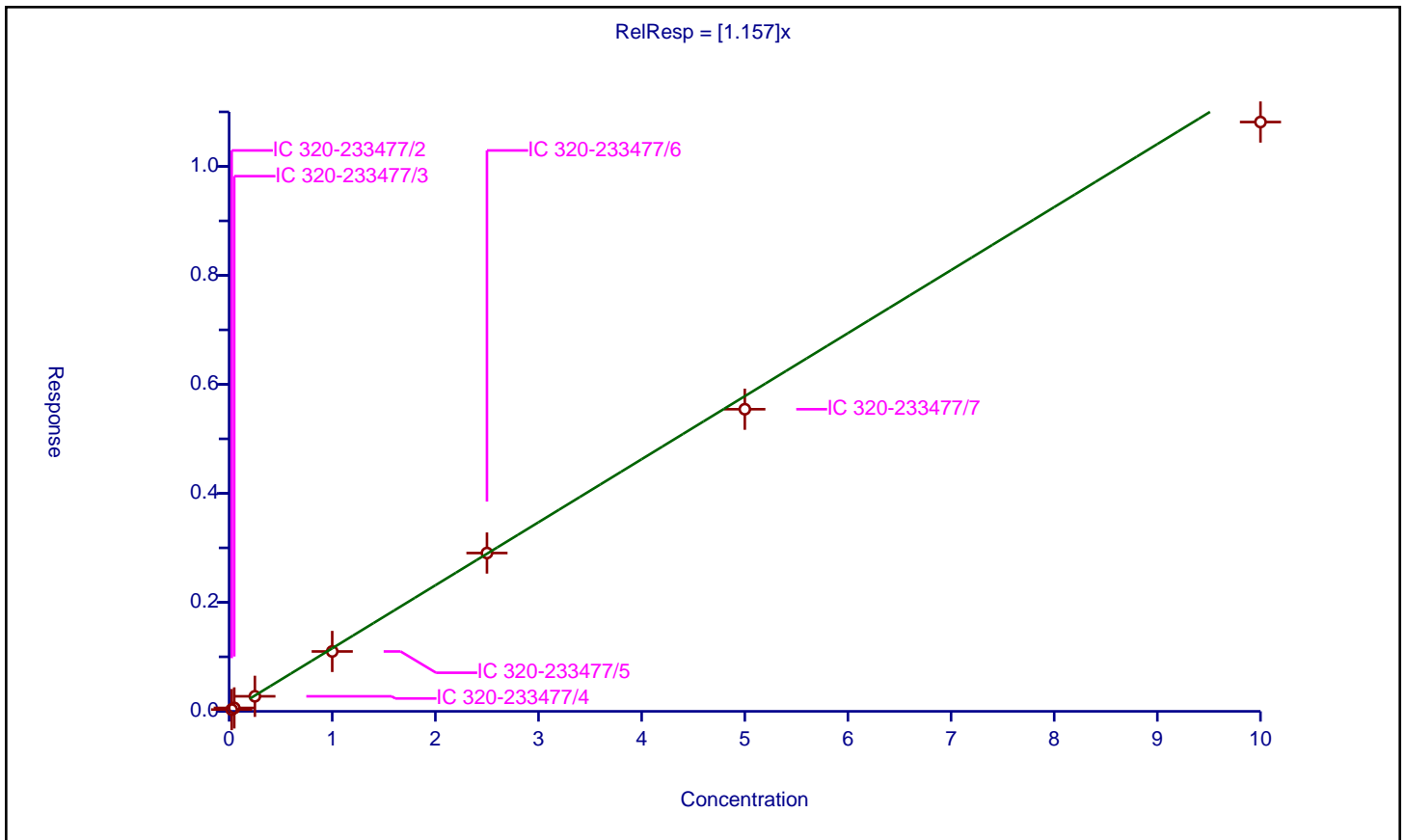
/ Perfluoroheptanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.157

Error Coefficients	
Standard Error:	7570000
Relative Standard Error:	7.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.032294	2.5	3724726.0	1.291773	Y
2	IC 320-233477/3	0.05	0.062501	2.5	3963601.0	1.250012	Y
3	IC 320-233477/4	0.25	0.275835	2.5	3856910.0	1.103342	Y
4	IC 320-233477/5	1.0	1.098924	2.5	4071620.0	1.098924	Y
5	IC 320-233477/6	2.5	2.90494	2.5	3786835.0	1.161976	Y
6	IC 320-233477/7	5.0	5.54371	2.5	3621431.0	1.108742	Y
7	IC 320-233477/8	10.0	10.814055	2.5	3701454.0	1.081406	Y



Calibration

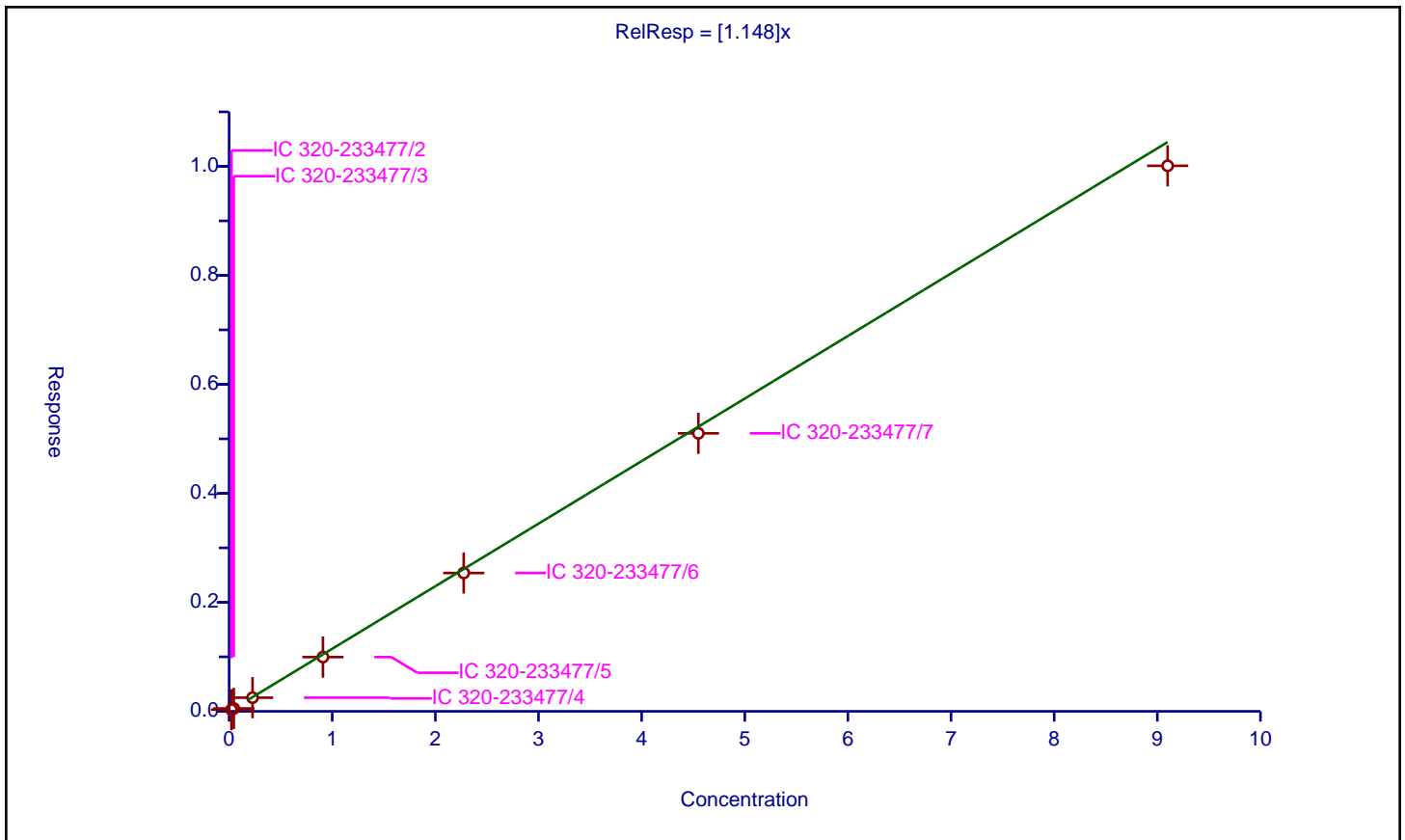
/ Perfluorohexanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.148

Error Coefficients	
Standard Error:	9700000
Relative Standard Error:	7.9
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.02275	0.030689	2.365	5274150.0	1.348985	Y
2	IC 320-233477/3	0.0455	0.052491	2.365	5419785.0	1.153641	Y
3	IC 320-233477/4	0.2275	0.250694	2.365	5214223.0	1.101951	Y
4	IC 320-233477/5	0.91	0.995401	2.365	5331177.0	1.093847	Y
5	IC 320-233477/6	2.275	2.53839	2.365	4952007.0	1.115776	Y
6	IC 320-233477/7	4.55	5.101114	2.365	4777689.0	1.121124	Y
7	IC 320-233477/8	9.1	10.010782	2.365	4872001.0	1.100086	Y



Calibration

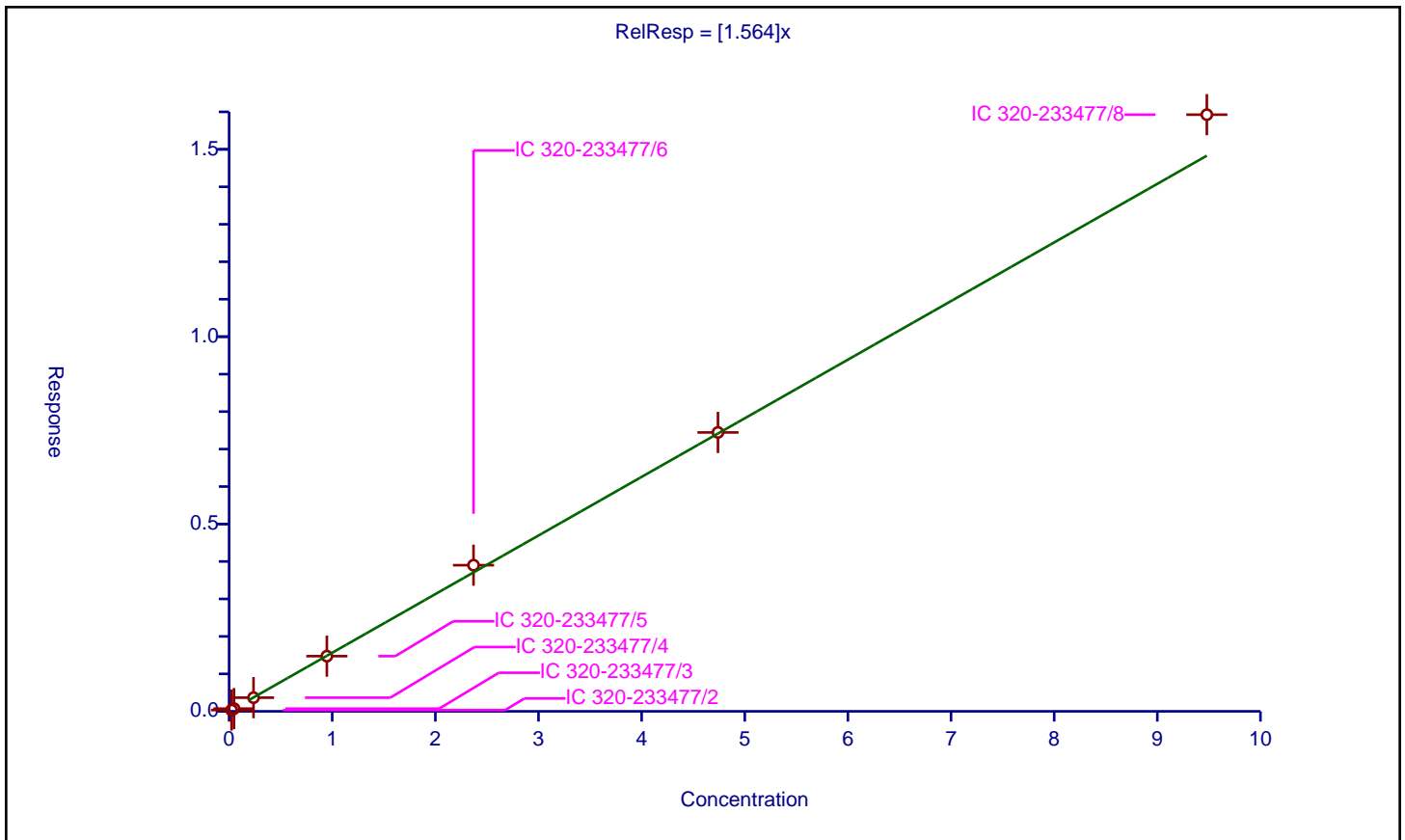
/ 1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.564

Error Coefficients	
Standard Error:	2210000
Relative Standard Error:	5.2
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.0237	0.033907	2.375	799554.0	1.430683	Y
2	IC 320-233477/3	0.0474	0.072581	2.375	834970.0	1.531243	Y
3	IC 320-233477/4	0.237	0.364792	2.375	825525.0	1.539208	Y
4	IC 320-233477/5	0.948	1.472622	2.375	819911.0	1.553399	Y
5	IC 320-233477/6	2.37	3.900606	2.375	735229.0	1.645825	Y
6	IC 320-233477/7	4.74	7.444041	2.375	731524.0	1.570473	Y
7	IC 320-233477/8	9.48	15.925237	2.375	704932.0	1.679877	Y



Calibration

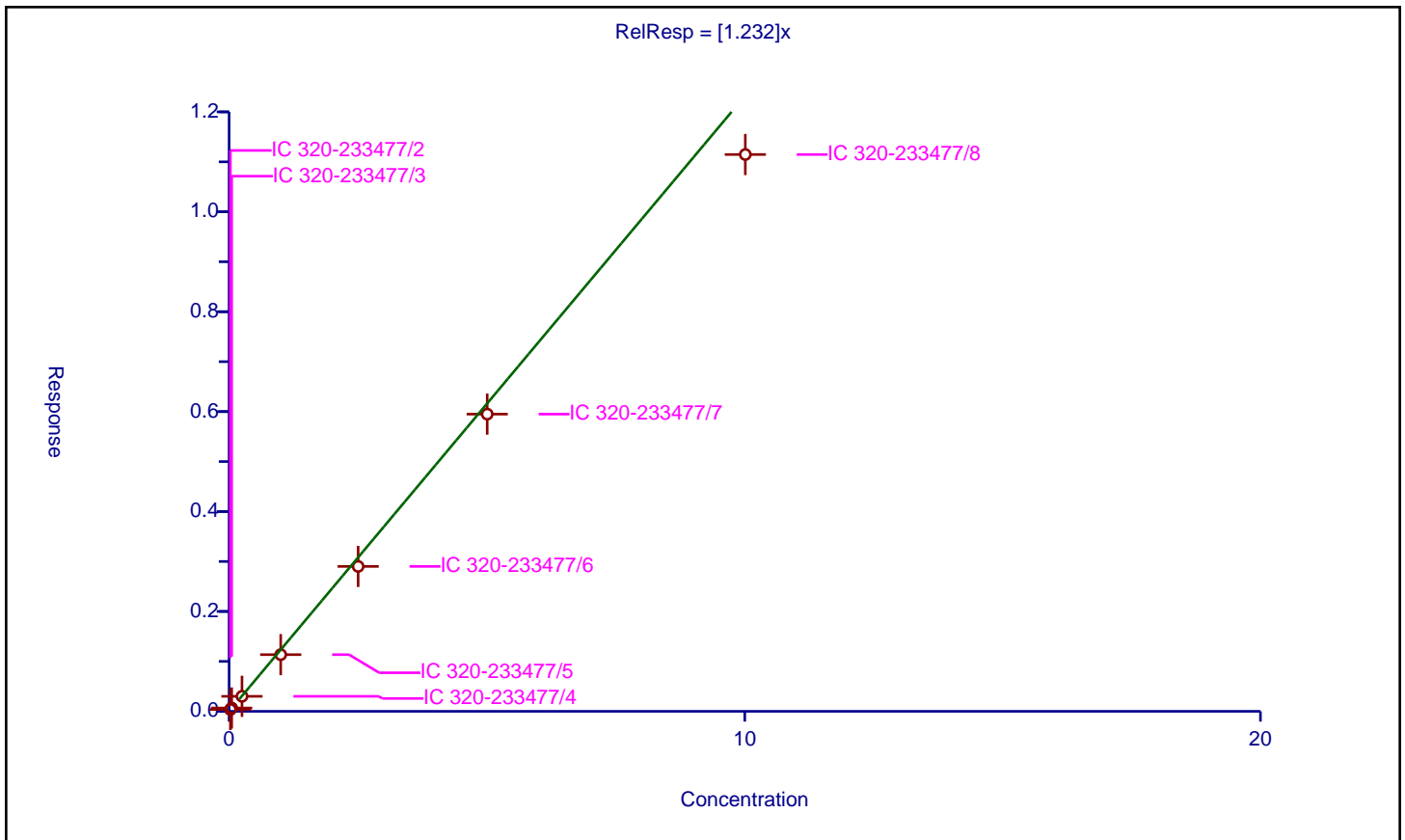
/ Perfluorooctanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.232

Error Coefficients	
Standard Error:	7750000
Relative Standard Error:	11.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.983

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025025	0.03736	2.5	3919080.0	1.492888	Y
2	IC 320-233477/3	0.05005	0.0667	2.5	4207903.0	1.332669	Y
3	IC 320-233477/4	0.25025	0.300387	2.5	3971401.0	1.200348	Y
4	IC 320-233477/5	1.001	1.134671	2.5	4164105.0	1.133537	Y
5	IC 320-233477/6	2.5025	2.900864	2.5	3836329.0	1.159187	Y
6	IC 320-233477/7	5.005	5.949358	2.5	3555536.0	1.188683	Y
7	IC 320-233477/8	10.01	11.146492	2.5	3653899.0	1.113536	Y



Calibration

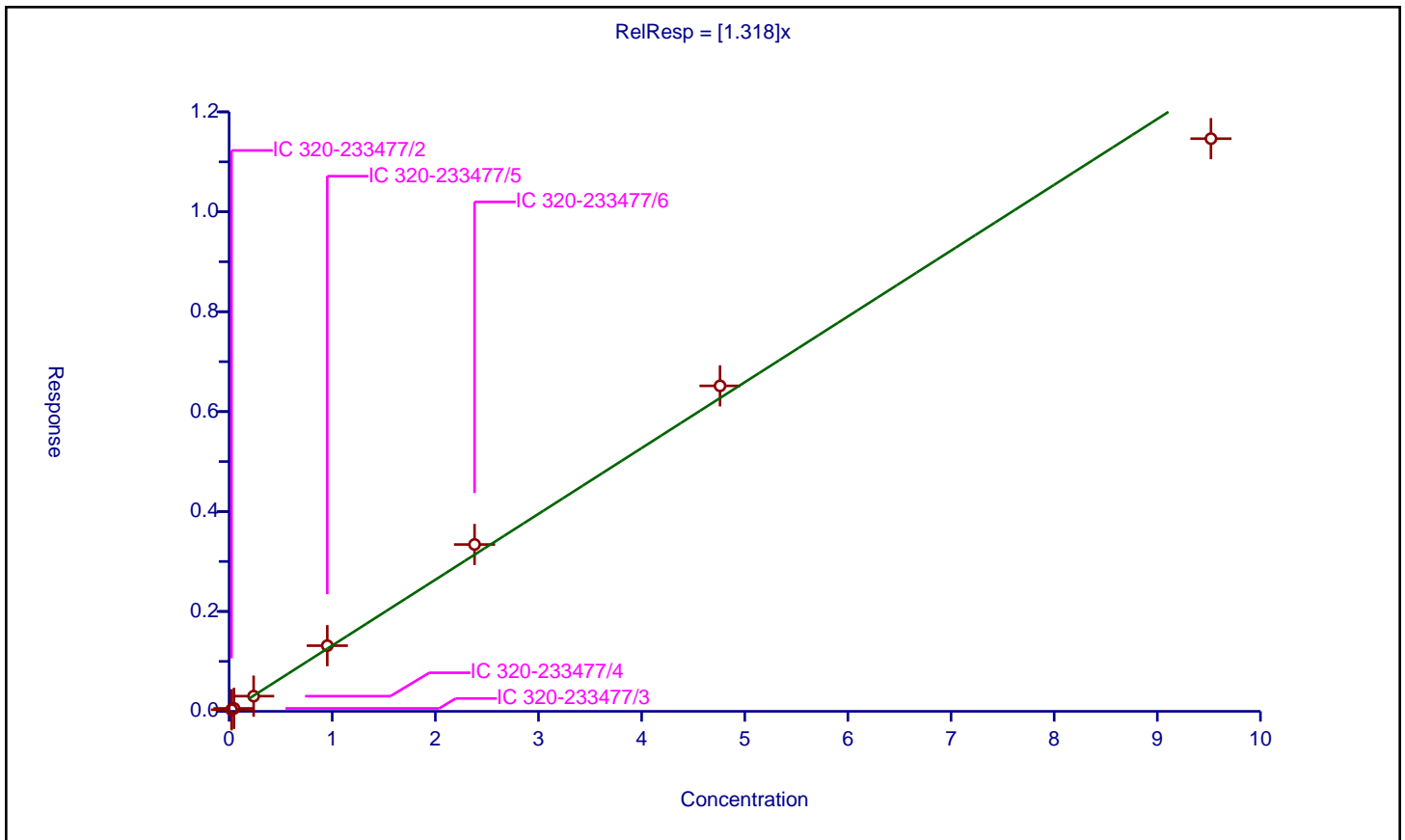
/ Perfluoroheptanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.318

Error Coefficients	
Standard Error:	8910000
Relative Standard Error:	5.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.0238	0.032151	2.39	3735610.0	1.350868	Y
2	IC 320-233477/3	0.0476	0.058889	2.39	4069838.0	1.237166	Y
3	IC 320-233477/4	0.238	0.304038	2.39	3725581.0	1.277469	Y
4	IC 320-233477/5	0.952	1.314723	2.39	3832872.0	1.381012	Y
5	IC 320-233477/6	2.38	3.339697	2.39	3715442.0	1.403234	Y
6	IC 320-233477/7	4.76	6.515589	2.39	3560852.0	1.368821	Y
7	IC 320-233477/8	9.52	11.463753	2.39	3902400.0	1.204176	Y



Calibration

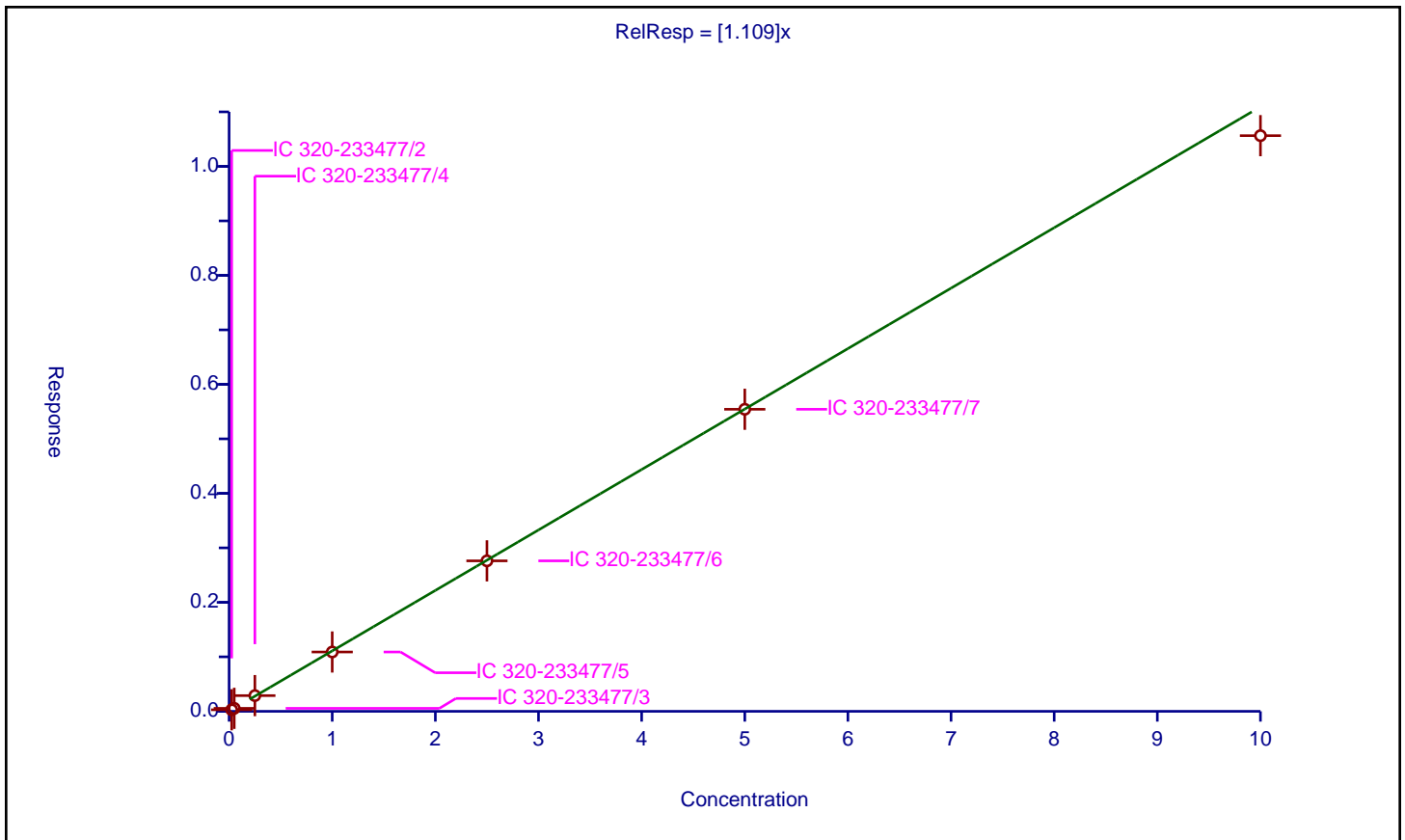
/ Perfluorononanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.109

Error Coefficients	
Standard Error:	6580000
Relative Standard Error:	3.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.02873	2.5	3518663.0	1.149186	Y
2	IC 320-233477/3	0.05	0.055191	2.5	3839924.0	1.103824	Y
3	IC 320-233477/4	0.25	0.288509	2.5	3471672.0	1.154038	Y
4	IC 320-233477/5	1.0	1.088969	2.5	3677166.0	1.088969	Y
5	IC 320-233477/6	2.5	2.761318	2.5	3458178.0	1.104527	Y
6	IC 320-233477/7	5.0	5.542741	2.5	3155893.0	1.108548	Y
7	IC 320-233477/8	10.0	10.563555	2.5	3292167.0	1.056356	Y



Calibration

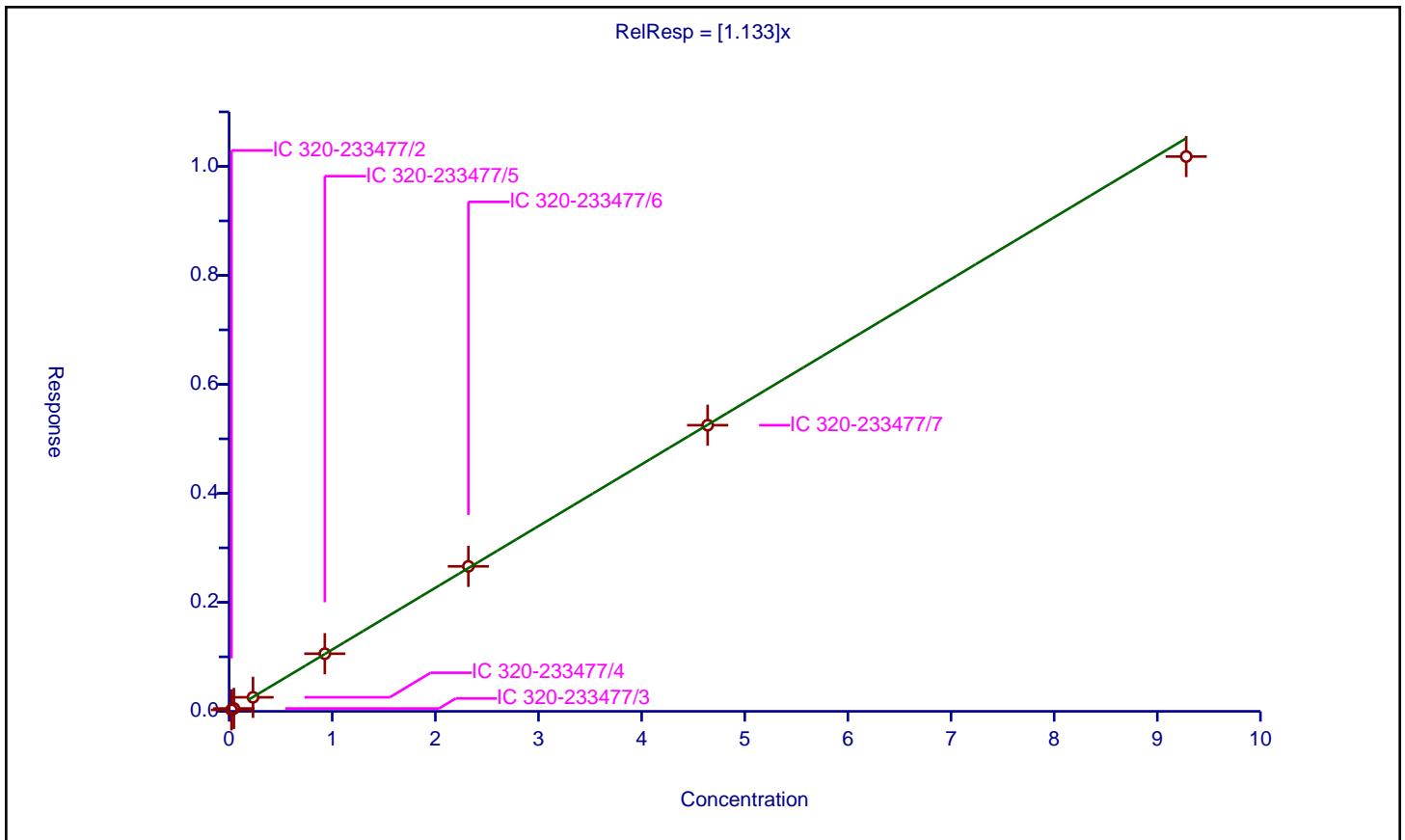
/ Perfluorooctane sulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.133

Error Coefficients	
Standard Error:	7720000
Relative Standard Error:	2.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.0232	0.027285	2.39	3735610.0	1.17608	Y
2	IC 320-233477/3	0.0464	0.052523	2.39	4069838.0	1.131969	Y
3	IC 320-233477/4	0.232	0.257391	2.39	3725581.0	1.109443	Y
4	IC 320-233477/5	0.928	1.057241	2.39	3832872.0	1.139269	Y
5	IC 320-233477/6	2.32	2.660437	2.39	3715442.0	1.14674	Y
6	IC 320-233477/7	4.64	5.250492	2.39	3560852.0	1.131572	Y
7	IC 320-233477/8	9.28	10.180589	2.39	3902400.0	1.097046	Y



Calibration

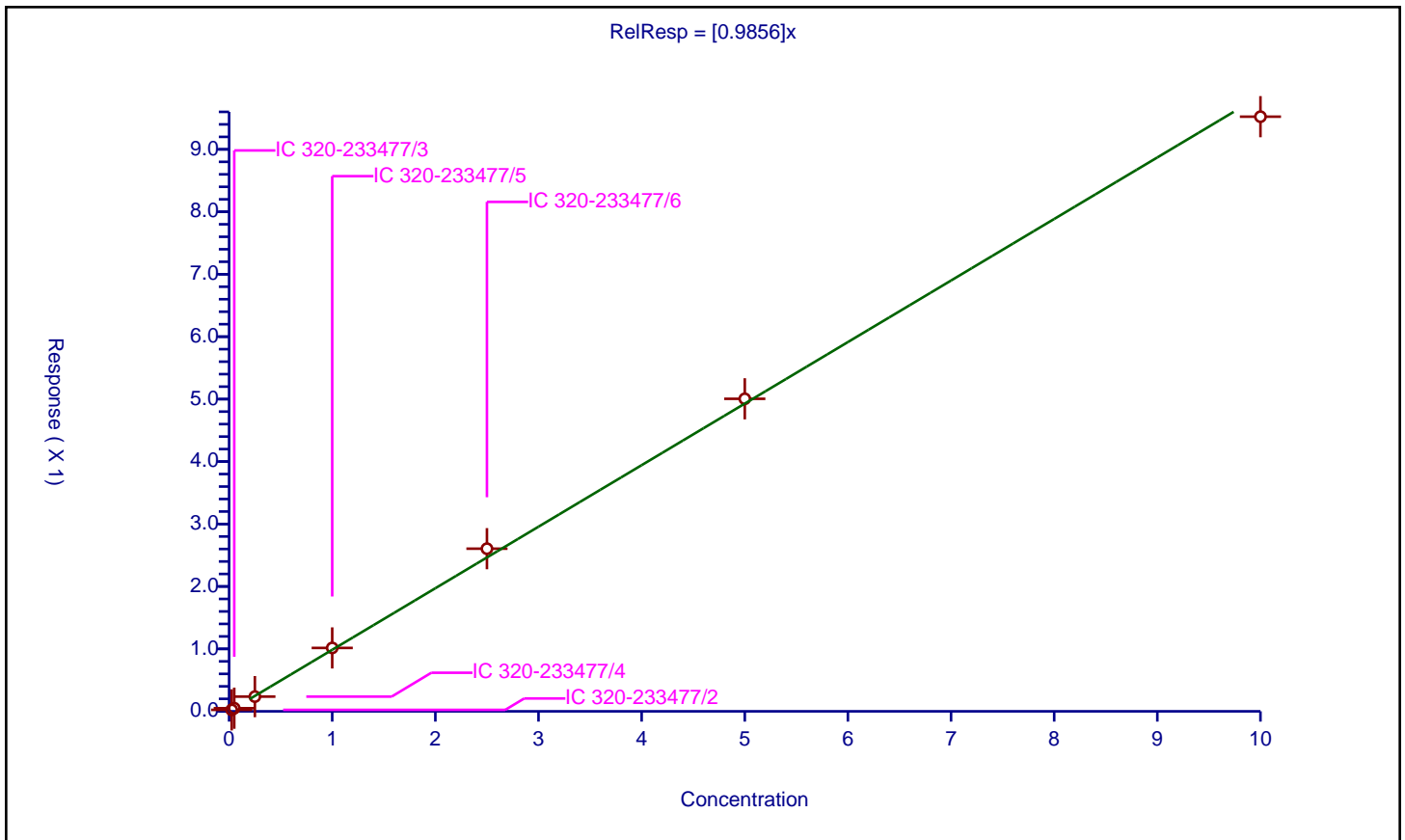
/ Perfluorooctane Sulfonamide

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base:
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.9856

Error Coefficients	
Standard Error:	9520000
Relative Standard Error:	4.0
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.023618	2.5	5863894.0	0.944731	Y
2	IC 320-233477/3	0.05	0.050075	2.5	6150410.0	1.001494	Y
3	IC 320-233477/4	0.25	0.235594	2.5	5880733.0	0.942376	Y
4	IC 320-233477/5	1.0	1.015474	2.5	6072674.0	1.015474	Y
5	IC 320-233477/6	2.5	2.604692	2.5	5643811.0	1.041877	Y
6	IC 320-233477/7	5.0	5.004977	2.5	5338756.0	1.000995	Y
7	IC 320-233477/8	10.0	9.523158	2.5	5176580.0	0.952316	Y



Calibration

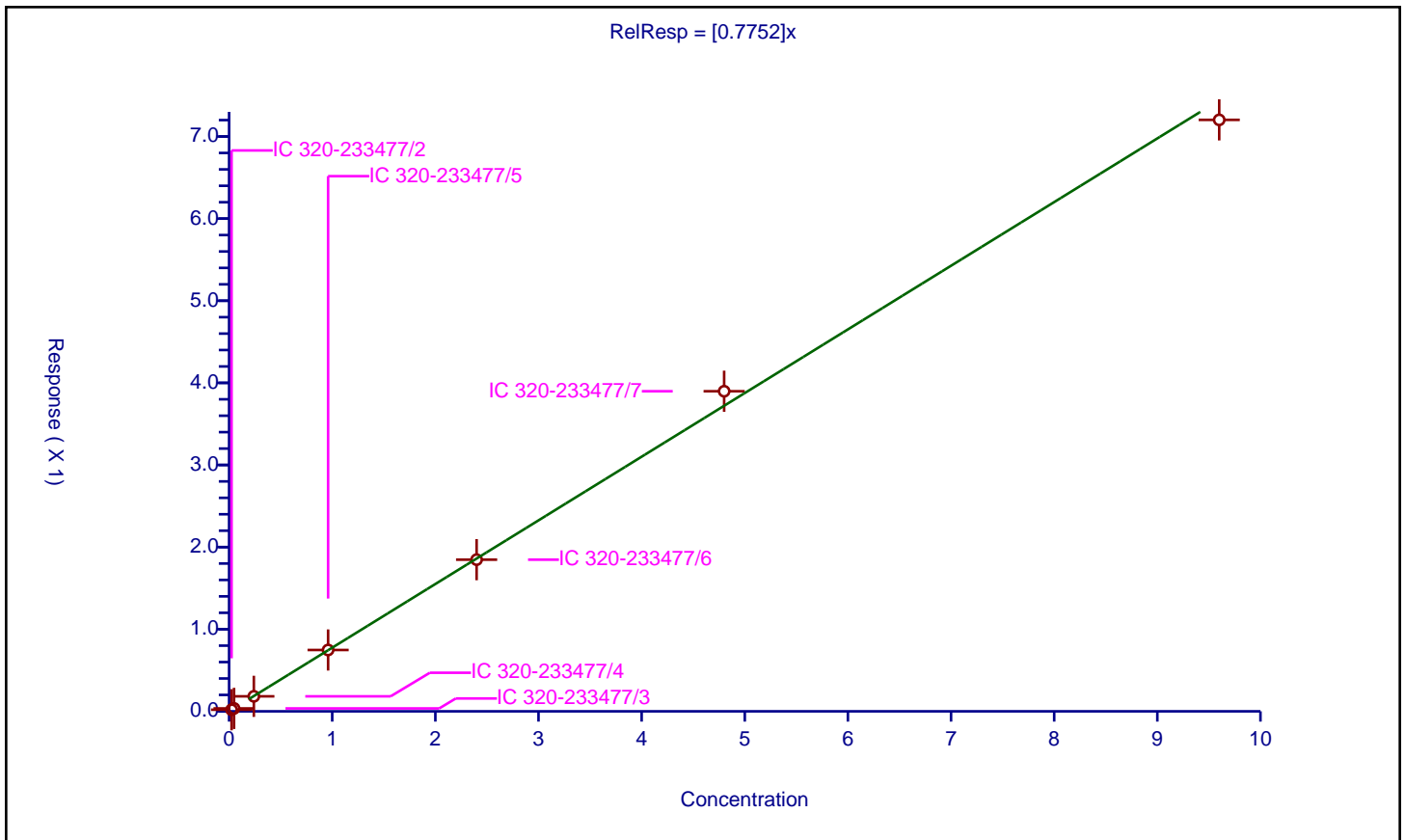
/ Perfluorononanesulfonic acid

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base:
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.7752

Error Coefficients	
Standard Error:	5500000
Relative Standard Error:	3.6
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.024	0.019514	2.39	3735610.0	0.813091	Y
2	IC 320-233477/3	0.048	0.035611	2.39	4069838.0	0.741901	Y
3	IC 320-233477/4	0.24	0.182711	2.39	3725581.0	0.761294	Y
4	IC 320-233477/5	0.96	0.747017	2.39	3832872.0	0.778143	Y
5	IC 320-233477/6	2.4	1.846875	2.39	3715442.0	0.769531	Y
6	IC 320-233477/7	4.8	3.898163	2.39	3560852.0	0.812117	Y
7	IC 320-233477/8	9.6	7.202726	2.39	3902400.0	0.750284	Y



Calibration

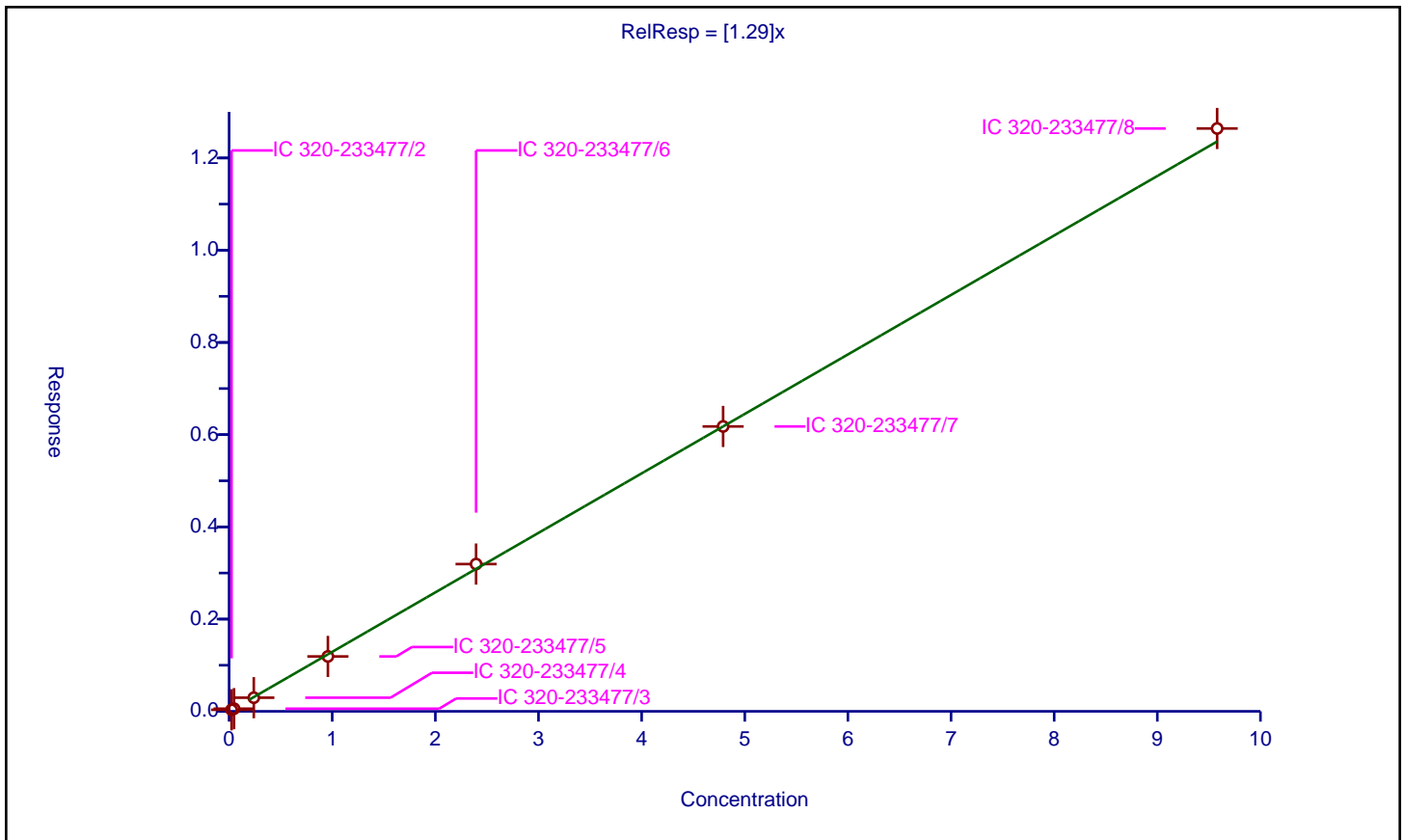
/ 1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base:
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.29

Error Coefficients	
Standard Error:	2270000
Relative Standard Error:	5.3
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.02395	0.033642	2.395	1246262.0	1.404681	Y
2	IC 320-233477/3	0.0479	0.057717	2.395	1358867.0	1.204938	Y
3	IC 320-233477/4	0.2395	0.295795	2.395	1290698.0	1.235053	Y
4	IC 320-233477/5	0.958	1.190223	2.395	1241456.0	1.242404	Y
5	IC 320-233477/6	2.395	3.193546	2.395	1060685.0	1.333422	Y
6	IC 320-233477/7	4.79	6.177927	2.395	992916.0	1.289755	Y
7	IC 320-233477/8	9.58	12.639871	2.395	887172.0	1.319402	Y



Calibration

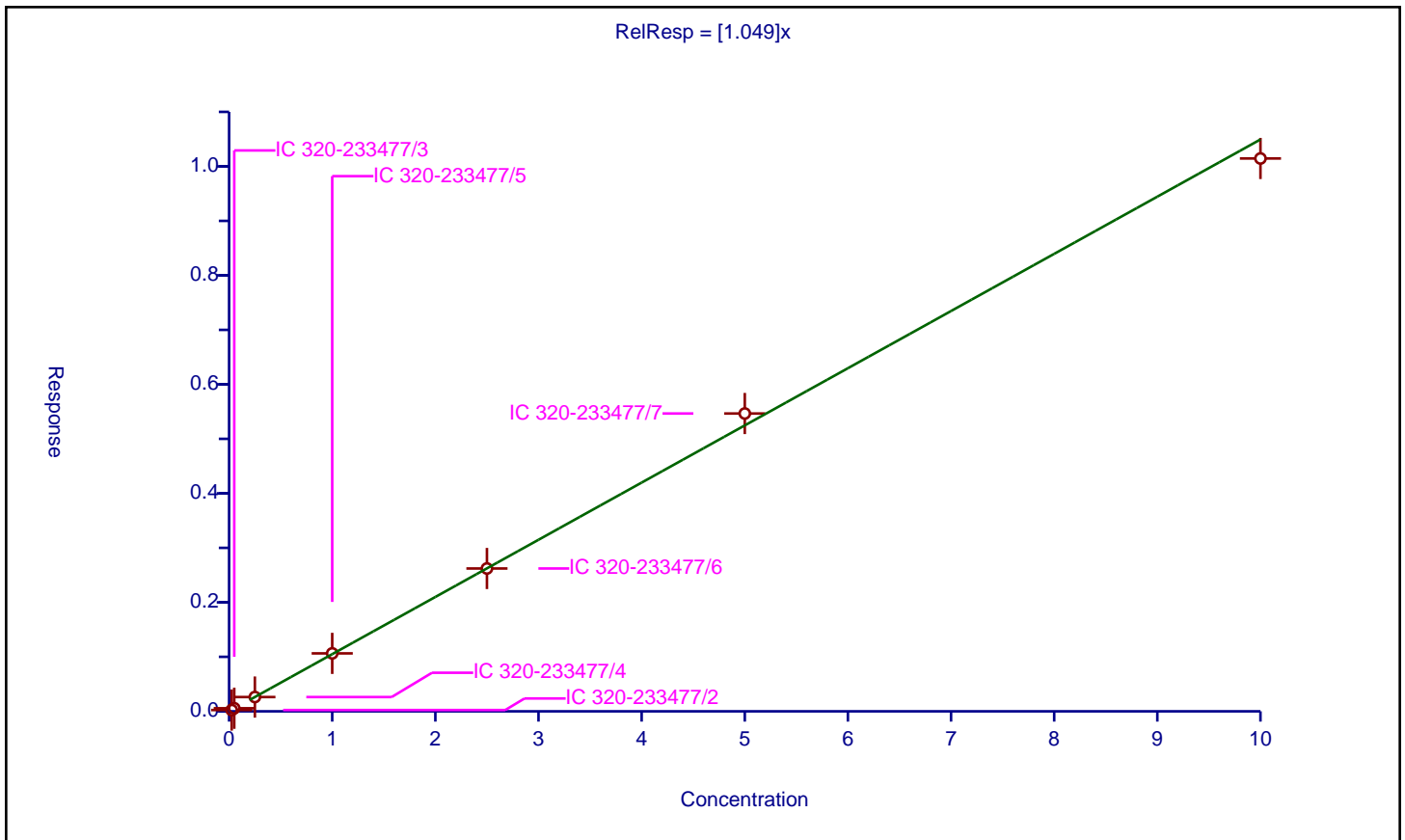
/ Perfluorodecanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.049

Error Coefficients	
Standard Error:	5330000
Relative Standard Error:	5.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.023668	2.5	3206069.0	0.946736	Y
2	IC 320-233477/3	0.05	0.05651	2.5	3274309.0	1.130208	Y
3	IC 320-233477/4	0.25	0.262265	2.5	3265845.0	1.049061	Y
4	IC 320-233477/5	1.0	1.063612	2.5	3225992.0	1.063612	Y
5	IC 320-233477/6	2.5	2.621069	2.5	3096188.0	1.048428	Y
6	IC 320-233477/7	5.0	5.46526	2.5	2641138.0	1.093052	Y
7	IC 320-233477/8	10.0	10.145014	2.5	2747254.0	1.014501	Y



Calibration

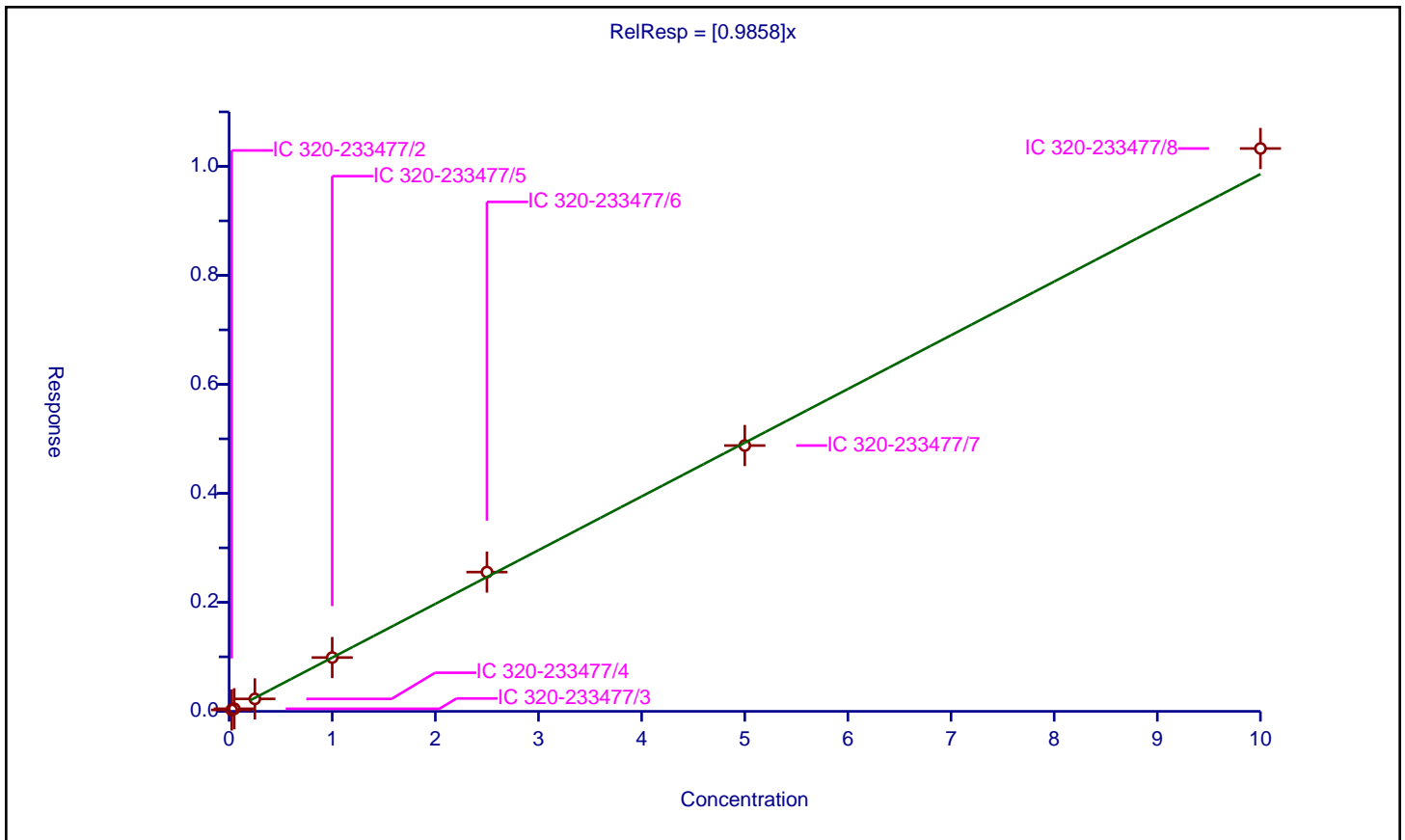
/ N-methyl perfluorooctane sulfonamidoacetic acid

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base:
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.9858

Error Coefficients	
Standard Error:	2420000
Relative Standard Error:	4.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.02559	2.5	1215393.0	1.02362	Y
2	IC 320-233477/3	0.05	0.047361	2.5	1276369.0	0.947218	Y
3	IC 320-233477/4	0.25	0.228194	2.5	1236119.0	0.912776	Y
4	IC 320-233477/5	1.0	0.986819	2.5	1320092.0	0.986819	Y
5	IC 320-233477/6	2.5	2.555182	2.5	1216339.0	1.022073	Y
6	IC 320-233477/7	5.0	4.877654	2.5	1218514.0	0.975531	Y
7	IC 320-233477/8	10.0	10.328075	2.5	1276287.0	1.032807	Y



Calibration

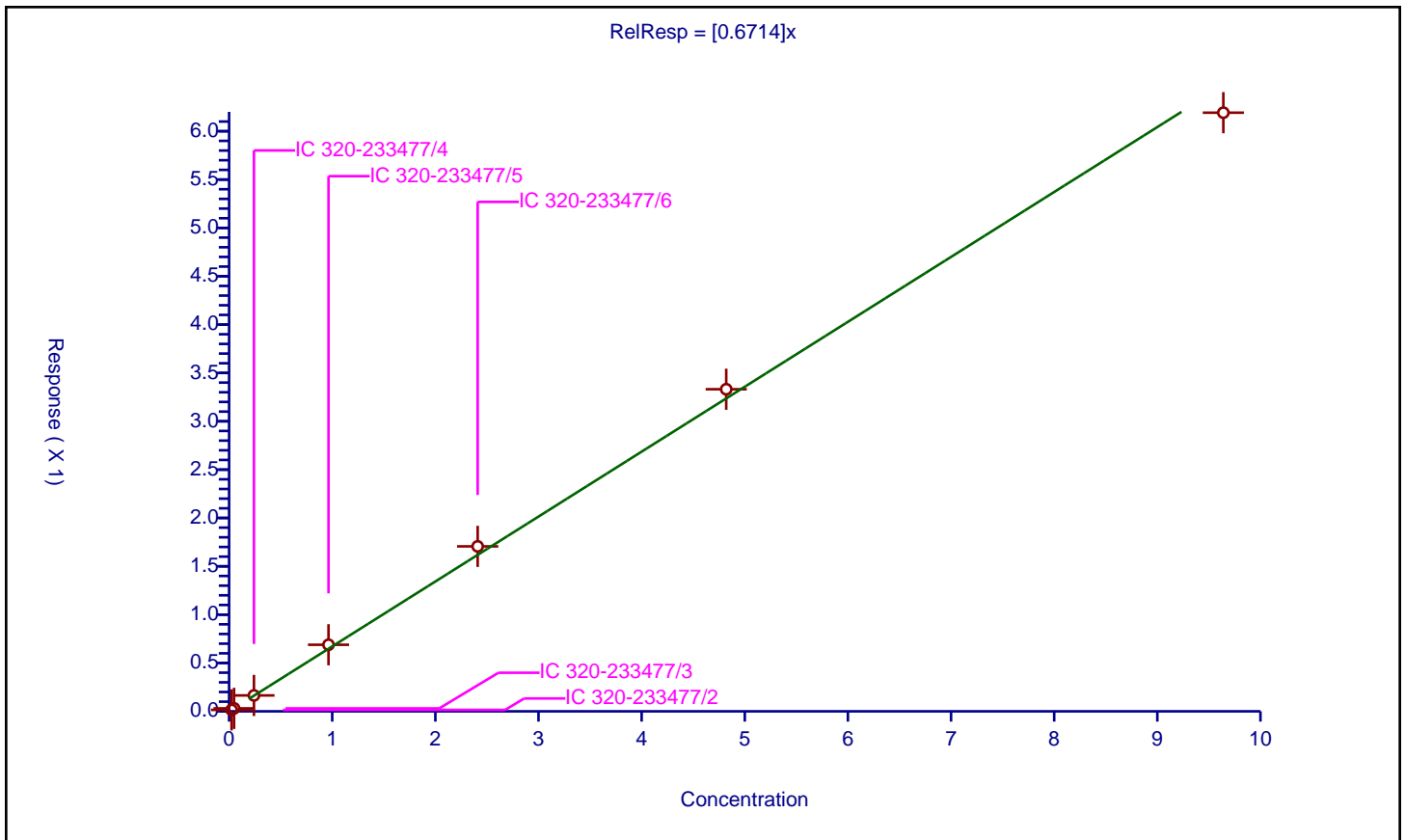
/ Perfluorodecane Sulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.6714

Error Coefficients	
Standard Error:	4750000
Relative Standard Error:	5.4
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.0241	0.015003	2.39	3735610.0	0.622533	Y
2	IC 320-233477/3	0.0482	0.030788	2.39	4069838.0	0.638747	Y
3	IC 320-233477/4	0.241	0.164641	2.39	3725581.0	0.683156	Y
4	IC 320-233477/5	0.964	0.68841	2.39	3832872.0	0.714119	Y
5	IC 320-233477/6	2.41	1.70619	2.39	3715442.0	0.707963	Y
6	IC 320-233477/7	4.82	3.33137	2.39	3560852.0	0.691156	Y
7	IC 320-233477/8	9.64	6.19165	2.39	3902400.0	0.642287	Y



Calibration

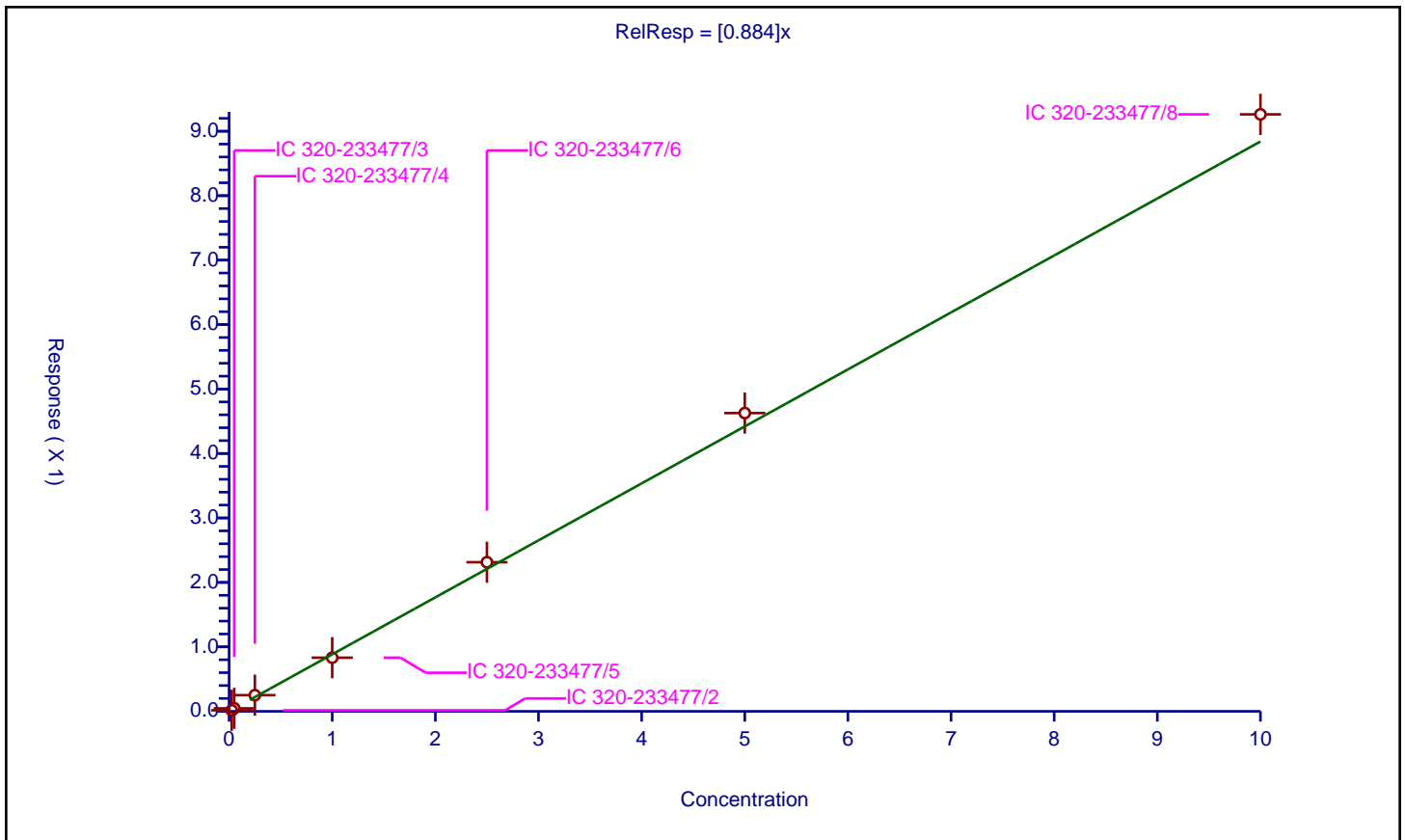
/ N-ethyl perfluorooctane sulfonamidoacetic acid

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base:
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.884

Error Coefficients	
Standard Error:	2040000
Relative Standard Error:	13.1
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.981

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.016159	2.5	1291362.0	0.646372	Y
2	IC 320-233477/3	0.05	0.046504	2.5	1427681.0	0.930075	Y
3	IC 320-233477/4	0.25	0.250696	2.5	1297377.0	1.002785	Y
4	IC 320-233477/5	1.0	0.832213	2.5	1412562.0	0.832213	Y
5	IC 320-233477/6	2.5	2.313147	2.5	1230676.0	0.925259	Y
6	IC 320-233477/7	5.0	4.627308	2.5	1179674.0	0.925462	Y
7	IC 320-233477/8	10.0	9.261434	2.5	1167600.0	0.926143	Y



Calibration

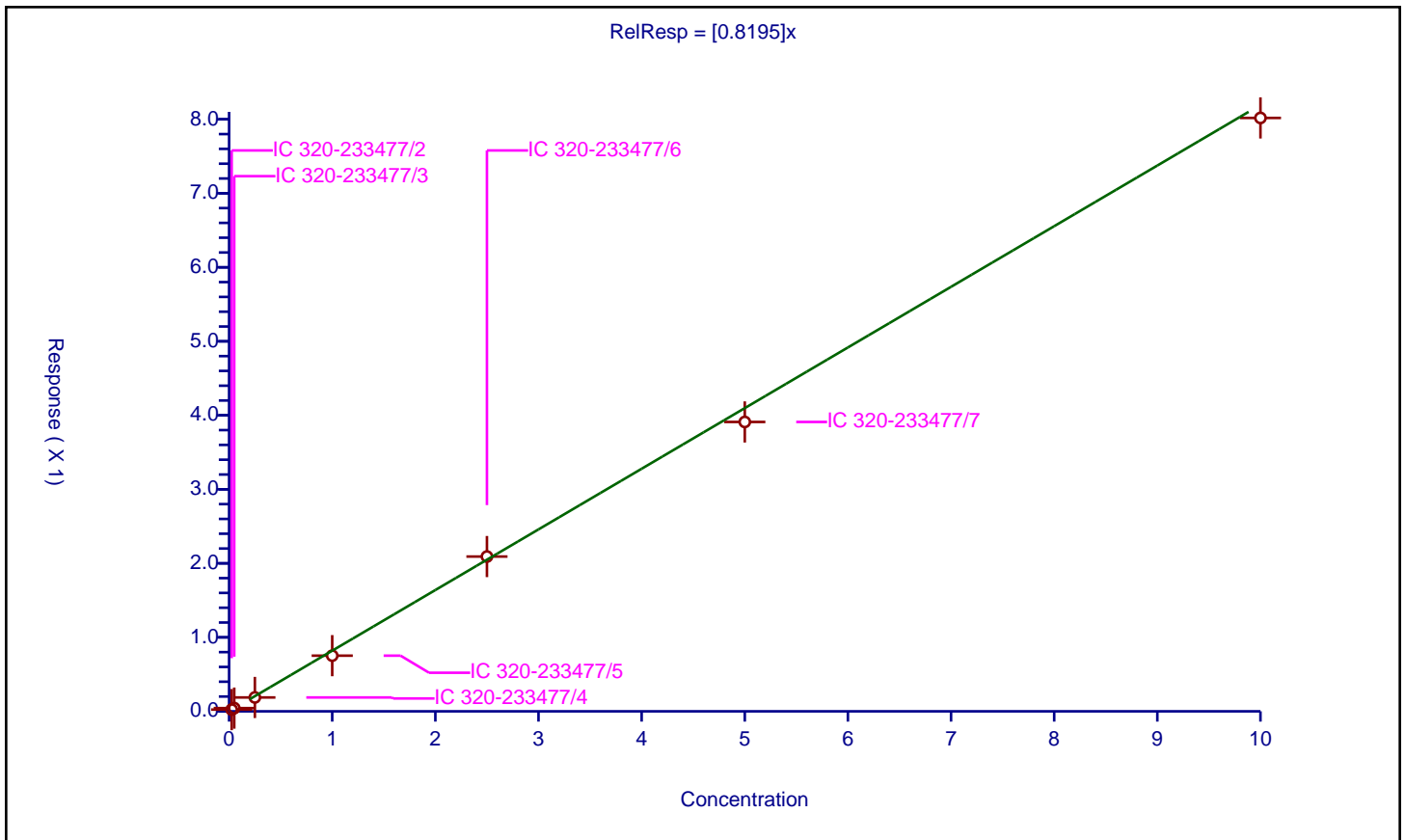
/ Perfluoroundecanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.8195

Error Coefficients	
Standard Error:	3500000
Relative Standard Error:	8.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.990

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.023585	2.5	2509506.0	0.943413	Y
2	IC 320-233477/3	0.05	0.043495	2.5	2825527.0	0.869891	Y
3	IC 320-233477/4	0.25	0.187568	2.5	2653699.0	0.750273	Y
4	IC 320-233477/5	1.0	0.752193	2.5	2739039.0	0.752193	Y
5	IC 320-233477/6	2.5	2.091338	2.5	2509304.0	0.836535	Y
6	IC 320-233477/7	5.0	3.910313	2.5	2361908.0	0.782063	Y
7	IC 320-233477/8	10.0	8.018188	2.5	2308936.0	0.801819	Y



Calibration

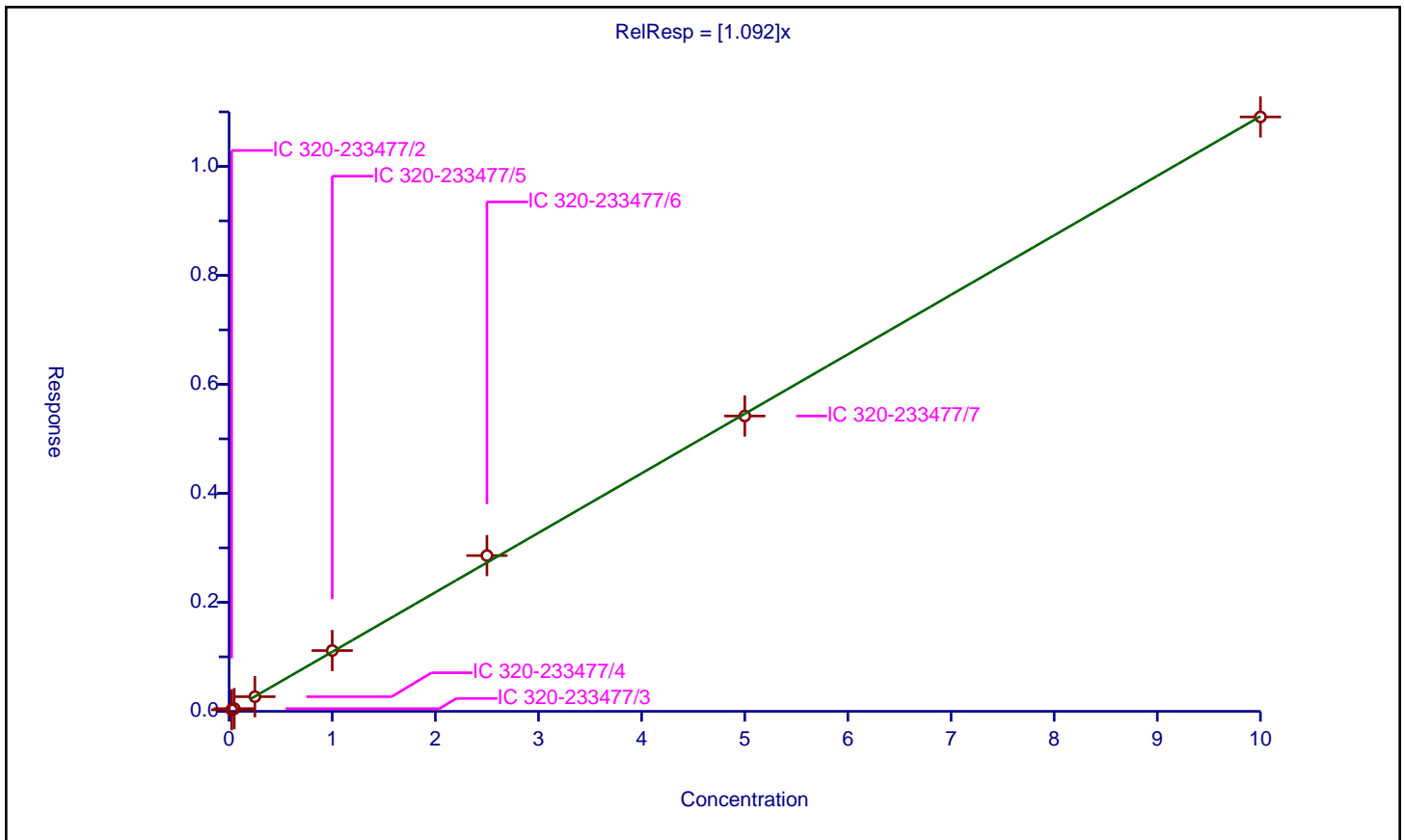
/ Perfluorododecanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.092

Error Coefficients	
Standard Error:	5280000
Relative Standard Error:	4.5
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.02844	2.5	2612394.0	1.137616	Y
2	IC 320-233477/3	0.05	0.049875	2.5	2796780.0	0.997504	Y
3	IC 320-233477/4	0.25	0.268647	2.5	2756034.0	1.074588	Y
4	IC 320-233477/5	1.0	1.115377	2.5	2741167.0	1.115377	Y
5	IC 320-233477/6	2.5	2.858349	2.5	2524421.0	1.14334	Y
6	IC 320-233477/7	5.0	5.419481	2.5	2508500.0	1.083896	Y
7	IC 320-233477/8	10.0	10.907382	2.5	2588991.0	1.090738	Y



Calibration

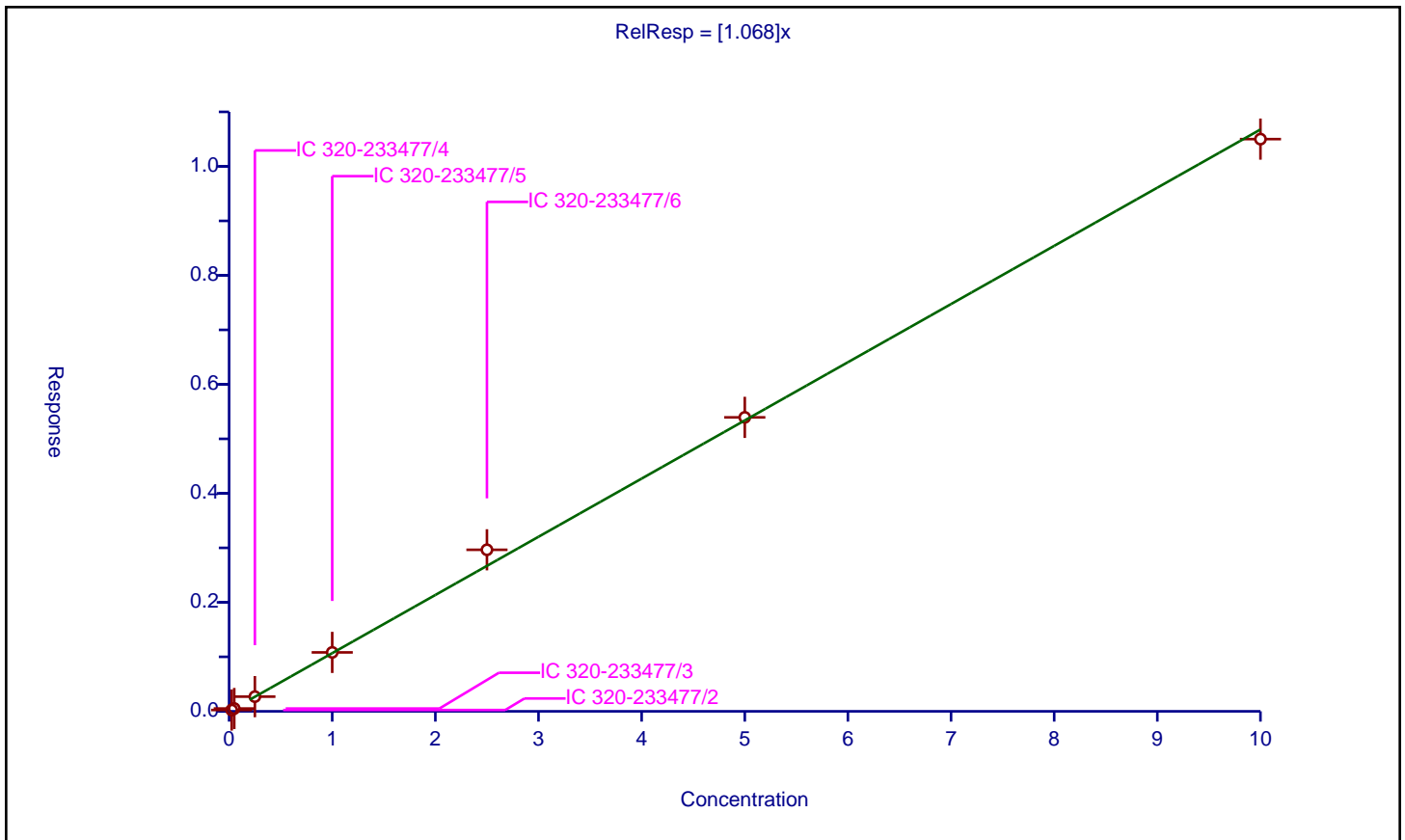
/ Perfluorotridecanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.068

Error Coefficients	
Standard Error:	5130000
Relative Standard Error:	6.2
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.024218	2.5	2612394.0	0.968728	Y
2	IC 320-233477/3	0.05	0.051461	2.5	2796780.0	1.029219	Y
3	IC 320-233477/4	0.25	0.269904	2.5	2756034.0	1.079617	Y
4	IC 320-233477/5	1.0	1.081554	2.5	2741167.0	1.081554	Y
5	IC 320-233477/6	2.5	2.964363	2.5	2524421.0	1.185745	Y
6	IC 320-233477/7	5.0	5.394361	2.5	2508500.0	1.078872	Y
7	IC 320-233477/8	10.0	10.5003	2.5	2588991.0	1.05003	Y



Calibration

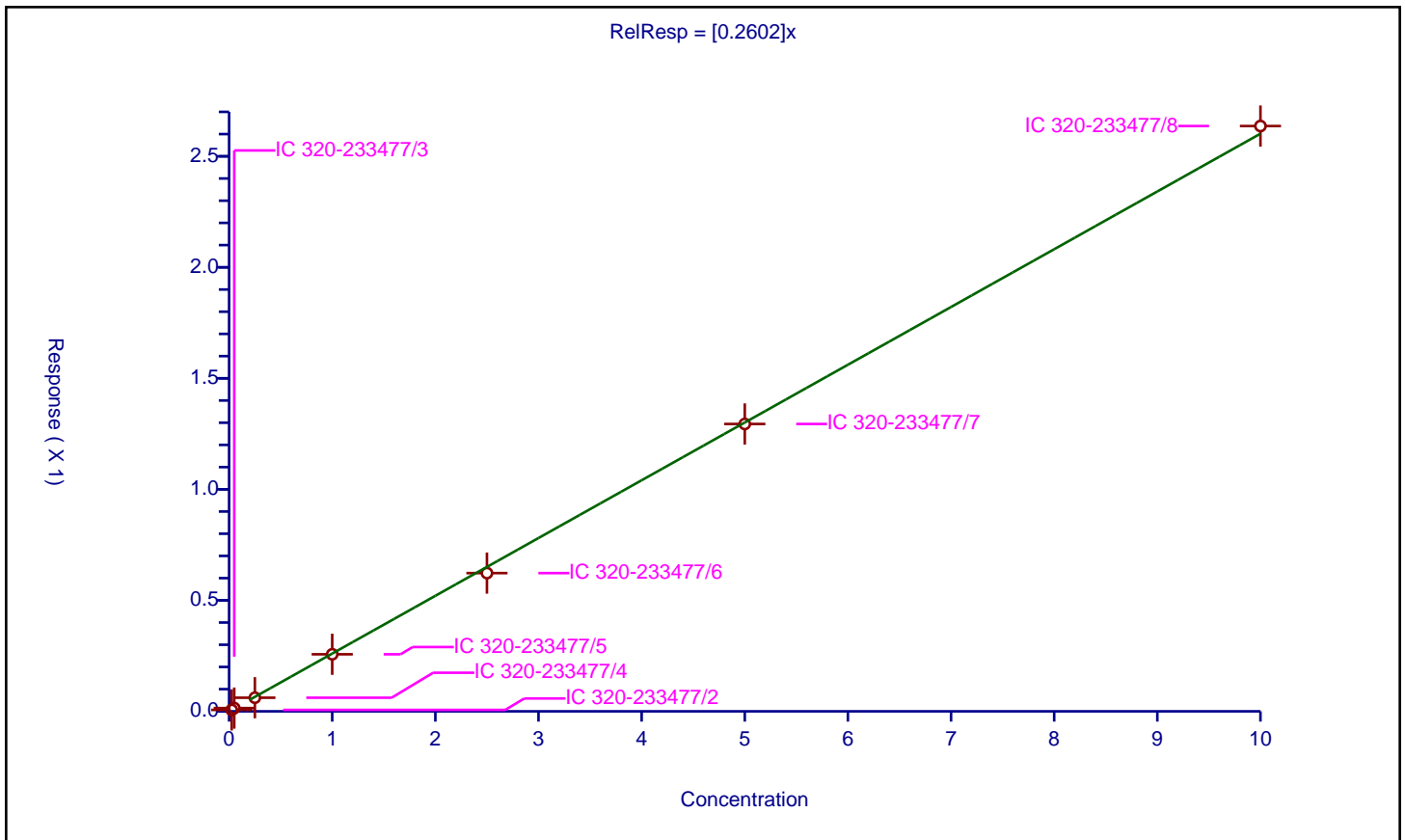
/ Perfluorotetradecanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base:
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.2602

Error Coefficients	
Standard Error:	1340000
Relative Standard Error:	5.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-233477/2	0.025	0.006388	2.5	2682209.0	0.255536	Y
2	IC 320-233477/3	0.05	0.014594	2.5	2667637.0	0.291888	Y
3	IC 320-233477/4	0.25	0.061333	2.5	2913500.0	0.24533	Y
4	IC 320-233477/5	1.0	0.256927	2.5	2848985.0	0.256927	Y
5	IC 320-233477/6	2.5	0.62267	2.5	2737226.0	0.249068	Y
6	IC 320-233477/7	5.0	1.294262	2.5	2597628.0	0.258852	Y
7	IC 320-233477/8	10.0	2.63624	2.5	2753301.0	0.263624	Y



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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930

SDG No.: _____

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

Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-234930/2	2018.07.19LLICAL_002.d
Level 2	IC 320-234930/3	2018.07.19LLICAL_003.d
Level 3	IC 320-234930/4	2018.07.19LLICAL_004.d
Level 4	IC 320-234930/5	2018.07.19LLICAL_005.d
Level 5	IC 320-234930/6	2018.07.19LLICAL_006.d
Level 6	IC 320-234930/7	2018.07.19LLICAL_007.d
Level 7	IC 320-234930/8	2018.07.19LLICAL_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
Perfluorobutanoic acid (PFBA)	1.0657 0.9915	1.0426 0.9803	0.9743	0.9770	0.9973	AveID		1.0041			3.6		20.0				
Perfluoropentanoic acid (PFPeA)	1.3279 1.1889	1.3238 1.1906	1.1967	1.1389	1.2176	AveID		1.2263			5.9		20.0				
Perfluorobutanesulfonic acid (PFBS)	77.326 79.272	78.334 75.062	75.678	77.769	78.435	AveID		77.411			2.0		20.0				
4:2 FTS	14.357 12.828	12.621 12.449	12.801	13.179	13.607	AveID		13.120			5.1		20.0				
Perfluorohexanoic acid (PFHxA)	1.2658 1.0749	1.1081 1.0380	1.0775	1.0052	1.0404	AveID		1.0871			7.9		20.0				
Perfluoropentanesulfonic acid	75.149 71.203	72.005 67.907	72.861	73.951	75.370	AveID		72.635			3.6		20.0				
Perfluoroheptanoic acid (PFHpA)	1.2795 1.1091	1.1701 1.1046	1.1123	1.1095	1.1344	AveID		1.1456			5.5		20.0				
Perfluorohexanesulfonic acid (PFHxS)	++++ 1.1074	1.2811 1.1115	1.1292	1.0923	1.1402	AveID		1.1436			6.1		20.0				
6:2 FTS	++++ 1.7094	1.5793 1.6518	1.6077	1.5538	1.6562	AveID		1.6264			3.5		20.0				
Perfluorooctanoic acid (PFOA)	1.3981 1.1966	1.2137 1.1777	1.2600	1.1566	1.2146	AveID		1.2310			6.5		20.0				
Perfluoroheptanesulfonic Acid (PFHpS)	1.2902 1.4109	1.3230 1.2856	1.3775	1.3593	1.3463	AveID		1.3418			3.4		20.0				
Perfluorononanoic acid (PFNA)	1.2557 1.1107	1.1428 1.1186	1.0482	1.0918	1.1339	AveID		1.1288			5.7		20.0				
Perfluorooctanesulfonic acid (PFOS)	1.3968 1.1686	1.1654 1.1416	1.1585	1.1147	1.1399	AveID		1.1836			8.1		20.0				
Perfluorooctane Sulfonamide (FOSA)	1.1513 0.9961	1.0268 0.9239	1.0164	1.0140	1.0102	AveID		1.0198			6.6		20.0				

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

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

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

Analy Batch No.: 234930

SDG No.: _____

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/19/2018 12:09

Calibration End Date: 07/19/2018 12:56

Calibration ID: 40194

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
8:2 FTS	1.4257 1.2899	1.4010 1.1867	1.3318	1.3734	1.2906	AveID		1.3284			6.1		20.0				
Perfluorononanesulfonic acid	0.7604 0.8323	0.8775 0.8064	0.7965	0.7838	0.8349	AveID		0.8131			4.7		20.0				
Perfluorodecanoic acid (PFDA)	1.1799 1.0765	1.0889 1.0531	1.0431	1.0160	1.0836	AveID		1.0773			4.8		20.0				
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	1.0493 1.0097	1.0359 1.0533	0.9524	0.9399	0.9860	AveID		1.0038			4.6		20.0				
Perfluorodecanesulfonic acid (PFDS)	0.7273 0.7656	0.5860 0.7164	0.6978	0.7114	0.7025	AveID		0.7010			7.9		20.0				
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.7061 0.8659	1.0497 0.9322	0.8413	0.8332	0.9000	AveID		0.8755			12.0		20.0				
Perfluoroundecanoic acid (PFUnA)	0.8704 0.7505	0.8075 0.8068	0.7432	0.7571	0.7751	AveID		0.7872			5.7		20.0				
Perfluorododecanoic acid (PFDoA)	1.0881 1.1120	1.1817 1.1155	1.0876	1.0980	1.0502	AveID		1.1047			3.6		20.0				
Perfluorotridecanoic Acid (PFTriA)	1.3376 1.0853	1.2591 1.0693	1.0534	1.0708	0.9818	AveID		1.1225			11.3		20.0				
Perfluorotetradecanoic acid (PFTeA)	0.2848 0.2527	0.2996 0.2438	0.2417	0.2676	0.2526	AveID		0.2633			8.3		20.0				
13C4 PFBA	1.2205 1.2787	1.2003 1.3466	1.2592	1.2293	1.2257	Ave		1.2515			3.9		20.0				
13C5 PFPeA	0.8491 0.8926	0.8371 0.9182	0.8924	0.8539	0.8567	Ave		0.8714			3.4		20.0				
13C3-PFBS	0.0224 0.0228	0.0219 0.0239	0.0225	0.0219	0.0222	Ave		0.0225			3.1		20.0				
13C2 PFHxA	1.0007 1.0129	1.0070 1.0521	1.0278	1.0177	1.0090	Ave		1.0182			1.7		20.0				
13C4-PFHpA	0.9679 0.9982	0.9487 0.9964	1.0056	0.9771	1.0038	Ave		0.9854			2.2		20.0				
18O2 PFHxS	1.3227 1.3237	1.2881 1.3467	1.3580	1.3268	1.2730	Ave		1.3198			2.3		20.0				
M2-6:2FTS	0.1916 0.1858	0.1979 0.1931	0.2042	0.1804	0.1791	Ave		0.1903			4.8		20.0				
13C4 PFOA	0.9407 0.9523	0.9612 0.9528	0.9769	0.9560	0.9252	Ave		0.9522			1.7		20.0				
13C4 PFOS	0.9511 0.9408	0.9139 0.9835	0.9444	0.9427	0.9489	Ave		0.9465			2.2		20.0				
13C5 PFNA	0.8064 0.8039	0.7893 0.7914	0.8530	0.8076	0.7823	Ave		0.8048			2.9		20.0				

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
13C8 FOSA	1.4328 1.3846	1.4051 1.3614	1.4694	1.4074	1.3737	Ave		1.4049			2.6		20.0				
M2-8:2FTS	0.2676 0.2337	0.2493 0.2397	0.2601	0.2402	0.2381	Ave		0.2470			5.1		20.0				
13C2 PFDA	0.7300 0.7016	0.7123 0.6785	0.7837	0.7584	0.7162	Ave		0.7258			4.9		20.0				
d3-NMeFOSAA	0.3099 0.3105	0.3074 0.3338	0.3147	0.3131	0.3058	Ave		0.3136			3.0		20.0				
d5-NEtFOSAA	0.3591 0.3346	0.3477 0.3292	0.3895	0.3602	0.3385	Ave		0.3512			5.9		20.0				
13C2 PUnA	0.6564 0.6022	0.6406 0.6107	0.6835	0.6363	0.6116	Ave		0.6345			4.6		20.0				
13C2 PFDoA	0.6246 0.6474	0.6176 0.6560	0.6784	0.6376	0.6597	Ave		0.6459			3.3		20.0				
13C2-PFTeDA	0.5966 0.6183	0.6130 0.6691	0.6519	0.5661	0.6182	Ave		0.6190			5.5		20.0				
13C2-PFHxDA	1.0273 1.0072	0.9126 1.0209	1.0493	0.9238	0.9140	Ave		0.9793			6.1		20.0				

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930

SDG No.: _____

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

Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-234930/2	2018.07.19LLICAL_002.d
Level 2	IC 320-234930/3	2018.07.19LLICAL_003.d
Level 3	IC 320-234930/4	2018.07.19LLICAL_004.d
Level 4	IC 320-234930/5	2018.07.19LLICAL_005.d
Level 5	IC 320-234930/6	2018.07.19LLICAL_006.d
Level 6	IC 320-234930/7	2018.07.19LLICAL_007.d
Level 7	IC 320-234930/8	2018.07.19LLICAL_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7				LVL 6	LVL 7			
Perfluorobutanoic acid (PFBA)		AveID	52670 9696851	105456 19024514	482861	1873207	4834495	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	45657 8116517	93384 15754215	420319	1516785	4125780	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	62042 12218559	127942 22855887	593344	2345694	6089802	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	12171 2089150	21779 4004970	106043	420002	1116204	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	51298 8327454	94033 15739825	435878	1595558	4151685	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanesulfonic acid		AveID	63978 11645386	124789 21940048	606155	2366814	6209317	0.0235 4.69	0.0469 9.38	0.235	0.938	2.35
Perfluoroheptanoic acid (PFHpA)		AveID	50147 8467214	93551 15861987	440214	1690871	4504008	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	++++ 10201210	126552 19629490	549204	2056963	5224139	++++ 4.55	0.0455 9.10	0.228	0.910	2.28
6:2 FTS		AveID	++++ 2302708	24967 4357116	122487	414355	1112155	++++ 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	53308 8724041	98416 16186908	484925	1726255	4449174	0.0250 5.01	0.0501 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	47308 9664303	97002 17346927	487403	1902646	4810287	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorononanoic acid (PFNA)		AveID	41007 6828387	76014 12757725	351911	1375214	3508214	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctanesulfonic acid (PFOS)		AveID	49924 7802715	83291 15014814	399592	1521008	3970364	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorooctane Sulfonamide (FOSA)		AveID	66797 10548466	121582 18126132	587792	2225796	5488897	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
8:2 FTS		AveID	14803 2208807	28196 3926521	130625	493007	1164233	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40

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

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

Analy Batch No.: 234930

SDG No.: _____

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/19/2018 12:09

Calibration End Date: 07/19/2018 12:56

Calibration ID: 40194

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
Perfluorononanesulfonic acid		AveID	28114 5748732	64875 10972799	284213	1106418	3008282	0.0240 4.80	0.0480 9.60	0.240	0.960	2.40
Perfluorodecanoic acid (PFDA)		AveID	34878 5775807	65359 10297645	321742	1201844	3069470	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	13169 2397468	26839 5066769	117955	459077	1192671	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	27003 5310555	43503 9788549	250025	1008302	2541789	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	10268 2215550	30754 4422149	128945	468159	1205053	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	23135 3456566	43590 7100567	199917	751363	1874945	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid (PFDoA)		AveID	27523 5505258	61498 10545821	290395	1092036	2740213	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	33833 5373341	65530 10108462	281272	1064933	2561741	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	6880 1194747	15477 2351179	62002	236302	617686	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	4942436 4889821	5057478 4851709	4955778	4793333	4847784	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C5 PFPeA	13PF OA	Ave	3438228 3413396	3527106 3308147	3512376	3329350	3388559	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	84409 81078	85914 80084	82484	79330	81682	2.33 2.33	2.33 2.33	2.33	2.33	2.33
13C2 PFHxA	13PF OA	Ave	4052458 3873424	4243020 3790746	4045162	3968266	3990656	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PF OA	Ave	3919328 3817190	3997421 3590021	3957747	3810067	3970331	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5066859 4788343	5134486 4589887	5055888	4894221	4763091	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	736949 674960	792094 660830	763465	668108	672928	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	3809215 3641760	4050166 3432703	3844808	3727566	3659304	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	3681992 3439242	3681269 3387461	3553250	3514122	3588037	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	3265651 3073959	3325893 2851303	3357135	3148950	3093998	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	5802008 5294769	5920583 4904839	5782925	5487673	5433217	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	1038289 856171	1006292 827207	980840	897394	902064	2.40 2.40	2.40 2.40	2.40	2.40	2.40

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930

SDG No.: _____

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

Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7				LVL 6	LVL 7			
13C2 PFDA	13PF OA	Ave	2955913 2682731	3001274 2444489	3084448	2957312	2832614	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	1254985 1187210	1295422 1202587	1238553	1221019	1209562	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d5-NEtFOSAA	13PF OA	Ave	1454179 1279332	1464896 1185901	1532769	1404624	1338986	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFunA	13PF OA	Ave	2658013 2302925	2699230 2200298	2689968	2481019	2418893	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDoA	13PF OA	Ave	2529382 2475466	2602208 2363413	2670150	2486312	2609131	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	2415938 2364341	2583089 2410726	2565538	2207313	2445039	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	4159895 3851333	3845258 3678172	4129611	3601873	3615084	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930

SDG No.: _____

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

Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-234930/2	2018.07.19LLICAL_002.d
Level 2	IC 320-234930/3	2018.07.19LLICAL_003.d
Level 3	IC 320-234930/4	2018.07.19LLICAL_004.d
Level 4	IC 320-234930/5	2018.07.19LLICAL_005.d
Level 5	IC 320-234930/6	2018.07.19LLICAL_006.d
Level 6	IC 320-234930/7	2018.07.19LLICAL_007.d
Level 7	IC 320-234930/8	2018.07.19LLICAL_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid (PFBA)	6.1 -2.4	3.8	-3.0	-2.7	-0.7	-1.3	30 30	30	30	30	30	30
Perfluoropentanoic acid (PFPeA)	8.3 -2.9	7.9	-2.4	-7.1	-0.7	-3.1	30 30	30	30	30	30	30
Perfluorobutanesulfonic acid (PFBS)	-0.1 -3.0	1.2	-2.2	0.5	1.3	2.4	30 30	30	30	30	30	30
4:2 FTS	9.4 -5.1	-3.8	-2.4	0.4	3.7	-2.2	30 30	30	30	30	30	30
Perfluorohexanoic acid (PFHxA)	16.4 -4.5	1.9	-0.9	-7.5	-4.3	-1.1	30 30	30	30	30	30	30
Perfluoropentanesulfonic acid	3.5 -6.5	-0.9	0.3	1.8	3.8	-2.0	30 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	11.7 -3.6	2.1	-2.9	-3.2	-1.0	-3.2	30 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	++++ -2.8	12.0	-1.3	-4.5	-0.3	-3.2	30	30	30	30	30	30
6:2 FTS	++++ 1.6	-2.9	-1.1	-4.5	1.8	5.1	30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	13.6 -4.3	-1.4	2.4	-6.0	-1.3	-2.8	30 30	30	30	30	30	30
Perfluoroheptanesulfonic Acid (PFHpS)	-3.8 -4.2	-1.4	2.7	1.3	0.3	5.1	30 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	11.2 -0.9	1.2	-7.1	-3.3	0.4	-1.6	30 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	18.0 -3.6	-1.5	-2.1	-5.8	-3.7	-1.3	30 30	30	30	30	30	30
Perfluorooctane Sulfonamide (FOSA)	12.9 -9.4	0.7	-0.3	-0.6	-0.9	-2.3	30 30	30	30	30	30	30
8:2 FTS	7.3 -10.7	5.5	0.2	3.4	-2.8	-2.9	30 30	30	30	30	30	30

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

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
Perfluorononanesulfonic acid	-6.5 -0.8	7.9	-2.0	-3.6	2.7	2.4	30 30	30	30	30	30	30
Perfluorodecanoic acid (PFDA)	9.5 -2.2	1.1	-3.2	-5.7	0.6	-0.1	30 30	30	30	30	30	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	4.5 4.9	3.2	-5.1	-6.4	-1.8	0.6	30 30	30	30	30	30	30
Perfluorodecanesulfonic acid (PFDS)	3.8 2.2	-16.4	-0.5	1.5	0.2	9.2	30 30	30	30	30	30	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	-19.3 6.5	19.9	-3.9	-4.8	2.8	-1.1	30 30	30	30	30	30	30
Perfluoroundecanoic acid (PFUnA)	10.6 2.5	2.6	-5.6	-3.8	-1.5	-4.7	30 30	30	30	30	30	30
Perfluorododecanoic acid (PFDoA)	-1.5 1.0	7.0	-1.6	-0.6	-4.9	0.7	30 30	30	30	30	30	30
Perfluorotridecanoic Acid (PFTriA)	19.2 -4.7	12.2	-6.2	-4.6	-12.5	-3.3	30 30	30	30	30	30	30
Perfluorotetradecanoic acid (PFTeA)	8.2 -7.4	13.8	-8.2	1.7	-4.0	-4.0	30 30	30	30	30	30	30

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_002.d
 Lims ID: IC L1 Full
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 19-Jul-2018 12:09:54 ALS Bottle#: 10 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L1-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 15:19:38 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK022

First Level Reviewer: roycea Date: 19-Jul-2018 13:10:00

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	1.435	1.435	0.0	0.526	4942436	2.44	97.5	44864	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.438	-0.003	1.000	52670	0.0265		106	15.4	M
D 3 13C5-PFPeA	267.90 > 223.00	1.756	1.750	0.006	0.644	3438228	2.44	97.4	58731	
4 Perfluoropentanoic acid										M
262.90 > 219.00	1.756	1.752	0.004	1.000	45657	0.0271		108	18.8	M
D 47 13C3-PFBS	301.90 > 83.00	1.801	1.795	0.006	0.660	84409	2.31	99.5	566	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.801	1.799	0.002	1.000	62042	0.0221		99.9	490	
298.90 > 99.00	1.801	1.799	0.002	1.000	27839		2.23(1.25-3.74)	99.9	353	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.026	2.017	0.009	1.125	12171	0.0256		109	671	
D 60 M2-4:2FTS	329.00 > 81.00	2.026	2.019	0.007	0.743	436597	NC		6711	
6 Perfluorohexanoic acid										M
313.00 > 269.00	2.060	2.056	0.004	1.000	51298	0.0291		116	113	M
313.00 > 119.00	2.060	2.056	0.004	1.000	3777		13.58(5.03-15.10)	116	82.0	M
D 7 13C2 PFHxA	315.00 > 270.00	2.060	2.058	0.002	0.755	4052458	2.46	98.3	76806	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.083	2.082	0.001	1.156	63978	0.0243		103	1603	
349.00 > 99.00	2.083	2.082	0.001	1.156	21825		2.93(1.36-4.07)	103	620	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.162	2.151	0.011	0.792	262612	NC		6484	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.162	2.153	0.009	1.000	10125	NC	86.9	
D 9 13C4-PFHpA	367.00	> 322.00	2.385	2.379	0.006	0.874	3919328	2.46	98.2	48259
10 Perfluoroheptanoic acid	363.00	> 319.00	2.385	2.380	0.005	1.000	50147	0.0279	112	105
	363.00	> 169.00	2.385	2.380	0.005	1.000	20789	2.41(1.13-3.40)	112	196
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.396	2.394	0.002	1.000	73812	0.0301	132	788
	399.00	> 99.00	2.396	2.394	0.002	1.000	24333	3.03(1.50-4.49)	132	210
D 11 18O2 PFHxS	403.00	> 84.00	2.396	2.395	0.001	0.878	5066859	2.37	100	44388
65 ADONA	377.00	> 251.00	2.430	2.421	0.009	0.787	120075	NC	2392	
	377.00	> 85.00	2.418	2.421	-0.003	0.784	68472	1.75(0.84-2.53)	586	
D 12 M2-6:2FTS	429.00	> 81.00	2.705	2.701	0.004	0.992	736949	2.39	101	14506
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.705	2.702	0.003	1.000	18037	0.0357	151	378
D 14 13C4 PFOA	417.00	> 372.00	2.728	2.725	0.003	1.000	3809215	2.47	98.8	42726
* 62 13C2-PFOA	415.00	> 370.00	2.728	2.725	0.003		4049444	2.50	36739	
15 Perfluorooctanoic acid	413.00	> 369.00	2.728	2.725	0.003	1.000	53308	0.0284	114	28.1
	413.00	> 169.00	2.728	2.725	0.003	1.000	26092	2.04(0.84-2.52)	114	156
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.735	2.733	0.002	0.886	47308	0.0229	96.2	1612
	449.00	> 99.00	2.743	2.733	0.010	0.889	13782	3.43(1.94-5.82)	96.2	329
D 18 13C4 PFOS	503.00	> 80.00	3.086	3.083	0.003	1.131	3681992	2.40	100	34955
D 19 13C5 PFNA	468.00	> 423.00	3.086	3.085	0.001	1.131	3265651	2.50	100	31911
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.094	3.086	0.008	1.002	49924	0.0274	118	938
	499.00	> 99.00	3.086	3.086	0.0	1.000	9363	5.33(2.31-6.93)	118	116
20 Perfluorononanoic acid	463.00	> 419.00	3.086	3.086	0.0	1.000	41007	0.0278	111	74.1
	463.00	> 169.00	3.086	3.086	0.0	1.000	10256	4.00(1.90-5.69)	111	336
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.293	3.291	0.002	1.067	61077	NC	689	
D 21 13C8 FOSA	506.00	> 78.00	3.415	3.413	0.002	1.252	5802008	2.55	102	41625
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.415	3.415	0.0	1.000	66797	0.0282	113	1050
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.433	3.426	0.007	1.000	14803	0.0257	107	271

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.433	3.426	0.007	1.259	1038289	2.60		108	17500	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.433	3.426	0.007	1.112	28114	0.0224		93.5	1030	
549.00 > 99.00	3.424	3.426	-0.002	1.109	11281		2.49(1.33-3.97)	93.5	187	
D 23 13C2 PFDA										
515.00 > 470.00	3.442	3.438	0.004	1.262	2955913	2.51		101	25066	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.442	3.439	0.003	1.000	34878	0.0274		110	196	M
513.00 > 169.00	3.442	3.439	0.003	1.000	5911		5.90(2.36-7.09)	110	279	M
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.595	3.587	0.007	1.318	1254985	2.47		98.8	23793	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.595	3.592	0.002	1.000	13169	0.0261		105	123	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.749	3.746	0.003	1.215	27003	0.0250		104	1101	
599.00 > 99.00	3.749	3.746	0.003	1.215	10166		2.66(1.39-4.16)	104	283	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.759	3.754	0.005	1.378	1454179	2.56		102	4105	
D 30 13C2 PFUnA										
565.00 > 520.00	3.759	3.760	-0.001	1.378	2658013	2.59		103	38997	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.759	3.760	-0.001	1.000	23135	0.0276		111	101	M
563.00 > 169.00	3.759	3.760	-0.001	1.000	6127		3.78(2.12-6.36)	111	221	M
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.759	3.760	-0.001	1.000	10268	0.0202		80.7	179	M
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.916	3.916	0.0	1.269	92510	NC			3280	
D 36 13C2 PFDoA										
615.00 > 570.00	4.059	4.051	0.008	1.488	2529382	2.42		96.7	18890	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.059	4.051	0.008	1.000	27523	0.0246		98.5	17.5	
613.00 > 169.00	4.059	4.051	0.008	1.000	8359		3.29(2.13-6.40)	98.5	254	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.317	4.311	0.006	1.064	33833	0.0298		119	14.2	
663.00 > 169.00	4.317	4.311	0.006	1.064	9076		3.73(1.25-3.76)	119	187	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.551	4.546	0.005	1.000	6880	0.0270		108	144	
713.00 > 219.00	4.551	4.546	0.005	1.000	5088		1.35(0.71-2.13)	108	122	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.551	4.547	0.004	1.668	2415938	2.41		96.4	8604	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.965	4.960	0.005	1.820	4159895	2.62		105	10534	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.965	4.962	0.003	1.000	76368	NC			18.7	
813.00 > 169.00	4.965	4.962	0.003	1.000	13164		5.80(2.86-8.58)		129	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.320	5.316	0.004	1.072	48922	NC			11.1	
913.00 > 169.00	5.320	5.316	0.004	1.072	5550		8.81(3.83-11.48)		87.1	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL1_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_002.d

Injection Date: 19-Jul-2018 12:09:54

Instrument ID: A8_N

Lims ID: IC L1 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 10

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

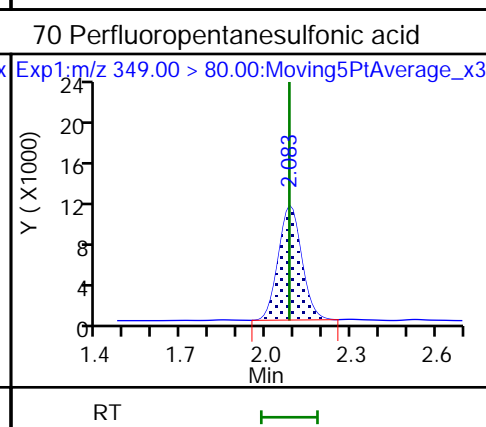
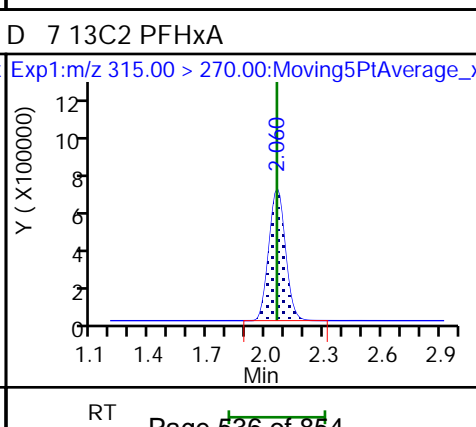
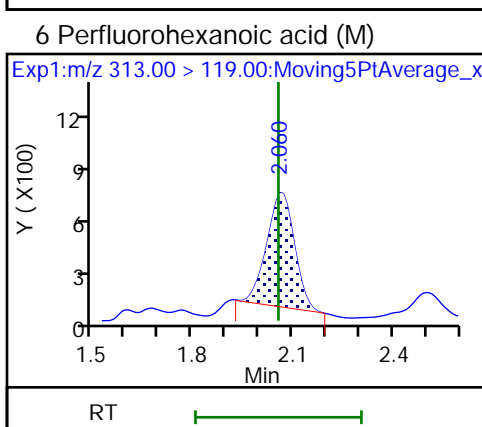
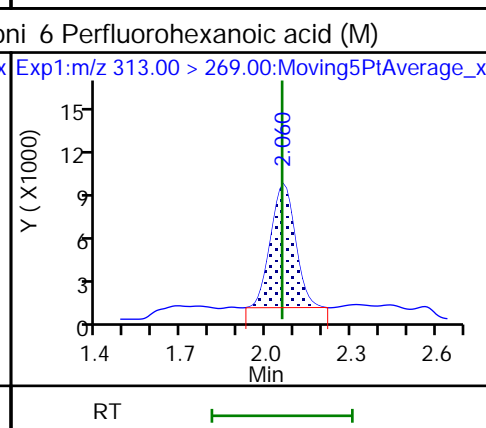
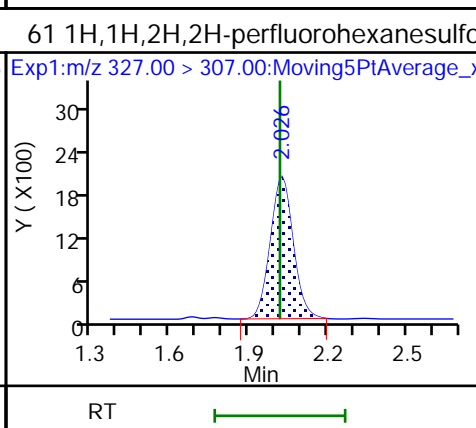
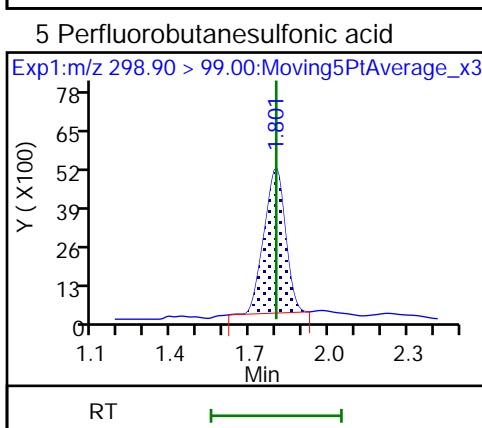
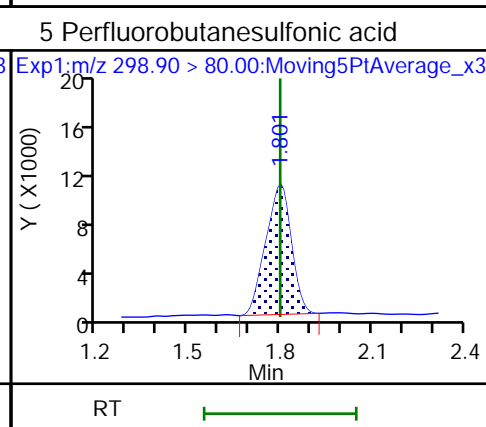
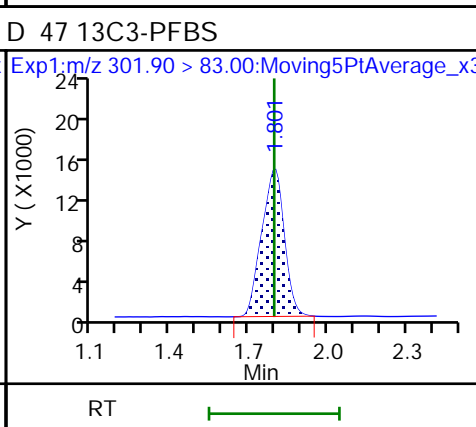
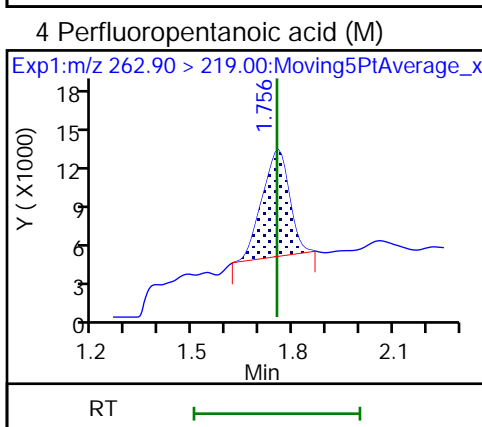
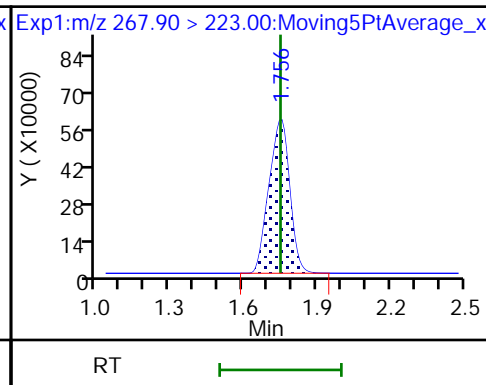
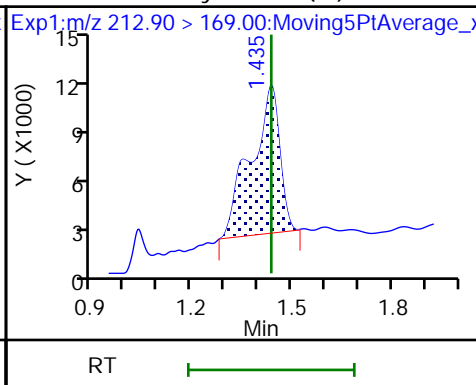
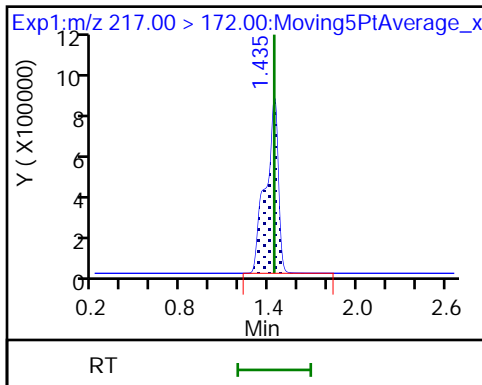
Method: A8_N

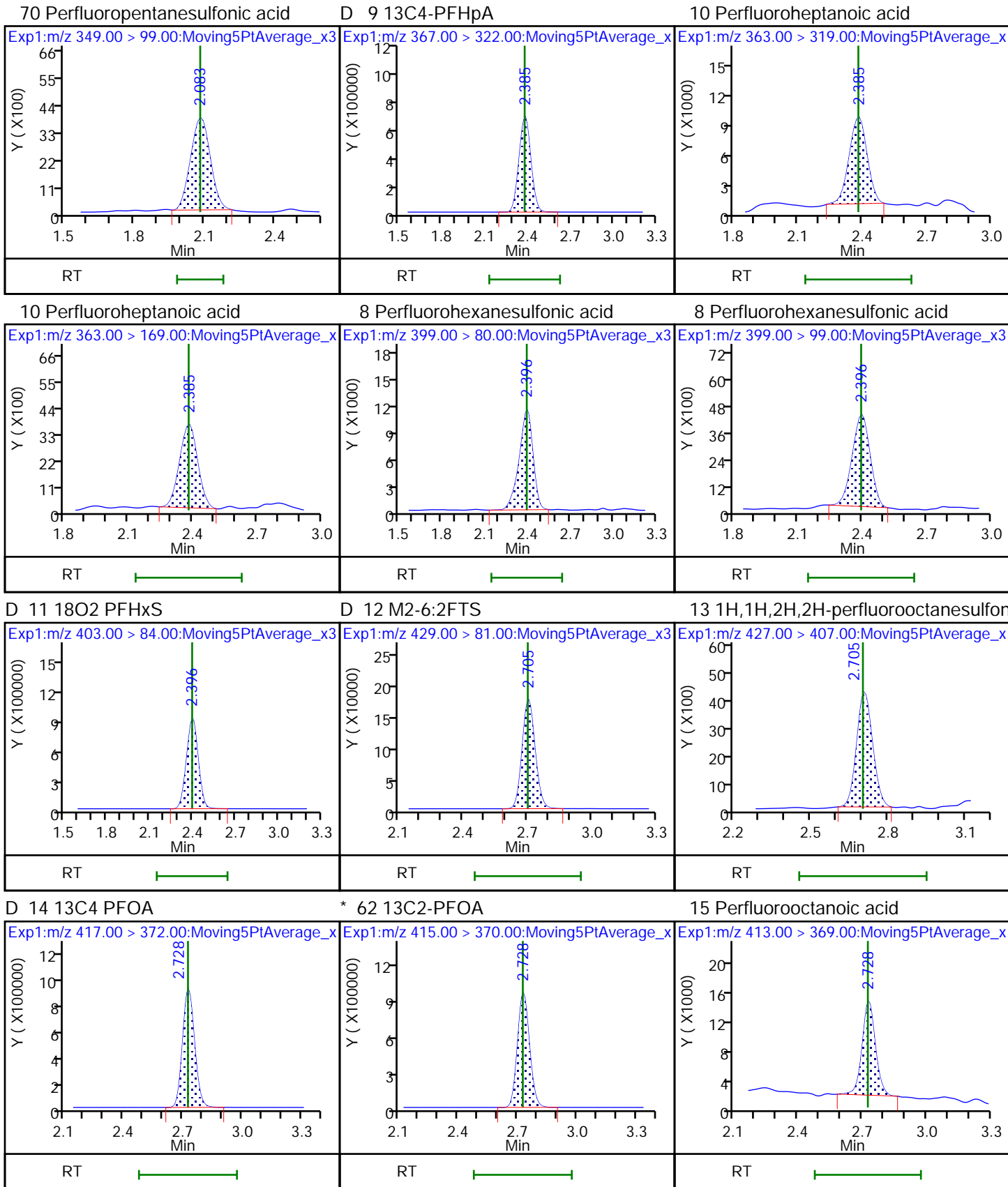
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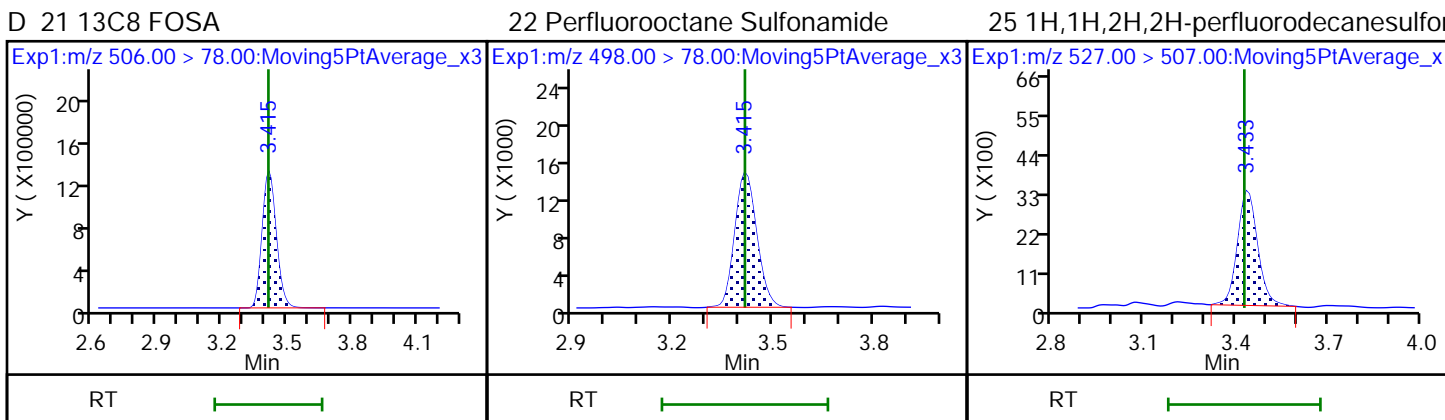
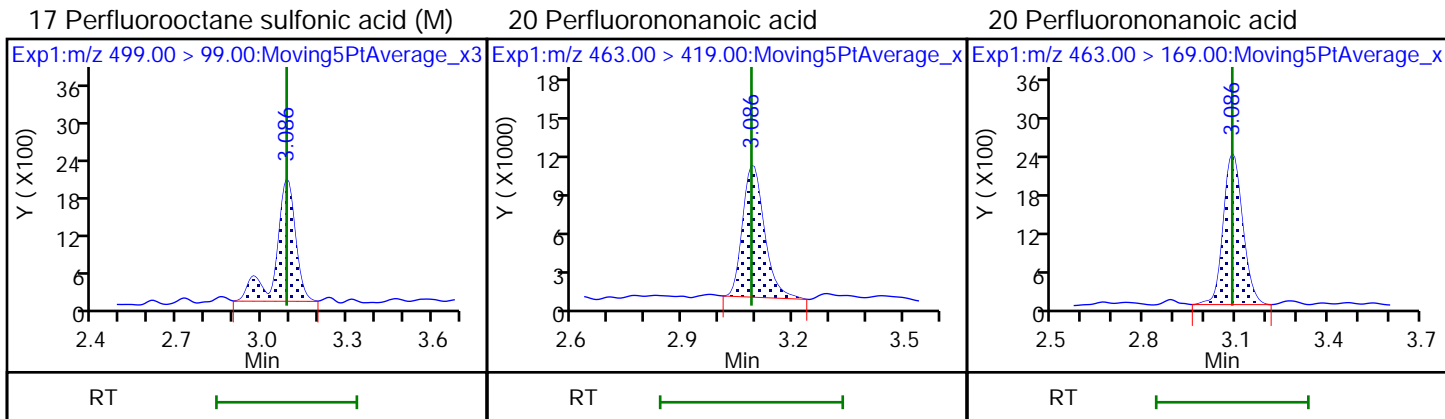
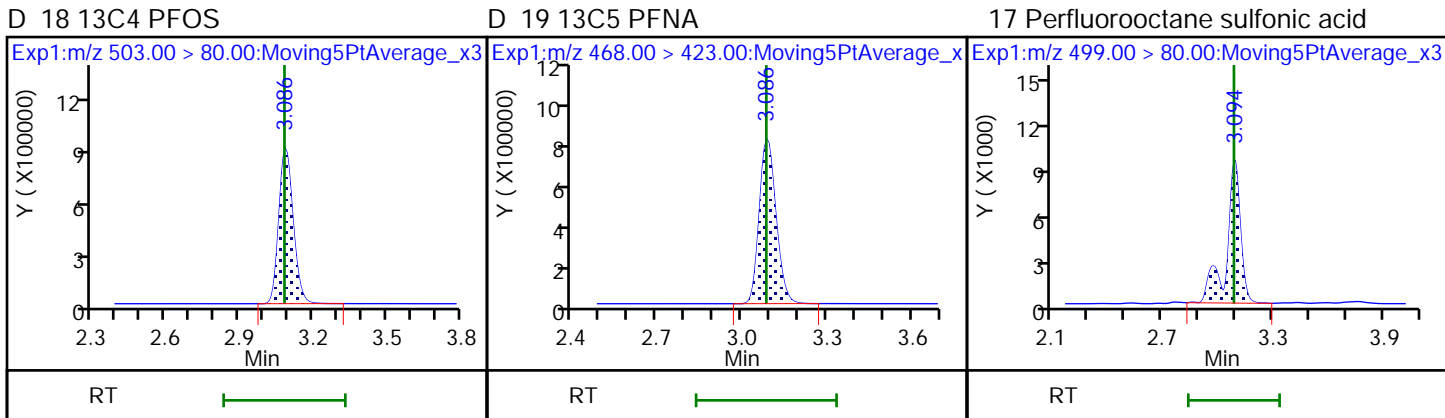
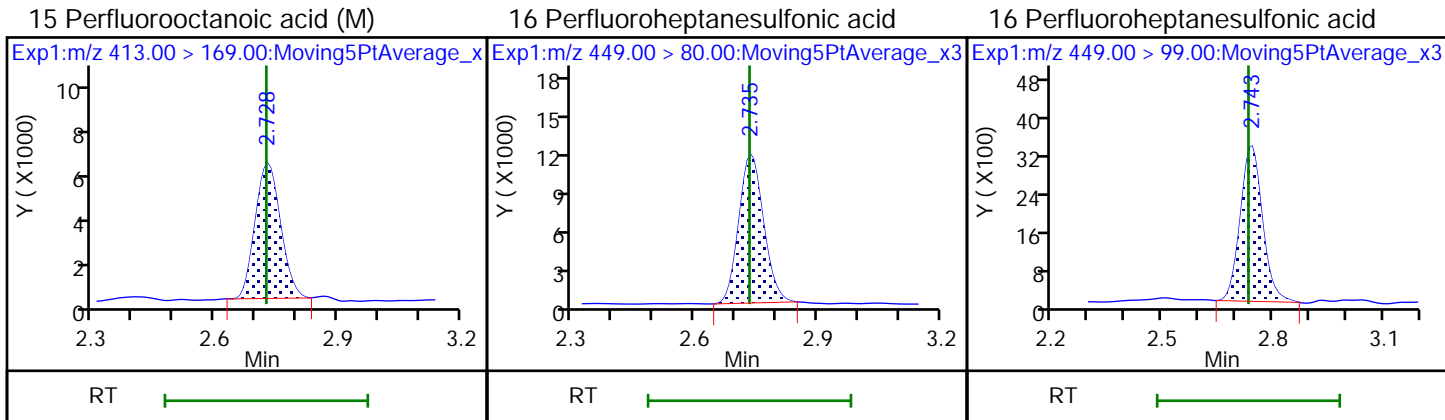
D 1 13C4 PFBA

2 Perfluorobutyric acid (M)

D 3 13C5-PFPeA



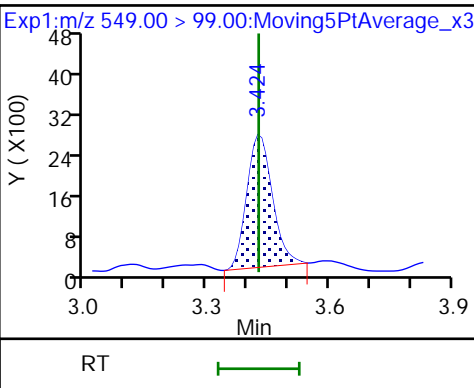
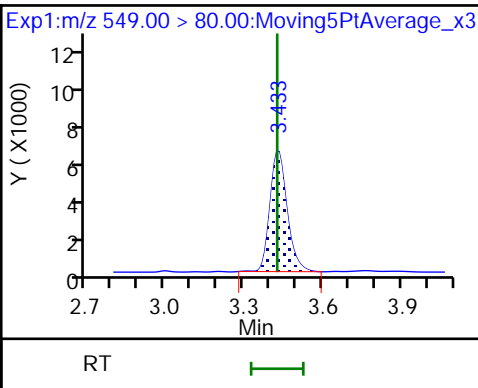
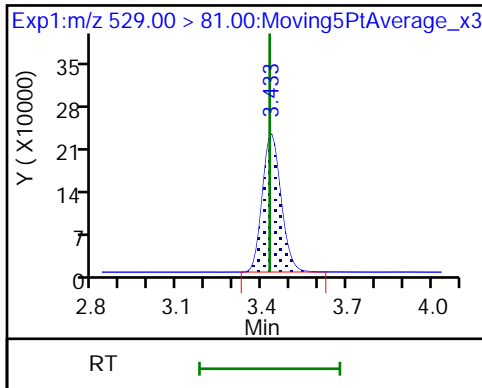




D 26 M2-8:2FTS

68 Perfluorononanesulfonic acid

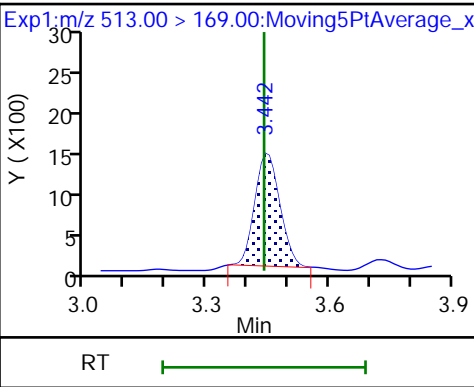
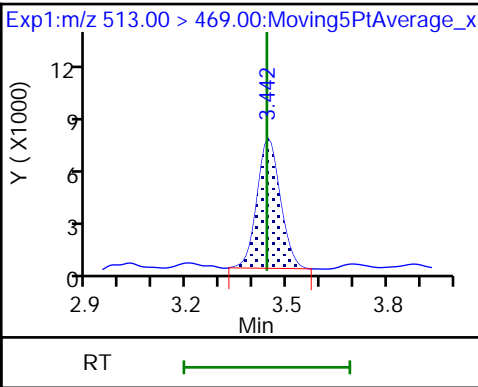
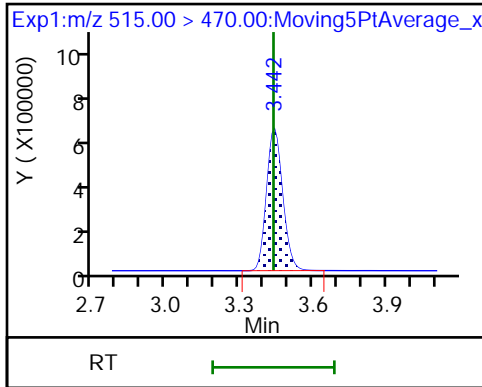
68 Perfluorononanesulfonic acid



D 23 13C2 PFDA

24 Perfluorodecanoic acid

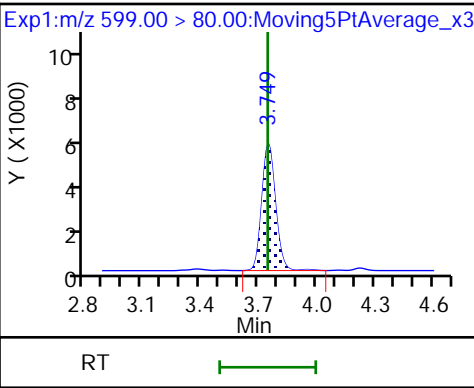
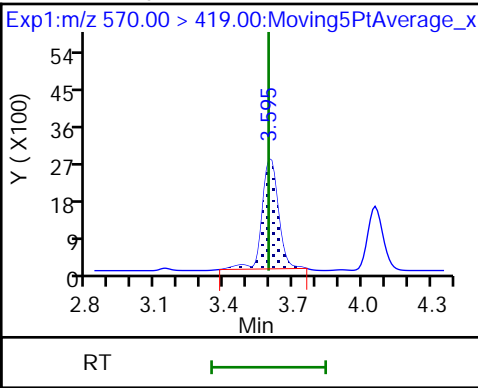
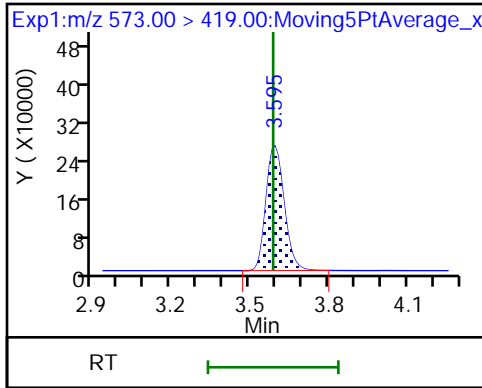
24 Perfluorodecanoic acid (M)



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

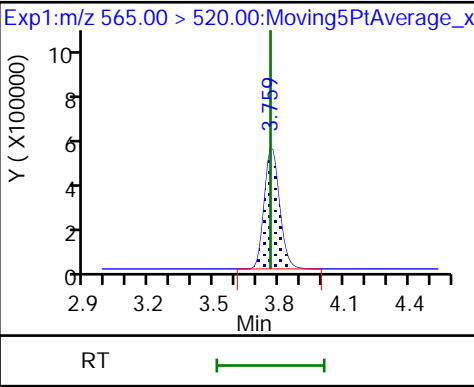
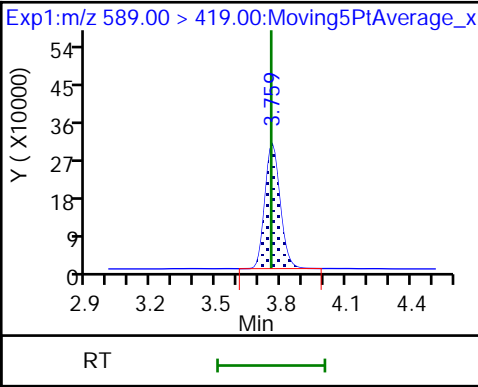
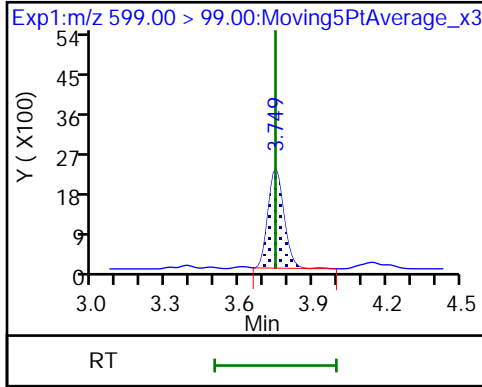
29 Perfluorodecane Sulfonic acid

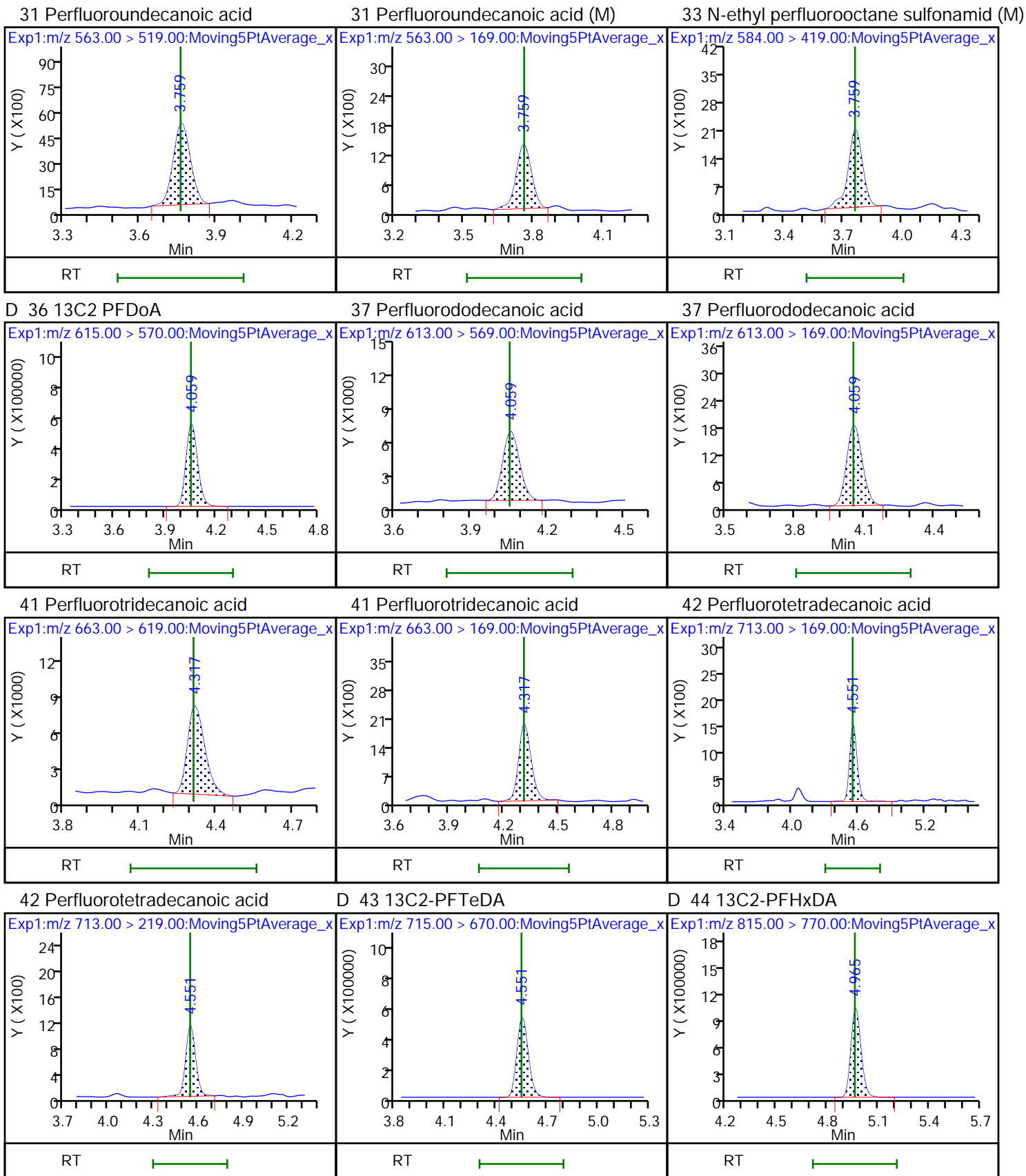


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

D 30 13C2 PFUnA





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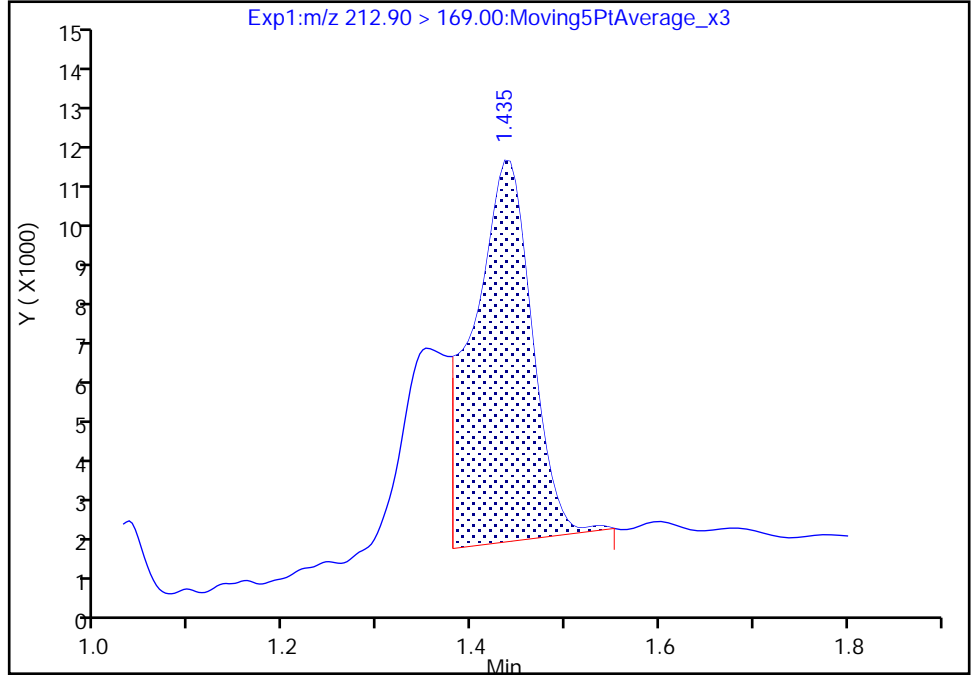
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Injection Date: 19-Jul-2018 12:09:54 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

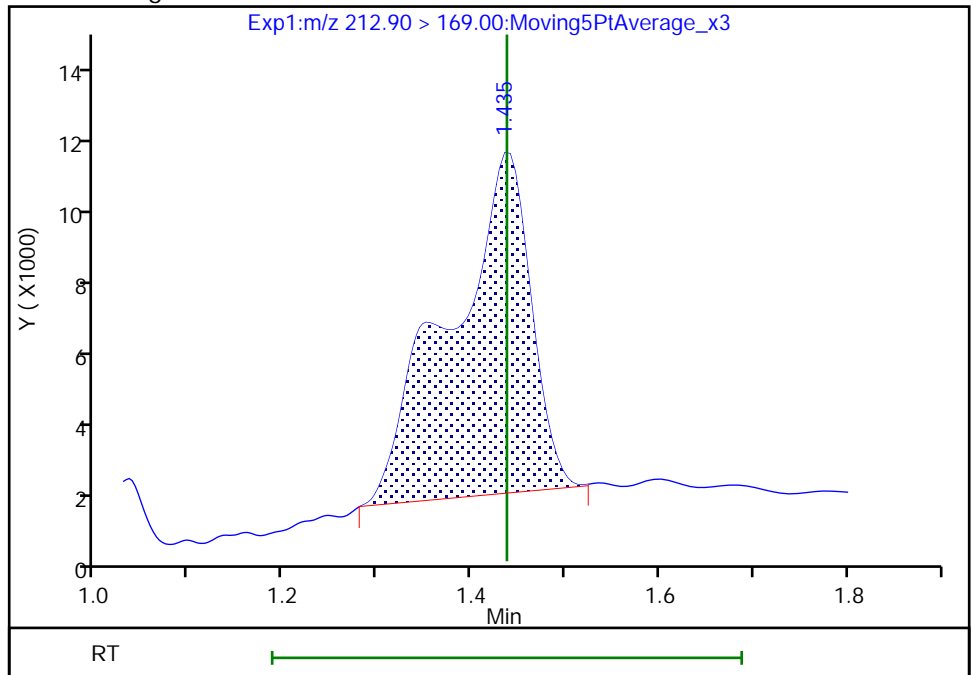
RT: 1.44
Area: 37942
Amount: 0.020785
Amount Units: ng/ml

Processing Integration Results



RT: 1.44
Area: 52670
Amount: 0.026533
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 14:39:08
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
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TestAmerica Sacramento

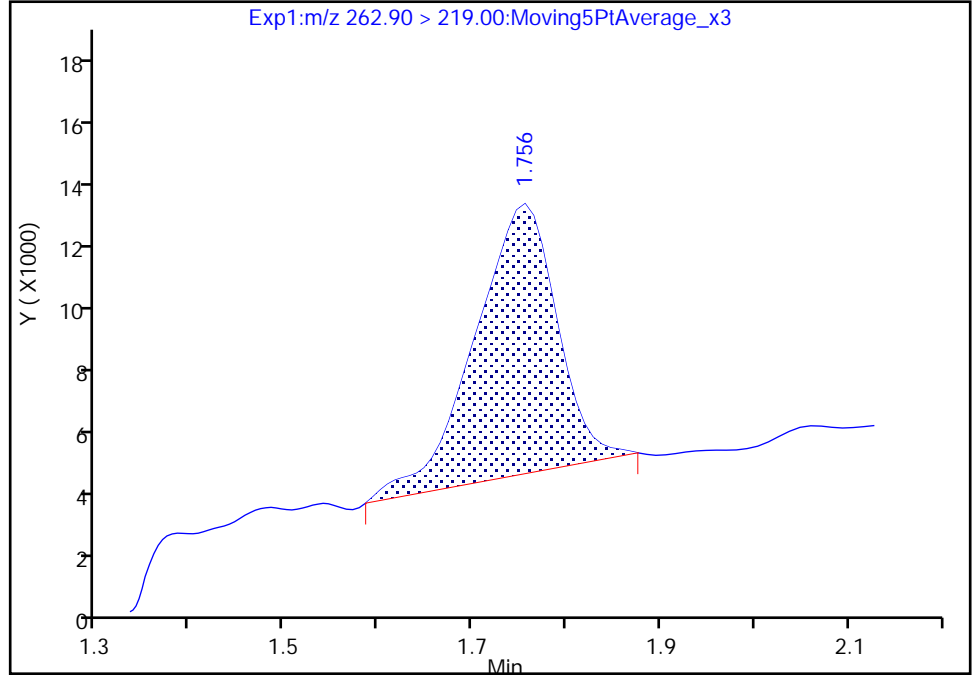
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Injection Date: 19-Jul-2018 12:09:54 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

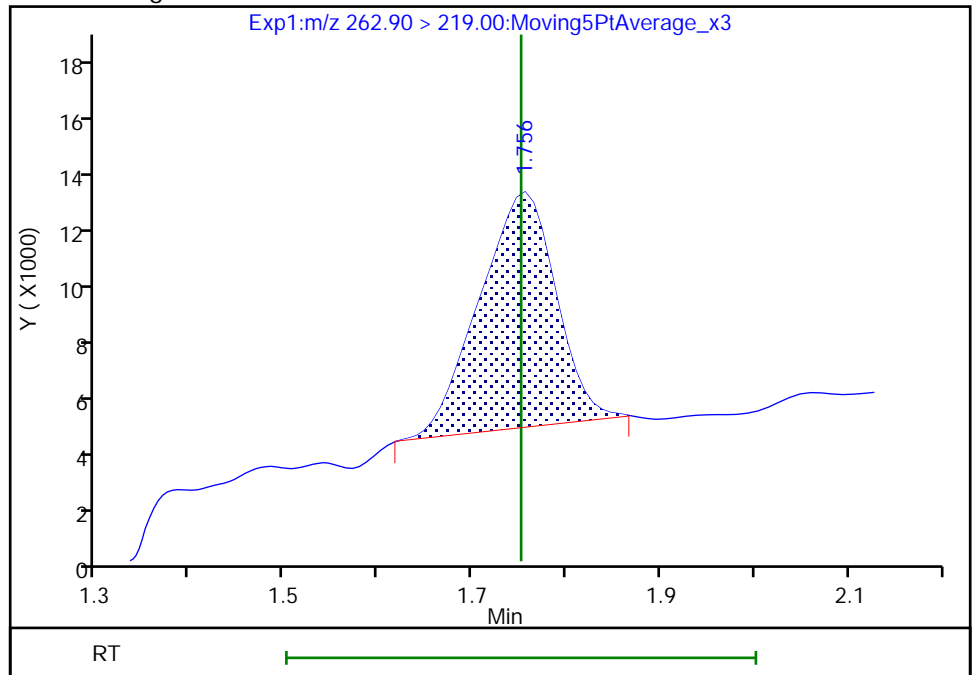
RT: 1.76
Area: 51095
Amount: 0.029457
Amount Units: ng/ml

Processing Integration Results



RT: 1.76
Area: 45657
Amount: 0.027071
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 14:40:31
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

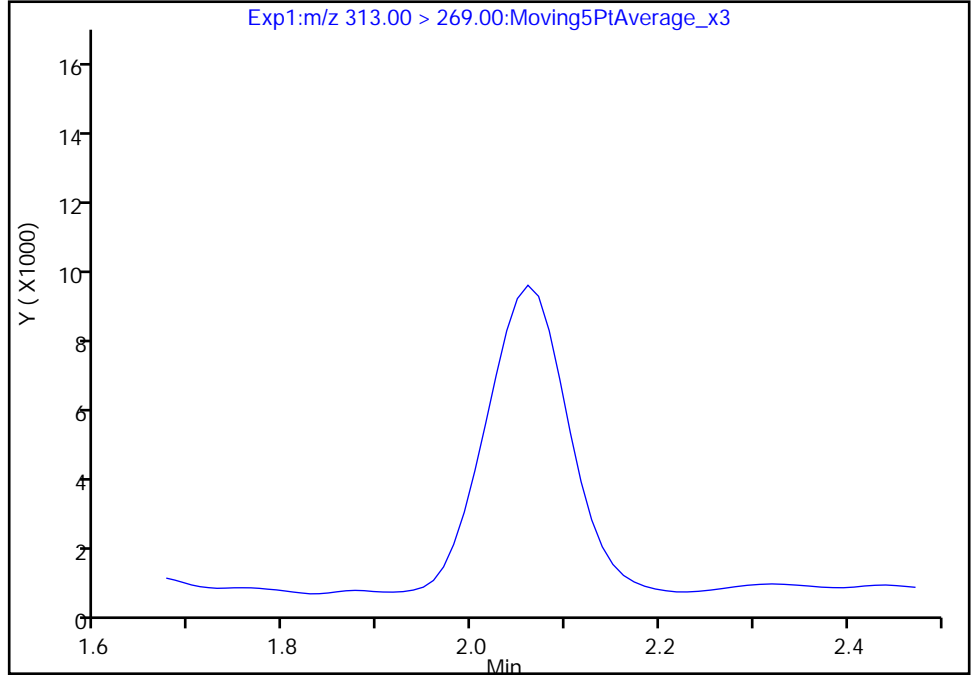
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Injection Date: 19-Jul-2018 12:09:54 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 1

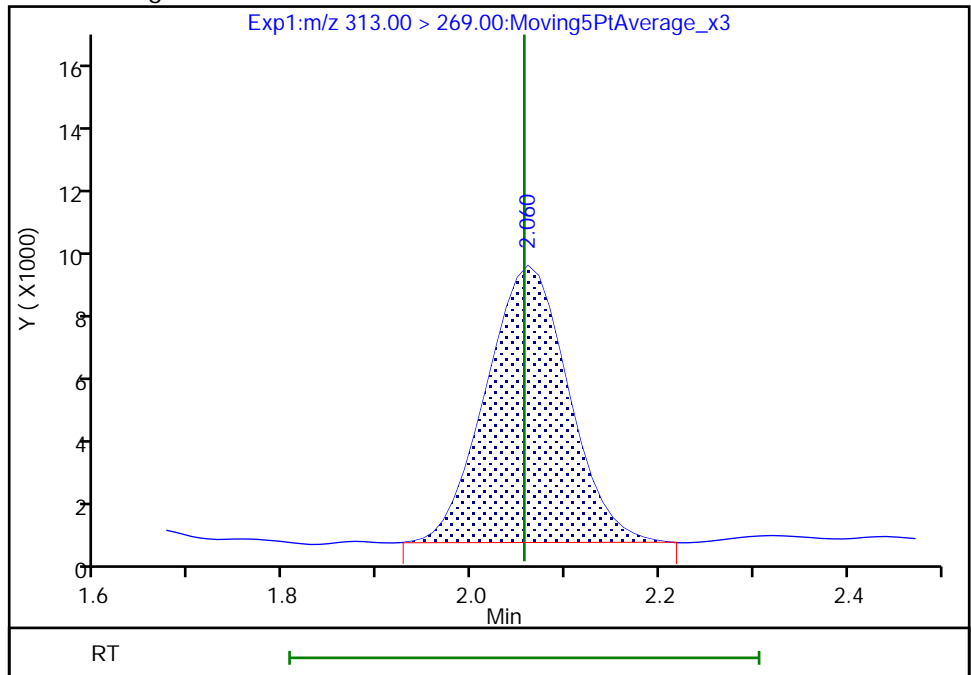
Not Detected
Expected RT: 2.06

Processing Integration Results



Manual Integration Results

RT: 2.06
Area: 51298
Amount: 0.029110
Amount Units: ng/ml



Reviewer: roycea, 19-Jul-2018 14:41:03
Audit Action: Manually Integrated

TestAmerica Sacramento

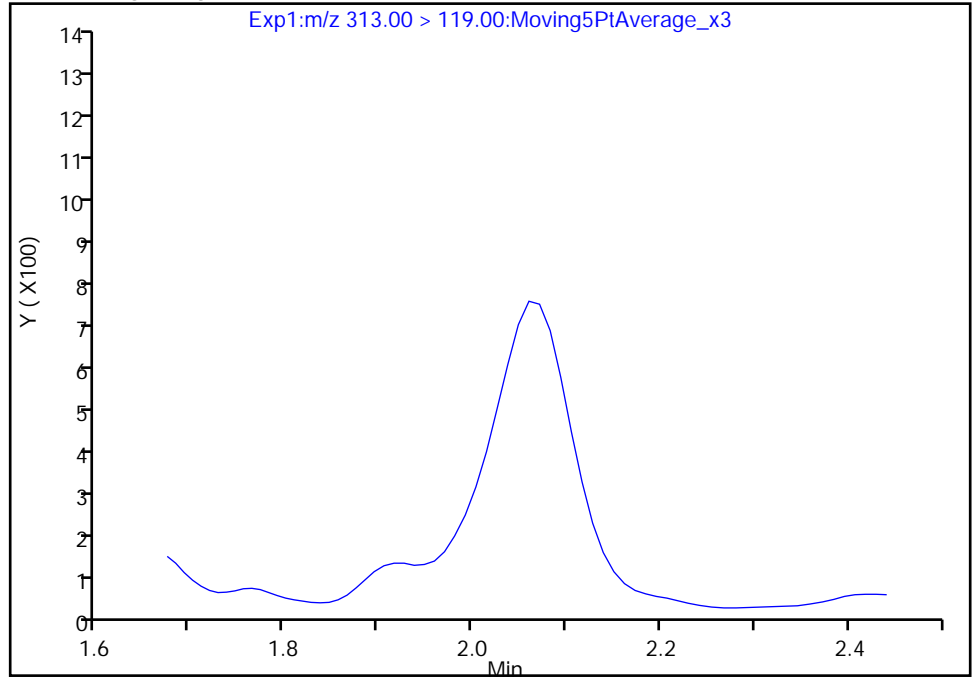
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Injection Date: 19-Jul-2018 12:09:54 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

6 Perfluorohexanoic acid, CAS: 307-24-4

Signal: 2

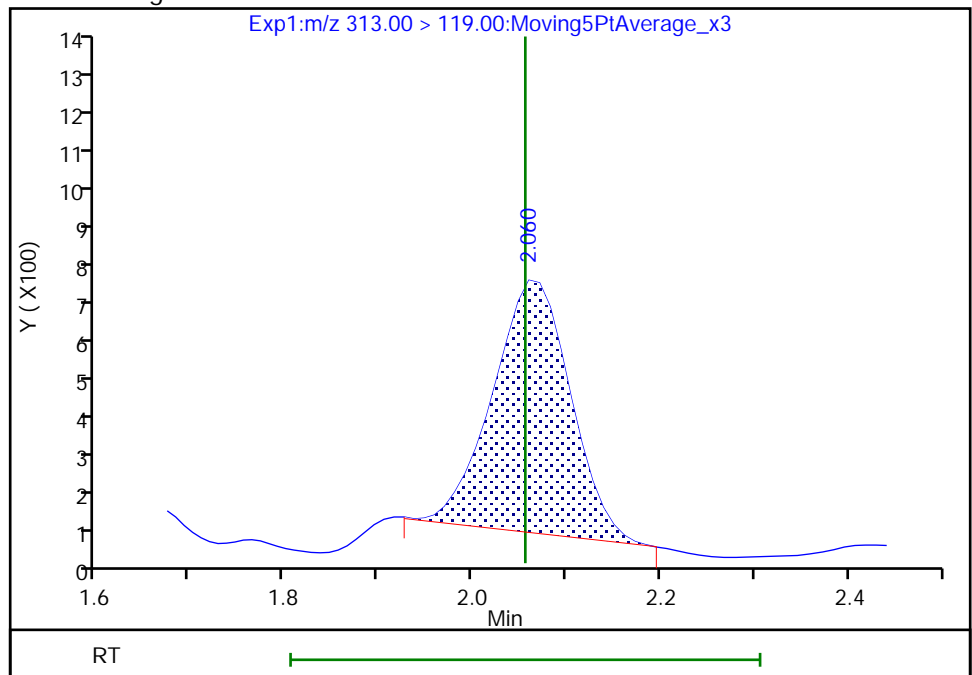
Not Detected
Expected RT: 2.06

Processing Integration Results



Manual Integration Results

RT: 2.06
Area: 3777
Amount: 0.029110
Amount Units: ng/ml



Reviewer: roycea, 19-Jul-2018 14:41:10
Audit Action: Manually Integrated

TestAmerica Sacramento

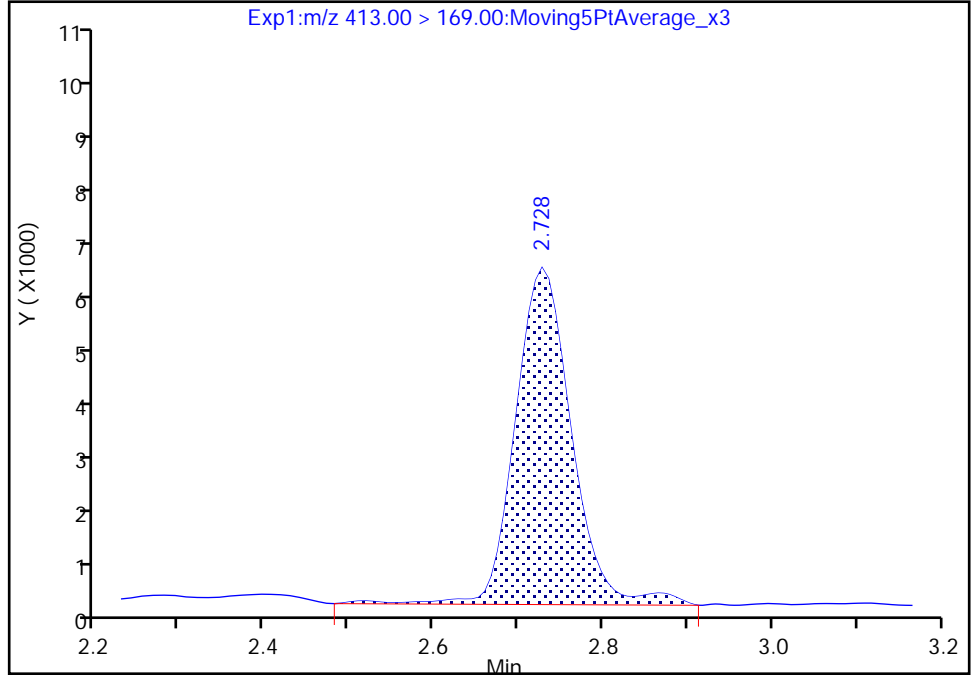
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Injection Date: 19-Jul-2018 12:09:54 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

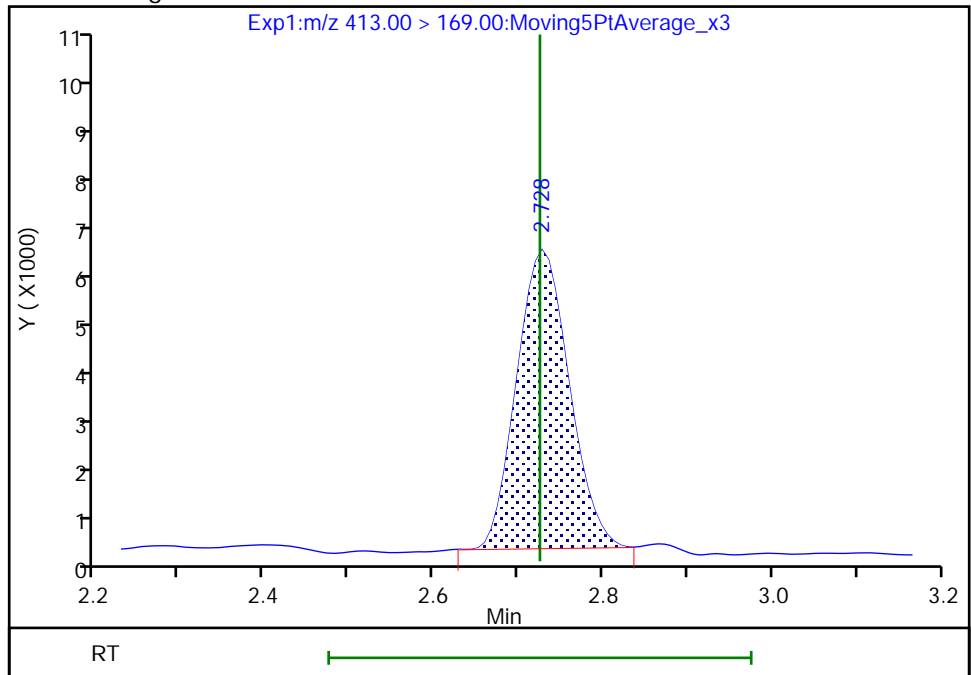
RT: 2.73
Area: 28507
Amount: 0.028420
Amount Units: ng/ml

Processing Integration Results



RT: 2.73
Area: 26092
Amount: 0.028420
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 14:41:30
Audit Action: Manually Integrated

TestAmerica Sacramento

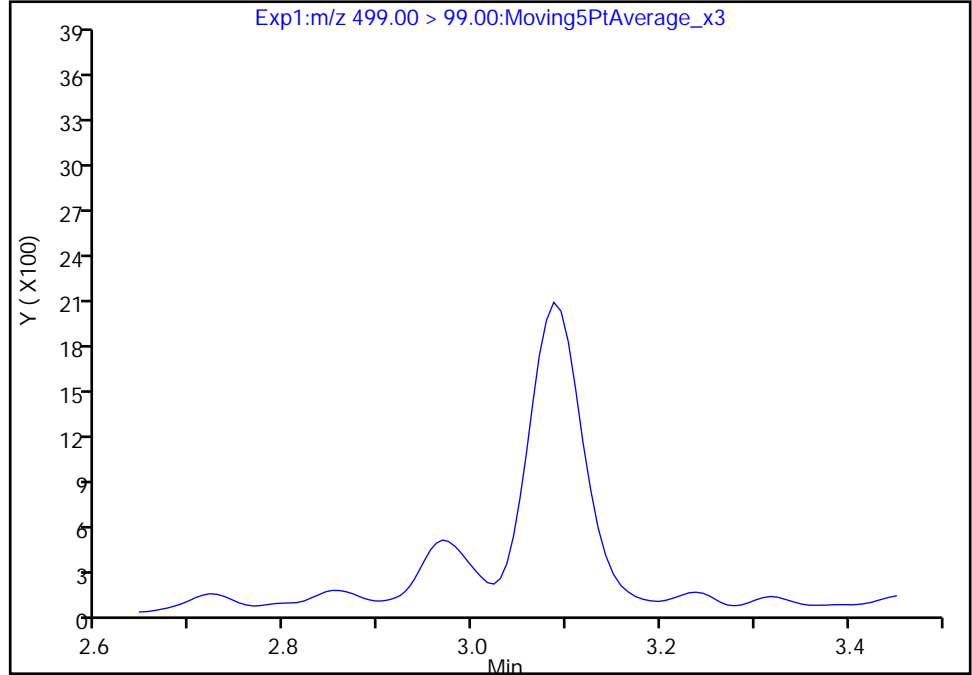
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Injection Date: 19-Jul-2018 12:09:54 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

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

Signal: 2

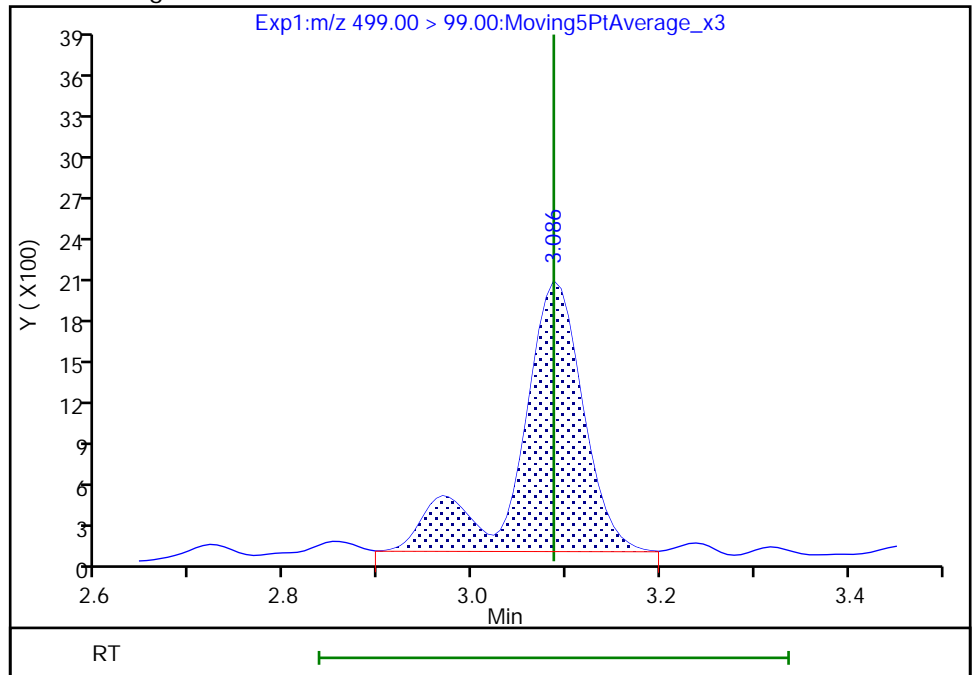
RT: 3.09
Area: 0
Amount: 0.027378
Amount Units: ng/ml

Processing Integration Results



RT: 3.09
Area: 9363
Amount: 0.027378
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 14:38:55
Audit Action: Manually Integrated

Audit Reason: Assign Peak
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TestAmerica Sacramento

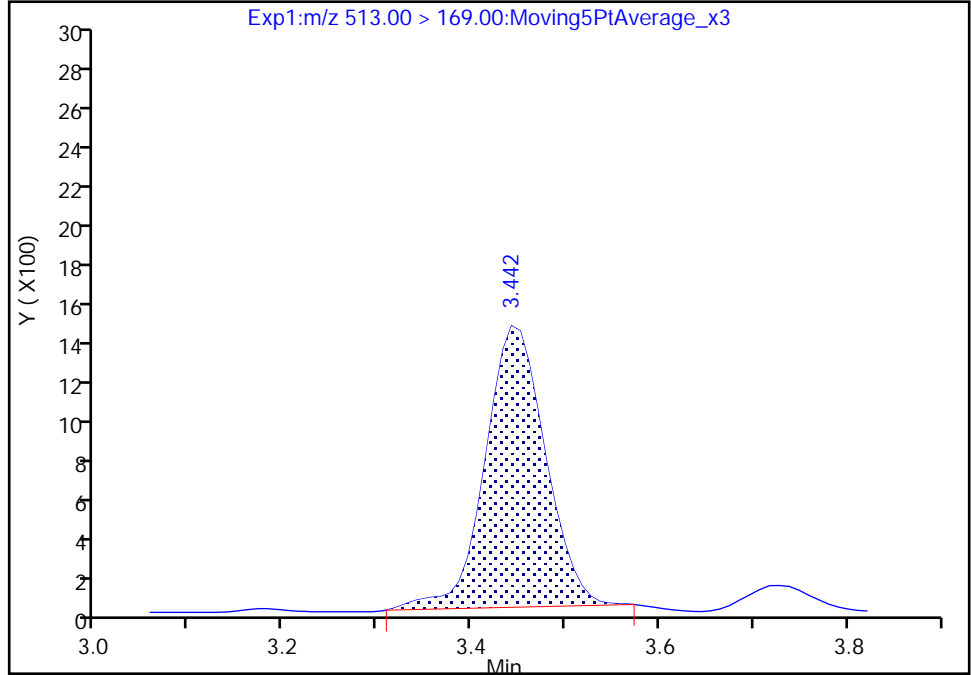
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Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

24 Perfluorodecanoic acid, CAS: 335-76-2

Signal: 2

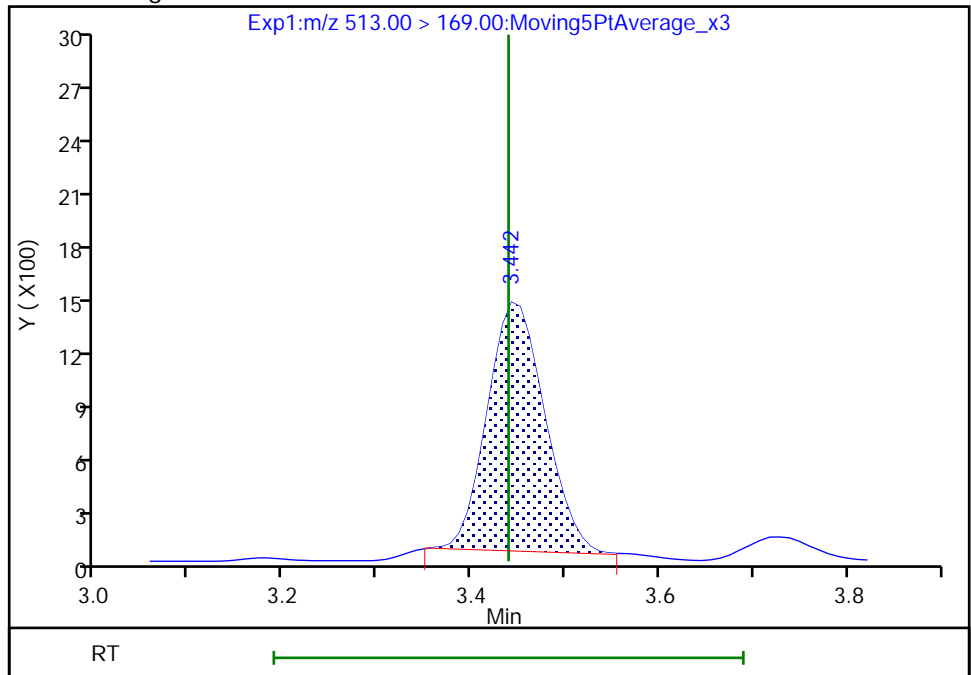
RT: 3.44
Area: 6344
Amount: 0.027382
Amount Units: ng/ml

Processing Integration Results



RT: 3.44
Area: 5911
Amount: 0.027382
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 14:41:45
Audit Action: Manually Integrated

TestAmerica Sacramento

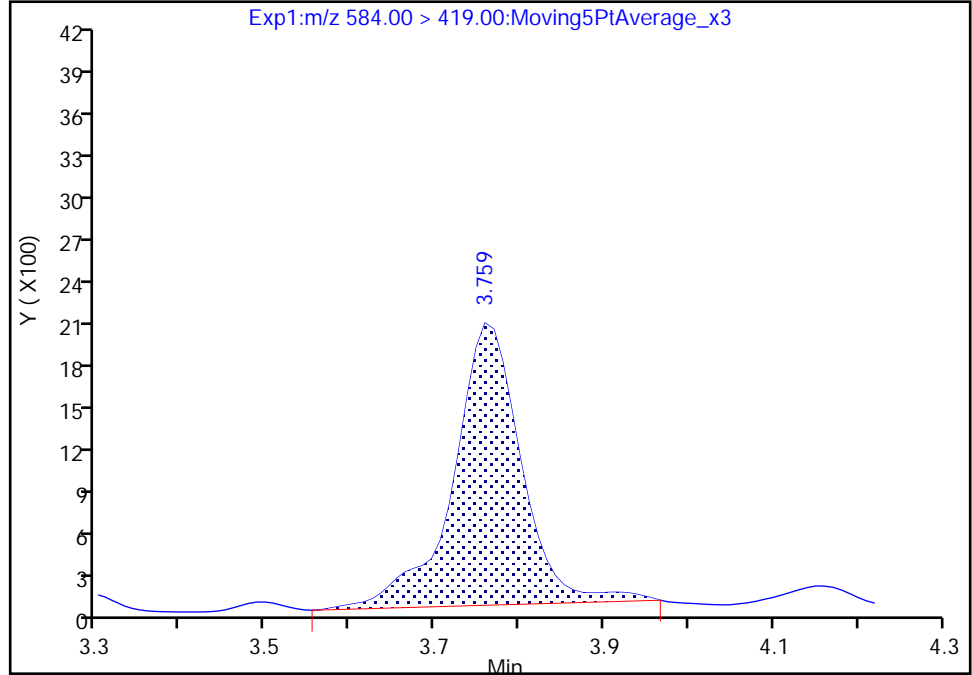
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_002.d
Injection Date: 19-Jul-2018 12:09:54 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

33 N-ethyl perfluorooctane sulfonamidoacetic ac, CAS: 2991-50-6

Signal: 1

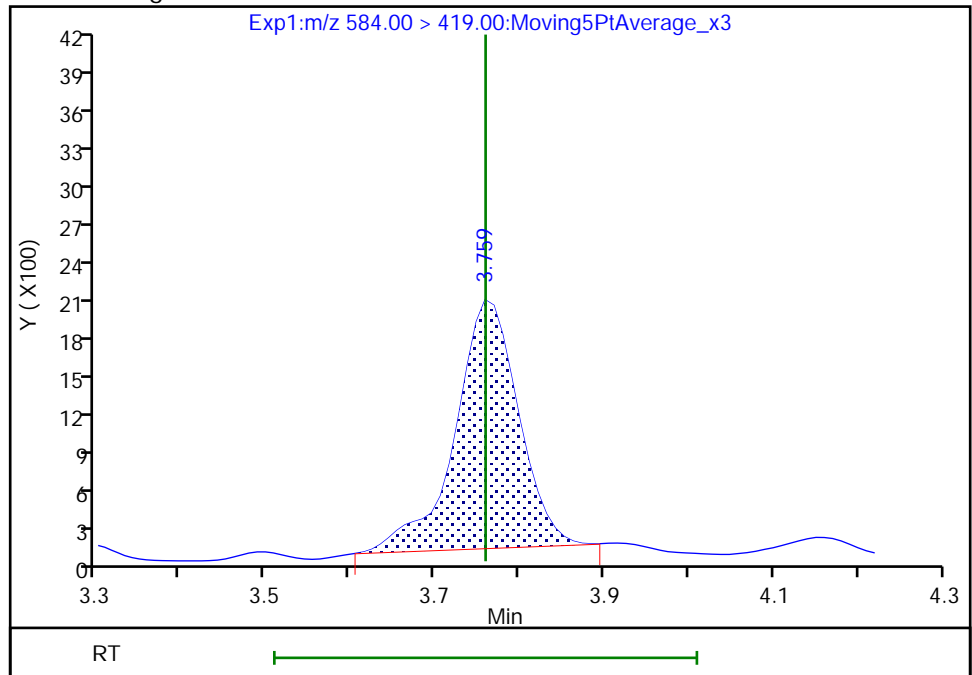
RT: 3.76
Area: 11351
Amount: 0.022507
Amount Units: ng/ml

Processing Integration Results



RT: 3.76
Area: 10268
Amount: 0.020163
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 14:42:02
Audit Action: Manually Integrated

Audit Reason: Baseline
Page 549 of 854

TestAmerica Sacramento

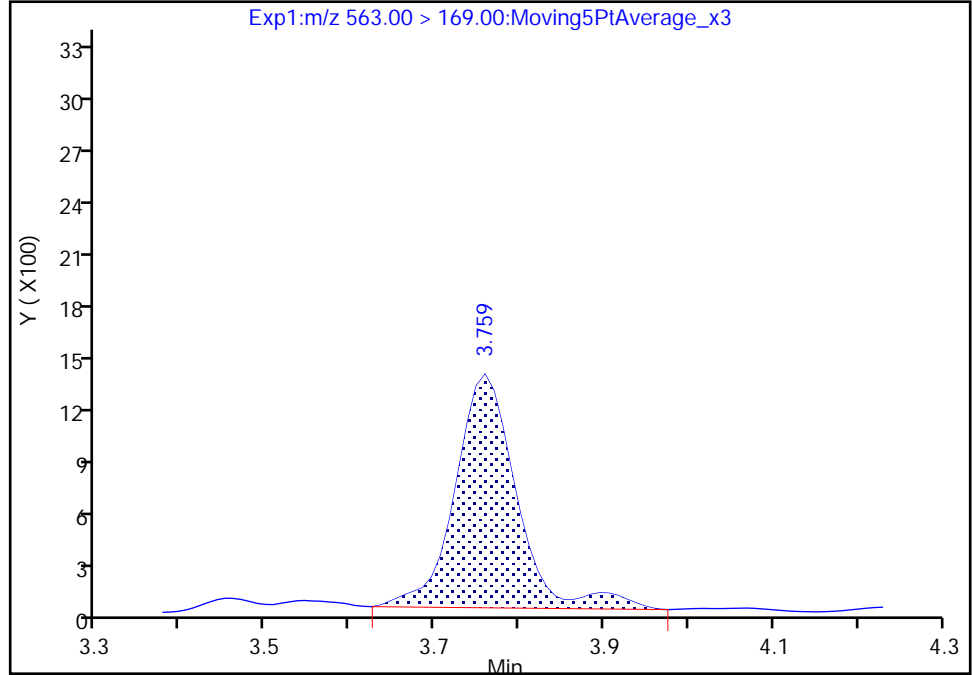
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Injection Date: 19-Jul-2018 12:09:54 Instrument ID: A8_N
Lims ID: IC L1 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 10 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

31 Perfluoroundecanoic acid, CAS: 2058-94-8

Signal: 2

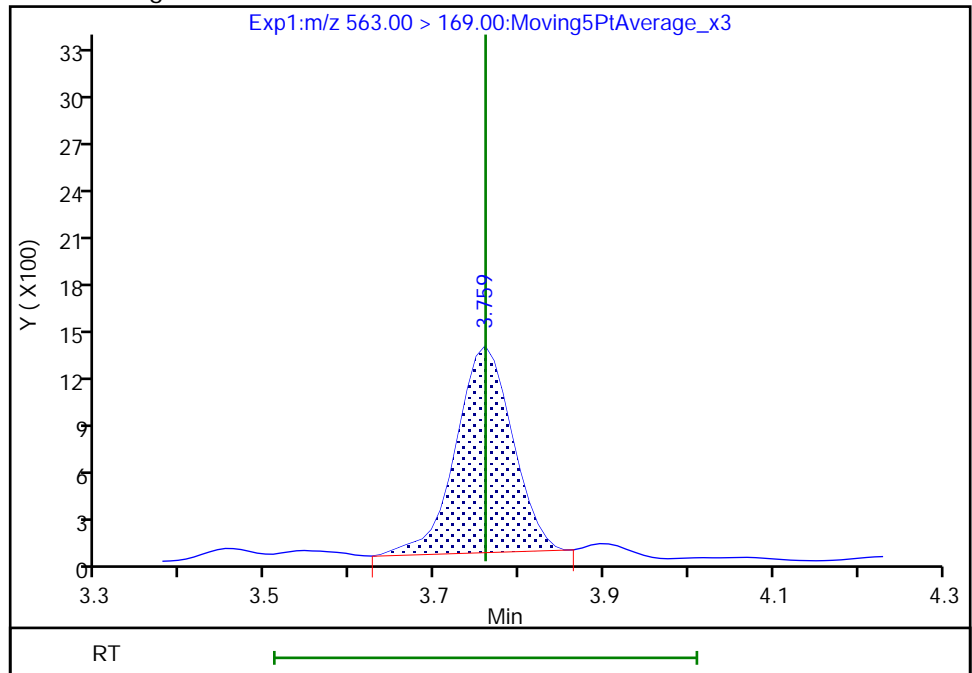
RT: 3.76
Area: 6841
Amount: 0.027641
Amount Units: ng/ml

Processing Integration Results



RT: 3.76
Area: 6127
Amount: 0.027641
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 14:42:17
Audit Action: Manually Integrated

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_003.d
 Lims ID: IC L2 Full
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 19-Jul-2018 12:17:44 ALS Bottle#: 11 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L2-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 15:19:42 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK022

First Level Reviewer: roycea Date: 19-Jul-2018 13:16:41

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	1.436	1.435	0.001	0.528	5057478	2.40	95.9	43435	
2 Perfluorobutyric acid	212.90 > 169.00	1.441	1.438	0.003	1.004	105456	0.0519	104	32.4	
D 3 13C5-PFPeA	267.90 > 223.00	1.748	1.750	-0.002	0.642	3527106	2.40	96.1	55851	
4 Perfluoropentanoic acid	262.90 > 219.00	1.748	1.752	-0.004	1.000	93384	0.0540	108	37.6	M
D 47 13C3-PFBS	301.90 > 83.00	1.793	1.795	-0.002	0.659	85914	2.26	97.3	580	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.802	1.799	0.003	1.005	127942	0.0447	101	1122	
	298.90 > 99.00	1.793	1.799	-0.006	1.000	55259	2.32(1.25-3.74)	101	674	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.016	2.017	-0.001	1.124	21779	0.0449	96.2	1229	
D 60 M2-4:2FTS	329.00 > 81.00	2.016	2.019	-0.003	0.741	486019	NC		6500	
6 Perfluorohexanoic acid	313.00 > 269.00	2.050	2.056	-0.006	0.995	94033	0.0510	102	221	
	313.00 > 119.00	2.050	2.056	-0.006	0.995	7511	12.52(5.03-15.10)	102	156	
D 7 13C2 PFHxA	315.00 > 270.00	2.061	2.058	0.003	0.757	4243020	2.47	98.9	90673	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.083	2.082	0.001	1.162	124789	0.0465	99.1	3462	
	349.00 > 99.00	2.083	2.082	0.001	1.162	44384	2.81(1.36-4.07)	99.1	1071	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.151	2.151	0.0	0.791	262159	NC		5698	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.151	2.153	-0.002	1.000	12577	NC	94.3	
D 9 13C4-PFHpA	367.00	> 322.00	2.373	2.379	-0.006	0.872	3997421	2.41	96.3	49228
10 Perfluoroheptanoic acid	363.00	> 319.00	2.373	2.380	-0.007	1.000	93551	0.0511	102	200
	363.00	> 169.00	2.373	2.380	-0.007	1.000	36202	2.58(1.13-3.40)	102	463
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.397	2.394	0.003	1.000	126552	0.0510	112	1524
	399.00	> 99.00	2.397	2.394	0.003	1.000	42389	2.99(1.50-4.49)	112	402
D 11 18O2 PFHxS	403.00	> 84.00	2.397	2.395	0.002	0.881	5134486	2.31	97.6	63646
65 ADONA	377.00	> 251.00	2.419	2.421	-0.002	0.786	259477	NC	5920	
	377.00	> 85.00	2.419	2.421	-0.002	0.786	150026	1.73(0.84-2.53)	1705	
D 12 M2-6:2FTS	429.00	> 81.00	2.699	2.701	-0.002	0.992	792094	2.47	104	17116
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.699	2.702	-0.003	1.000	24967	0.0460	97.1	540
D 14 13C4 PFOA	417.00	> 372.00	2.721	2.725	-0.004	1.000	4050166	2.52	101	41927
* 62 13C2-PFOA	415.00	> 370.00	2.721	2.725	-0.004		4213639	2.50	47851	
15 Perfluorooctanoic acid	413.00	> 369.00	2.721	2.725	-0.004	1.000	98416	0.0493	98.6	53.8
	413.00	> 169.00	2.721	2.725	-0.004	1.000	48257	2.04(0.84-2.52)	98.6	278
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.729	2.733	-0.004	0.886	97002	0.0469	98.6	2883
	449.00	> 99.00	2.729	2.733	-0.004	0.886	26848	3.61(1.94-5.82)	98.6	631
D 18 13C4 PFOS	503.00	> 80.00	3.079	3.083	-0.004	1.131	3681269	2.31	96.6	51065
D 19 13C5 PFNA	468.00	> 423.00	3.079	3.085	-0.006	1.131	3325893	2.45	98.1	43012
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.079	3.086	-0.007	1.000	83291	0.0457	98.5	1374
	499.00	> 99.00	3.086	3.086	0.0	1.003	19743	4.22(2.31-6.93)	98.5	338
20 Perfluorononanoic acid	463.00	> 419.00	3.086	3.086	0.0	1.003	76014	0.0506	101	144
	463.00	> 169.00	3.086	3.086	0.0	1.003	19316	3.94(1.90-5.69)	101	784
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.286	3.291	-0.005	1.067	135200	NC	1587	
D 21 13C8 FOSA	506.00	> 78.00	3.405	3.413	-0.008	1.251	5920583	2.50	100	52365
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.415	3.415	0.0	1.003	121582	0.0503	101	2058
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.424	3.426	-0.002	1.000	28196	0.0505	105	464

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.424	3.426	-0.002	1.258	1006292	2.42		101	13051	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.424	3.426	-0.002	1.112	64875	0.0518		108	1798	
549.00 > 99.00	3.424	3.426	-0.002	1.112	25883		2.51(1.33-3.97)	108	391	
D 23 13C2 PFDA										
515.00 > 470.00	3.433	3.438	-0.005	1.262	3001274	2.45		98.1	37243	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.433	3.439	-0.006	1.000	65359	0.0505		101	469	
513.00 > 169.00	3.433	3.439	-0.006	1.000	13154		4.97(2.36-7.09)	101	485	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.584	3.587	-0.003	1.317	1295422	2.45		98.0	34094	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.584	3.592	-0.008	1.000	26839	0.0516		103	237	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.738	3.746	-0.008	1.214	43503	0.0403		83.6	1121	
599.00 > 99.00	3.738	3.746	-0.008	1.214	18721		2.32(1.39-4.16)	83.6	761	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.749	3.754	-0.005	1.378	1464896	2.47		99.0	3706	
D 30 13C2 PFUnA										
565.00 > 520.00	3.759	3.760	-0.001	1.381	2699230	2.52		101	56100	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.759	3.760	-0.001	1.000	43590	0.0513		103	211	
563.00 > 169.00	3.759	3.760	-0.001	1.000	12321		3.54(2.12-6.36)	103	527	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.759	3.760	-0.001	1.003	30754	0.0599		120	744	M
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.916	3.916	0.0	1.272	206805	NC			6224	
D 36 13C2 PFDoA										
615.00 > 570.00	4.048	4.051	-0.003	1.488	2602208	2.39		95.6	18890	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.048	4.051	-0.003	1.000	61498	0.0535		107	37.3	
613.00 > 169.00	4.048	4.051	-0.003	1.000	13497		4.56(2.13-6.40)	107	355	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.307	4.311	-0.004	1.064	65530	0.0561		112	28.9	
663.00 > 169.00	4.307	4.311	-0.004	1.064	21125		3.10(1.25-3.76)	112	418	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.541	4.546	-0.005	0.998	15477	0.0569		114	326	
713.00 > 219.00	4.541	4.546	-0.005	0.998	9942		1.56(0.71-2.13)	114	230	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.551	4.547	0.004	1.673	2583089	2.48		99.0	13003	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.956	4.960	-0.004	1.821	3845258	2.33		93.2	10108	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.965	4.962	0.003	1.002	103551	NC			25.8	
813.00 > 169.00	4.965	4.962	0.003	1.002	18076		5.73(2.86-8.58)		213	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.312	5.316	-0.004	1.072	87545	NC			20.2	
913.00 > 169.00	5.312	5.316	-0.004	1.072	11263		7.77(3.83-11.48)		177	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL2_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_003.d

Injection Date: 19-Jul-2018 12:17:44

Instrument ID: A8_N

Lims ID: IC L2 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 11

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

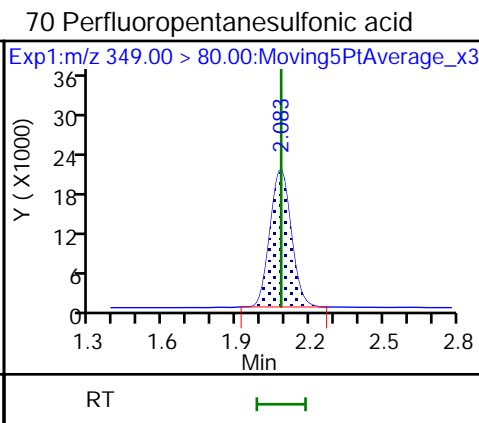
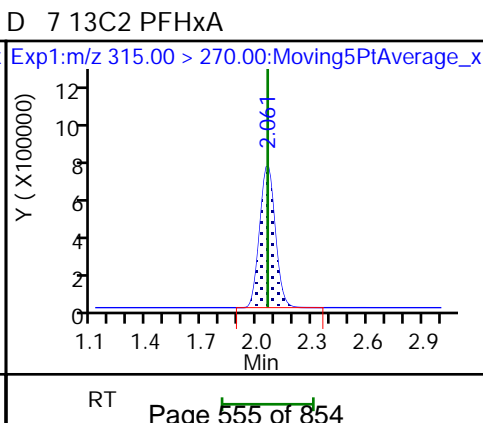
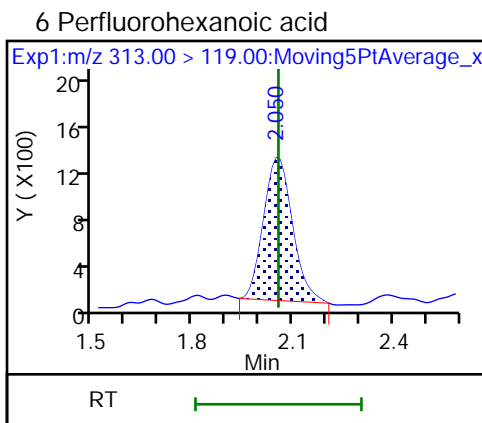
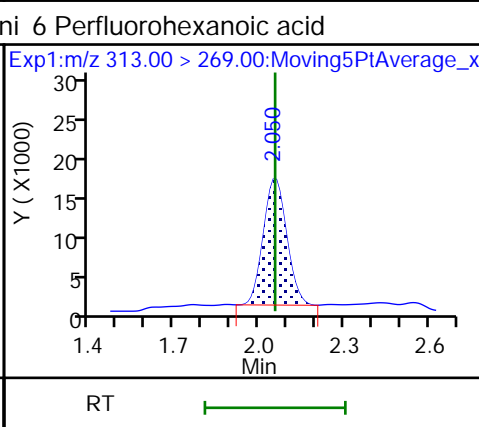
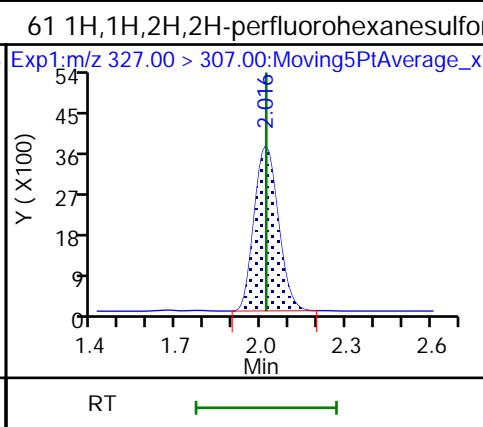
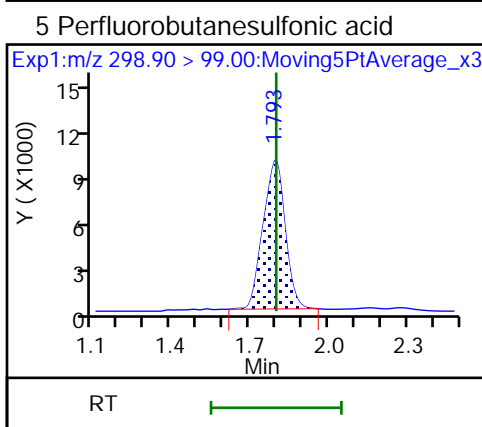
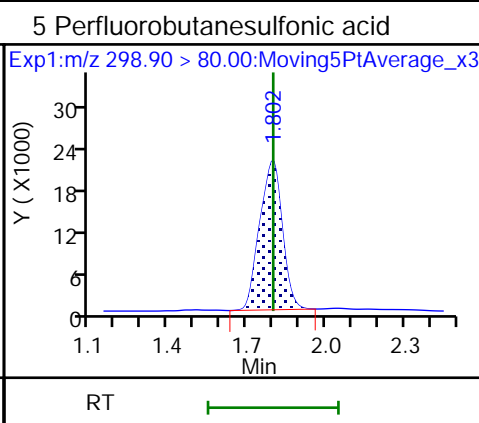
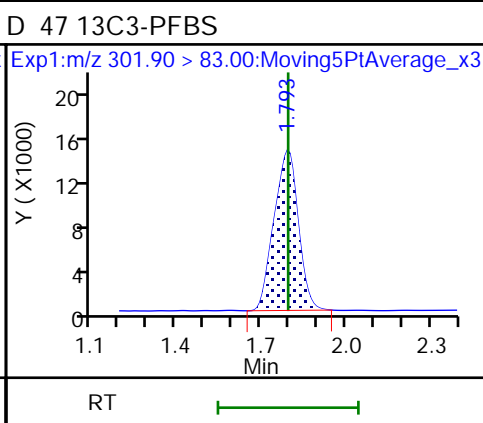
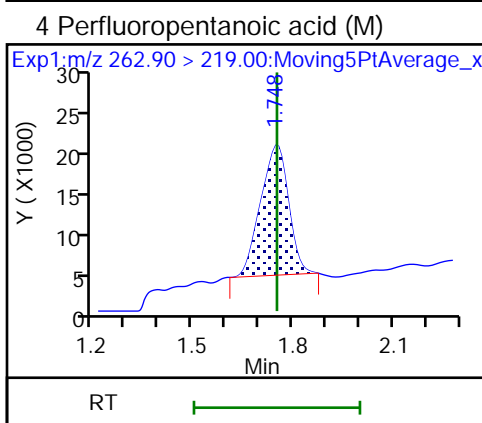
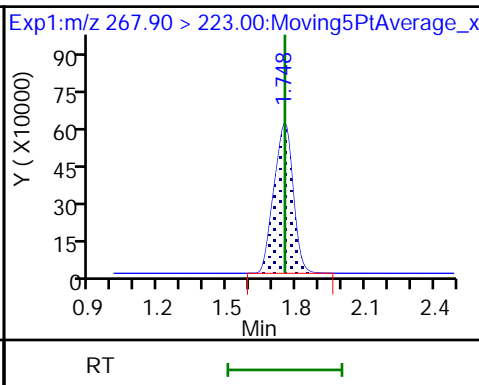
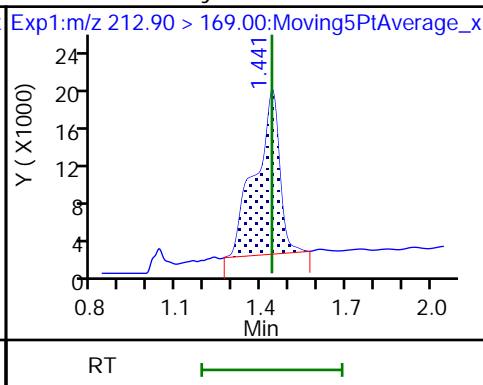
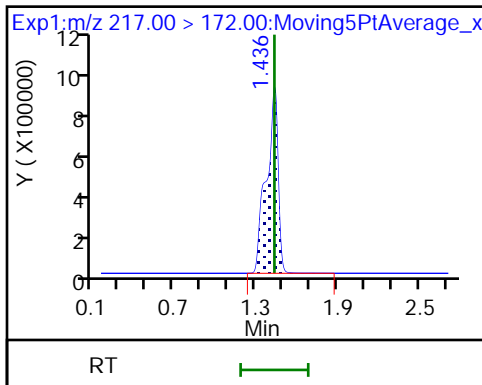
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

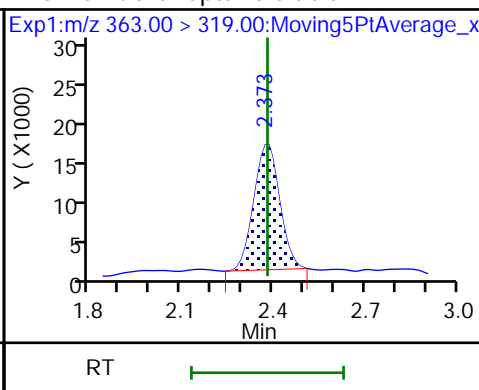
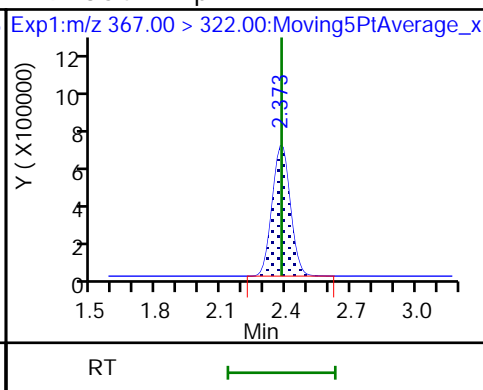
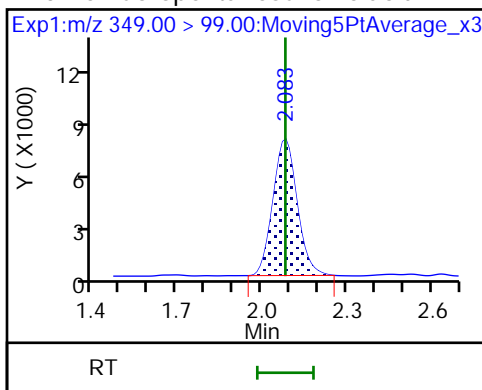
D 3 13C5-PFPeA



70 Perfluoropentanesulfonic acid

D 9 13C4-PFHpA

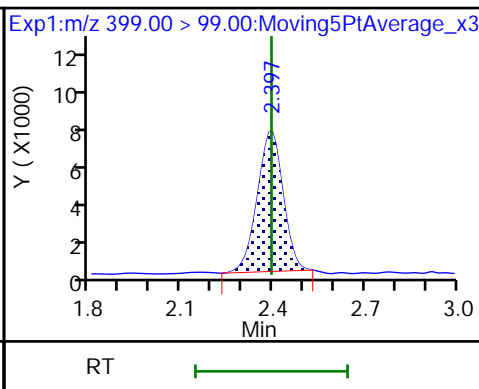
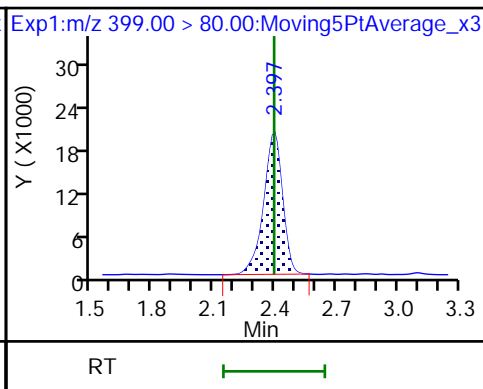
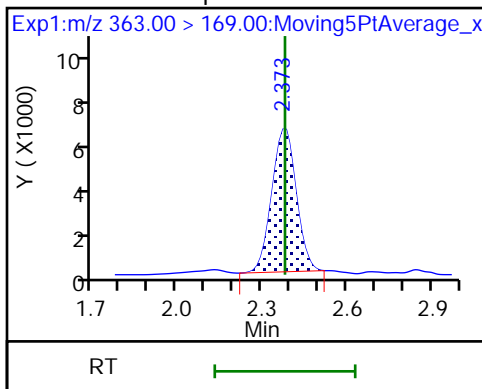
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

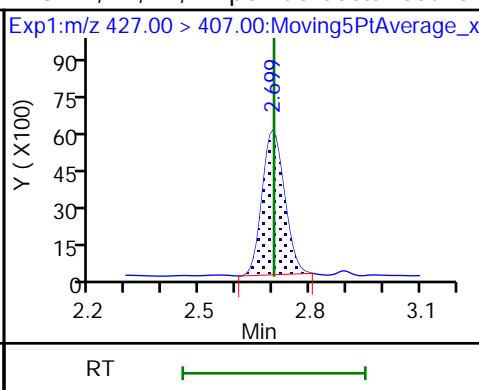
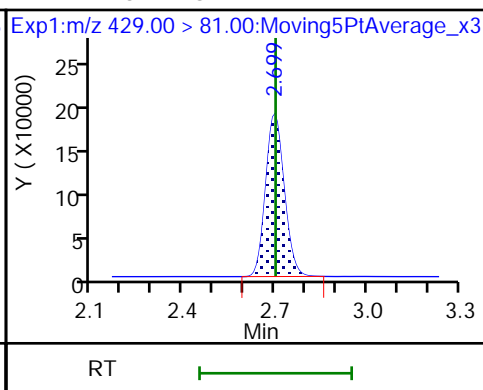
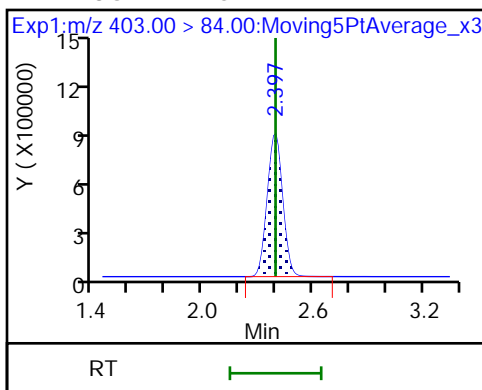
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

D 12 M2-6:2FTS

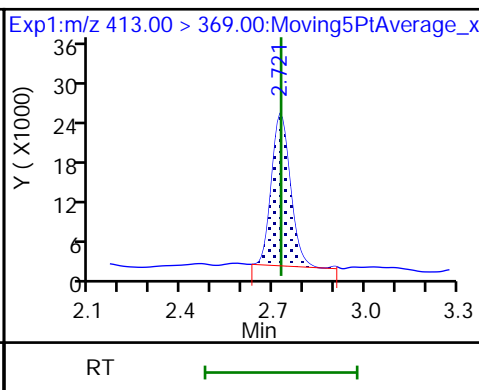
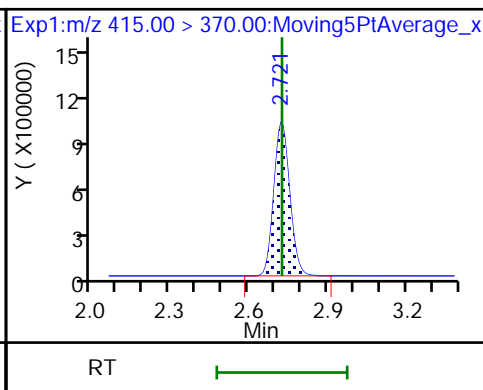
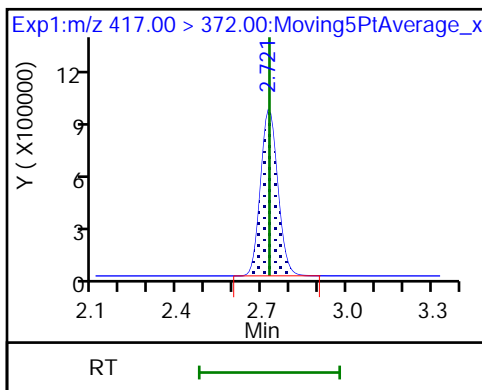
13 1H,1H,2H,2H-perfluorooctanesulfoni

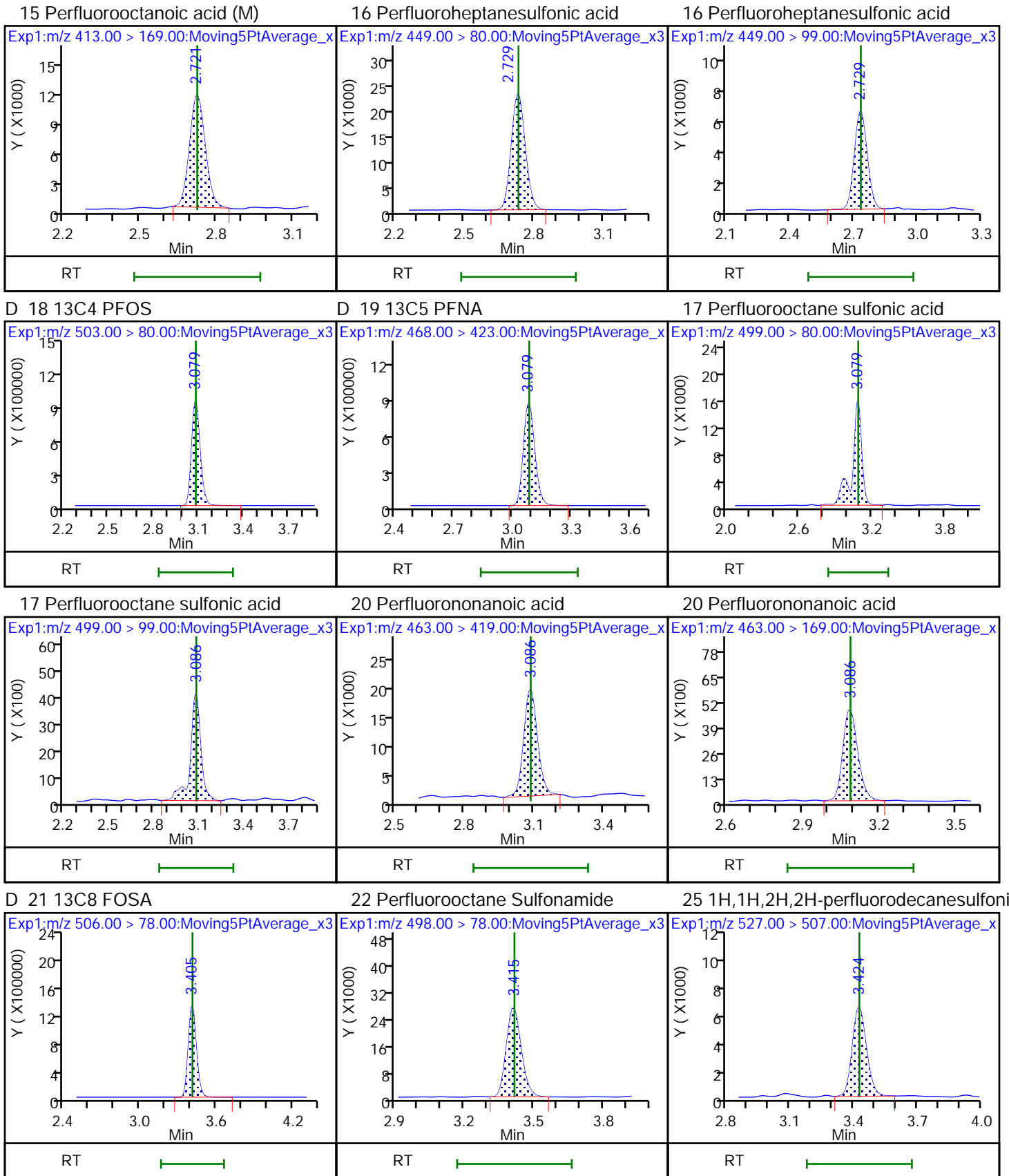


D 14 13C4 PFOA

* 62 13C2-PFOA

15 Perfluorooctanoic acid

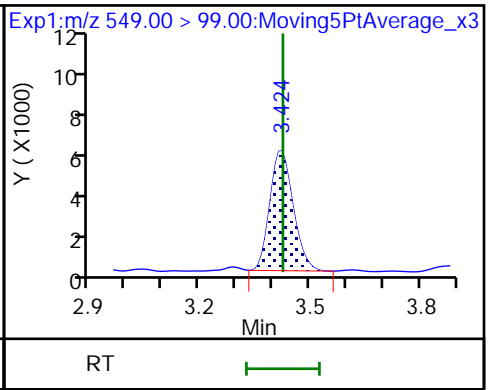
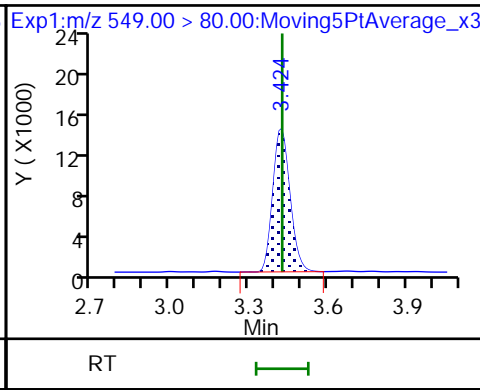
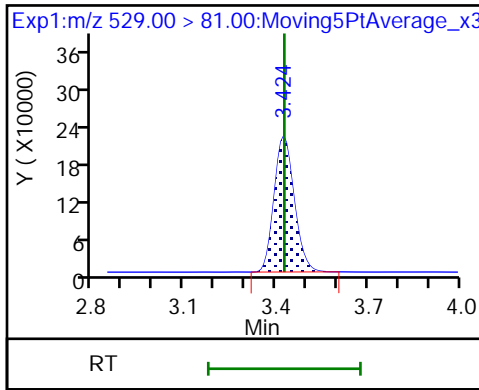




D 26 M2-8:2FTS

68 Perfluorononanesulfonic acid

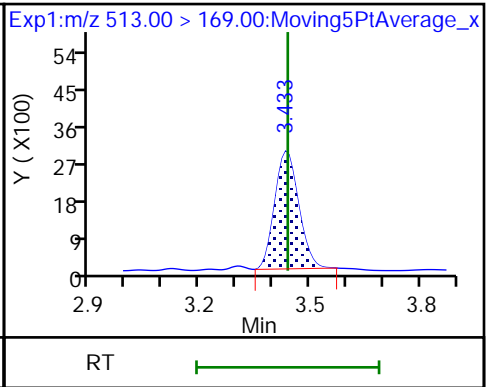
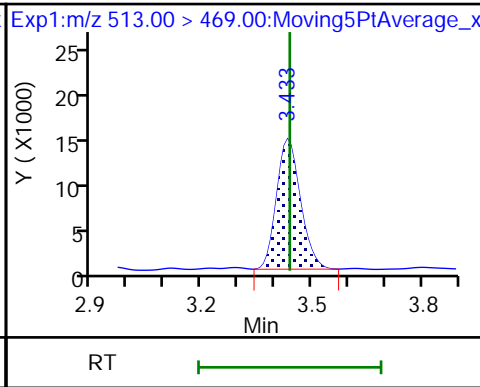
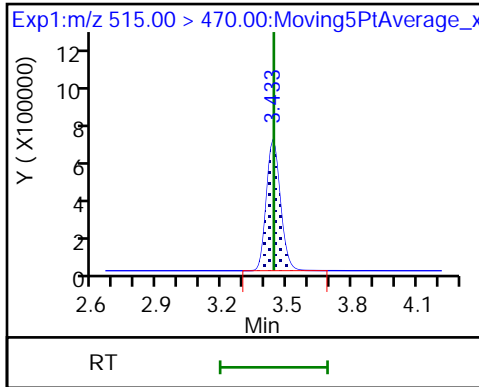
68 Perfluorononanesulfonic acid



D 23 13C2 PFDA

24 Perfluorodecanoic acid

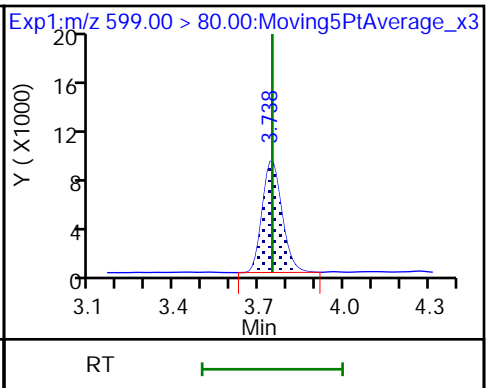
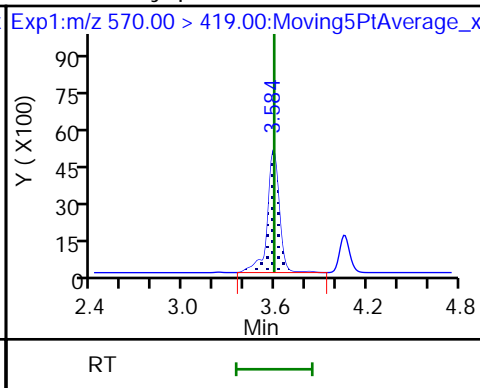
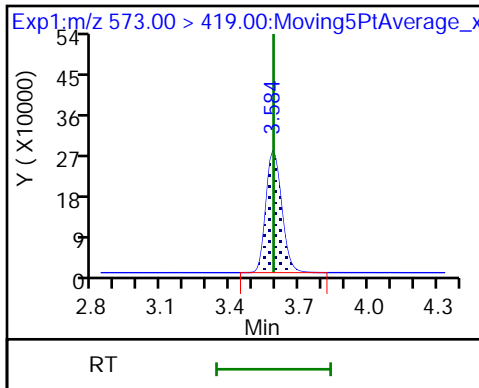
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

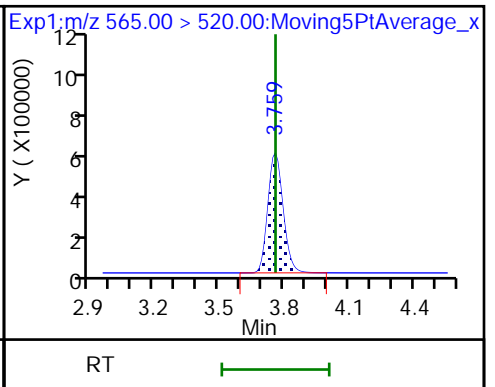
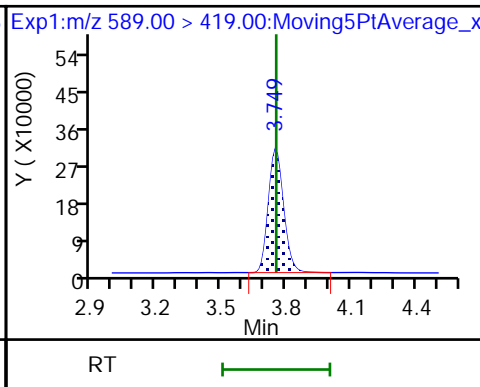
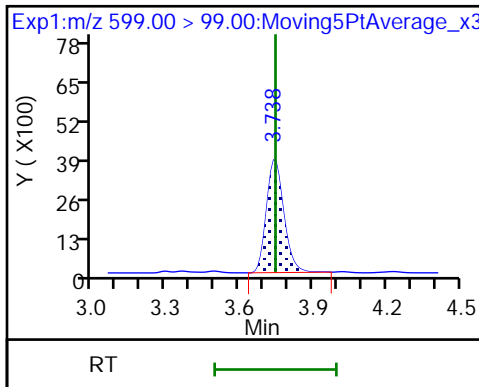
29 Perfluorodecane Sulfonic acid

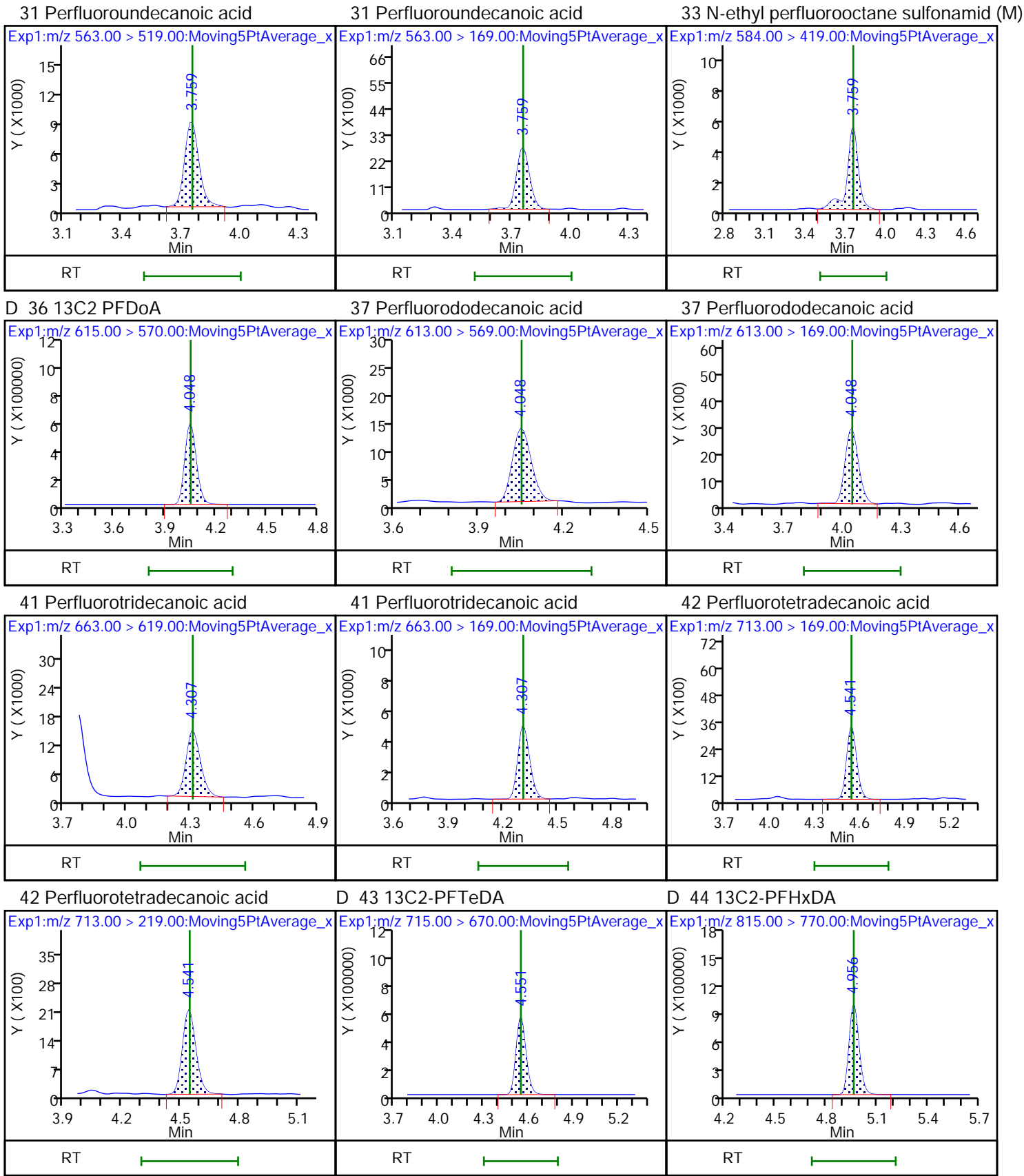


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

D 30 13C2 PFUnA





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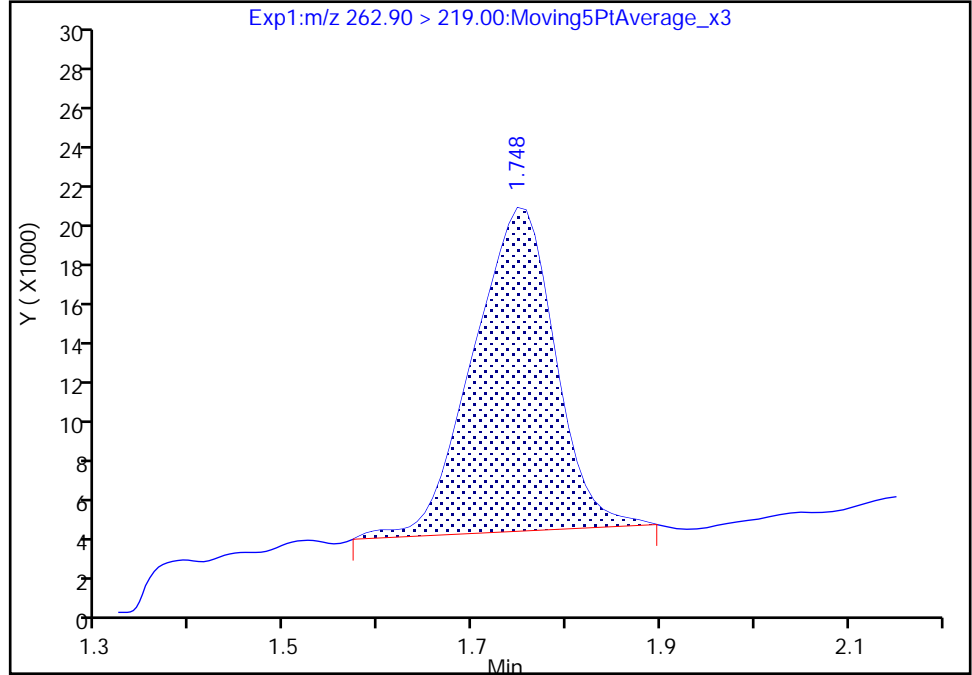
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_003.d
Injection Date: 19-Jul-2018 12:17:44 Instrument ID: A8_N
Lims ID: IC L2 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

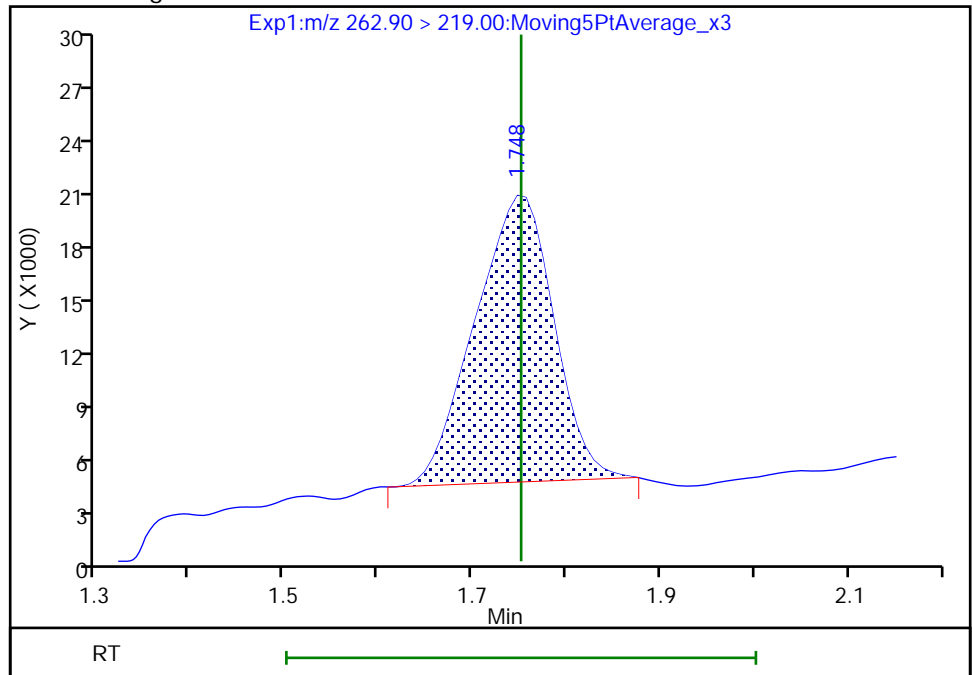
RT: 1.75
Area: 99448
Amount: 0.056909
Amount Units: ng/ml

Processing Integration Results



RT: 1.75
Area: 93384
Amount: 0.053974
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 14:43:54
Audit Action: Manually Integrated

Audit Reason: Baseline
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TestAmerica Sacramento

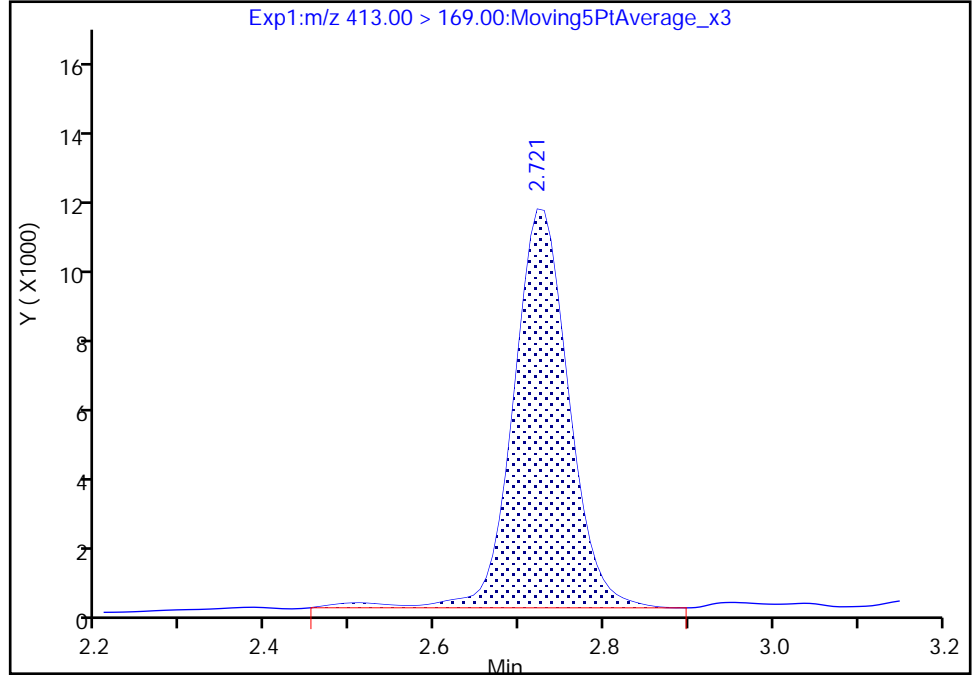
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_003.d
Injection Date: 19-Jul-2018 12:17:44 Instrument ID: A8_N
Lims ID: IC L2 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

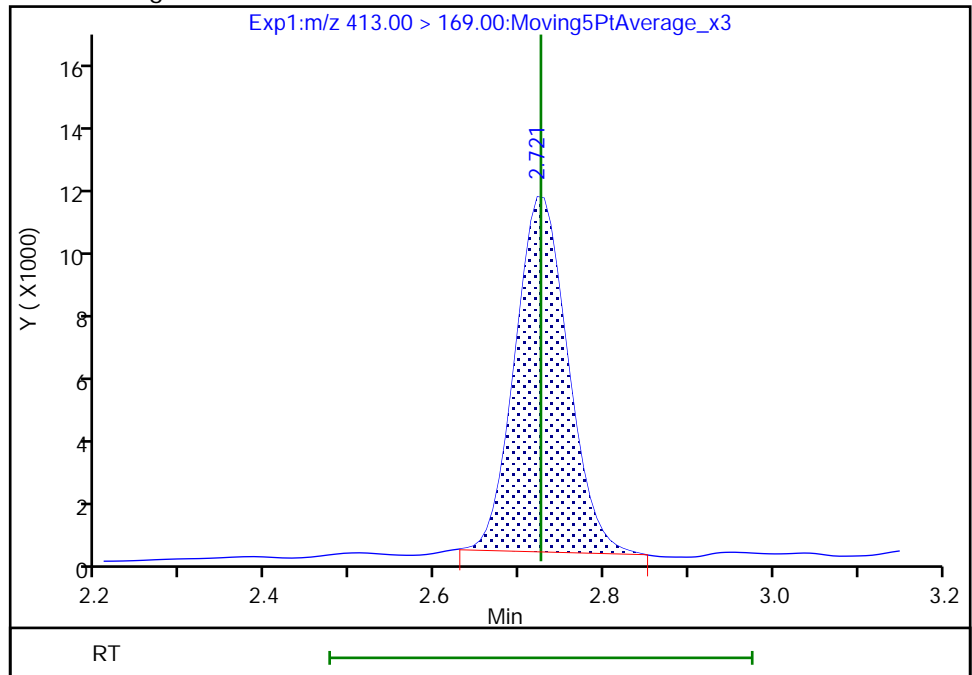
RT: 2.72
Area: 51429
Amount: 0.049347
Amount Units: ng/ml

Processing Integration Results



RT: 2.72
Area: 48257
Amount: 0.049347
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 14:43:42
Audit Action: Manually Integrated

TestAmerica Sacramento

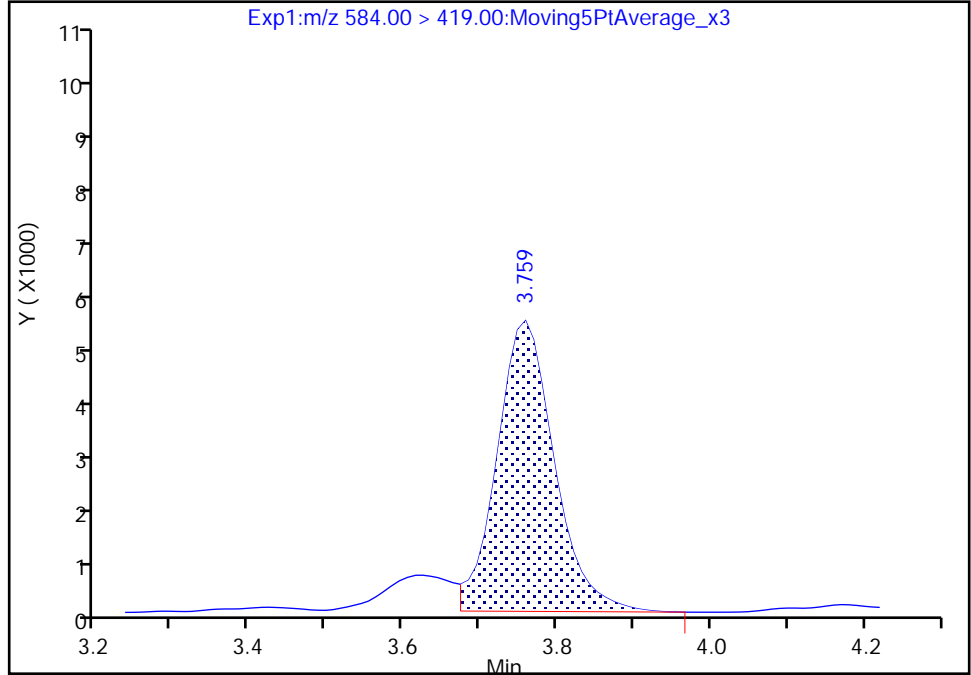
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Injection Date: 19-Jul-2018 12:17:44 Instrument ID: A8_N
Lims ID: IC L2 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 11 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

33 N-ethyl perfluorooctane sulfonamidoacetic ac, CAS: 2991-50-6

Signal: 1

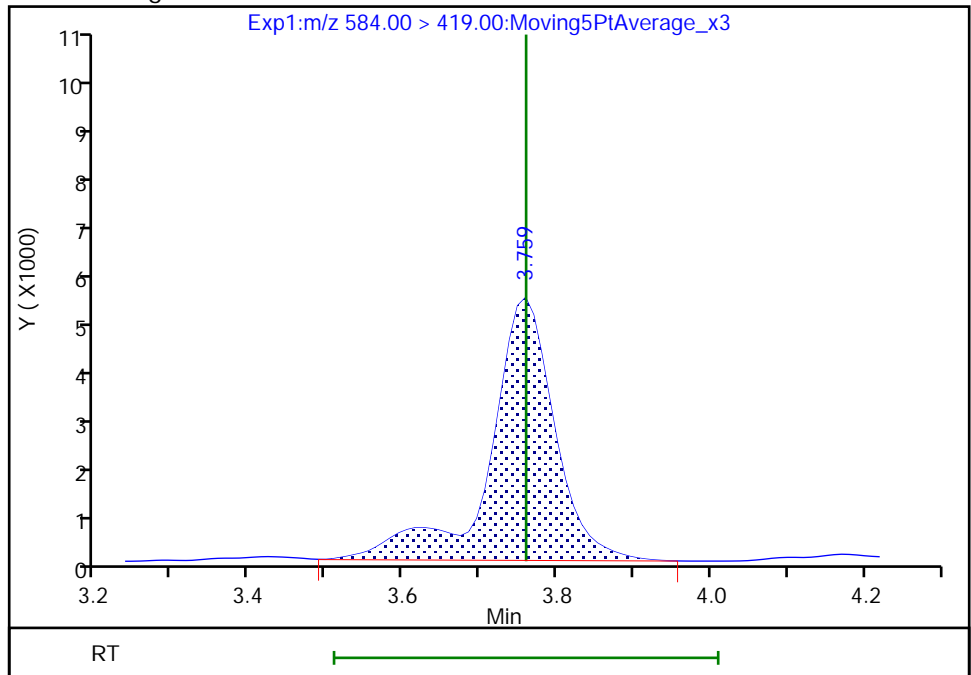
RT: 3.76
Area: 26838
Amount: 0.053482
Amount Units: ng/ml

Processing Integration Results



RT: 3.76
Area: 30754
Amount: 0.059949
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 14:44:18
Audit Action: Manually Integrated

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_004.d
 Lims ID: IC L3 Full
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 19-Jul-2018 12:25:33 ALS Bottle#: 12 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L3-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 15:19:47 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK022

First Level Reviewer: roycea Date: 19-Jul-2018 13:18:00

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	1.435	1.435	0.0	0.526	4955778	2.52	101	46920	
2 Perfluorobutyric acid	212.90 > 169.00	1.441	1.438	0.003	1.004	482861	0.2426	97.0	149	M
D 3 13C5-PFPeA	267.90 > 223.00	1.756	1.750	0.006	0.644	3512376	2.56	102	49098	
4 Perfluoropentanoic acid	262.90 > 219.00	1.756	1.752	0.004	1.000	420319	0.2440	97.6	174	
D 47 13C3-PFBS	301.90 > 83.00	1.801	1.795	0.006	0.660	82484	2.33	100	532	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.801	1.799	0.002	1.000	593344	0.2161	97.8	5457	
	298.90 > 99.00	1.801	1.799	0.002	1.000	260203	2.28(1.25-3.74)	97.8	4404	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.015	2.017	-0.002	1.119	106043	0.2278	97.6	6036	
D 60 M2-4:2FTS	329.00 > 81.00	2.026	2.019	0.007	0.743	446562	NC		6896	
6 Perfluorohexanoic acid	313.00 > 269.00	2.060	2.056	0.004	1.000	435878	0.2478	99.1	1114	
	313.00 > 119.00	2.060	2.056	0.004	1.000	39550	11.02(5.03-15.10)	99.1	801	
D 7 13C2 PFHxA	315.00 > 270.00	2.060	2.058	0.002	0.755	4045162	2.52	101	85957	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.082	2.082	0.0	1.156	606155	0.2352	100	14427	
	349.00 > 99.00	2.082	2.082	0.0	1.156	226392	2.68(1.36-4.07)	100	6400	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.150	2.151	-0.001	0.788	277198	NC		6799	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.150	2.153	-0.003	1.000	80167	NC	689	
D 9 13C4-PFHpA	367.00	> 322.00	2.385	2.379	0.006	0.874	3957747	2.55	102	45300
10 Perfluoroheptanoic acid	363.00	> 319.00	2.385	2.380	0.005	1.000	440214	0.2427	97.1	1058
	363.00	> 169.00	2.385	2.380	0.005	1.000	168910	2.61(1.13-3.40)	97.1	1934
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.396	2.394	0.002	1.000	549204	0.2246	98.7	5531
	399.00	> 99.00	2.396	2.394	0.002	1.000	175467	3.13(1.50-4.49)	98.7	1394
D 11 18O2 PFHxS	403.00	> 84.00	2.396	2.395	0.001	0.878	5055888	2.43	103	46455
65 ADONA	377.00	> 251.00	2.418	2.421	-0.003	0.784	1250245	NC	20504	
	377.00	> 85.00	2.418	2.421	-0.003	0.784	728380	1.72(0.84-2.53)	6033	
D 12 M2-6:2FTS	429.00	> 81.00	2.705	2.701	0.004	0.992	763465	2.55	107	15071
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.705	2.702	0.003	1.000	122487	0.2343	98.9	2922
D 14 13C4 PFOA	417.00	> 372.00	2.728	2.725	0.003	1.000	3844808	2.57	103	56582
* 62 13C2-PFOA	415.00	> 370.00	2.728	2.725	0.003		3935668	2.50	45995	
15 Perfluorooctanoic acid	413.00	> 369.00	2.728	2.725	0.003	1.000	484925	0.2561	102	270
	413.00	> 169.00	2.728	2.725	0.003	1.000	241254	2.01(0.84-2.52)	102	1344
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.735	2.733	0.002	0.886	487403	0.2443	103	9538
	449.00	> 99.00	2.735	2.733	0.002	0.886	127507	3.82(1.94-5.82)	103	3268
D 18 13C4 PFOS	503.00	> 80.00	3.086	3.083	0.003	1.131	3553250	2.38	99.8	54875
D 19 13C5 PFNA	468.00	> 423.00	3.086	3.085	0.001	1.131	3357135	2.65	106	34196
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.086	3.086	0.0	1.000	399592	0.2271	97.9	7468
	499.00	> 99.00	3.086	3.086	0.0	1.000	95274	4.19(2.31-6.93)	97.9	1495
20 Perfluorononanoic acid	463.00	> 419.00	3.086	3.086	0.0	1.000	351911	0.2322	92.9	699
	463.00	> 169.00	3.086	3.086	0.0	1.000	77782	4.52(1.90-5.69)	92.9	2123
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.293	3.291	0.002	1.067	647650	NC	9042	
D 21 13C8 FOSA	506.00	> 78.00	3.414	3.413	0.001	1.252	5782925	2.61	105	46264
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.414	3.415	-0.001	1.000	587792	0.2492	99.7	13058
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.424	3.426	-0.002	1.000	130625	0.2401	100	2221

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.424	3.426	-0.002	1.255	980840	2.52		105	15412	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.424	3.426	-0.002	1.109	284213	0.2351		98.0	9084	
549.00 > 99.00	3.424	3.426	-0.002	1.109	112519		2.53(1.33-3.97)	98.0	1680	
D 23 13C2 PFDA										
515.00 > 470.00	3.442	3.438	0.004	1.262	3084448	2.70		108	45325	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.442	3.439	0.003	1.000	321742	0.2421		96.8	2644	
513.00 > 169.00	3.442	3.439	0.003	1.000	51636		6.23(2.36-7.09)	96.8	1909	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.594	3.587	0.007	1.318	1238553	2.51		100	31942	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.594	3.592	0.002	1.000	117955	0.2372		94.9	963	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.749	3.746	0.003	1.215	250025	0.2399		99.5	7468	
599.00 > 99.00	3.749	3.746	0.003	1.215	89754		2.79(1.39-4.16)	99.5	3611	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.759	3.754	0.005	1.378	1532769	2.77		111	3534	
D 30 13C2 PFUnA										
565.00 > 520.00	3.759	3.760	-0.001	1.378	2689968	2.69		108	46632	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.759	3.760	-0.001	1.000	199917	0.2360		94.4	982	
563.00 > 169.00	3.759	3.760	-0.001	1.000	53725		3.72(2.12-6.36)	94.4	2784	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.759	3.760	-0.001	1.000	128945	0.2402		96.1	3663	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.916	3.916	0.0	1.269	958275	NC			25509	
D 36 13C2 PFDoA										
615.00 > 570.00	4.048	4.051	-0.003	1.484	2670150	2.63		105	25544	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.048	4.051	-0.003	1.000	290395	0.2461		98.4	171	
613.00 > 169.00	4.048	4.051	-0.003	1.000	69421		4.18(2.13-6.40)	98.4	2409	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.318	4.311	0.007	1.067	281272	0.2346		93.8	130	
663.00 > 169.00	4.318	4.311	0.007	1.067	84695		3.32(1.25-3.76)	93.8	1505	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.551	4.546	0.005	1.000	62002	0.2295		91.8	1473	
713.00 > 219.00	4.541	4.546	-0.005	0.998	41187		1.51(0.71-2.13)	91.8	949	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.551	4.547	0.004	1.669	2565538	2.63		105	12828	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.965	4.960	0.005	1.820	4129611	2.68		107	11414	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.965	4.962	0.003	1.000	420168	NC			102	
813.00 > 169.00	4.965	4.962	0.003	1.000	67928		6.19(2.86-8.58)		688	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.320	5.316	0.004	1.072	472023	NC			104	
913.00 > 169.00	5.320	5.316	0.004	1.072	56004		8.43(3.83-11.48)		845	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL3_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_004.d

Injection Date: 19-Jul-2018 12:25:33

Instrument ID: A8_N

Lims ID: IC L3 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 12

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

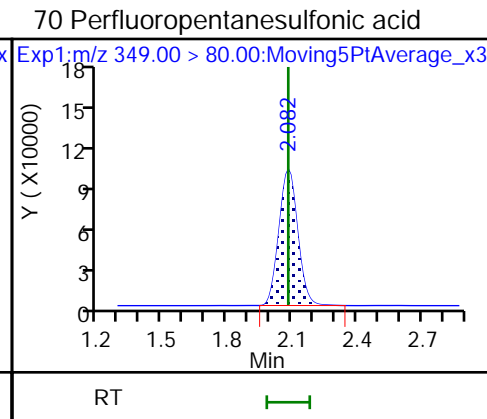
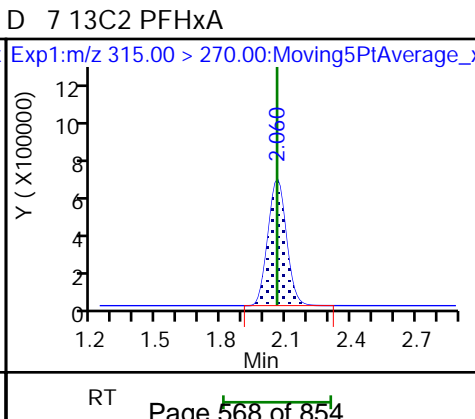
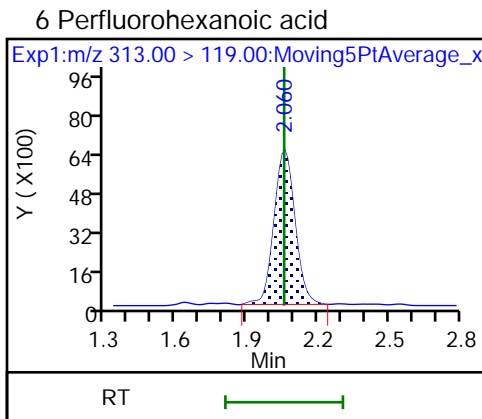
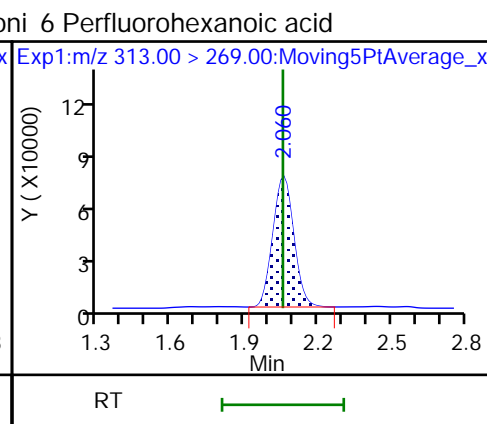
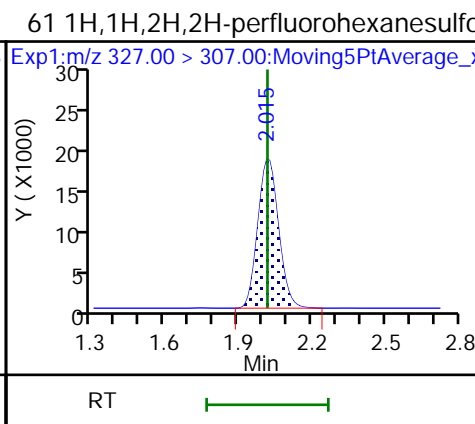
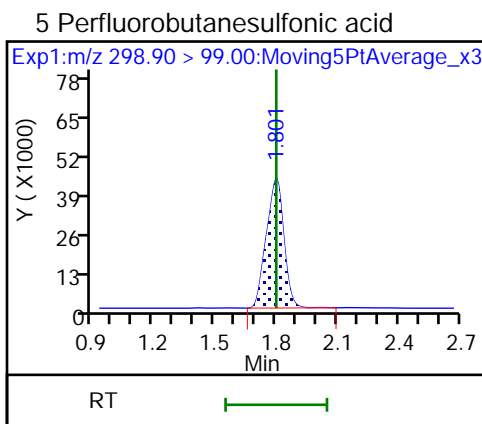
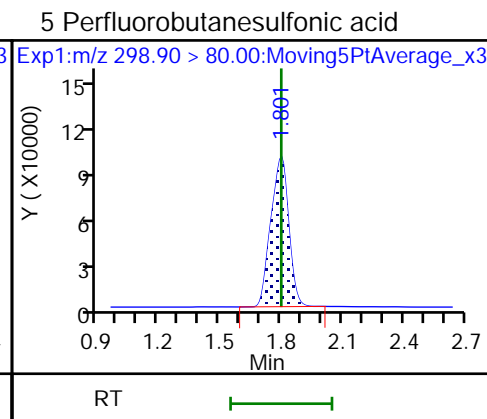
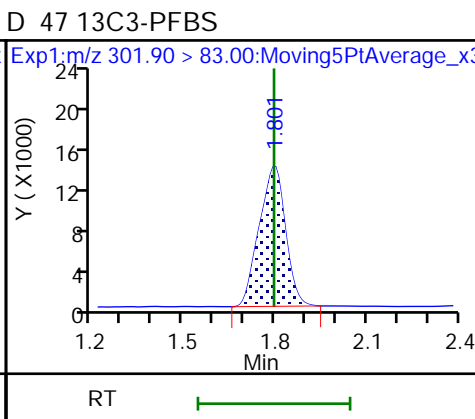
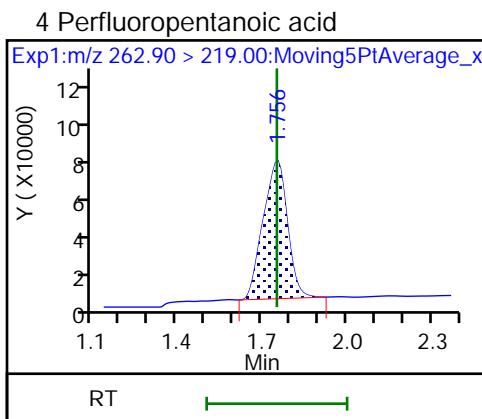
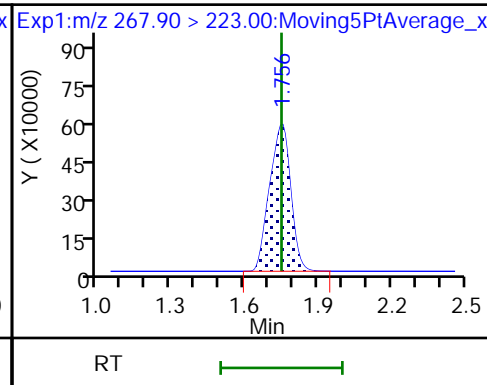
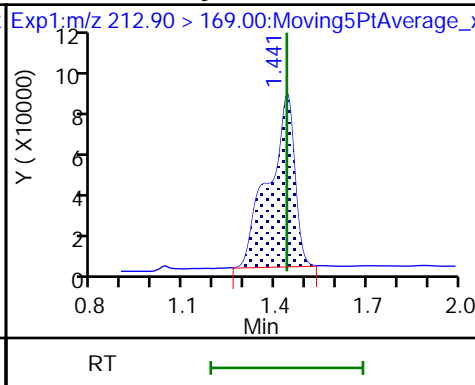
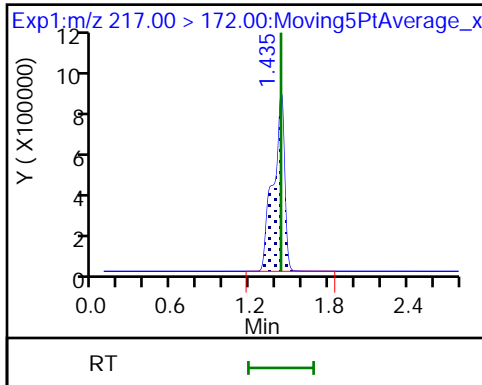
Method: A8_N

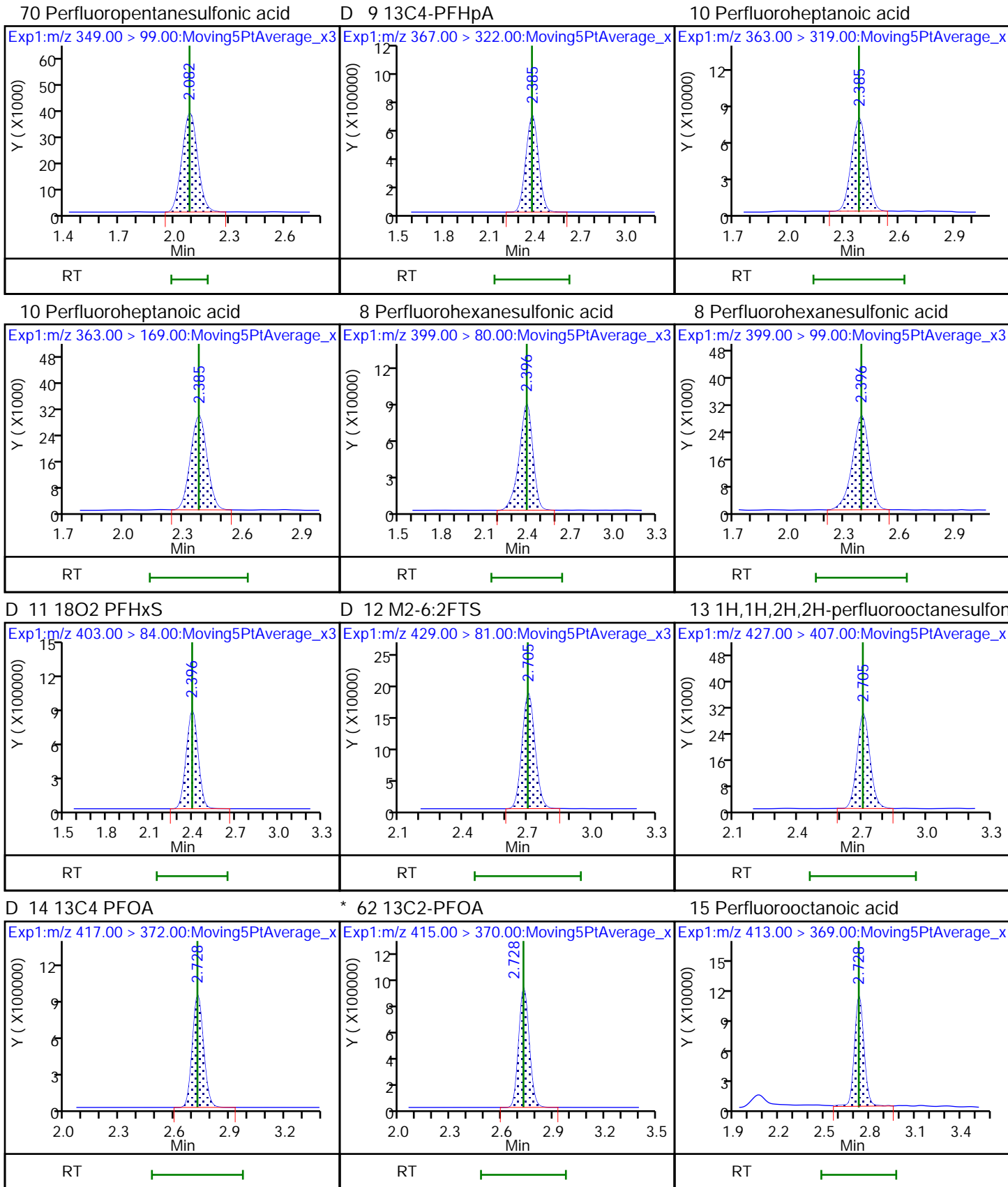
Limit Group: LC PFC_QSM5-1 ICAL

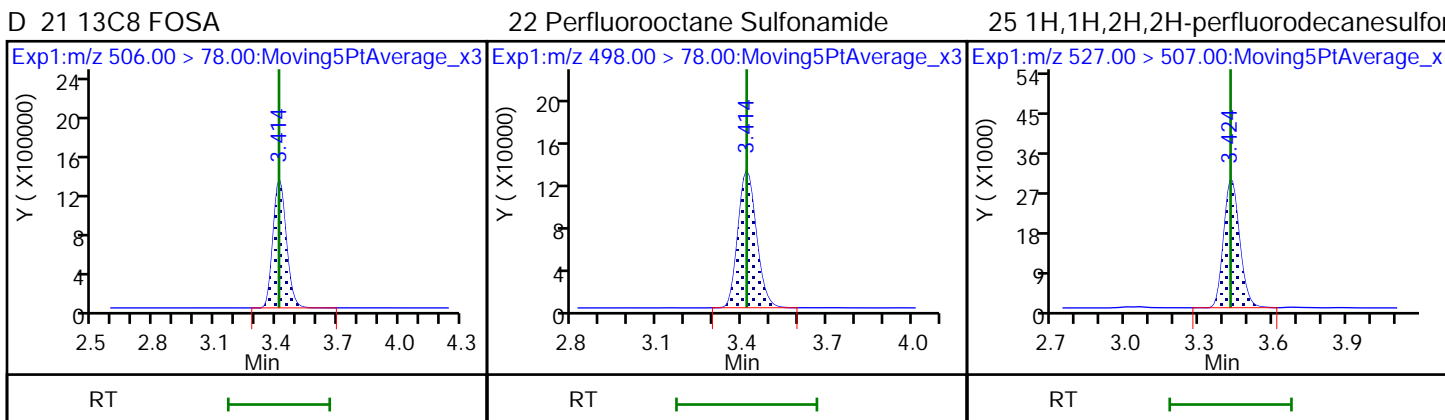
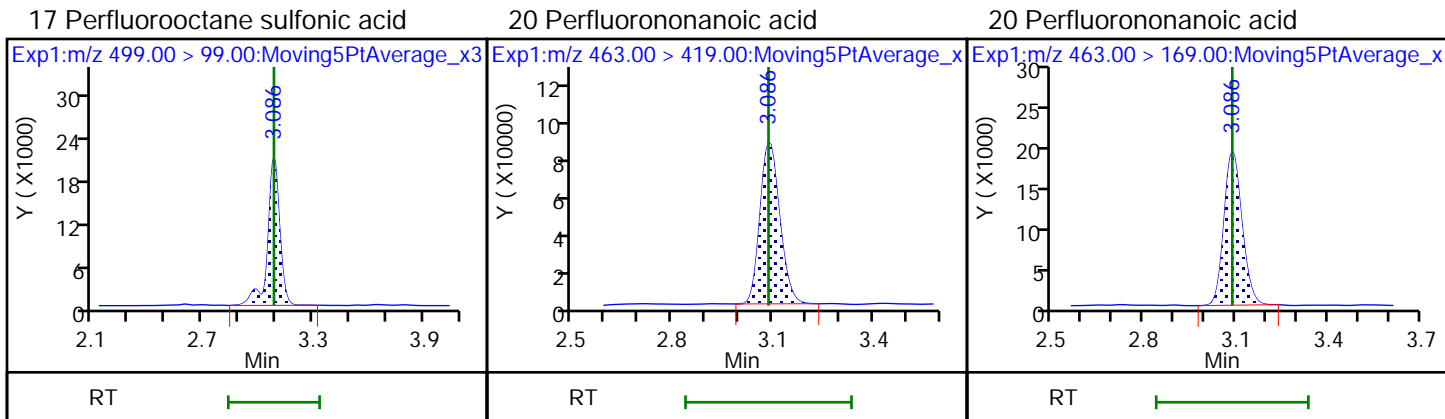
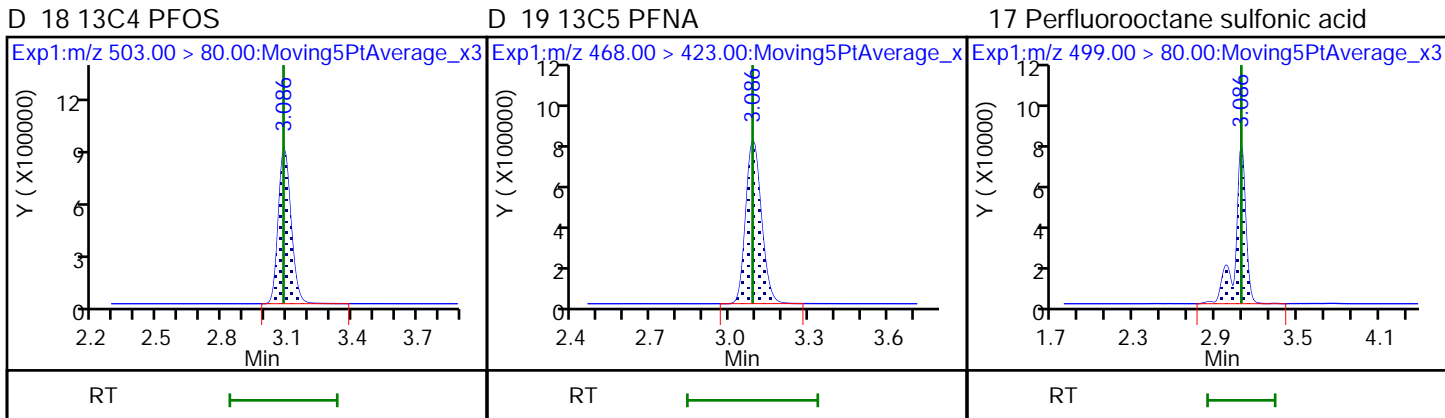
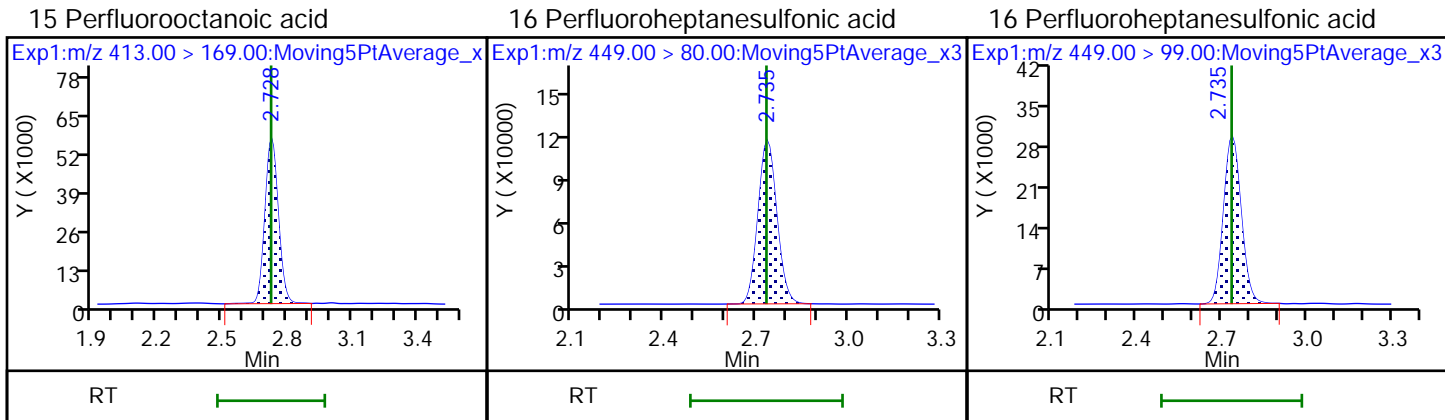
D 1 13C4 PFBA

2 Perfluorobutyric acid (M)

D 3 13C5-PFPeA



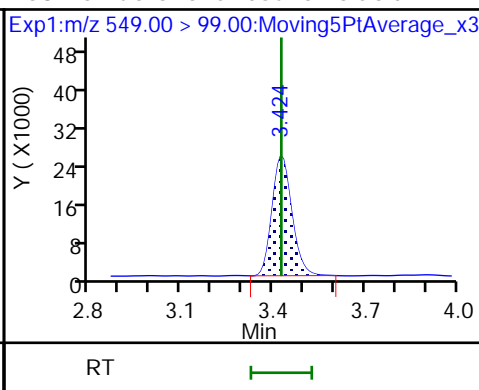
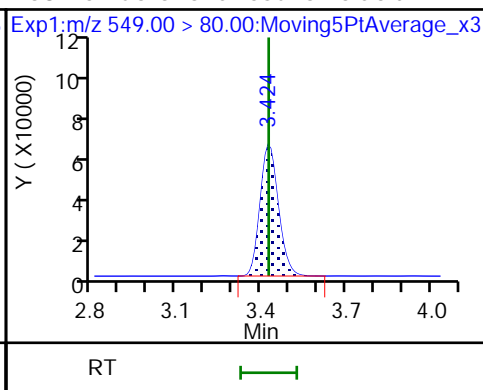
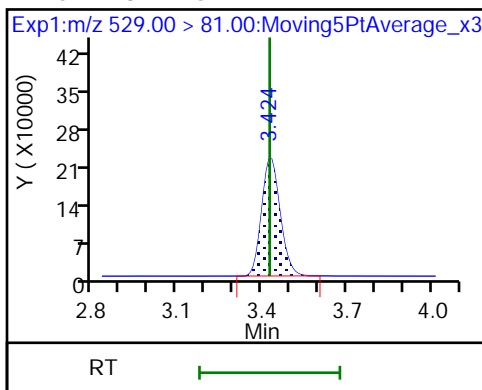




D 26 M2-8:2FTS

68 Perfluorononanesulfonic acid

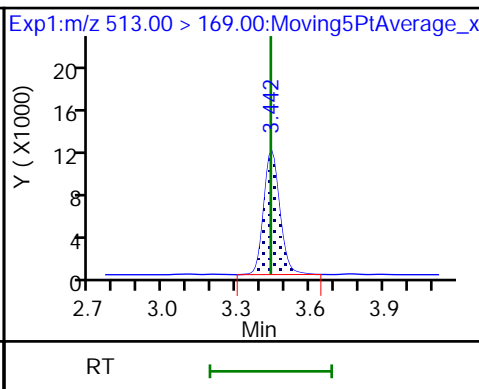
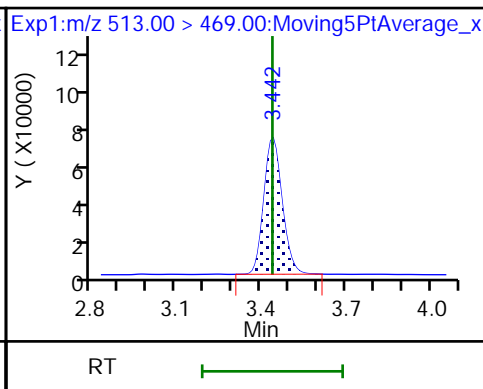
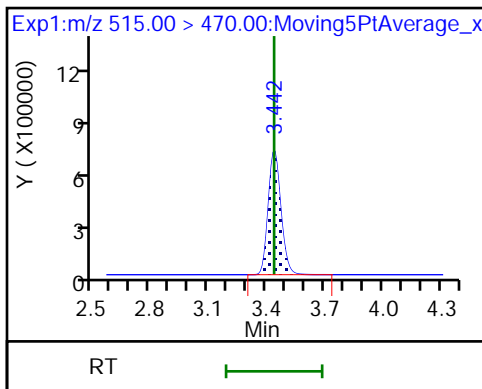
68 Perfluorononanesulfonic acid



D 23 13C2 PFDA

24 Perfluorodecanoic acid

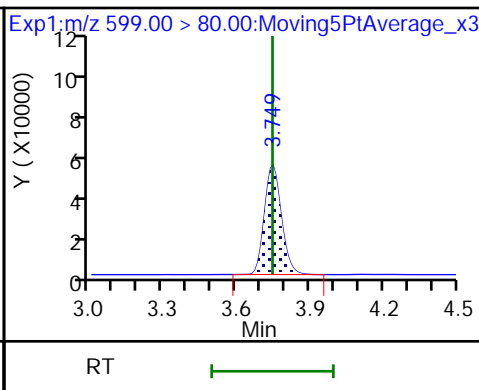
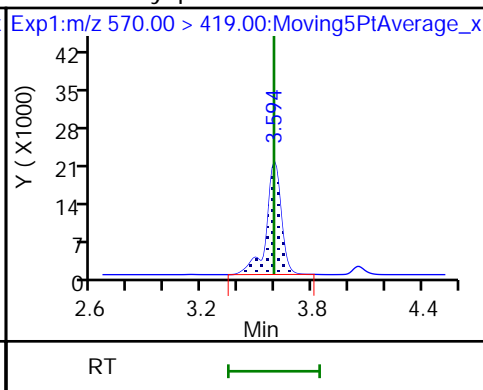
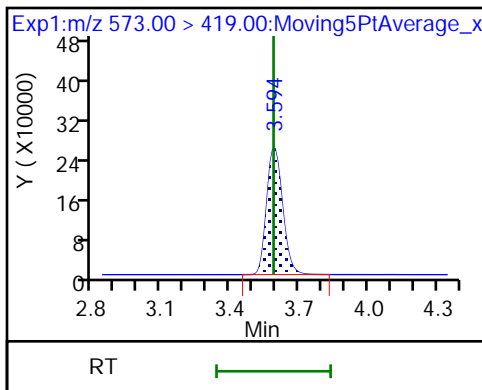
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

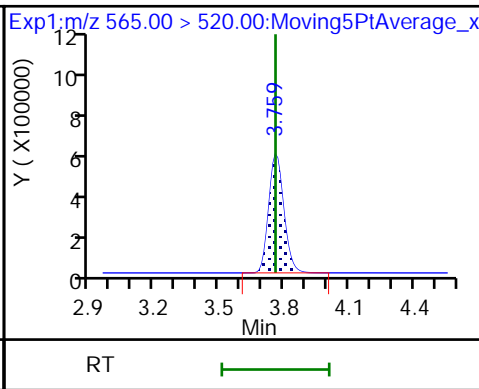
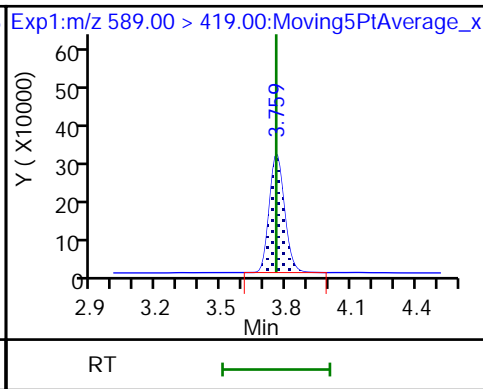
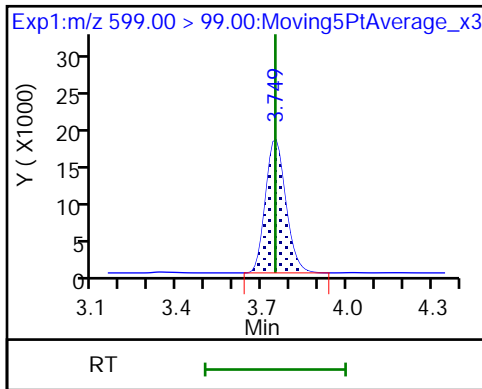
29 Perfluorodecane Sulfonic acid

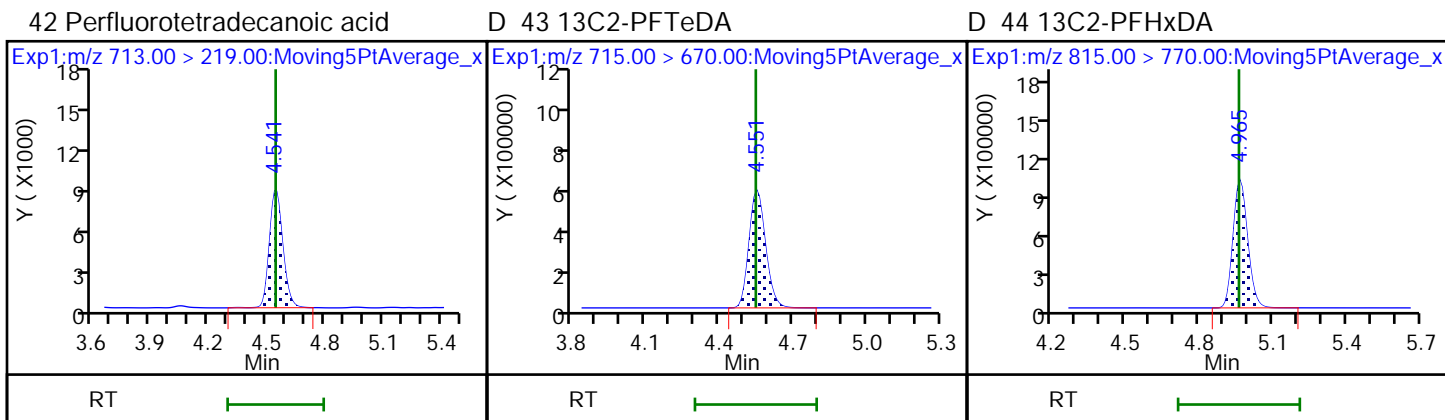
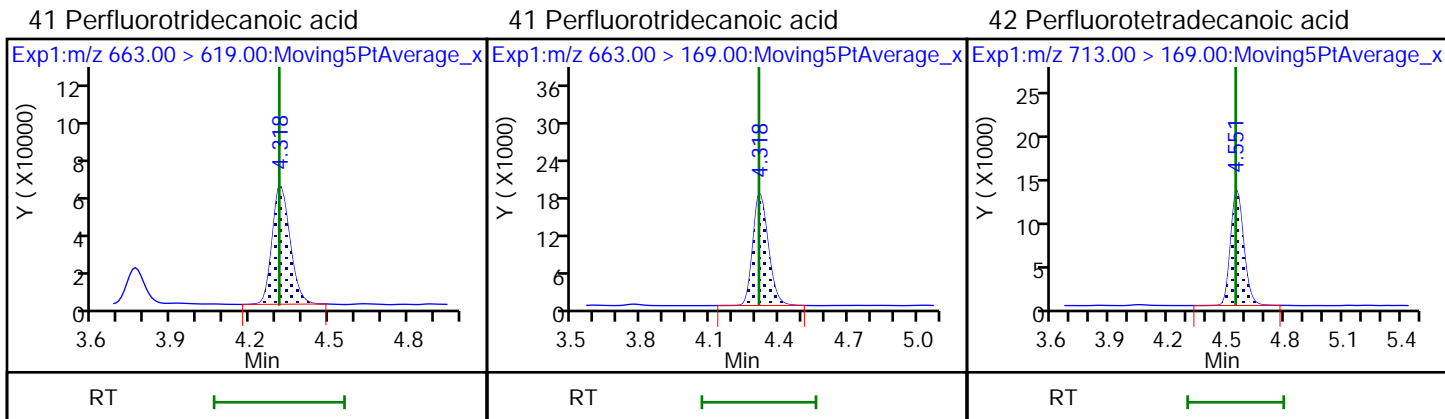
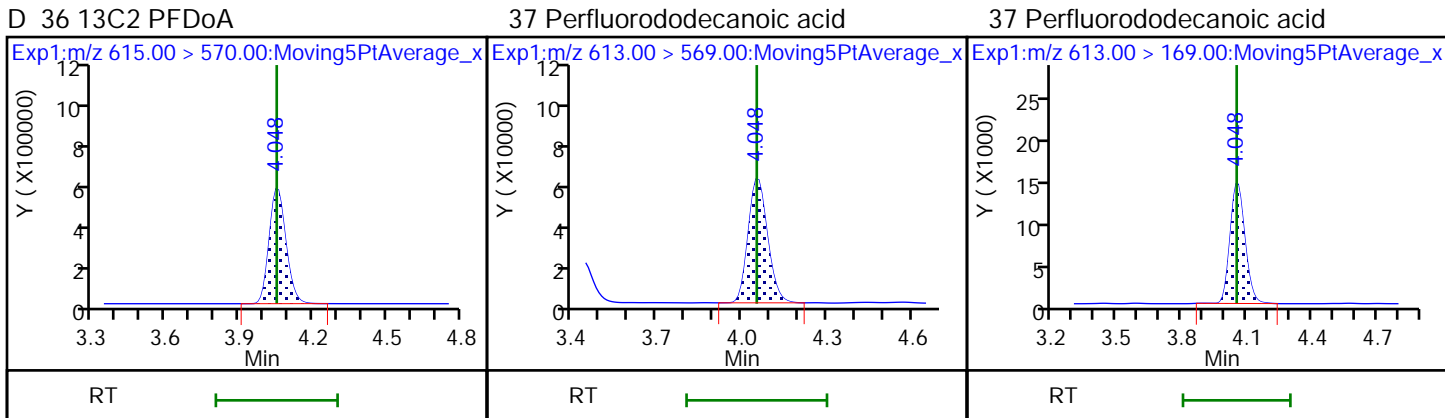
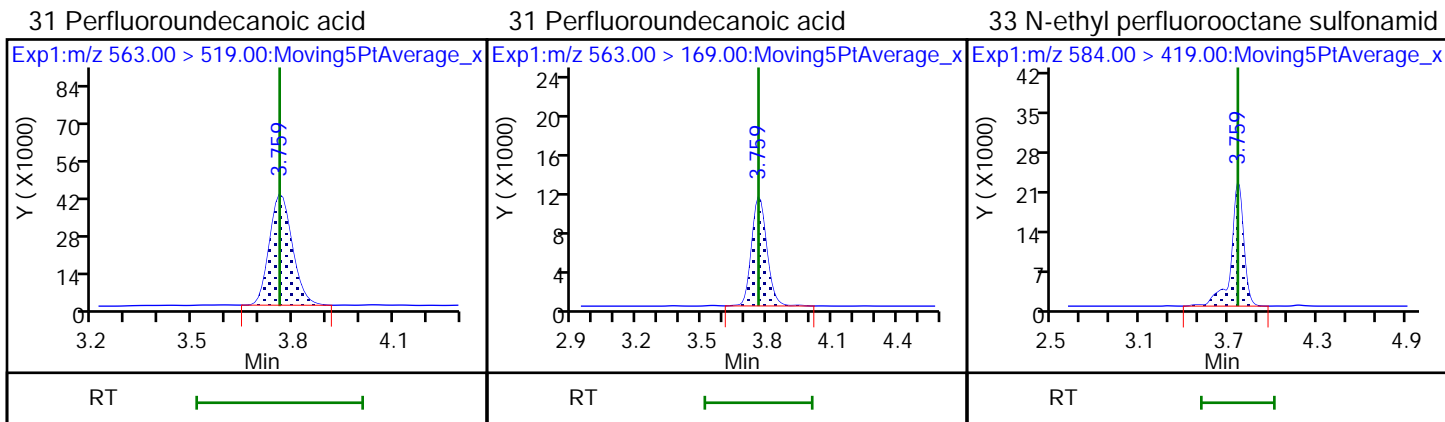


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

D 30 13C2 PFUnA





TestAmerica Sacramento

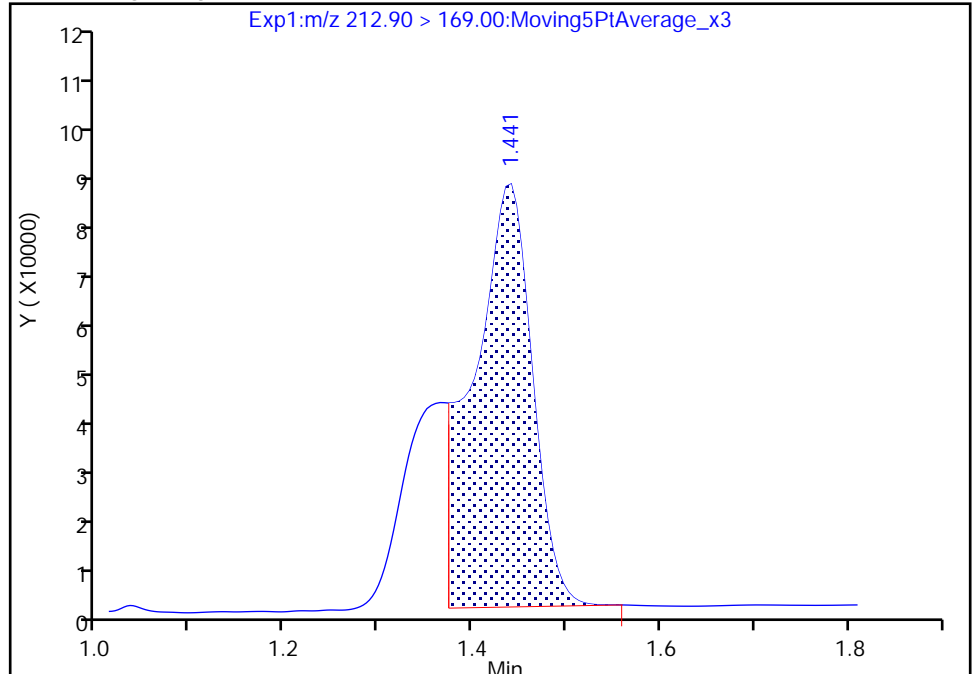
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Injection Date: 19-Jul-2018 12:25:33 Instrument ID: A8_N
Lims ID: IC L3 Full
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 12 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

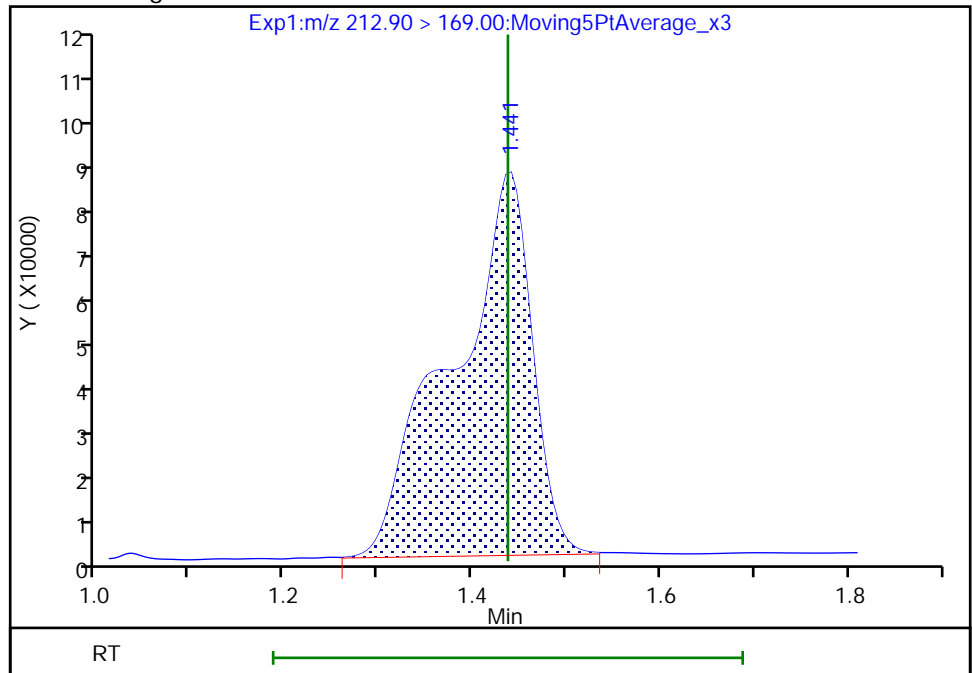
RT: 1.44
Area: 350401
Amount: 0.183002
Amount Units: ng/ml

Processing Integration Results



RT: 1.44
Area: 482861
Amount: 0.242592
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 14:45:29
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_005.d
 Lims ID: IC L4 Full
 Client ID:
 Sample Type: ICIS Calib Level: 4
 Inject. Date: 19-Jul-2018 12:33:22 ALS Bottle#: 13 Worklist Smp#: 5
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L4-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 15:19:50 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK022

First Level Reviewer: roycea Date: 19-Jul-2018 13:29:21

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	1.430	1.435	-0.005	0.526	4793333	2.46	98.2	75534	
2 Perfluorobutyric acid	212.90 > 169.00	1.435	1.438	-0.003	1.004	1873207	0.9730	97.3	643	
D 3 13C5-PFPeA	267.90 > 223.00	1.746	1.750	-0.004	0.642	3329350	2.45	98.0	43608	
4 Perfluoropentanoic acid	262.90 > 219.00	1.746	1.752	-0.006	1.000	1516785	0.9287	92.9	645	
D 47 13C3-PFBS	301.90 > 83.00	1.791	1.795	-0.004	0.659	79330	2.26	97.1	447	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.791	1.799	-0.008	1.000	2345694	0.8881	100	21989	
	298.90 > 99.00	1.791	1.799	-0.008	1.000	969290	2.42(1.25-3.74)	100	12530	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.014	2.017	-0.003	1.124	420002	0.9382	100	23667	
D 60 M2-4:2FTS	329.00 > 81.00	2.014	2.019	-0.005	0.741	426589	NC		6553	
6 Perfluorohexanoic acid	313.00 > 269.00	2.048	2.056	-0.008	1.000	1595558	0.9246	92.5	4222	
	313.00 > 119.00	2.048	2.056	-0.008	1.000	154165	10.35(5.03-15.10)	92.5	2603	
D 7 13C2 PFHxA	315.00 > 270.00	2.048	2.058	-0.010	0.753	3968266	2.50	100.0	94856	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.082	2.082	0.0	1.162	2366814	0.9550	102	43536	
	349.00 > 99.00	2.082	2.082	0.0	1.162	858040	2.76(1.36-4.07)	102	20417	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.149	2.151	-0.002	0.790	255406	NC		5487	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.149	2.153	-0.004	1.000	288430	NC		2442
D 9 13C4-PFHpA	367.00	> 322.00	2.371	2.379	-0.008	0.872	3810067	2.48	99.2	43129
10 Perfluoroheptanoic acid	363.00	> 319.00	2.371	2.380	-0.009	1.000	1690871	0.9684	96.8	3853
	363.00	> 169.00	2.371	2.380	-0.009	1.000	658870	2.57(1.13-3.40)	96.8	7465
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.384	2.394	-0.010	0.995	2056963	0.8692	95.5	12731
	399.00	> 99.00	2.384	2.394	-0.010	0.995	689619	2.98(1.50-4.49)	95.5	5122
D 11 18O2 PFHxS	403.00	> 84.00	2.395	2.395	0.0	0.881	4894221	2.38	101	49024
65 ADONA	377.00	> 251.00	2.417	2.421	-0.004	0.786	4974051	NC		56383
	377.00	> 85.00	2.417	2.421	-0.004	0.786	2853186	1.74(0.84-2.53)		18238
D 12 M2-6:2FTS	429.00	> 81.00	2.697	2.701	-0.004	0.992	668108	2.25	94.8	13114
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.697	2.702	-0.005	1.000	414355	0.9057	95.5	7875
D 14 13C4 PFOA	417.00	> 372.00	2.719	2.725	-0.006	1.000	3727566	2.51	100	47978
* 62 13C2-PFOA	415.00	> 370.00	2.719	2.725	-0.006		3899180	2.50		48035
15 Perfluorooctanoic acid	413.00	> 369.00	2.719	2.725	-0.006	1.000	1726255	0.9405	94.0	938
	413.00	> 169.00	2.719	2.725	-0.006	1.000	888030	1.94(0.84-2.52)	94.0	4989
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.727	2.733	-0.006	0.887	1902646	0.9644	101	22430
	449.00	> 99.00	2.727	2.733	-0.006	0.887	502395	3.79(1.94-5.82)	101	9671
D 18 13C4 PFOS	503.00	> 80.00	3.076	3.083	-0.007	1.131	3514122	2.38	99.6	29634
D 19 13C5 PFNA	468.00	> 423.00	3.083	3.085	-0.002	1.134	3148950	2.51	100	36726
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.083	3.086	-0.003	1.003	1521008	0.8740	94.2	23500
	499.00	> 99.00	3.083	3.086	-0.003	1.003	347027	4.38(2.31-6.93)	94.2	14450
20 Perfluorononanoic acid	463.00	> 419.00	3.083	3.086	-0.003	1.000	1375214	0.9672	96.7	3145
	463.00	> 169.00	3.083	3.086	-0.003	1.000	322059	4.27(1.90-5.69)	96.7	9757
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.290	3.291	-0.001	1.070	2453406	NC		23636
D 21 13C8 FOSA	506.00	> 78.00	3.410	3.413	-0.003	1.254	5487673	2.50	100	39331
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.410	3.415	-0.005	1.000	2225796	0.99	99.4	29230
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.420	3.426	-0.006	1.000	493007	0.99	103	8199

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.420	3.426	-0.006	1.258	897394	2.33		97.3	11457	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.420	3.426	-0.006	1.112	1106418	0.9254		96.4	27336	
549.00 > 99.00	3.420	3.426	-0.006	1.112	425024		2.60(1.33-3.97)	96.4	7324	
D 23 13C2 PFDA										
515.00 > 470.00	3.429	3.438	-0.009	1.261	2957312	2.61		104	59375	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.438	3.439	-0.001	1.003	1201844	0.9431		94.3	6430	
513.00 > 169.00	3.429	3.439	-0.010	1.000	214834		5.59(2.36-7.09)	94.3	9444	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.578	3.587	-0.009	1.316	1221019	2.50		99.9	28508	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.589	3.592	-0.003	1.003	459077	0.9364		93.6	3461	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.742	3.746	-0.004	1.217	1008302	0.9783		101	29631	
599.00 > 99.00	3.742	3.746	-0.004	1.217	341077		2.96(1.39-4.16)	101	8717	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.753	3.754	-0.001	1.380	1404624	2.56		103	3283	
D 30 13C2 PFUnA										
565.00 > 520.00	3.753	3.760	-0.007	1.380	2481019	2.51		100	56292	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.753	3.760	-0.007	1.000	751363	0.9618		96.2	2697	
563.00 > 169.00	3.753	3.760	-0.007	1.000	198983		3.78(2.12-6.36)	96.2	8132	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.753	3.760	-0.007	1.000	468159	0.9518		95.2	13436	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.910	3.916	-0.006	1.271	3813953	NC			50895	
D 36 13C2 PFDoA										
615.00 > 570.00	4.052	4.051	0.001	1.490	2486312	2.47		98.7	19287	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.052	4.051	0.001	1.000	1092036	0.99		99.4	692	
613.00 > 169.00	4.052	4.051	0.001	1.000	252260		4.33(2.13-6.40)	99.4	5331	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.309	4.311	-0.002	1.063	1064933	0.9540		95.4	505	
663.00 > 169.00	4.309	4.311	-0.002	1.063	340502		3.13(1.25-3.76)	95.4	5640	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.544	4.546	-0.002	1.000	236302	1.02		102	3876	
713.00 > 219.00	4.544	4.546	-0.002	1.000	166017		1.42(0.71-2.13)	102	3522	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.544	4.547	-0.003	1.671	2207313	2.29		91.4	11513	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.959	4.960	-0.001	1.824	3601873	2.36		94.3	11075	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.959	4.962	-0.003	1.000	1406255	NC			351	
813.00 > 169.00	4.959	4.962	-0.003	1.000	229006		6.14(2.86-8.58)		2518	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.315	5.316	-0.001	1.072	1618520	NC			371	
913.00 > 169.00	5.307	5.316	-0.009	1.070	198235		8.16(3.83-11.48)		2531	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_005.d

Injection Date: 19-Jul-2018 12:33:22

Instrument ID: A8_N

Lims ID: IC L4 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 5

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

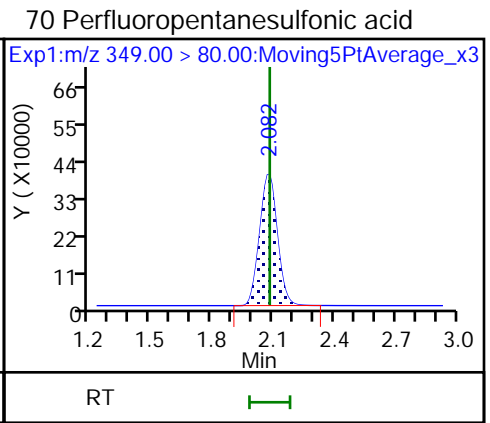
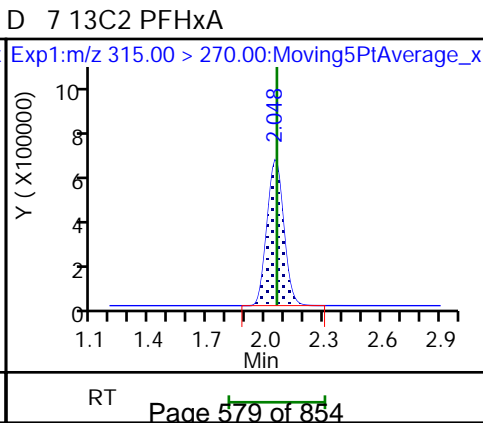
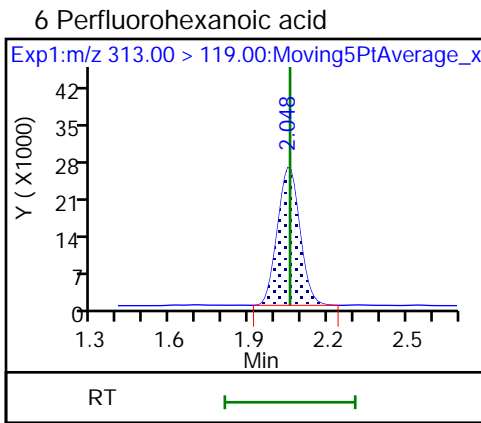
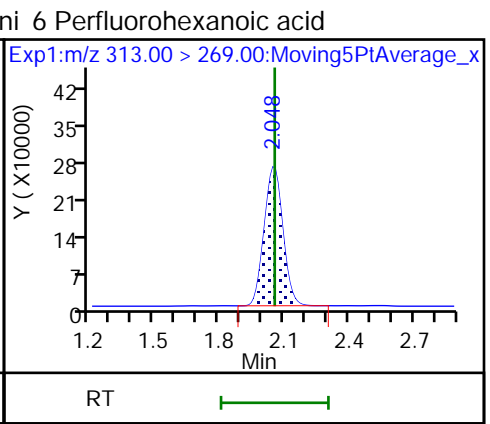
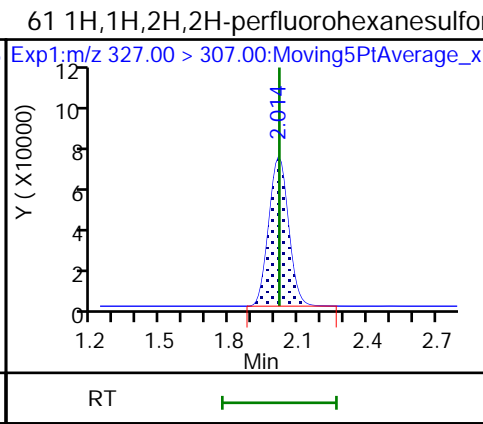
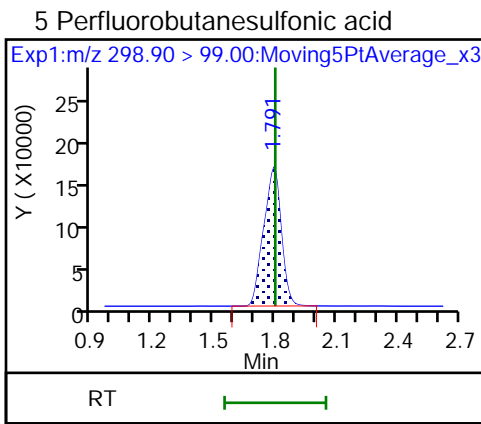
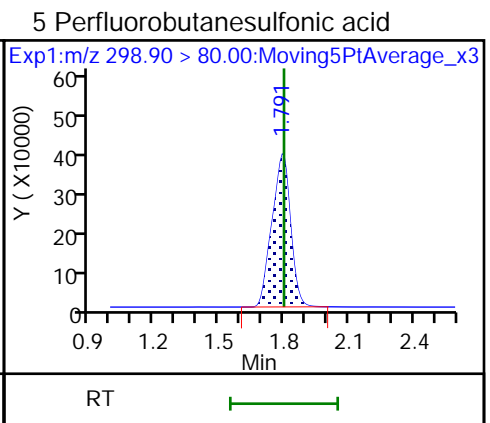
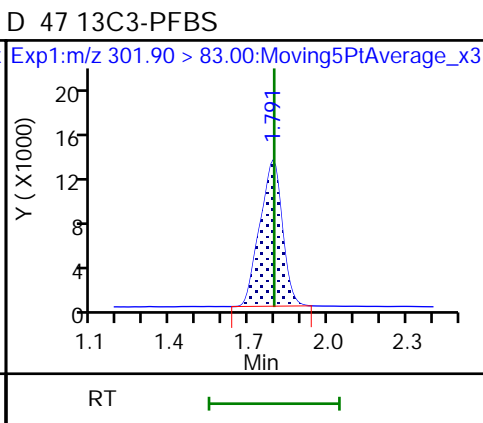
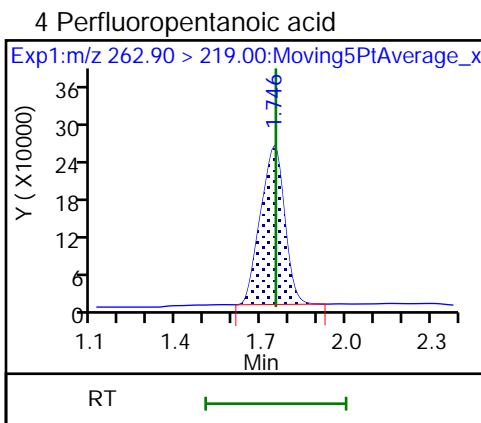
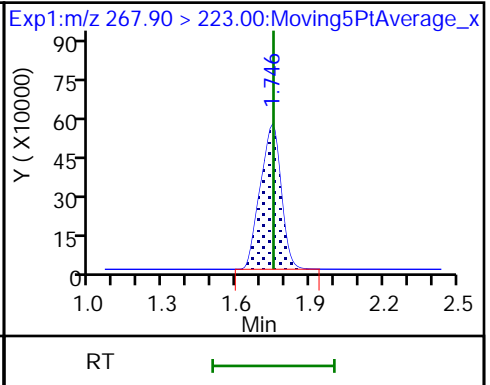
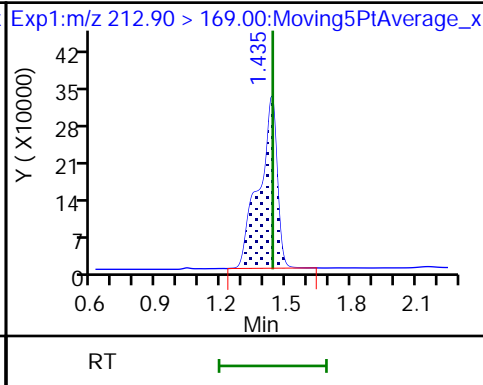
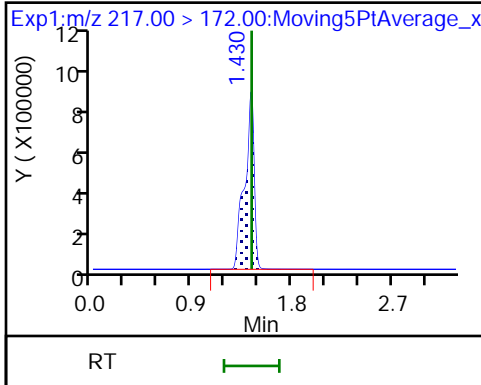
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

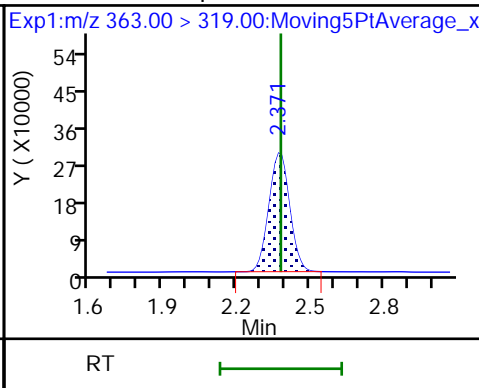
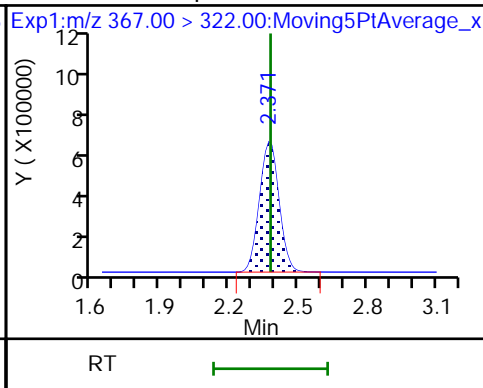
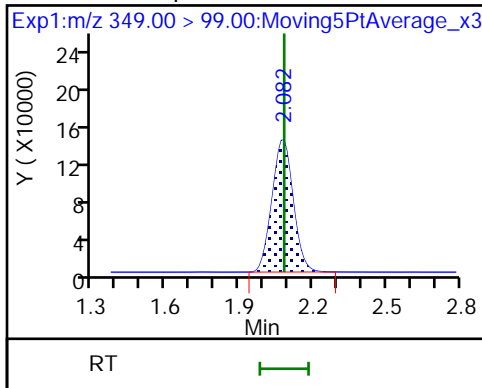
D 3 13C5-PFPeA



70 Perfluoropentanesulfonic acid

D 9 13C4-PFHpA

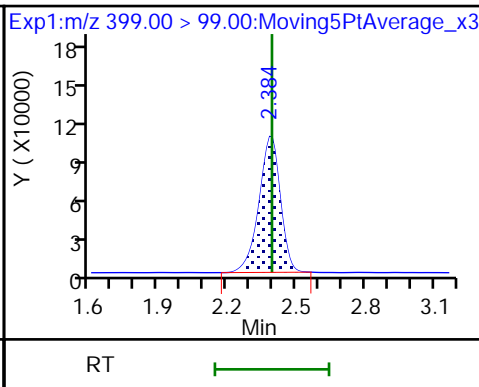
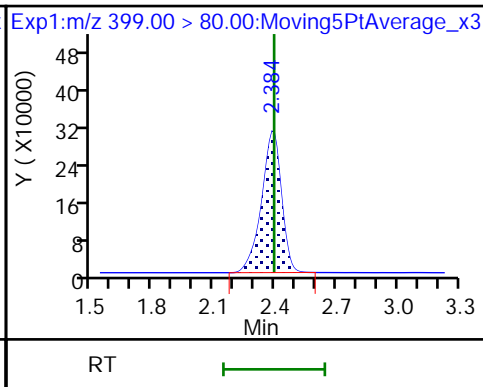
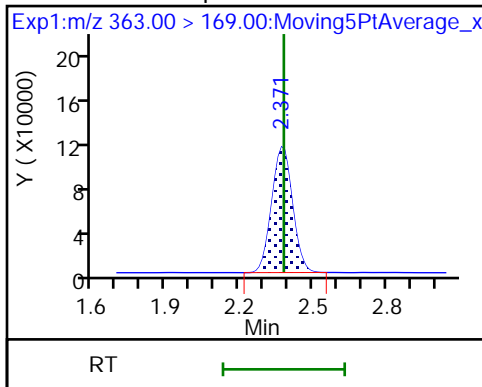
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

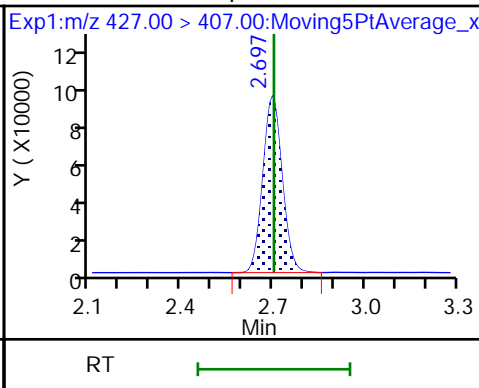
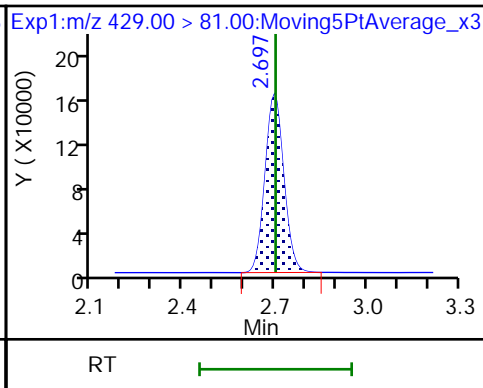
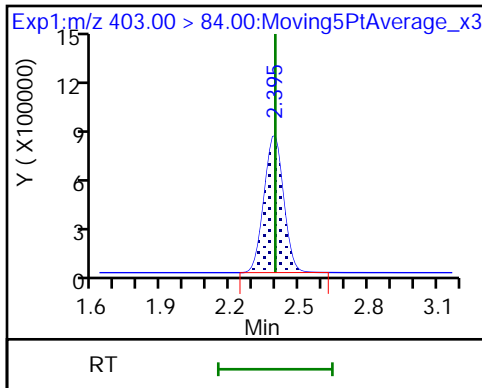
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

D 12 M2-6:2FTS

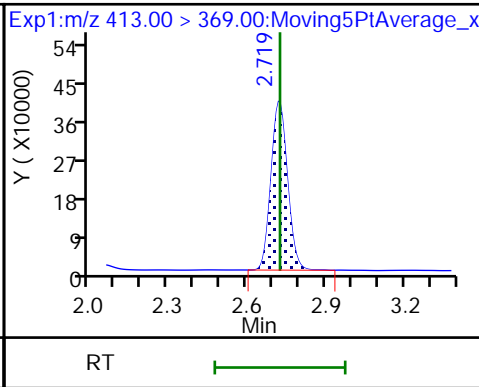
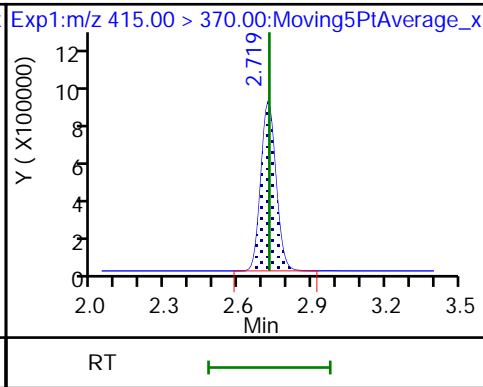
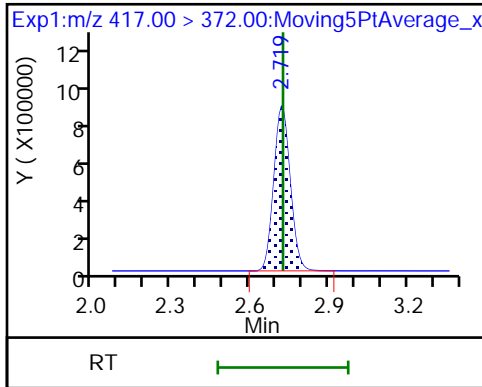
13 1H,1H,2H,2H-perfluorooctanesulfoni

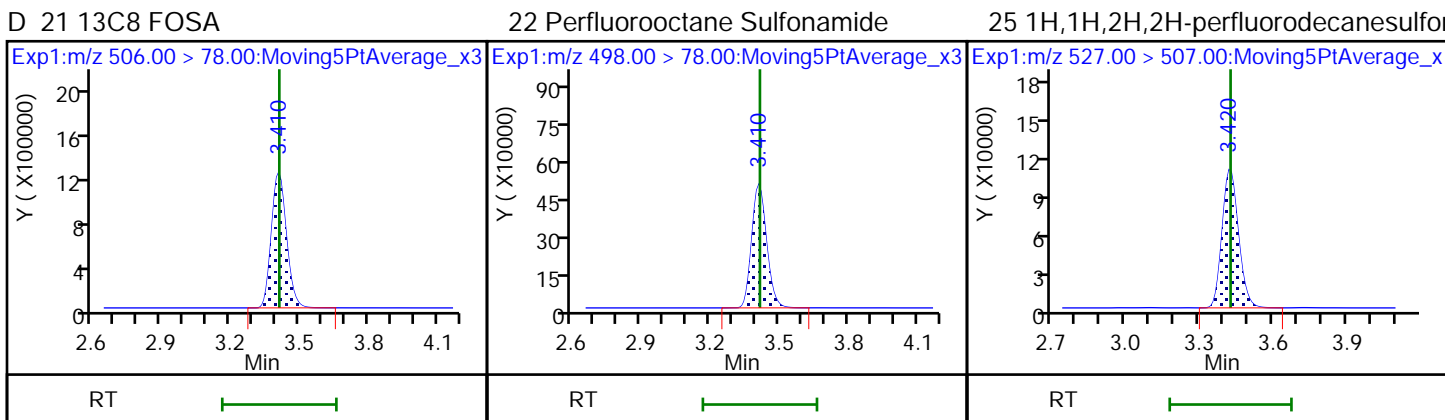
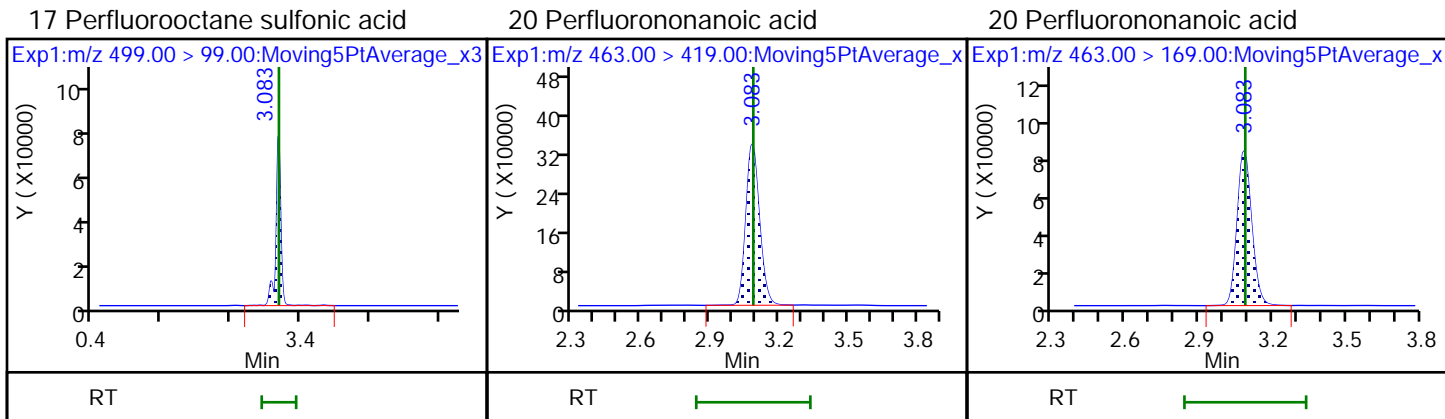
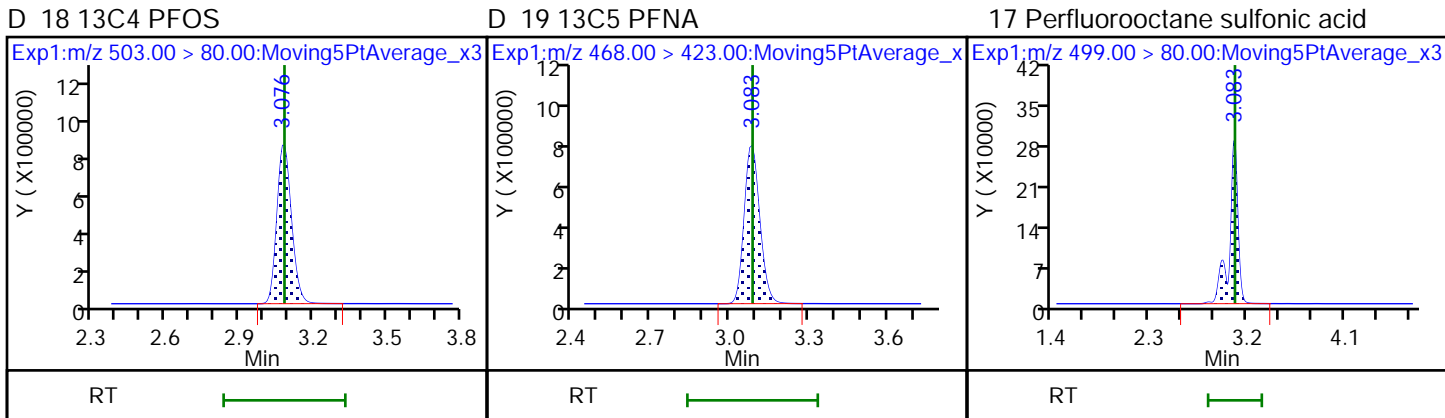
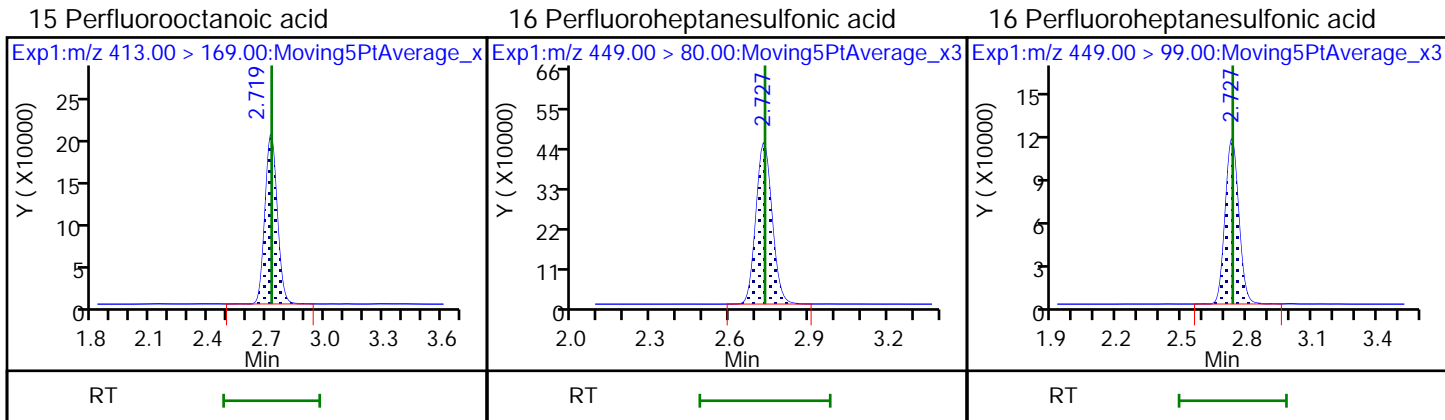


D 14 13C4 PFOA

* 62 13C2-PFOA

15 Perfluorooctanoic acid

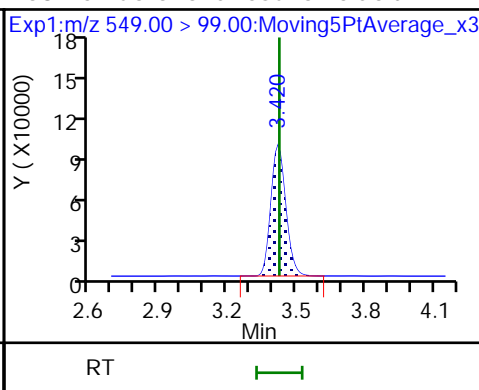
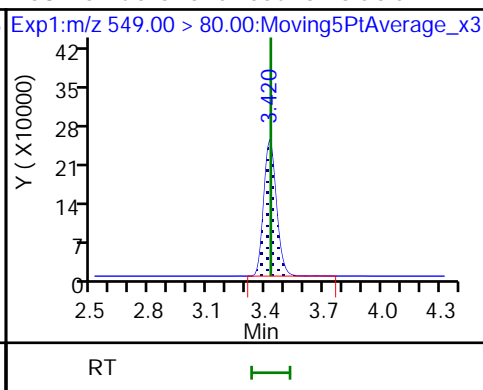
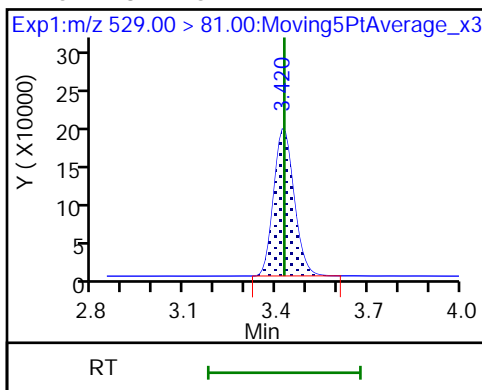




D 26 M2-8:2FTS

68 Perfluorononanesulfonic acid

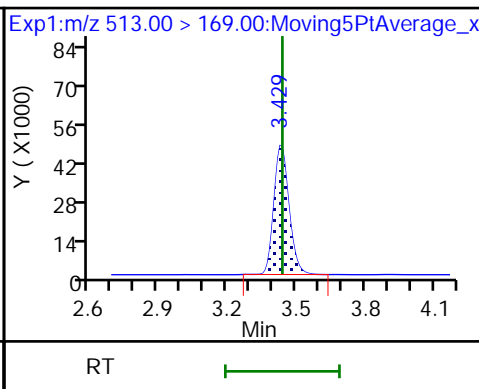
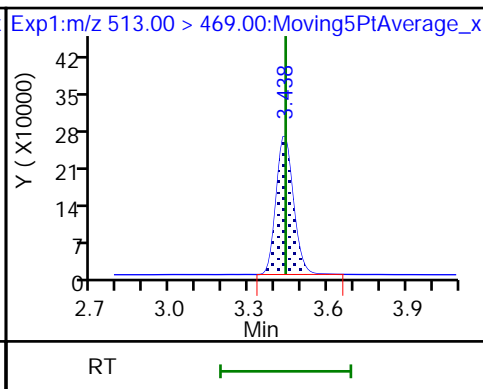
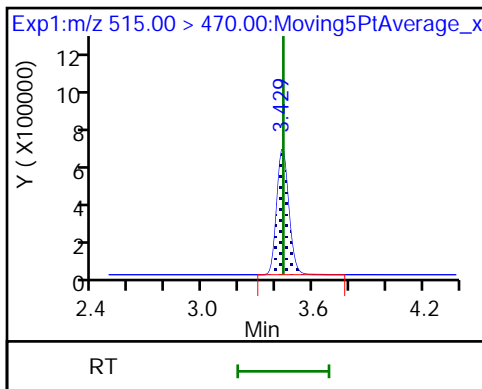
68 Perfluorononanesulfonic acid



D 23 13C2 PFDA

24 Perfluorodecanoic acid

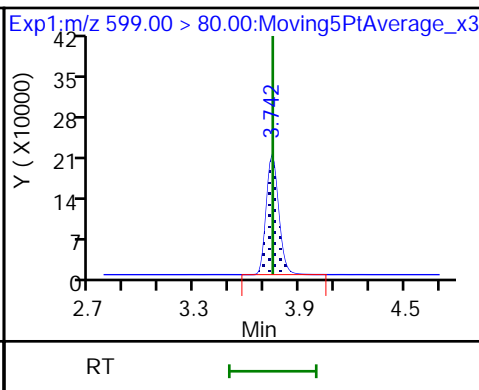
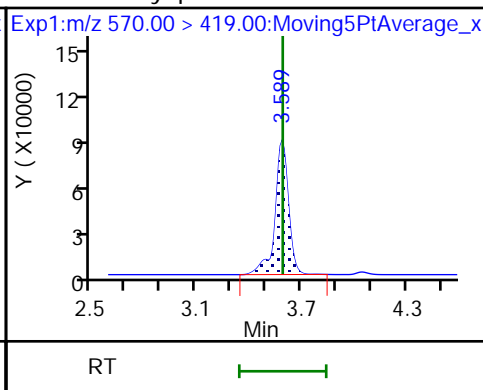
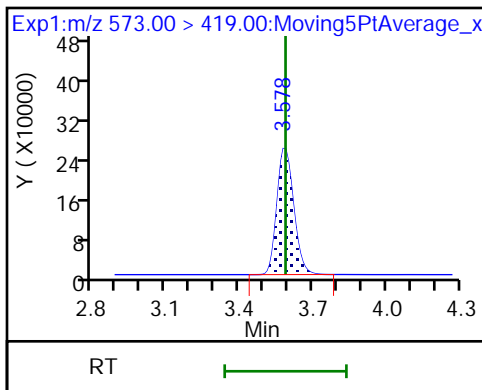
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

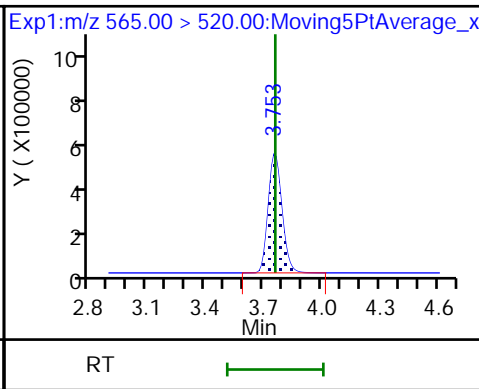
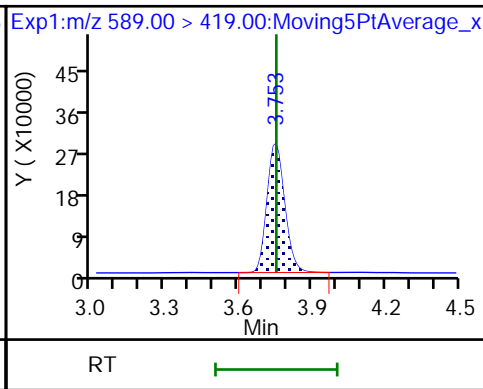
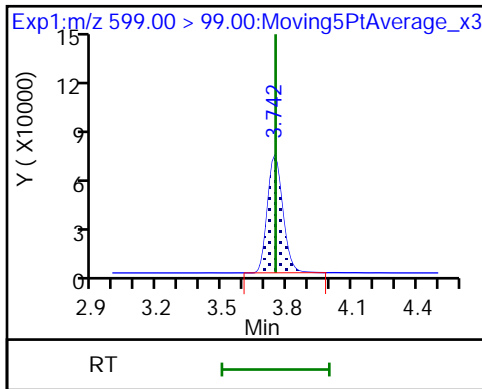
29 Perfluorodecane Sulfonic acid

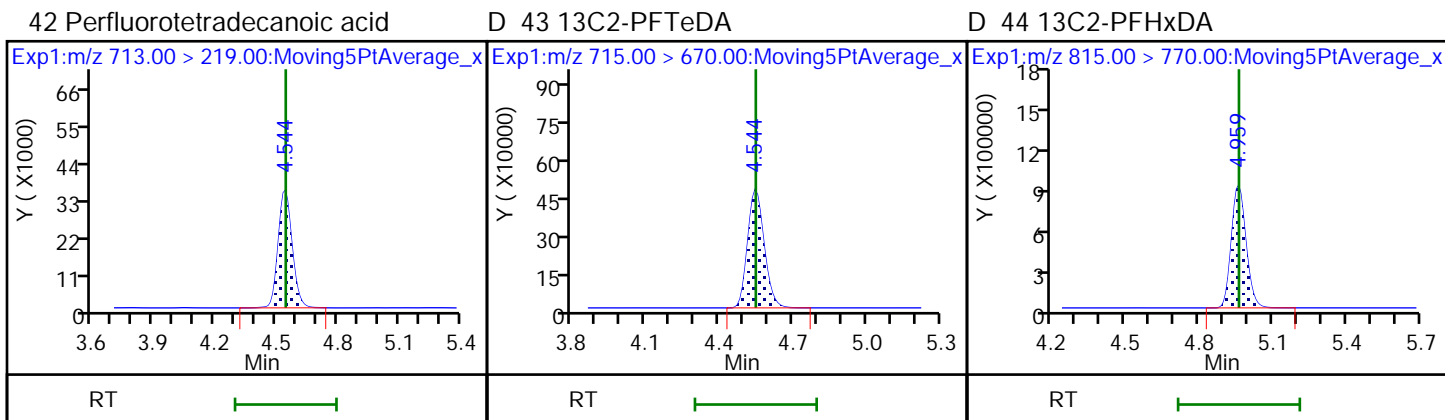
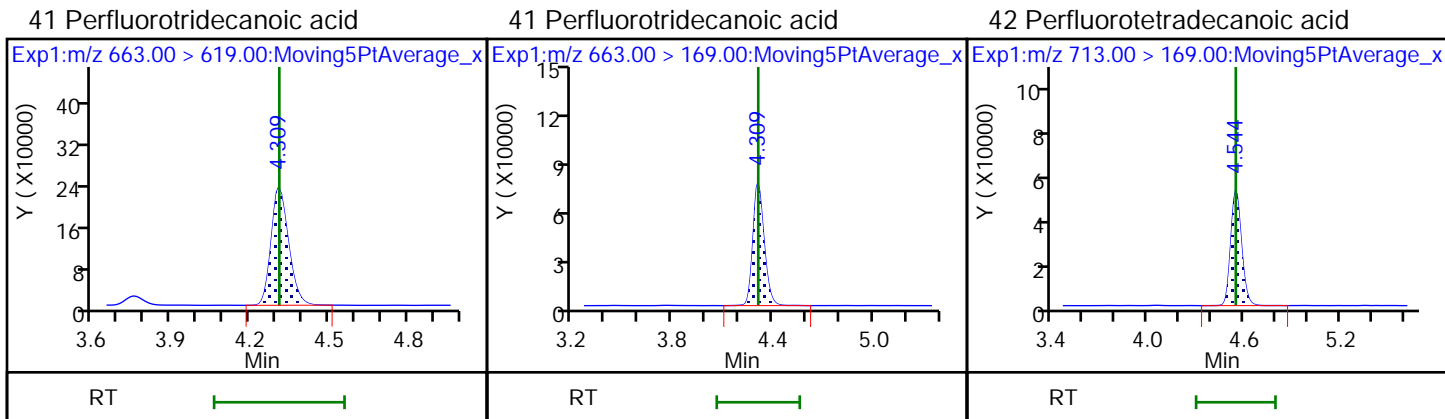
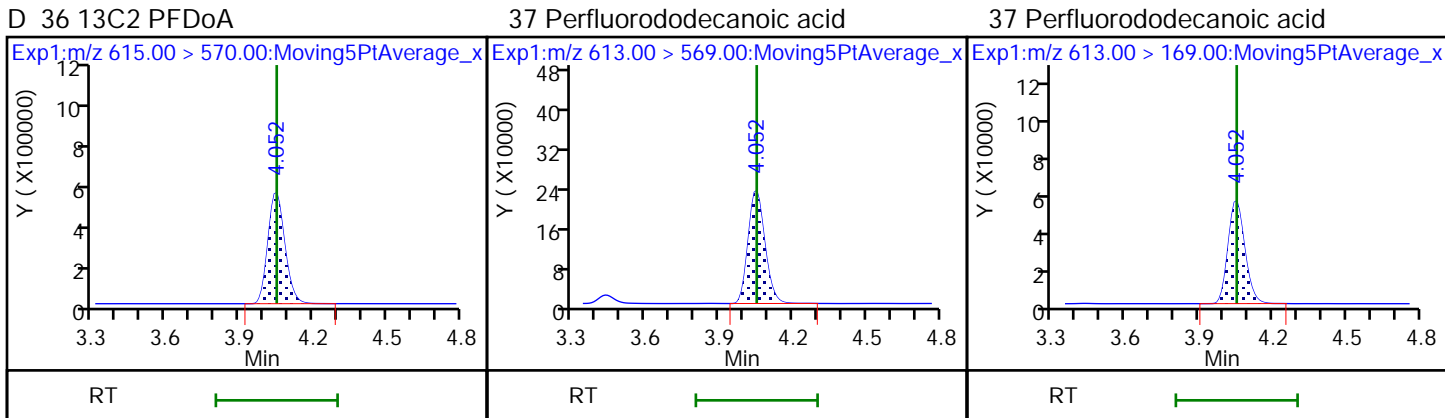
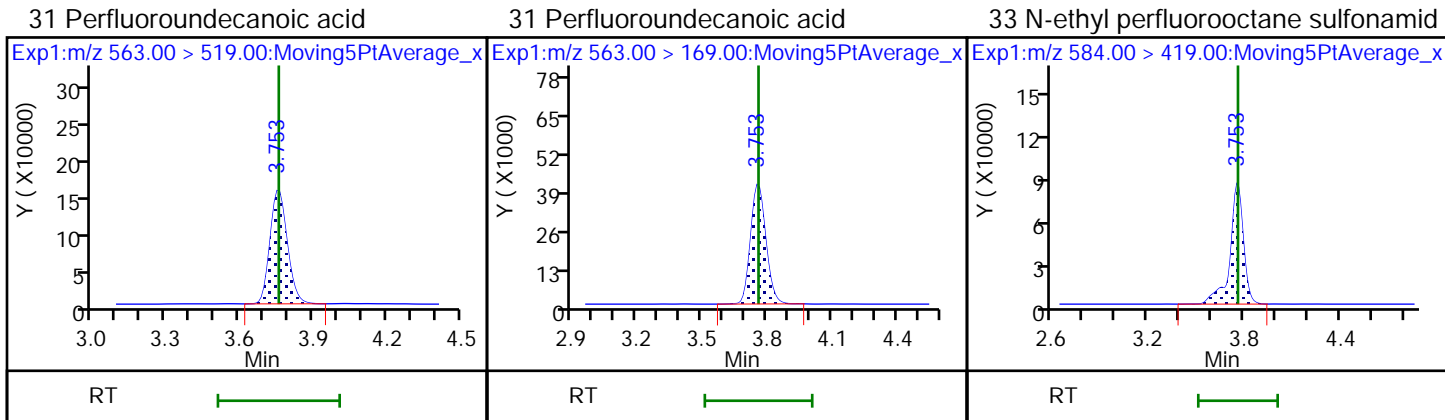


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

D 30 13C2 PFUnA





TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_006.d

Lims ID: IC L5 Full

Client ID:

Sample Type: IC Calib Level: 5

Inject. Date: 19-Jul-2018 12:41:09 ALS Bottle#: 14 Worklist Smp#: 6

Injection Vol: 2.0 ul Dil. Factor: 1.0000

Sample Info: L5-FULL

Misc. Info.: Plate: 1 Rack: 1

Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Sublist: chrom-A8_N*sub32

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\A8_N.m

Limit Group: LC PFC_QSM5-1 ICAL

Last Update: 19-Jul-2018 15:19:54 Calib Date: 19-Jul-2018 12:56:46

Integrator: Picker

Quant Method: Isotopic Dilution Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d

Column 1 : Det: EXP1

Process Host: XAWRK022

First Level Reviewer: roycea Date: 19-Jul-2018 13:30:49

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	1.439	1.435	0.004	0.528	4847784	2.45	97.9	77275	
2 Perfluorobutyric acid	212.90 > 169.00	1.439	1.438	0.001	1.000	4834495	2.48	99.3	1847	
D 3 13C5-PFPeA	267.90 > 223.00	1.753	1.750	0.003	0.643	3388559	2.46	98.3	44533	
4 Perfluoropentanoic acid	262.90 > 219.00	1.753	1.752	0.001	1.000	4125780	2.48	99.3	2223	
D 47 13C3-PFBS	301.90 > 83.00	1.798	1.795	0.003	0.659	81682	2.29	98.6	495	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.798	1.799	-0.001	1.000	6089802	2.24	101	41798	
	298.90 > 99.00	1.798	1.799	-0.001	1.000	2498064	2.44(1.25-3.74)	101	28390	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.022	2.017	0.005	1.125	1116204	2.42	104	48675	
D 60 M2-4:2FTS	329.00 > 81.00	2.022	2.019	0.003	0.742	426967	NC		4832	
6 Perfluorohexanoic acid	313.00 > 269.00	2.056	2.056	0.0	1.000	4151685	2.39	95.7	10138	
	313.00 > 119.00	2.056	2.056	0.0	1.000	382083	10.87(5.03-15.10)	95.7	5894	
D 7 13C2 PFHxA	315.00 > 270.00	2.056	2.058	-0.002	0.754	3990656	2.48	99.1	75028	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.079	2.082	-0.003	1.156	6209317	2.43	104	115741	
	349.00 > 99.00	2.079	2.082	-0.003	1.156	2182281	2.85(1.36-4.07)	104	36347	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.146	2.151	-0.005	0.787	272036	NC		5886	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.158	2.153	0.005	1.005	759830	NC		7567
D 9 13C4-PFHpA	367.00	> 322.00	2.381	2.379	0.002	0.873	3970331	2.55	102	37956
10 Perfluoroheptanoic acid	363.00	> 319.00	2.381	2.380	0.001	1.000	4504008	2.48	99.0	8619
	363.00	> 169.00	2.381	2.380	0.001	1.000	1683951	2.67(1.13-3.40)	99.0	16137
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.392	2.394	-0.002	1.000	5224139	2.27	99.7	27885
	399.00	> 99.00	2.392	2.394	-0.002	1.000	1713928	3.05(1.50-4.49)	99.7	8713
D 11 18O2 PFHxS	403.00	> 84.00	2.392	2.395	-0.003	0.878	4763091	2.28	96.4	39387
65 ADONA	377.00	> 251.00	2.426	2.421	0.005	0.787	12597463	NC		65209
	377.00	> 85.00	2.426	2.421	0.005	0.787	7393622	1.70(0.84-2.53)		36079
D 12 M2-6:2FTS	429.00	> 81.00	2.703	2.701	0.002	0.992	672928	2.24	94.1	15992
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.703	2.702	0.001	1.000	1112155	2.41	102	23815
D 14 13C4 PFOA	417.00	> 372.00	2.726	2.725	0.001	1.000	3659304	2.43	97.2	39132
* 62 13C2-PFOA	415.00	> 370.00	2.726	2.725	0.001		3955243	2.50		46308
15 Perfluorooctanoic acid	413.00	> 369.00	2.726	2.725	0.001	1.000	4449174	2.47	98.7	2321
	413.00	> 169.00	2.726	2.725	0.001	1.000	2219238	2.00(0.84-2.52)	98.7	9890
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.734	2.733	0.001	0.887	4810287	2.39	100	37358
	449.00	> 99.00	2.734	2.733	0.001	0.887	1268874	3.79(1.94-5.82)	100	29324
D 18 13C4 PFOS	503.00	> 80.00	3.083	3.083	0.0	1.131	3588037	2.40	100	22524
D 19 13C5 PFNA	468.00	> 423.00	3.091	3.085	0.006	1.134	3093998	2.43	97.2	39260
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.091	3.086	0.005	1.002	3970364	2.23	96.3	37379
	499.00	> 99.00	3.083	3.086	-0.003	1.000	870046	4.56(2.31-6.93)	96.3	9791
20 Perfluorononanoic acid	463.00	> 419.00	3.091	3.086	0.005	1.000	3508214	2.51	100	6717
	463.00	> 169.00	3.091	3.086	0.005	1.000	797032	4.40(1.90-5.69)	100	17494
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.291	3.291	0.0	1.067	6462378	NC		47928
D 21 13C8 FOSA	506.00	> 78.00	3.411	3.413	-0.002	1.251	5433217	2.44	97.8	49675
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.420	3.415	0.005	1.003	5488897	2.48	99.1	39043
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.430	3.426	0.004	1.000	1164233	2.33	97.2	14884

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.430	3.426	0.004	1.258	902064	2.31		96.4	18007	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.430	3.426	0.004	1.112	3008282	2.46		103	33863	
549.00 > 99.00	3.430	3.426	0.004	1.112	1105676		2.72(1.33-3.97)	103	18868	
D 23 13C2 PFDA										
515.00 > 470.00	3.439	3.438	0.001	1.262	2832614	2.47		98.7	28636	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.439	3.439	0.0	1.000	3069470	2.51		101	17505	
513.00 > 169.00	3.439	3.439	0.0	1.000	507102		6.05(2.36-7.09)	101	27961	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.589	3.587	0.002	1.317	1209562	2.44		97.5	18278	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.600	3.592	0.008	1.003	1192671	2.46		98.2	6712	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.753	3.746	0.007	1.218	2541789	2.42		100	57868	
599.00 > 99.00	3.753	3.746	0.007	1.218	839909		3.03(1.39-4.16)	100	19031	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.753	3.754	-0.001	1.377	1338986	2.41		96.4	2659	
D 30 13C2 PFUnA										
565.00 > 520.00	3.764	3.760	0.004	1.381	2418893	2.41		96.4	54750	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.764	3.760	0.004	1.000	1874945	2.46		98.5	9392	
563.00 > 169.00	3.764	3.760	0.004	1.000	504585		3.72(2.12-6.36)	98.5	10272	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.764	3.760	0.004	1.003	1205053	2.57		103	22839	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.922	3.916	0.006	1.272	9984335	NC			78596	
D 36 13C2 PFDoA										
615.00 > 570.00	4.055	4.051	0.004	1.487	2609131	2.55		102	19784	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.055	4.051	0.004	1.000	2740213	2.38		95.1	1752	
613.00 > 169.00	4.055	4.051	0.004	1.000	669921		4.09(2.13-6.40)	95.1	17703	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.314	4.311	0.003	1.064	2561741	2.19		87.5	1220	
663.00 > 169.00	4.314	4.311	0.003	1.064	772457		3.32(1.25-3.76)	87.5	10766	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.550	4.546	0.004	1.000	617686	2.40		96.0	7681	
713.00 > 219.00	4.550	4.546	0.004	1.000	430382		1.44(0.71-2.13)	96.0	6086	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.550	4.547	0.003	1.669	2445039	2.50		99.9	12142	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.963	4.960	0.003	1.821	3615084	2.33		93.3	10487	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.963	4.962	0.001	1.000	3556569	NC			870	
813.00 > 169.00	4.963	4.962	0.001	1.000	587299		6.06(2.86-8.58)		4737	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.319	5.316	0.003	1.072	3748354	NC			909	
913.00 > 169.00	5.319	5.316	0.003	1.072	444045		8.44(3.83-11.48)		4798	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_006.d

Injection Date: 19-Jul-2018 12:41:09

Instrument ID: A8_N

Lims ID: IC L5 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 6

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

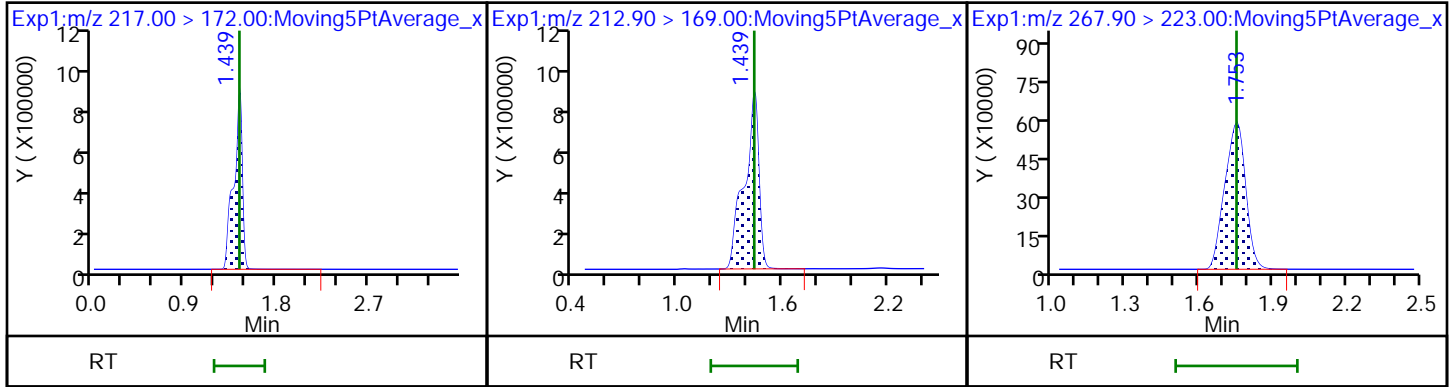
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

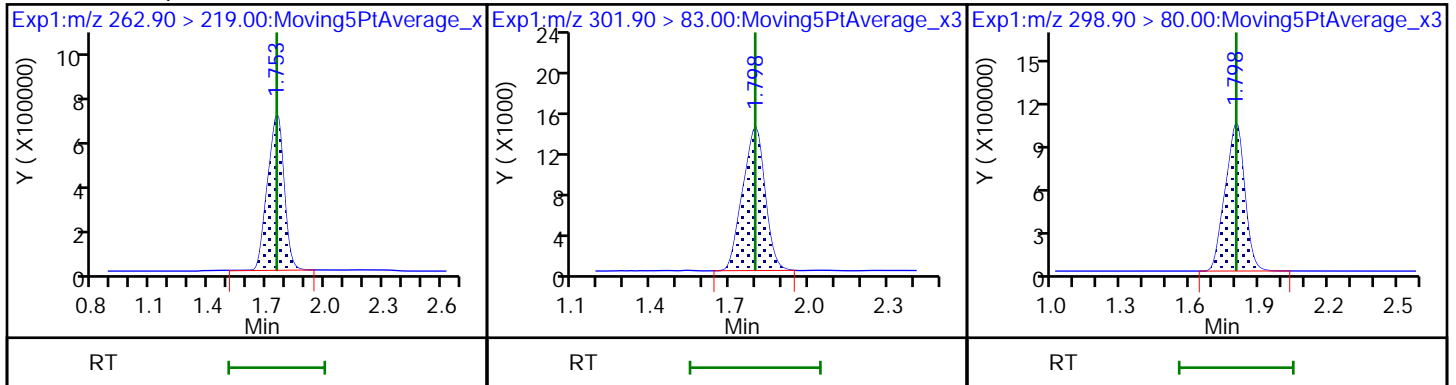
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

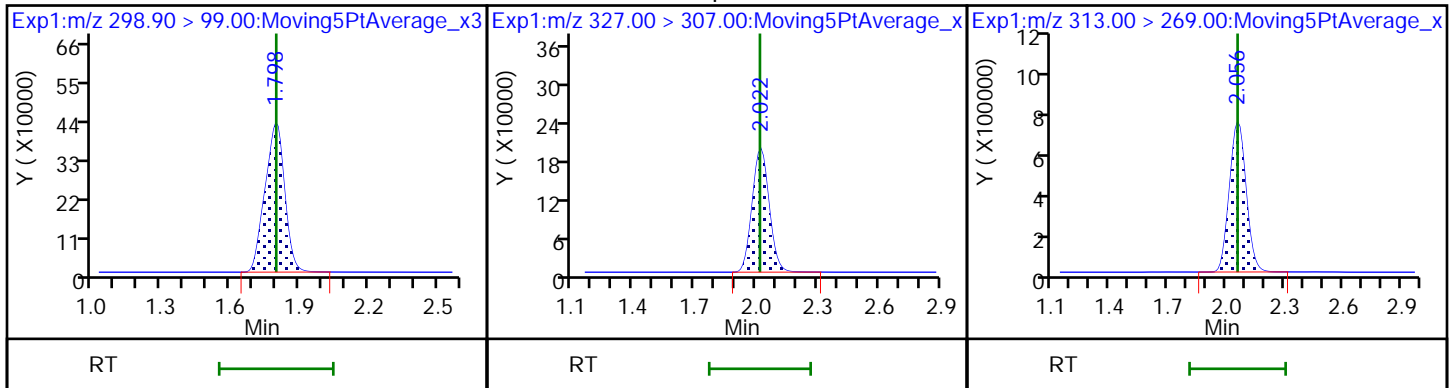
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfoni

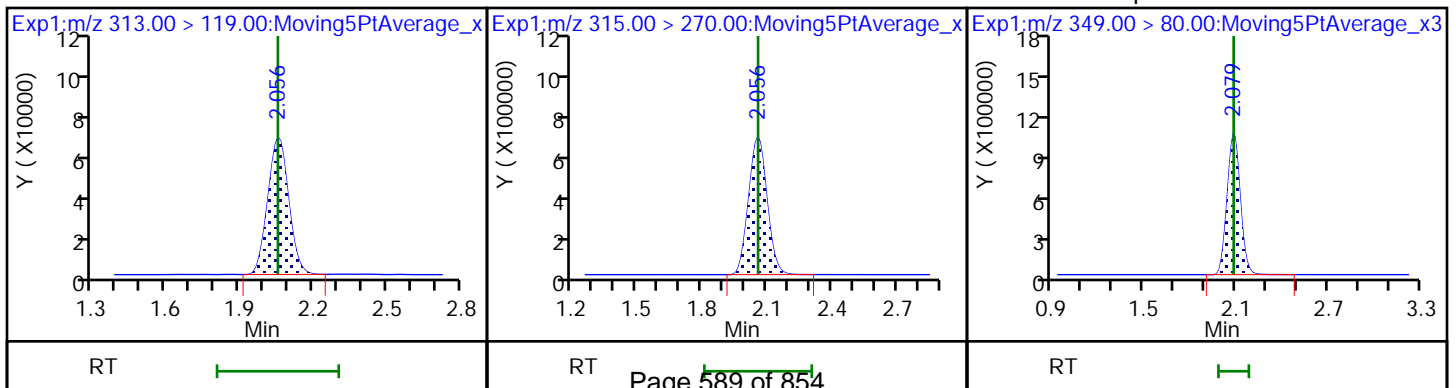
6 Perfluorohexanoic acid



6 Perfluorohexanoic acid

D 7 13C2 PFHxA

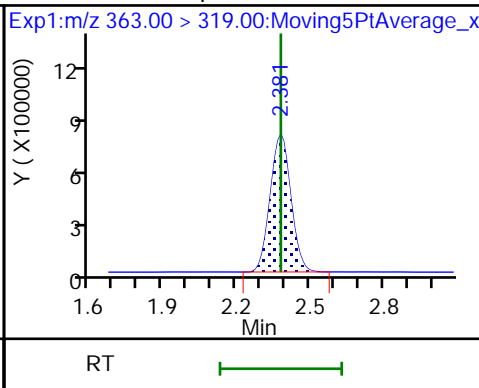
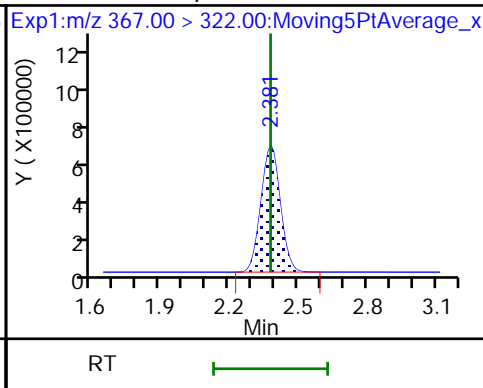
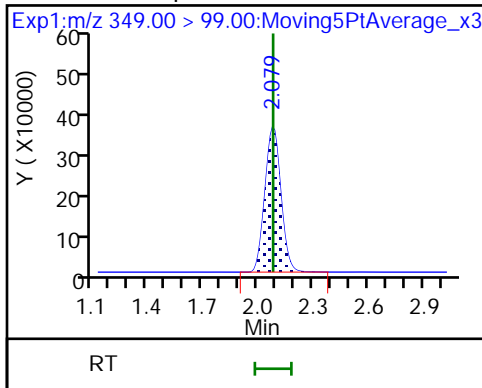
70 Perfluoropentanesulfonic acid



70 Perfluoropentanesulfonic acid

D 9 13C4-PFHpA

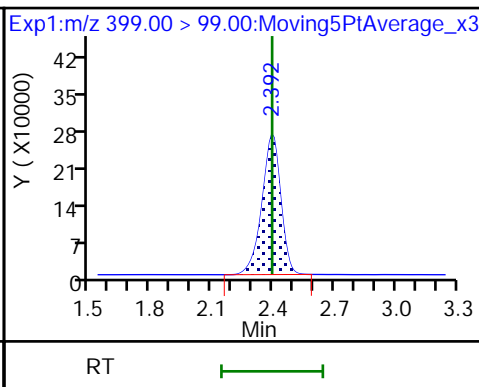
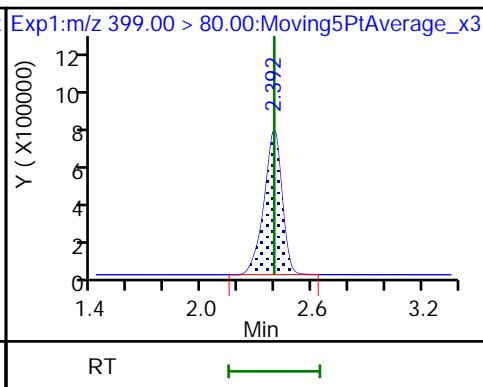
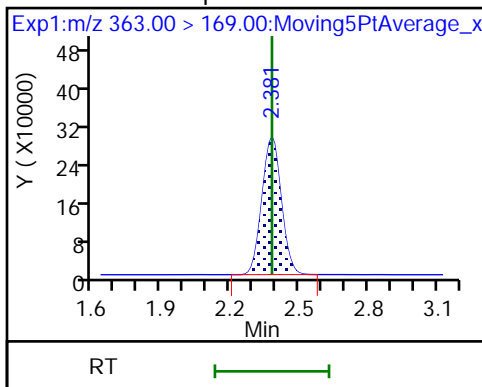
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

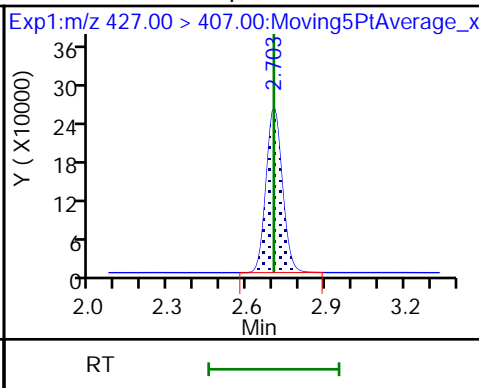
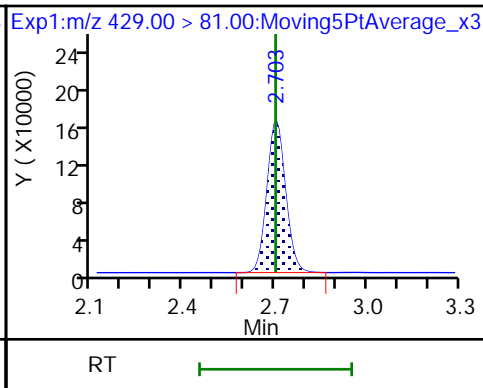
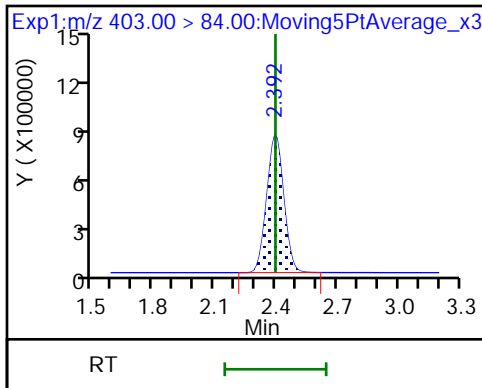
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

D 12 M2-6:2FTS

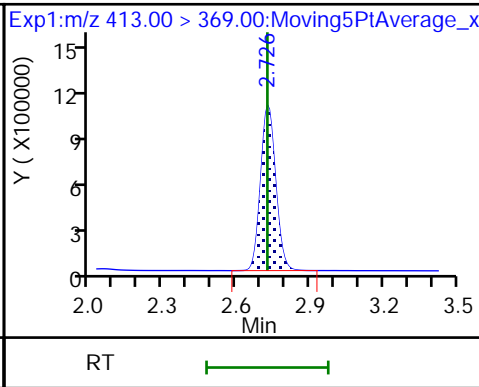
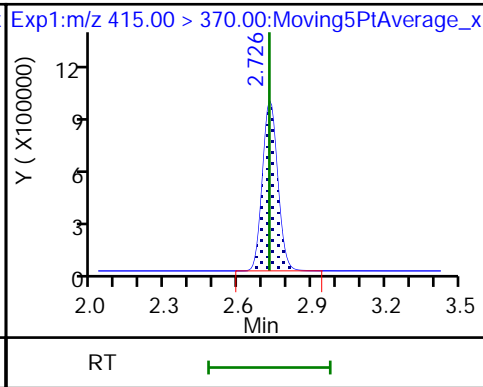
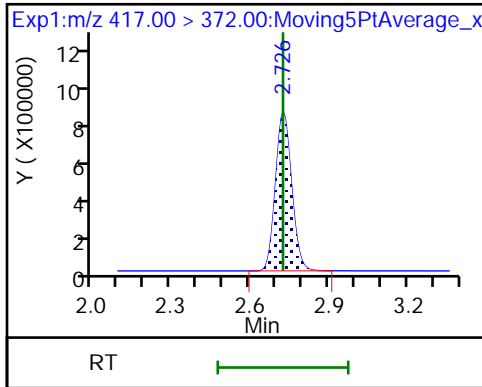
13 1H,1H,2H,2H-perfluorooctanesulfoni

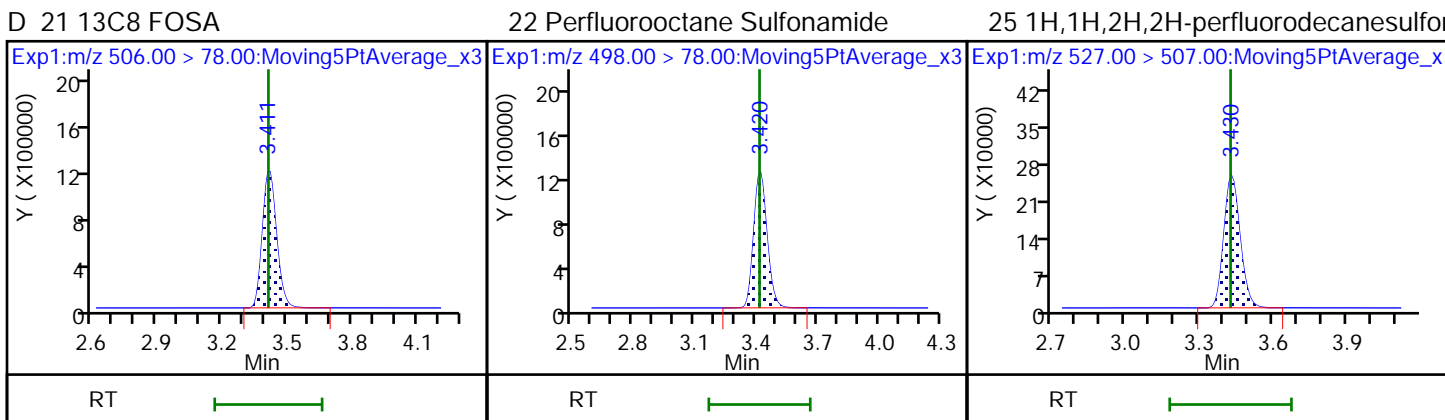
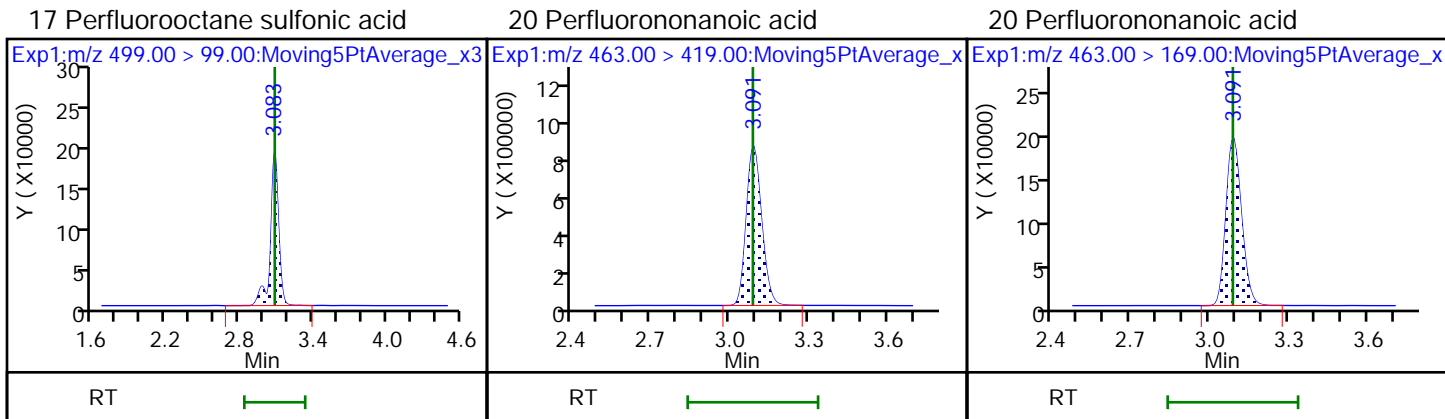
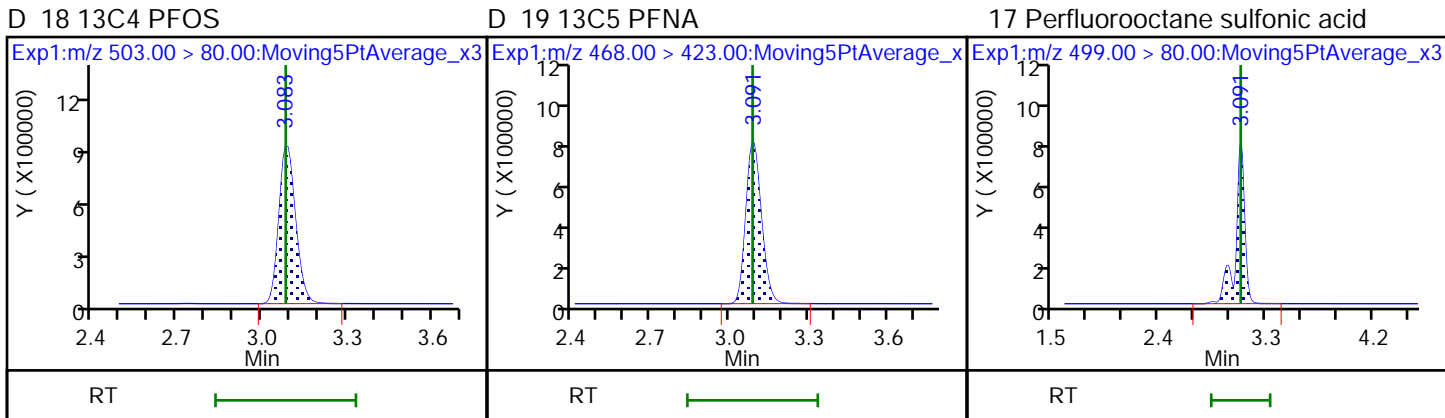
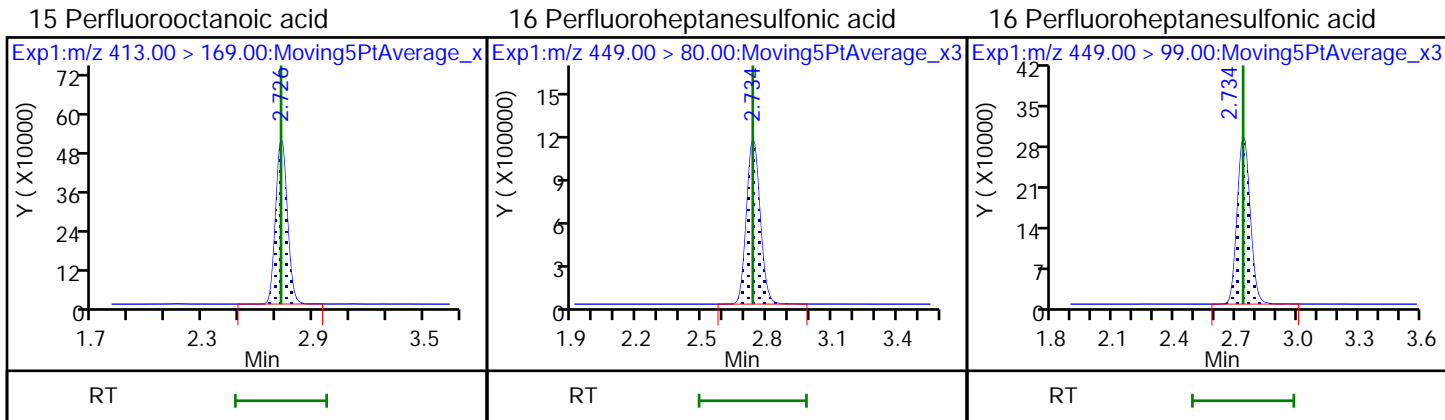


D 14 13C4 PFOA

* 62 13C2-PFOA

15 Perfluorooctanoic acid

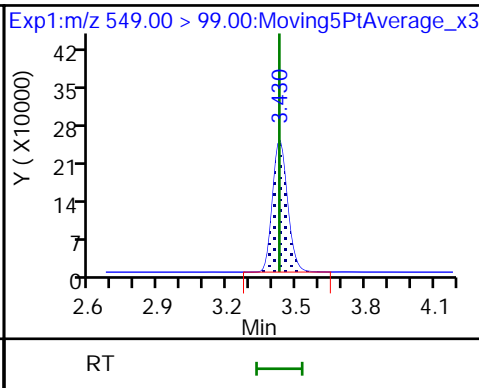
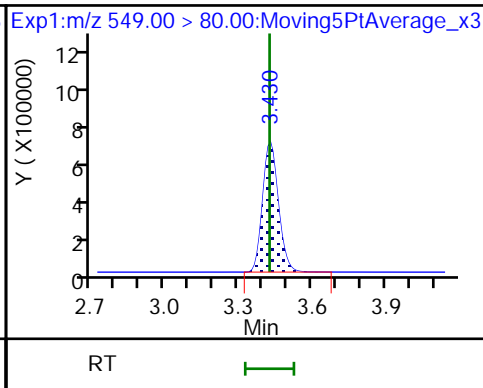
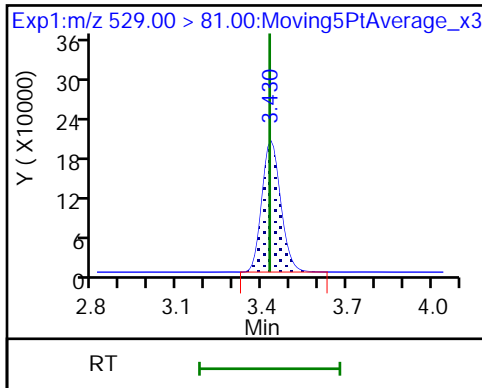




D 26 M2-8:2FTS

68 Perfluorononanesulfonic acid

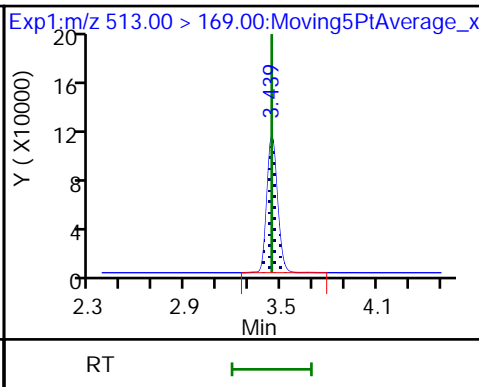
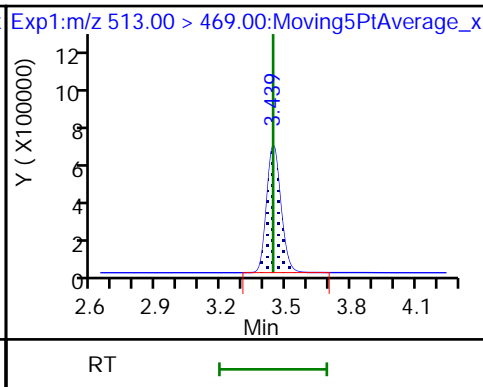
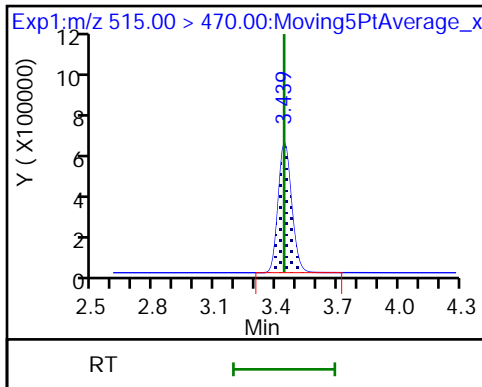
68 Perfluorononanesulfonic acid



D 23 13C2 PFDA

24 Perfluorodecanoic acid

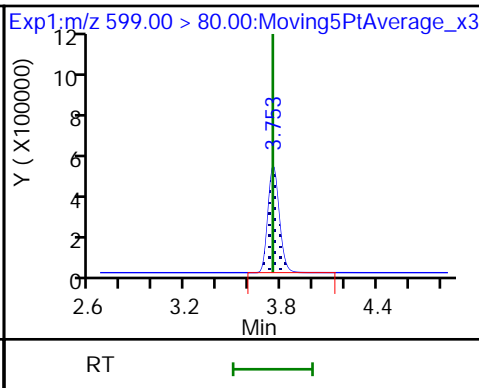
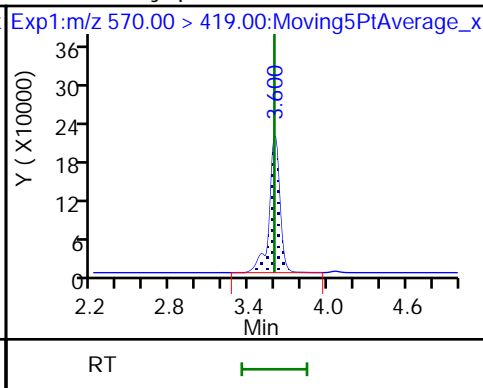
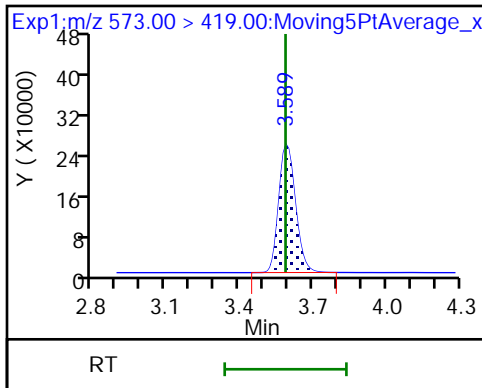
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

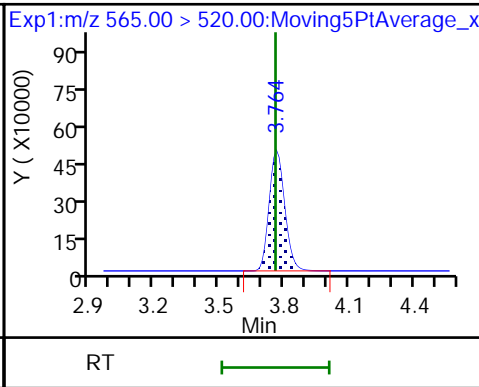
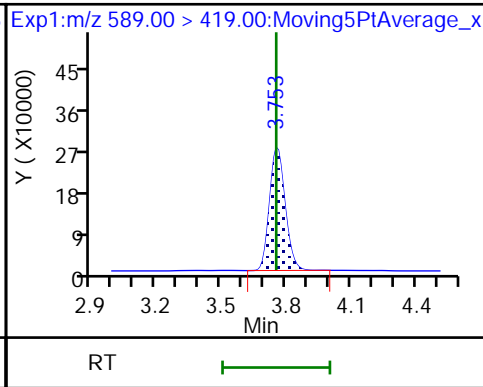
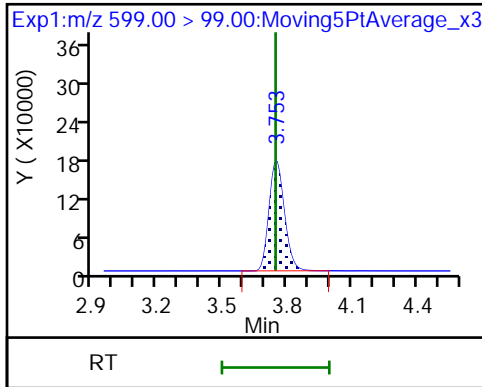
29 Perfluorodecane Sulfonic acid

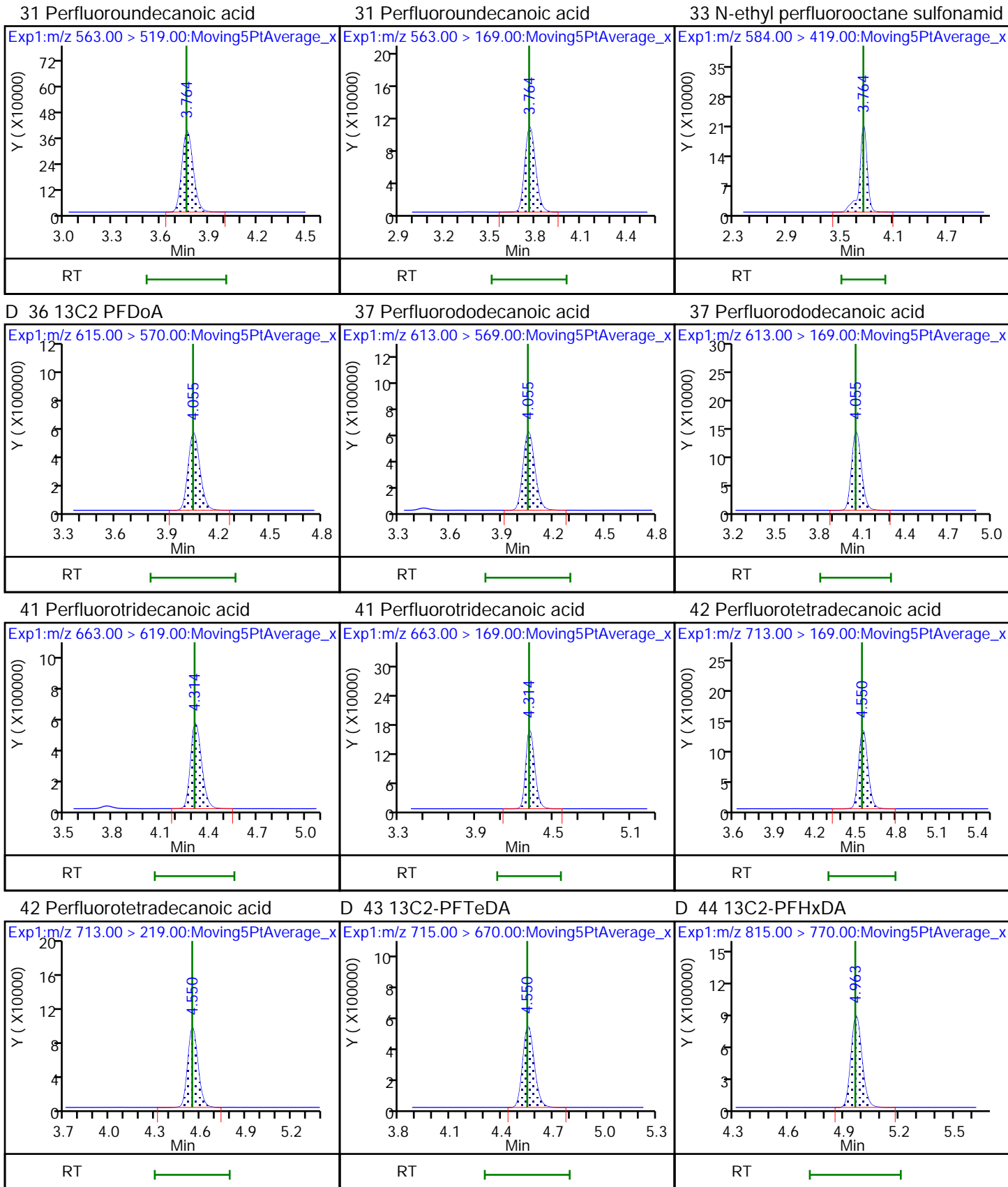


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

D 30 13C2 PFUnA





TestAmerica Sacramento
Target Compound Quantitation Report

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 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 19-Jul-2018 12:48:58 ALS Bottle#: 15 Worklist Smp#: 7
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L6-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 15:19:57 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK022

First Level Reviewer: roycea Date: 19-Jul-2018 13:20:18

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	1.436	1.435	0.001	0.526	4889821	2.55	102	84379	
2 Perfluorobutyric acid	212.90 > 169.00	1.436	1.438	-0.002	1.000	9696851	4.94	98.7	3683	
D 3 13C5-PFPeA	267.90 > 223.00	1.747	1.750	-0.003	0.640	3413396	2.56	102	47278	
4 Perfluoropentanoic acid	262.90 > 219.00	1.756	1.752	0.004	1.005	8116517	4.85	96.9	4854	
D 47 13C3-PFBS	301.90 > 83.00	1.792	1.795	-0.003	0.657	81078	2.35	101	1704	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.801	1.799	0.002	1.005	12218559	4.53	102	81298	
	298.90 > 99.00	1.801	1.799	0.002	1.005	4972830	2.46(1.25-3.74)	102	44139	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.015	2.017	-0.002	1.124	2089150	4.57	97.8	88372	
D 60 M2-4:2FTS	329.00 > 81.00	2.015	2.019	-0.004	0.739	443901	NC		6997	
6 Perfluorohexanoic acid	313.00 > 269.00	2.060	2.056	0.004	1.000	8327454	4.94	98.9	21180	
	313.00 > 119.00	2.060	2.056	0.004	1.000	745130	11.18(5.03-15.10)	98.9	13911	
D 7 13C2 PFHxA	315.00 > 270.00	2.060	2.058	0.002	0.755	3873424	2.49	99.5	65123	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.083	2.082	0.001	1.162	11645386	4.60	98.0	108392	
	349.00 > 99.00	2.083	2.082	0.001	1.162	4404321	2.64(1.36-4.07)	98.0	46379	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.150	2.151	-0.001	0.788	253802	NC		5335	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.150	2.153	-0.003	1.000	1497980	NC		12298
D 9 13C4-PFHpA	367.00	> 322.00	2.372	2.379	-0.007	0.870	3817190	2.53	101	64677
10 Perfluoroheptanoic acid	363.00	> 319.00	2.385	2.380	0.005	1.005	8467214	4.84	96.8	14251
	363.00	> 169.00	2.385	2.380	0.005	1.005	3364109	2.52(1.13-3.40)	96.8	30130
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.396	2.394	0.002	1.000	10201210	4.41	96.8	25202
	399.00	> 99.00	2.396	2.394	0.002	1.000	3457180	2.95(1.50-4.49)	96.8	17976
D 11 18O2 PFHxS	403.00	> 84.00	2.396	2.395	0.001	0.878	4788343	2.37	100	39461
65 ADONA	377.00	> 251.00	2.418	2.421	-0.003	0.784	23372337	NC		200447
	377.00	> 85.00	2.418	2.421	-0.003	0.784	13857575	1.69(0.84-2.53)		45831
D 12 M2-6:2FTS	429.00	> 81.00	2.698	2.701	-0.003	0.989	674960	2.32	97.6	13174
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.705	2.702	0.003	1.003	2302708	4.98	105	34314
D 14 13C4 PFOA	417.00	> 372.00	2.728	2.725	0.003	1.000	3641760	2.50	100	56516
* 62 13C2-PFOA	415.00	> 370.00	2.728	2.725	0.003		3823974	2.50		37325
15 Perfluorooctanoic acid	413.00	> 369.00	2.728	2.725	0.003	1.000	8724041	4.86	97.2	4939
	413.00	> 169.00	2.728	2.725	0.003	1.000	4589968	1.90(0.84-2.52)	97.2	20106
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.736	2.733	0.003	0.887	9664303	5.01	105	52277
	449.00	> 99.00	2.736	2.733	0.003	0.887	2437210	3.97(1.94-5.82)	105	24743
D 18 13C4 PFOS	503.00	> 80.00	3.085	3.083	0.002	1.131	3439242	2.38	99.4	19308
D 19 13C5 PFNA	468.00	> 423.00	3.085	3.085	0.0	1.131	3073959	2.50	99.9	36086
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.085	3.086	-0.001	1.000	7802715	4.58	98.7	44548
	499.00	> 99.00	3.085	3.086	-0.001	1.000	1762186	4.43(2.31-6.93)	98.7	21134
20 Perfluorononanoic acid	463.00	> 419.00	3.085	3.086	-0.001	1.000	6828387	4.92	98.4	16865
	463.00	> 169.00	3.085	3.086	-0.001	1.000	1619135	4.22(1.90-5.69)	98.4	26647
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.294	3.291	0.003	1.068	12858463	NC		97427
D 21 13C8 FOSA	506.00	> 78.00	3.415	3.413	0.002	1.252	5294769	2.46	98.6	49218
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.415	3.415	0.0	1.000	10548466	4.88	97.7	70759
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.424	3.426	-0.002	1.000	2208807	4.65	97.1	18207

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS										
529.00 > 81.00	3.424	3.426	-0.002	1.255	856171	2.27		94.6	14122	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.424	3.426	-0.002	1.110	5748732	4.91		102	71495	
549.00 > 99.00	3.424	3.426	-0.002	1.110	2141529		2.68(1.33-3.97)	102	22856	
D 23 13C2 PFDA										
515.00 > 470.00	3.443	3.438	0.005	1.262	2682731	2.42		96.7	41844	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.443	3.439	0.004	1.000	5775807	5.00		99.9	35933	
513.00 > 169.00	3.443	3.439	0.004	1.000	1029669		5.61(2.36-7.09)	99.9	25060	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.584	3.587	-0.003	1.314	1187210	2.47		99.0	27459	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.595	3.592	0.003	1.003	2397468	5.03		101	16290	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.749	3.746	0.003	1.215	5310555	5.26		109	216495	
599.00 > 99.00	3.749	3.746	0.003	1.215	1782161		2.98(1.39-4.16)	109	45406	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.749	3.754	-0.005	1.375	1279332	2.38		95.2	2885	
D 30 13C2 PFUnA										
565.00 > 520.00	3.760	3.760	0.0	1.378	2302925	2.37		94.9	27621	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.760	3.760	0.0	1.000	3456566	4.77		95.3	13445	
563.00 > 169.00	3.760	3.760	0.0	1.000	990005		3.49(2.12-6.36)	95.3	28997	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.760	3.760	0.0	1.003	2215550	4.95		98.9	30816	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.918	3.916	0.002	1.270	18371559	NC			175045	
D 36 13C2 PFDoA										
615.00 > 570.00	4.051	4.051	0.0	1.485	2475466	2.51		100	17403	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.051	4.051	0.0	1.000	5505258	5.03		101	3743	
613.00 > 169.00	4.051	4.051	0.0	1.000	1313388		4.19(2.13-6.40)	101	18523	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.308	4.311	-0.003	1.063	5373341	4.83		96.7	2583	
663.00 > 169.00	4.308	4.311	-0.003	1.063	1614727		3.33(1.25-3.76)	96.7	18263	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.544	4.546	-0.002	1.000	1194747	4.80		96.0	13295	
713.00 > 219.00	4.544	4.546	-0.002	1.000	867806		1.38(0.71-2.13)	96.0	14214	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.544	4.547	-0.003	1.666	2364341	2.50		99.9	10951	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.959	4.960	-0.001	1.818	3851333	2.57		103	9586	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.959	4.962	-0.003	1.000	7741676	NC			1688	
813.00 > 169.00	4.959	4.962	-0.003	1.000	1257924		6.15(2.86-8.58)		7229	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.315	5.316	-0.001	1.072	8441211	NC			1419	
913.00 > 169.00	5.315	5.316	-0.001	1.072	1013476		8.33(3.83-11.48)		3890	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL6_00006

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_007.d

Injection Date: 19-Jul-2018 12:48:58

Instrument ID: A8_N

Lims ID: IC L6 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 15

Worklist Smp#: 7

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

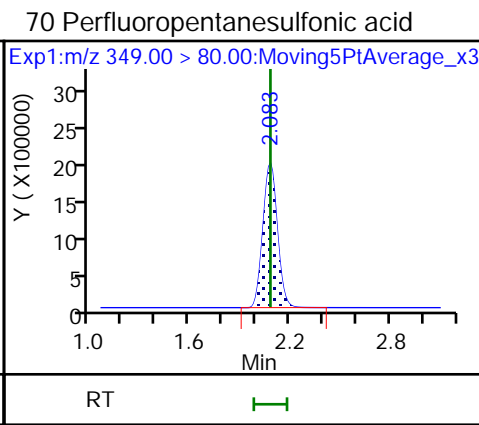
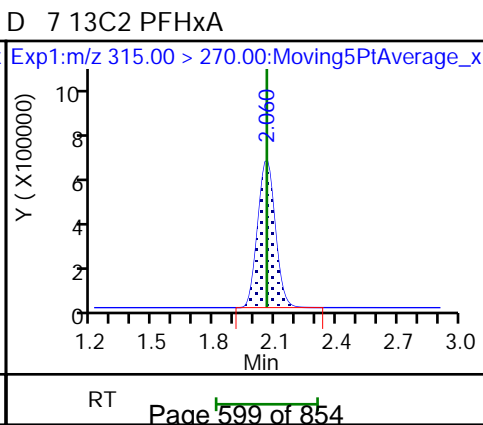
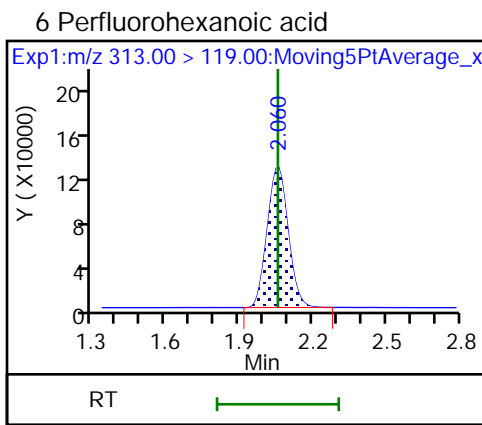
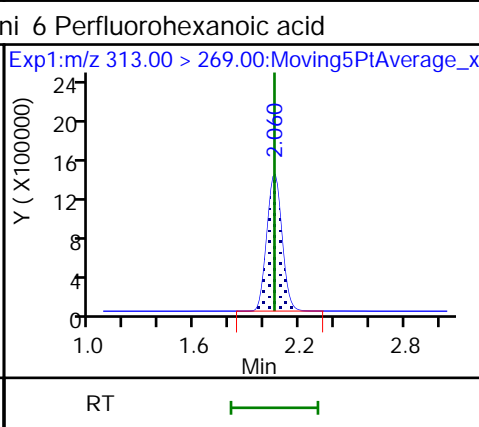
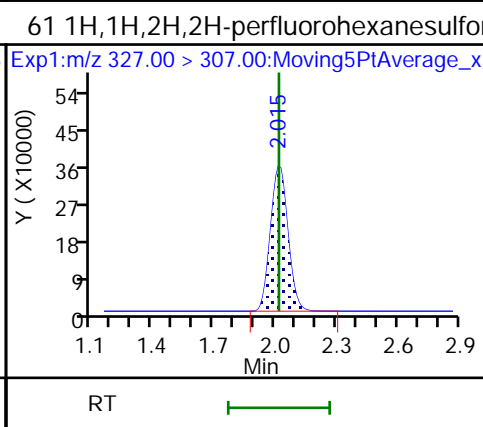
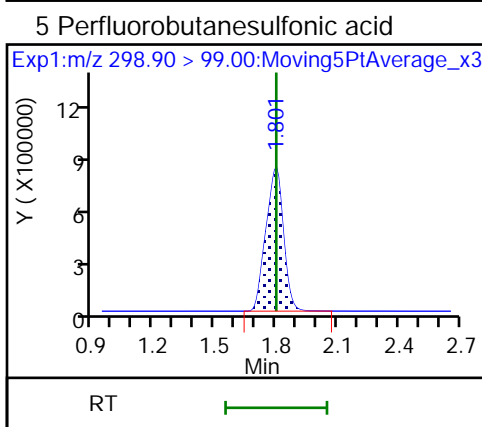
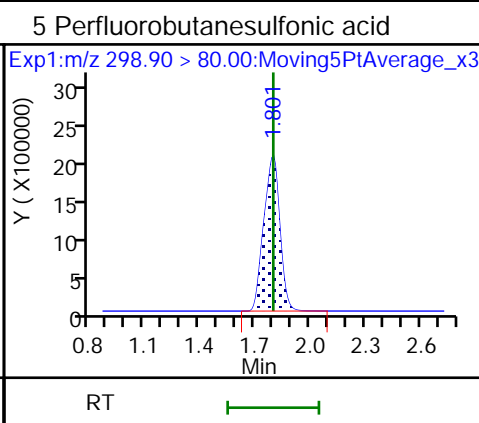
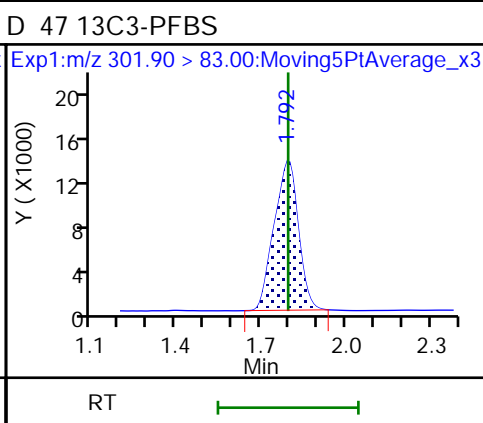
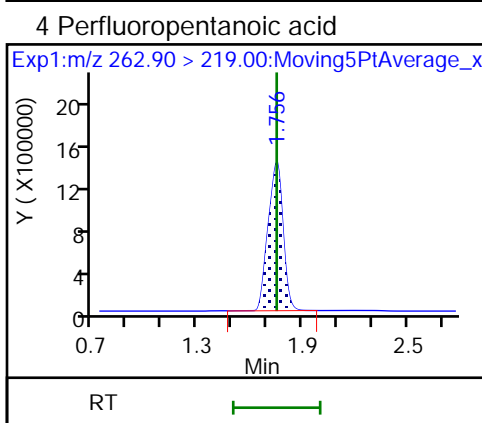
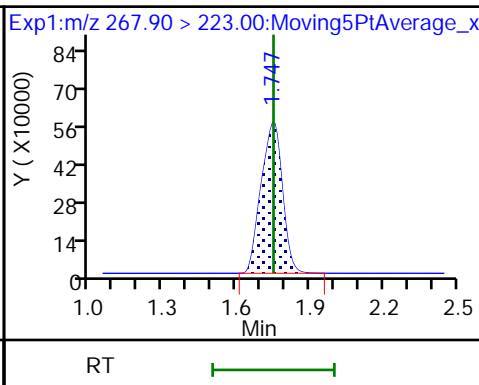
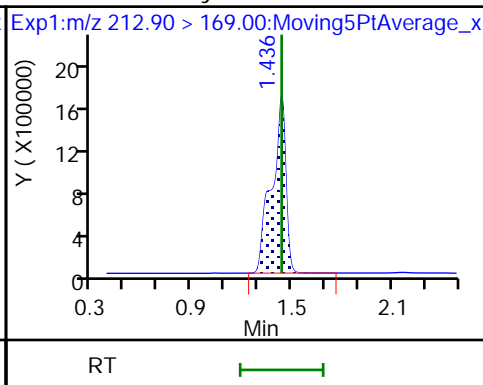
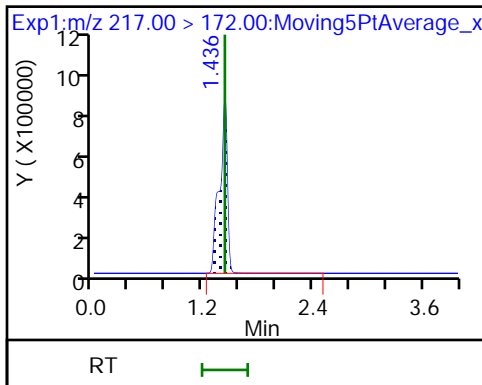
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Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

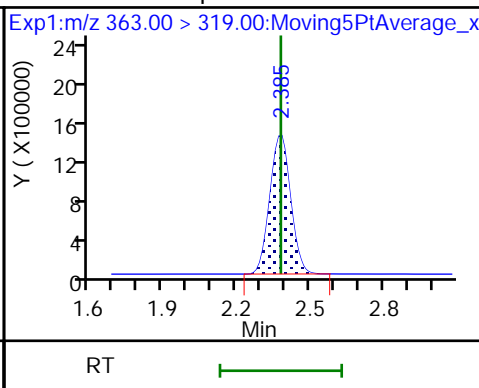
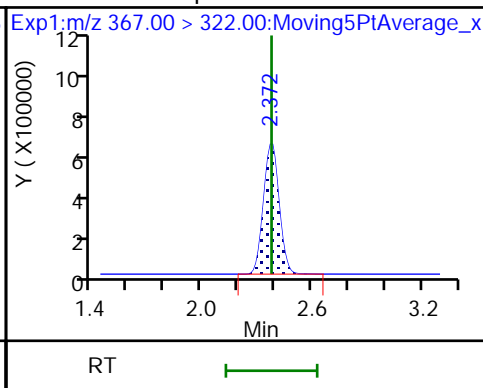
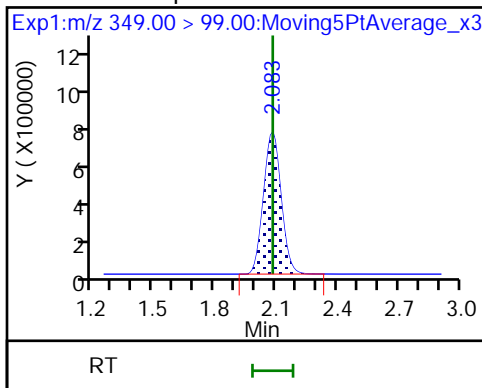
D 3 13C5-PFPeA



70 Perfluoropentanesulfonic acid

D 9 13C4-PFHpA

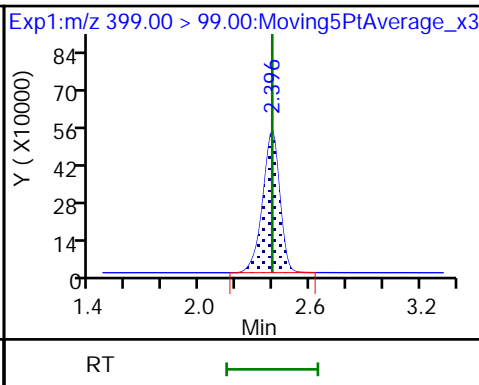
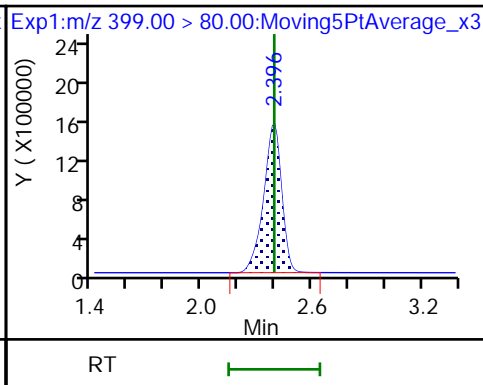
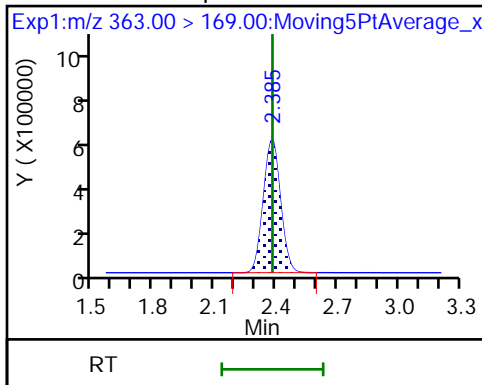
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

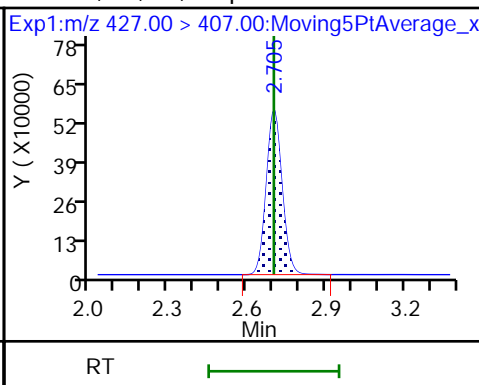
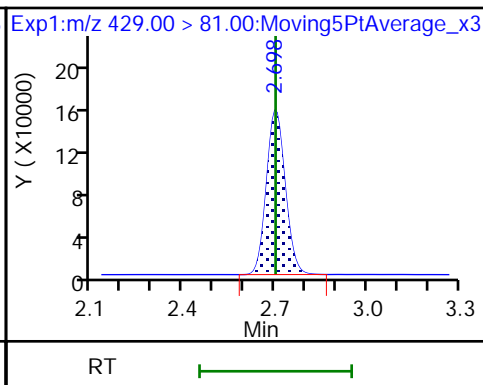
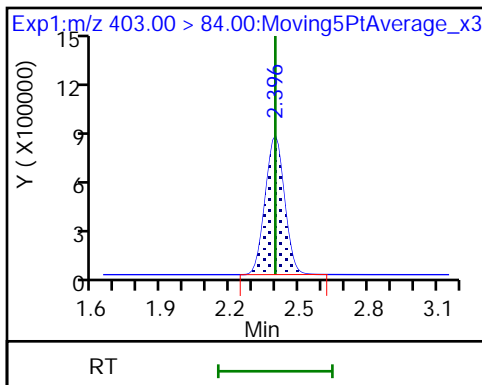
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

D 12 M2-6:2FTS

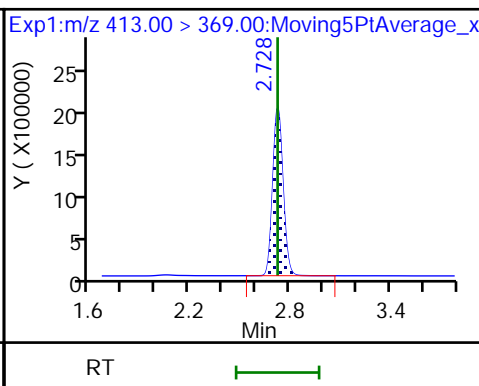
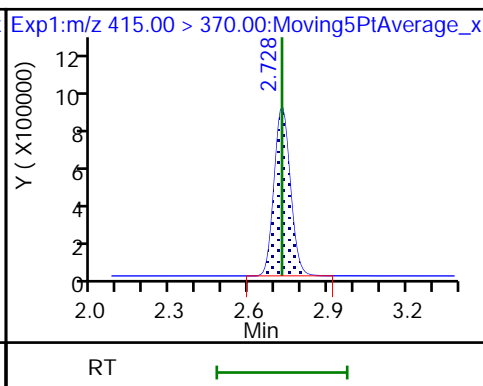
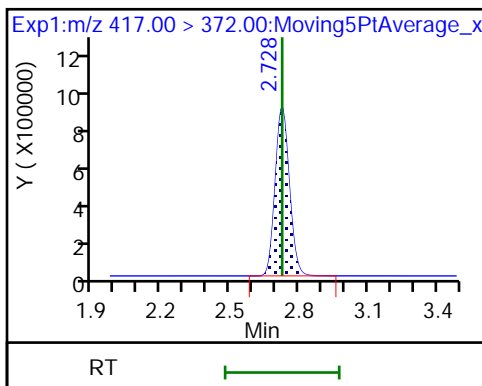
13 1H,1H,2H,2H-perfluorooctanesulfoni

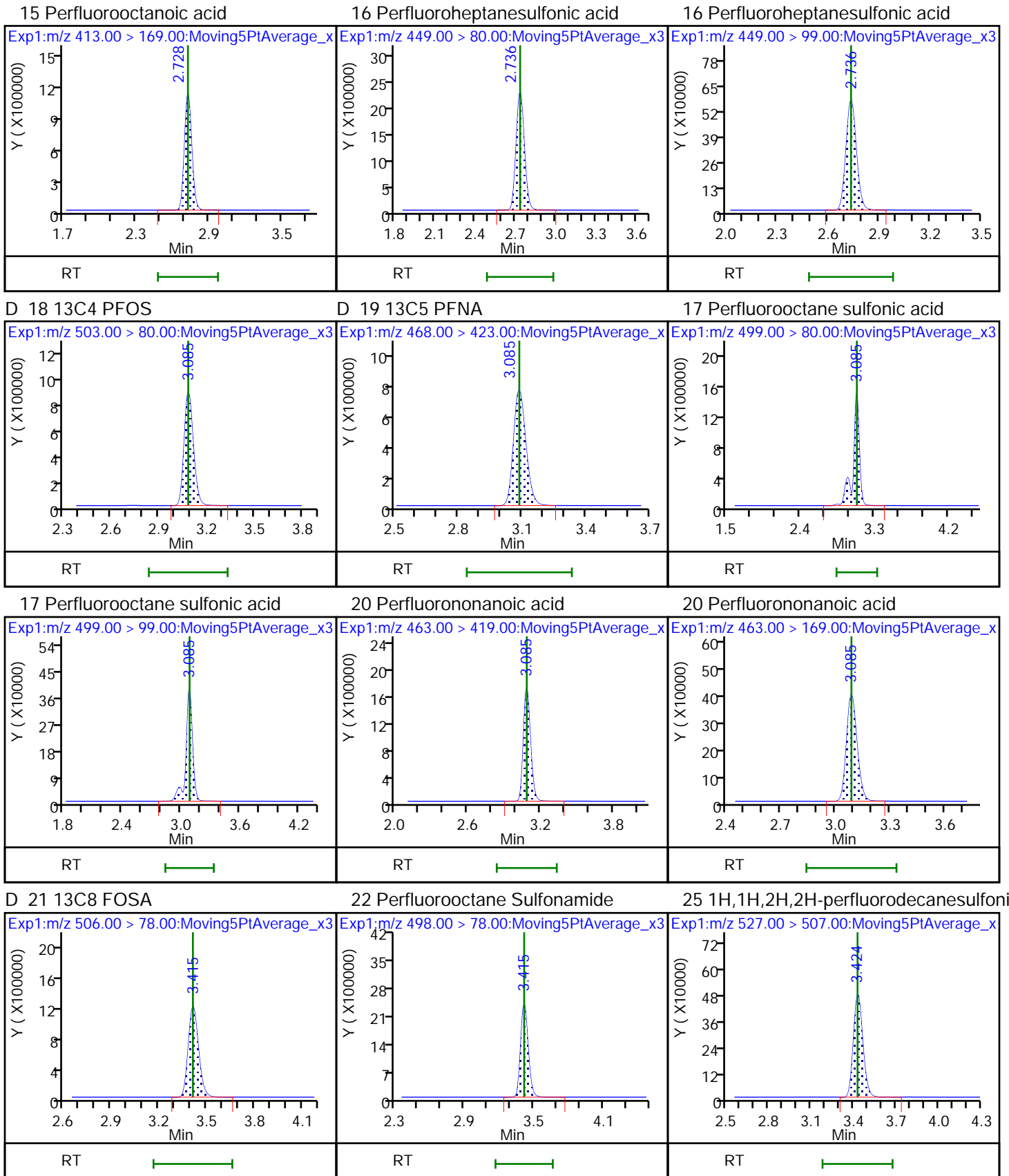


D 14 13C4 PFOA

* 62 13C2-PFOA

15 Perfluorooctanoic acid

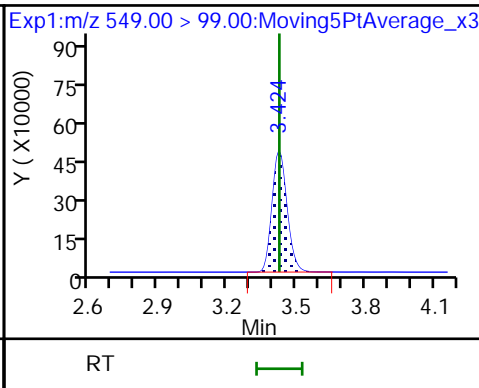
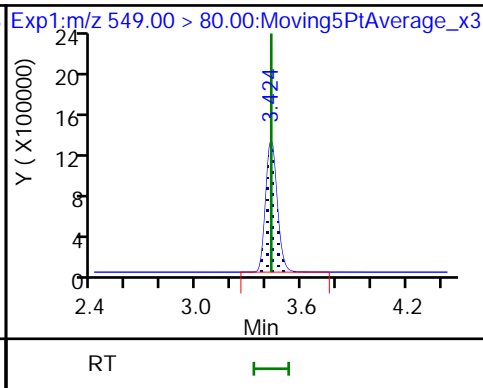
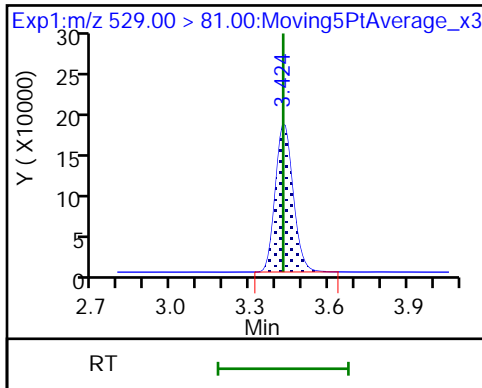




D 26 M2-8:2FTS

68 Perfluorononanesulfonic acid

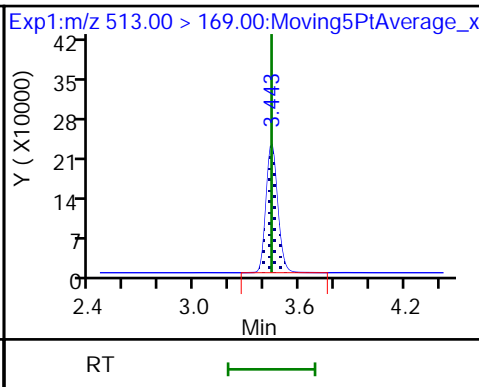
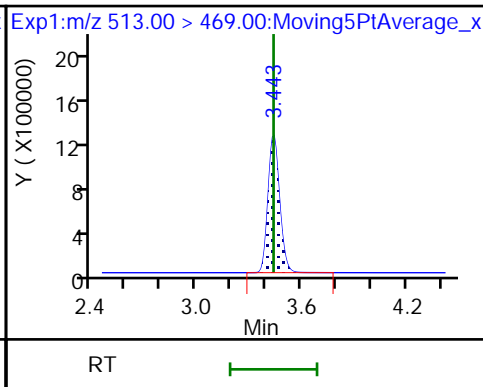
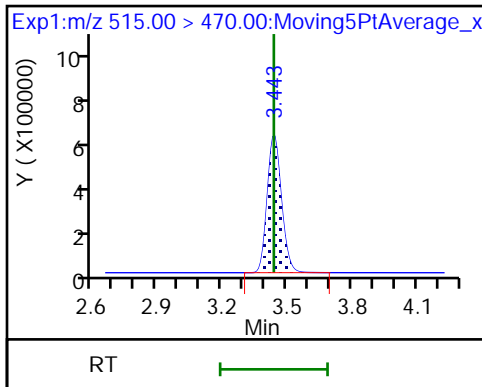
68 Perfluorononanesulfonic acid



D 23 13C2 PFDA

24 Perfluorodecanoic acid

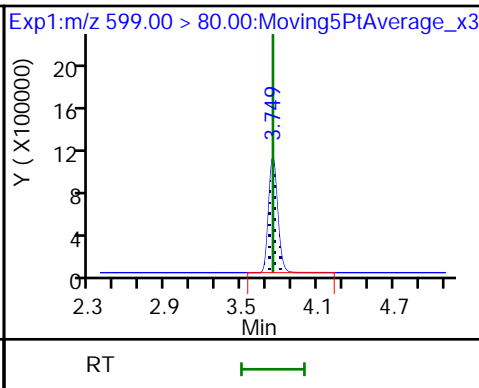
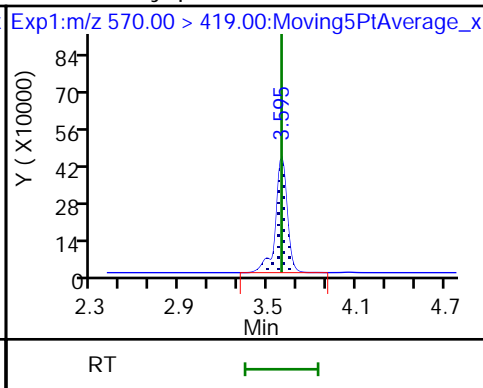
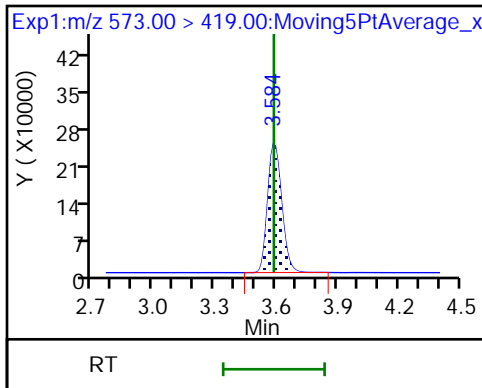
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

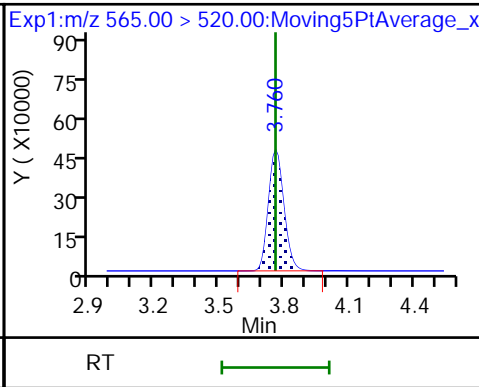
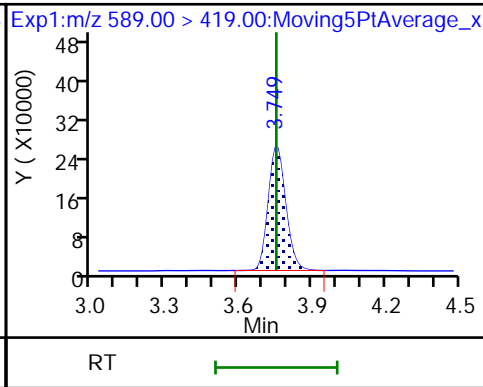
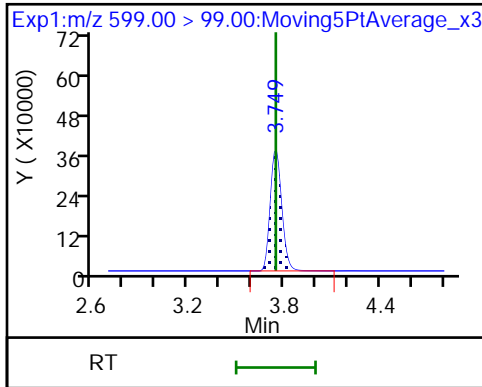
29 Perfluorodecane Sulfonic acid

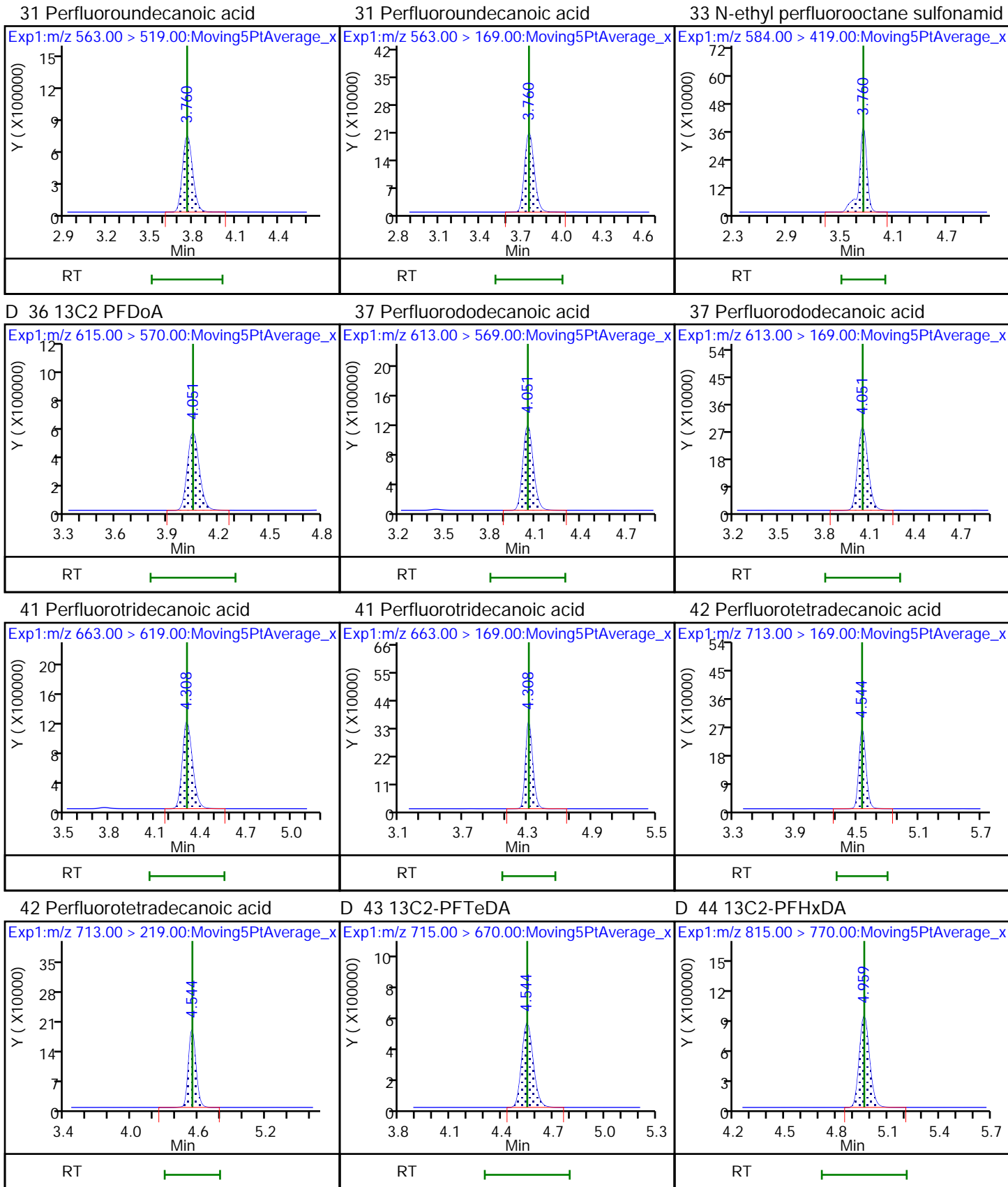


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

D 30 13C2 PFUnA





TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d
 Lims ID: IC L7 Full
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 19-Jul-2018 12:56:46 ALS Bottle#: 16 Worklist Smp#: 8
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: L7-FULL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 15:20:01 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK022

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	1.436	1.435	0.001	0.526	4851709	2.69	108	120926	
2 Perfluorobutyric acid	212.90 > 169.00	1.436	1.438	-0.002	1.000	19024514	9.76	97.6	6726	
D 3 13C5-PFPeA	267.90 > 223.00	1.747	1.750	-0.003	0.641	3308147	2.63	105	39674	
4 Perfluoropentanoic acid	262.90 > 219.00	1.747	1.752	-0.005	1.000	15754215	9.71	97.1	7429	
D 47 13C3-PFBS	301.90 > 83.00	1.792	1.795	-0.003	0.657	80084	2.47	106	474	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.801	1.799	0.002	1.005	22855887	8.57	97.0	102367	
	298.90 > 99.00	1.801	1.799	0.002	1.005	9784928	2.34(1.25-3.74)	97.0	78104	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.014	2.017	-0.003	1.124	4004970	8.86	94.9	136173	
D 60 M2-4:2FTS	329.00 > 81.00	2.014	2.019	-0.005	0.739	404071	NC		5712	
6 Perfluorohexanoic acid	313.00 > 269.00	2.060	2.056	0.004	1.000	15739825	9.55	95.5	39558	
	313.00 > 119.00	2.060	2.056	0.004	1.000	1436132	10.96(5.03-15.10)	95.5	34740	
D 7 13C2 PFHxA	315.00 > 270.00	2.060	2.058	0.002	0.755	3790746	2.58	103	71006	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.082	2.082	0.0	1.162	21940048	8.77	93.5	145913	
	349.00 > 99.00	2.082	2.082	0.0	1.162	8375876	2.62(1.36-4.07)	93.5	93925	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.150	2.151	-0.001	0.788	272722	NC		5192	
67 Perfluoro(2-propoxypropanoic) acid	329.10 > 285.00	2.150	2.153	-0.003	1.000	3168021	NC		27572	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 9 13C4-PFHpA	367.00	> 322.00	2.384	2.379	0.005	0.874	3590021	2.53	101	43619
10 Perfluoroheptanoic acid	363.00	> 319.00	2.384	2.380	0.004	1.000	15861987	9.64	96.4	26902
363.00 > 169.00	2.384	2.380	0.004	1.000	6377924		2.49(1.13-3.40)	96.4	45308	
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.396	2.394	0.002	1.000	19629490	8.84	97.2	32046
399.00 > 99.00	2.396	2.394	0.002	1.000	6601020		2.97(1.50-4.49)	97.2	19474	
D 11 18O2 PFHxS	403.00	> 84.00	2.396	2.395	0.001	0.878	4589887	2.41	102	40088
65 ADONA	377.00	> 251.00	2.418	2.421	-0.003	0.783	37375561	NC		212539
377.00 > 85.00	2.418	2.421	-0.003	0.783	25219400		1.48(0.84-2.53)		83769	
D 12 M2-6:2FTS	429.00	> 81.00	2.697	2.701	-0.004	0.989	660830	2.41	101	14237
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.697	2.702	-0.005	1.000	4357116	9.63	102	43955
D 14 13C4 PFOA	417.00	> 372.00	2.727	2.725	0.002	1.000	3432703	2.50	100	33032
* 62 13C2-PFOA	415.00	> 370.00	2.727	2.725	0.002		3602863	2.50		35081
15 Perfluorooctanoic acid	413.00	> 369.00	2.727	2.725	0.002	1.000	16186908	9.58	95.7	10474
413.00 > 169.00	2.727	2.725	0.002	1.000	8264254		1.96(0.84-2.52)	95.7	25968	
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.735	2.733	0.002	0.886	17346927	9.12	95.8	73512
449.00 > 99.00	2.735	2.733	0.002	0.886	4813075		3.60(1.94-5.82)	95.8	44510	
D 18 13C4 PFOS	503.00	> 80.00	3.087	3.083	0.004	1.132	3387461	2.48	104	12692
D 19 13C5 PFNA	468.00	> 423.00	3.087	3.085	0.002	1.132	2851303	2.46	98.3	40628
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.087	3.086	0.001	1.000	15014814	8.95	96.4	55726
499.00 > 99.00	3.087	3.086	0.001	1.000	3357097		4.47(2.31-6.93)	96.4	33744	
20 Perfluorononanoic acid	463.00	> 419.00	3.087	3.086	0.001	1.000	12757725	9.91	99.1	26941
463.00 > 169.00	3.087	3.086	0.001	1.000	3145920		4.06(1.90-5.69)	99.1	54724	
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.289	3.291	-0.002	1.065	22971545	NC		105952
D 21 13C8 FOSA	506.00	> 78.00	3.419	3.413	0.006	1.253	4904839	2.42	96.9	46654
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.419	3.415	0.004	1.000	18126132	9.06	90.6	85310
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.428	3.426	0.002	1.000	3926521	8.56	89.3	44870
D 26 M2-8:2FTS	529.00	> 81.00	3.428	3.426	0.002	1.257	827207	2.32	97.0	17797

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.428	3.426	0.002	1.110	10972799	9.52		99.2	63740	
549.00 > 99.00	3.428	3.426	0.002	1.110	4184967		2.62(1.33-3.97)	99.2	44026	
D 23 13C2 PFDA										
515.00 > 470.00	3.437	3.438	-0.001	1.260	2444489	2.34		93.5	31555	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.437	3.439	-0.002	1.000	10297645	9.78		97.8	60645	
513.00 > 169.00	3.437	3.439	-0.002	1.000	1841612		5.59(2.36-7.09)	97.8	57367	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.588	3.587	0.001	1.316	1202587	2.66		106	17960	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.588	3.592	-0.004	1.000	5066769	10.5		105	26144	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.743	3.746	-0.003	1.212	9788549	9.85		102	401257	
599.00 > 99.00	3.743	3.746	-0.003	1.212	3366167		2.91(1.39-4.16)	102	57586	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.754	3.754	0.0	1.376	1185901	2.34		93.7	2509	
D 30 13C2 PFUnA										
565.00 > 520.00	3.764	3.760	0.004	1.380	2200298	2.41		96.3	37039	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.764	3.760	0.004	1.000	7100567	10.2		102	24406	
563.00 > 169.00	3.764	3.760	0.004	1.000	1776485		4.00(2.12-6.36)	102	51184	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.764	3.760	0.004	1.003	4422149	10.6		106	48466	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.912	3.916	-0.004	1.267	31713808	NC			258912	
D 36 13C2 PFDaA										
615.00 > 570.00	4.046	4.051	-0.005	1.484	2363413	2.54		102	17604	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.046	4.051	-0.005	1.000	10545821	10.1		101	6969	
613.00 > 169.00	4.046	4.051	-0.005	1.000	2523142		4.18(2.13-6.40)	101	30797	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.305	4.311	-0.006	1.064	10108462	9.53		95.3	4872	
663.00 > 169.00	4.305	4.311	-0.006	1.064	3276118		3.09(1.25-3.76)	95.3	29674	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.541	4.546	-0.005	1.000	2351179	9.26		92.6	18992	
713.00 > 219.00	4.541	4.546	-0.005	1.000	1763369		1.33(0.71-2.13)	92.6	14368	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.541	4.547	-0.006	1.665	2410726	2.70		108	12117	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.956	4.960	-0.004	1.817	3678172	2.61		104	10140	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.956	4.962	-0.006	1.000	14066931	NC			3007	
813.00 > 169.00	4.956	4.962	-0.006	1.000	2361420		5.96(2.86-8.58)		11648	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.313	5.316	-0.003	1.072	15677890	NC			2585	
913.00 > 169.00	5.306	5.316	-0.010	1.070	1999426		7.84(3.83-11.48)		8252	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC_LL7_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d

Injection Date: 19-Jul-2018 12:56:46

Instrument ID: A8_N

Lims ID: IC L7 Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 16

Worklist Smp#: 8

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

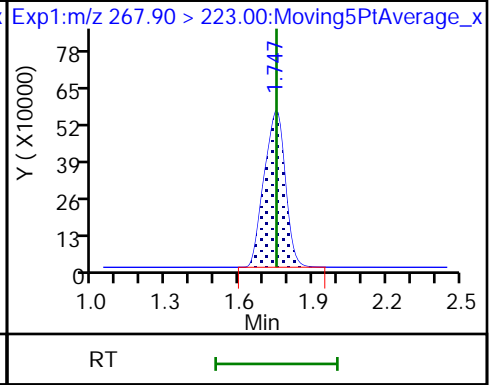
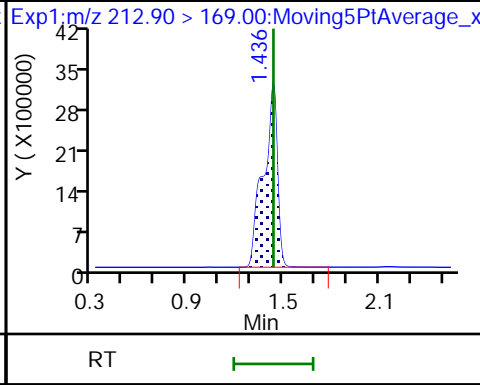
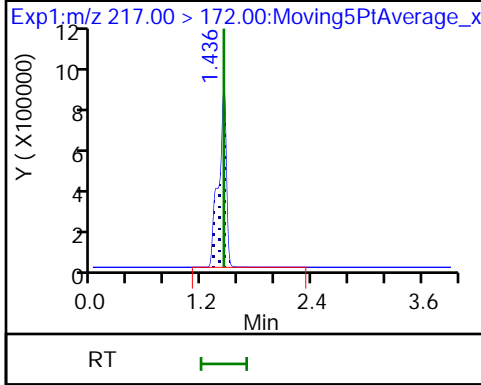
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

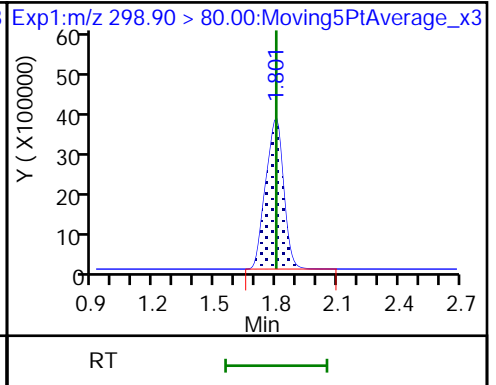
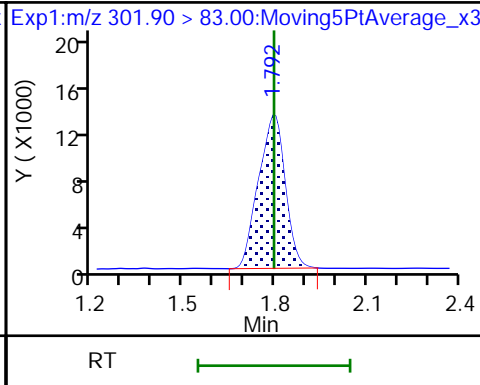
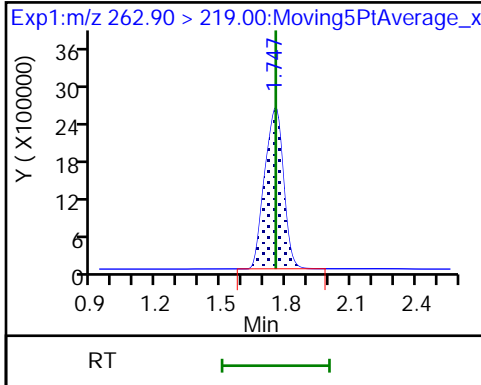
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

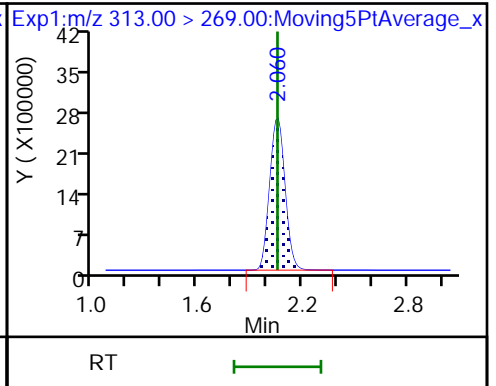
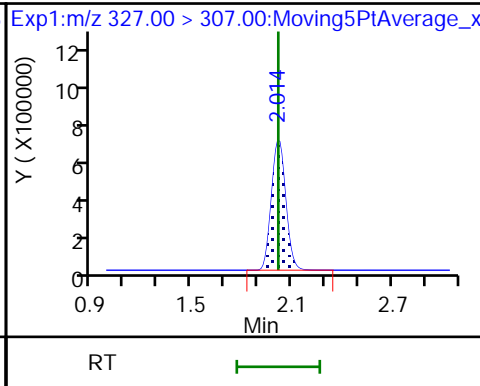
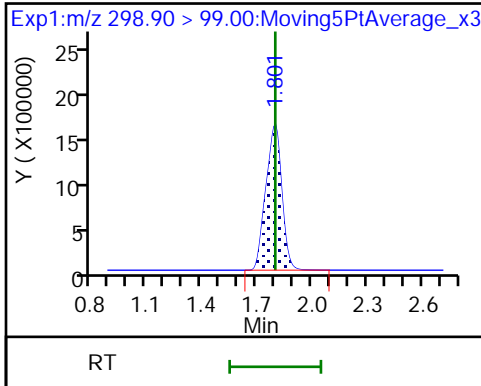
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfoni

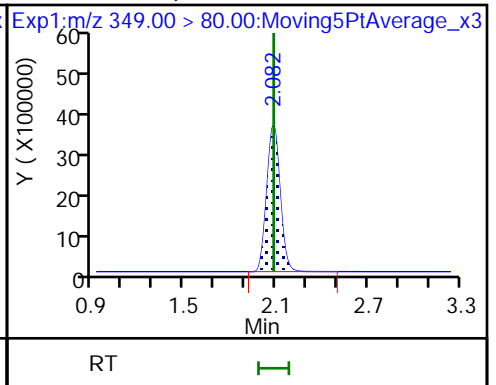
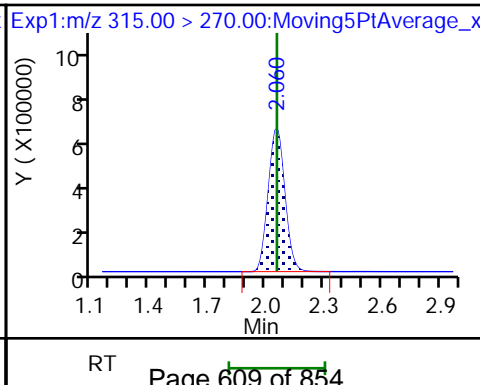
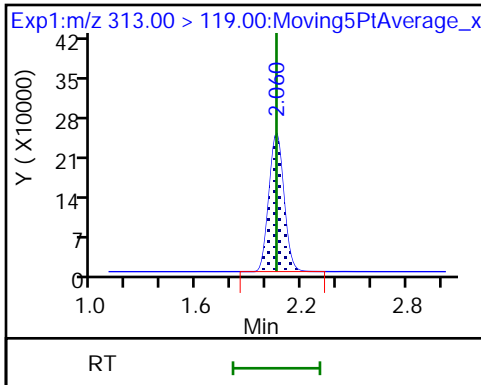
6 Perfluorohexanoic acid

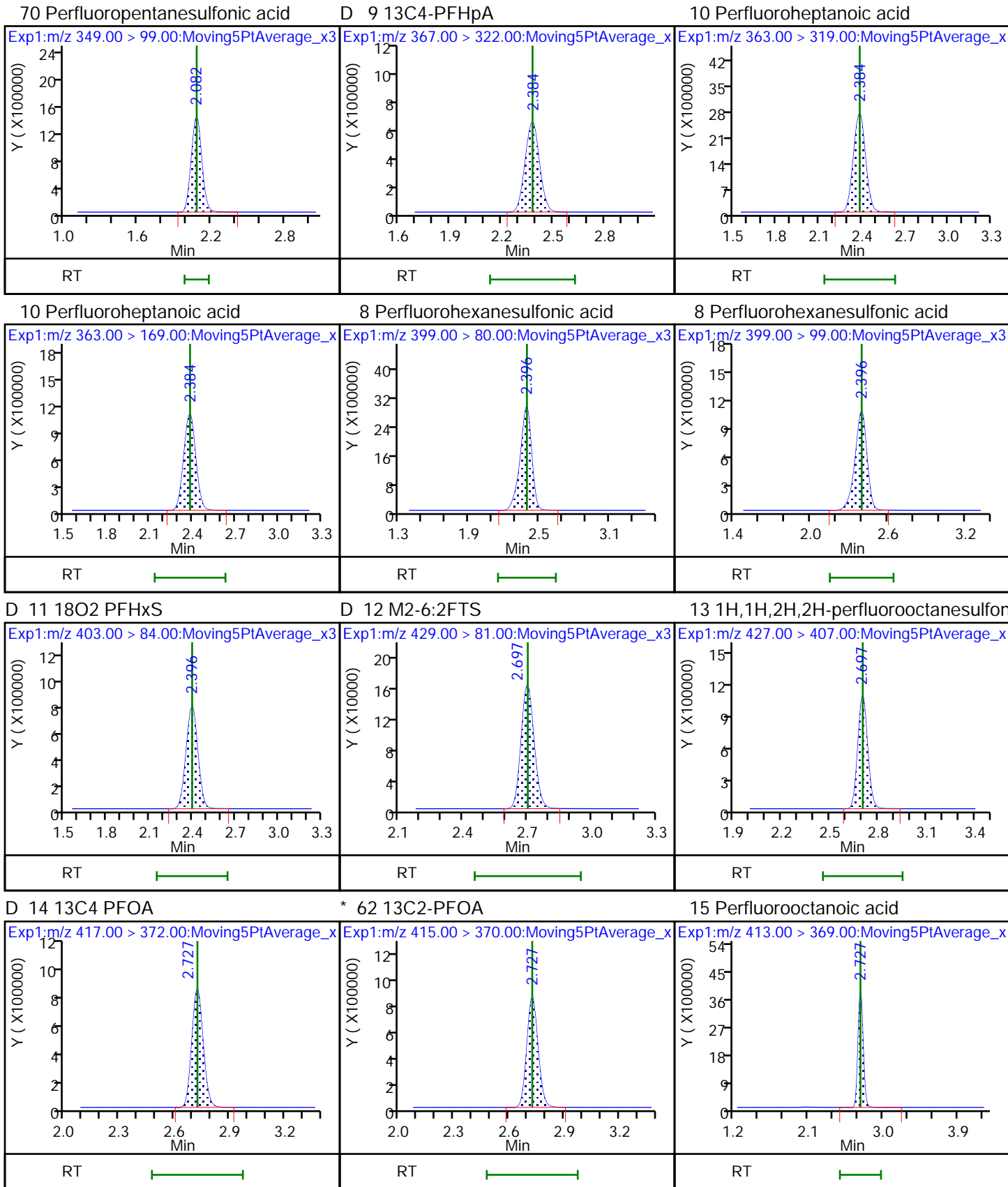


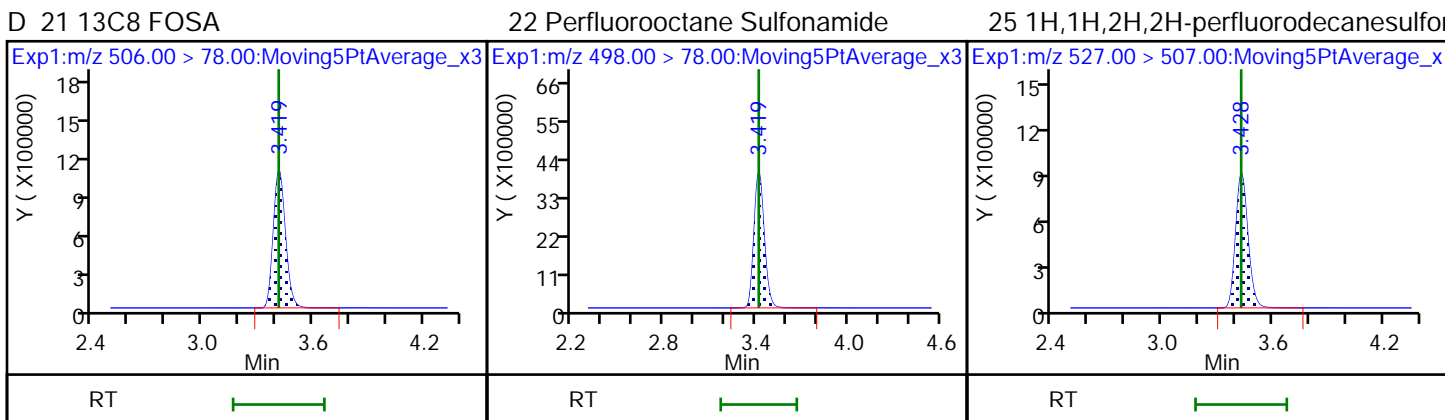
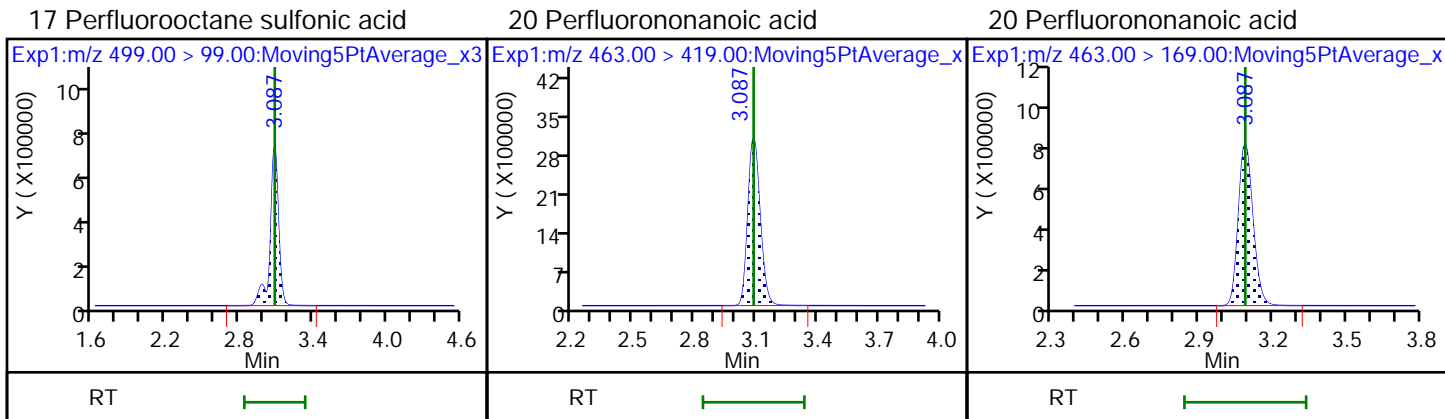
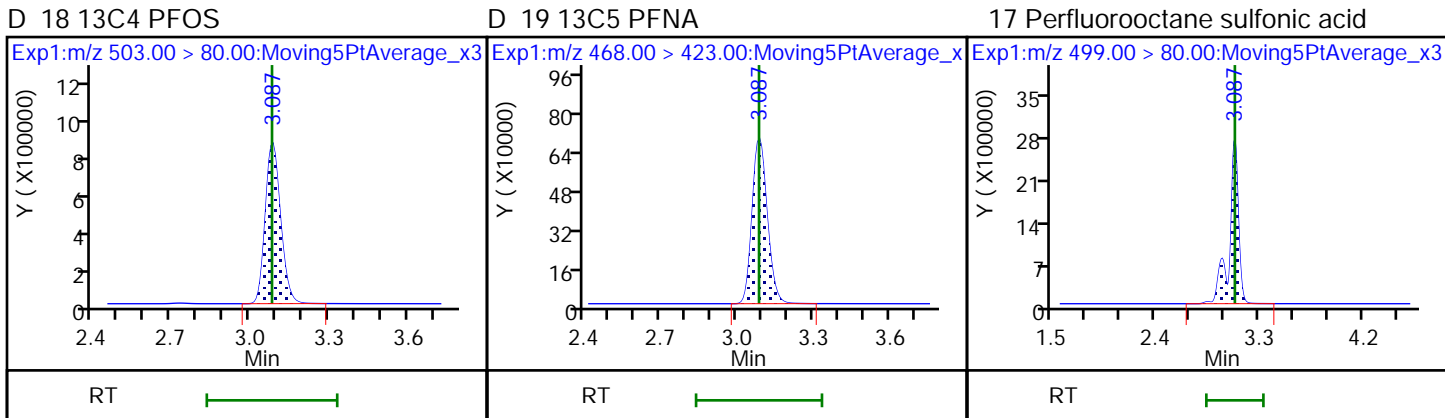
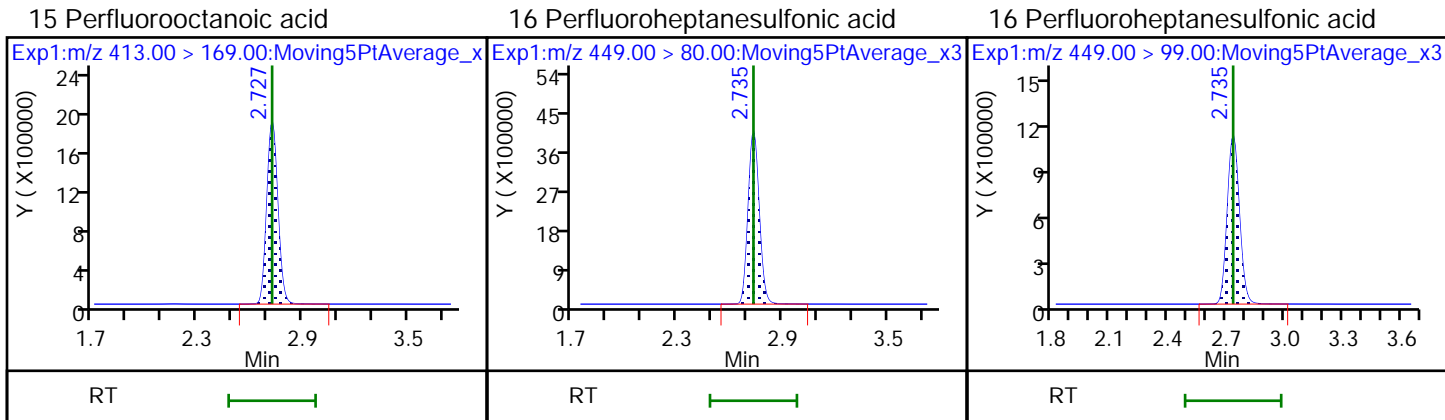
6 Perfluorohexanoic acid

D 7 13C2 PFHxA

70 Perfluoropentanesulfonic acid



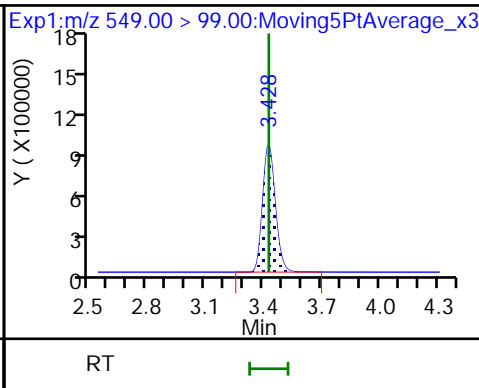
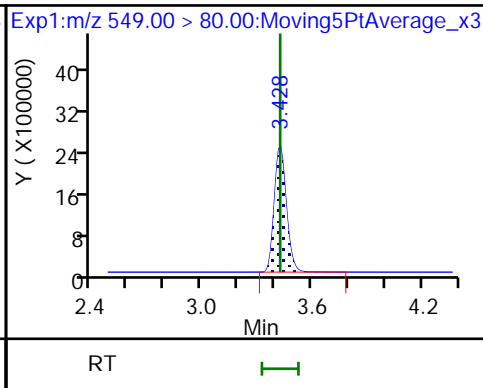
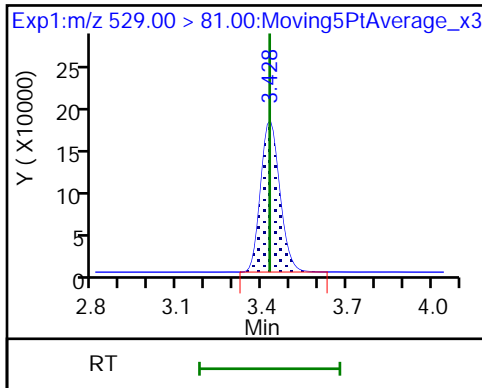




D 26 M2-8:2FTS

68 Perfluorononanesulfonic acid

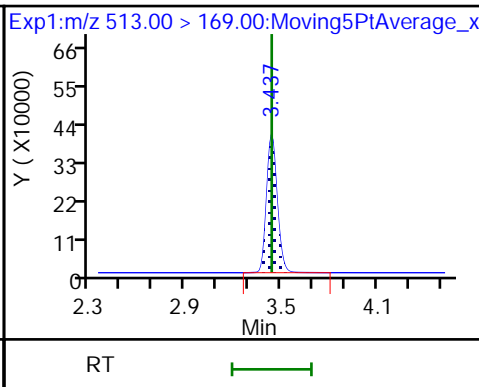
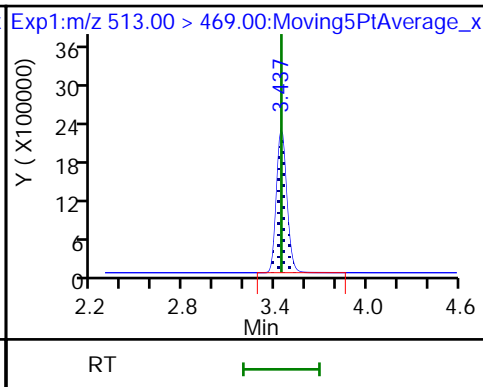
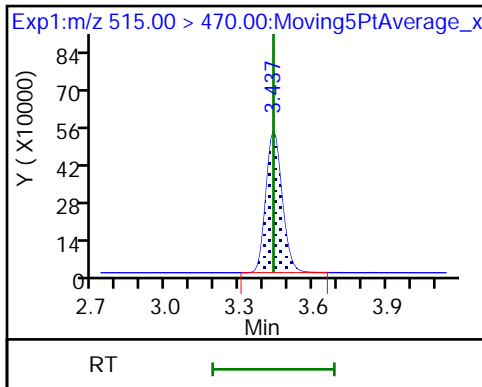
68 Perfluorononanesulfonic acid



D 23 13C2 PFDA

24 Perfluorodecanoic acid

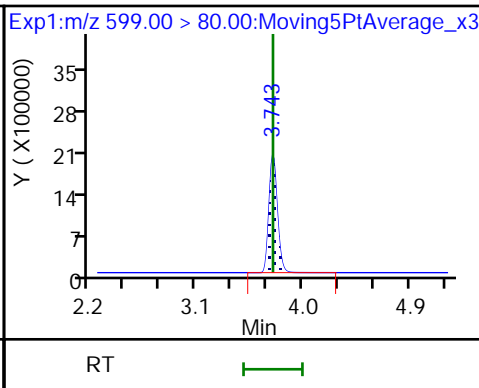
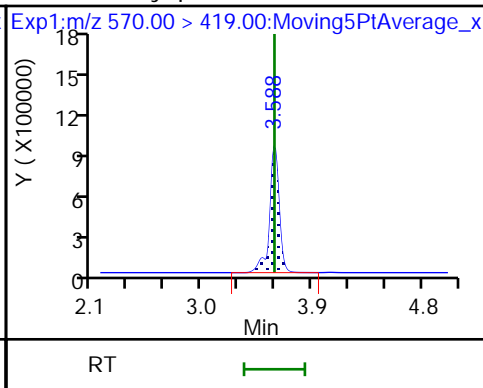
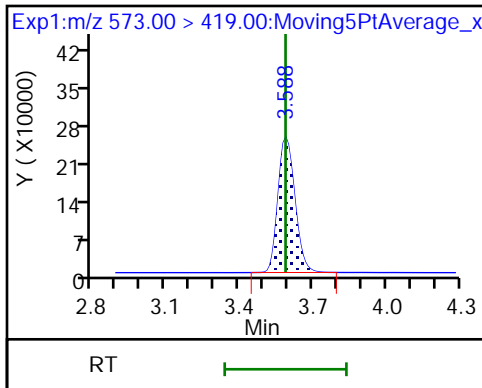
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

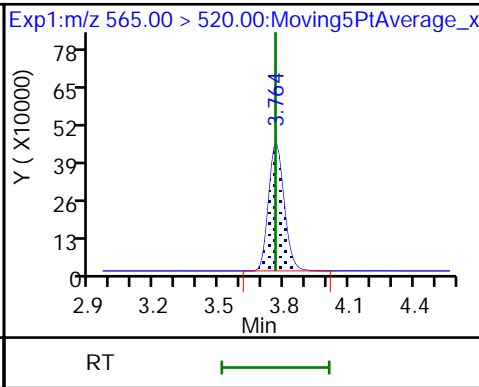
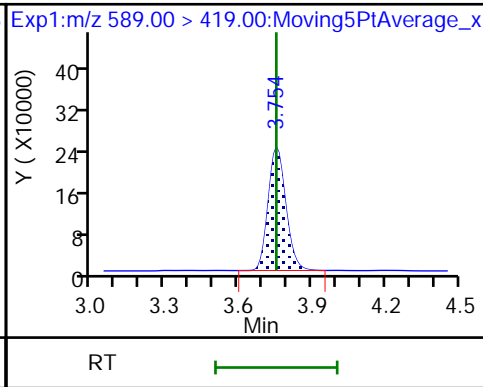
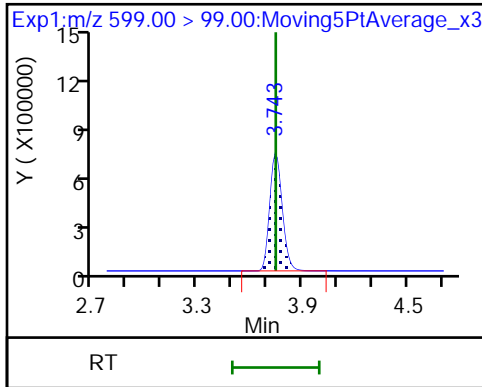
29 Perfluorodecane Sulfonic acid

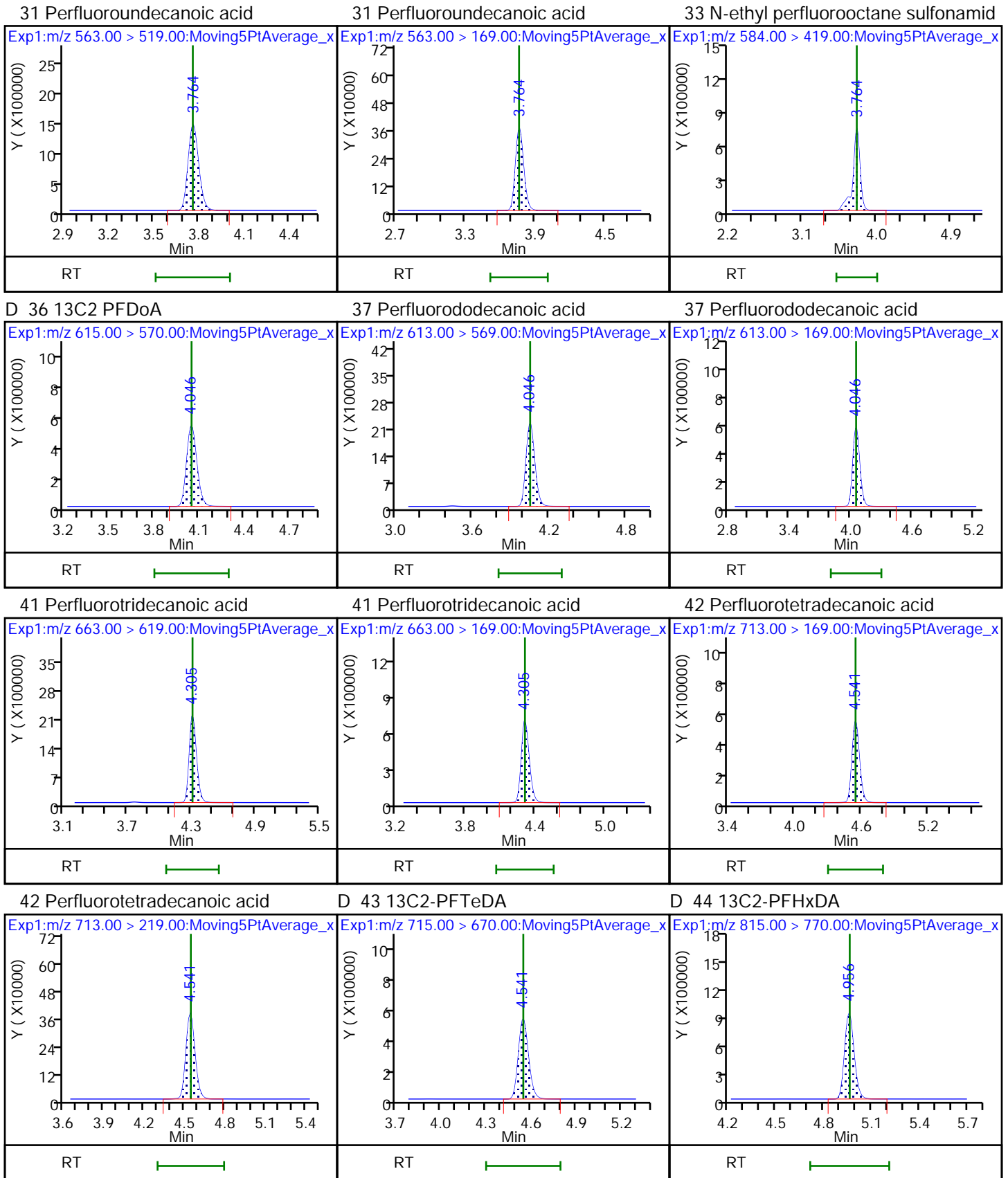


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

D 30 13C2 PFUnA





Calibration

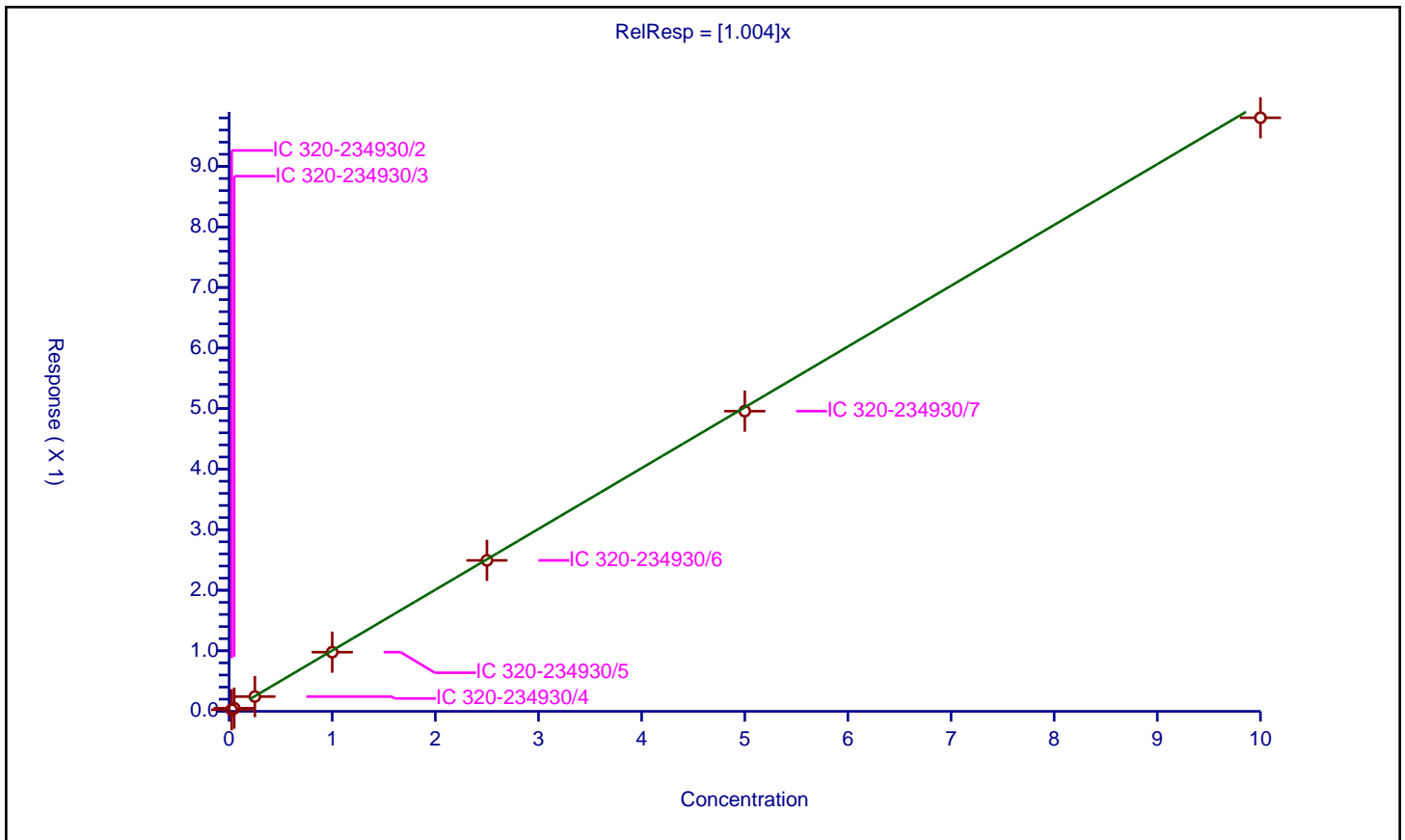
/ Perfluorobutyric acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.004

Error Coefficients	
Standard Error:	8970000
Relative Standard Error:	3.6
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.026642	2.5	4942436.0	1.065669	Y
2	IC 320-234930/3	0.05	0.052129	2.5	5057478.0	1.042575	Y
3	IC 320-234930/4	0.25	0.243585	2.5	4955778.0	0.974339	Y
4	IC 320-234930/5	1.0	0.976986	2.5	4793333.0	0.976986	Y
5	IC 320-234930/6	2.5	2.493147	2.5	4847784.0	0.997259	Y
6	IC 320-234930/7	5.0	4.957672	2.5	4889821.0	0.991534	Y
7	IC 320-234930/8	10.0	9.802996	2.5	4851709.0	0.9803	Y



Calibration

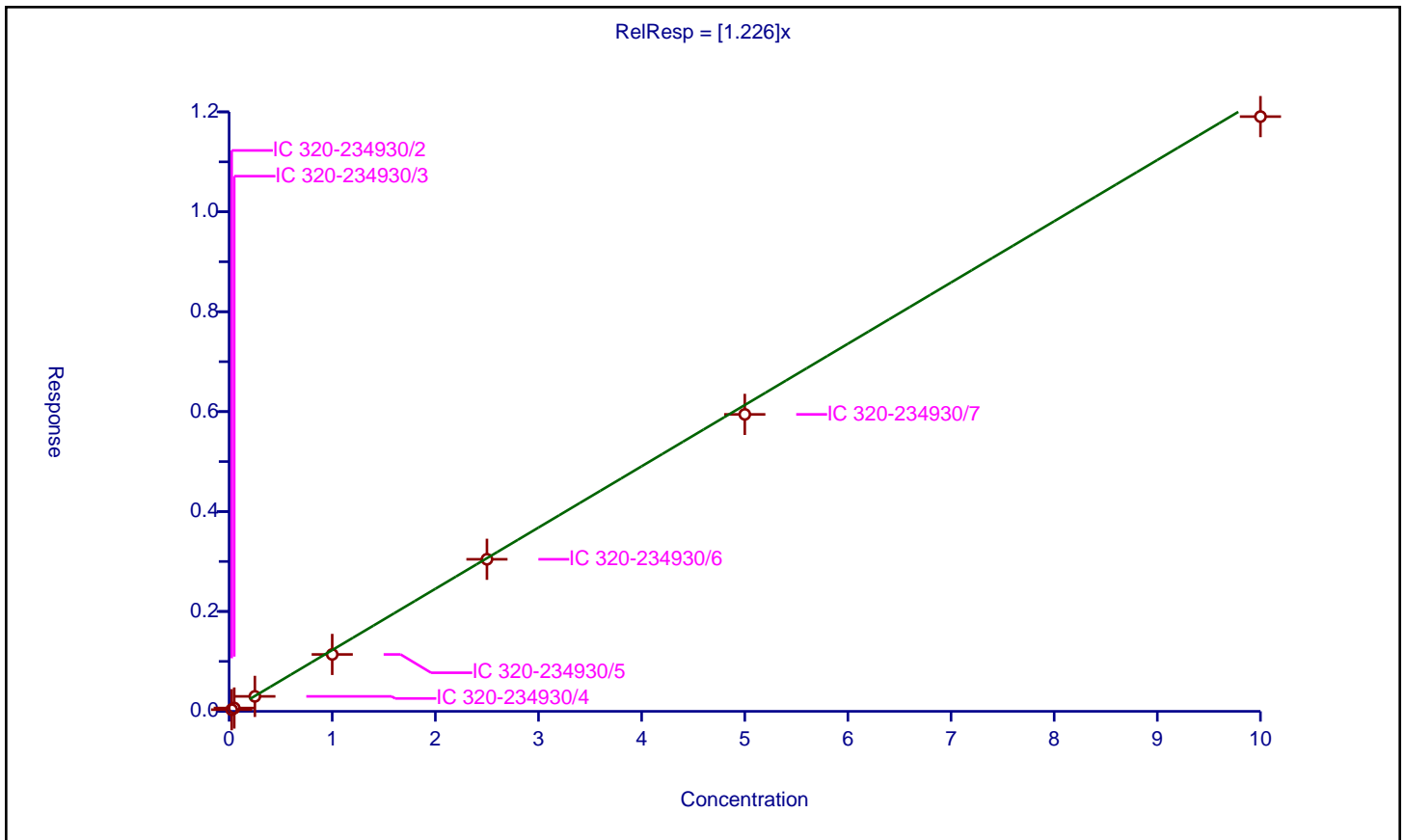
/ Perfluoropentanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.226

Error Coefficients	
Standard Error:	7460000
Relative Standard Error:	5.9
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.033198	2.5	3438228.0	1.327922	Y
2	IC 320-234930/3	0.05	0.06619	2.5	3527106.0	1.323805	Y
3	IC 320-234930/4	0.25	0.29917	2.5	3512376.0	1.19668	Y
4	IC 320-234930/5	1.0	1.13895	2.5	3329350.0	1.13895	Y
5	IC 320-234930/6	2.5	3.043905	2.5	3388559.0	1.217562	Y
6	IC 320-234930/7	5.0	5.944605	2.5	3413396.0	1.188921	Y
7	IC 320-234930/8	10.0	11.905619	2.5	3308147.0	1.190562	Y



Calibration

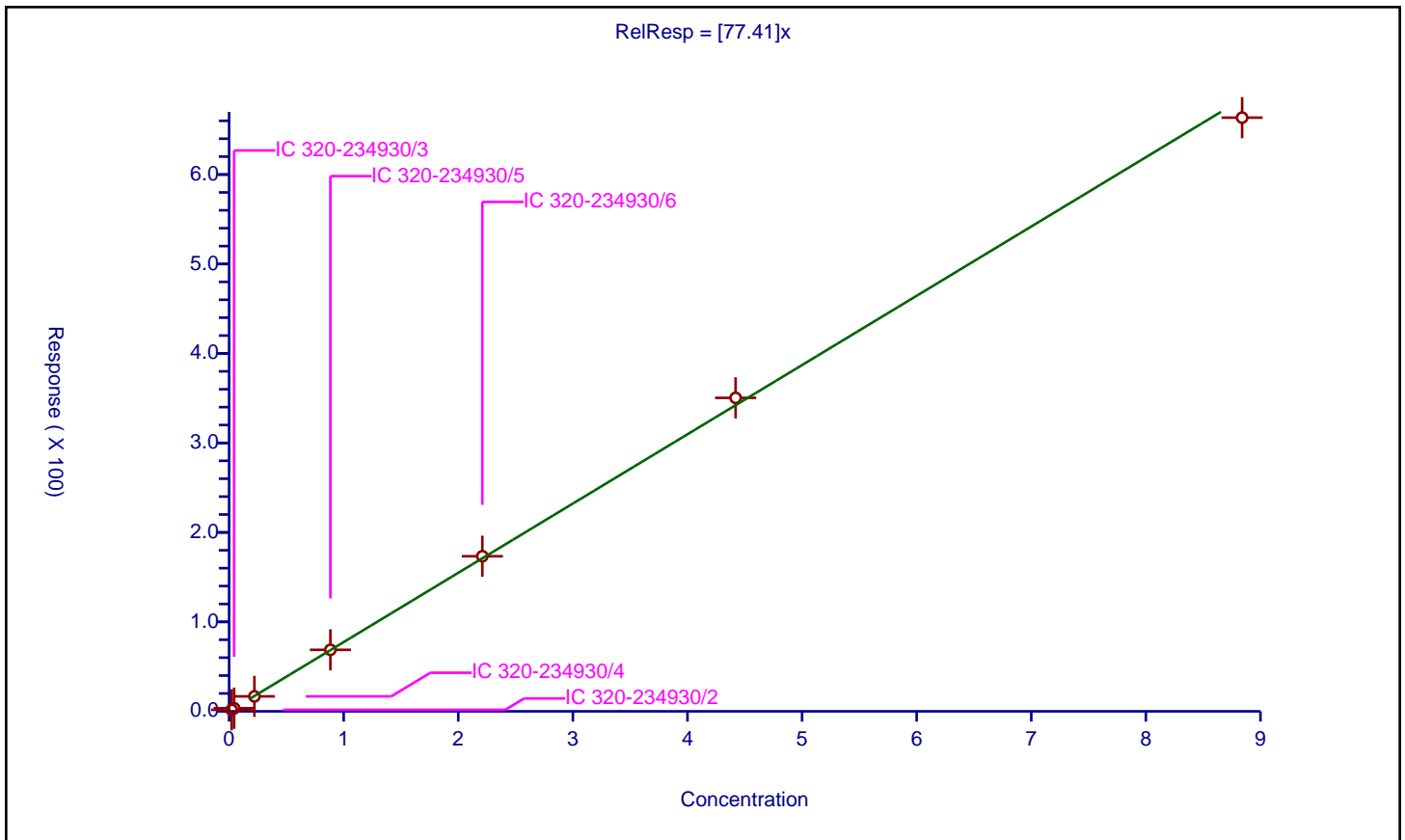
/ Perfluorobutanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	77.41

Error Coefficients	
Standard Error:	10900000
Relative Standard Error:	2.0
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	1.000

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.0221	1.708913	2.325	84409.0	77.326387	Y
2	IC 320-234930/3	0.0442	3.462359	2.325	85914.0	78.333924	Y
3	IC 320-234930/4	0.221	16.724756	2.325	82484.0	75.67763	Y
4	IC 320-234930/5	0.884	68.747492	2.325	79330.0	77.768656	Y
5	IC 320-234930/6	2.21	173.340389	2.325	81682.0	78.434565	Y
6	IC 320-234930/7	4.42	350.380494	2.325	81078.0	79.271605	Y
7	IC 320-234930/8	8.84	663.552486	2.325	80084.0	75.062498	Y



Calibration

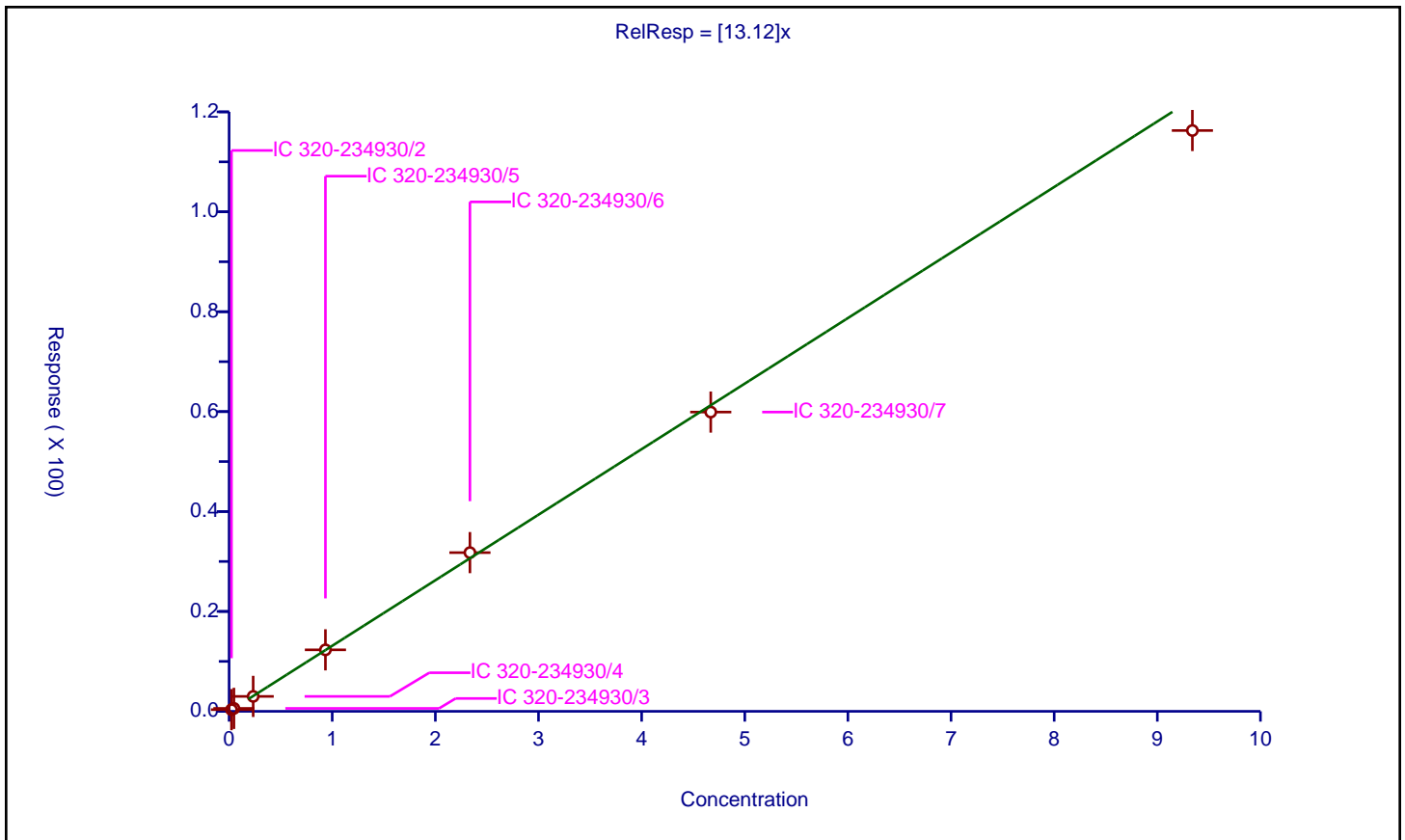
/ 1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2)

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	13.12

Error Coefficients	
Standard Error:	1910000
Relative Standard Error:	5.1
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.02335	0.335244	2.325	84409.0	14.357327	Y
2	IC 320-234930/3	0.0467	0.589382	2.325	85914.0	12.620602	Y
3	IC 320-234930/4	0.2335	2.989064	2.325	82484.0	12.801132	Y
4	IC 320-234930/5	0.934	12.309399	2.325	79330.0	13.179228	Y
5	IC 320-234930/6	2.335	31.771679	2.325	81682.0	13.606715	Y
6	IC 320-234930/7	4.67	59.908653	2.325	81078.0	12.828405	Y
7	IC 320-234930/8	9.34	116.272355	2.325	80084.0	12.44886	Y



Calibration

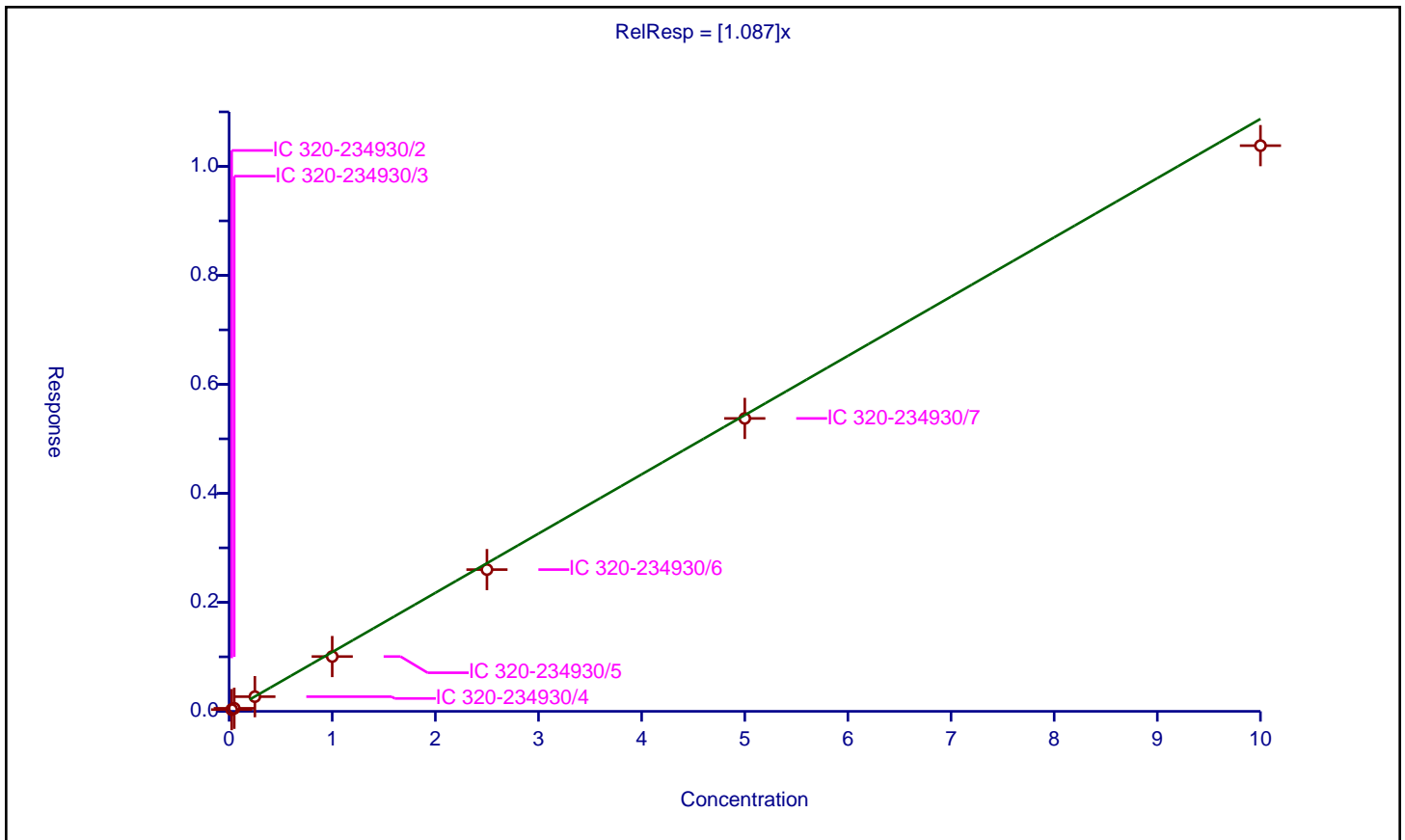
/ Perfluorohexanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.087

Error Coefficients	
Standard Error:	7500000
Relative Standard Error:	7.9
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.992

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.031646	2.5	4052458.0	1.265849	Y
2	IC 320-234930/3	0.05	0.055405	2.5	4243020.0	1.10809	Y
3	IC 320-234930/4	0.25	0.269382	2.5	4045162.0	1.077529	Y
4	IC 320-234930/5	1.0	1.005198	2.5	3968266.0	1.005198	Y
5	IC 320-234930/6	2.5	2.600879	2.5	3990656.0	1.040352	Y
6	IC 320-234930/7	5.0	5.374737	2.5	3873424.0	1.074947	Y
7	IC 320-234930/8	10.0	10.380427	2.5	3790746.0	1.038043	Y



Calibration

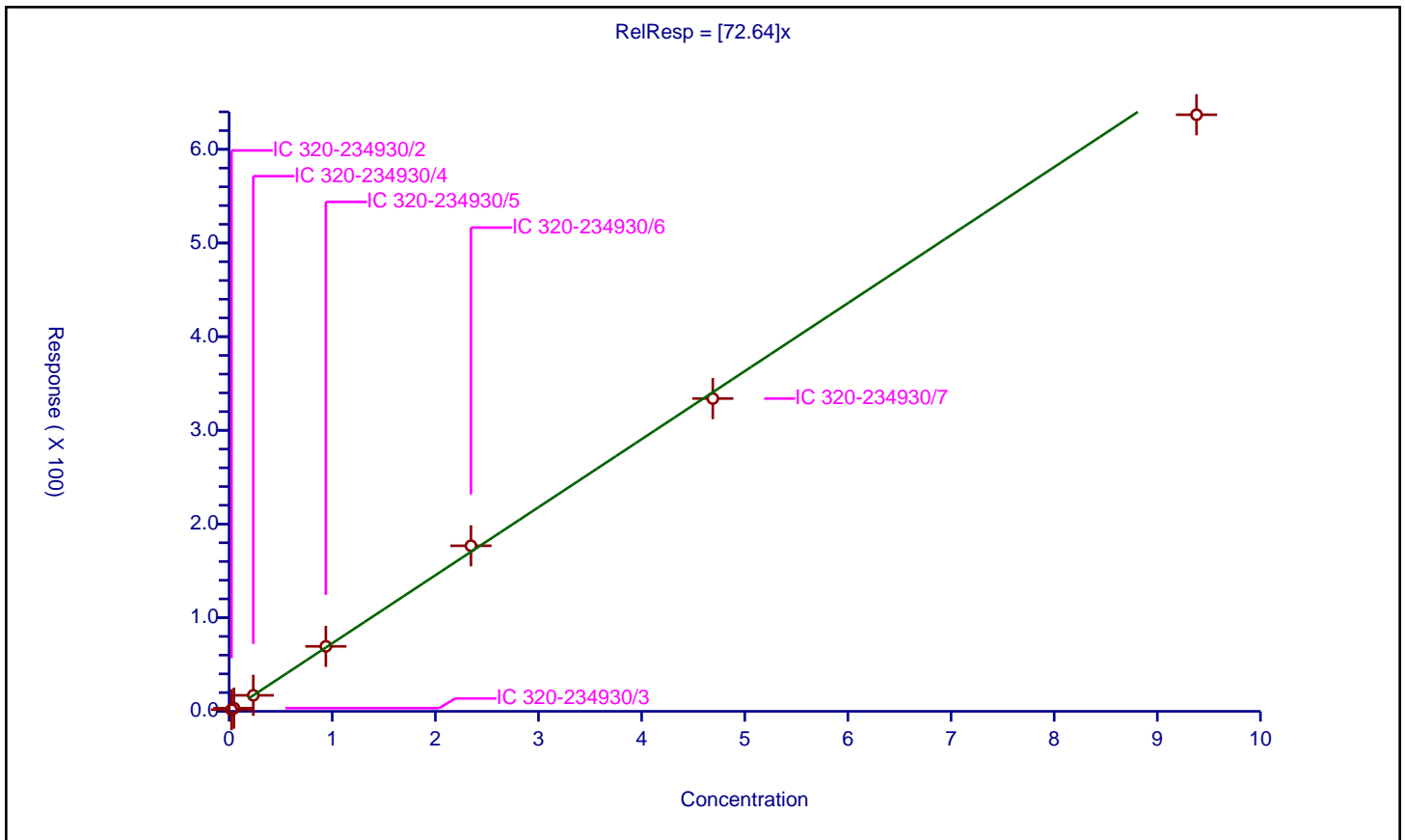
/ Perfluoropentanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	72.64

Error Coefficients	
Standard Error:	10500000
Relative Standard Error:	3.6
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.02345	1.762239	2.325	84409.0	75.148794	Y
2	IC 320-234930/3	0.0469	3.377033	2.325	85914.0	72.004971	Y
3	IC 320-234930/4	0.2345	17.085864	2.325	82484.0	72.860826	Y
4	IC 320-234930/5	0.938	69.366476	2.325	79330.0	73.951467	Y
5	IC 320-234930/6	2.345	176.742269	2.325	81682.0	75.369838	Y
6	IC 320-234930/7	4.69	333.944133	2.325	81078.0	71.20344	Y
7	IC 320-234930/8	9.38	636.963833	2.325	80084.0	67.906592	Y



Calibration

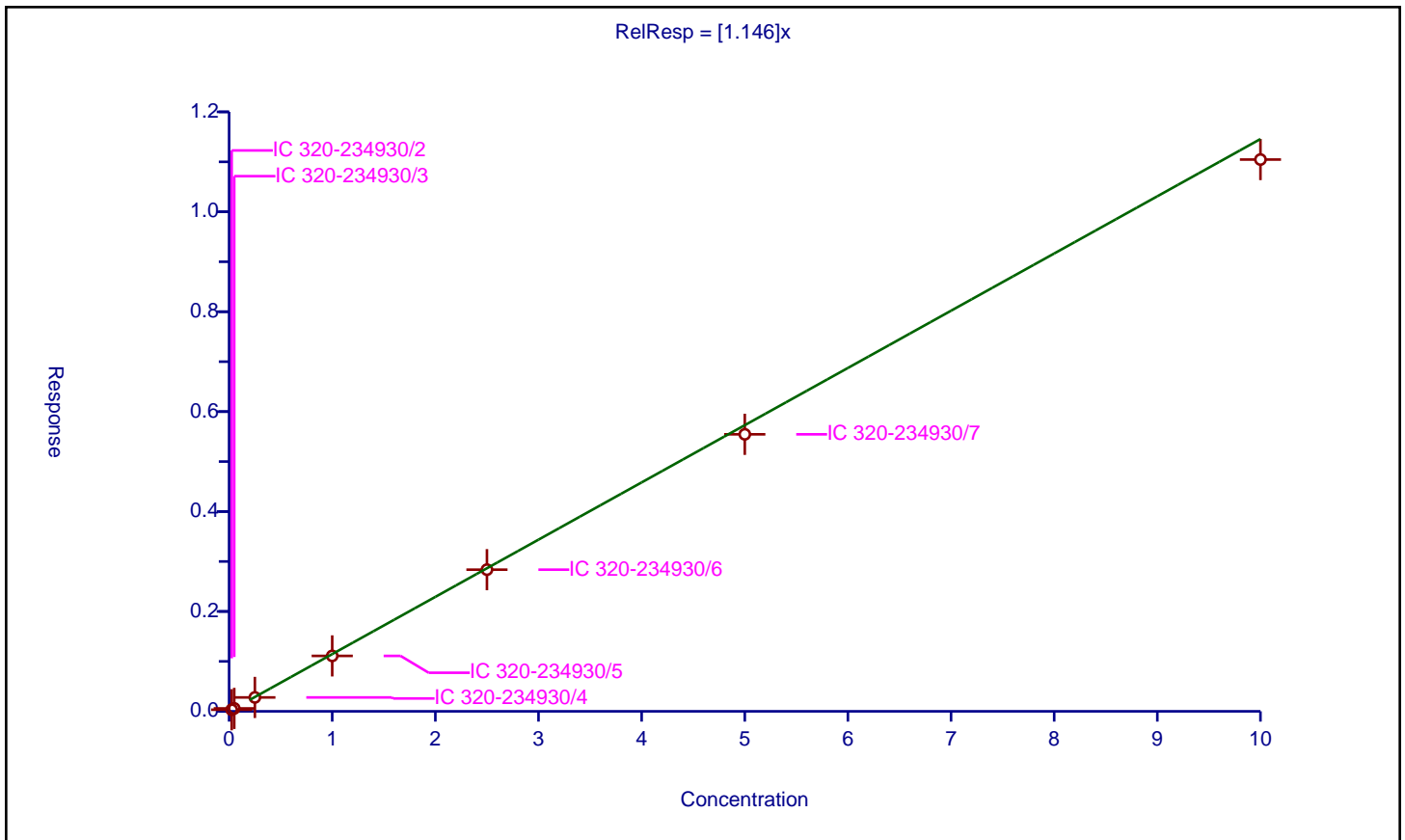
/ Perfluoroheptanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.146

Error Coefficients	
Standard Error:	7600000
Relative Standard Error:	5.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.031987	2.5	3919328.0	1.27948	Y
2	IC 320-234930/3	0.05	0.058507	2.5	3997421.0	1.170142	Y
3	IC 320-234930/4	0.25	0.278071	2.5	3957747.0	1.112284	Y
4	IC 320-234930/5	1.0	1.109476	2.5	3810067.0	1.109476	Y
5	IC 320-234930/6	2.5	2.836041	2.5	3970331.0	1.134416	Y
6	IC 320-234930/7	5.0	5.54545	2.5	3817190.0	1.10909	Y
7	IC 320-234930/8	10.0	11.045887	2.5	3590021.0	1.104589	Y



Calibration

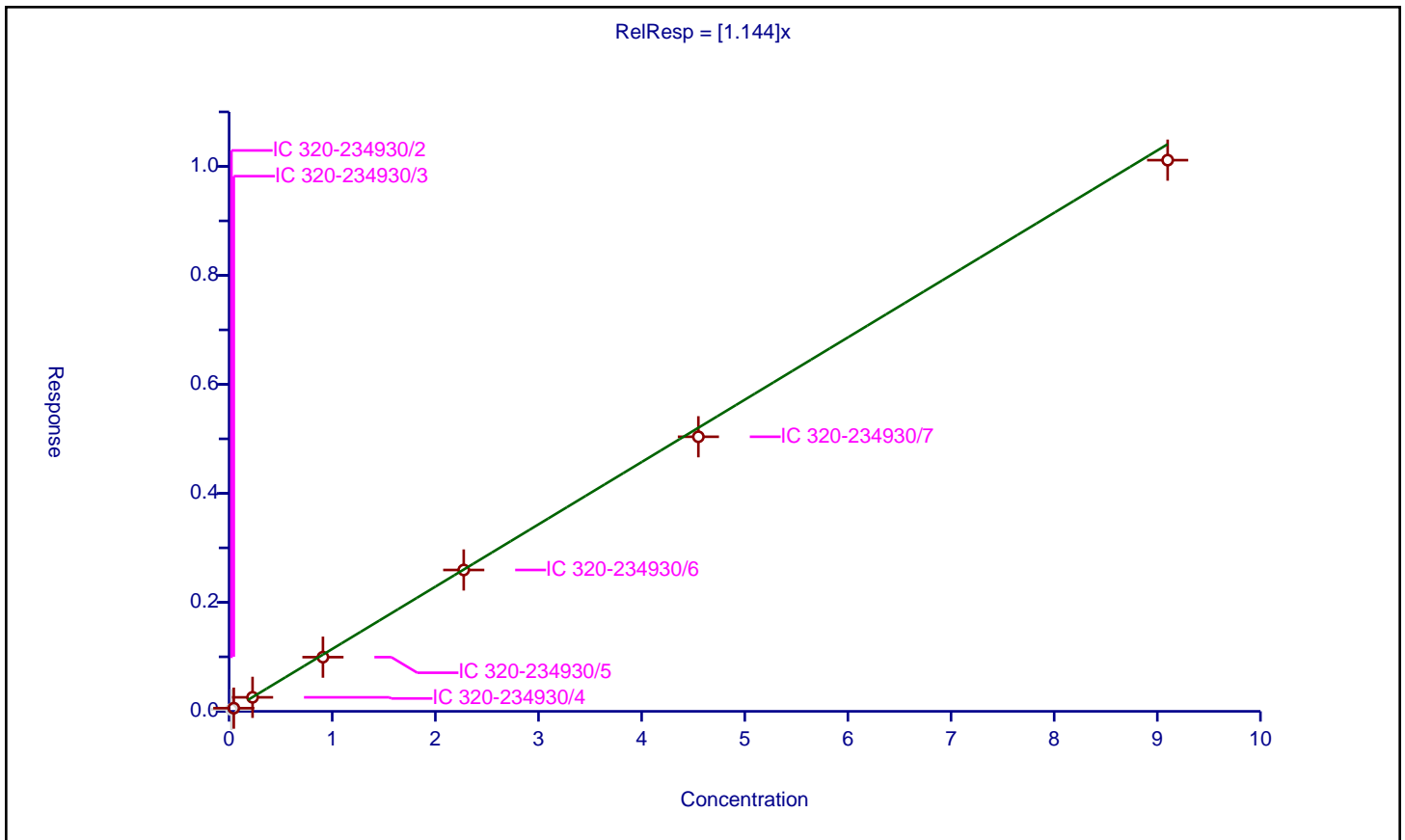
/ Perfluorohexanesulfonic acid

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.144

Error Coefficients	
Standard Error:	10200000
Relative Standard Error:	6.1
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.02275	0.034452	2.365	5066859.0	1.514391	N
2	IC 320-234930/3	0.0455	0.058291	2.365	5134486.0	1.281126	Y
3	IC 320-234930/4	0.2275	0.256902	2.365	5055888.0	1.129239	Y
4	IC 320-234930/5	0.91	0.993972	2.365	4894221.0	1.092277	Y
5	IC 320-234930/6	2.275	2.593922	2.365	4763091.0	1.140186	Y
6	IC 320-234930/7	4.55	5.038457	2.365	4788343.0	1.107353	Y
7	IC 320-234930/8	9.1	10.114354	2.365	4589887.0	1.111468	Y



Calibration

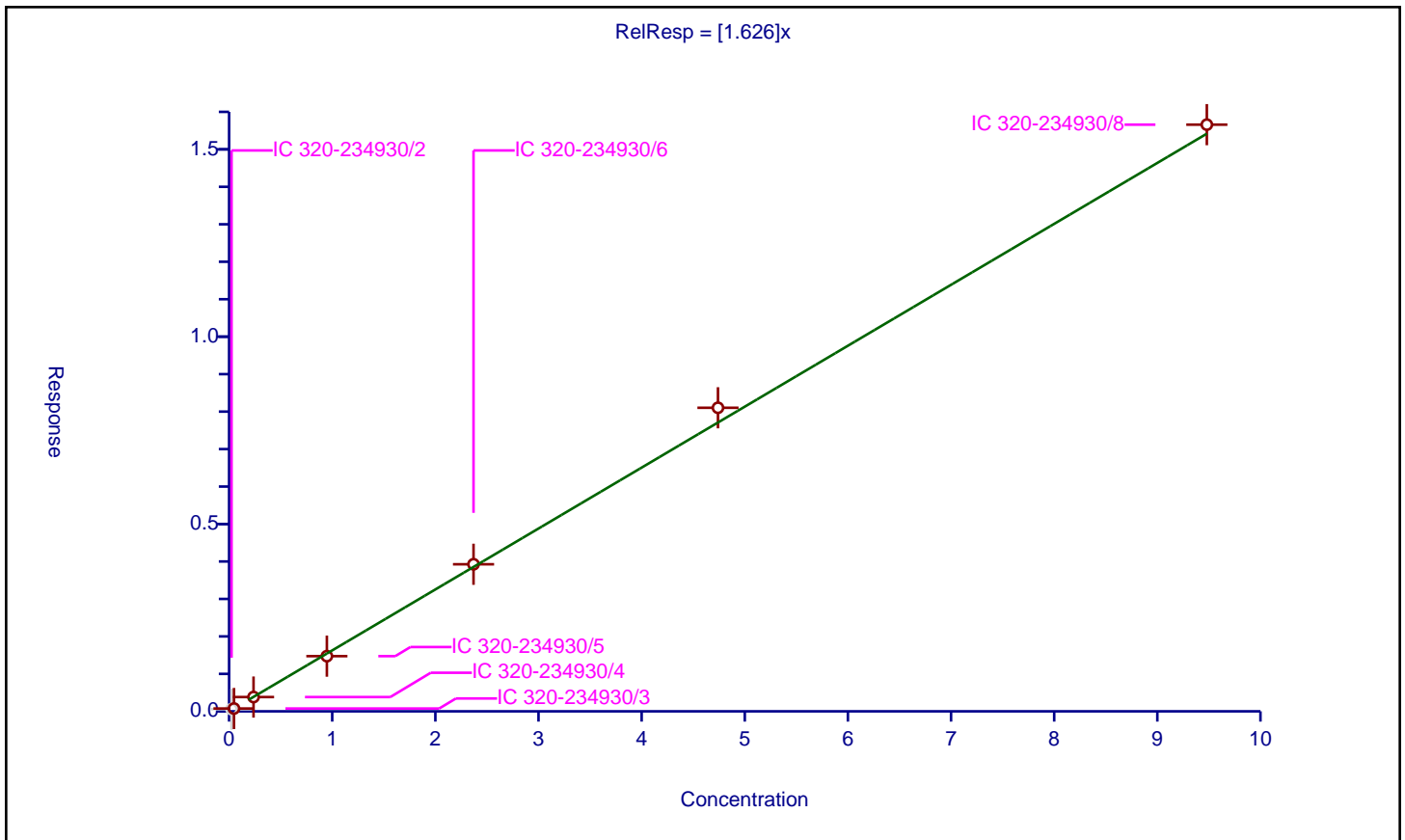
/ 1H,1H,2H,2H-perfluorooctanesulfonic acid (6:2)

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.626

Error Coefficients	
Standard Error:	2270000
Relative Standard Error:	3.5
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.0237	0.058129	2.375	736949.0	2.452687	N
2	IC 320-234930/3	0.0474	0.074861	2.375	792094.0	1.579337	Y
3	IC 320-234930/4	0.237	0.381035	2.375	763465.0	1.607741	Y
4	IC 320-234930/5	0.948	1.472955	2.375	668108.0	1.55375	Y
5	IC 320-234930/6	2.37	3.925187	2.375	672928.0	1.656197	Y
6	IC 320-234930/7	4.74	8.102601	2.375	674960.0	1.709409	Y
7	IC 320-234930/8	9.48	15.659323	2.375	660830.0	1.651827	Y



Calibration

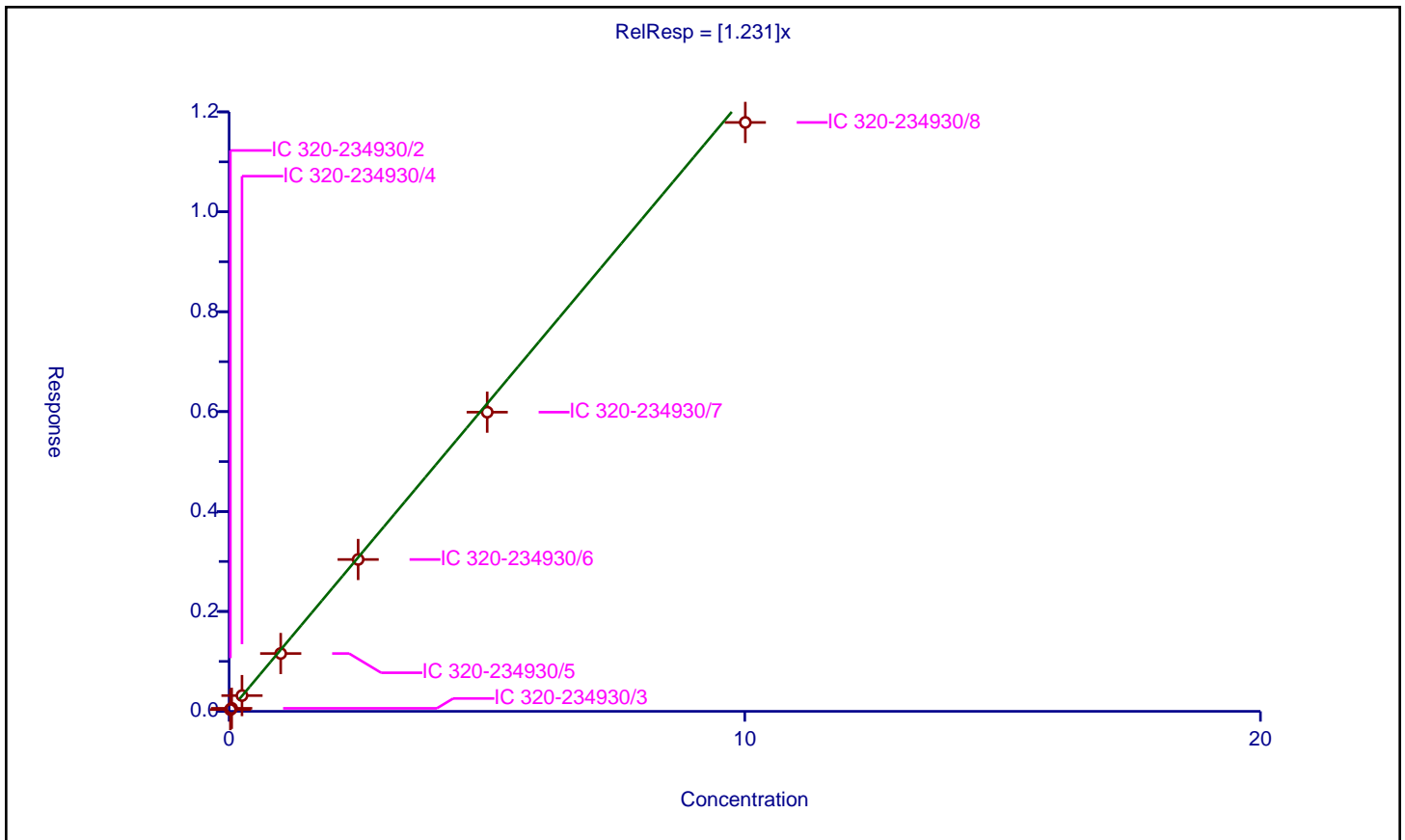
/ Perfluorooctanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.231

Error Coefficients	
Standard Error:	7760000
Relative Standard Error:	6.5
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025025	0.034986	2.5	3809215.0	1.39805	Y
2	IC 320-234930/3	0.05005	0.060748	2.5	4050166.0	1.213749	Y
3	IC 320-234930/4	0.25025	0.315312	2.5	3844808.0	1.259986	Y
4	IC 320-234930/5	1.001	1.157763	2.5	3727566.0	1.156606	Y
5	IC 320-234930/6	2.5025	3.039631	2.5	3659304.0	1.214638	Y
6	IC 320-234930/7	5.005	5.988891	2.5	3641760.0	1.196582	Y
7	IC 320-234930/8	10.01	11.788748	2.5	3432703.0	1.177697	Y



Calibration

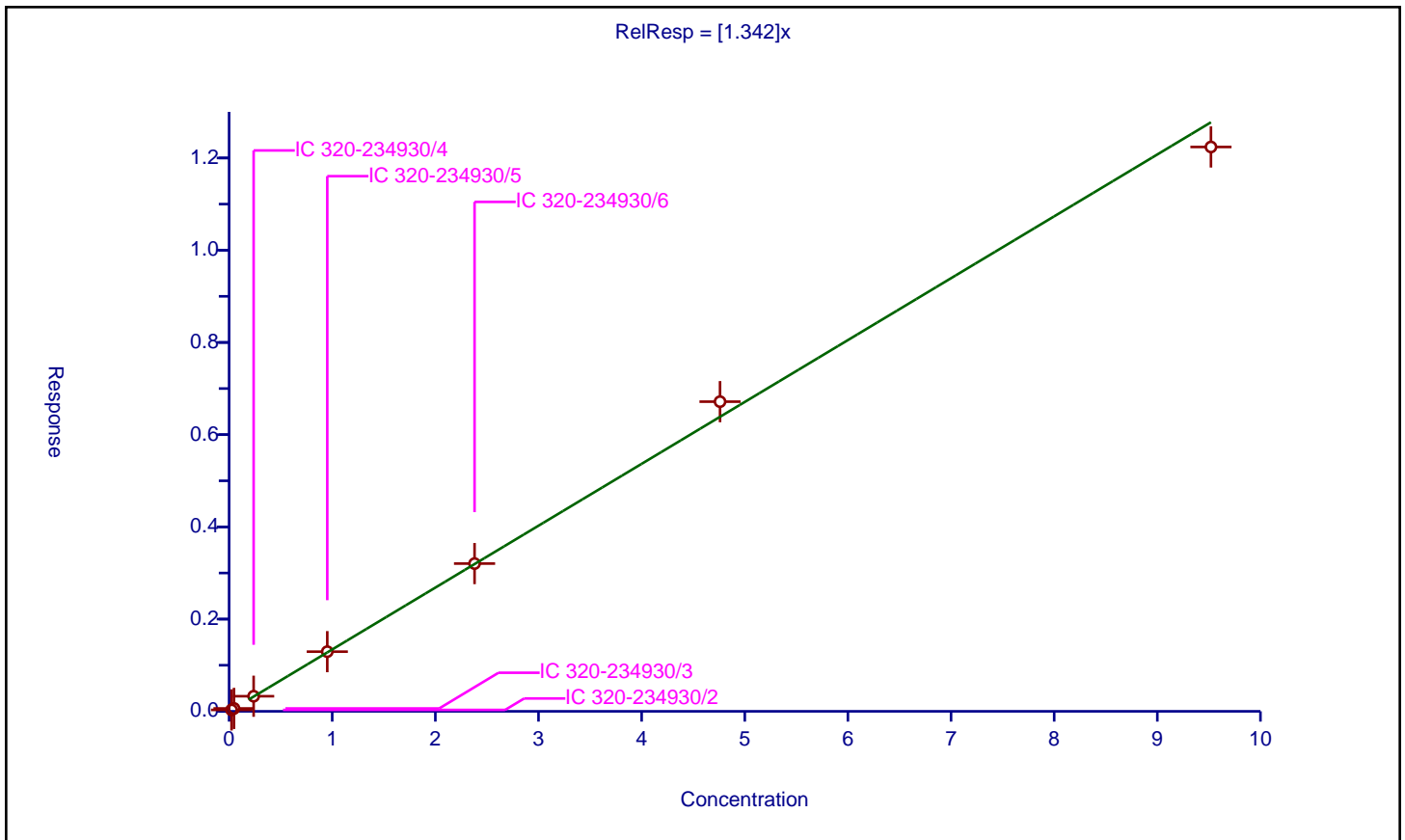
/ Perfluoroheptanesulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.342

Error Coefficients	
Standard Error:	8380000
Relative Standard Error:	3.4
Correlation Coefficient:	0.997
Coefficient of Determination (Adjusted):	0.999

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.0238	0.030708	2.39	3681992.0	1.290247	Y
2	IC 320-234930/3	0.0476	0.062977	2.39	3681269.0	1.323043	Y
3	IC 320-234930/4	0.238	0.327839	2.39	3553250.0	1.377474	Y
4	IC 320-234930/5	0.952	1.294014	2.39	3514122.0	1.359259	Y
5	IC 320-234930/6	2.38	3.204144	2.39	3588037.0	1.346279	Y
6	IC 320-234930/7	4.76	6.715923	2.39	3439242.0	1.410908	Y
7	IC 320-234930/8	9.52	12.239006	2.39	3387461.0	1.28561	Y



Calibration

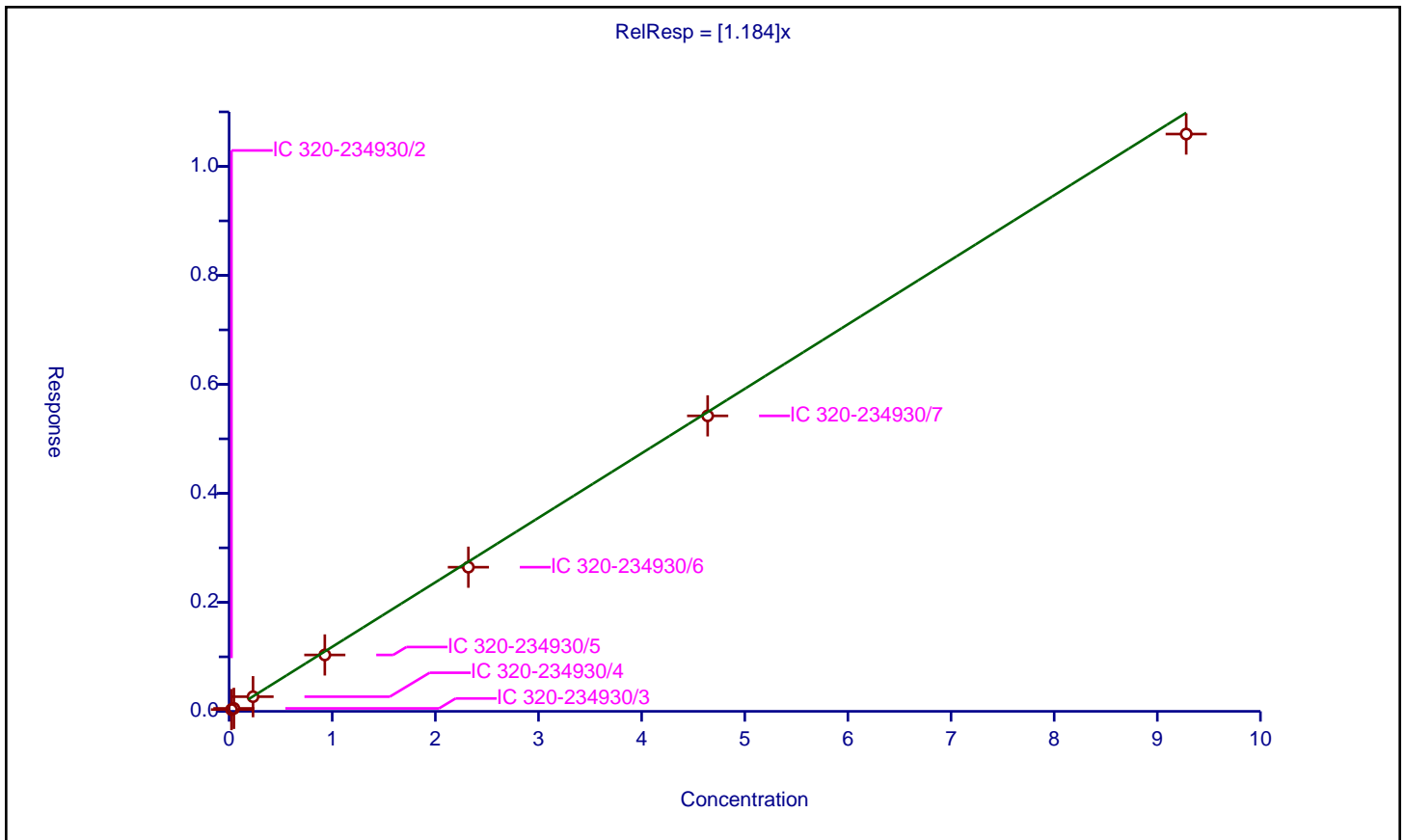
/ Perfluorooctane sulfonic acid

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.184

Error Coefficients	
Standard Error:	7120000
Relative Standard Error:	8.1
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.0232	0.032406	2.39	3681992.0	1.396807	Y
2	IC 320-234930/3	0.0464	0.054075	2.39	3681269.0	1.165415	Y
3	IC 320-234930/4	0.232	0.268775	2.39	3553250.0	1.158513	Y
4	IC 320-234930/5	0.928	1.034457	2.39	3514122.0	1.114717	Y
5	IC 320-234930/6	2.32	2.644669	2.39	3588037.0	1.139944	Y
6	IC 320-234930/7	4.64	5.422267	2.39	3439242.0	1.168592	Y
7	IC 320-234930/8	9.28	10.5936	2.39	3387461.0	1.141552	Y



Calibration

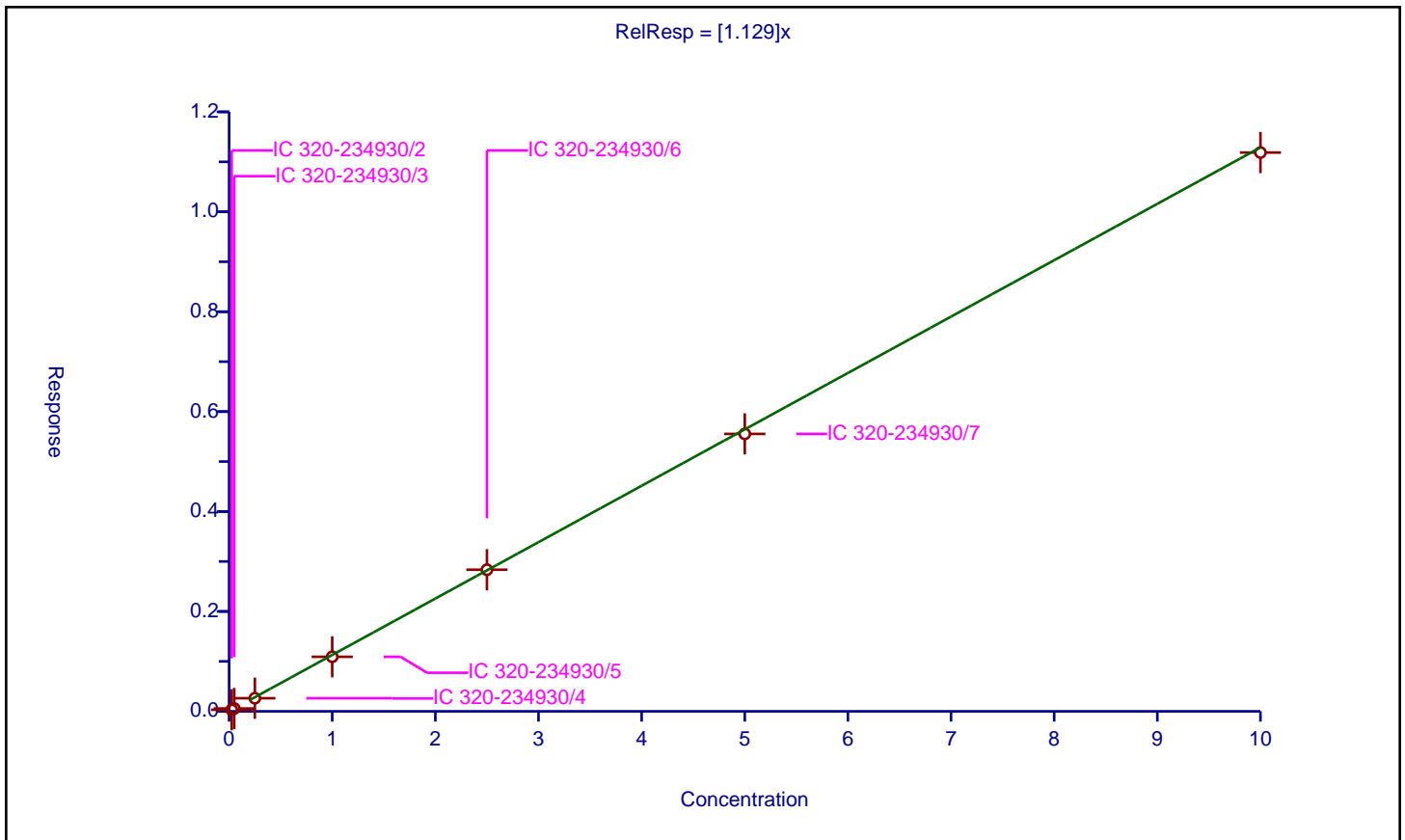
/ Perfluorononanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.129

Error Coefficients	
Standard Error:	6110000
Relative Standard Error:	5.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.031393	2.5	3265651.0	1.255707	Y
2	IC 320-234930/3	0.05	0.057138	2.5	3325893.0	1.142761	Y
3	IC 320-234930/4	0.25	0.262062	2.5	3357135.0	1.048248	Y
4	IC 320-234930/5	1.0	1.091804	2.5	3148950.0	1.091804	Y
5	IC 320-234930/6	2.5	2.834693	2.5	3093998.0	1.133877	Y
6	IC 320-234930/7	5.0	5.553414	2.5	3073959.0	1.110683	Y
7	IC 320-234930/8	10.0	11.185873	2.5	2851303.0	1.118587	Y



Calibration

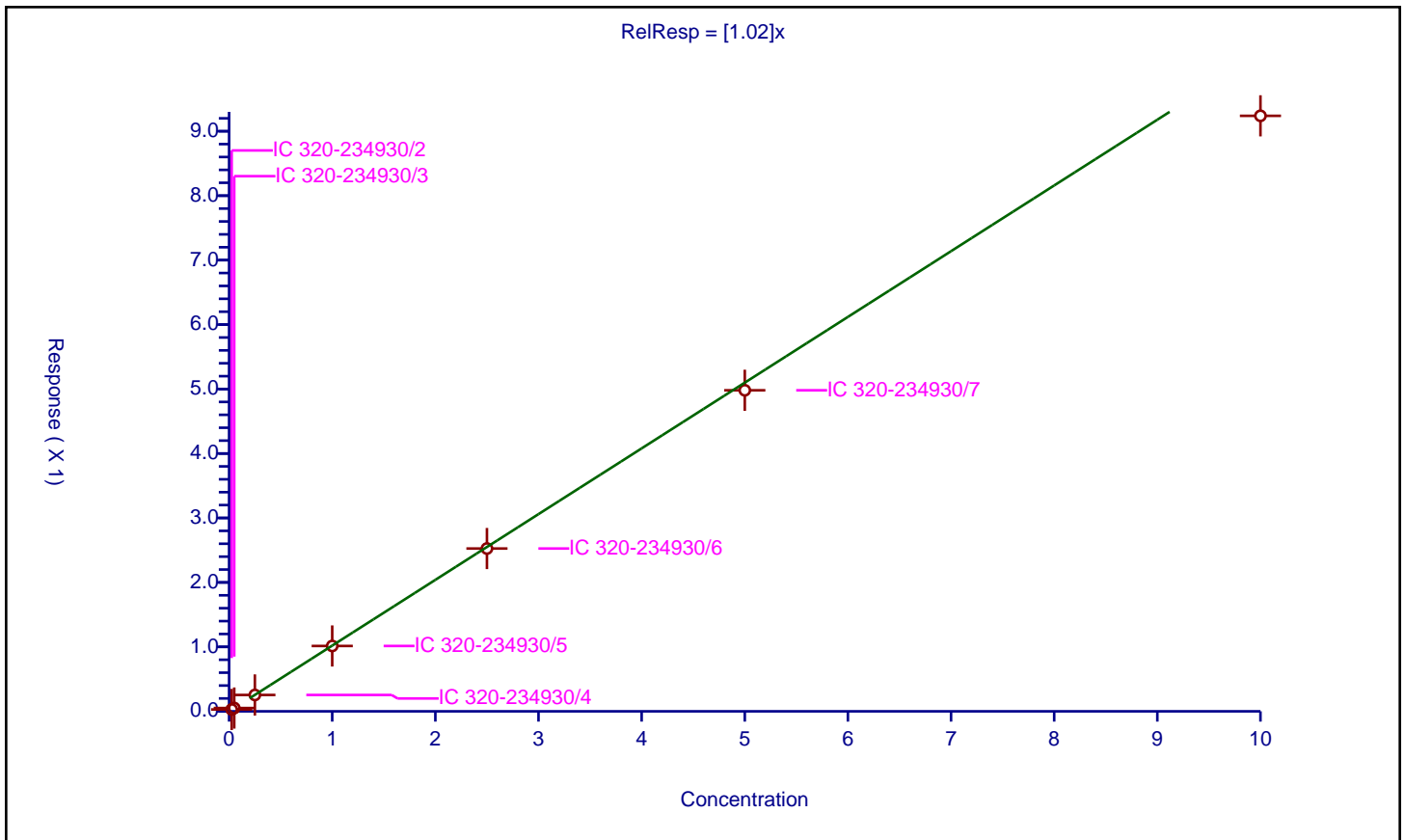
/ Perfluorooctane Sulfonamide

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.02

Error Coefficients	
Standard Error:	8900000
Relative Standard Error:	6.6
Correlation Coefficient:	0.993
Coefficient of Determination (Adjusted):	0.994

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.028782	2.5	5802008.0	1.151274	Y
2	IC 320-234930/3	0.05	0.051339	2.5	5920583.0	1.026774	Y
3	IC 320-234930/4	0.25	0.254107	2.5	5782925.0	1.016427	Y
4	IC 320-234930/5	1.0	1.013998	2.5	5487673.0	1.013998	Y
5	IC 320-234930/6	2.5	2.52562	2.5	5433217.0	1.010248	Y
6	IC 320-234930/7	5.0	4.980607	2.5	5294769.0	0.996121	Y
7	IC 320-234930/8	10.0	9.238903	2.5	4904839.0	0.92389	Y



Calibration

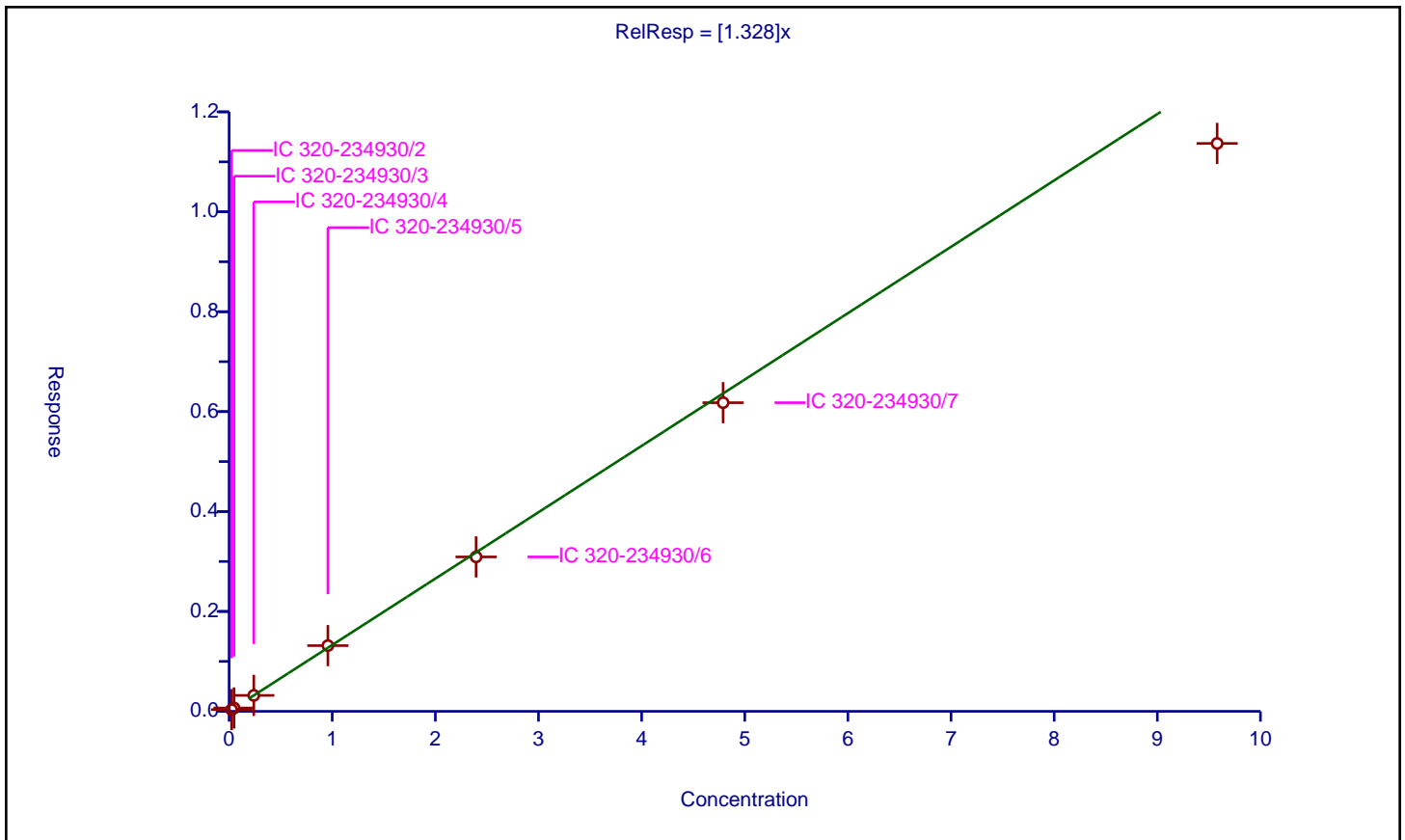
/ 1H,1H,2H,2H-perfluorodecanesulfonic acid (8:2)

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.328

Error Coefficients	
Standard Error:	1910000
Relative Standard Error:	6.1
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.995

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.02395	0.034146	2.395	1038289.0	1.425711	Y
2	IC 320-234930/3	0.0479	0.067107	2.395	1006292.0	1.400985	Y
3	IC 320-234930/4	0.2395	0.318958	2.395	980840.0	1.331767	Y
4	IC 320-234930/5	0.958	1.315756	2.395	897394.0	1.373441	Y
5	IC 320-234930/6	2.395	3.091065	2.395	902064.0	1.290632	Y
6	IC 320-234930/7	4.79	6.178781	2.395	856171.0	1.289933	Y
7	IC 320-234930/8	9.58	11.368397	2.395	827207.0	1.18668	Y



Calibration

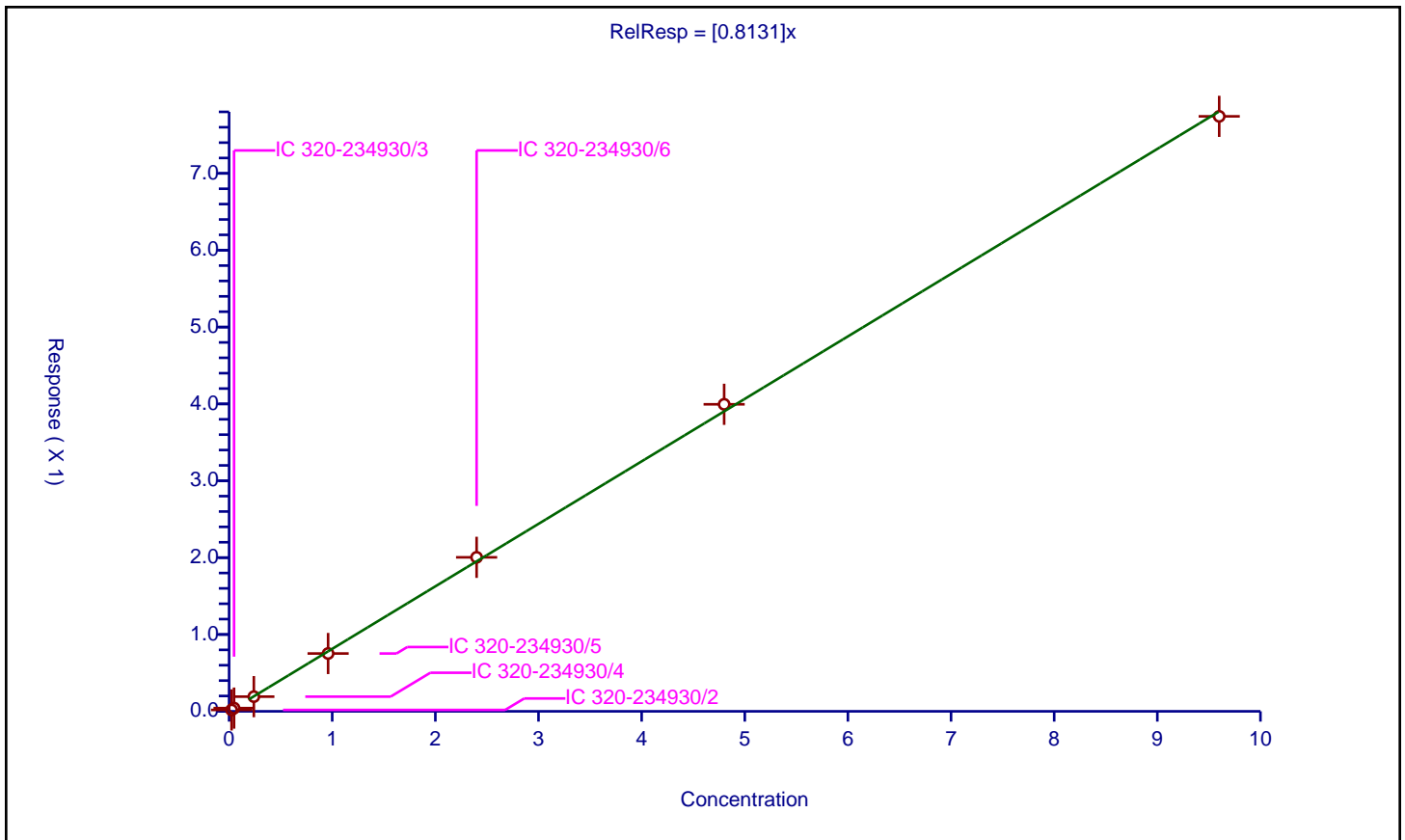
/ Perfluorononanesulfonic acid

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.8131

Error Coefficients	
Standard Error:	5230000
Relative Standard Error:	4.7
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.024	0.018249	2.39	3681992.0	0.760373	Y
2	IC 320-234930/3	0.048	0.042119	2.39	3681269.0	0.877478	Y
3	IC 320-234930/4	0.24	0.191168	2.39	3553250.0	0.796535	Y
4	IC 320-234930/5	0.96	0.752489	2.39	3514122.0	0.783843	Y
5	IC 320-234930/6	2.4	2.003824	2.39	3588037.0	0.834927	Y
6	IC 320-234930/7	4.8	3.994912	2.39	3439242.0	0.832273	Y
7	IC 320-234930/8	9.6	7.741783	2.39	3387461.0	0.806436	Y



Calibration

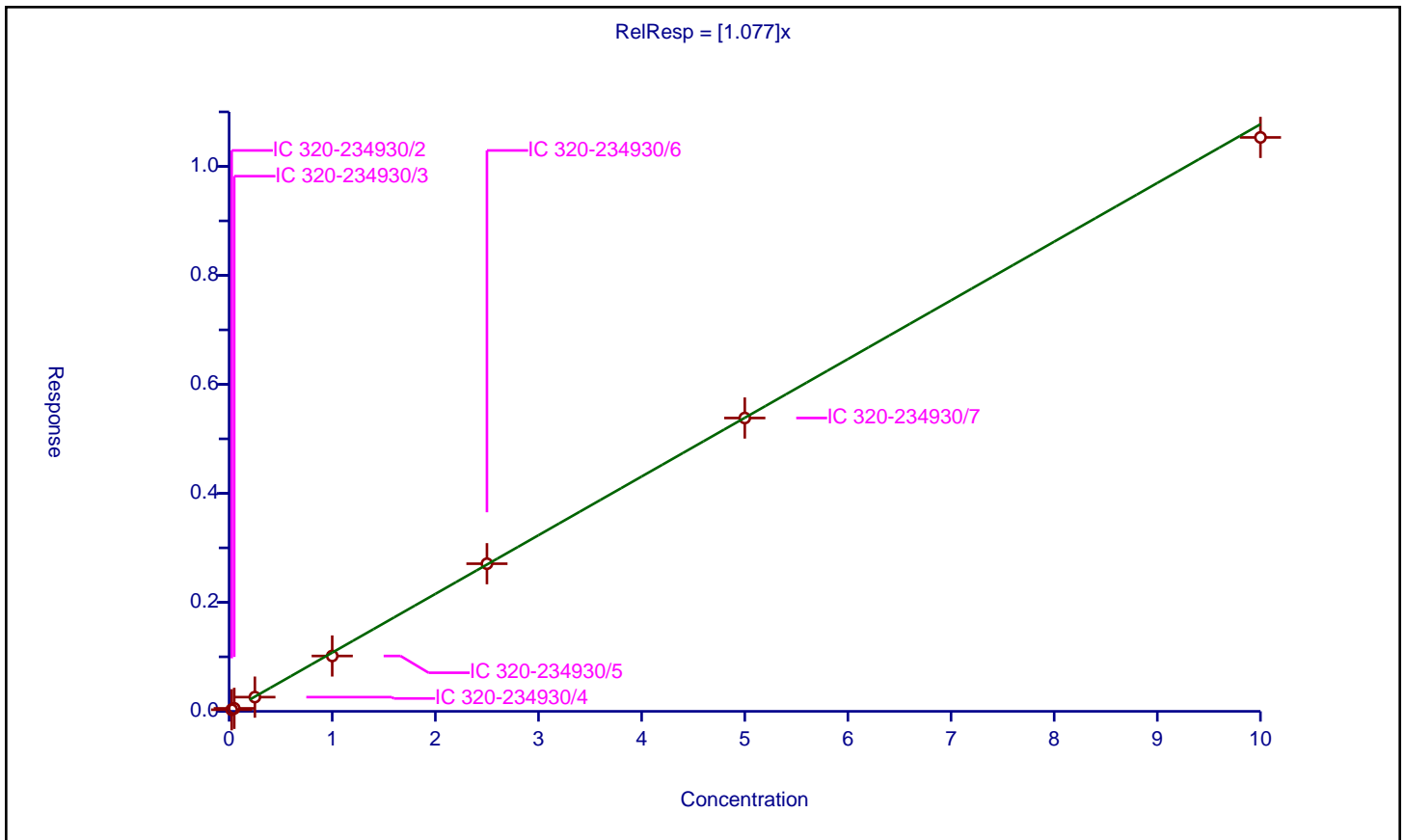
/ Perfluorodecanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.077

Error Coefficients	
Standard Error:	5010000
Relative Standard Error:	4.8
Correlation Coefficient:	0.996
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.029499	2.5	2955913.0	1.17994	Y
2	IC 320-234930/3	0.05	0.054443	2.5	3001274.0	1.08854	Y
3	IC 320-234930/4	0.25	0.260778	2.5	3084448.0	1.04311	Y
4	IC 320-234930/5	1.0	1.015994	2.5	2957312.0	1.015994	Y
5	IC 320-234930/6	2.5	2.709044	2.5	2832614.0	1.083617	Y
6	IC 320-234930/7	5.0	5.382395	2.5	2682731.0	1.076479	Y
7	IC 320-234930/8	10.0	10.53149	2.5	2444489.0	1.053149	Y



Calibration

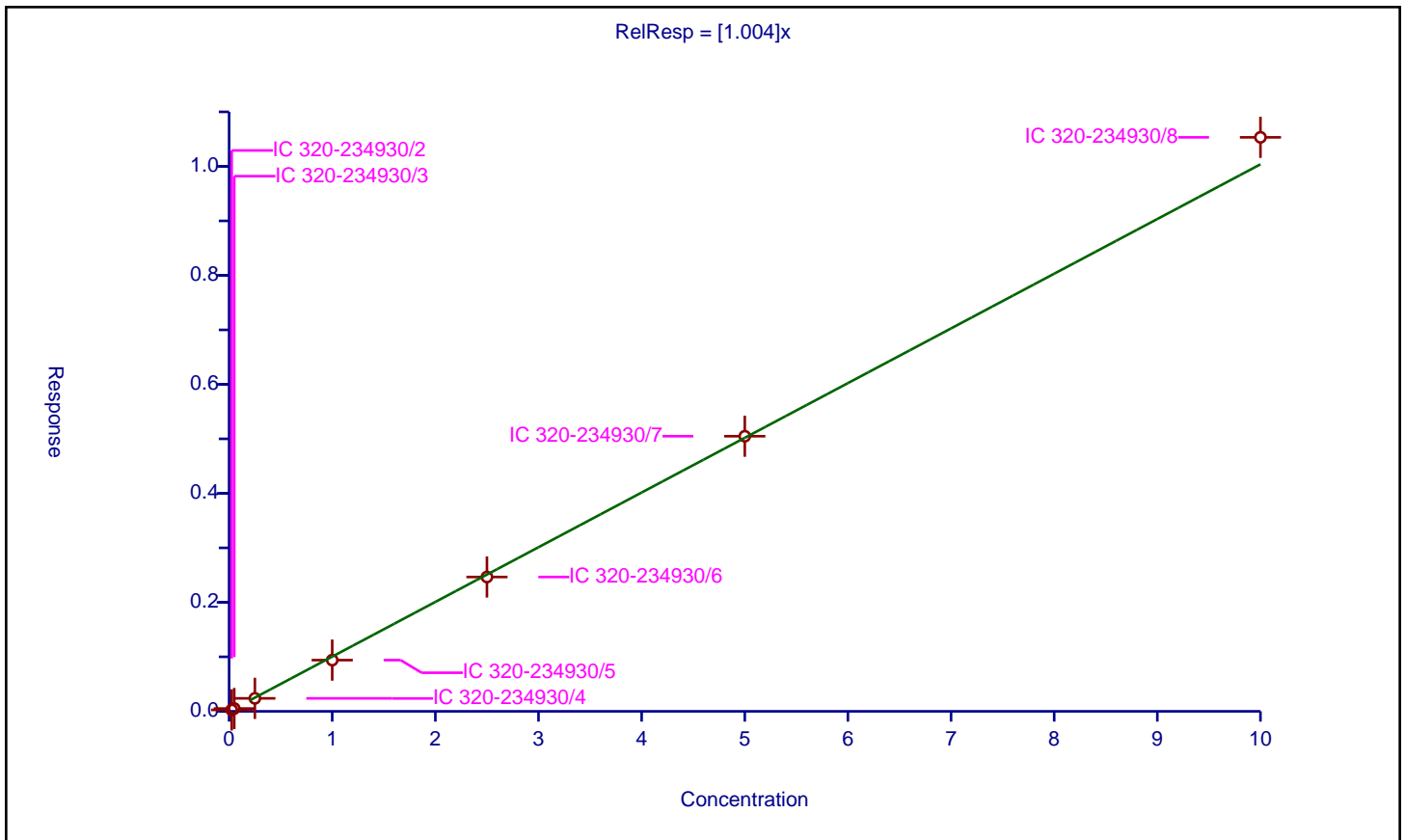
/ N-methyl perfluorooctane sulfonamidoacetic acid

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.004

Error Coefficients	
Standard Error:	2350000
Relative Standard Error:	4.6
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.997

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.026233	2.5	1254985.0	1.049335	Y
2	IC 320-234930/3	0.05	0.051796	2.5	1295422.0	1.035917	Y
3	IC 320-234930/4	0.25	0.23809	2.5	1238553.0	0.952361	Y
4	IC 320-234930/5	1.0	0.939946	2.5	1221019.0	0.939946	Y
5	IC 320-234930/6	2.5	2.465089	2.5	1209562.0	0.986035	Y
6	IC 320-234930/7	5.0	5.048534	2.5	1187210.0	1.009707	Y
7	IC 320-234930/8	10.0	10.533061	2.5	1202587.0	1.053306	Y



Calibration

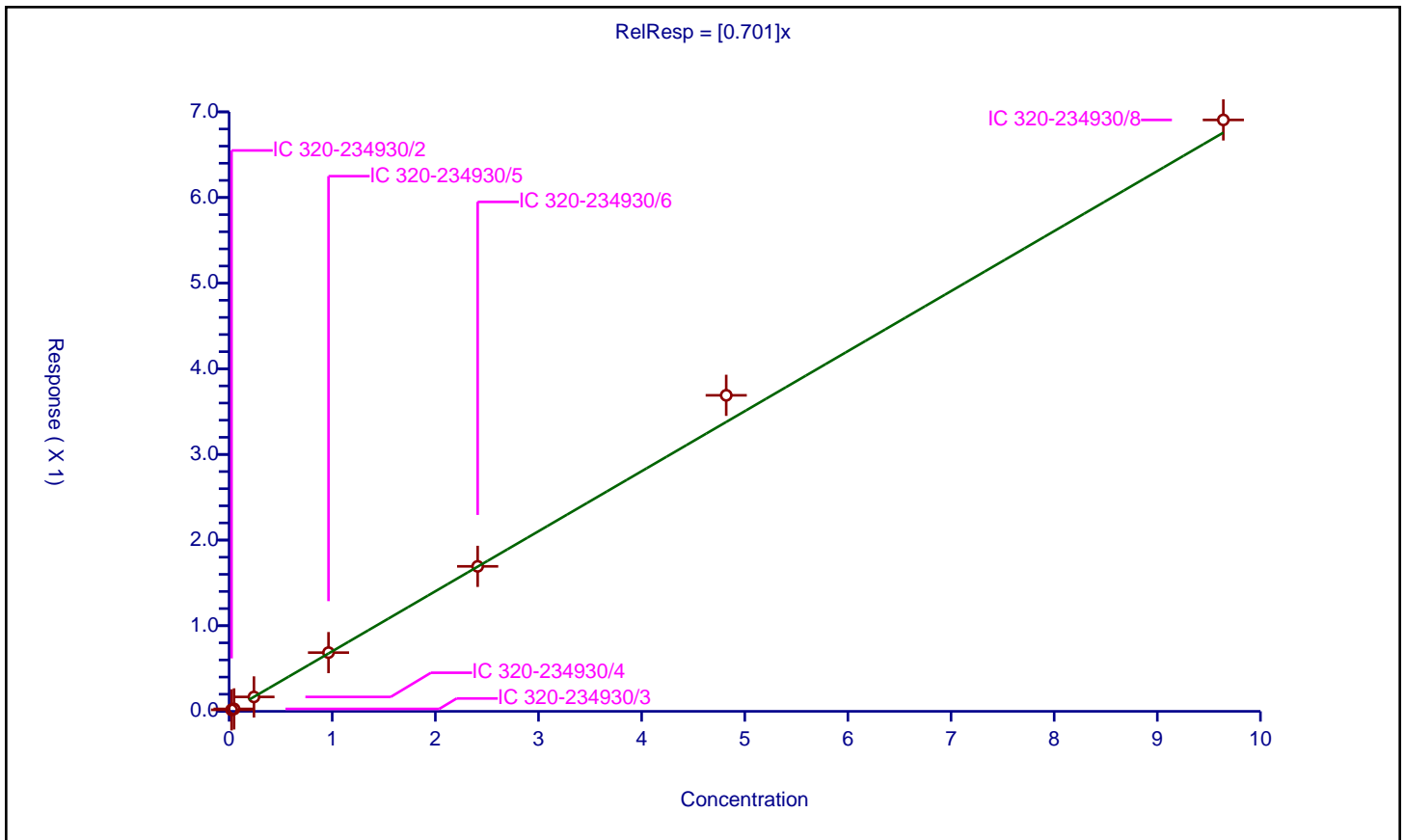
/ Perfluorodecane Sulfonic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.701

Error Coefficients	
Standard Error:	4680000
Relative Standard Error:	7.9
Correlation Coefficient:	0.998
Coefficient of Determination (Adjusted):	0.993

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.0241	0.017528	2.39	3681992.0	0.727294	Y
2	IC 320-234930/3	0.0482	0.028244	2.39	3681269.0	0.585966	Y
3	IC 320-234930/4	0.241	0.168173	2.39	3553250.0	0.697812	Y
4	IC 320-234930/5	0.964	0.685759	2.39	3514122.0	0.711369	Y
5	IC 320-234930/6	2.41	1.693092	2.39	3588037.0	0.702528	Y
6	IC 320-234930/7	4.82	3.690414	2.39	3439242.0	0.765646	Y
7	IC 320-234930/8	9.64	6.906244	2.39	3387461.0	0.716415	Y



Calibration

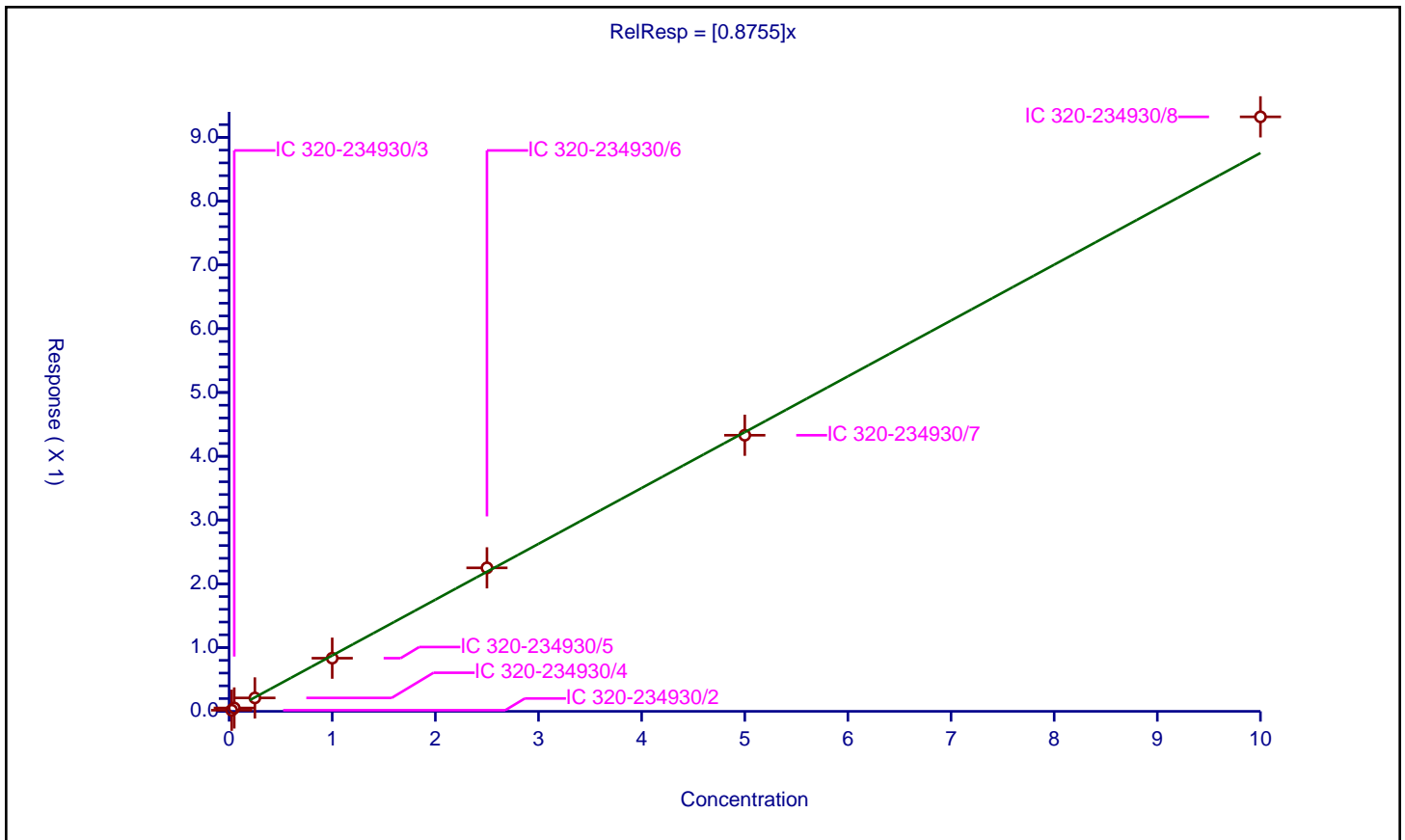
/ N-ethyl perfluorooctane sulfonamidoacetic acid

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.8755

Error Coefficients	
Standard Error:	2090000
Relative Standard Error:	12.0
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.983

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.017653	2.5	1454179.0	0.706103	Y
2	IC 320-234930/3	0.05	0.052485	2.5	1464896.0	1.049699	Y
3	IC 320-234930/4	0.25	0.210314	2.5	1532769.0	0.841255	Y
4	IC 320-234930/5	1.0	0.833246	2.5	1404624.0	0.833246	Y
5	IC 320-234930/6	2.5	2.249936	2.5	1338986.0	0.899974	Y
6	IC 320-234930/7	5.0	4.329506	2.5	1279332.0	0.865901	Y
7	IC 320-234930/8	10.0	9.32234	2.5	1185901.0	0.932234	Y



Calibration

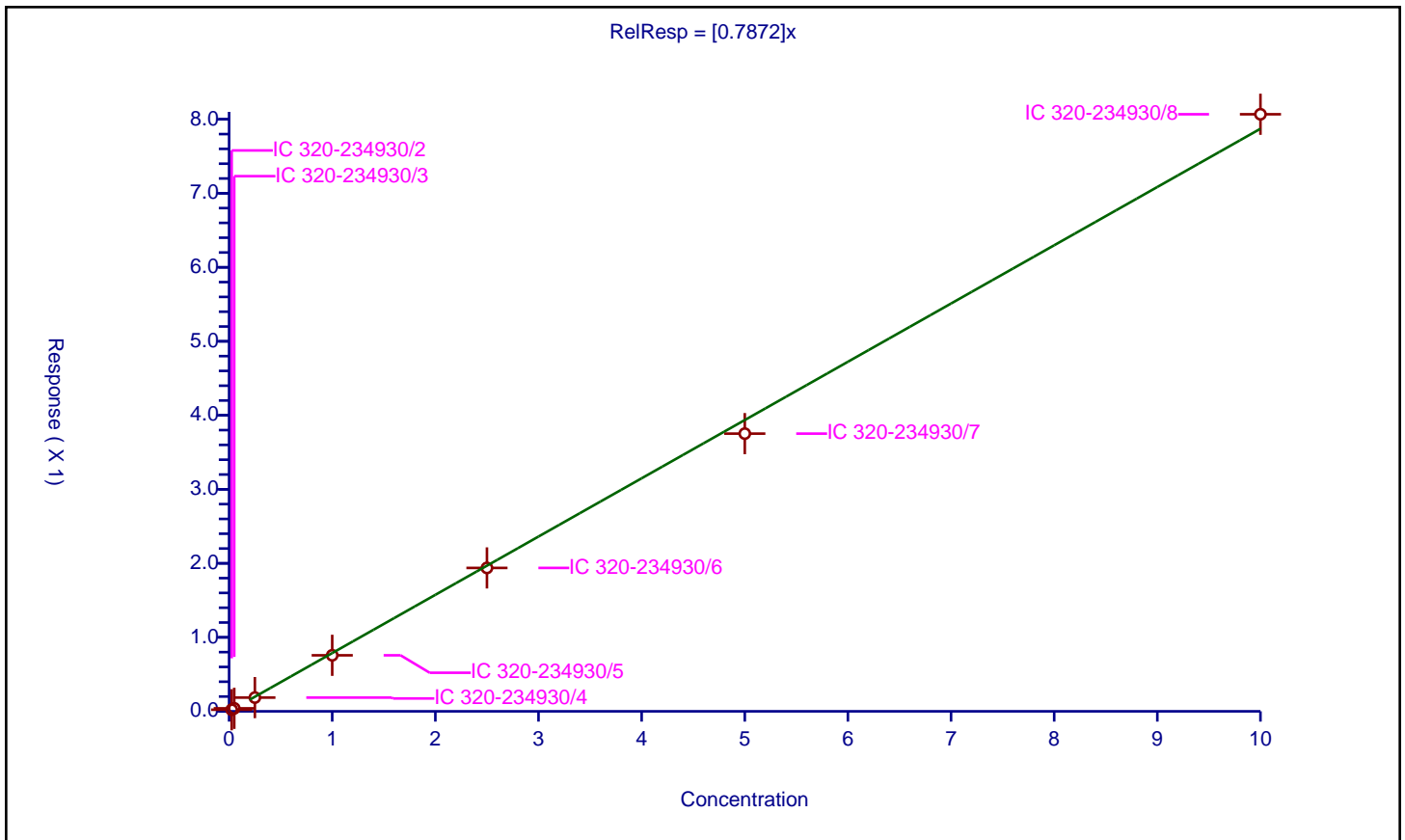
/ Perfluoroundecanoic acid

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.7872

Error Coefficients	
Standard Error:	3330000
Relative Standard Error:	5.7
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.996

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.02176	2.5	2658013.0	0.870387	Y
2	IC 320-234930/3	0.05	0.040373	2.5	2699230.0	0.807452	Y
3	IC 320-234930/4	0.25	0.185799	2.5	2689968.0	0.743195	Y
4	IC 320-234930/5	1.0	0.757111	2.5	2481019.0	0.757111	Y
5	IC 320-234930/6	2.5	1.937813	2.5	2418893.0	0.775125	Y
6	IC 320-234930/7	5.0	3.752365	2.5	2302925.0	0.750473	Y
7	IC 320-234930/8	10.0	8.067733	2.5	2200298.0	0.806773	Y



Calibration

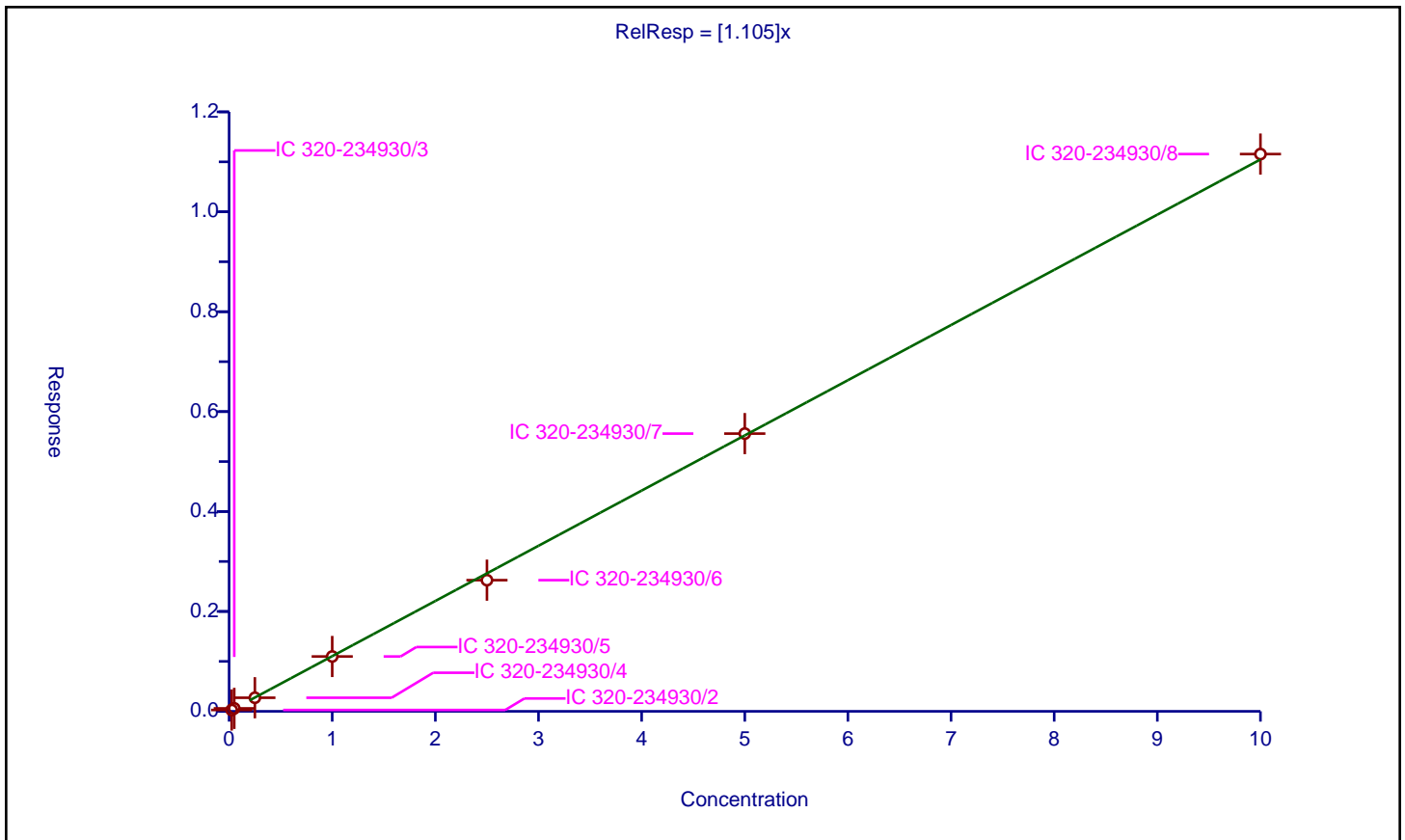
/ Perfluorododecanoic acid

Curve Type: Average
Weighting: Conc_Sq
Origin: Force
Dependency: Response
Calib Mode: IsoDil
Response Base: AREA
RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.105

Error Coefficients	
Standard Error:	5010000
Relative Standard Error:	3.6
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.998

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.027203	2.5	2529382.0	1.088131	Y
2	IC 320-234930/3	0.05	0.059083	2.5	2602208.0	1.18165	Y
3	IC 320-234930/4	0.25	0.27189	2.5	2670150.0	1.087561	Y
4	IC 320-234930/5	1.0	1.098048	2.5	2486312.0	1.098048	Y
5	IC 320-234930/6	2.5	2.625599	2.5	2609131.0	1.05024	Y
6	IC 320-234930/7	5.0	5.55982	2.5	2475466.0	1.111964	Y
7	IC 320-234930/8	10.0	11.155288	2.5	2363413.0	1.115529	Y



Calibration

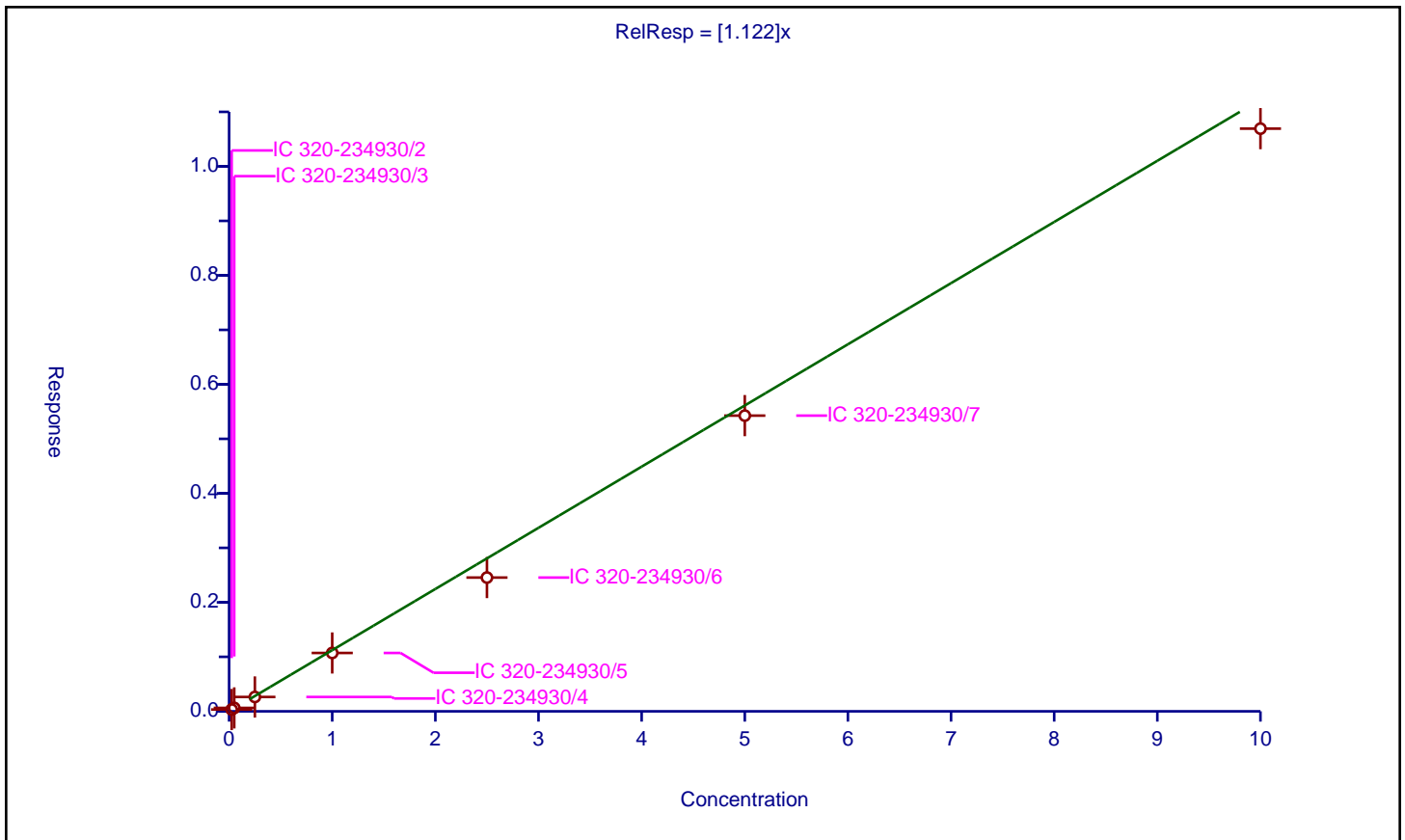
/ Perfluorotridecanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	1.122

Error Coefficients	
Standard Error:	4810000
Relative Standard Error:	11.3
Correlation Coefficient:	0.999
Coefficient of Determination (Adjusted):	0.982

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.03344	2.5	2529382.0	1.337599	Y
2	IC 320-234930/3	0.05	0.062956	2.5	2602208.0	1.259123	Y
3	IC 320-234930/4	0.25	0.263349	2.5	2670150.0	1.053394	Y
4	IC 320-234930/5	1.0	1.070796	2.5	2486312.0	1.070796	Y
5	IC 320-234930/6	2.5	2.454592	2.5	2609131.0	0.981837	Y
6	IC 320-234930/7	5.0	5.426595	2.5	2475466.0	1.085319	Y
7	IC 320-234930/8	10.0	10.692653	2.5	2363413.0	1.069265	Y



Calibration

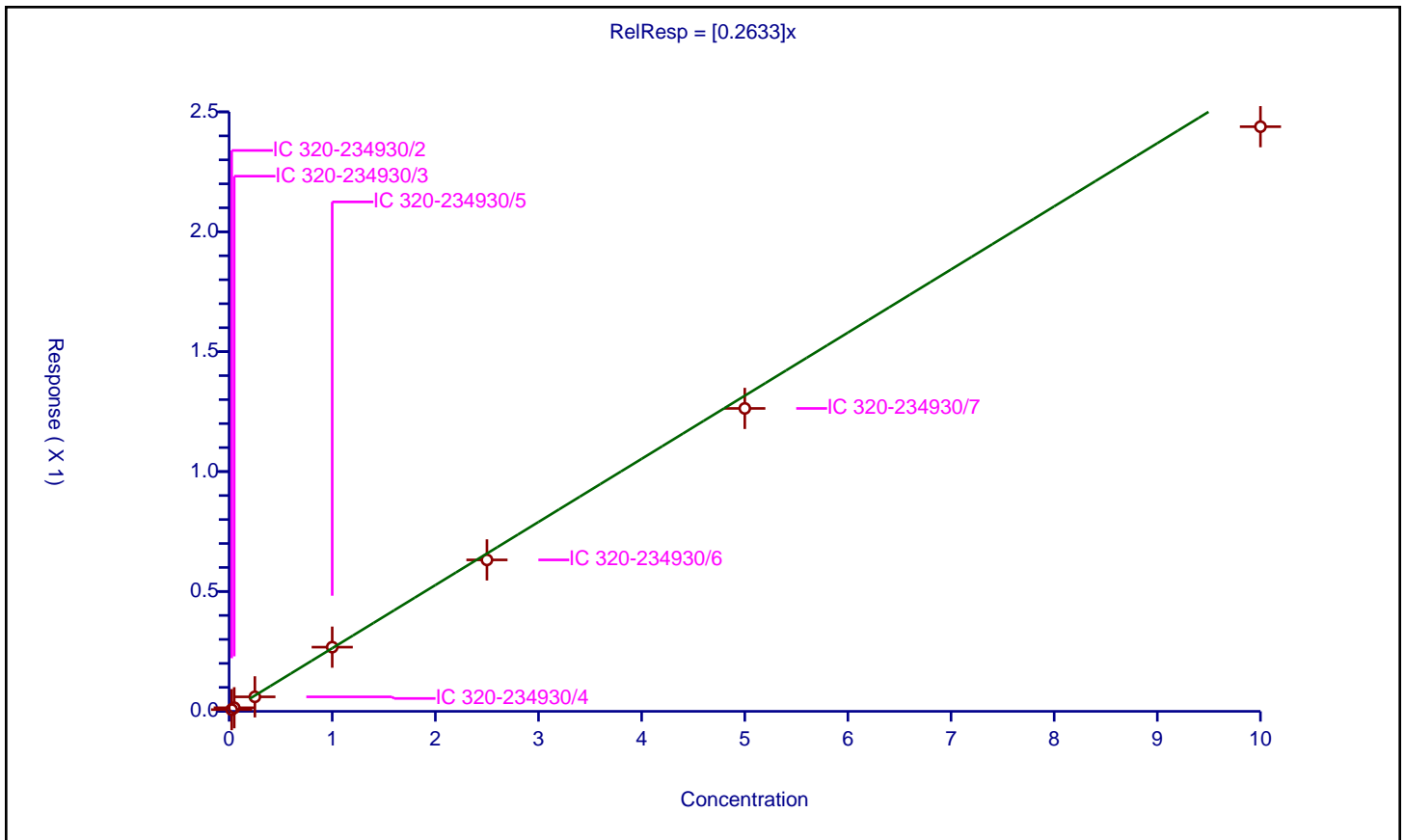
/ Perfluorotetradecanoic acid

Curve Type: Average
 Weighting: Conc_Sq
 Origin: Force
 Dependency: Response
 Calib Mode: IsoDil
 Response Base: AREA
 RF Rounding: 0

Curve Coefficients	
Intercept:	0
Slope:	0.2633

Error Coefficients	
Standard Error:	1110000
Relative Standard Error:	8.3
Correlation Coefficient:	1.000
Coefficient of Determination (Adjusted):	0.991

ID	Level	Concentration	Rel. Resp.	IS Amount	IS Response	RRF	Used
1	IC 320-234930/2	0.025	0.007119	2.5	2415938.0	0.284776	Y
2	IC 320-234930/3	0.05	0.014979	2.5	2583089.0	0.299583	Y
3	IC 320-234930/4	0.25	0.060418	2.5	2565538.0	0.241673	Y
4	IC 320-234930/5	1.0	0.267635	2.5	2207313.0	0.267635	Y
5	IC 320-234930/6	2.5	0.631571	2.5	2445039.0	0.252628	Y
6	IC 320-234930/7	5.0	1.263298	2.5	2364341.0	0.25266	Y
7	IC 320-234930/8	10.0	2.438248	2.5	2410726.0	0.243825	Y



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: ICV 320-233477/10 Calibration Date: 07/11/2018 15:54
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.11LLICALA_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.006		2.55	2.50	2.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.190		2.45	2.50	-1.9	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	75.70		2.19	2.21	-1.0	30.0
4:2 FTS	AveID	13.00	12.39		2.23	2.34	-4.7	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.045		2.54	2.50	1.6	30.0
Perfluoropentanesulfonic acid	AveID	69.78	67.50		2.27	2.35	-3.3	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.129		2.44	2.50	-2.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.139		2.26	2.28	-0.8	30.0
6:2 FTS	AveID	1.564	1.662		2.52	2.37	6.2	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.189		2.42	2.50	-3.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.338		2.42	2.38	1.5	30.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.129		2.54	2.50	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.100		2.25	2.32	-2.9	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9614		2.44	2.50	-2.5	30.0
8:2 FTS	AveID	1.290	1.301		2.42	2.40	0.9	30.0
Perfluorononanesulfonic acid	AveID	0.7752	0.7807		2.42	2.40	0.7	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.088		2.59	2.50	3.7	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9853		2.50	2.50	-0.0	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6730		2.42	2.41	0.2	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8891		2.51	2.50	0.6	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7701		2.35	2.50	-6.0	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.087		2.49	2.50	-0.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.119		2.62	2.50	4.8	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2656		2.55	2.50	2.1	30.0
13C4 PFBA	Ave	1.356	1.378		2.54	2.50	1.6	30.0
13C5 PFPeA	Ave	0.9425	0.9608		2.55	2.50	1.9	30.0
13C3-PFBS	Ave	0.0237	0.0248		2.43	2.33	4.5	30.0
13C2 PFHxA	Ave	1.017	1.045		2.57	2.50	2.7	30.0
13C4-PFHpA	Ave	0.9371	0.9594		2.56	2.50	2.4	30.0
18O2 PFHxS	Ave	1.328	1.310		2.33	2.37	-1.3	30.0
M2-6:2FTS	Ave	0.2009	0.1917		2.27	2.38	-4.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: ICV 320-233477/10 Calibration Date: 07/11/2018 15:54
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.11LLICALA_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9560	0.9622		2.52	2.50	0.6	30.0
13C4 PFOS	Ave	0.9742	1.017		2.49	2.39	4.4	30.0
13C5 PFNA	Ave	0.8546	0.8534		2.50	2.50	-0.1	30.0
13C8 FOSA	Ave	1.405	1.507		2.68	2.50	7.3	30.0
M2-8:2FTS	Ave	0.2939	0.2961		2.41	2.40	0.8	30.0
13C2 PFDA	Ave	0.7503	0.7467		2.49	2.50	-0.5	30.0
d3-NMeFOSAA	Ave	0.3075	0.3211		2.61	2.50	4.4	30.0
d5-NEtFOSAA	Ave	0.3150	0.3212		2.55	2.50	1.9	30.0
13C2 PFUnA	Ave	0.6266	0.6524		2.60	2.50	4.1	30.0
13C2 PFDoA	Ave	0.6496	0.6654		2.56	2.50	2.4	30.0
13C2-PFTeDA	Ave	0.6740	0.6932		2.57	2.50	2.8	30.0
13C2-PFHxDA	Ave	1.074	1.173		2.73	2.50	9.3	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_010.d
 Lims ID: ICV Full
 Client ID:
 Sample Type: ICV
 Inject. Date: 11-Jul-2018 15:54:23 ALS Bottle#: 17 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist:
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 11-Jul-2018 16:34:22 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:22:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.00 > 172.00	1.430	1.431	-0.001	0.536	5662549	2.54	102	25171	
2 Perfluorobutyric acid	212.90 > 169.00	1.435	1.431	0.004	1.004	5694181	2.55		2796	
4 Perfluoropentanoic acid	262.90 > 219.00	1.720	1.702	0.018	1.000	4700361	2.45		1877	
D 3 13C5-PFPeA	267.90 > 223.00	1.720	1.702	0.018	0.645	3948505	2.55	102	53954	
D 47 13C3-PFBS	301.90 > 83.00	1.756	1.748	0.008	0.658	94606	2.43	105	643	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.756	1.751	0.005	1.000	6807777	2.19		64304	
	298.90 > 99.00	1.756	1.751	0.005	1.000	2776259	2.45(1.25-3.74)		37604	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	1.970	1.962	0.008	1.122	1177478	2.23		54136	
D 60 M2-4:2FTS	329.00 > 81.00	1.970	1.962	0.008	0.739	497860	NC		7684	
D 7 13C2 PFHxA	315.00 > 270.00	2.003	1.996	0.007	0.751	4294759	2.57	103	86055	
6 Perfluorohexanoic acid	313.00 > 269.00	2.003	1.998	0.005	1.000	4489753	2.54		10643	
	313.00 > 119.00	2.003	1.998	0.005	1.000	410563	10.94(5.03-15.10)		9304	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.025	2.022	0.003	1.154	6440627	2.27		105383	
	349.00 > 99.00	2.025	2.022	0.003	1.154	2391078	2.69(1.36-4.07)		30821	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.093	2.093	0.0	0.785	276012	NC		6290	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.093	2.095	-0.002	1.000	808359	NC		4938
D 9 13C4-PFHpA	367.00	> 322.00	2.319	2.319	0.0	0.869	3942808	2.56	102	47725
10 Perfluoroheptanoic acid	363.00	> 319.00	2.319	2.319	0.0	1.000	4451513	2.44		8112
	363.00	> 169.00	2.319	2.319	0.0	1.000	1752355	2.54(1.13-3.40)		16512
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.332	2.332	0.0	1.000	5578276	2.26		27972
	399.00	> 99.00	2.332	2.332	0.0	1.000	1797150	3.10(1.50-4.49)		9813
D 11 18O2 PFHxS	403.00	> 84.00	2.332	2.334	-0.002	0.874	5091650	2.33	98.7	57623
65 Adona	377.00	> 251.00	2.358	2.360	-0.002	0.779	12331342	NC		79894
	377.00	> 85.00	2.358	2.360	-0.002	0.779	7454068	1.65(0.84-2.53)		36223
D 12 M2-6:2FTS	429.00	> 81.00	2.644	2.645	-0.001	0.991	748501	2.27	95.4	13706
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.644	2.648	-0.004	1.000	1241375	2.52		19833
15 Perfluorooctanoic acid	413.00	> 369.00	2.667	2.672	-0.005	1.000	4705604	2.42		3344
	413.00	> 169.00	2.667	2.672	-0.005	1.000	2411704	1.95(0.84-2.52)		11110
* 62 13C2-PFOA	415.00	> 370.00	2.667	2.672	-0.005		4109601	2.50		35548
D 14 13C4 PFOA	417.00	> 372.00	2.667	2.672	-0.005	1.000	3954191	2.52	101	41673
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.674	2.678	-0.004	0.884	5320943	2.42		32575
	449.00	> 99.00	2.674	2.678	-0.004	0.884	1364302	3.90(1.94-5.82)		18490
D 18 13C4 PFOS	503.00	> 80.00	3.026	3.034	-0.008	1.135	3994626	2.49	104	29003
D 19 13C5 PFNA	468.00	> 423.00	3.026	3.035	-0.009	1.135	3507198	2.50	99.9	40014
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.026	3.035	-0.009	1.000	4265448	2.25		33190
	499.00	> 99.00	3.026	3.035	-0.009	1.000	948802	4.50(2.31-6.93)		11013
20 Perfluorononanoic acid	463.00	> 419.00	3.026	3.036	-0.010	1.000	3959562	2.54		8599
	463.00	> 169.00	3.026	3.036	-0.010	1.000	973781	4.07(1.90-5.69)		31878
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.233	3.245	-0.012	1.069	7020939	NC		52039
D 21 13C8 FOSA	506.00	> 78.00	3.361	3.367	-0.006	1.260	6194047	2.68	107	38519
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.361	3.371	-0.010	1.000	5955013	2.44		31773
68 Perfluorononanesulfonic acid	549.00	> 80.00	3.371	3.377	-0.006	1.114	3131719	2.42		59993
	549.00	> 99.00	3.371	3.377	-0.006	1.114	1180397	2.65(1.33-3.97)		20818

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags	
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.371	3.380	-0.009	1.000	1516938	2.42		27887	
D 26 M2-8:2FTS	529.00	> 81.00	3.371	3.380	-0.009	1.264	1165739	2.41		101	17380
D 23 13C2 PFDA	515.00	> 470.00	3.380	3.391	-0.011	1.267	3068510	2.49		99.5	30066
24 Perfluorodecanoic acid	513.00	> 469.00	3.380	3.392	-0.012	1.000	3338723	2.59			15753
	513.00	> 169.00	3.380	3.392	-0.012	1.000	607336		5.50(2.36-7.09)		15281
D 27 d3-NMeFOSAA	573.00	> 419.00	3.529	3.544	-0.015	1.323	1319394	2.61		104	32055
28 N-methyl perfluorooctane sulfonami	570.00	> 419.00	3.538	3.548	-0.010	1.003	1299929	2.50			10976
29 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.687	3.701	-0.014	1.219	2710734	2.42			63426
	599.00	> 99.00	3.687	3.701	-0.014	1.219	896556		3.02(1.39-4.16)		18844
D 32 d5-NEtFOSAA	589.00	> 419.00	3.698	3.710	-0.012	1.387	1319907	2.55		102	3301
D 30 13C2 PFUnA	565.00	> 520.00	3.709	3.716	-0.007	1.391	2681170	2.60		104	30671
33 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.709	3.718	-0.009	1.003	1173536	2.51			24732
31 Perfluoroundecanoic acid	563.00	> 519.00	3.709	3.718	-0.009	1.000	2064714	2.35			10830
	563.00	> 169.00	3.709	3.718	-0.009	1.000	560082		3.69(2.12-6.36)		29000
66 11-Chloroeicosafuoro-3-oxaundecan	631.00	> 451.00	3.866	3.874	-0.008	1.278	10857363	NC			103159
D 36 13C2 PFDaA	615.00	> 570.00	3.999	4.009	-0.010	1.500	2734442	2.56		102	19970
37 Perfluorododecanoic acid	613.00	> 569.00	3.999	4.011	-0.012	1.000	2971924	2.49			1727
	613.00	> 169.00	3.999	4.011	-0.012	1.000	730621		4.07(2.13-6.40)		15446
41 Perfluorotridecanoic acid	663.00	> 619.00	4.263	4.273	-0.010	1.066	3060870	2.62			1290
	663.00	> 169.00	4.263	4.273	-0.010	1.066	906949		3.37(1.25-3.76)		12570
D 43 13C2-PFTeDA	715.00	> 670.00	4.502	4.508	-0.006	1.688	2848581	2.57		103	16350
42 Perfluorotetradecanoic acid	713.00	> 169.00	4.502	4.508	-0.006	1.000	756552	2.55			7628
	713.00	> 219.00	4.491	4.508	-0.017	0.998	522665		1.45(0.71-2.13)		8285
D 44 13C2-PFHxDA	815.00	> 770.00	4.914	4.918	-0.004	1.843	4820793	2.73		109	12076
45 Perfluorohexadecanoic acid	813.00	> 769.00	4.914	4.918	-0.004	1.000	4400685	NC			894
	813.00	> 169.00	4.914	4.918	-0.004	1.000	738640		5.96(2.86-8.58)		6323
46 Perfluorooctadecanoic acid	913.00	> 869.00	5.263	5.271	-0.008	1.071	5178447	NC			844
	913.00	> 169.00	5.263	5.271	-0.008	1.071	623997		8.30(3.83-11.48)		5178

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFCIC_FULL_00012

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_010.d

Injection Date: 11-Jul-2018 15:54:23

Instrument ID: A8_N

Lims ID: ICV Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 17

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

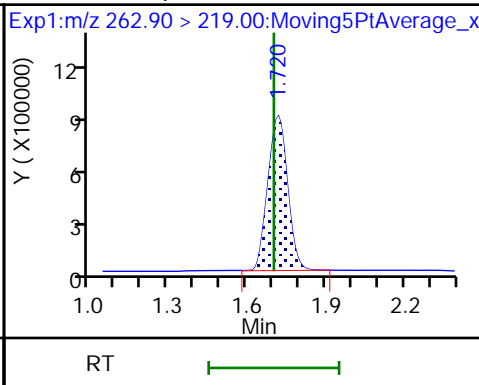
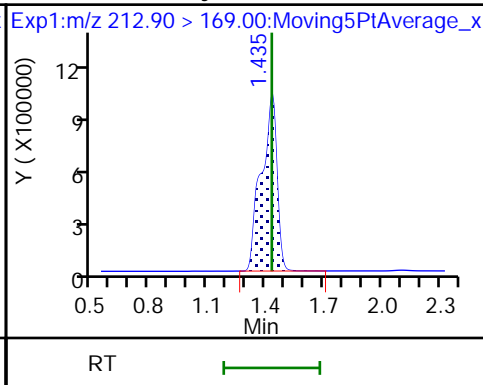
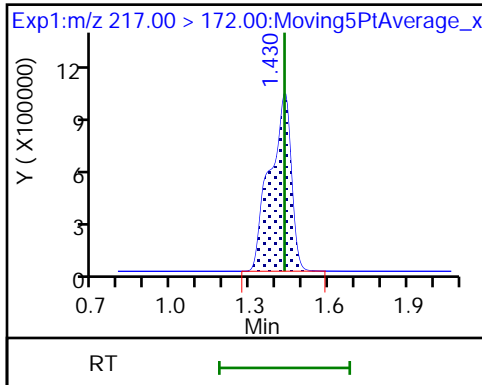
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Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

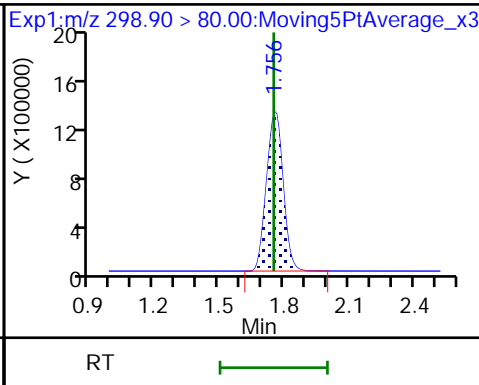
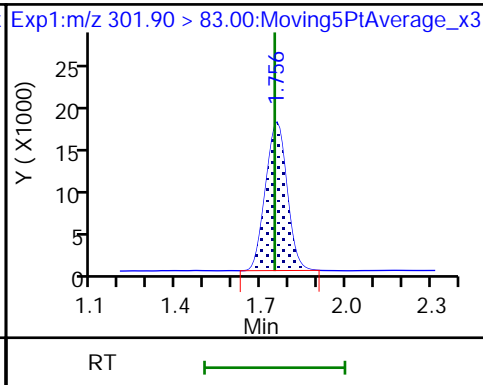
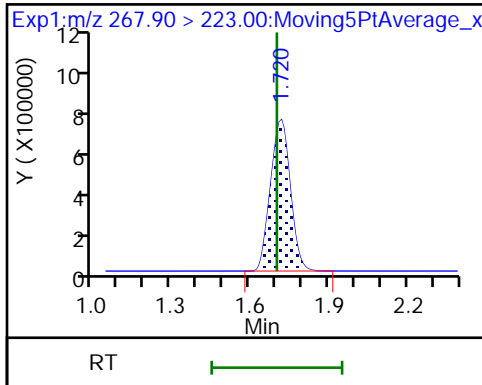
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

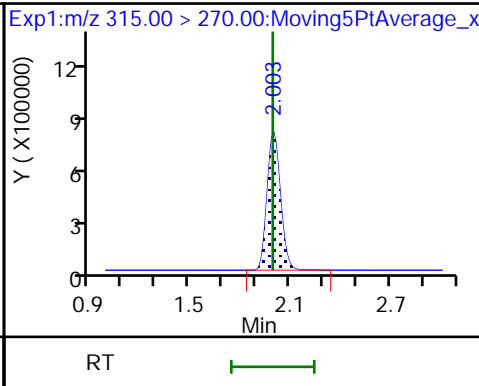
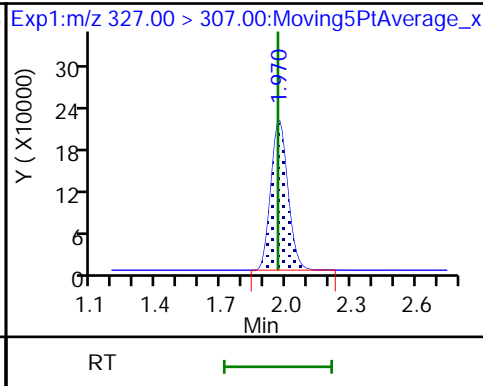
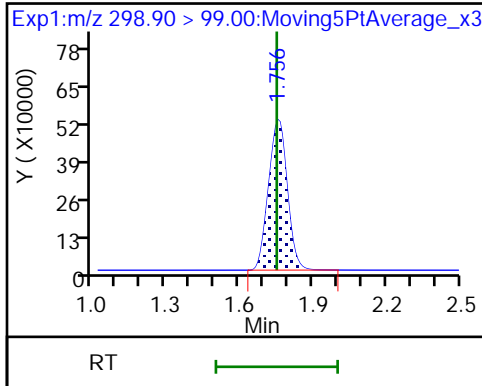
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfonate

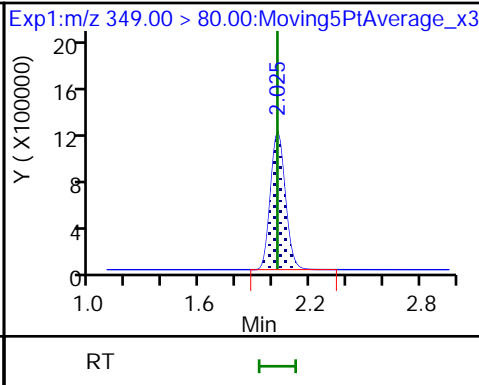
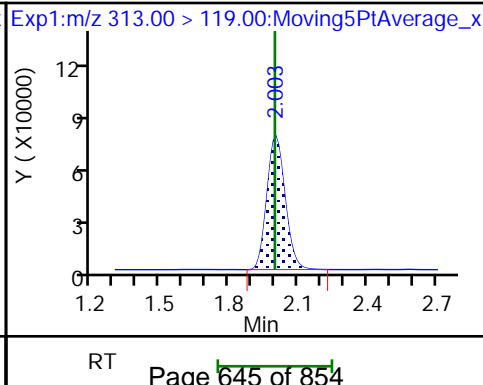
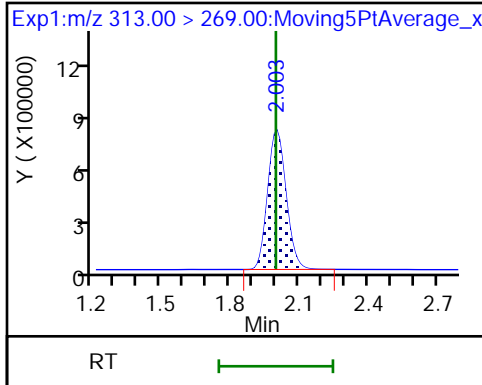
D 7 13C2 PFHxA

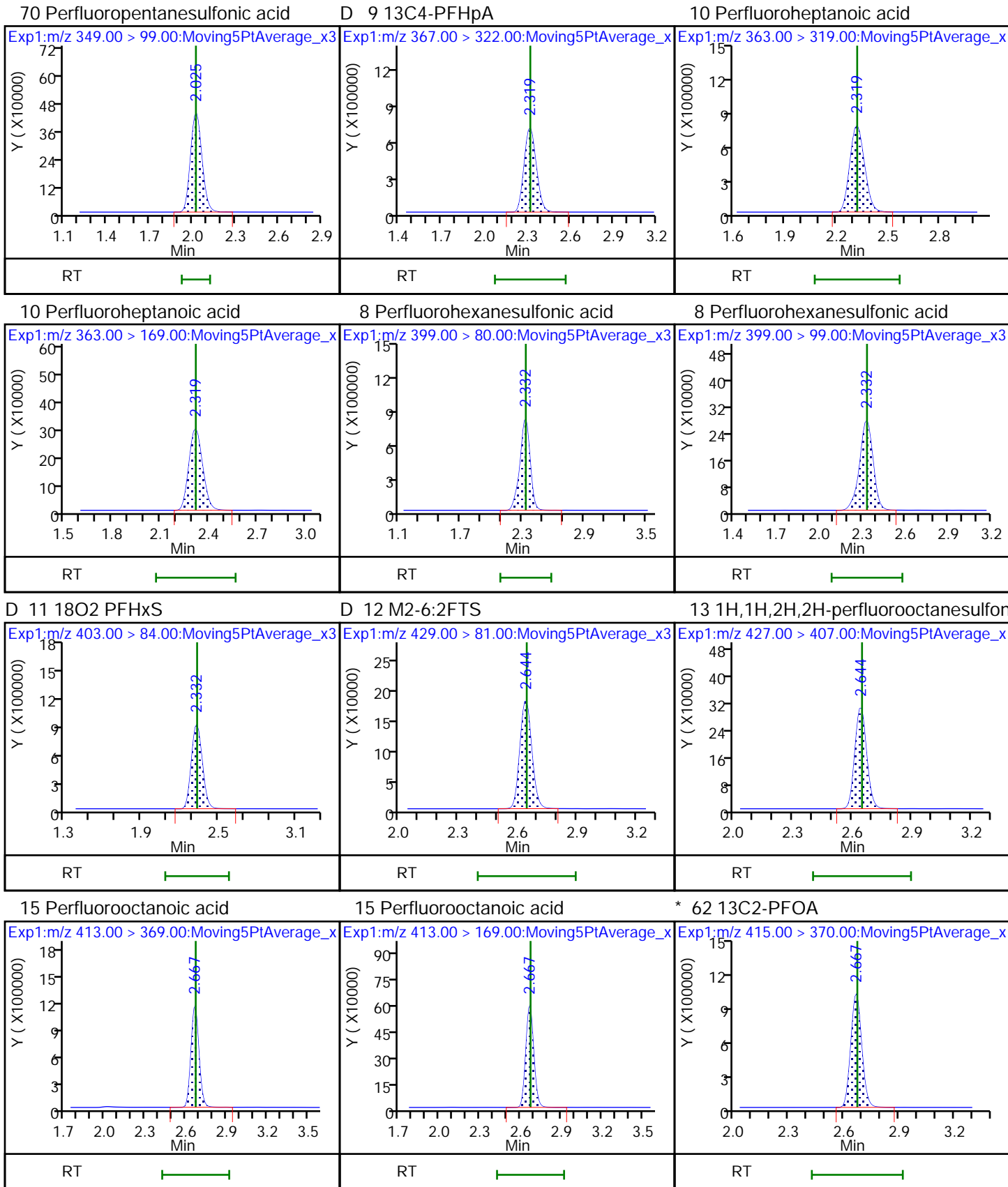


6 Perfluorohexanoic acid

6 Perfluorohexanoic acid

70 Perfluoropentanesulfonic acid

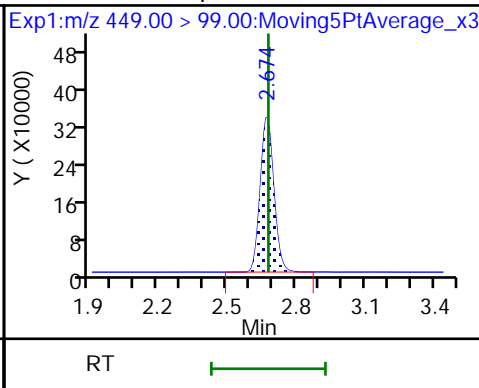
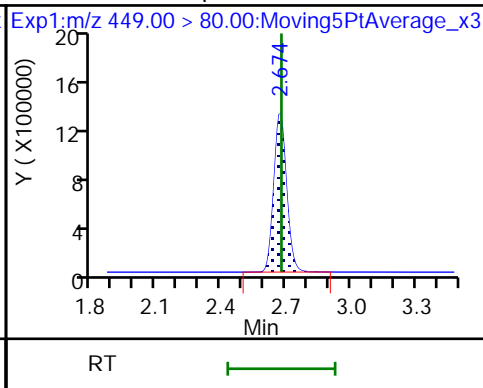
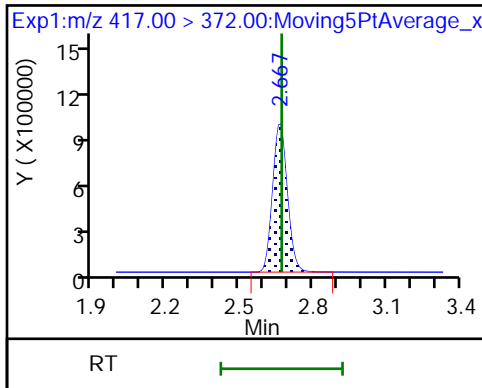




D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

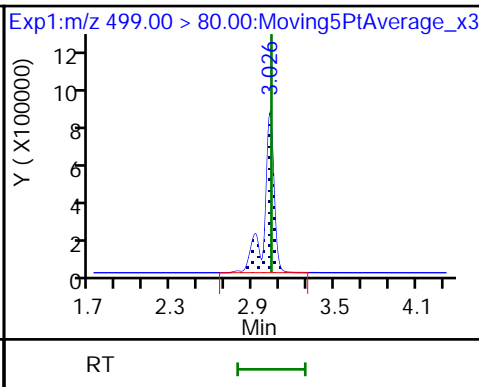
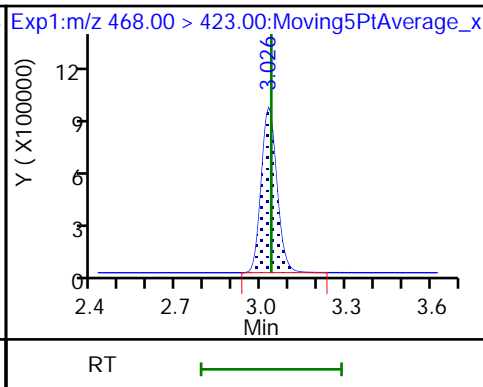
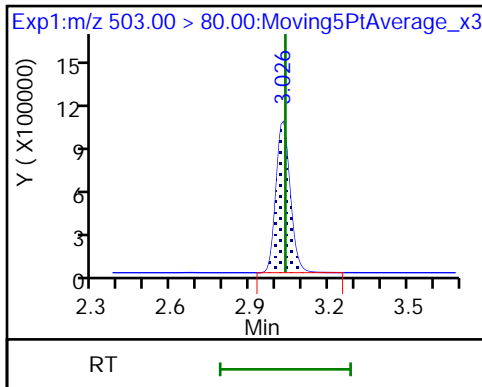
16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS

D 19 13C5 PFNA

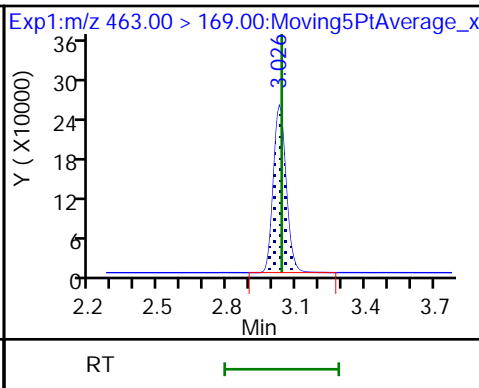
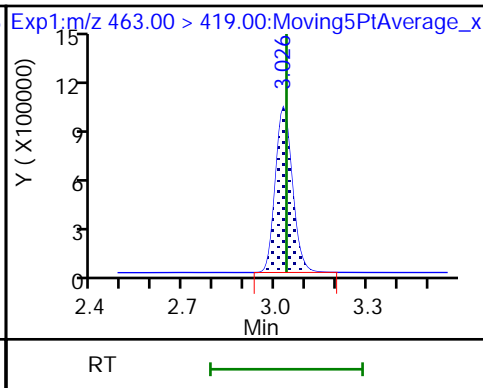
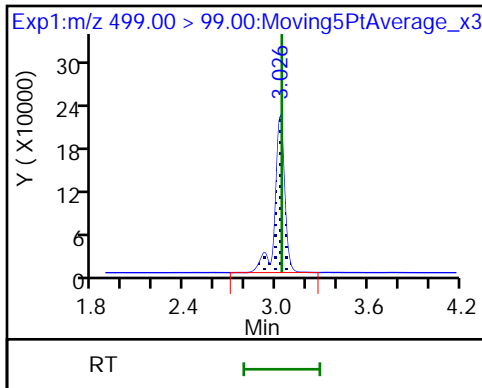
17 Perfluorooctane sulfonic acid



17 Perfluorooctane sulfonic acid

20 Perfluorononanoic acid

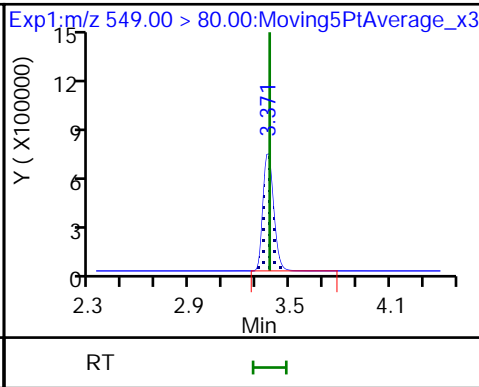
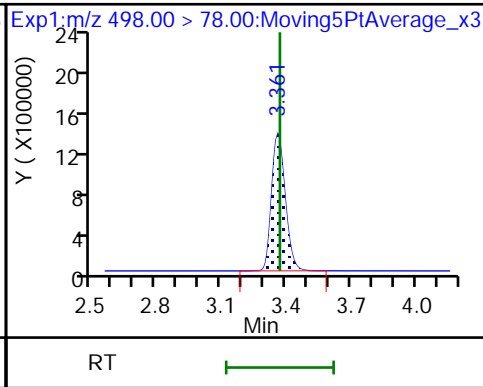
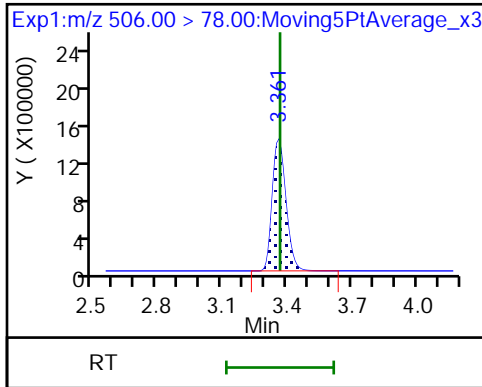
20 Perfluorononanoic acid



D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

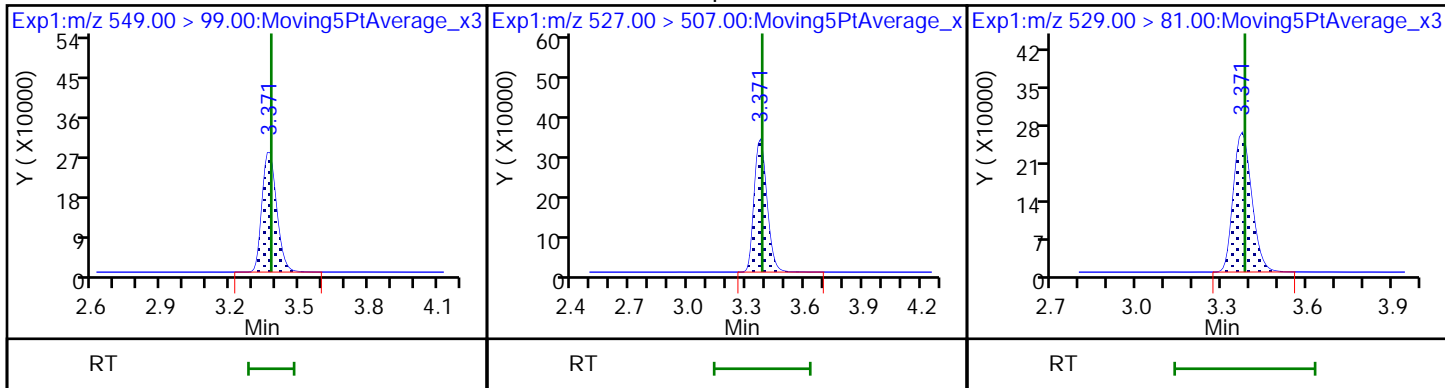
68 Perfluorononanesulfonic acid



68 Perfluorononanesulfonic acid

25 1H,1H,2H,2H-perfluorodecanesulfonate

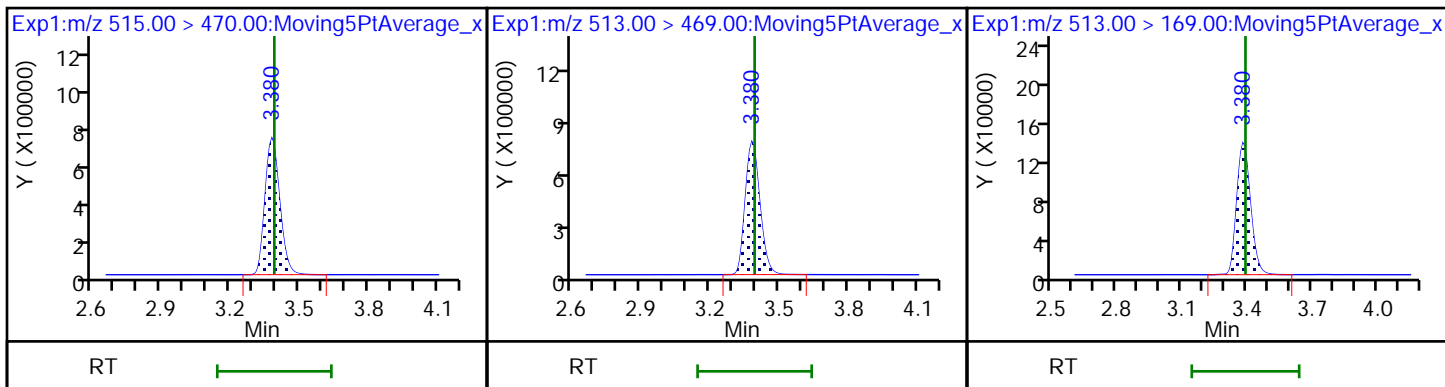
D 26 M2-8:2FTS



D 23 13C2 PFDA

24 Perfluorodecanoic acid

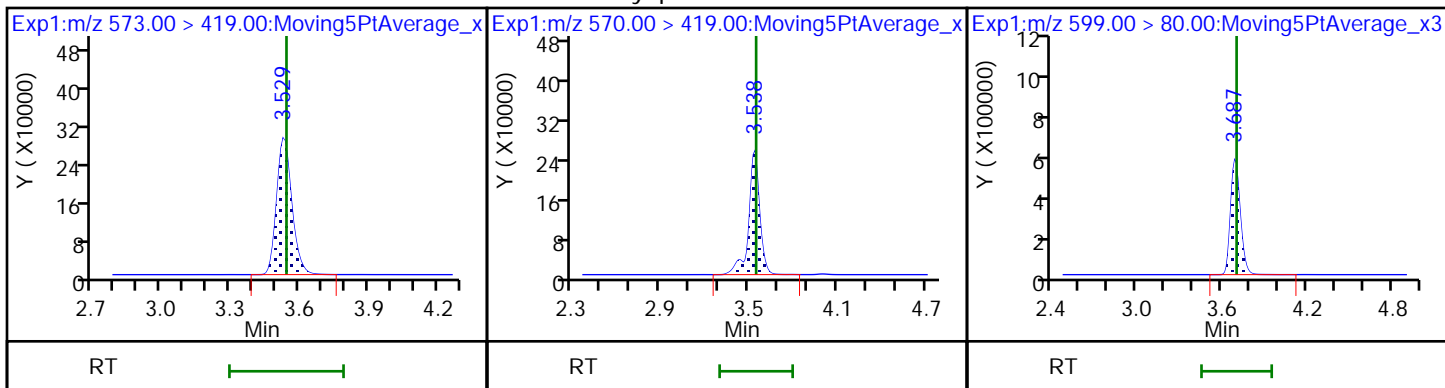
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonamide

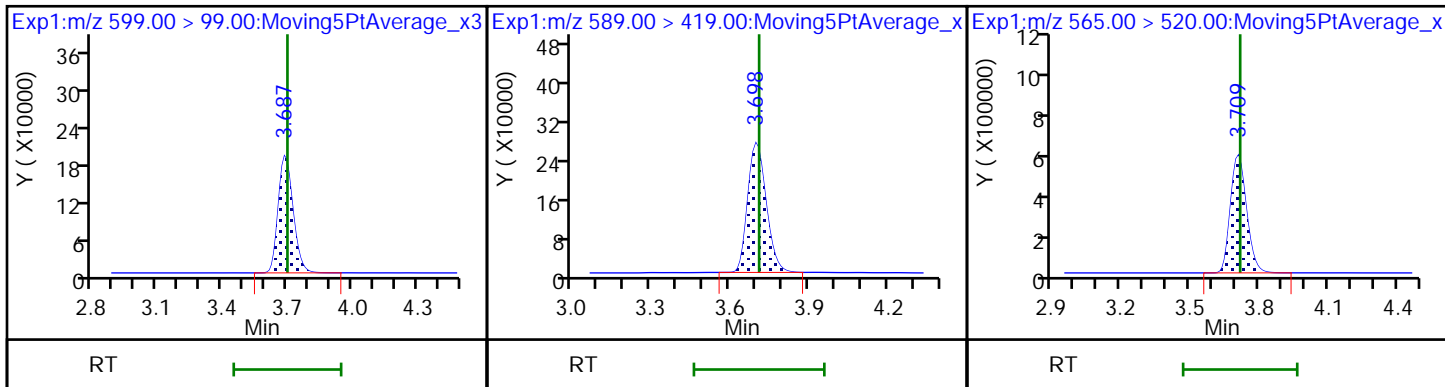
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

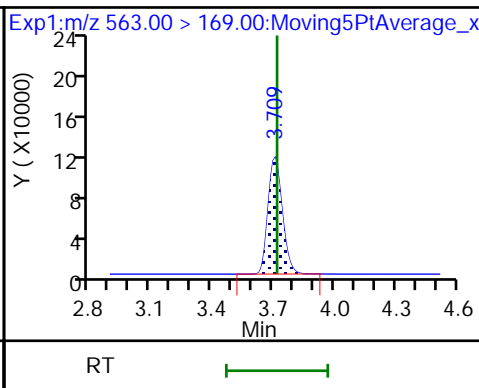
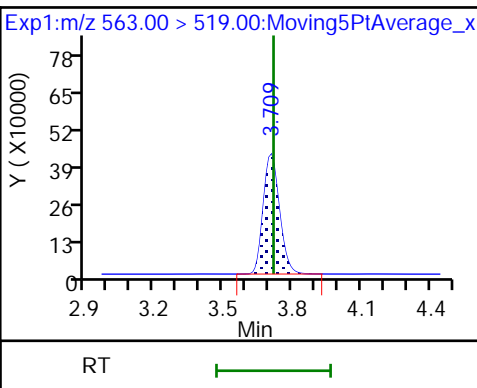
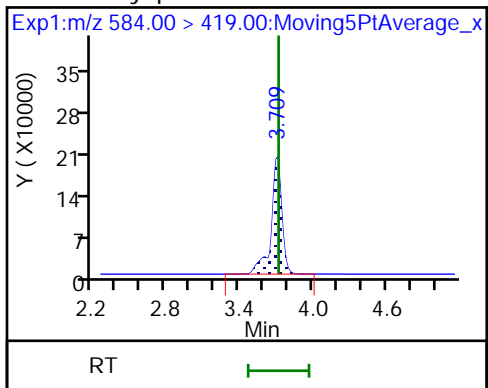
D 30 13C2 PFUnA



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

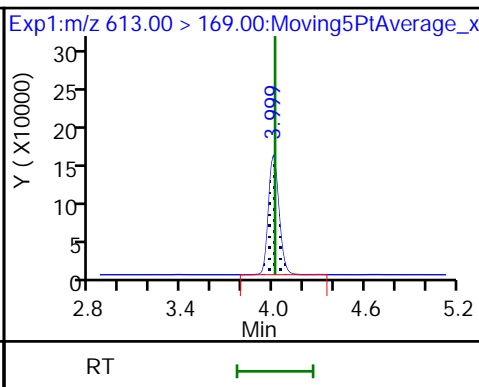
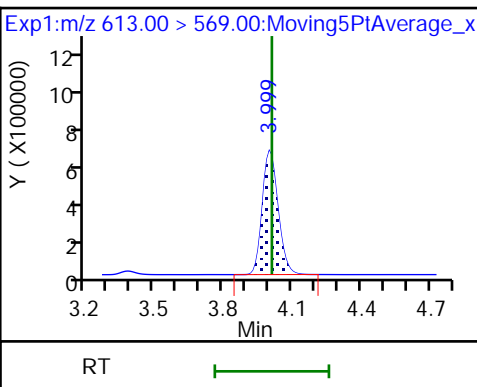
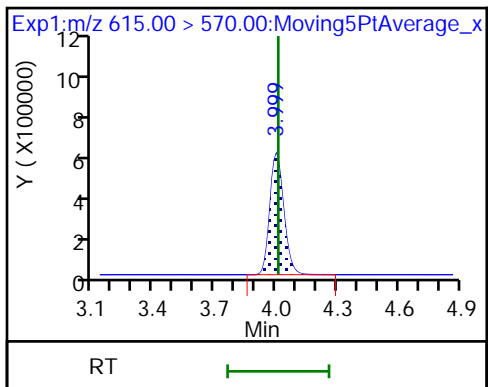
31 Perfluoroundecanoic acid



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

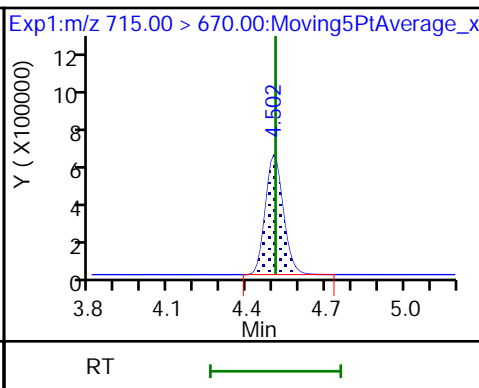
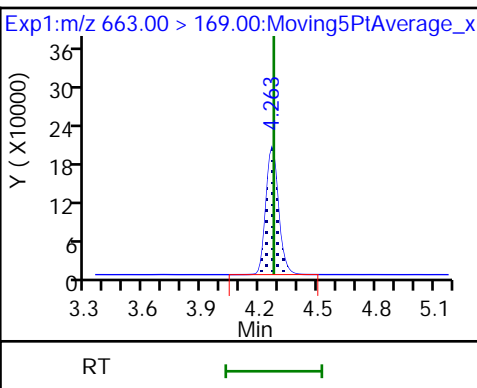
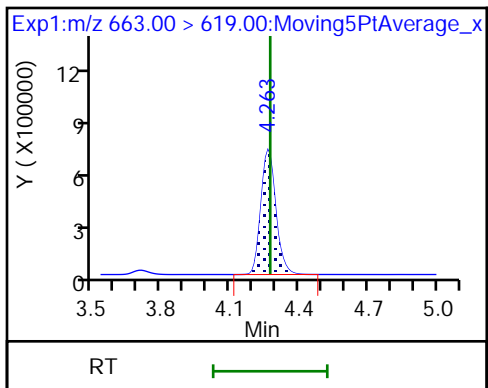
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

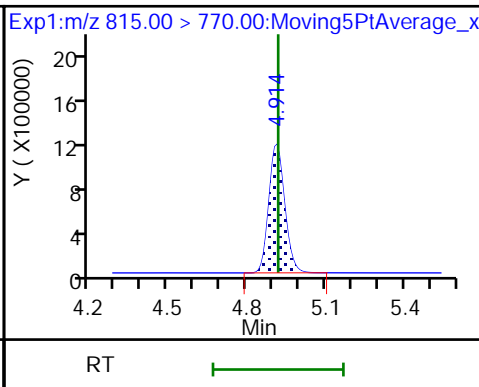
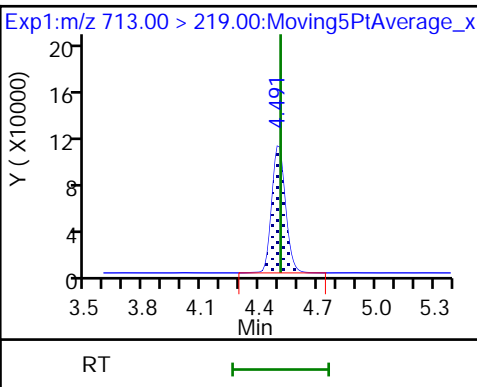
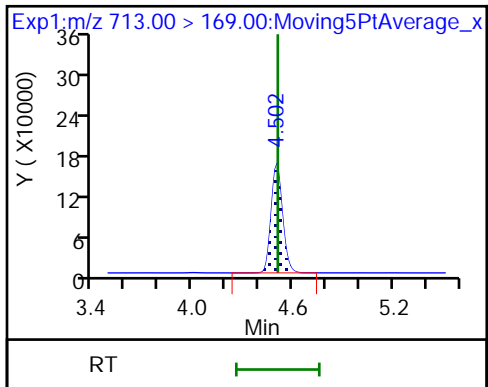
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-234756/2 Calibration Date: 07/18/2018 16:49
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLAA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9840		0.0499	0.0500	-0.2	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.167		0.0481	0.0500	-3.8	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	76.75		0.0443	0.0442	0.3	30.0
4:2 FTS	AveID	13.00	13.36		0.400	0.0467	2.7	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.038		0.0504	0.0500	0.9	30.0
Perfluoropentanesulfonic acid	AveID	69.78	71.38		0.0480	0.0469	2.3	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.182		0.0511	0.0500	2.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.286		0.0510	0.0455	12.1	30.0
6:2 FTS	AveID	1.564	1.601		0.400	0.0474	2.3	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.245		0.0506	0.0501	1.1	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.324		0.0478	0.0476	0.5	30.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.141		0.0514	0.0500	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.135		0.0465	0.0464	0.1	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9237		0.0469	0.0500	-6.3	30.0
8:2 FTS	AveID	1.290	1.323		0.400	0.0479	2.6	30.0
Perfluorononanesulfonic acid	AveID	0.7752	0.7967		0.0493	0.0480	2.8	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.053		0.0502	0.0500	0.3	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9526		0.400	0.0500	-3.4	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6374		0.0458	0.0482	-5.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8687		0.0491	0.0500	-1.7	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7939		0.0484	0.0500	-3.1	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.072		0.0491	0.0500	-1.8	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.022		0.0479	0.0500	-4.3	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2797		0.0537	0.0500	7.5	30.0
13C4 PFBA	Ave	1.356	1.270		2.34	2.50	-6.4	30.0
13C5 PFPeA	Ave	0.9425	0.8801		2.33	2.50	-6.6	30.0
13C3-PFBS	Ave	0.0237	0.0221		2.17	2.33	-6.7	30.0
13C2 PFHxA	Ave	1.017	0.9642		2.37	2.50	-5.2	30.0
13C4-PFHpA	Ave	0.9371	0.9610		2.56	2.50	2.6	30.0
18O2 PFHxS	Ave	1.328	1.363		2.43	2.37	2.7	30.0
M2-6:2FTS	Ave	0.2009	0.1997		2.36	2.38	-0.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-234756/2 Calibration Date: 07/18/2018 16:49
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLAA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9560	0.9714		2.54	2.50	1.6	30.0
13C4 PFOS	Ave	0.9742	0.9576		2.35	2.39	-1.7	30.0
13C5 PFNA	Ave	0.8546	0.8546		2.50	2.50	-0.0	30.0
13C8 FOSA	Ave	1.405	1.410		2.51	2.50	0.4	30.0
M2-8:2FTS	Ave	0.2939	0.2922		2.38	2.40	-0.6	30.0
13C2 PFDA	Ave	0.7503	0.7713		2.57	2.50	2.8	30.0
d3-NMeFOSAA	Ave	0.3075	0.3218		2.62	2.50	4.7	30.0
d5-NEtFOSAA	Ave	0.3150	0.3506		2.78	2.50	11.3	30.0
13C2 PFUnA	Ave	0.6266	0.6499		2.59	2.50	3.7	30.0
13C2 PFDoA	Ave	0.6496	0.6612		2.54	2.50	1.8	30.0
13C2-PFTeDA	Ave	0.6740	0.6364		2.36	2.50	-5.6	30.0
13C2-PFHxDA	Ave	1.074	1.004		2.34	2.50	-6.5	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61249.b\2018.07.18LLAA_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 18-Jul-2018 16:49:41 ALS Bottle#: 21 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61249.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 10:20:25 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK025

First Level Reviewer: mongkols Date: 19-Jul-2018 10:20:25

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	1.431	1.424	0.007	0.524	5627169	2.34	93.6	70195	
2 Perfluorobutyric acid	212.90 > 169.00	1.431	1.430	0.001	1.000	110738	0.0499	99.8	38.6	
D 3 13C5-PFPeA	267.90 > 223.00	1.748	1.738	0.010	0.641	3901085	2.33	93.4	65578	
4 Perfluoropentanoic acid	262.90 > 219.00	1.739	1.747	-0.008	0.995	91068	0.0481	96.2	33.4	
D 47 13C3-PFBS	301.90 > 83.00	1.793	1.783	0.010	0.657	91079	2.17	93.3	606	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.793	1.792	0.001	1.000	132899	0.0443	100	1433	
	298.90 > 99.00	1.793	1.792	0.001	1.000	53032	2.51(1.25-3.74)		644	
D 60 M2-4:2FTS	329.00 > 81.00	2.016	2.003	0.013	0.739	485324	NC		7148	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.027	2.015	0.012	1.131	24432	0.0480	103	1431	
D 7 13C2 PFHxA	315.00 > 270.00	2.061	2.049	0.012	0.756	4273906	2.37	94.8	95042	
6 Perfluorohexanoic acid	313.00 > 269.00	2.061	2.060	0.001	1.000	88734	0.0504	101	214	
	313.00 > 119.00	2.050	2.060	-0.010	0.995	9602	9.24(5.03-15.10)		236	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.084	2.083	0.001	1.162	131137	0.0480	102	4644	
	349.00 > 99.00	2.084	2.083	0.001	1.162	47438	2.76(1.36-4.07)		1049	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.163	2.139	0.024	0.793	285997	NC		7394	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.163	2.162	0.001	1.000	13641	NC	130	
D 9 13C4-PFHpA	367.00	> 322.00	2.386	2.372	0.014	0.875	4259677	2.56	103	47974
D 11 18O2 PFHxS	403.00	> 84.00	2.397	2.385	0.012	0.879	5717047	2.43	103	52569
10 Perfluoroheptanoic acid	363.00	> 319.00	2.386	2.385	0.001	1.000	100700	0.0511	102	240
	363.00	> 169.00	2.386	2.385	0.001	1.000	41521	2.43(1.13-3.40)		637
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.397	2.396	0.001	1.000	141476	0.0510	112	2253
	399.00	> 99.00	2.397	2.396	0.001	1.000	43759	3.23(1.50-4.49)		381
D 12 M2-6:2FTS	429.00	> 81.00	2.706	2.690	0.016	0.992	840863	2.36	99.4	18879
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.706	2.705	0.001	1.000	26861	0.0485	102	731
D 14 13C4 PFOA	417.00	> 372.00	2.728	2.713	0.015	1.000	4305655	2.54	102	35314
* 62 13C2-PFOA	415.00	> 370.00	2.728	2.728	0.0		4432604	2.50		47292
15 Perfluorooctanoic acid	413.00	> 369.00	2.728	2.728	0.0	1.000	107308	0.0506	101	60.4
	413.00	> 169.00	2.728	2.728	0.0	1.000	57816	1.86(0.84-2.52)		437
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.736	2.736	0.0	0.886	107020	0.0478	101	3290
	449.00	> 99.00	2.736	2.736	0.0	0.886	32284	3.31(1.94-5.82)		885
D 18 13C4 PFOS	503.00	> 80.00	3.087	3.069	0.018	1.131	4057932	2.35	98.3	46709
D 19 13C5 PFNA	468.00	> 423.00	3.087	3.069	0.018	1.131	3787863	2.50	100	47420
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.087	3.085	0.002	1.000	89386	0.0465	100	1941
	499.00	> 99.00	3.087	3.085	0.002	1.000	21021	4.25(2.31-6.93)		375
20 Perfluorononanoic acid	463.00	> 419.00	3.087	3.085	0.002	1.000	86450	0.0514	103	188
	463.00	> 169.00	3.087	3.085	0.002	1.000	24102	3.59(1.90-5.69)		746
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.294	3.294	0.0	1.067	144063	NC		1516
D 21 13C8 FOSA	506.00	> 78.00	3.406	3.402	0.004	1.248	6250690	2.51	100	52066
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.406	3.406	0.0	1.000	115477	0.0469	93.7	2017
D 26 M2-8:2FTS	529.00	> 81.00	3.424	3.411	0.013	1.255	1240711	2.38	99.4	21111
D 23 13C2 PFDA	515.00	> 470.00	3.433	3.421	0.012	1.259	3418675	2.57	103	47353

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.424	3.425	-0.001	1.109	64926	0.0493		103	2370	
549.00 > 99.00	3.424	3.425	-0.001	1.109	21560		3.01(1.33-3.97)		487	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.424	3.425	-0.001	1.000	32840	0.0491		103	696	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.443	3.434	0.009	1.003	71988	0.0502		100	448	
513.00 > 169.00	3.443	3.434	0.009	1.003	15355		4.69(2.36-7.09)		672	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.584	3.570	0.014	1.314	1426553	2.62		105	29977	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.595	3.596	-0.001	1.003	27178	0.0483		96.6	290	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.749	3.733	0.016	1.374	1553951	2.78		111	4013	
D 30 13C2 PFUnA										
565.00 > 520.00	3.759	3.733	0.026	1.378	2880765	2.59		104	43007	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.749	3.740	0.009	1.215	52162	0.0458		94.9	1359	
599.00 > 99.00	3.749	3.740	0.009	1.215	17288		3.02(1.39-4.16)		722	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.759	3.761	-0.002	1.003	26998	0.0491		98.3	642	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.759	3.761	-0.002	1.000	45741	0.0484		96.9	230	
563.00 > 169.00	3.759	3.761	-0.002	1.000	10980		4.17(2.12-6.36)		288	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.916	3.919	-0.003	1.269	215040	NC			9125	
D 36 13C2 PFDaA										
615.00 > 570.00	4.049	4.023	0.026	1.484	2930924	2.54		102	24797	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.049	4.051	-0.002	1.000	62864	0.0491		98.2	34.9	
613.00 > 169.00	4.049	4.051	-0.002	1.000	13935		4.51(2.13-6.40)		373	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.307	4.308	-0.001	1.064	59918	0.0479		95.7	25.2	
663.00 > 169.00	4.318	4.308	0.010	1.066	22829		2.62(1.25-3.76)		370	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.551	4.528	0.023	1.668	2820982	2.36		94.4	15577	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.551	4.554	-0.003	1.000	15779	0.0537		107	222	
713.00 > 219.00	4.551	4.554	-0.003	1.000	11433		1.38(0.71-2.13)		239	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.964	4.936	0.028	1.820	4450157	2.34		93.5	12647	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.973	4.967	0.006	1.002	120284	NC			27.2	
813.00 > 169.00	4.973	4.967	0.006	1.002	20465		5.88(2.86-8.58)		211	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.334	5.329	0.005	1.074	99893	NC			21.8	
913.00 > 169.00	5.334	5.329	0.005	1.074	11831		8.44(3.83-11.48)		187	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC_LL2_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61249.b\2018.07.18LLAA_004.d

Injection Date: 18-Jul-2018 16:49:41

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

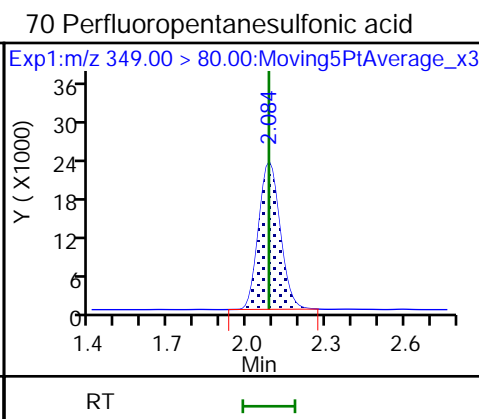
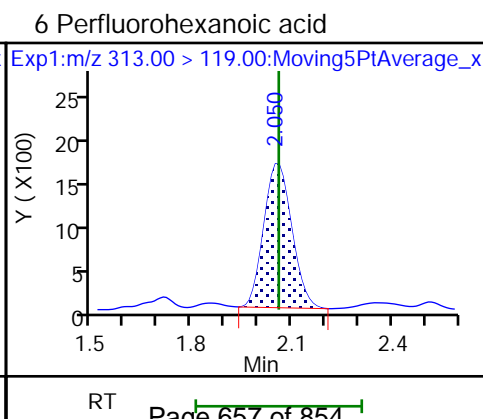
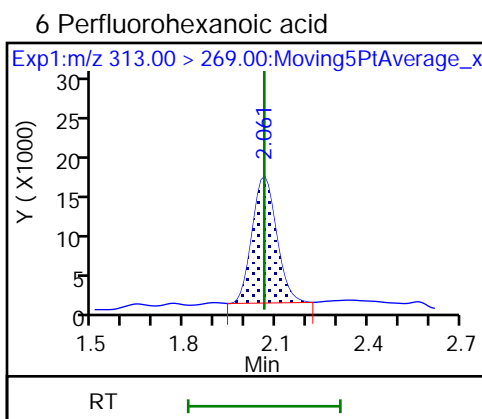
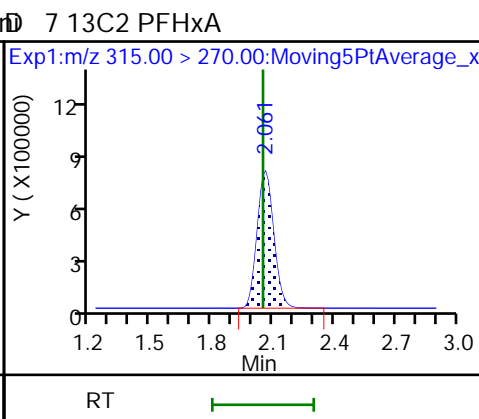
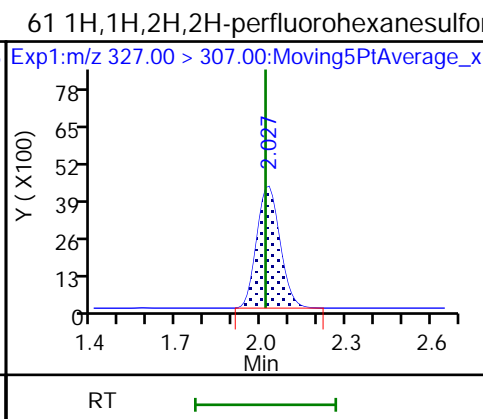
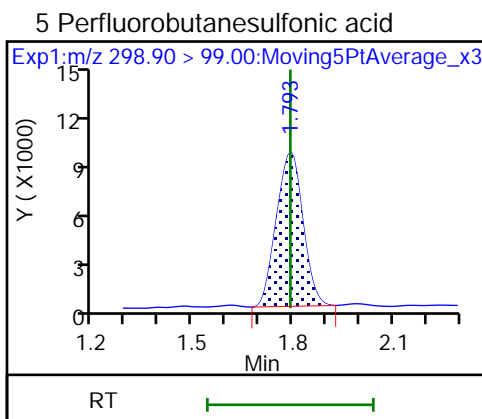
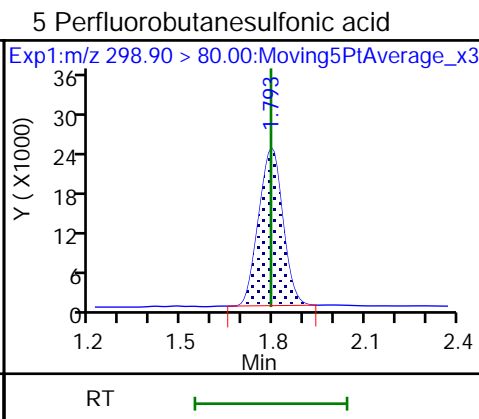
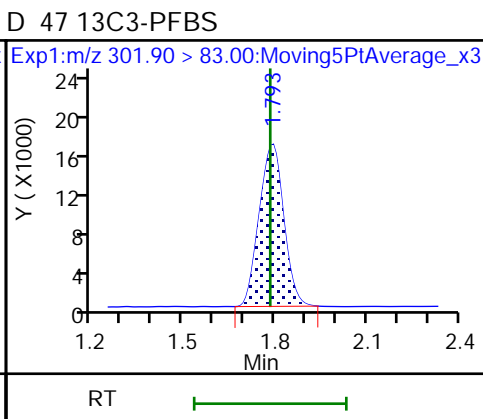
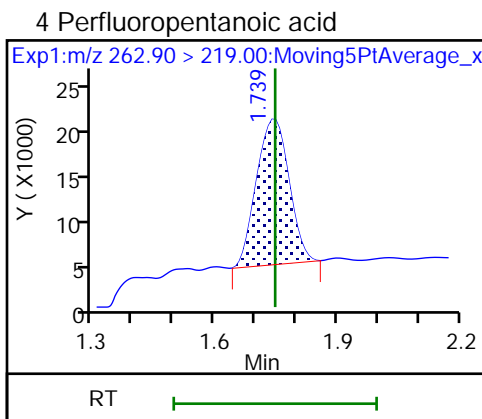
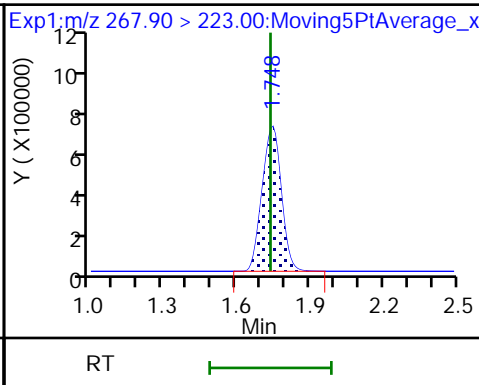
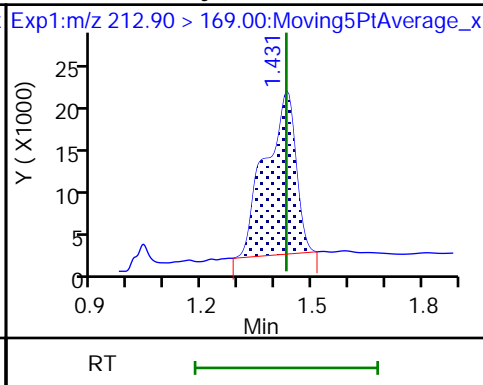
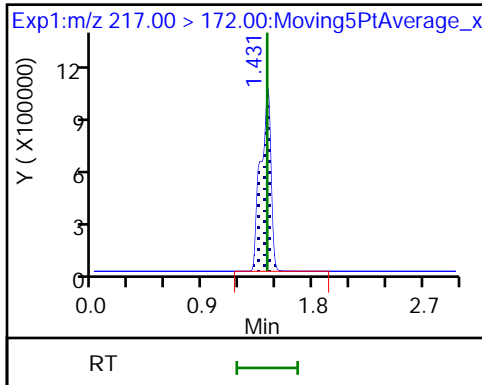
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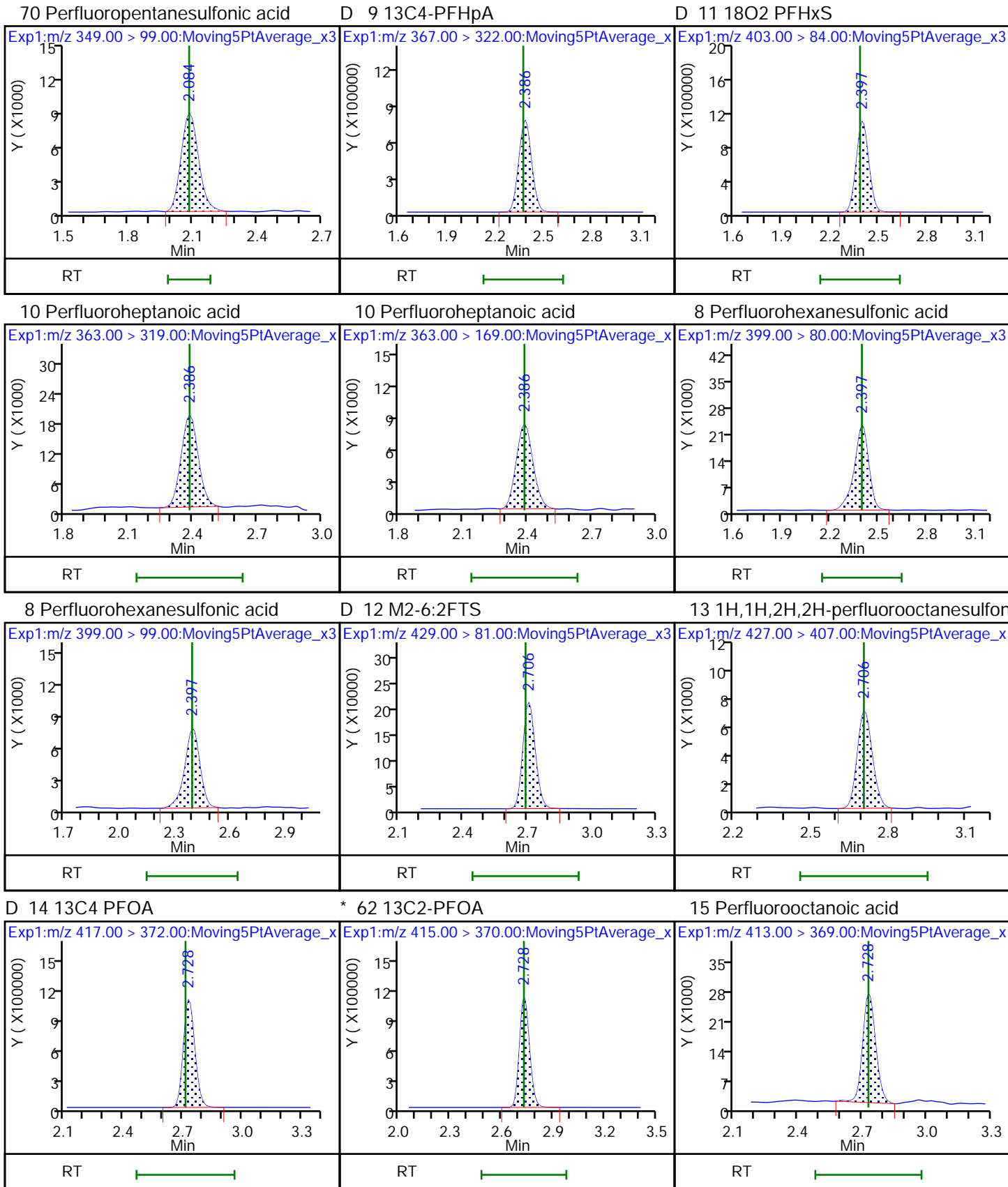
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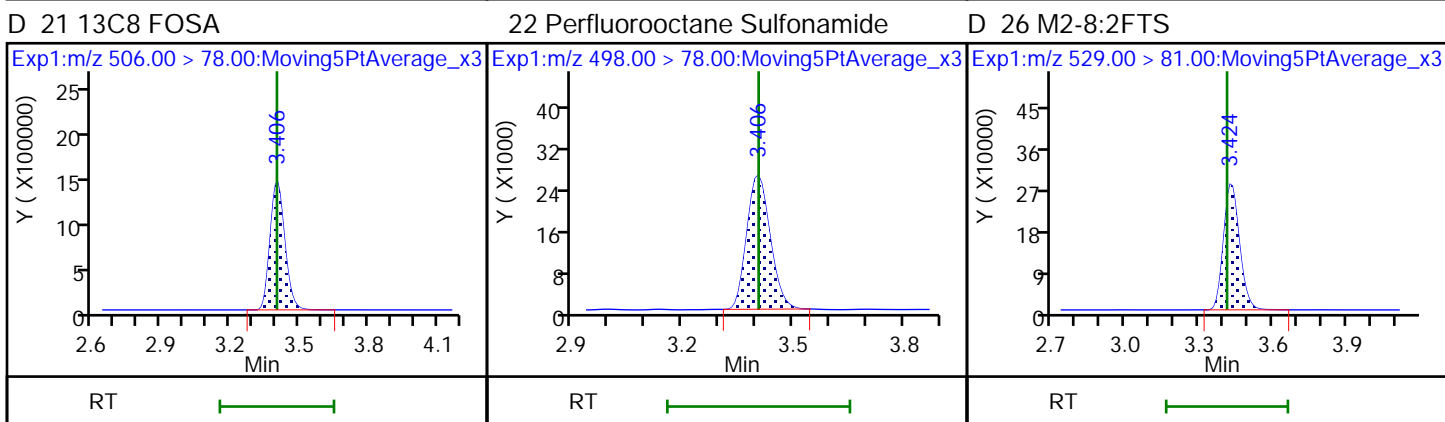
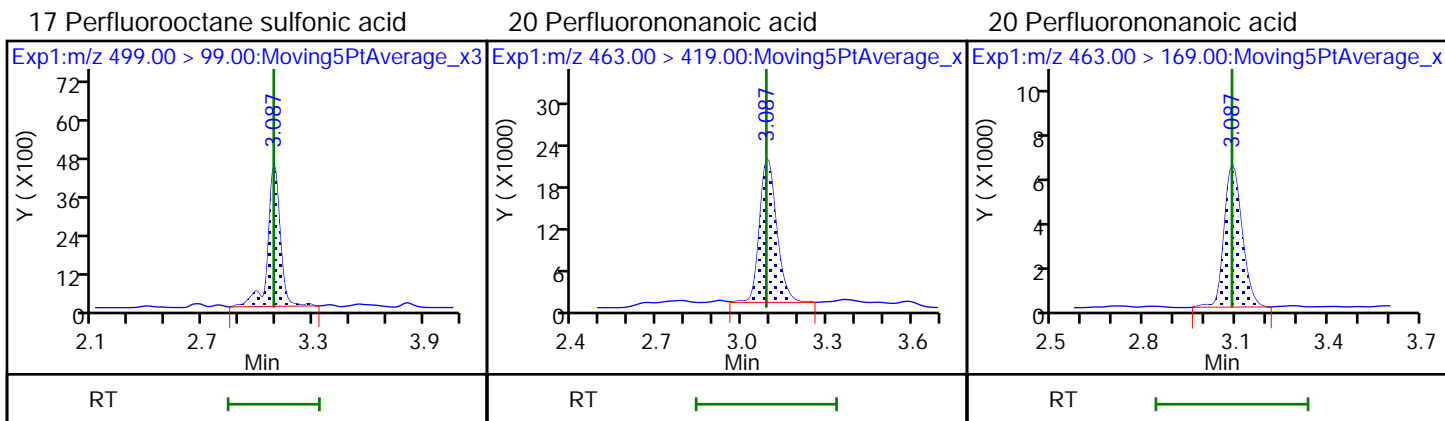
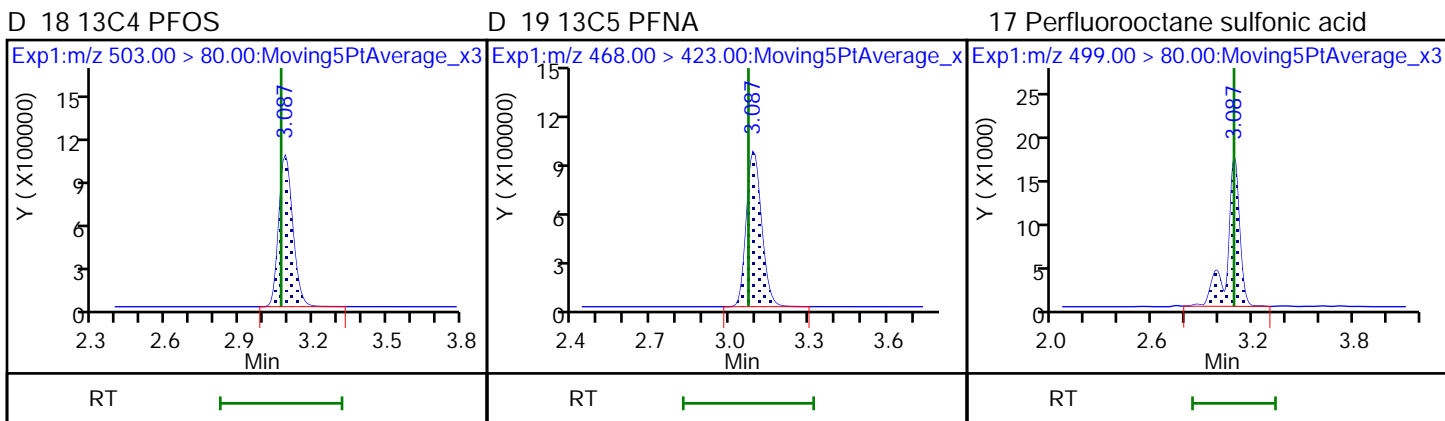
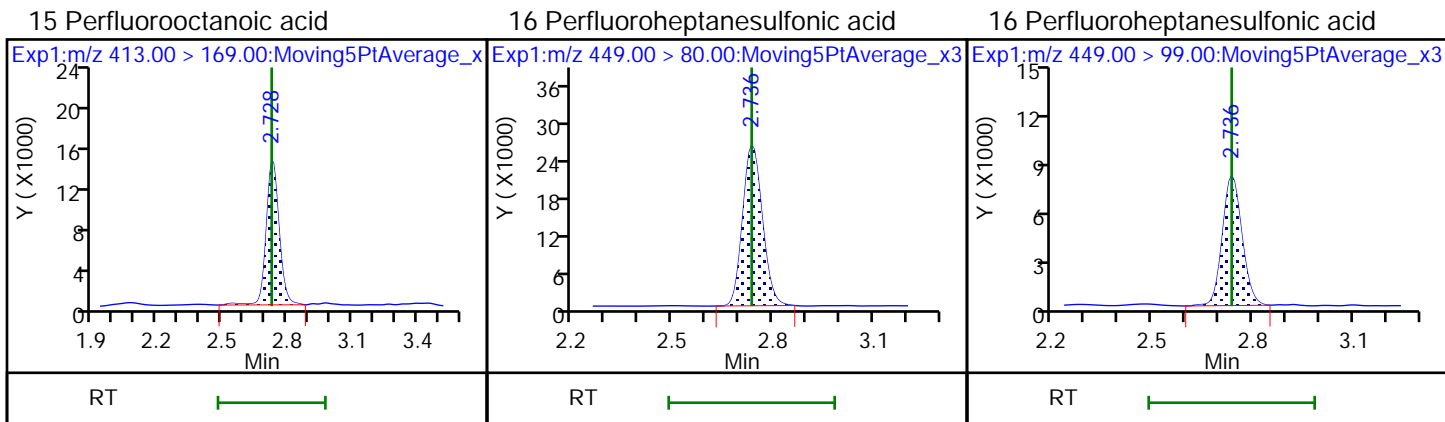
D 1 13C4 PFBA

2 Perfluorobutyric acid

D 3 13C5-PFPeA



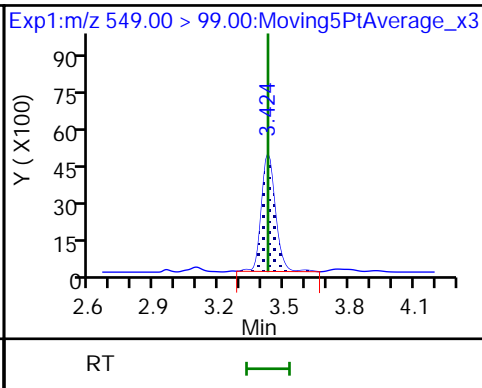
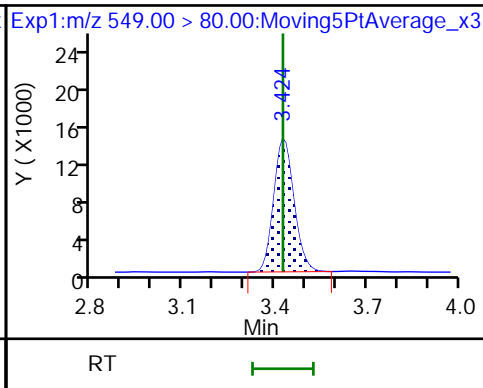
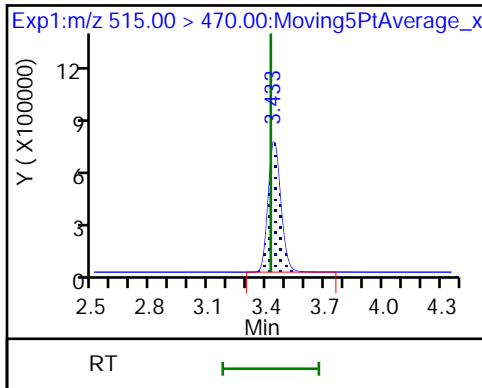




D 23 13C2 PFDA

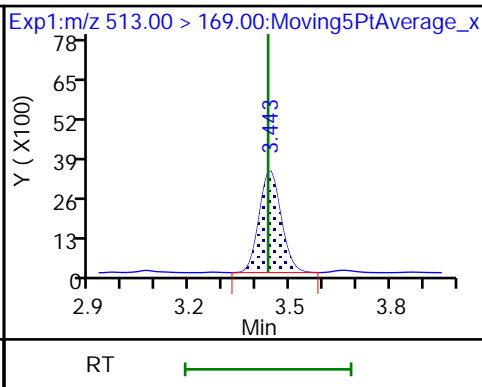
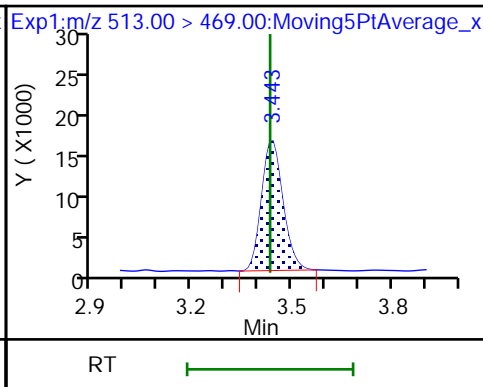
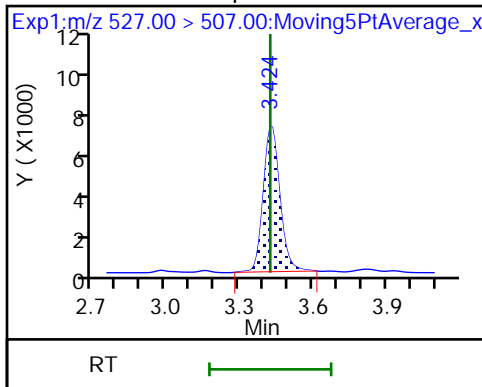
68 Perfluorononanesulfonic acid

68 Perfluorononanesulfonic acid



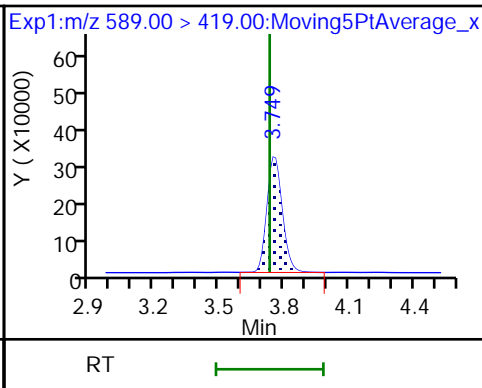
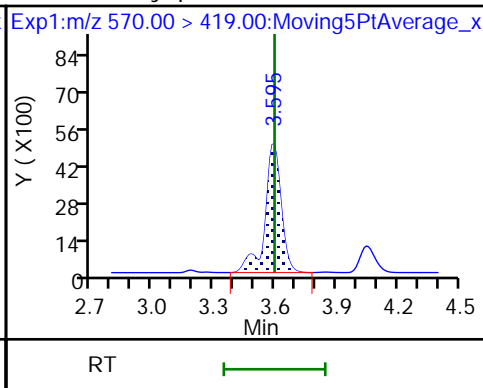
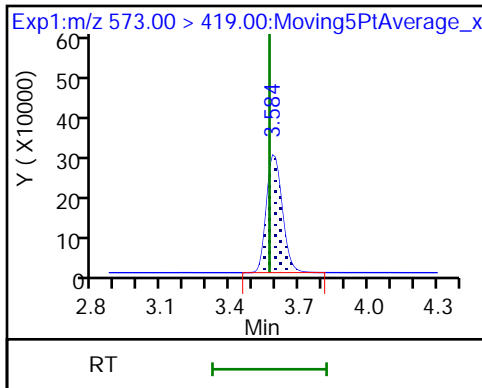
25 1H,1H,2H,2H-perfluorodecanesulfoni 24 Perfluorodecanoic acid

24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

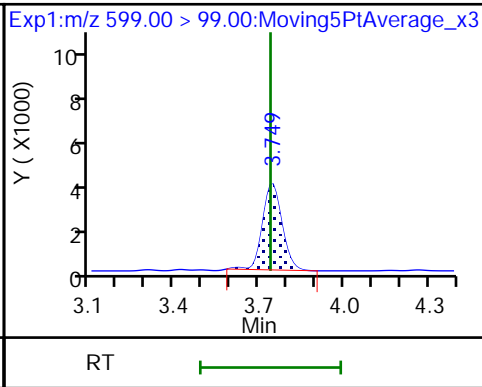
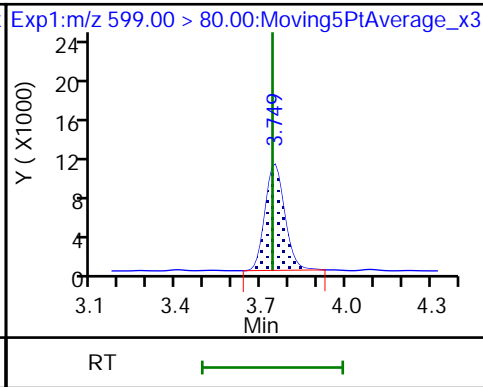
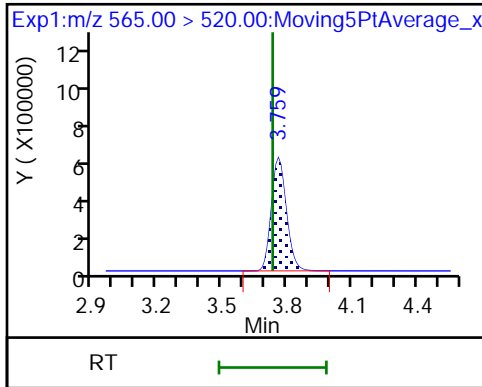
28 N-methyl perfluorooctane sulfonamiD 32 d5-NEtFOSAA



D 30 13C2 PFUnA

29 Perfluorodecane Sulfonic acid

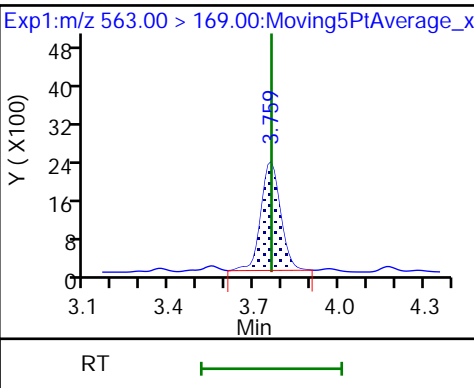
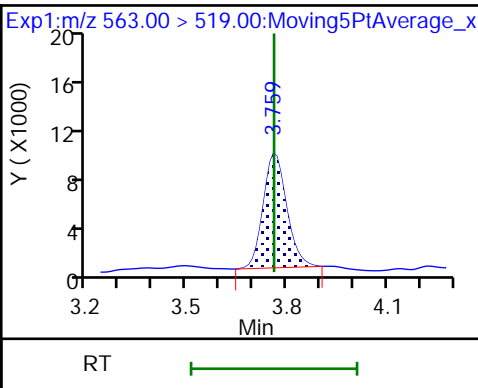
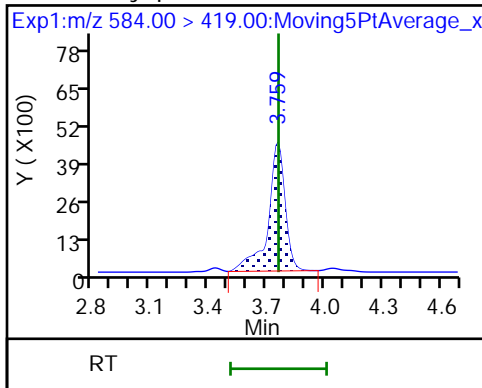
29 Perfluorodecane Sulfonic acid



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

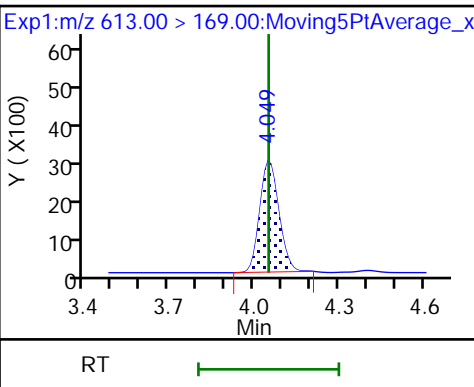
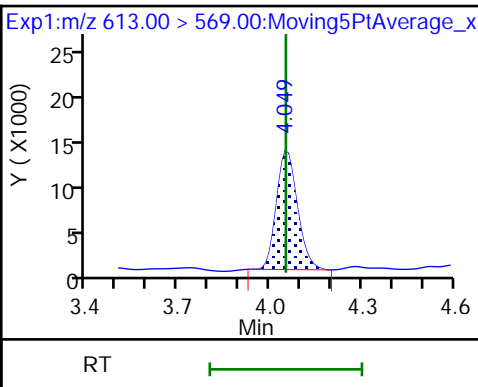
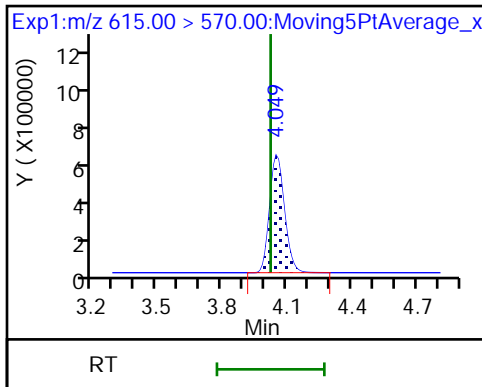
31 Perfluoroundecanoic acid



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

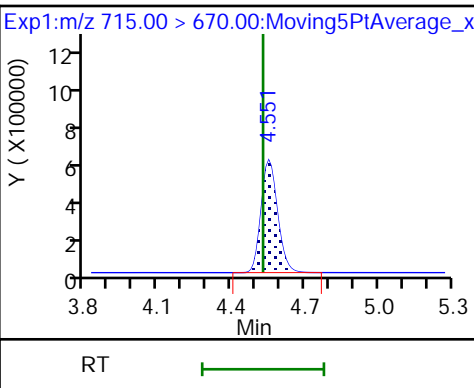
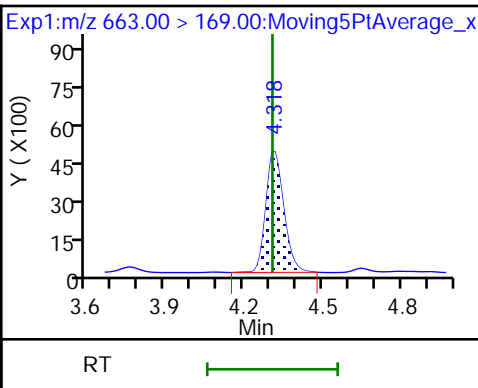
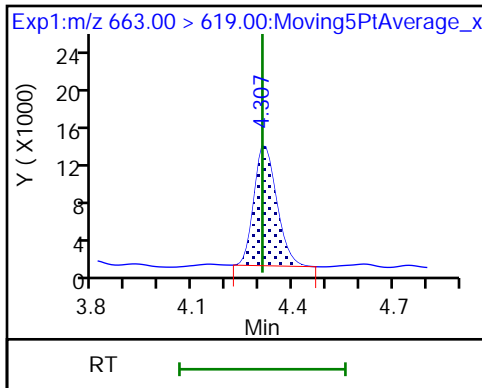
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

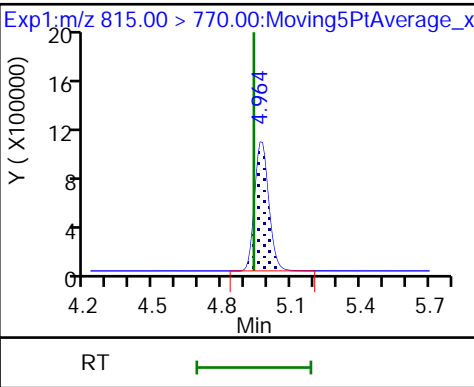
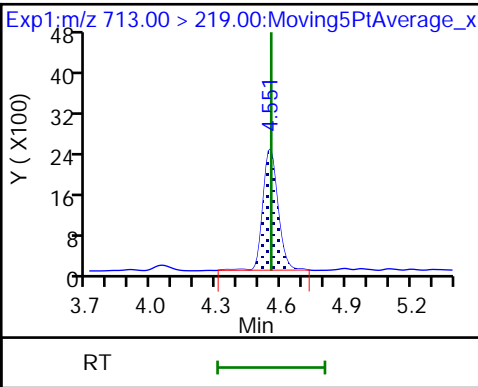
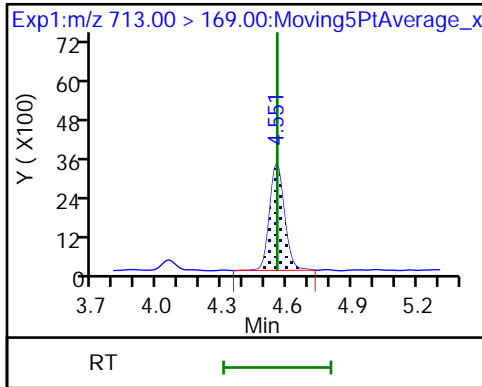
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234756/3 Calibration Date: 07/18/2018 16:57
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLAA_056.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.998		2.53	2.50	1.2	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.186		2.44	2.50	-2.2	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	77.80		2.25	2.21	1.7	30.0
4:2 FTS	AveID	13.00	13.01		2.34	2.34	0.1	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.078		2.62	2.50	4.8	30.0
Perfluoropentanesulfonic acid	AveID	69.78	76.08		2.56	2.35	9.0	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.161		2.51	2.50	0.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.109		2.20	2.28	-3.4	30.0
6:2 FTS	AveID	1.564	1.616		2.45	2.37	3.3	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.145		2.33	2.50	-7.0	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.395		2.52	2.38	5.9	30.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.100		2.48	2.50	-0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.163		2.38	2.32	2.6	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.031		2.62	2.50	4.6	30.0
8:2 FTS	AveID	1.290	1.259		2.34	2.40	-2.4	30.0
Perfluorononanesulfonic acid	AveID	0.7752	0.8163		2.53	2.40	5.3	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.058		2.52	2.50	0.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.070		2.71	2.50	8.5	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7154		2.57	2.41	6.5	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8782		2.48	2.50	-0.7	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7377		2.25	2.50	-10.0	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.130		2.59	2.50	3.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.110		2.60	2.50	4.0	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2428		2.33	2.50	-6.7	30.0
13C4 PFBA	Ave	1.356	1.275		2.35	2.50	-6.0	30.0
13C5 PFPeA	Ave	0.9425	0.8884		2.36	2.50	-5.7	30.0
13C3-PFBS	Ave	0.0237	0.0225		2.21	2.33	-4.8	30.0
13C2 PFHxA	Ave	1.017	1.001		2.46	2.50	-1.5	30.0
13C4-PFHpA	Ave	0.9371	0.996		2.66	2.50	6.3	30.0
18O2 PFHxS	Ave	1.328	1.380		2.46	2.37	3.9	30.0
M2-6:2FTS	Ave	0.2009	0.1955		2.31	2.38	-2.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234756/3 Calibration Date: 07/18/2018 16:57
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLAA_056.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9560	0.9756		2.55	2.50	2.0	30.0
13C4 PFOS	Ave	0.9742	0.9682		2.38	2.39	-0.6	30.0
13C5 PFNA	Ave	0.8546	0.8495		2.49	2.50	-0.6	30.0
13C8 FOSA	Ave	1.405	1.430		2.54	2.50	1.8	30.0
M2-8:2FTS	Ave	0.2939	0.2639		2.15	2.40	-10.2	30.0
13C2 PFDA	Ave	0.7503	0.7489		2.50	2.50	-0.2	30.0
d3-NMeFOSAA	Ave	0.3075	0.3078		2.50	2.50	0.0	30.0
d5-NEtFOSAA	Ave	0.3150	0.3474		2.76	2.50	10.3	30.0
13C2 PFUnA	Ave	0.6266	0.6528		2.60	2.50	4.2	30.0
13C2 PFDoA	Ave	0.6496	0.6505		2.50	2.50	0.1	30.0
13C2-PFTeDA	Ave	0.6740	0.6617		2.45	2.50	-1.8	30.0
13C2-PFHxDA	Ave	1.074	1.016		2.37	2.50	-5.4	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61249.b\2018.07.18LLAA_056.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 18-Jul-2018 16:57:30 ALS Bottle#: 14 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61249.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 10:21:35 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK025

First Level Reviewer: mongkols Date: 19-Jul-2018 10:21:35

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	1.430	1.424	0.006	0.524	4963068	2.35	94.0	51195	
2 Perfluorobutyric acid										M
212.90 > 169.00	1.430	1.430	0.0	1.000	4951192	2.53		101	2291	M
D 3 13C5-PFPeA	267.90 > 223.00	1.747	1.738	0.009	0.640	3459219	2.36	94.3	51465	
4 Perfluoropentanoic acid	262.90 > 219.00	1.747	1.747	0.0	1.000	4102696	2.44	97.8	2144	
D 47 13C3-PFBS	301.90 > 83.00	1.792	1.783	0.009	0.657	81635	2.21	95.2	576	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.792	1.792	0.0	1.000	6036782	2.25	102	50052	
298.90 > 99.00	1.792	1.792	0.0	1.000	2513519		2.40(1.25-3.74)		31520	
D 60 M2-4:2FTS	329.00 > 81.00	2.015	2.003	0.012	0.739	450241	NC		5987	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.015	2.015	0.0	1.124	1066759	2.34	100	46143	
D 7 13C2 PFHxA	315.00 > 270.00	2.060	2.049	0.011	0.755	3899551	2.46	98.5	96756	
6 Perfluorohexanoic acid	313.00 > 269.00	2.060	2.060	0.0	1.000	4205425	2.62	105	11620	
313.00 > 119.00	2.060	2.060	0.0	1.000	387647		10.85(5.03-15.10)		11199	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.083	2.083	0.0	1.162	6264024	2.56	109	78140	
349.00 > 99.00	2.083	2.083	0.0	1.162	2215998		2.83(1.36-4.07)		29841	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.162	2.139	0.023	0.792	259513	NC		6523	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.162	2.162	0.0	1.000	785578	NC		6969
D 9 13C4-PFHpA	367.00	> 322.00	2.385	2.372	0.013	0.874	3879046	2.66	106	49084
D 11 18O2 PFHxS	403.00	> 84.00	2.396	2.385	0.011	0.878	5081735	2.46	104	50307
10 Perfluoroheptanoic acid	363.00	> 319.00	2.385	2.385	0.0	1.000	4504451	2.51	100	10381
	363.00	> 169.00	2.385	2.385	0.0	1.000	1665000	2.71(1.13-3.40)		14694
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.396	2.396	0.0	1.000	5420411	2.20	96.6	26318
	399.00	> 99.00	2.396	2.396	0.0	1.000	1770723	3.06(1.50-4.49)		13567
D 12 M2-6:2FTS	429.00	> 81.00	2.705	2.690	0.015	0.992	723272	2.31	97.3	14606
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.705	2.705	0.0	1.000	1166582	2.45	103	17891
D 14 13C4 PFOA	417.00	> 372.00	2.728	2.713	0.015	1.000	3798679	2.55	102	37017
* 62 13C2-PFOA	415.00	> 370.00	2.728	2.728	0.0		3893737	2.50		36177
15 Perfluorooctanoic acid	413.00	> 369.00	2.728	2.728	0.0	1.000	4355346	2.33	93.0	2543
	413.00	> 169.00	2.728	2.728	0.0	1.000	2343131	1.86(0.84-2.52)		13032
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.736	2.736	0.0	0.887	5006740	2.52	106	40288
	449.00	> 99.00	2.736	2.736	0.0	0.887	1299458	3.85(1.94-5.82)		20679
D 18 13C4 PFOS	503.00	> 80.00	3.085	3.069	0.016	1.131	3603885	2.38	99.4	22771
D 19 13C5 PFNA	468.00	> 423.00	3.085	3.069	0.016	1.131	3307903	2.49	99.4	41394
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.085	3.085	0.0	1.000	4068531	2.38	103	35888
	499.00	> 99.00	3.085	3.085	0.0	1.000	917819	4.43(2.31-6.93)		22447
20 Perfluorononanoic acid	463.00	> 419.00	3.085	3.085	0.0	1.000	3639419	2.48	99.2	8143
	463.00	> 169.00	3.085	3.085	0.0	1.000	860414	4.23(1.90-5.69)		21511
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.294	3.294	0.0	1.068	6422188	NC		67766
D 21 13C8 FOSA	506.00	> 78.00	3.406	3.402	0.004	1.249	5567370	2.54	102	43197
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.406	3.406	0.0	1.000	5741894	2.62	105	51536
D 26 M2-8:2FTS	529.00	> 81.00	3.425	3.411	0.014	1.255	984347	2.15	89.8	12048
D 23 13C2 PFDA	515.00	> 470.00	3.434	3.421	0.013	1.259	2915926	2.50	99.8	40569

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.425	3.425	0.0	1.110	2954056	2.53		105	35164	
549.00 > 99.00	3.425	3.425	0.0	1.110	1114311		2.65(1.33-3.97)		17866	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.425	3.425	0.0	1.000	1238961	2.34		97.6	13519	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.434	3.434	0.0	1.000	3083804	2.52		101	21258	
513.00 > 169.00	3.434	3.434	0.0	1.000	552362		5.58(2.36-7.09)		17534	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.585	3.570	0.015	1.314	1198423	2.50		100	19443	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.596	3.596	0.0	1.003	1282434	2.71		109	10313	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.750	3.733	0.017	1.375	1352494	2.76		110	2916	
D 30 13C2 PFUnA										
565.00 > 520.00	3.761	3.733	0.028	1.379	2541987	2.60		104	37338	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.740	3.740	0.0	1.212	2599775	2.57		107	26602	
599.00 > 99.00	3.740	3.740	0.0	1.212	870901		2.99(1.39-4.16)		35706	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.761	3.761	0.0	1.003	1187696	2.48		99.3	13449	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.761	3.761	0.0	1.000	1875251	2.25		90.0	8552	
563.00 > 169.00	3.761	3.761	0.0	1.000	512661		3.66(2.12-6.36)		17337	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.919	3.919	0.0	1.270	10144752	NC			93043	
D 36 13C2 PFDaA										
615.00 > 570.00	4.051	4.023	0.028	1.485	2532683	2.50		100	22339	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.051	4.051	0.0	1.000	2861689	2.59		103	1598	
613.00 > 169.00	4.051	4.051	0.0	1.000	662700		4.32(2.13-6.40)		12723	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.308	4.308	0.0	1.063	2812338	2.60		104	1212	
663.00 > 169.00	4.308	4.308	0.0	1.063	888647		3.16(1.25-3.76)		15656	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.554	4.528	0.026	1.669	2576568	2.45		98.2	15258	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.554	4.554	0.0	1.000	625689	2.33		93.3	7357	
713.00 > 219.00	4.544	4.554	-0.010	0.998	463883		1.35(0.71-2.13)		8132	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.967	4.936	0.031	1.821	3955064	2.37		94.6	11749	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.967	4.967	0.0	1.000	3950043	NC			847	
813.00 > 169.00	4.967	4.967	0.0	1.000	613554		6.44(2.86-8.58)		4714	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.329	5.329	0.0	1.073	4128806	NC			846	
913.00 > 169.00	5.329	5.329	0.0	1.073	492126		8.39(3.83-11.48)		4762	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL5_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61249.b\2018.07.18LLAA_056.d

Injection Date: 18-Jul-2018 16:57:30

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

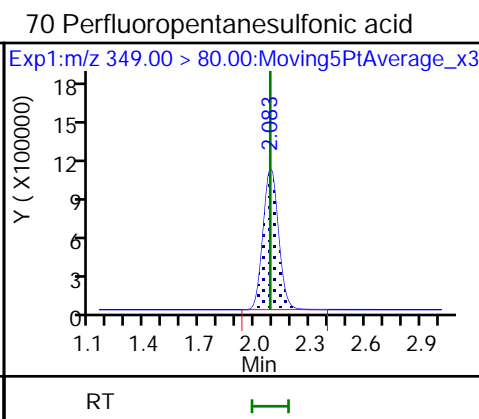
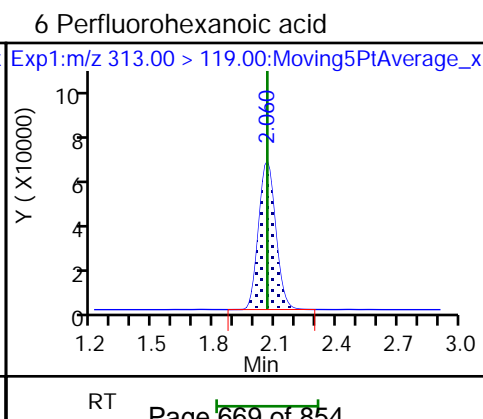
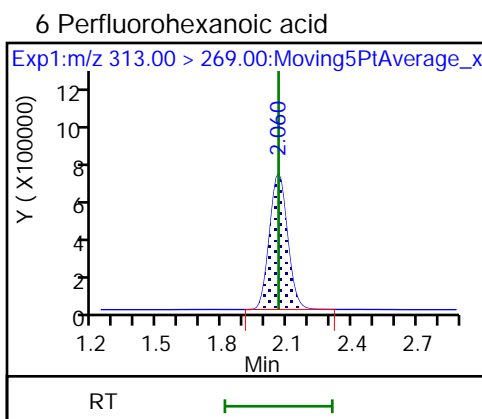
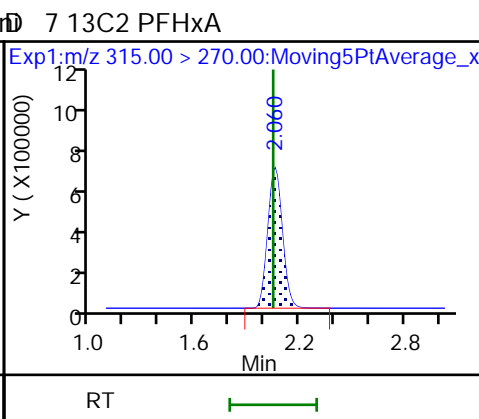
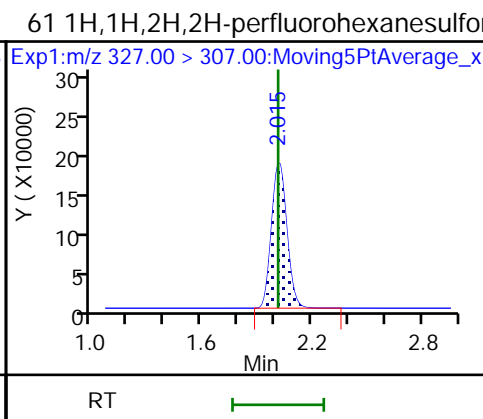
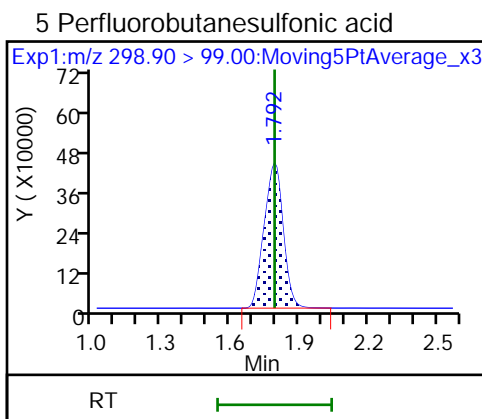
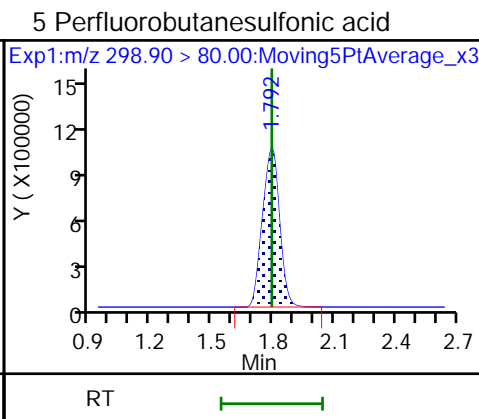
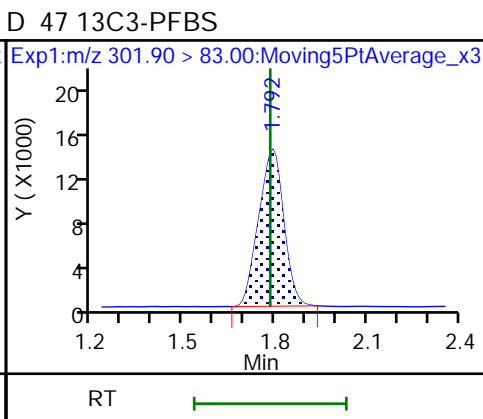
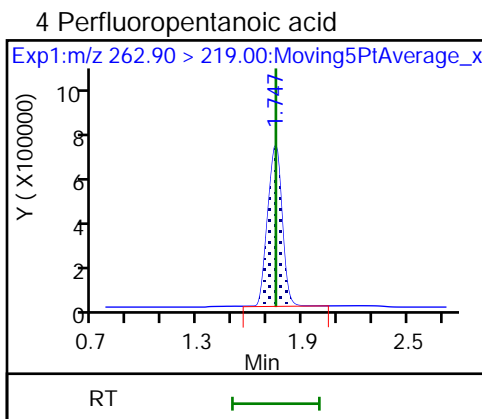
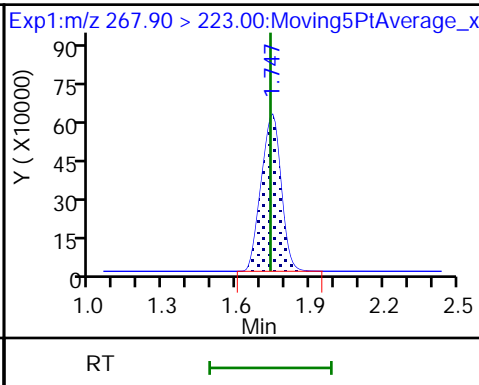
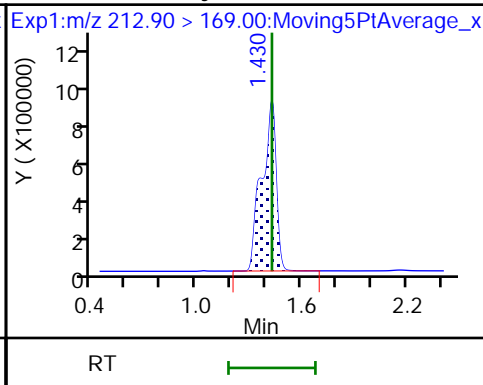
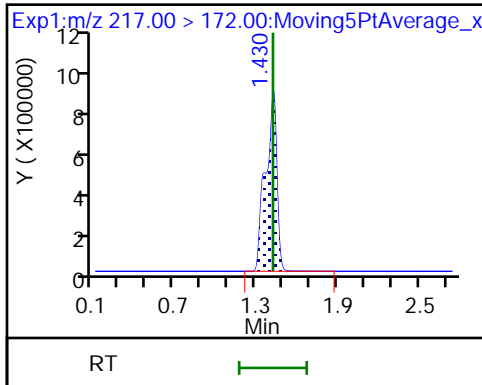
Method: A8_N

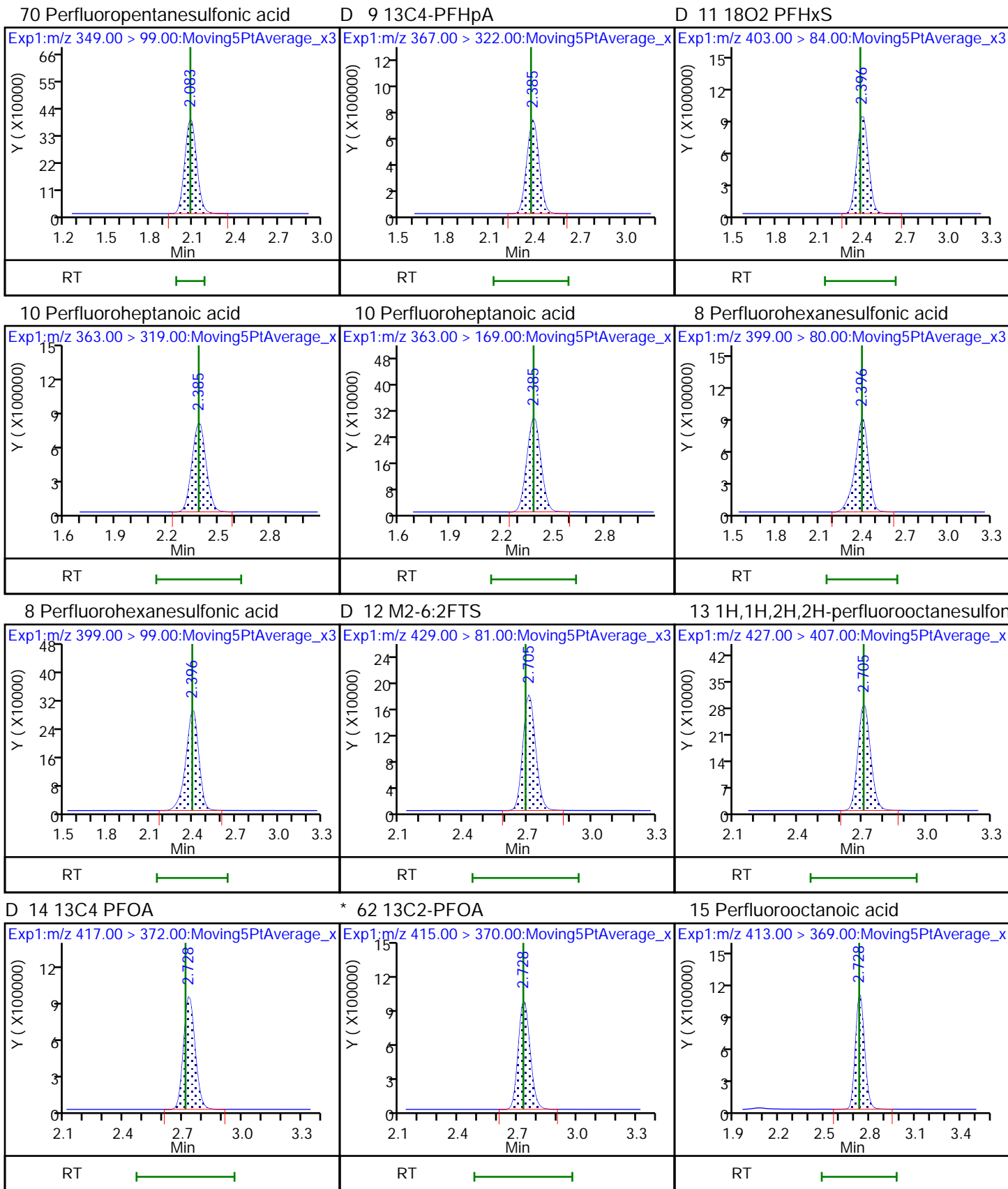
Limit Group: LC PFC_QSM5-1 ICAL

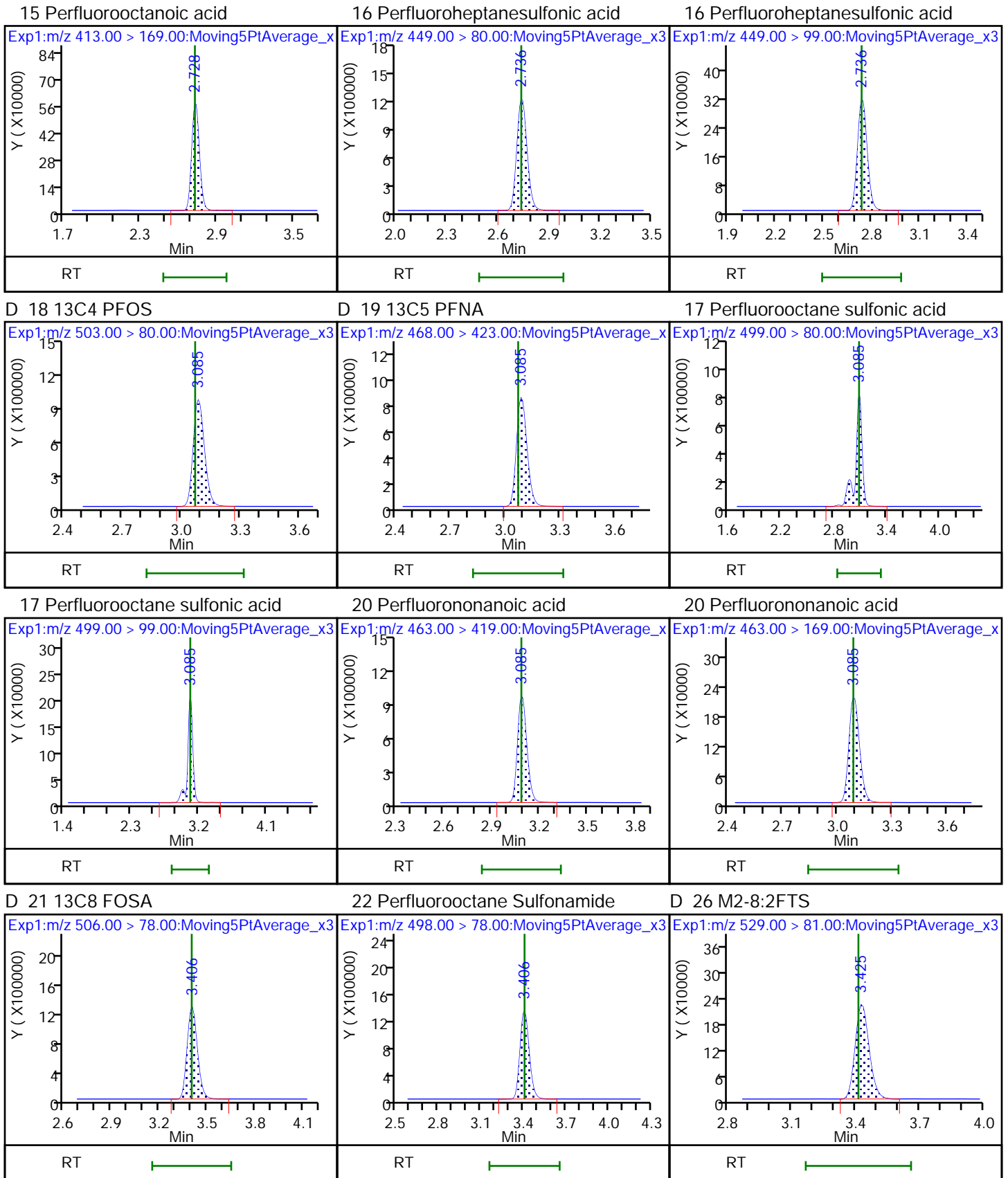
D 1 13C4 PFBA

2 Perfluorobutyric acid (M)

D 3 13C5-PFPeA



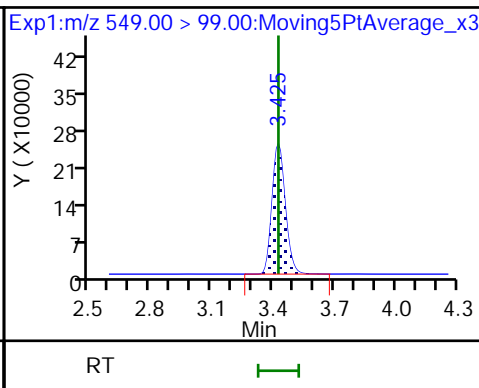
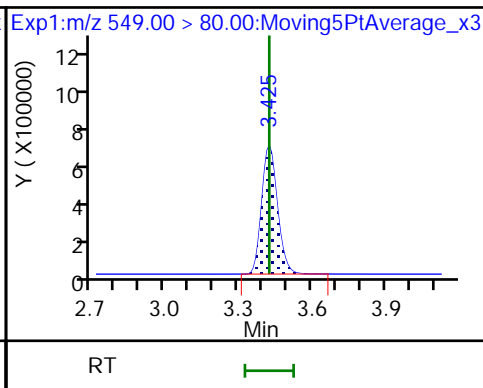
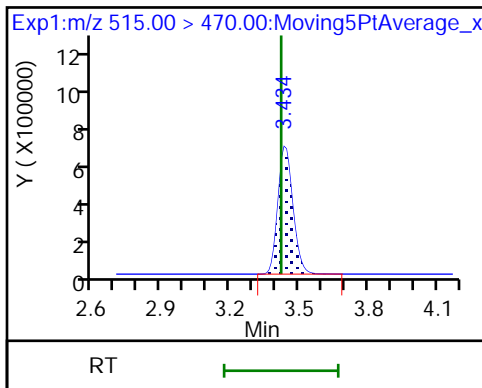




D 23 13C2 PFDA

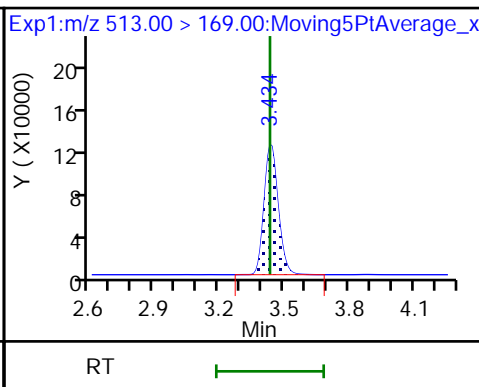
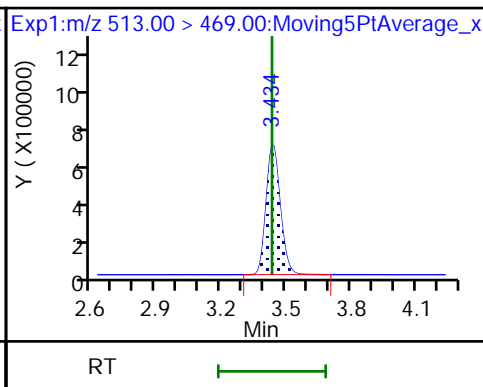
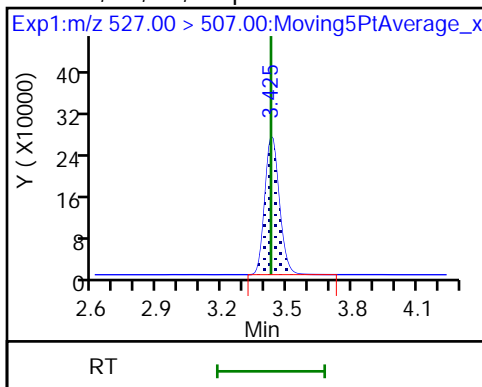
68 Perfluorononanesulfonic acid

68 Perfluorononanesulfonic acid



25 1H,1H,2H,2H-perfluorodecanesulfoni 24 Perfluorodecanoic acid

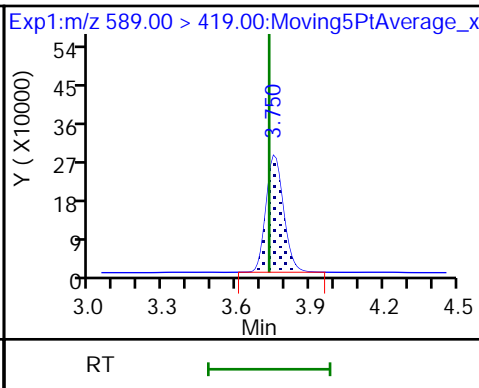
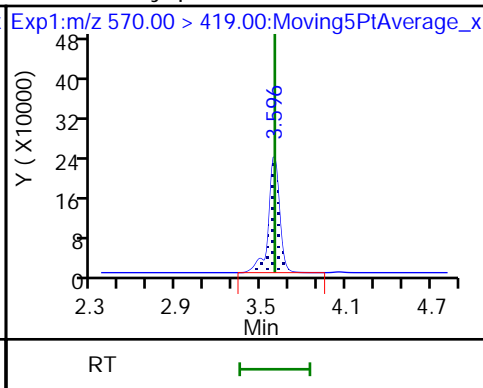
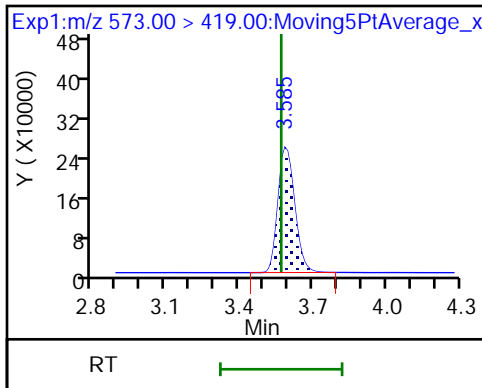
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonamiD

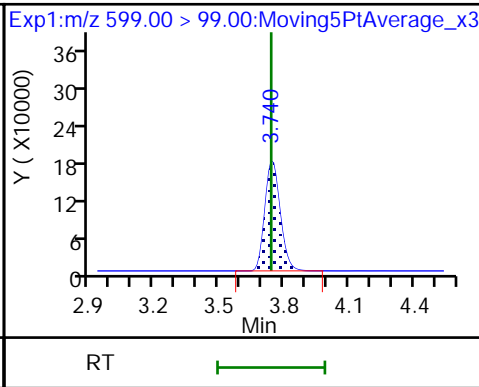
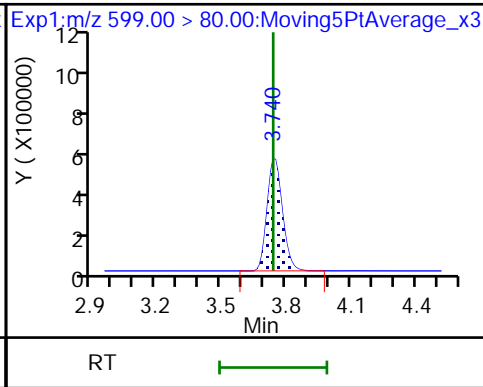
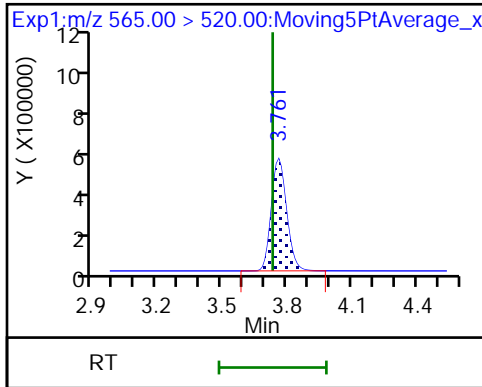
32 d5-NEtFOSAA



D 30 13C2 PFUnA

29 Perfluorodecane Sulfonic acid

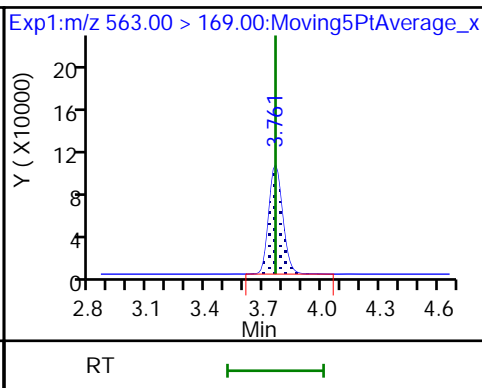
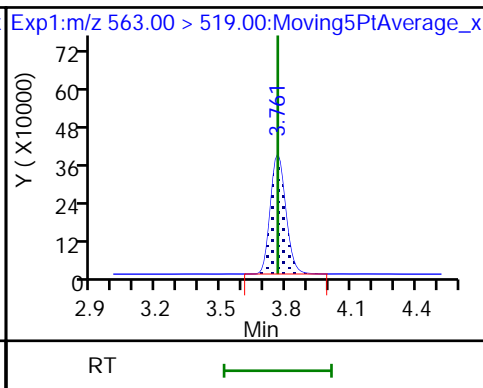
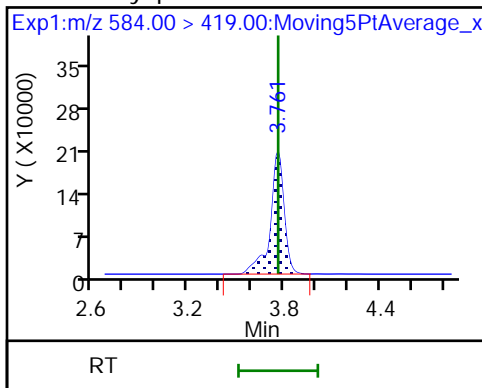
29 Perfluorodecane Sulfonic acid



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

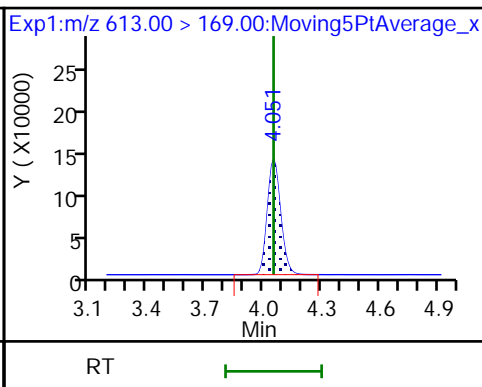
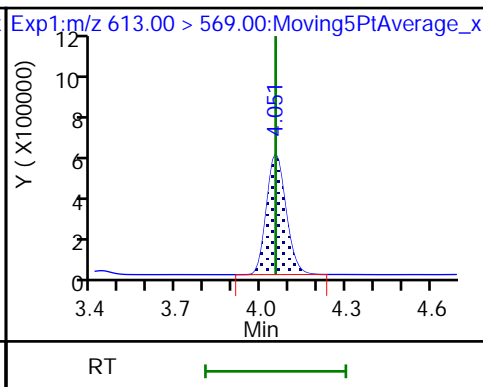
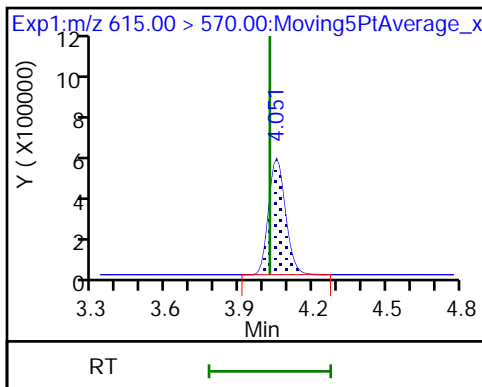
31 Perfluoroundecanoic acid



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

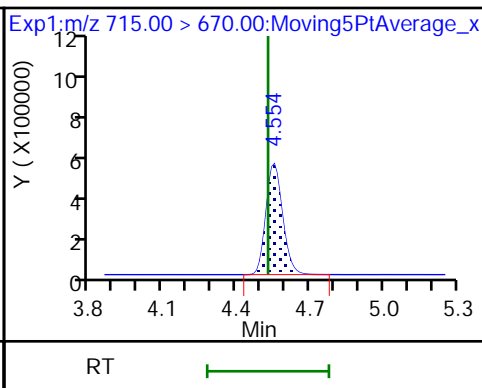
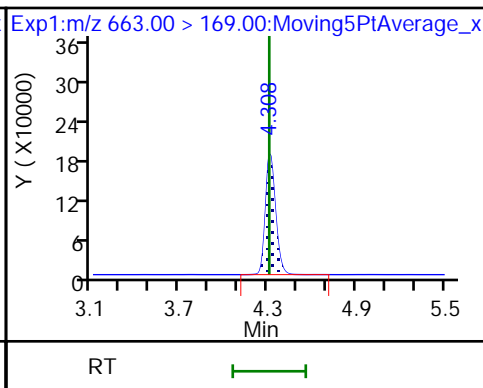
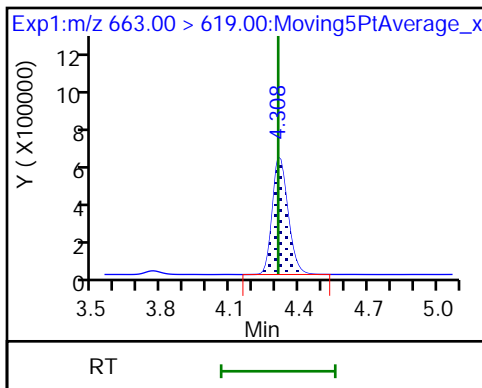
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

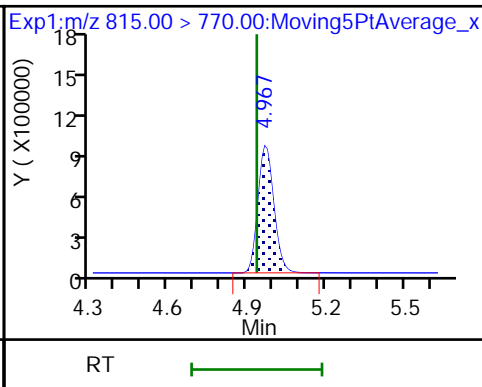
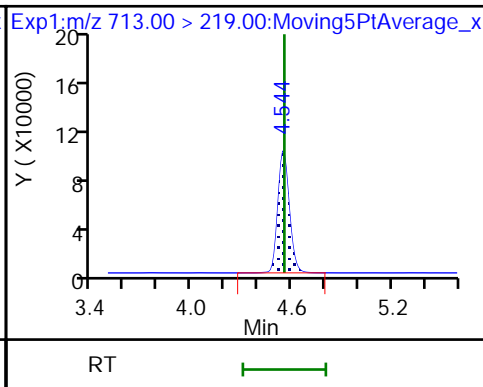
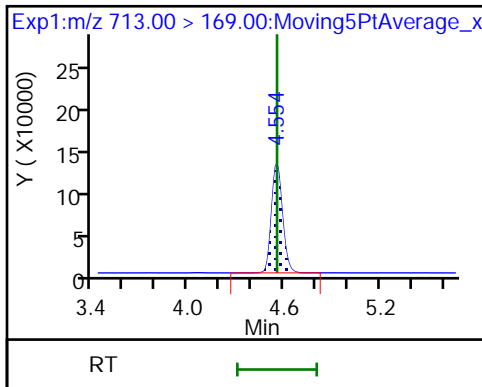
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA



TestAmerica Sacramento

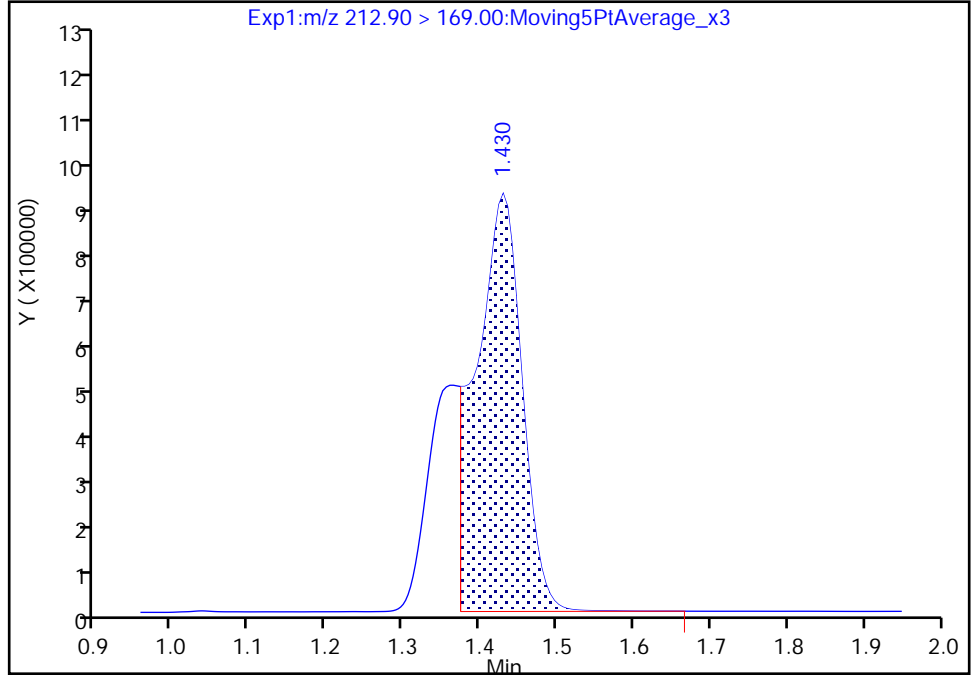
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61249.b\2018.07.18LLAA_056.d
Injection Date: 18-Jul-2018 16:57:30 Instrument ID: A8_N
Lims ID: CCV L5
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 14 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

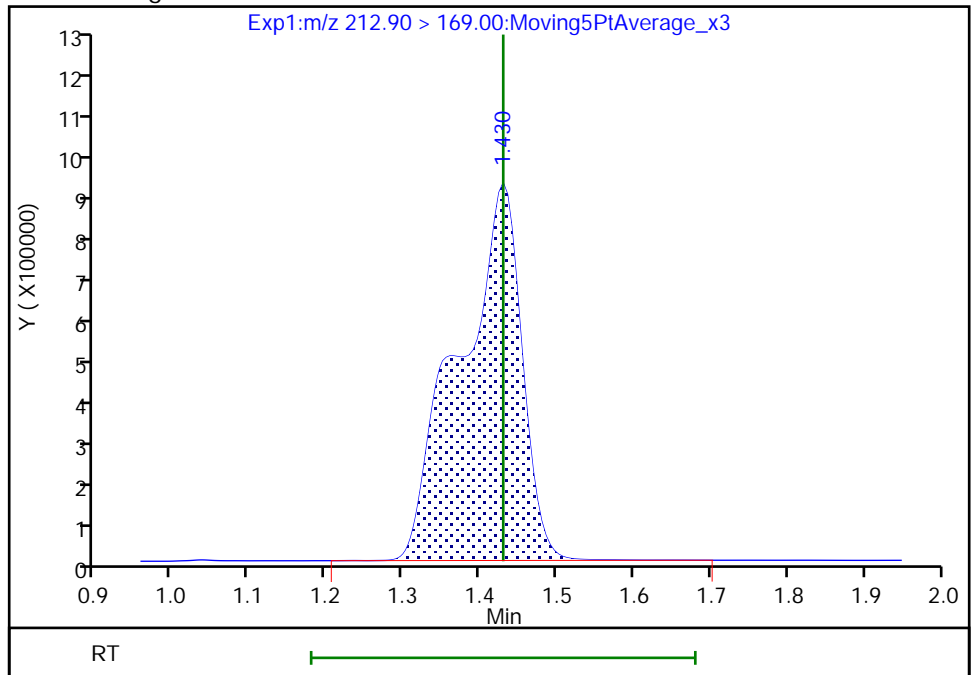
RT: 1.43
Area: 3589016
Amount: 1.834319
Amount Units: ng/ml

Processing Integration Results



RT: 1.43
Area: 4951192
Amount: 2.530517
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 10:21:21
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234762/1 Calibration Date: 07/18/2018 22:41
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLB_060.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9660		2.45	2.50	-2.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.156		2.38	2.50	-4.7	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	80.24		2.32	2.21	4.9	30.0
4:2 FTS	AveID	13.00	13.90		2.50	2.34	7.0	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.075		2.61	2.50	4.5	30.0
Perfluoropentanesulfonic acid	AveID	69.78	78.78		2.65	2.35	12.9	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.123		2.43	2.50	-2.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.102		2.18	2.28	-4.0	30.0
6:2 FTS	AveID	1.564	1.588		2.41	2.37	1.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.445		2.61	2.38	9.7	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.212		2.46	2.50	-1.6	30.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.120		2.52	2.50	0.9	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.170		2.40	2.32	3.3	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.027		2.61	2.50	4.2	30.0
8:2 FTS	AveID	1.290	1.397		2.59	2.40	8.3	30.0
Perfluorononanesulfonic acid	AveID	0.7752	0.7945		2.46	2.40	2.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.095		2.61	2.50	4.3	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9729		2.47	2.50	-1.3	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6994		2.51	2.41	4.2	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8483		2.40	2.50	-4.0	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7555		2.30	2.50	-7.8	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.186		2.72	2.50	8.6	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.250		2.93	2.50	17.1	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2520		2.42	2.50	-3.2	30.0
13C4 PFBA	Ave	1.356	1.334		2.46	2.50	-1.6	30.0
13C5 PFPeA	Ave	0.9425	0.8962		2.38	2.50	-4.9	30.0
13C3-PFBS	Ave	0.0237	0.0218		2.14	2.33	-8.1	30.0
13C2 PFHxA	Ave	1.017	0.995		2.45	2.50	-2.1	30.0
13C4-PFHpA	Ave	0.9371	0.9884		2.64	2.50	5.5	30.0
18O2 PFHxS	Ave	1.328	1.334		2.38	2.37	0.5	30.0
M2-6:2FTS	Ave	0.2009	0.2137		2.53	2.38	6.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234762/1 Calibration Date: 07/18/2018 22:41
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLB_060.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9560	0.9403		2.46	2.50	-1.6	30.0
13C4 PFOS	Ave	0.9742	0.9317		2.29	2.39	-4.4	30.0
13C5 PFNA	Ave	0.8546	0.8468		2.48	2.50	-0.9	30.0
13C8 FOSA	Ave	1.405	1.368		2.43	2.50	-2.6	30.0
M2-8:2FTS	Ave	0.2939	0.3375		2.75	2.40	14.8	30.0
13C2 PFDA	Ave	0.7503	0.7697		2.56	2.50	2.6	30.0
d3-NMeFOSAA	Ave	0.3075	0.3669		2.98	2.50	19.3	30.0
13C2 PFUnA	Ave	0.6266	0.6545		2.61	2.50	4.5	30.0
d5-NEtFOSAA	Ave	0.3150	0.3796		3.01	2.50	20.5	30.0
13C2 PFDoA	Ave	0.6496	0.6344		2.44	2.50	-2.3	30.0
13C2-PFTeDA	Ave	0.6740	0.6883		2.55	2.50	2.1	30.0
13C2-PFHxDA	Ave	1.074	1.063		2.47	2.50	-1.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_060.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 18-Jul-2018 22:41:42 ALS Bottle#: 14 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*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 14:16:43 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols Date: 19-Jul-2018 14:16:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid	212.90 > 169.00	1.430	1.430	0.0	1.000	4796241	2.45	98.0	1539	
D 1 13C4 PFBA	217.00 > 172.00	1.430	1.436	-0.006	0.527	4965156	2.46	98.4	49834	
4 Perfluoropentanoic acid	262.90 > 219.00	1.748	1.748	0.0	1.005	3855254	2.38	95.3	1578	
D 3 13C5-PFPeA	267.90 > 223.00	1.739	1.748	-0.009	0.641	3335061	2.38	95.1	48010	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.793	1.793	0.0	1.005	5745649	2.32	105	46657	
	298.90 > 99.00	1.793	1.793	0.0	1.005	2314951	2.48(1.25-3.74)		30365	
D 47 13C3-PFBS	301.90 > 83.00	1.784	1.793	-0.009	0.657	75329	2.14	91.9	493	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.015	2.015	0.0	1.130	1051860	2.50	107	44940	
D 60 M2-4:2FTS	329.00 > 81.00	2.015	2.016	-0.001	0.743	451823	NC		5502	
6 Perfluorohexanoic acid	313.00 > 269.00	2.049	2.049	0.0	1.000	3983019	2.61	104	9905	
	313.00 > 119.00	2.049	2.049	0.0	1.000	360227	11.06(5.03-15.10)		5563	
D 7 13C2 PFHxA	315.00 > 270.00	2.049	2.061	-0.012	0.755	3704006	2.45	97.9	62980	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.072	2.072	0.0	1.162	5985300	2.65	113	71878	
	349.00 > 99.00	2.072	2.072	0.0	1.162	2099721	2.85(1.36-4.07)		39434	
67 Perfluoro(2-propoxypropanoic) acid	329.10 > 285.00	2.151	2.151	0.0	1.000	723115	NC		6293	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.151	2.152	-0.001	0.793	216039	NC			5225	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.373	2.373	0.0	1.000	4130077	2.43		97.1	7517	
363.00 > 169.00	2.373	2.373	0.0	1.000	1515164		2.73(1.13-3.40)		12894	
D 9 13C4-PFHpA										
367.00 > 322.00	2.373	2.385	-0.012	0.875	3677983	2.64		105	41926	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.385	2.385	0.0	1.000	4978494	2.18		96.0	23932	
399.00 > 99.00	2.385	2.385	0.0	1.000	1629748		3.05(1.50-4.49)		9050	
D 11 18O2 PFHxS										
403.00 > 84.00	2.385	2.396	-0.011	0.879	4695776	2.38		100	33897	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.691	2.691	0.0	1.000	1197150	2.41		102	17505	
D 12 M2-6:2FTS										
429.00 > 81.00	2.691	2.698	-0.007	0.992	755430	2.53		106	17948	
* 62 13C2-PFOA										
415.00 > 370.00	2.714	2.714	0.0		3721178	2.50			34888	
D 14 13C4 PFOA										
417.00 > 372.00	2.714	2.720	-0.006	1.000	3498953	2.46		98.4	41186	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.721	2.721	0.0	1.003	4245863	2.46		98.4	2221	
413.00 > 169.00	2.721	2.721	0.0	1.003	2129072		1.99(0.84-2.52)		8034	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.721	2.721	0.0	0.887	4771015	2.61		110	56101	
449.00 > 99.00	2.721	2.721	0.0	0.887	1222948		3.90(1.94-5.82)		26111	
D 18 13C4 PFOS										
503.00 > 80.00	3.069	3.076	-0.007	1.131	3314602	2.29		95.6	23184	
D 19 13C5 PFNA										
468.00 > 423.00	3.076	3.076	0.0	1.134	3151061	2.48		99.1	37271	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.076	3.076	0.0	1.002	3766018	2.40		103	32886	
499.00 > 99.00	3.076	3.076	0.0	1.002	818880		4.60(2.31-6.93)		14978	
20 Perfluorononanoic acid										
463.00 > 419.00	3.076	3.076	0.0	1.000	3528110	2.52		101	6652	
463.00 > 169.00	3.076	3.076	0.0	1.000	822841		4.29(1.90-5.69)		14365	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.277	3.277	0.0	1.067	6135685	NC			43925	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.403	3.403	0.0	1.000	5228933	2.61		104	25400	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.412	3.412	0.0	1.112	2644453	2.46		102	54261	
549.00 > 99.00	3.412	3.412	0.0	1.112	1007354		2.63(1.33-3.97)		18802	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.412	3.412	0.0	1.000	1680324	2.59		108	28143	
D 21 13C8 FOSA										
506.00 > 78.00	3.403	3.412	-0.009	1.254	5089136	2.43		97.4	40782	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.421	3.421	0.0	1.000	3135229	2.61		104	16447	
513.00 > 169.00	3.421	3.421	0.0	1.000	514503		6.09(2.36-7.09)		18731	
D 26 M2-8:2FTS										
529.00 > 81.00	3.412	3.421	-0.009	1.257	1203122	2.75		115	15303	
D 23 13C2 PFDA										
515.00 > 470.00	3.421	3.430	-0.009	1.261	2864240	2.56		103	37310	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.579	3.579	0.0	1.003	1328108	2.47		98.7	10560	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.570	3.579	-0.009	1.316	1365143	2.98		119	36430	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.733	3.733	0.0	1.216	2337543	2.51		104	48390	
599.00 > 99.00	3.733	3.733	0.0	1.216	776400		3.01(1.39-4.16)		15945	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.744	3.744	0.0	1.380	1412469	3.01		120	3893	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.744	3.744	0.0	1.000	1839848	2.30		92.2	10171	
563.00 > 169.00	3.744	3.744	0.0	1.000	497951		3.69(2.12-6.36)		12701	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.744	3.744	0.0	1.000	1198151	2.40		96.0	19977	
D 30 13C2 PFUnA										
565.00 > 520.00	3.744	3.754	-0.010	1.380	2435321	2.61		104	33153	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.902	3.902	0.0	1.271	9169372	NC			88093	
D 36 13C2 PFDaA										
615.00 > 570.00	4.035	4.034	0.001	1.487	2360806	2.44		97.7	19919	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.035	4.035	0.0	1.000	2800582	2.72		109	1730	
613.00 > 169.00	4.035	4.035	0.0	1.000	652074		4.29(2.13-6.40)		15157	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.295	4.295	0.0	1.065	2950464	2.93		117	1442	
663.00 > 169.00	4.295	4.295	0.0	1.065	906265		3.26(1.25-3.76)		16116	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.529	4.529	0.0	1.000	645329	2.42		96.8	11301	
713.00 > 219.00	4.529	4.529	0.0	1.000	483359		1.34(0.71-2.13)		6435	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.529	4.540	-0.011	1.669	2561273	2.55		102	18083	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.947	4.947	0.0	1.000	4206140	NC			1026	
813.00 > 169.00	4.947	4.947	0.0	1.000	644937		6.52(2.86-8.58)		4551	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.947	4.947	0.0	1.823	3954999	2.47		99.0	13557	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.297	5.297	0.0	1.071	3993067	NC			866	
913.00 > 169.00	5.297	5.297	0.0	1.071	483672		8.26(3.83-11.48)		3731	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC_LL5_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_060.d

Injection Date: 18-Jul-2018 22:41:42

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

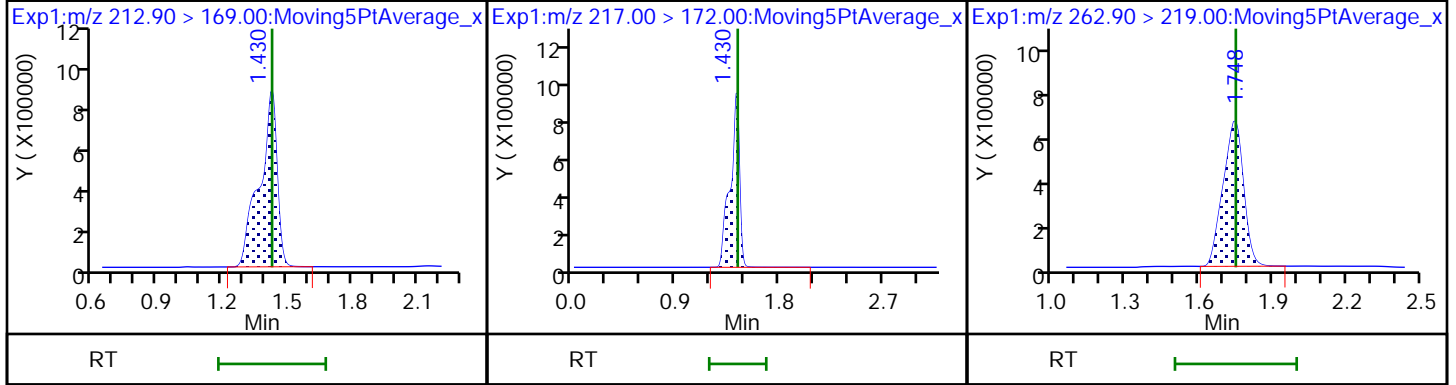
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

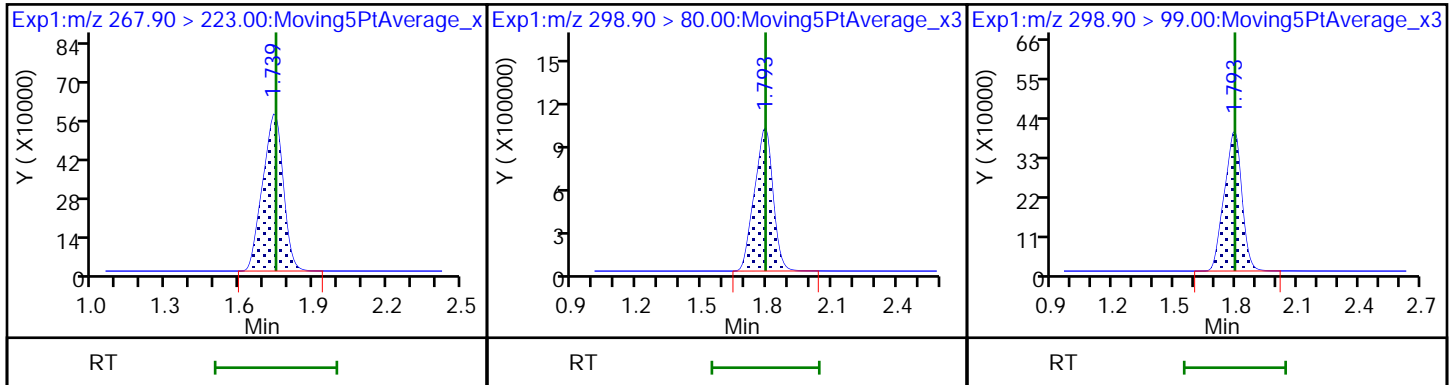
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

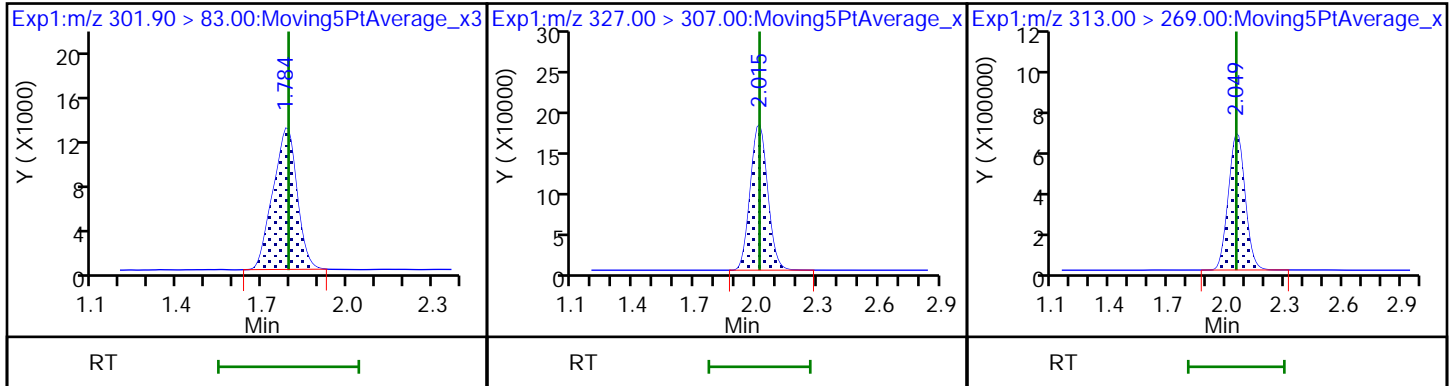
5 Perfluorobutanesulfonic acid



D 47 13C3-PFBS

61 1H,1H,2H,2H-perfluorohexanesulfoni

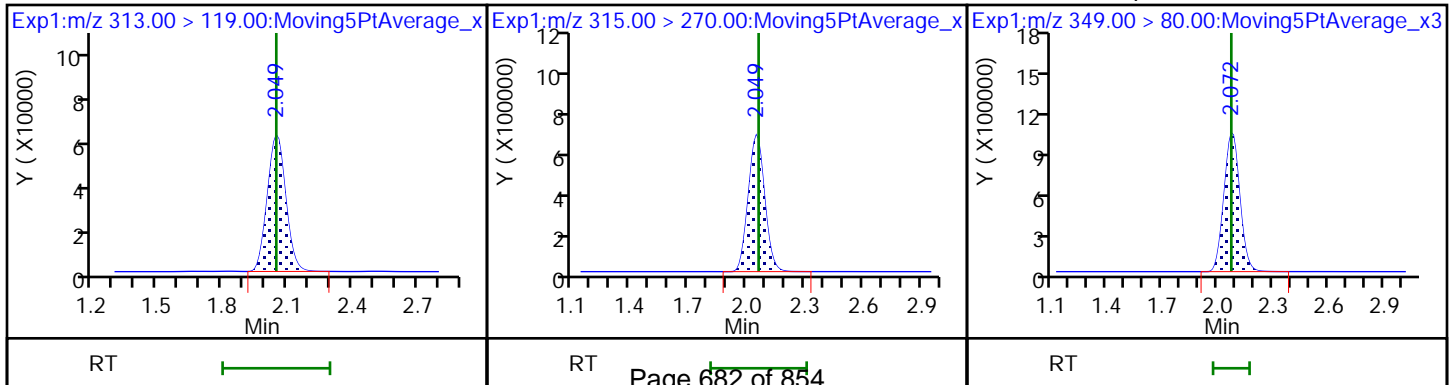
6 Perfluorohexanoic acid

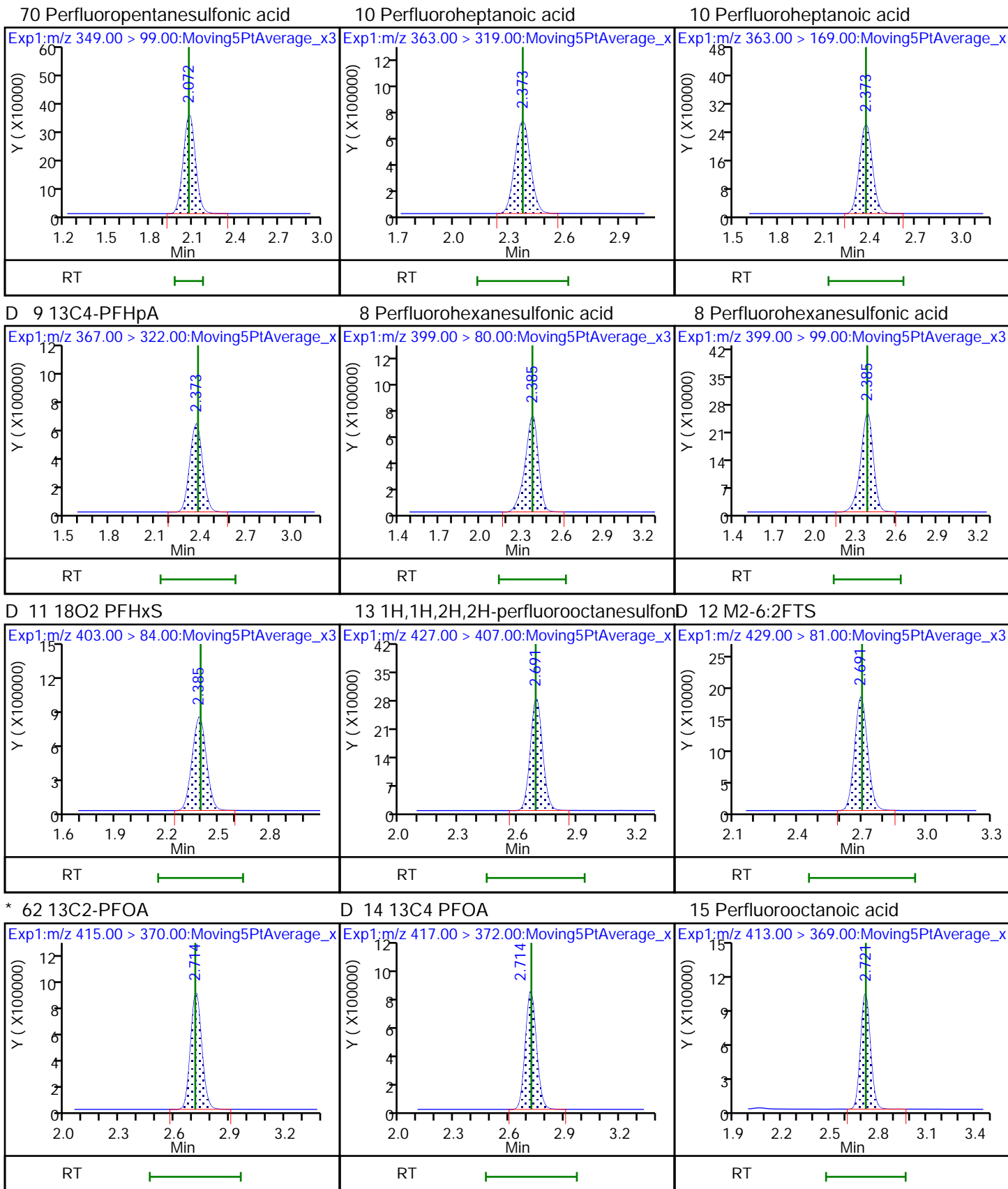


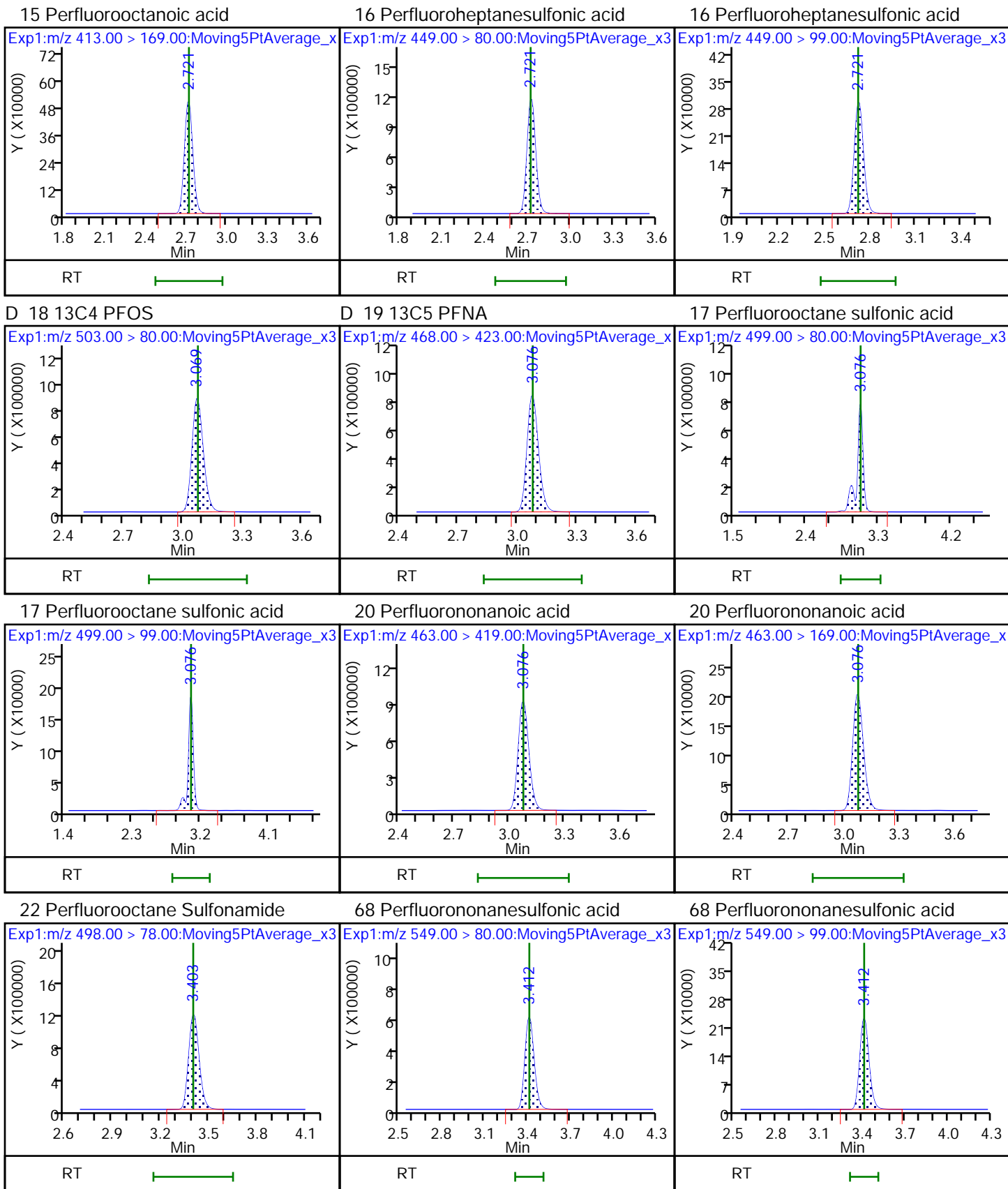
6 Perfluorohexanoic acid

D 7 13C2 PFHxA

70 Perfluoropentanesulfonic acid

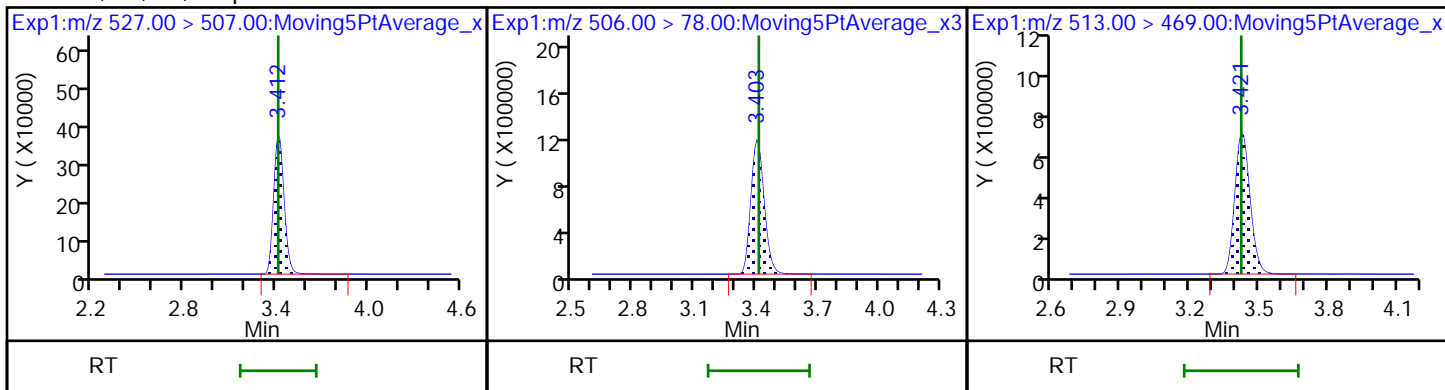






25 1H,1H,2H,2H-perfluorodecanesulfonamide D 21 13C8 FOSA

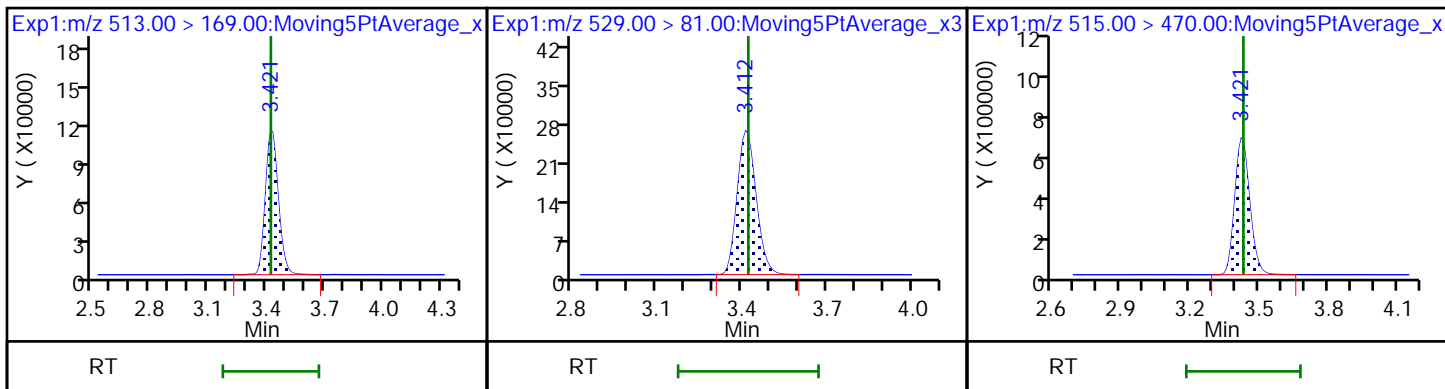
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

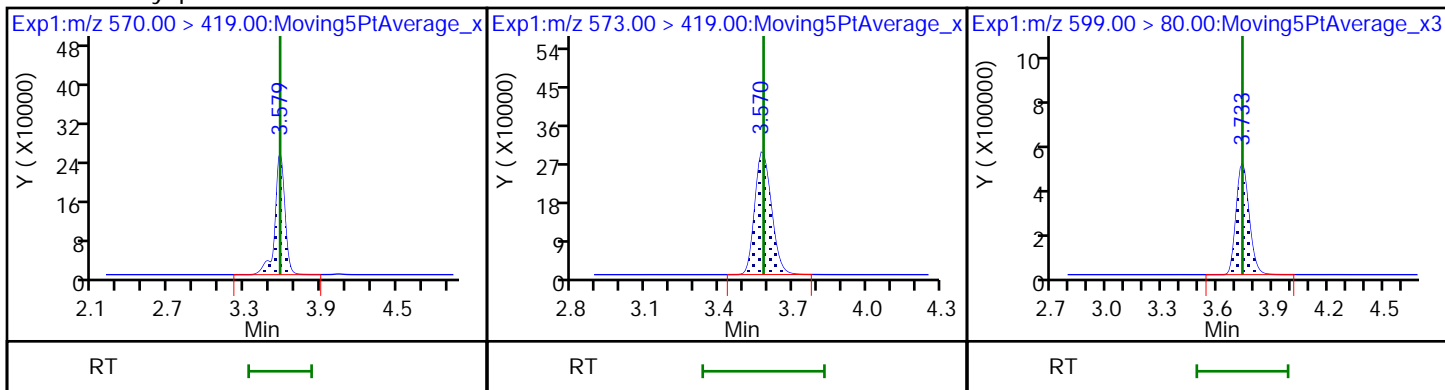
D 26 M2-8:2FTS

D 23 13C2 PFDA



28 N-methyl perfluorooctane sulfonamide D 27 d3-NMeFOSAA

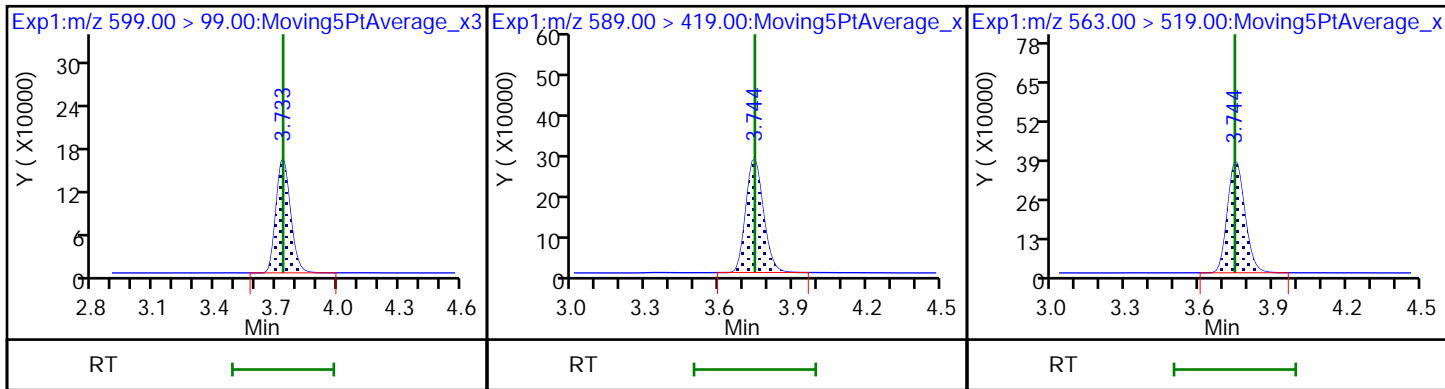
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

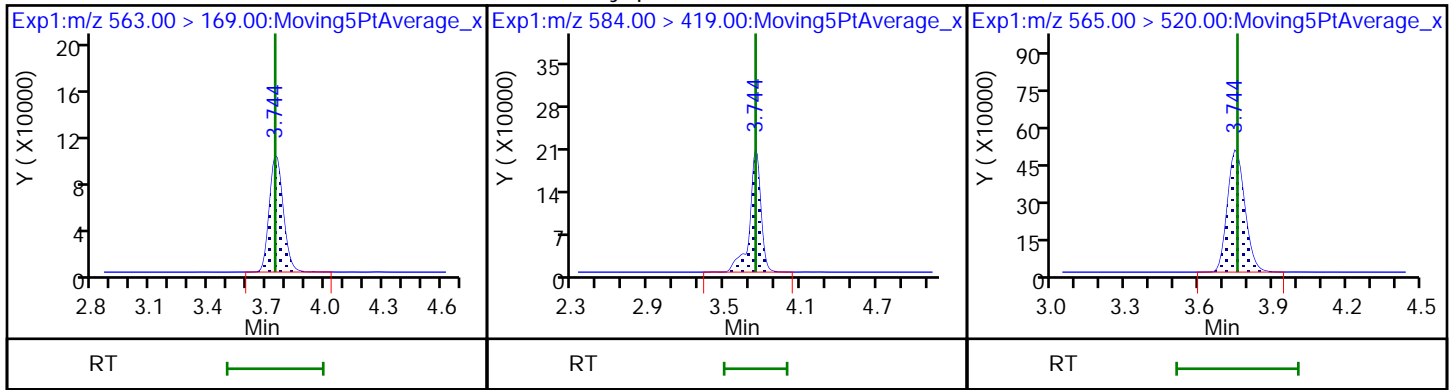
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



31 Perfluoroundecanoic acid

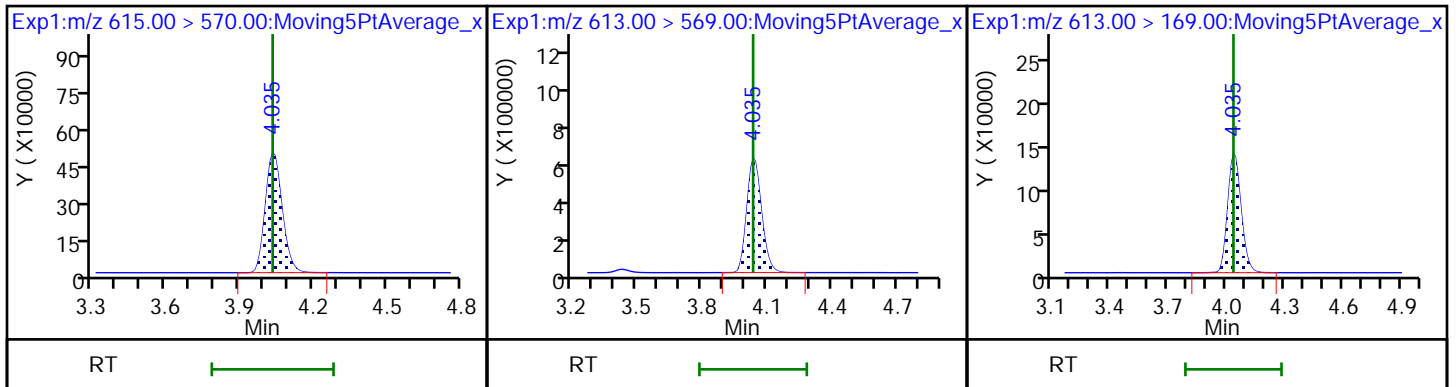
33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

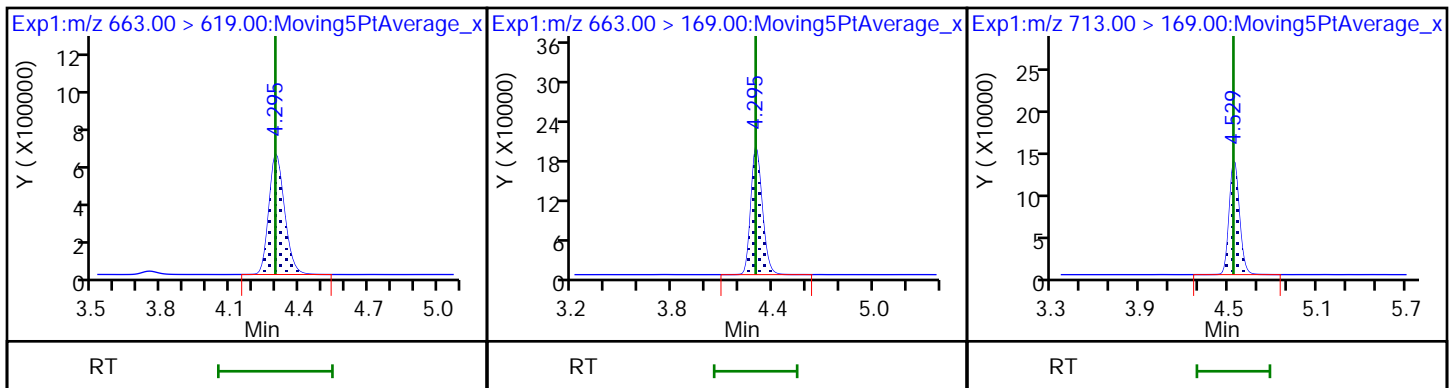
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

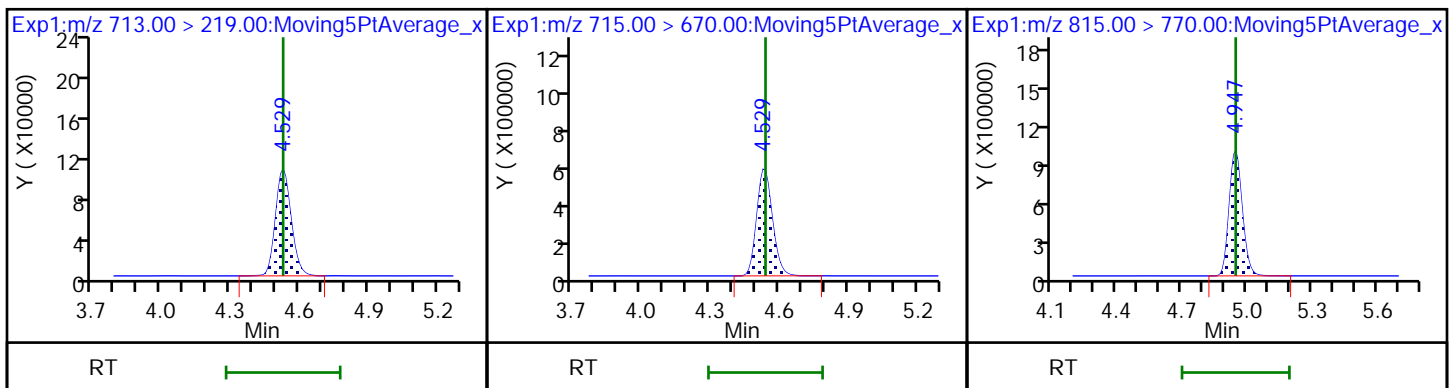
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234762/9 Calibration Date: 07/18/2018 23:44
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLB_068.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9776		0.992	1.00	-0.8	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.176		0.969	1.00	-3.1	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	76.32		0.882	0.884	-0.2	30.0
4:2 FTS	AveID	13.00	13.62		0.978	0.934	4.7	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.032		1.00	1.00	0.3	30.0
Perfluoropentanesulfonic acid	AveID	69.78	73.38		0.986	0.938	5.2	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.171		1.01	1.00	1.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.103		0.874	0.910	-3.9	30.0
6:2 FTS	AveID	1.564	1.629		0.987	0.948	4.1	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.154		0.938	1.00	-6.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.321		0.955	0.952	0.3	30.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.071		0.965	1.00	-3.5	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.097		0.898	0.928	-3.2	30.0
Perfluorononanesulfonic acid	AveID	0.7752	0.7655		0.948	0.960	-1.3	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.016		1.03	1.00	3.1	30.0
8:2 FTS	AveID	1.290	1.184		0.880	0.958	-8.2	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.030		0.981	1.00	-1.9	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9528		0.967	1.00	-3.3	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6313		0.906	0.964	-6.0	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8347		0.944	1.00	-5.6	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7986		0.974	1.00	-2.6	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.042		0.954	1.00	-4.6	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.055		0.988	1.00	-1.2	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2561		0.984	1.00	-1.6	30.0
13C4 PFBA	Ave	1.356	1.307		2.41	2.50	-3.6	30.0
13C5 PFPeA	Ave	0.9425	0.8799		2.33	2.50	-6.6	30.0
13C3-PFBS	Ave	0.0237	0.0226		2.21	2.33	-4.8	30.0
13C2 PFHxA	Ave	1.017	1.018		2.50	2.50	0.1	30.0
13C4-PFHpA	Ave	0.9371	0.9617		2.57	2.50	2.6	30.0
18O2 PFHxS	Ave	1.328	1.357		2.42	2.37	2.2	30.0
M2-6:2FTS	Ave	0.2009	0.2131		2.52	2.38	6.1	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234762/9 Calibration Date: 07/18/2018 23:44
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLB_068.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9560	0.9653		2.52	2.50	1.0	30.0
13C4 PFOS	Ave	0.9742	0.9728		2.39	2.39	-0.1	30.0
13C5 PFNA	Ave	0.8546	0.8357		2.44	2.50	-2.2	30.0
13C8 FOSA	Ave	1.405	1.390		2.47	2.50	-1.0	30.0
M2-8:2FTS	Ave	0.2939	0.2926		2.38	2.40	-0.4	30.0
13C2 PFDA	Ave	0.7503	0.7692		2.56	2.50	2.5	30.0
d3-NMeFOSAA	Ave	0.3075	0.3329		2.71	2.50	8.2	30.0
d5-NEtFOSAA	Ave	0.3150	0.3655		2.90	2.50	16.0	30.0
13C2 PFUnA	Ave	0.6266	0.6264		2.50	2.50	-0.0	30.0
13C2 PFDoA	Ave	0.6496	0.6680		2.57	2.50	2.8	30.0
13C2-PFTeDA	Ave	0.6740	0.6405		2.38	2.50	-5.0	30.0
13C2-PFHxDA	Ave	1.074	0.9858		2.30	2.50	-8.2	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_068.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 18-Jul-2018 23:44:17 ALS Bottle#: 13 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*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 14:27:19 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols Date: 19-Jul-2018 14:27:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid	212.90 > 169.00	1.430	1.430	0.0	1.000	1903290	0.99	99.2	769	
D 1 13C4 PFBA	217.00 > 172.00	1.430	1.436	-0.006	0.527	4867492	2.41	96.4	77664	
4 Perfluoropentanoic acid	262.90 > 219.00	1.747	1.747	0.0	1.000	1541364	0.9694	96.9	715	
D 3 13C5-PFPeA	267.90 > 223.00	1.747	1.748	-0.001	0.644	3276566	2.33	93.4	39859	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.792	1.792	0.0	1.000	2266226	0.8820	99.8	22678	
	298.90 > 99.00	1.792	1.792	0.0	1.000	936417	2.42(1.25-3.74)		14183	
D 47 13C3-PFBS	301.90 > 83.00	1.792	1.793	-0.001	0.661	78094	2.21	95.2	581	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.015	2.015	0.0	1.124	427158	0.9783	105	24163	
D 60 M2-4:2FTS	329.00 > 81.00	2.015	2.016	-0.001	0.743	444541	NC		7635	
6 Perfluorohexanoic acid	313.00 > 269.00	2.049	2.049	0.0	1.000	1565391	1.00	100	4435	
	313.00 > 119.00	2.049	2.049	0.0	1.000	145713	10.74(5.03-15.10)		4130	
D 7 13C2 PFHxA	315.00 > 270.00	2.049	2.061	-0.012	0.755	3791598	2.50	100	64603	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.071	2.071	0.0	1.156	2311789	0.9863	105	38634	
	349.00 > 99.00	2.071	2.071	0.0	1.156	800261	2.89(1.36-4.07)		16720	
67 Perfluoro(2-propoxypropanoic) acid	329.10 > 285.00	2.150	2.150	0.0	1.000	287610	NC		2466	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.150	2.152	-0.002	0.793	227073	NC			4887	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.372	2.372	0.0	1.000	1677132	1.01		101	3985	
363.00 > 169.00	2.372	2.372	0.0	1.000	630112		2.66(1.13-3.40)		5658	
D 9 13C4-PFHpA										
367.00 > 322.00	2.372	2.385	-0.013	0.875	3581243	2.57		103	40693	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.385	2.385	0.0	1.000	2029431	0.8744		96.1	13666	
399.00 > 99.00	2.385	2.385	0.0	1.000	633362		3.20(1.50-4.49)		4746	
D 11 18O2 PFHxS										
403.00 > 84.00	2.385	2.396	-0.011	0.879	4781852	2.42		102	33201	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.690	2.690	0.0	1.000	490177	0.9869		104	13053	
D 12 M2-6:2FTS										
429.00 > 81.00	2.690	2.698	-0.008	0.992	754053	2.52		106	14976	
* 62 13C2-PFOA										
415.00 > 370.00	2.713	2.713	0.0		3723947	2.50			46643	
D 14 13C4 PFOA										
417.00 > 372.00	2.713	2.720	-0.007	1.000	3594694	2.52		101	42676	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.713	2.713	0.0	1.000	1661310	0.9382		93.7	1007	
413.00 > 169.00	2.713	2.713	0.0	1.000	854704		1.94(0.84-2.52)		4151	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.720	2.720	0.0	0.886	1822564	0.9546		100	25300	
449.00 > 99.00	2.720	2.720	0.0	0.886	493075		3.70(1.94-5.82)		12979	
D 18 13C4 PFOS										
503.00 > 80.00	3.070	3.076	-0.006	1.131	3463347	2.39		99.9	33878	
D 19 13C5 PFNA										
468.00 > 423.00	3.070	3.076	-0.006	1.131	3112008	2.44		97.8	37220	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.070	3.070	0.0	1.000	1474757	0.8981		96.8	14340	
499.00 > 99.00	3.070	3.070	0.0	1.000	336044		4.39(2.31-6.93)		4936	
20 Perfluorononanoic acid										
463.00 > 419.00	3.070	3.070	0.0	1.000	1333260	0.9655		96.5	2793	
463.00 > 169.00	3.070	3.070	0.0	1.000	330076		4.04(1.90-5.69)		11781	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.276	3.276	0.0	1.067	2414486	NC			20250	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.403	3.403	0.0	1.000	2104070	1.03		103	24761	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.403	3.403	0.0	1.109	1064846	0.9479		98.7	29837	
549.00 > 99.00	3.403	3.403	0.0	1.109	403464		2.64(1.33-3.97)		8163	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.413	3.413	0.0	1.000	494464	0.8795		91.8	7234	
D 21 13C8 FOSA										
506.00 > 78.00	3.403	3.412	-0.009	1.255	5177505	2.47		99.0	33937	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
24 Perfluorodecanoic acid										
513.00 > 469.00	3.422	3.422	0.0	1.000	1179830	0.9813		98.1	6850	
513.00 > 169.00	3.422	3.422	0.0	1.000	209554		5.63(2.36-7.09)		7731	
D 26 M2-8:2FTS										
529.00 > 81.00	3.413	3.421	-0.008	1.258	1043824	2.38		99.6	19098	
D 23 13C2 PFDA										
515.00 > 470.00	3.422	3.430	-0.008	1.261	2864364	2.56		103	39533	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.571	3.571	0.0	1.000	472443	0.9665		96.7	4235	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.571	3.579	-0.008	1.316	1239567	2.71		108	20346	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.726	3.726	0.0	1.214	881809	0.9063		94.0	26064	
599.00 > 99.00	3.726	3.726	0.0	1.214	313269		2.81(1.39-4.16)		10861	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.736	3.744	-0.008	1.377	1361234	2.90		116	3777	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.747	3.747	0.0	1.000	745067	0.9745		97.4	3536	
563.00 > 169.00	3.736	3.747	-0.011	0.997	198467		3.75(2.12-6.36)		8115	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.736	3.736	0.0	1.000	454476	0.9442		94.4	25752	
D 30 13C2 PFUnA										
565.00 > 520.00	3.747	3.754	-0.007	1.381	2332562	2.50		100.0	33734	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.894	3.894	0.0	1.269	3890693	NC			63159	
D 36 13C2 PFDaA										
615.00 > 570.00	4.027	4.034	-0.007	1.484	2487701	2.57		103	17336	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.037	4.037	0.0	1.003	1036842	0.9543		95.4	685	
613.00 > 169.00	4.037	4.037	0.0	1.003	273619		3.79(2.13-6.40)		7172	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.289	4.289	0.0	1.065	1049590	0.9879		98.8	484	
663.00 > 169.00	4.298	4.289	0.009	1.067	324840		3.23(1.25-3.76)		6307	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.531	4.531	0.0	1.000	244325	0.9843		98.4	3997	
713.00 > 219.00	4.521	4.531	-0.010	0.998	167209		1.46(0.71-2.13)		4413	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.531	4.540	-0.009	1.670	2385153	2.38		95.0	13362	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.939	4.939	0.0	1.000	1364674	NC			314	
813.00 > 169.00	4.939	4.939	0.0	1.000	226537		6.02(2.86-8.58)		2389	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.939	4.947	-0.008	1.821	3671163	2.30		91.8	11731	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.298	5.298	0.0	1.073	1513985	NC			315	
913.00 > 169.00	5.291	5.298	-0.007	1.071	194120		7.80(3.83-11.48)		2361	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFC_LL4_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_068.d

Injection Date: 18-Jul-2018 23:44:17

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

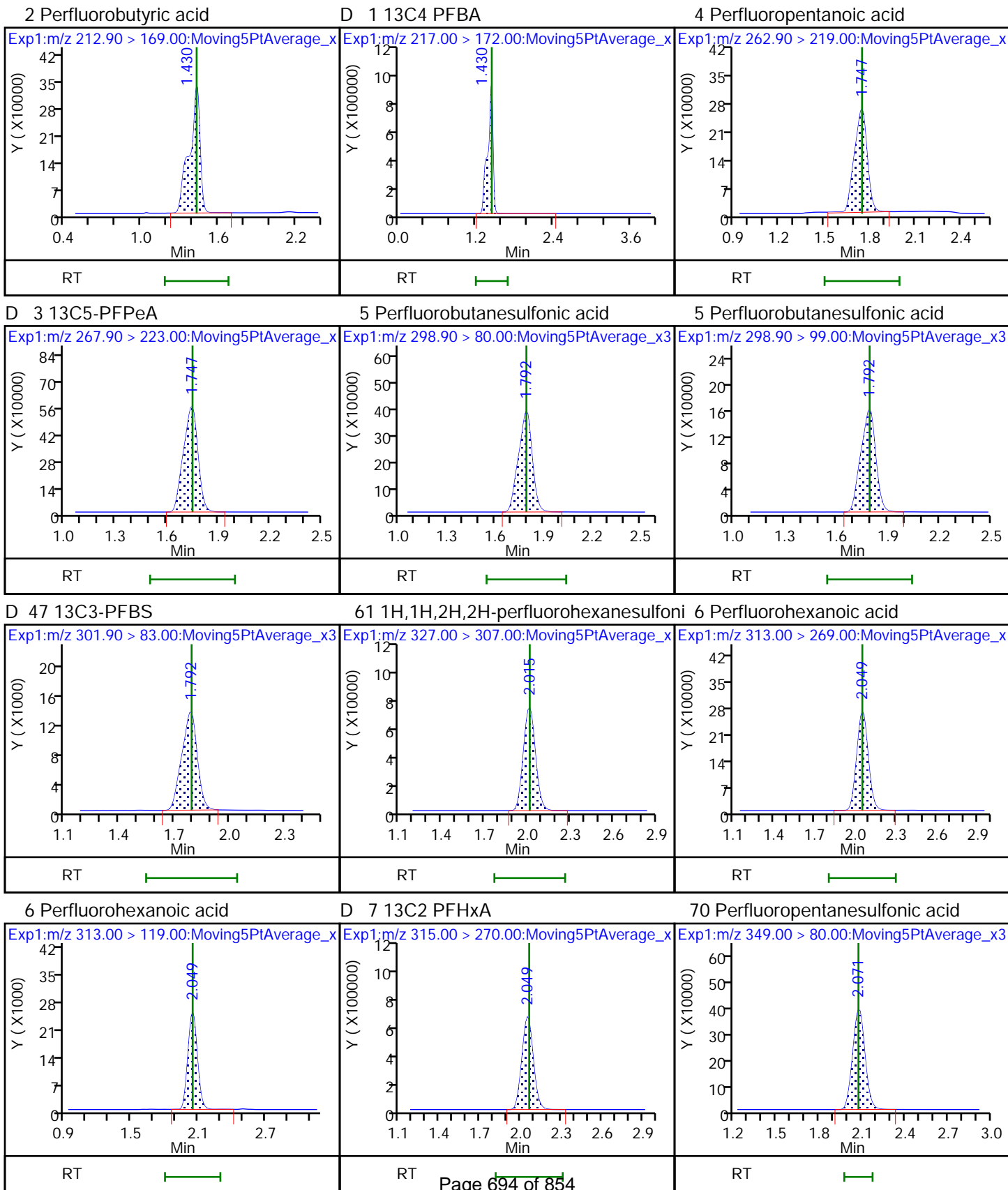
Worklist Smp#: 9

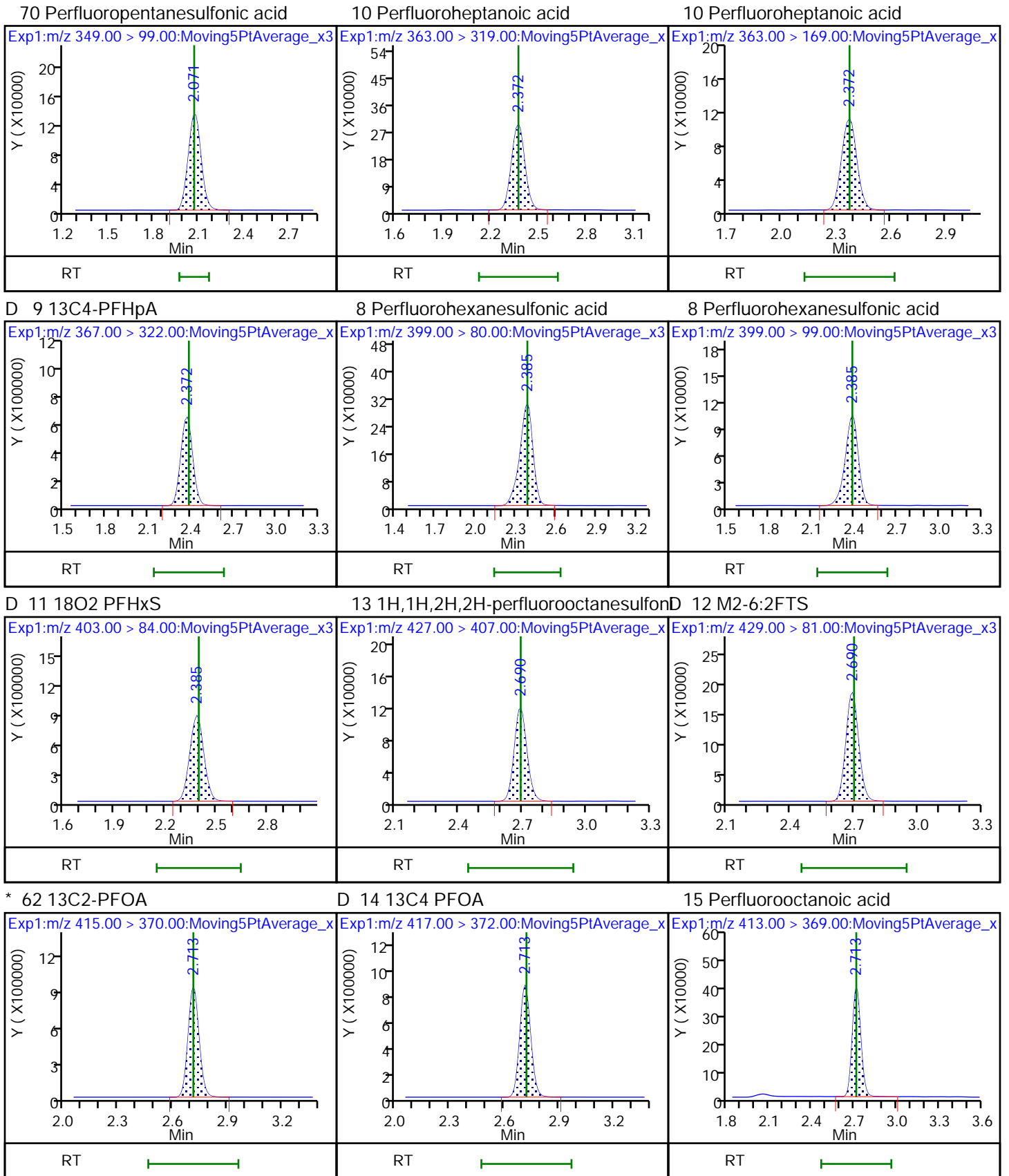
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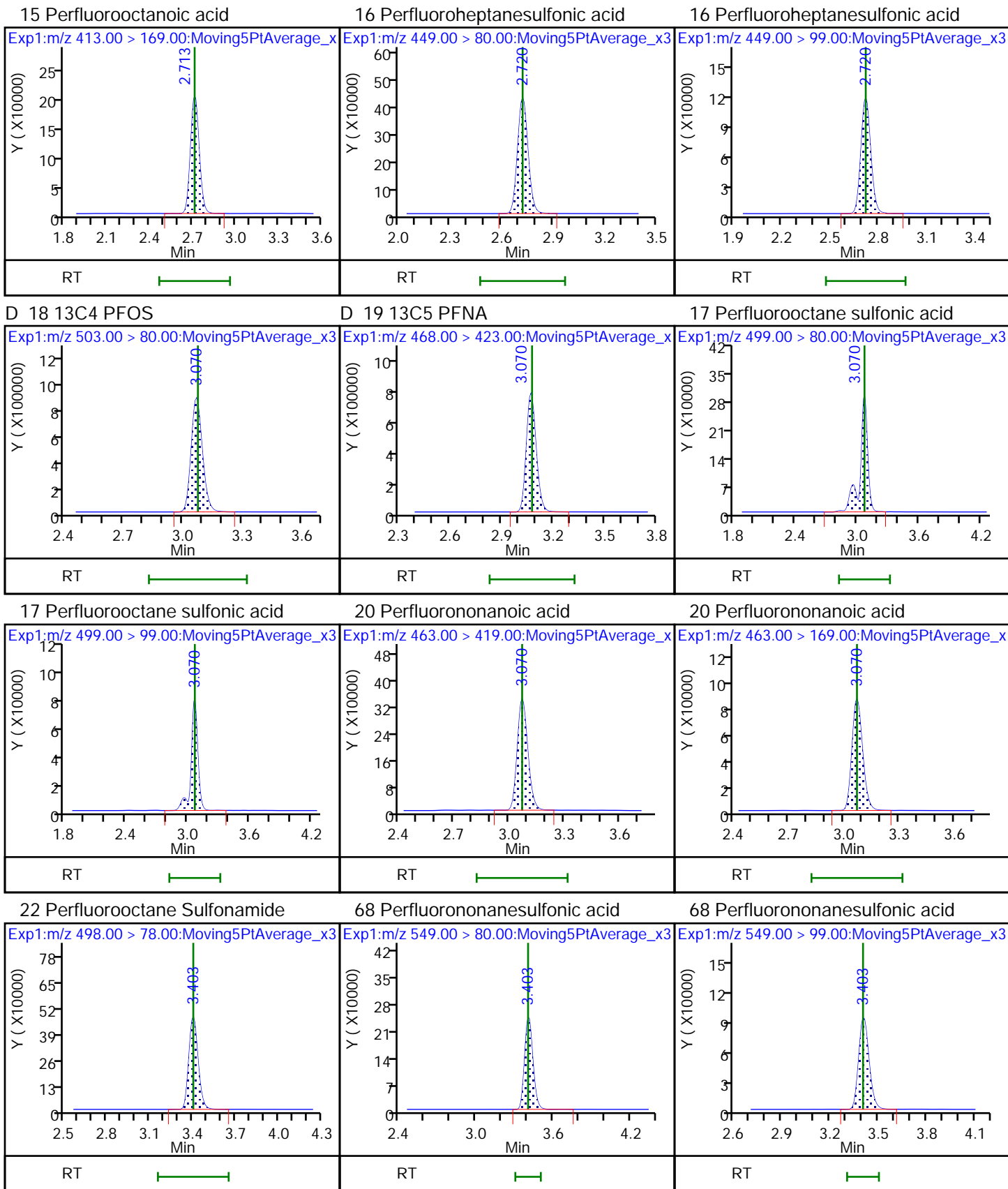
Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

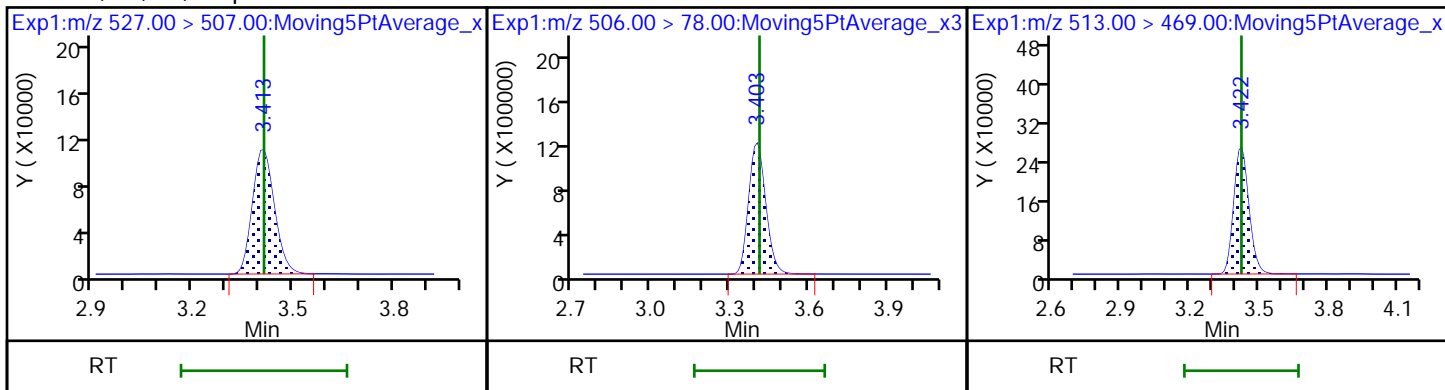






25 1H,1H,2H,2H-perfluorodecanesulfonamide 21 13C8 FOSA

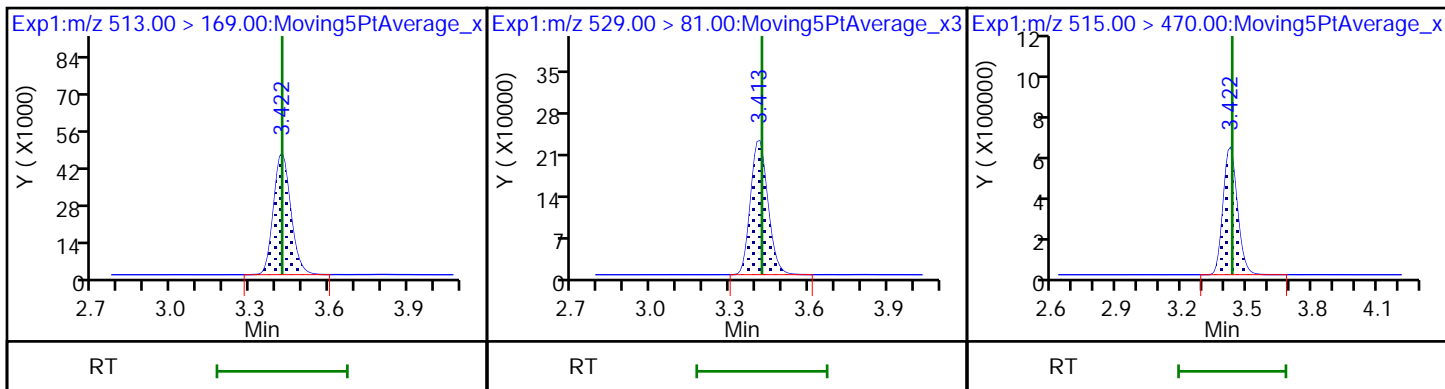
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

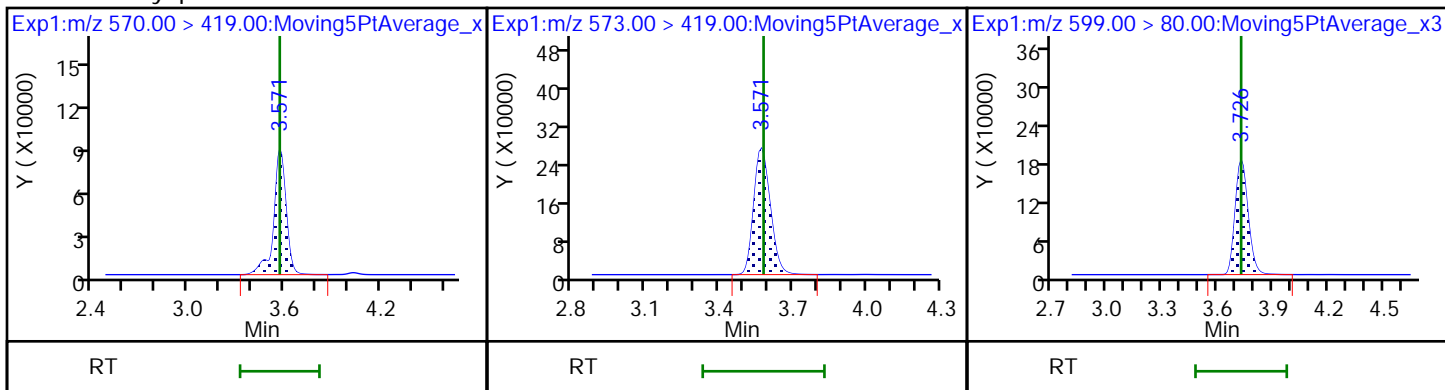
D 26 M2-8:2FTS

D 23 13C2 PFDA



28 N-methyl perfluorooctane sulfonamide 27 d3-NMeFOSAA

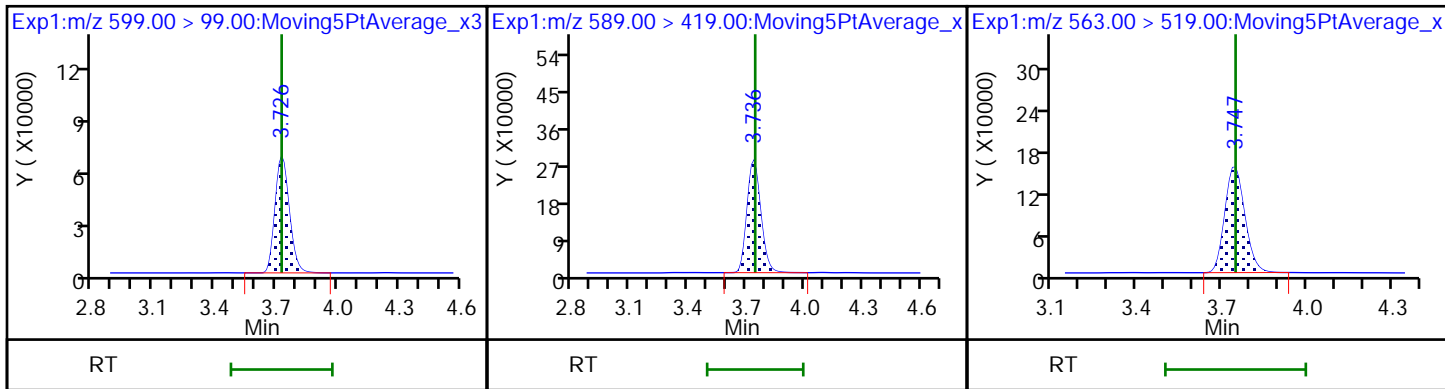
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

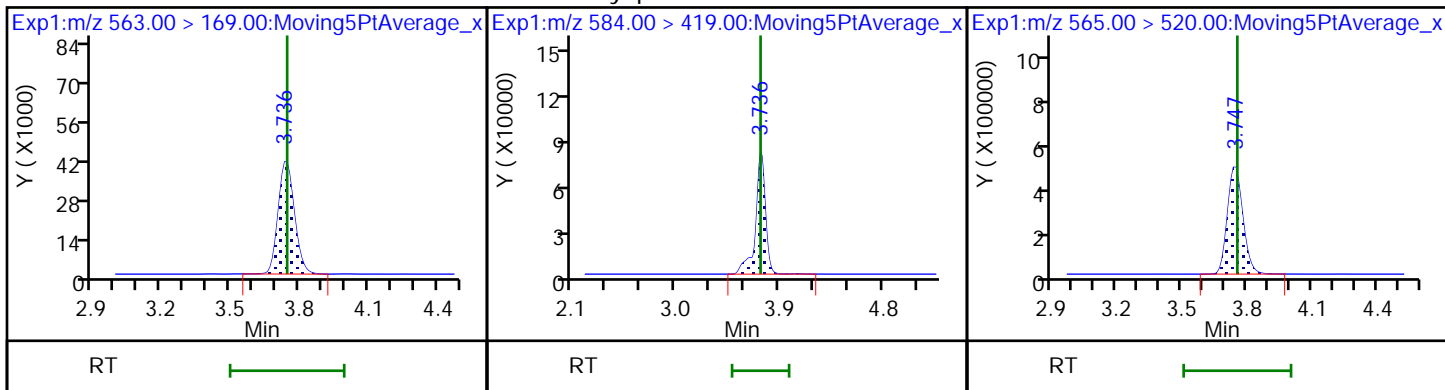
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



31 Perfluoroundecanoic acid

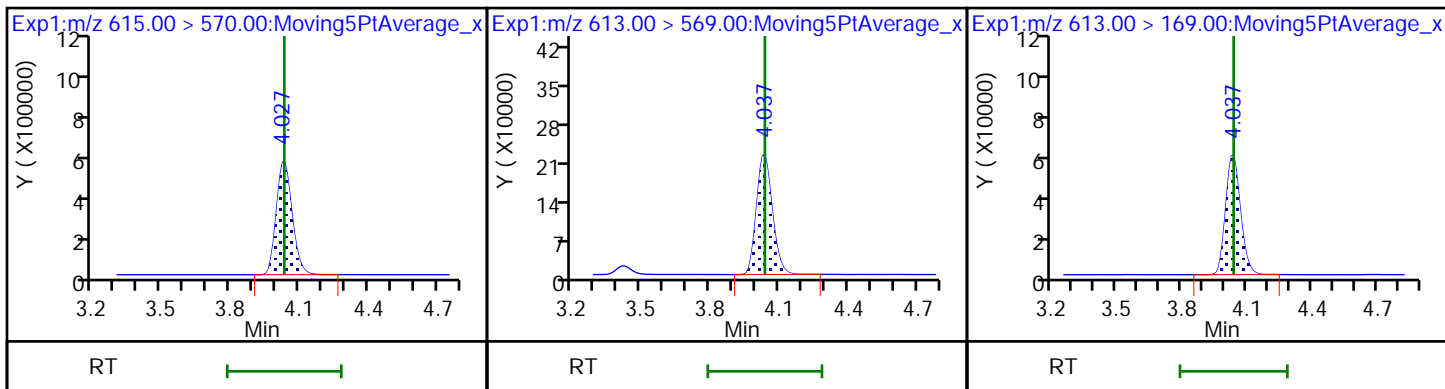
33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

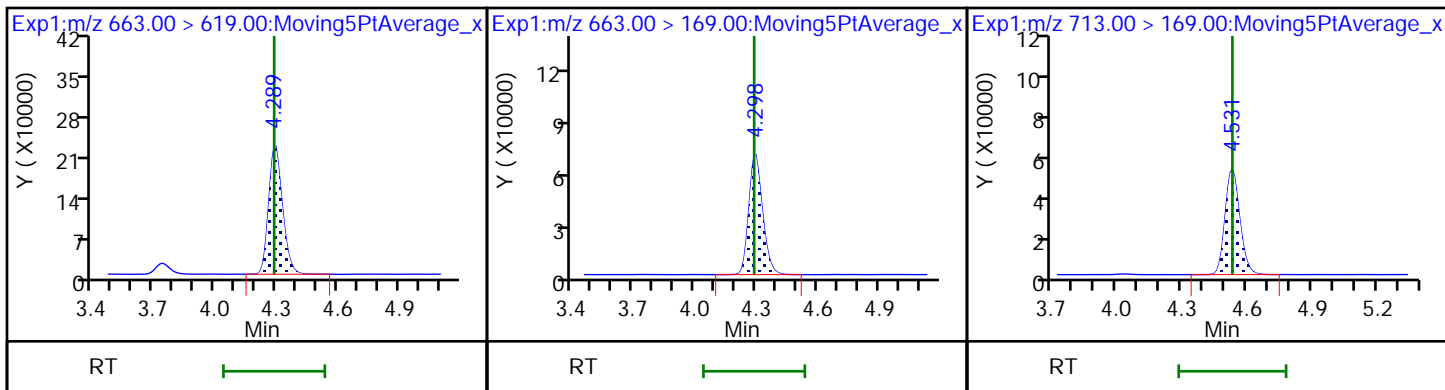
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

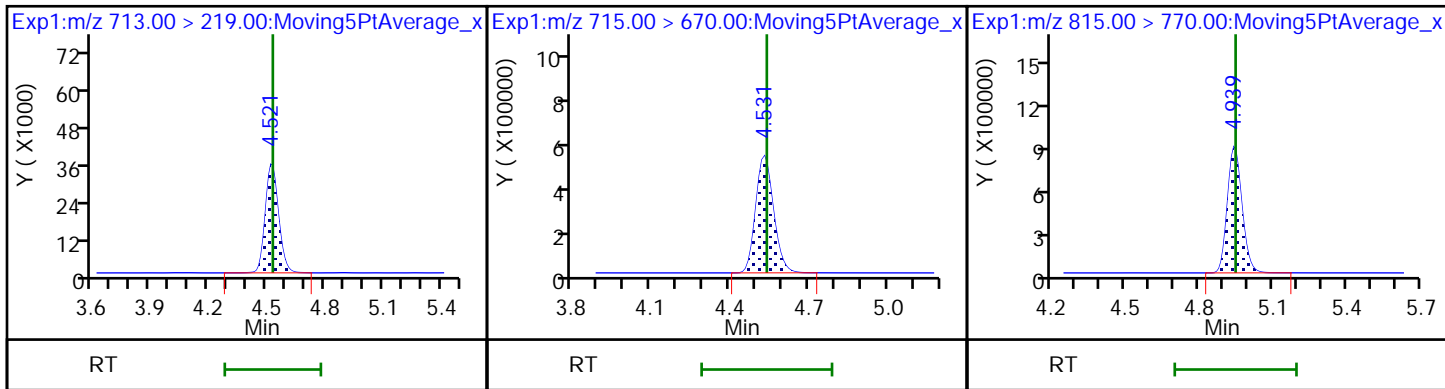
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: ICV 320-234930/10 Calibration Date: 07/19/2018 13:12
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLICAL_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.004	0.9938		2.47	2.50	-1.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.226	1.207		2.46	2.50	-1.6	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.41	77.66		2.22	2.21	0.3	30.0
4:2 FTS	AveID	13.12	13.25		2.36	2.34	1.0	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.087	1.043		2.40	2.50	-4.1	30.0
Perfluoropentanesulfonic acid	AveID	72.64	74.60		2.41	2.35	2.7	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.146	1.162		2.54	2.50	1.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.144	1.101		2.19	2.28	-3.7	30.0
6:2 FTS	AveID	1.626	1.683		2.45	2.37	3.5	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.231	1.196		2.43	2.50	-2.8	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.342	1.343		2.38	2.38	0.1	30.0
Perfluorononanoic acid (PFNA)	AveID	1.129	1.102		2.44	2.50	-2.4	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.184	1.163		2.28	2.32	-1.8	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.020	1.004		2.46	2.50	-1.5	30.0
8:2 FTS	AveID	1.328	1.351		2.44	2.40	1.7	30.0
Perfluorononanesulfonic acid	AveID	0.8131	0.8322		2.46	2.40	2.3	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.077	1.004		2.33	2.50	-6.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.004	0.9208		2.29	2.50	-8.3	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7010	0.7274		2.50	2.41	3.8	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8755	0.8497		2.43	2.50	-2.9	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.7872	0.7997		2.54	2.50	1.6	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.105	1.004		2.27	2.50	-9.1	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.122	1.046		2.33	2.50	-6.8	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2633	0.2502		2.38	2.50	-5.0	30.0
13C4 PFBA	Ave	1.251	1.295		2.59	2.50	3.4	30.0
13C5 PFPeA	Ave	0.8714	0.8895		2.55	2.50	2.1	30.0
13C3-PFBS	Ave	0.0225	0.0227		2.34	2.33	0.6	30.0
13C2 PFHxA	Ave	1.018	1.045		2.57	2.50	2.6	30.0
13C4-PFHpA	Ave	0.9854	1.003		2.54	2.50	1.7	30.0
18O2 PFHxS	Ave	1.320	1.356		2.43	2.37	2.7	30.0
M2-6:2FTS	Ave	0.1903	0.1866		2.33	2.38	-2.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: ICV 320-234930/10 Calibration Date: 07/19/2018 13:12
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLICAL_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9522	0.9582		2.52	2.50	0.6	30.0
13C4 PFOS	Ave	0.9465	0.9820		2.48	2.39	3.8	30.0
13C5 PFNA	Ave	0.8048	0.8333		2.59	2.50	3.5	30.0
13C8 FOSA	Ave	1.405	1.430		2.55	2.50	1.8	30.0
M2-8:2FTS	Ave	0.2470	0.2468		2.39	2.40	-0.0	30.0
13C2 PFDA	Ave	0.7258	0.7524		2.59	2.50	3.7	30.0
d3-NMeFOSAA	Ave	0.3136	0.3408		2.72	2.50	8.7	30.0
d5-NEtFOSAA	Ave	0.3512	0.3660		2.60	2.50	4.2	30.0
13C2 PFUnA	Ave	0.6345	0.6255		2.46	2.50	-1.4	30.0
13C2 PFDoA	Ave	0.6459	0.7090		2.74	2.50	9.8	30.0
13C2-PFTeDA	Ave	0.6190	0.6649		2.69	2.50	7.4	30.0
13C2-PFHxDA	Ave	0.9793	1.039		2.65	2.50	6.1	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_010.d
 Lims ID: ICV Full
 Client ID:
 Sample Type: ICV
 Inject. Date: 19-Jul-2018 13:12:22 ALS Bottle#: 17 Worklist Smp#: 10
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICV
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 15:19:21 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK022

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	1.436	1.435	0.001	0.528	5178117	2.59	103	43717	
2 Perfluorobutyric acid	212.90 > 169.00	1.436	1.438	-0.002	1.000	5145856	2.47		2044	
D 3 13C5-PFPeA	267.90 > 223.00	1.748	1.750	-0.002	0.642	3557519	2.55	102	49025	
4 Perfluoropentanoic acid	262.90 > 219.00	1.748	1.752	-0.004	1.000	4293888	2.46		1959	
D 47 13C3-PFBS	301.90 > 83.00	1.793	1.795	-0.002	0.659	84290	2.34	101	547	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.793	1.799	-0.006	1.000	6222283	2.22		51944	
	298.90 > 99.00	1.793	1.799	-0.006	1.000	2604973	2.39(1.25-3.74)		28403	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.016	2.017	-0.001	1.124	1121247	2.36		49548	
D 60 M2-4:2FTS	329.00 > 81.00	2.016	2.019	-0.003	0.741	465382	NC		6239	
6 Perfluorohexanoic acid	313.00 > 269.00	2.061	2.055	0.006	1.000	4359290	2.40		13444	
	313.00 > 119.00	2.061	2.055	0.006	1.000	398939	10.93(5.03-15.10)		7699	
D 7 13C2 PFHxA	315.00 > 270.00	2.061	2.058	0.003	0.757	4179451	2.57	103	65813	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.083	2.082	0.001	1.162	6342530	2.41		91990	
	349.00 > 99.00	2.083	2.082	0.001	1.162	2269513	2.79(1.36-4.07)		30370	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.151	2.151	0.0	0.791	275380	NC		6139	
67 Perfluoro(2-propoxypropanoic) acid	329.10 > 285.00	2.151	2.153	-0.002	1.000	785482	NC		6655	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 9 13C4-PFHpA	367.00	> 322.00	2.373	2.379	-0.006	0.872	4009642	2.54	102	53387
10 Perfluoroheptanoic acid	363.00	> 319.00	2.385	2.380	0.005	1.005	4659473	2.54		9498
363.00 > 169.00	2.373	2.380	-0.007	1.000	1758306		2.65(1.13-3.40)			20274
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.397	2.394	0.003	1.000	5435950	2.19		26001
399.00 > 99.00	2.397	2.394	0.003	1.000	1781647		3.05(1.50-4.49)			9202
D 11 18O2 PFHxS	403.00	> 84.00	2.397	2.395	0.002	0.881	5130434	2.43	103	45534
65 ADONA	377.00	> 251.00	2.419	2.421	-0.002	0.784	12930264	NC		108427
377.00 > 85.00	2.419	2.421	-0.002	0.784	7919604		1.63(0.84-2.53)			38750
D 12 M2-6:2FTS	429.00	> 81.00	2.699	2.701	-0.002	0.992	708857	2.33	98.0	21258
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.699	2.702	-0.003	1.000	1190841	2.45		22112
D 14 13C4 PFOA	417.00	> 372.00	2.721	2.725	-0.004	1.000	3832463	2.52	101	43711
* 62 13C2-PFOA	415.00	> 370.00	2.721	2.725	-0.004		3999659	2.50		35646
15 Perfluorooctanoic acid	413.00	> 369.00	2.721	2.725	-0.004	1.000	4589308	2.43		2324
413.00 > 169.00	2.721	2.725	-0.004	1.000	2344795		1.96(0.84-2.52)			12399
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.729	2.733	-0.004	0.884	5022412	2.38		41420
449.00 > 99.00	2.729	2.733	-0.004	0.884	1294589		3.88(1.94-5.82)			19194
D 18 13C4 PFOS	503.00	> 80.00	3.085	3.083	0.002	1.134	3754705	2.48	104	23095
D 19 13C5 PFNA	468.00	> 423.00	3.085	3.085	0.0	1.134	3332748	2.59	104	37681
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.085	3.086	-0.001	1.000	4237154	2.28		37189
499.00 > 99.00	3.085	3.086	-0.001	1.000	934523		4.53(2.31-6.93)			13433
20 Perfluorononanoic acid	463.00	> 419.00	3.085	3.086	-0.001	1.000	3673575	2.44		9022
463.00 > 169.00	3.085	3.086	-0.001	1.000	873577		4.21(1.90-5.69)			24199
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.294	3.291	0.003	1.067	6908471	NC		58298
D 21 13C8 FOSA	506.00	> 78.00	3.415	3.413	0.002	1.255	5720899	2.55	102	49532
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.415	3.415	0.0	1.000	5744723	2.46		47540
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.424	3.426	-0.002	1.000	1277386	2.44		20081
D 26 M2-8:2FTS	529.00	> 81.00	3.424	3.426	-0.002	1.258	945748	2.39	99.9	14799

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.424	3.426	-0.002	1.110	3137636	2.46			64649	
549.00 > 99.00	3.424	3.426	-0.002	1.110	1158367		2.71(1.33-3.97)		16345	
D 23 13C2 PFDA										
515.00 > 470.00	3.433	3.438	-0.005	1.262	3009261	2.59		104	23198	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.433	3.439	-0.006	1.000	3019890	2.33			16568	
513.00 > 169.00	3.433	3.439	-0.006	1.000	546249		5.53(2.36-7.09)		24199	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.584	3.587	-0.003	1.317	1363055	2.72		109	26249	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.594	3.592	0.002	1.003	1255152	2.29			10944	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.749	3.746	0.003	1.215	2754097	2.50			62902	
599.00 > 99.00	3.749	3.746	0.003	1.215	909760		3.03(1.39-4.16)		62270	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.749	3.754	-0.005	1.378	1463798	2.60		104	3468	
D 30 13C2 PFUnA										
565.00 > 520.00	3.760	3.760	0.0	1.382	2501834	2.46		98.6	56679	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.760	3.760	0.0	1.000	2000758	2.54			9805	
563.00 > 169.00	3.760	3.760	0.0	1.000	531962		3.76(2.12-6.36)		27109	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.760	3.760	0.0	1.003	1243821	2.43			23682	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.918	3.916	0.002	1.270	10114451	NC			85397	
D 36 13C2 PFDaA										
615.00 > 570.00	4.050	4.051	-0.001	1.488	2835790	2.74		110	20796	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.050	4.051	-0.001	1.000	2847625	2.27			1793	
613.00 > 169.00	4.050	4.051	-0.001	1.000	710671		4.01(2.13-6.40)		10708	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.307	4.311	-0.004	1.063	2966269	2.33			1298	
663.00 > 169.00	4.307	4.311	-0.004	1.063	940141		3.16(1.25-3.76)		11963	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.543	4.546	-0.003	1.000	665325	2.38			9517	
713.00 > 219.00	4.533	4.546	-0.013	0.998	476815		1.40(0.71-2.13)		7129	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.543	4.547	-0.004	1.670	2659383	2.69		107	12176	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.958	4.960	-0.002	1.822	4157045	2.65		106	11905	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.958	4.962	-0.004	1.000	3998718	NC			891	
813.00 > 169.00	4.958	4.962	-0.004	1.000	634747		6.30(2.86-8.58)		4600	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.307	5.316	-0.009	1.070	4628288	NC			878	
913.00 > 169.00	5.307	5.316	-0.009	1.070	545777		8.48(3.83-11.48)		5642	

[QC Flag Legend](#)

Processing Flags

NC - Not Calibrated

[Reagents:](#)

LCPFCIC_FULL_00012

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_010.d

Injection Date: 19-Jul-2018 13:12:22

Instrument ID: A8_N

Lims ID: ICV Full

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 17

Worklist Smp#: 10

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

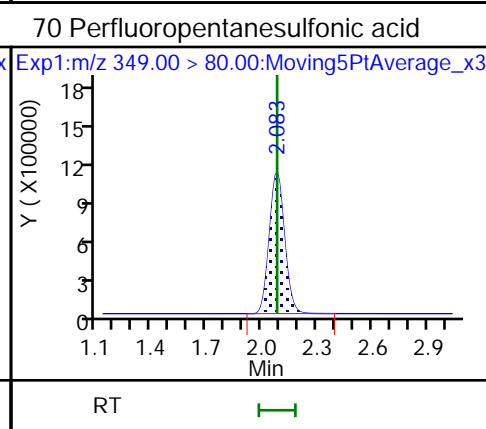
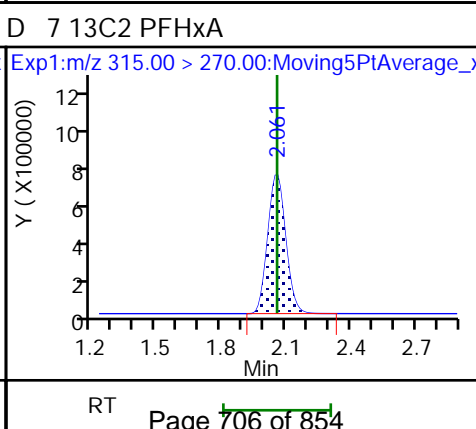
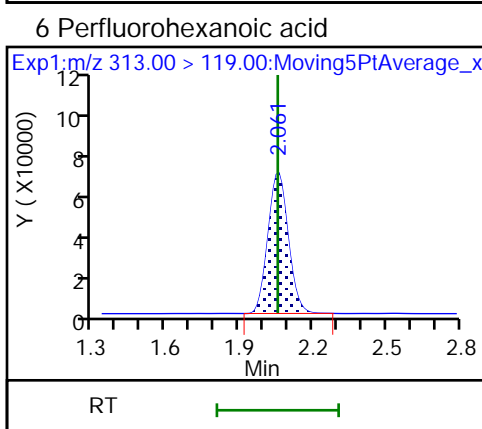
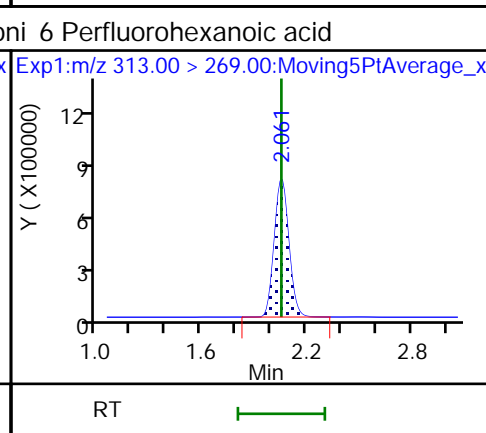
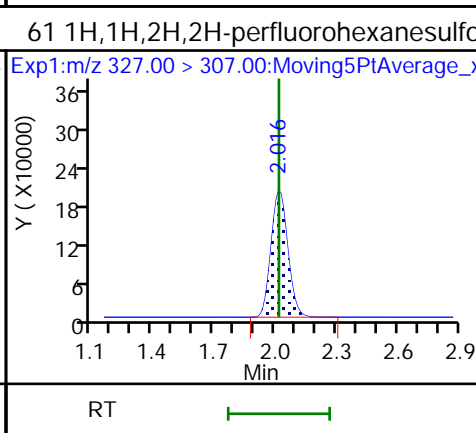
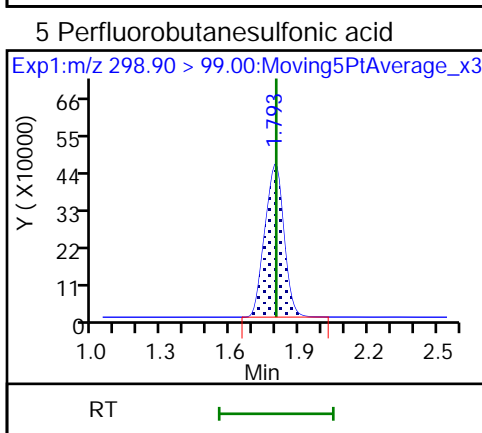
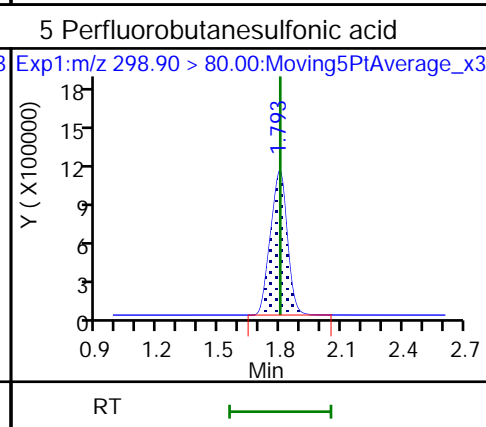
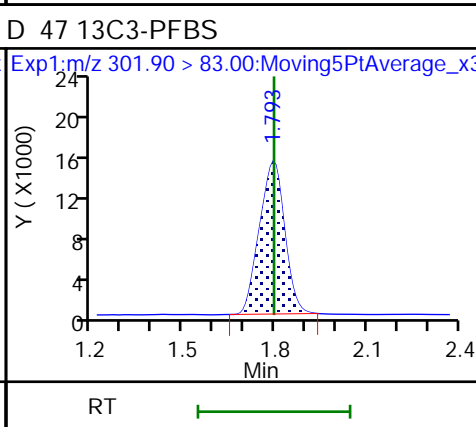
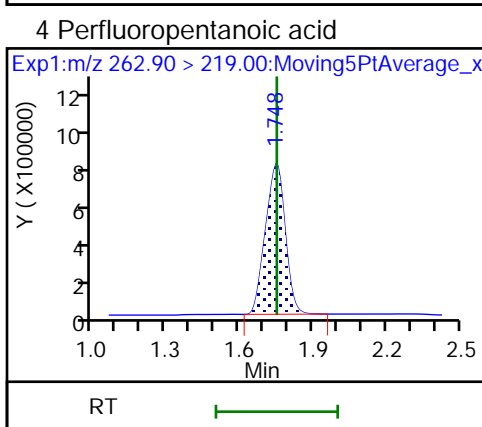
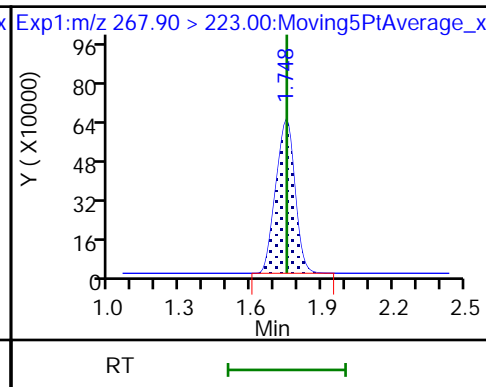
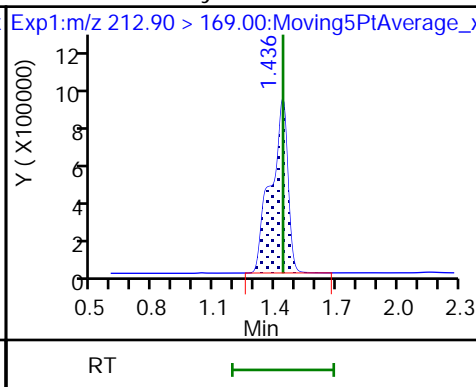
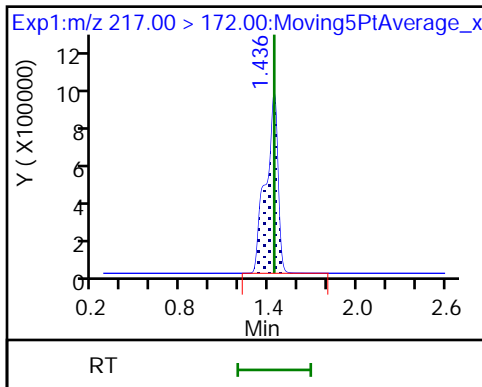
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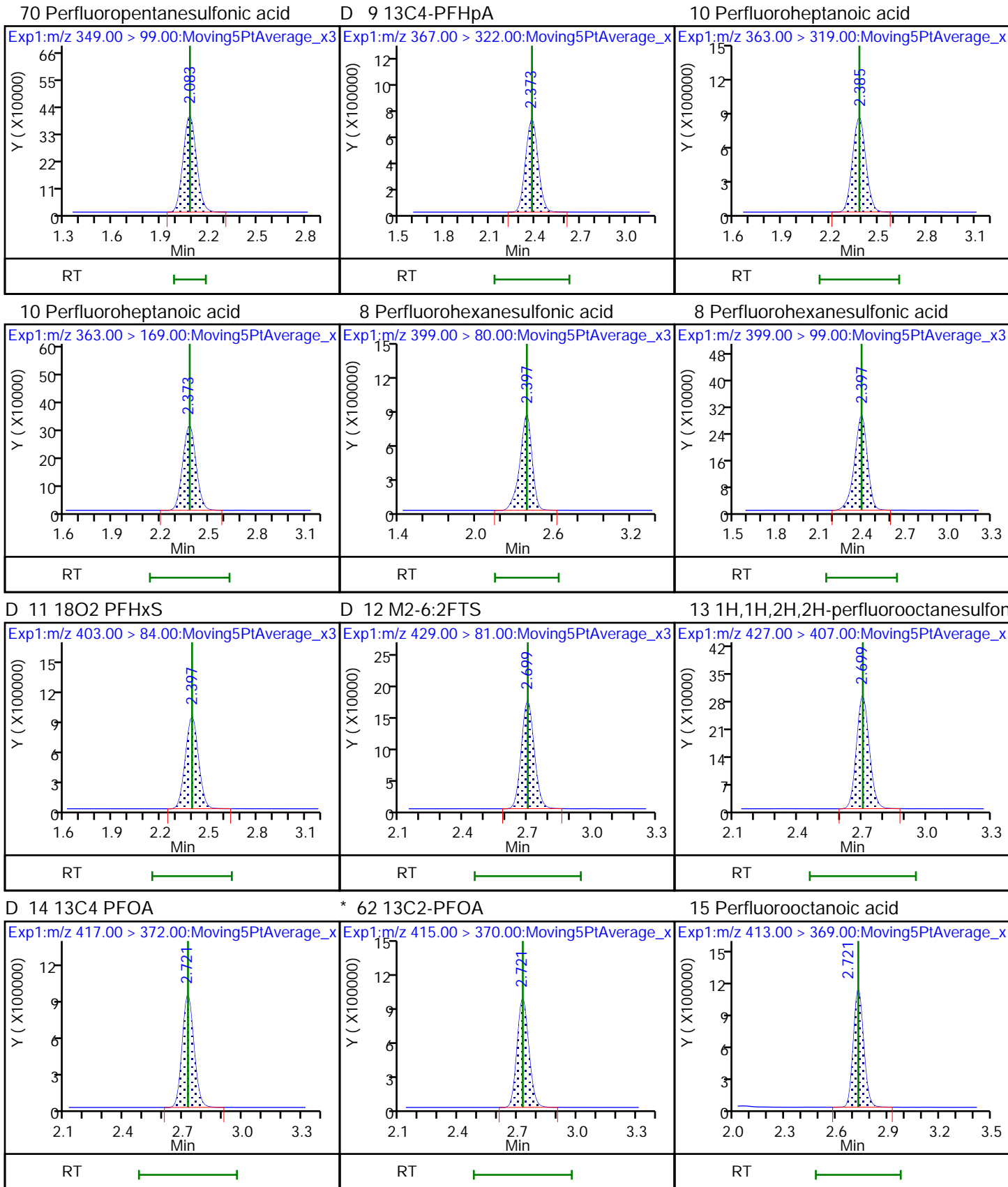
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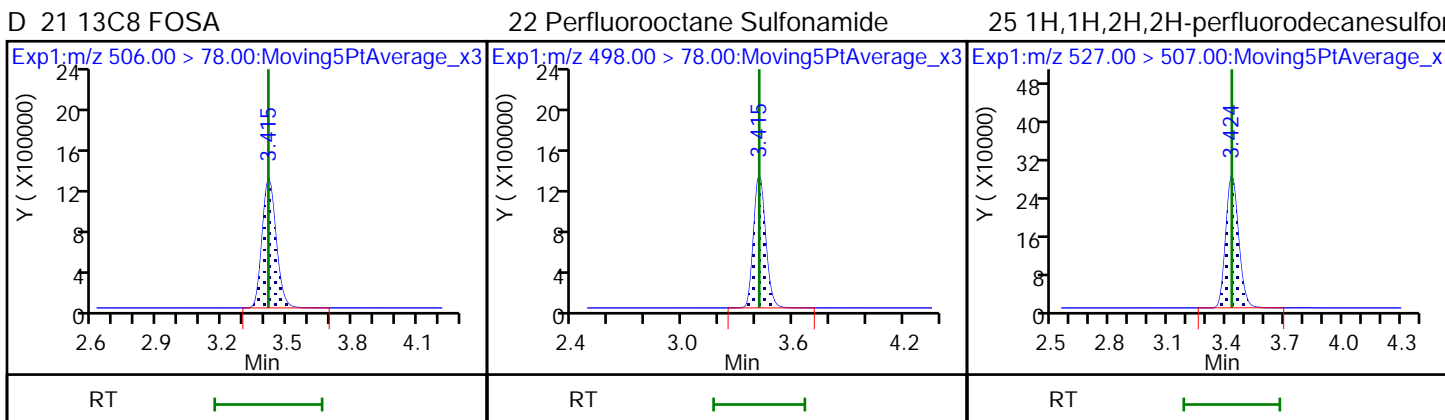
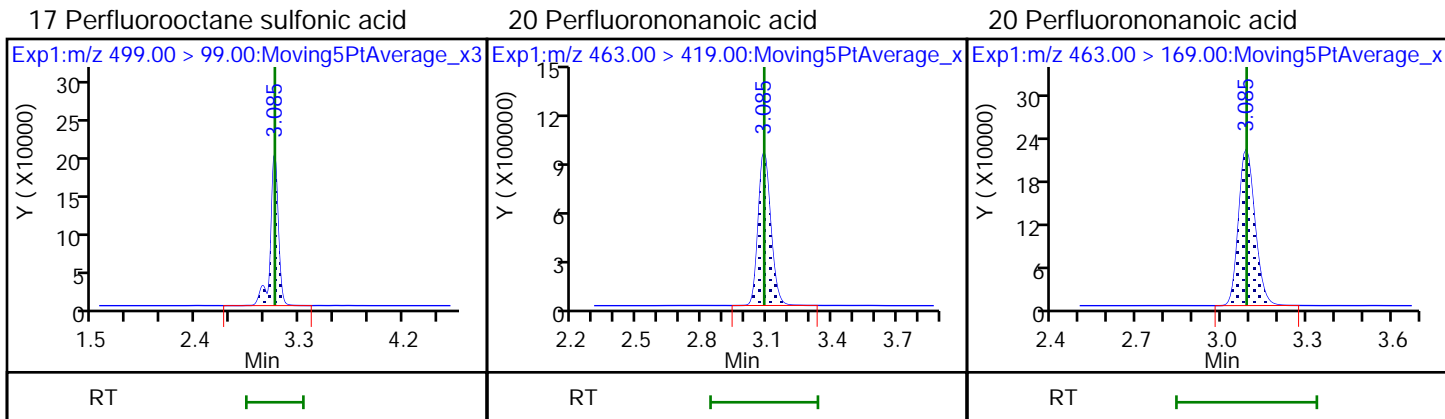
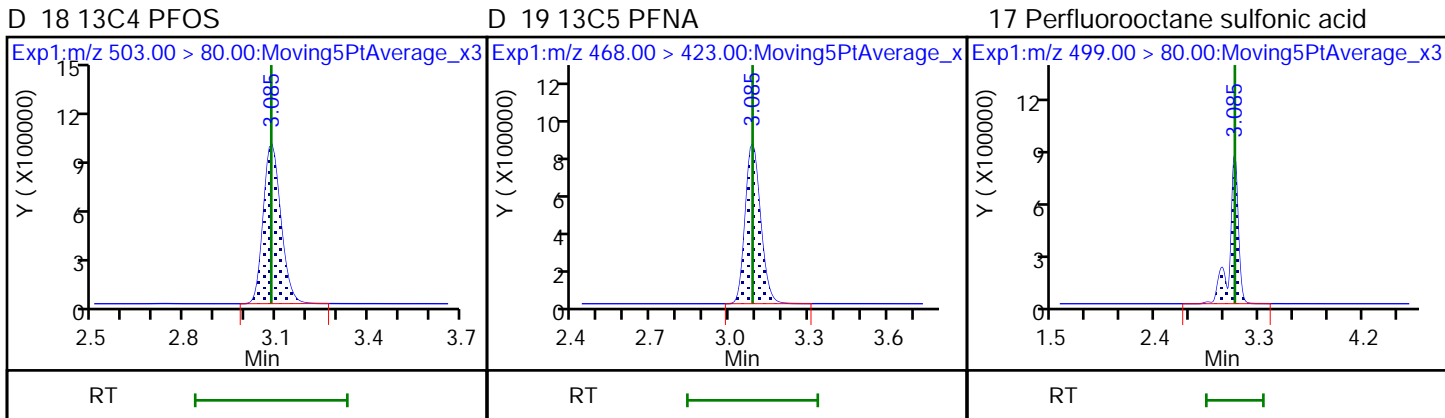
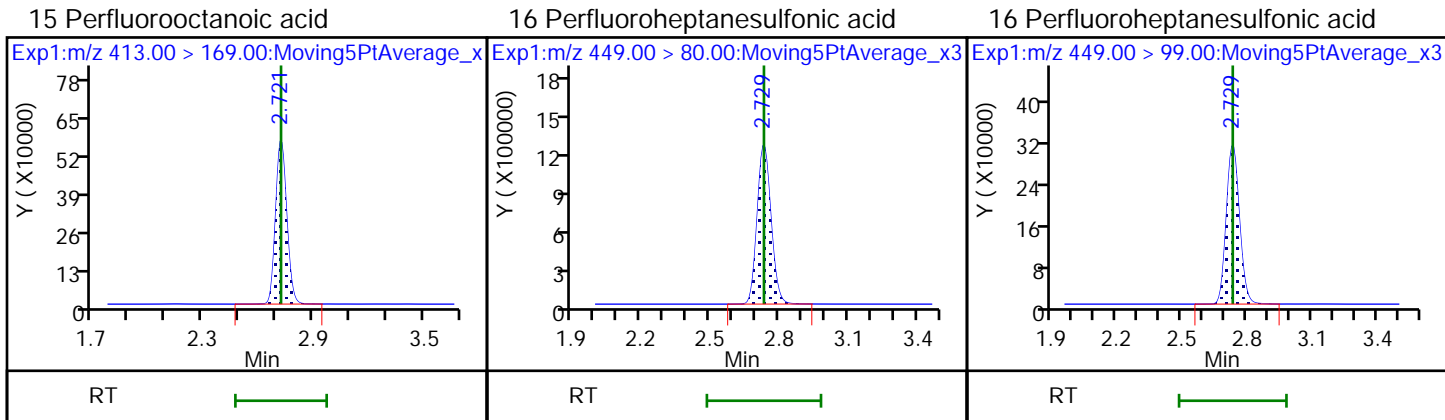
D 1 13C4 PFBA

2 Perfluorobutyric acid

D 3 13C5-PFPeA



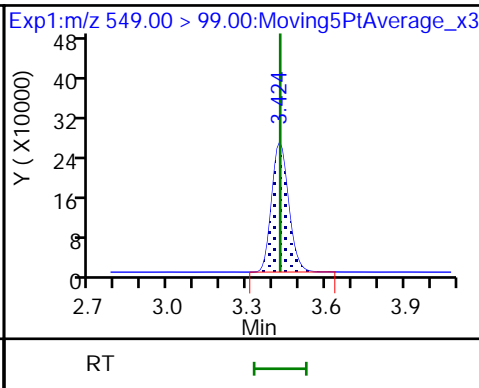
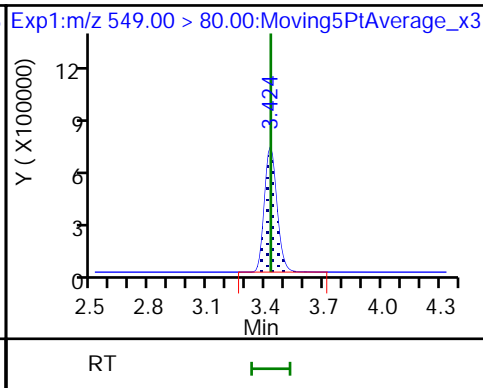
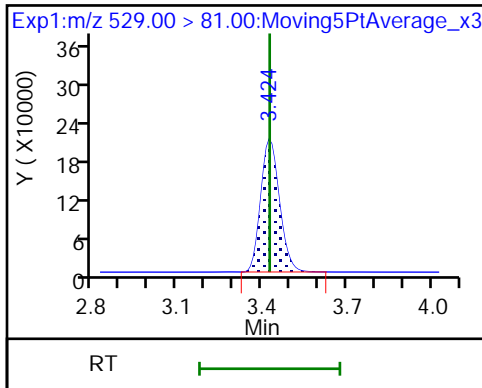




D 26 M2-8:2FTS

68 Perfluorononanesulfonic acid

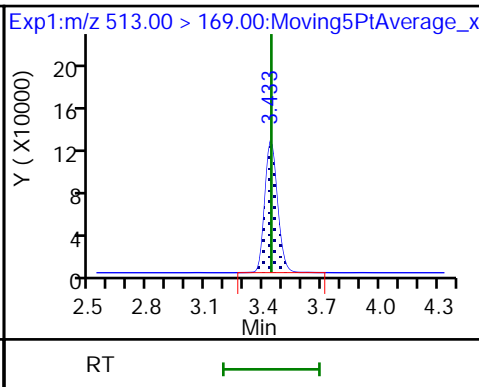
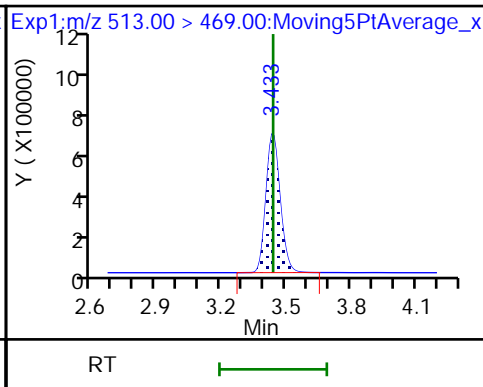
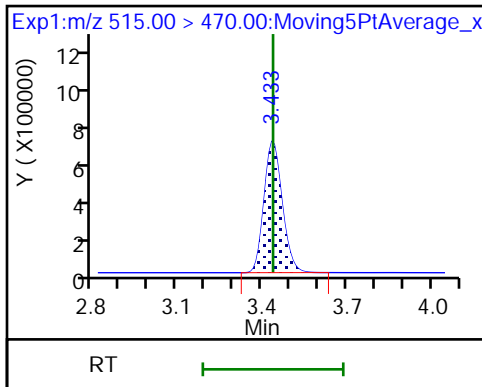
68 Perfluorononanesulfonic acid



D 23 13C2 PFDA

24 Perfluorodecanoic acid

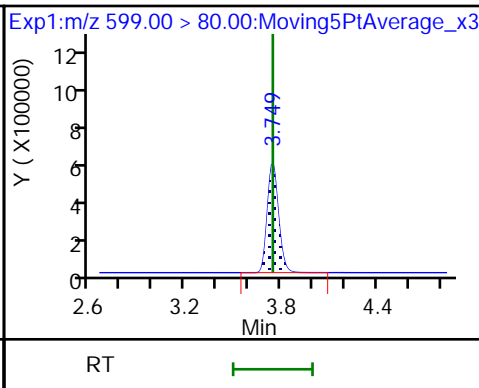
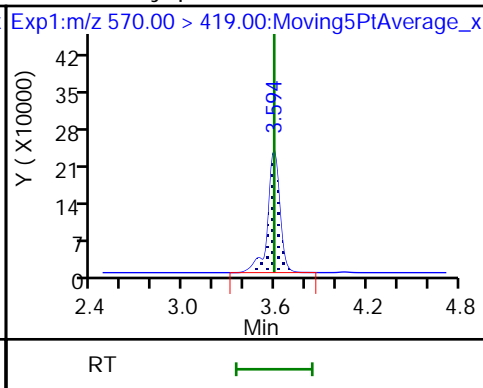
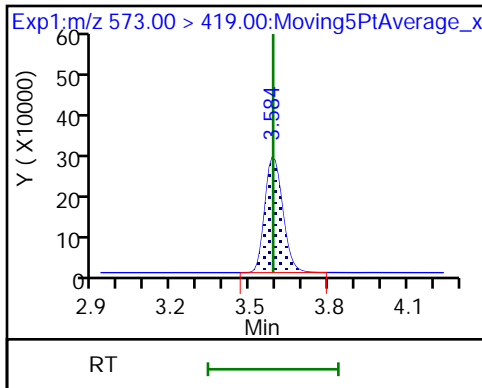
24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

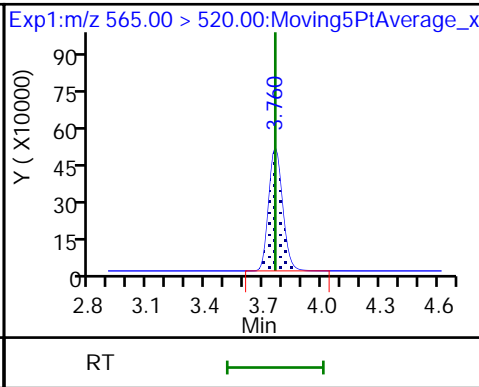
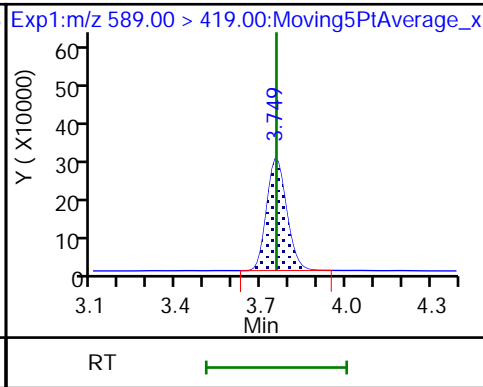
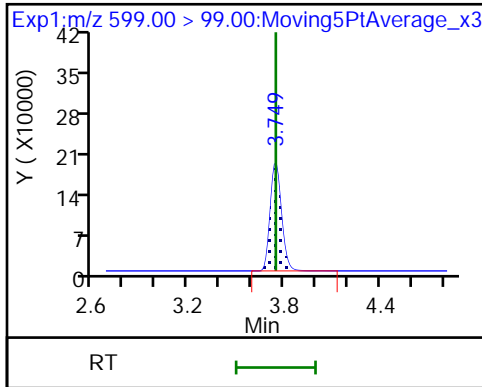
29 Perfluorodecane Sulfonic acid

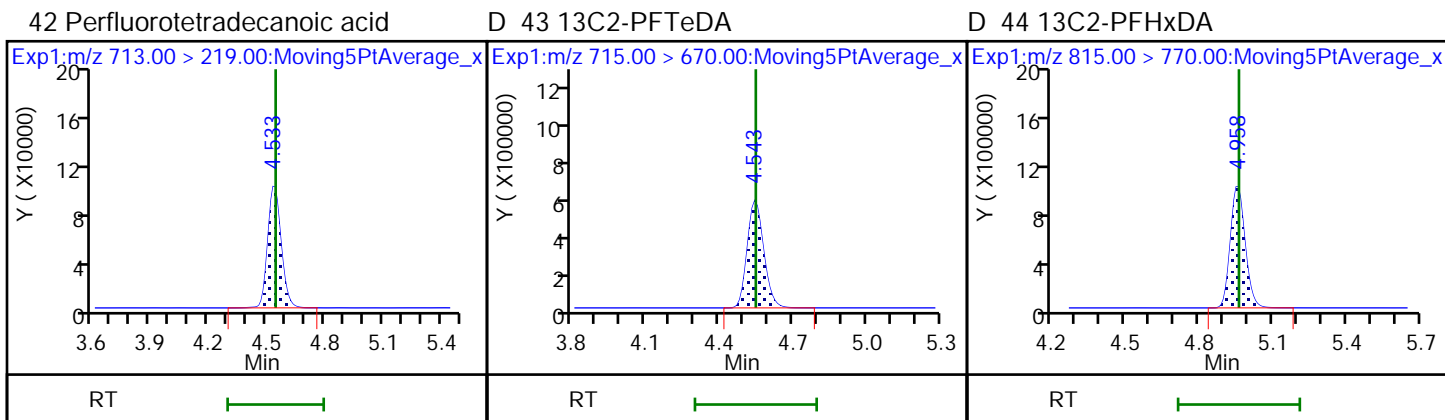
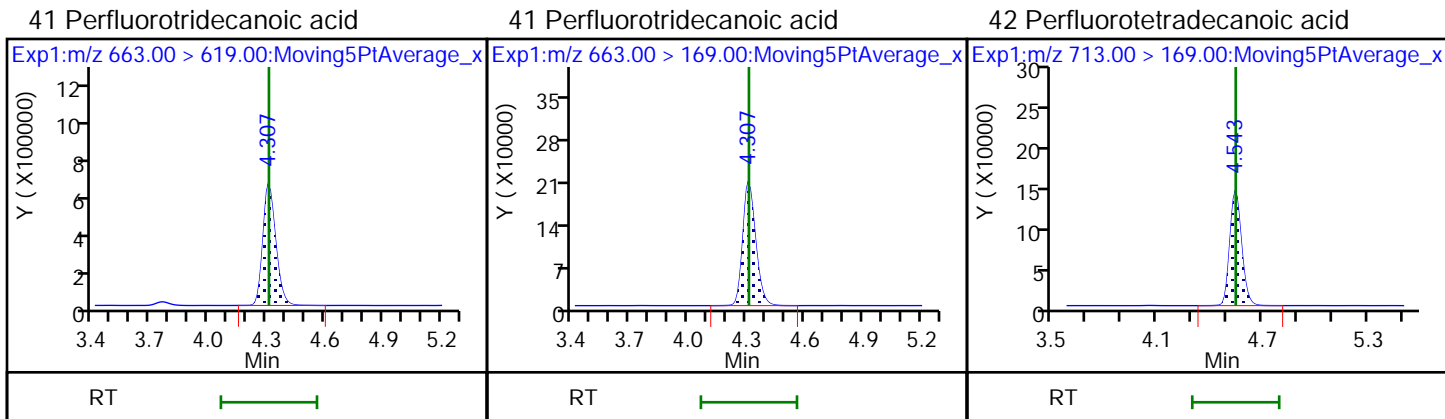
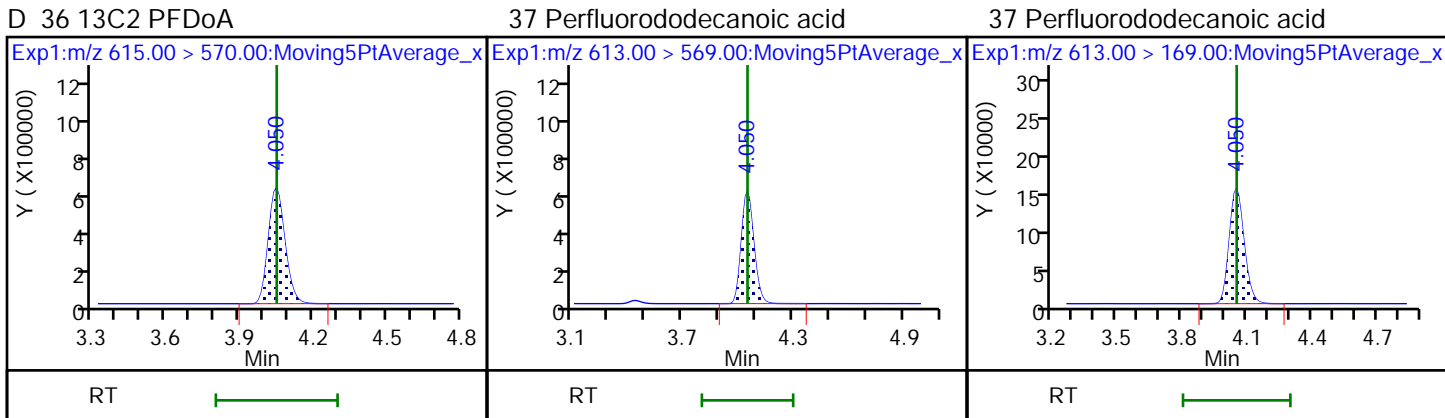
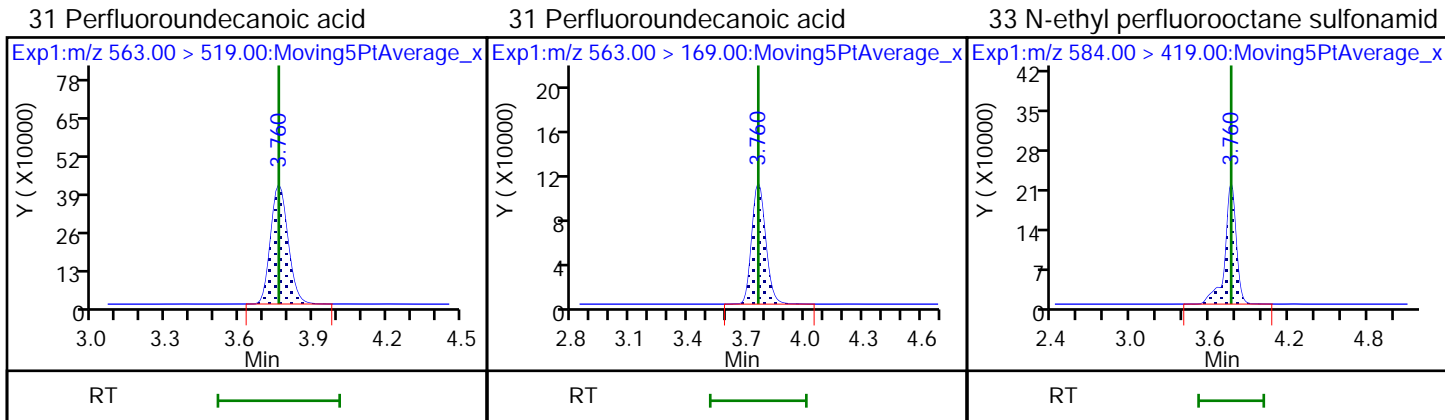


29 Perfluorodecane Sulfonic acid

D 32 d5-NEtFOSAA

D 30 13C2 PFUnA





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-235044/2 Calibration Date: 07/19/2018 19:20
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.004	0.995		0.0496	0.0500	-0.9	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.226	1.313		0.0535	0.0500	7.1	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.41	73.43		0.0419	0.0442	-5.1	30.0
4:2 FTS	AveID	13.12	11.48		0.400	0.0467	-12.5	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.087	1.131		0.0520	0.0500	4.0	30.0
Perfluoropentanesulfonic acid	AveID	72.64	71.33		0.0461	0.0469	-1.8	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.146	1.140		0.0498	0.0500	-0.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.144	1.278		0.0509	0.0455	11.8	30.0
6:2 FTS	AveID	1.626	1.657		0.400	0.0474	1.9	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.231	1.258		0.0512	0.0501	2.2	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.342	1.286		0.0456	0.0476	-4.2	30.0
Perfluorononanoic acid (PFNA)	AveID	1.129	1.134		0.0502	0.0500	0.4	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.184	1.170		0.0459	0.0464	-1.1	30.0
8:2 FTS	AveID	1.328	1.438		0.0519	0.0479	8.3	30.0
Perfluorononanesulfonic acid	AveID	0.8131	0.8080		0.0477	0.0480	-0.6	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.020	0.9636		0.0472	0.0500	-5.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.077	1.072		0.0497	0.0500	-0.5	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.004	0.9016		0.400	0.0500	-10.2	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7010	0.7877		0.0542	0.0482	12.4	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8755	0.9282		0.0530	0.0500	6.0	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.7872	0.7389		0.0469	0.0500	-6.1	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.105	1.082		0.0490	0.0500	-2.1	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.122	1.058		0.0471	0.0500	-5.7	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2633	0.2631		0.0500	0.0500	-0.0	30.0
13C4 PFBA	Ave	1.251	1.230		2.46	2.50	-1.7	30.0
13C5 PFPeA	Ave	0.8714	0.8727		2.50	2.50	0.1	30.0
13C3-PFBS	Ave	0.0225	0.0226		2.33	2.33	0.2	30.0
13C2 PFHxA	Ave	1.018	1.011		2.48	2.50	-0.7	30.0
13C4-PFHpA	Ave	0.9854	1.010		2.56	2.50	2.5	30.0
18O2 PFHxS	Ave	1.320	1.324		2.37	2.37	0.3	30.0
M2-6:2FTS	Ave	0.1903	0.1926		2.40	2.38	1.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-235044/2 Calibration Date: 07/19/2018 19:20
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9522	0.9647		2.53	2.50	1.3	30.0
13C4 PFOS	Ave	0.9465	0.9629		2.43	2.39	1.7	30.0
13C5 PFNA	Ave	0.8048	0.8244		2.56	2.50	2.4	30.0
13C8 FOSA	Ave	1.405	1.433		2.55	2.50	2.0	30.0
M2-8:2FTS	Ave	0.2470	0.2632		2.55	2.40	6.6	30.0
13C2 PFDA	Ave	0.7258	0.7659		2.64	2.50	5.5	30.0
d3-NMeFOSAA	Ave	0.3136	0.3153		2.51	2.50	0.5	30.0
13C2 PFUnA	Ave	0.6345	0.6823		2.69	2.50	7.5	30.0
d5-NEtFOSAA	Ave	0.3512	0.3646		2.60	2.50	3.8	30.0
13C2 PFDoA	Ave	0.6459	0.6481		2.51	2.50	0.3	30.0
13C2-PFTeDA	Ave	0.6190	0.6065		2.45	2.50	-2.0	30.0
13C2-PFHxDA	Ave	0.9793	0.9893		2.53	2.50	1.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61319.b\2018.07.19LLC_004.d
 Lims ID: CCVL
 Client ID:
 Sample Type: CCVL
 Inject. Date: 19-Jul-2018 19:20:16 ALS Bottle#: 21 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCVL
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61319.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 20-Jul-2018 16:37:39 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK011

First Level Reviewer: mongkols Date: 20-Jul-2018 16:37:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.441	1.441	0.0	1.000	96549	0.0496		99.1	44.7	
D 1 13C4 PFBA										
217.00 > 172.00	1.441	1.442	-0.001	0.528	4850158	2.46		98.3	59498	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.756	1.756	0.0	1.000	90342	0.0535		107	37.1	
D 3 13C5-PFPeA										
267.90 > 223.00	1.756	1.757	-0.001	0.644	3440486	2.50		100	49246	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.801	1.801	0.0	1.000	115468	0.0419		94.9	1010	
298.90 > 99.00	1.801	1.801	0.0	1.000	52391		2.20(1.25-3.74)		939	
D 47 13C3-PFBS										
301.90 > 83.00	1.801	1.802	-0.001	0.660	82713	2.33		100	640	
D 60 M2-4:2FTS										
329.00 > 81.00	2.026	2.016	0.010	0.743	458683	NC			6624	
61 1H,1H,2H,2H-perfluorohexanesulfoni										
327.00 > 307.00	2.026	2.025	0.001	1.125	19070	0.0409		87.5	1129	
6 Perfluorohexanoic acid										
313.00 > 269.00	2.060	2.059	0.001	1.000	90109	0.0520		104	271	
313.00 > 119.00	2.060	2.059	0.001	1.000	10341		8.71(5.03-15.10)		290	
D 7 13C2 PFHxA										
315.00 > 270.00	2.060	2.061	-0.001	0.755	3984140	2.48		99.3	85073	
70 Perfluoropentanesulfonic acid										
349.00 > 80.00	2.083	2.082	0.001	1.156	119021	0.0461		98.2	2855	
349.00 > 99.00	2.083	2.082	0.001	1.156	40787		2.92(1.36-4.07)		1165	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.150	2.151	-0.001	0.788	247321	NC			5233	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.162	2.161	0.001	1.005	11745	NC	109	
10 Perfluoroheptanoic acid	363.00	> 319.00	2.385	2.384	0.001	1.000	90800	0.0498	99.5	232
	363.00	> 169.00	2.385	2.384	0.001	1.000	34673	2.62(1.13-3.40)		477
D 9 13C4-PFHpA	367.00	> 322.00	2.385	2.386	-0.001	0.874	3981839	2.56	102	62207
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.396	2.395	0.001	1.000	121405	0.0509	112	1453
	399.00	> 99.00	2.396	2.395	0.001	1.000	38078	3.19(1.50-4.49)		346
D 11 18O2 PFHxS	403.00	> 84.00	2.396	2.397	-0.001	0.878	4936970	2.37	100	36043
65 ADONA	377.00	> 251.00	2.419	2.429	-0.010	0.786	236069	NC		5405
	377.00	> 85.00	2.419	2.429	-0.010	0.786	143313	1.65(0.84-2.53)		1192
D 12 M2-6:2FTS	429.00	> 81.00	2.705	2.699	0.006	0.992	721244	2.40	101	17091
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.705	2.705	0.0	1.000	23854	0.0483	102	935
D 14 13C4 PFOA	417.00	> 372.00	2.728	2.721	0.007	1.000	3803380	2.53	101	42814
* 62 13C2-PFOA	415.00	> 370.00	2.728	2.727	0.001		3942446	2.50		51695
15 Perfluorooctanoic acid	413.00	> 369.00	2.728	2.727	0.001	1.000	95812	0.0512	102	53.2
	413.00	> 169.00	2.728	2.727	0.001	1.000	54447	1.76(0.84-2.52)		340
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.736	2.735	0.001	0.889	92915	0.0456	95.8	2034
	449.00	> 99.00	2.728	2.735	-0.007	0.886	24551	3.78(1.94-5.82)		630
D 19 13C5 PFNA	468.00	> 423.00	3.087	3.085	0.002	1.131	3250196	2.56	102	56992
D 18 13C4 PFOS	503.00	> 80.00	3.079	3.085	-0.006	1.129	3629089	2.43	102	42718
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.087	3.091	-0.004	1.003	82460	0.0459	98.9	1746
	499.00	> 99.00	3.087	3.091	-0.004	1.003	18257	4.52(2.31-6.93)		357
20 Perfluorononanoic acid	463.00	> 419.00	3.087	3.091	-0.004	1.000	73683	0.0502	100	155
	463.00	> 169.00	3.087	3.091	-0.004	1.000	14696	5.01(1.90-5.69)		610
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.286	3.290	-0.004	1.067	124642	NC		1436
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.424	3.420	0.004	1.000	108870	0.0472	94.5	3032
D 26 M2-8:2FTS	529.00	> 81.00	3.424	3.423	0.001	1.255	993936	2.55	107	12939
D 21 13C8 FOSA	506.00	> 78.00	3.424	3.423	0.001	1.255	5649446	2.55	102	46147

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.424	3.429	-0.005	1.000	28590	0.0519	108	367
68 Perfluorononanesulfonic acid	549.00	> 80.00	3.424	3.429	-0.005	1.112	58891	0.0477	99.4	2642
	549.00	> 99.00	3.424	3.429	-0.005	1.112	20594	2.86(1.33-3.97)		403
24 Perfluorodecanoic acid	513.00	> 469.00	3.433	3.438	-0.005	1.000	64722	0.0497	99.5	485
	513.00	> 169.00	3.433	3.438	-0.005	1.000	11791	5.49(2.36-7.09)		654
D 23 13C2 PFDA	515.00	> 470.00	3.433	3.441	-0.008	1.259	3019451	2.64	106	26794
D 27 d3-NMeFOSAA	573.00	> 419.00	3.584	3.593	-0.009	1.314	1242885	2.51	101	28470
28 N-methyl perfluorooctane sulfonami	570.00	> 419.00	3.595	3.600	-0.005	1.003	22411	0.0449	89.8	195
29 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.749	3.752	-0.003	1.218	57648	0.0542	112	1691
	599.00	> 99.00	3.749	3.752	-0.003	1.218	17514	3.29(1.39-4.16)		468
D 30 13C2 PFUnA	565.00	> 520.00	3.759	3.758	0.001	1.378	2689783	2.69	108	37413
D 32 d5-NEtFOSAA	589.00	> 419.00	3.759	3.758	0.001	1.378	1437386	2.60	104	3247
31 Perfluoroundecanoic acid	563.00	> 519.00	3.770	3.763	0.007	1.003	39749	0.0469	93.9	210
	563.00	> 169.00	3.759	3.763	-0.004	1.000	12843	3.09(2.12-6.36)		885
33 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.759	3.763	-0.004	1.000	26683	0.0530	106	911
66 11-Chloroeicosafuoro-3-oxaundecan	631.00	> 451.00	3.916	3.919	-0.003	1.272	199180	NC		5313
D 36 13C2 PFDoA	615.00	> 570.00	4.049	4.047	0.002	1.484	2555211	2.51	100	20779
37 Perfluorododecanoic acid	613.00	> 569.00	4.049	4.051	-0.002	1.000	55298	0.0490	97.9	31.9
	613.00	> 169.00	4.049	4.051	-0.002	1.000	12798	4.32(2.13-6.40)		450
41 Perfluorotridecanoic acid	663.00	> 619.00	4.307	4.308	-0.001	1.064	54093	0.0471	94.3	24.1
	663.00	> 169.00	4.307	4.308	-0.001	1.064	16105	3.36(1.25-3.76)		290
D 43 13C2-PFTeDA	715.00	> 670.00	4.541	4.542	-0.001	1.665	2390936	2.45	98.0	12408
42 Perfluorotetradecanoic acid	713.00	> 169.00	4.541	4.544	-0.003	1.000	12581	0.0500	99.9	219
	713.00	> 219.00	4.541	4.544	-0.003	1.000	9119	1.38(0.71-2.13)		241
D 44 13C2-PFHxDA	815.00	> 770.00	4.956	4.957	-0.001	1.817	3900230	2.53	101	10089
45 Perfluorohexadecanoic acid	813.00	> 769.00	4.956	4.958	-0.002	1.000	104953	NC		26.0
	813.00	> 169.00	4.956	4.958	-0.002	1.000	18702	5.61(2.86-8.58)		225

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.305	5.299	0.006	1.070	90105	NC			20.4	
913.00 > 169.00	5.305	5.299	0.006	1.070	11698		7.70(3.83-11.48)		217	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL2_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61319.b\2018.07.19LLC_004.d

Injection Date: 19-Jul-2018 19:20:16

Instrument ID: A8_N

Lims ID: CCVL

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 21

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

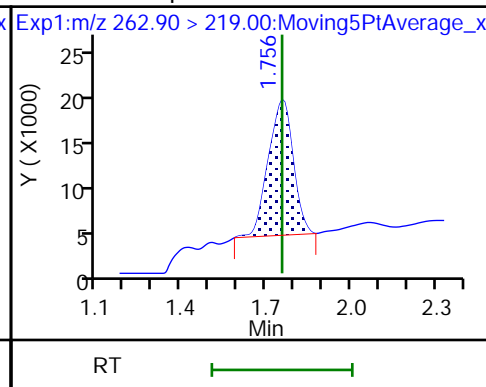
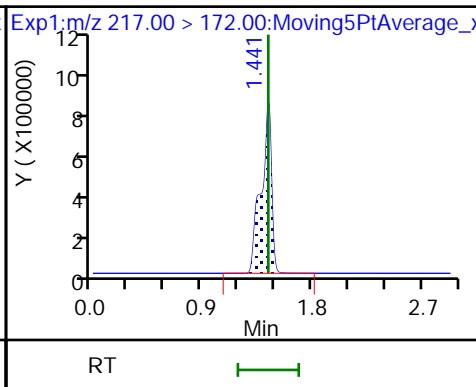
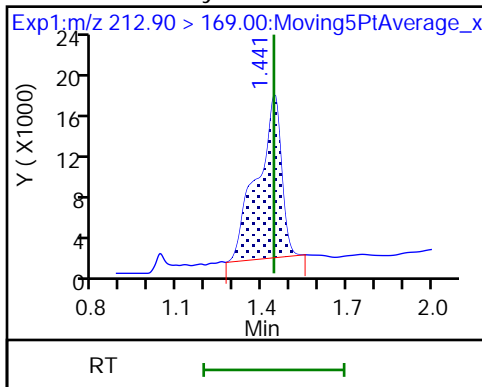
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

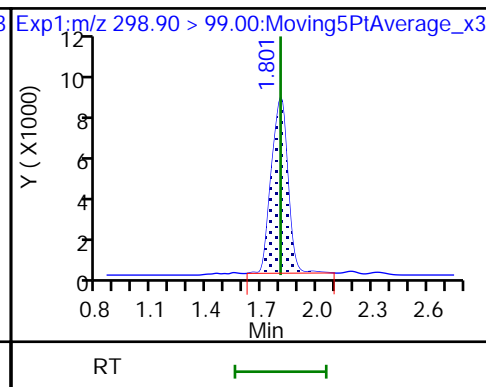
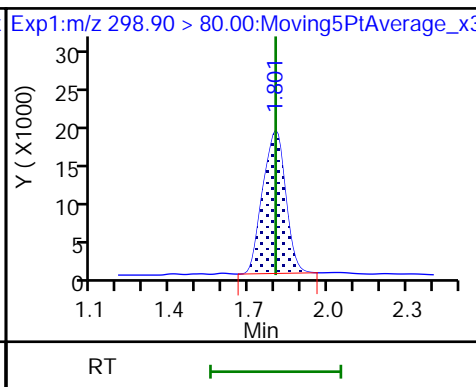
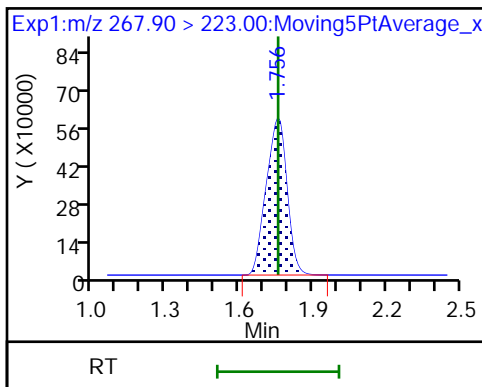
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

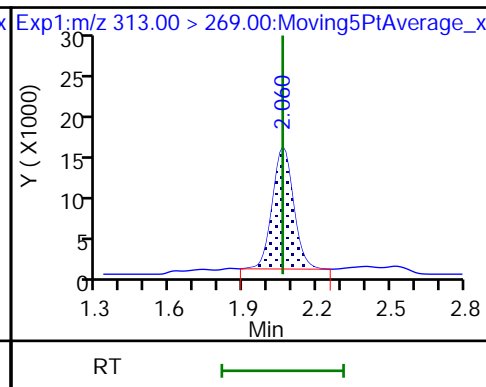
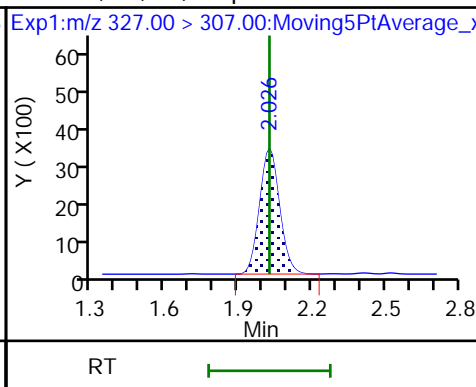
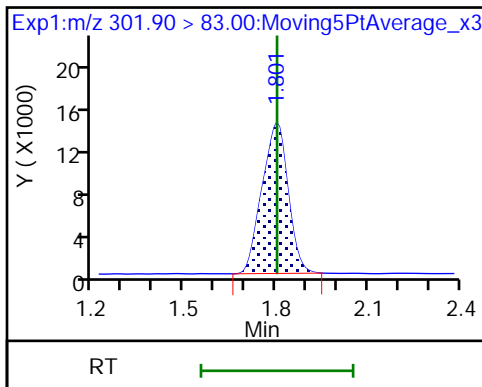
5 Perfluorobutanesulfonic acid



D 47 13C3-PFBS

61 1H,1H,2H,2H-perfluorohexanesulfoni

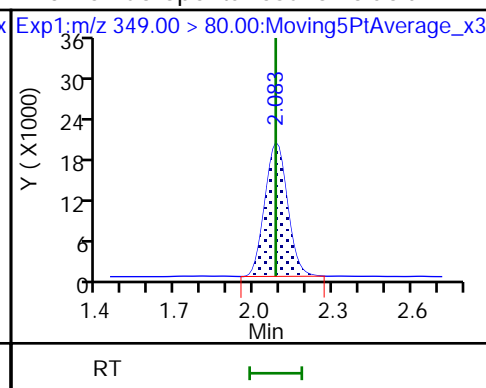
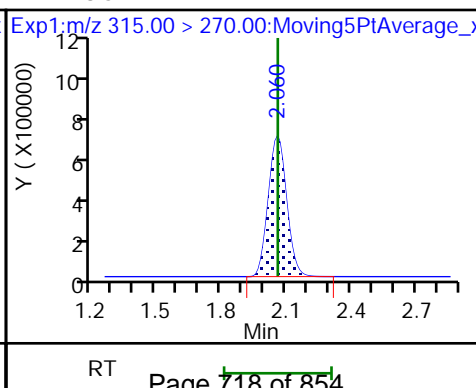
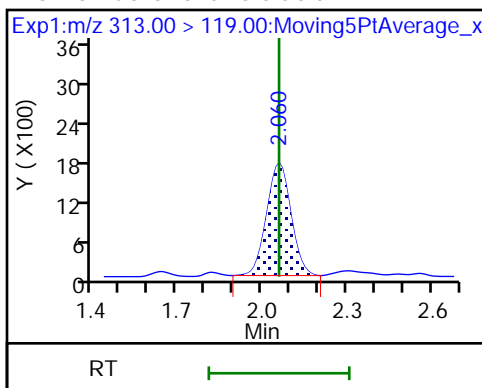
6 Perfluorohexanoic acid

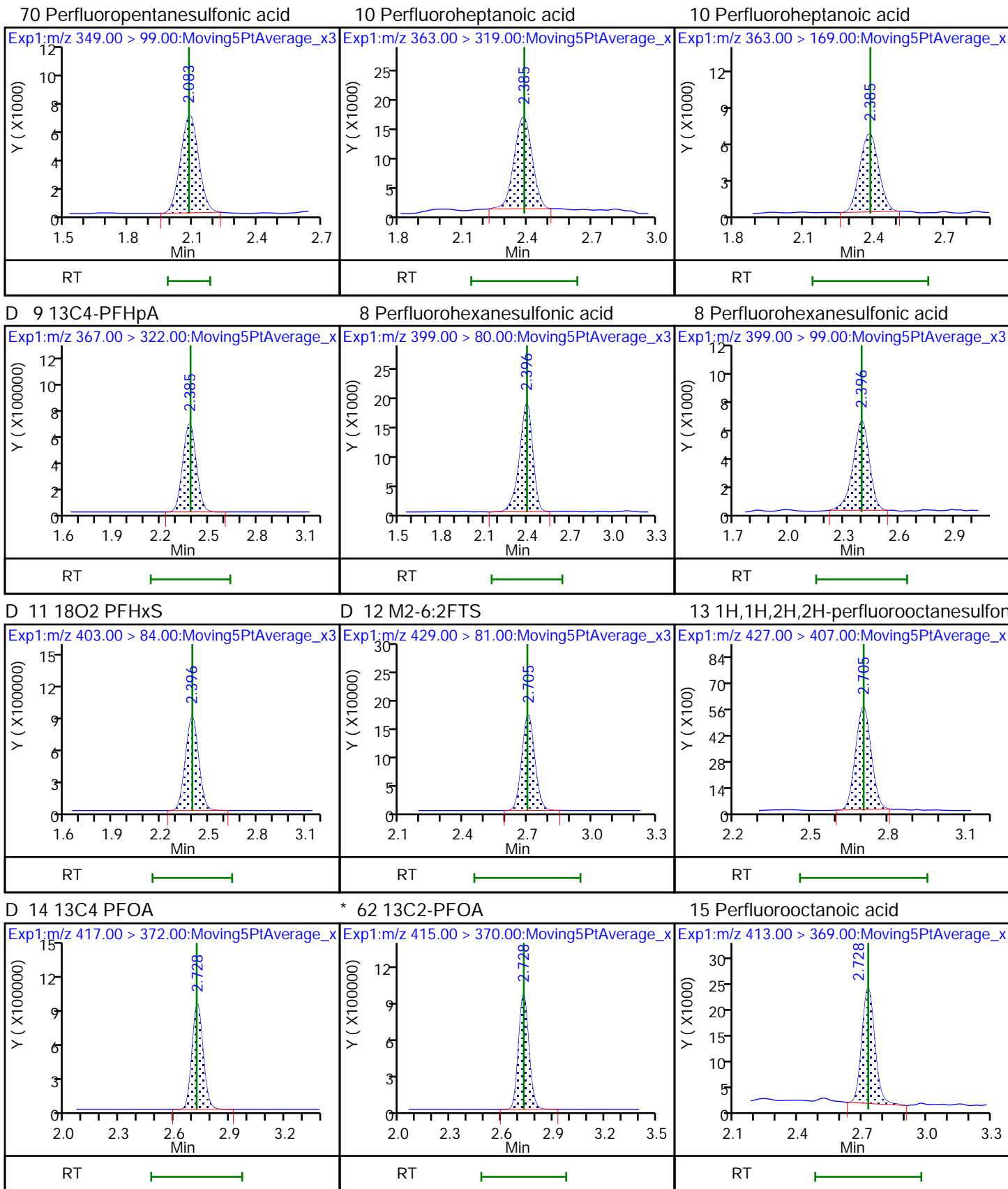


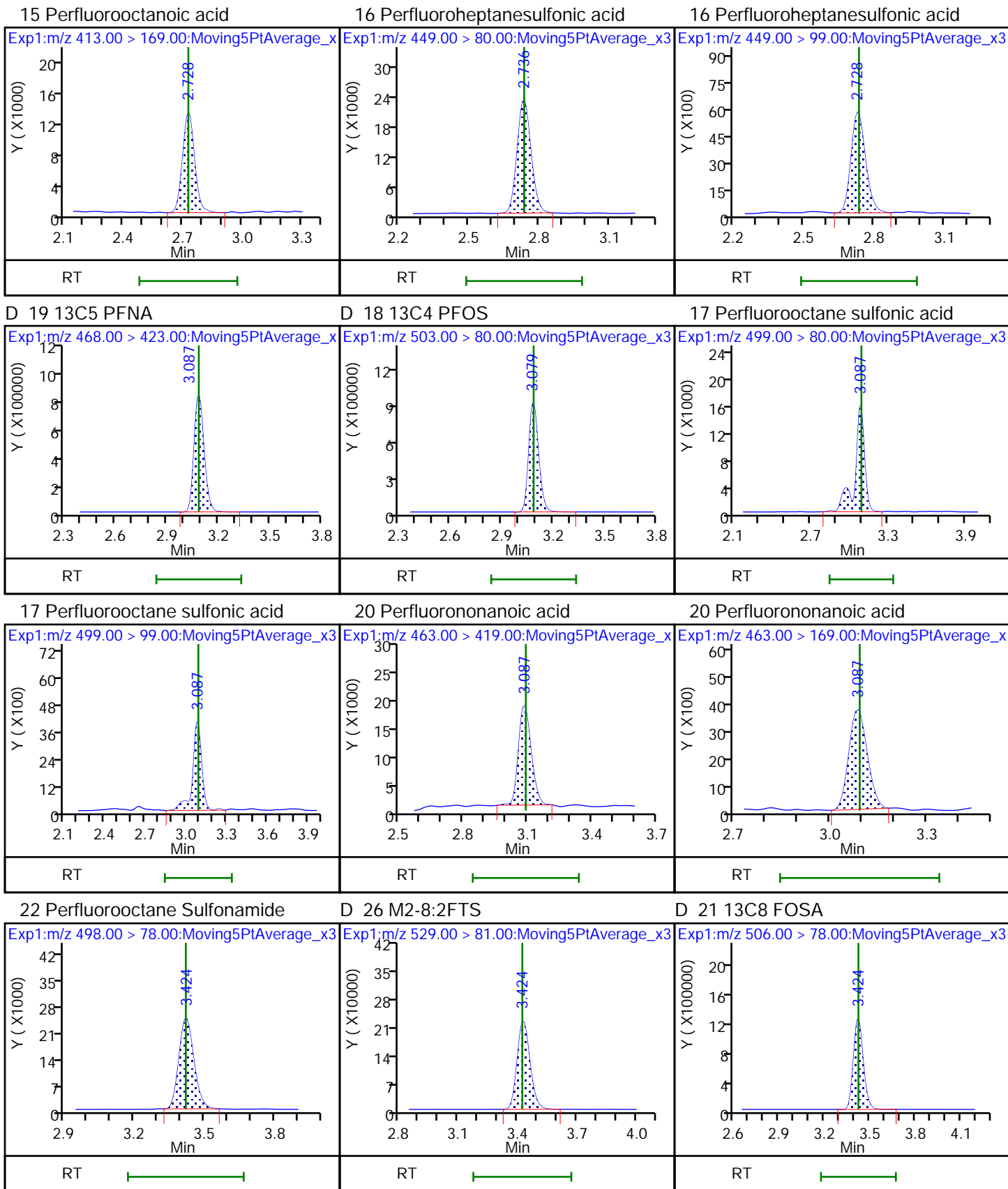
6 Perfluorohexanoic acid

D 7 13C2 PFHxA

70 Perfluoropentanesulfonic acid

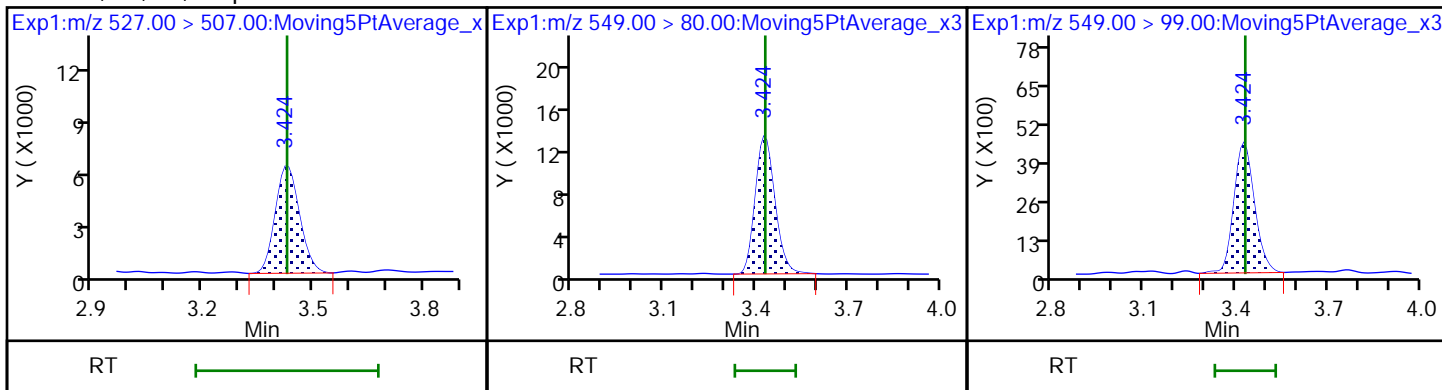






25 1H,1H,2H,2H-perfluorodecanesulfonyl 68 Perfluorononanesulfonic acid

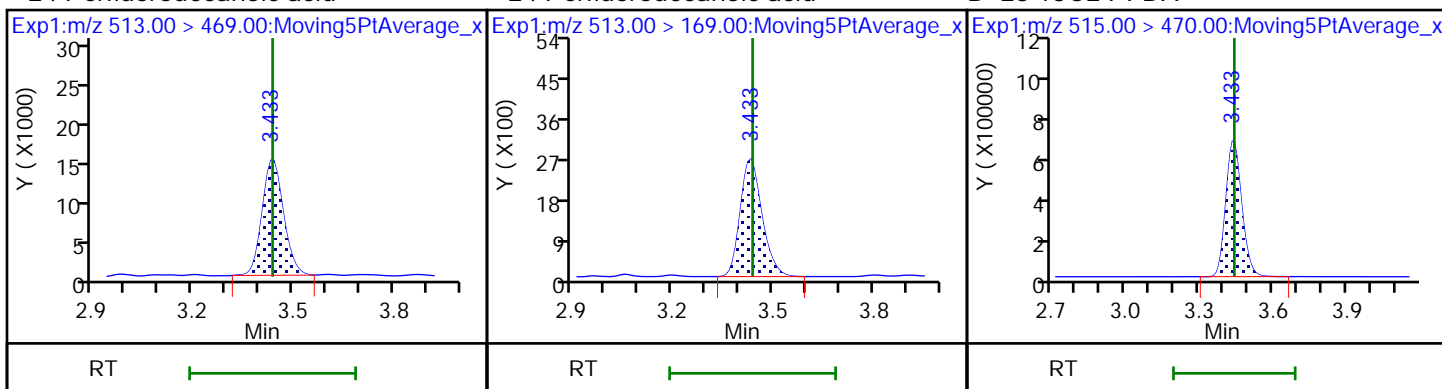
68 Perfluorononanesulfonic acid



24 Perfluorodecanoic acid

24 Perfluorodecanoic acid

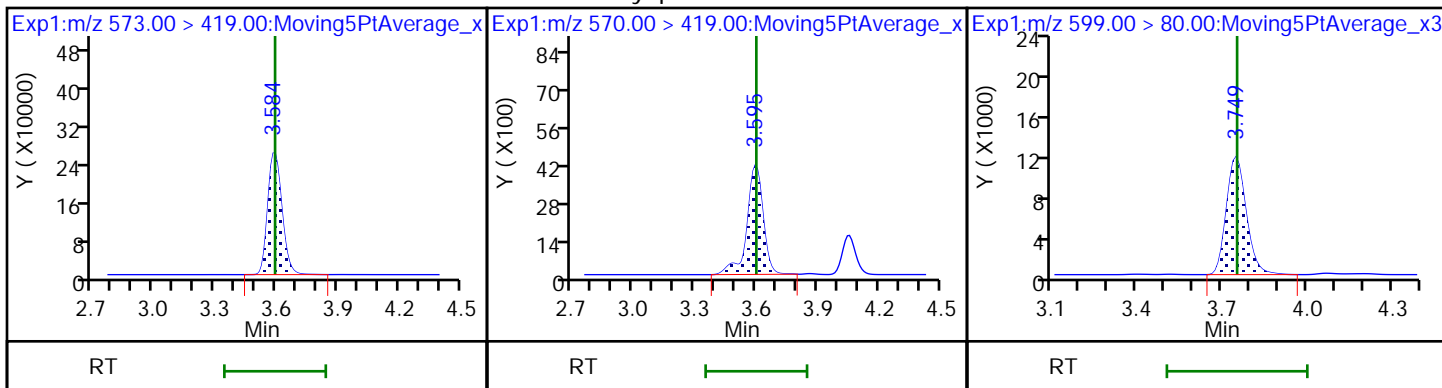
D 23 13C2 PFDA



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

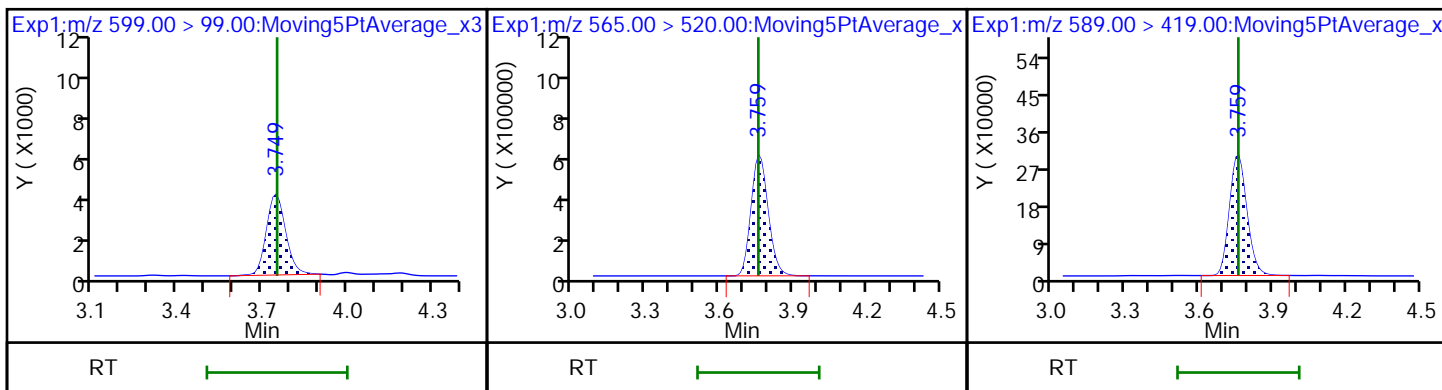
29 Perfluorodecane Sulfonic acid

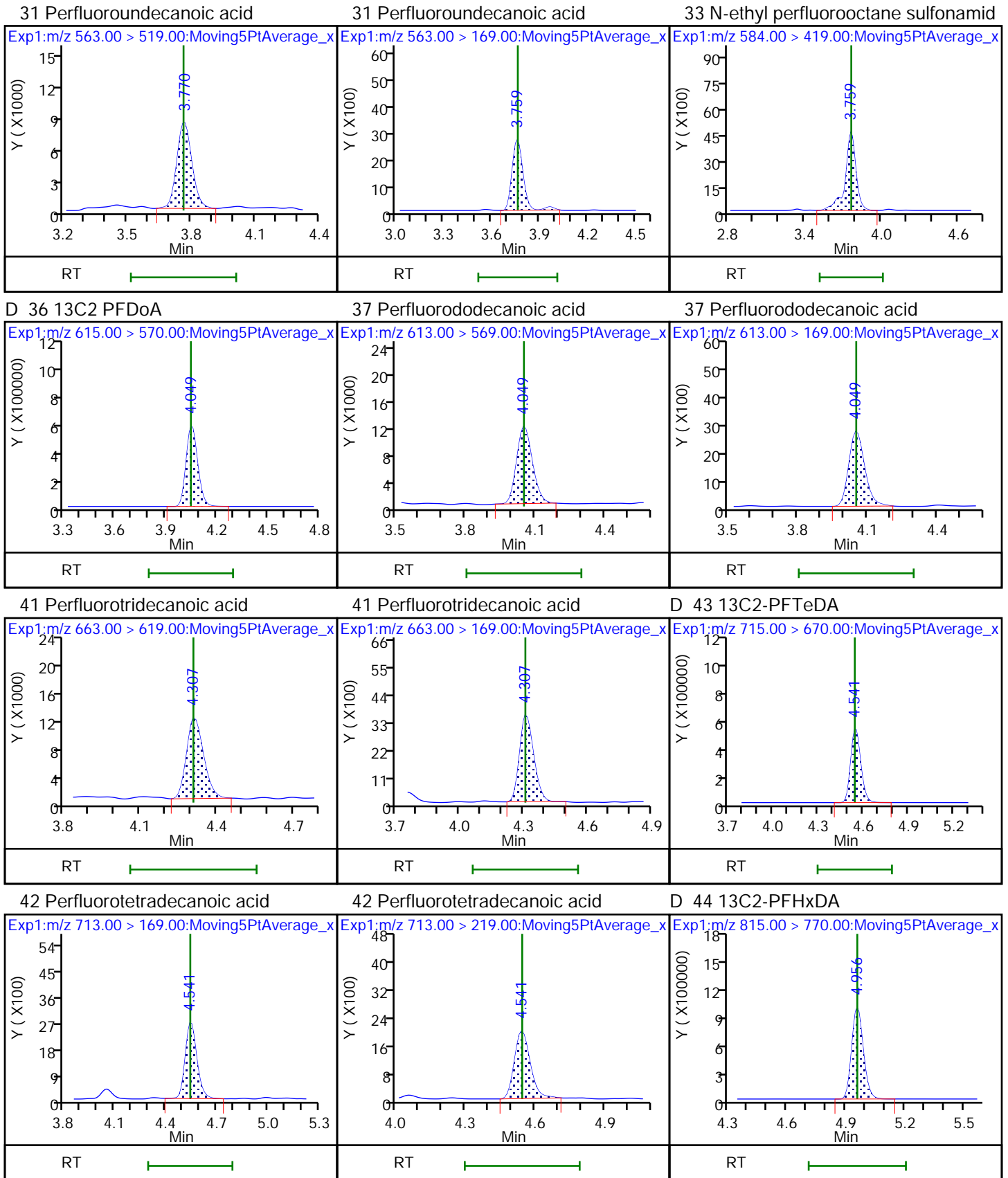


29 Perfluorodecane Sulfonic acid

D 30 13C2 PFUnA

D 32 d5-NEtFOSAA





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235044/3 Calibration Date: 07/19/2018 19:28
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.004	0.9818		0.978	1.00	-2.2	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.226	1.173		0.956	1.00	-4.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.41	76.95		0.879	0.884	-0.6	30.0
4:2 FTS	AveID	13.12	13.70		0.975	0.934	4.4	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.087	1.006		0.925	1.00	-7.5	30.0
Perfluoropentanesulfonic acid	AveID	72.64	73.82		0.953	0.938	1.6	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.146	1.076		0.940	1.00	-6.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.144	1.075		0.856	0.910	-6.0	30.0
6:2 FTS	AveID	1.626	1.584		0.923	0.948	-2.6	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.231	1.157		0.941	1.00	-6.0	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.342	1.293		0.917	0.952	-3.7	30.0
Perfluorononanoic acid (PFNA)	AveID	1.129	1.029		0.911	1.00	-8.9	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.184	1.106		0.867	0.928	-6.6	30.0
Perfluorononanesulfonic acid	AveID	0.8131	0.7602		0.897	0.960	-6.5	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.020	1.000		0.981	1.00	-1.9	30.0
8:2 FTS	AveID	1.328	1.326		0.956	0.958	-0.2	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.077	1.009		0.937	1.00	-6.3	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.004	0.9876		0.984	1.00	-1.6	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7010	0.6470		0.890	0.964	-7.7	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8755	0.8906		1.02	1.00	1.7	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.7872	0.7702		0.978	1.00	-2.2	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.105	1.093		0.990	1.00	-1.0	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.122	1.024		0.912	1.00	-8.8	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2633	0.2656		1.01	1.00	0.9	30.0
13C4 PFBA	Ave	1.251	1.216		2.43	2.50	-2.8	30.0
13C5 PFPeA	Ave	0.8714	0.8550		2.45	2.50	-1.9	30.0
13C3-PFBS	Ave	0.0225	0.0216		2.23	2.33	-4.0	30.0
13C2 PFHxA	Ave	1.018	1.014		2.49	2.50	-0.4	30.0
13C4-PFHpA	Ave	0.9854	0.9736		2.47	2.50	-1.2	30.0
18O2 PFHxS	Ave	1.320	1.275		2.28	2.37	-3.4	30.0
M2-6:2FTS	Ave	0.1903	0.1955		2.44	2.38	2.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235044/3 Calibration Date: 07/19/2018 19:28
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9522	0.9193		2.41	2.50	-3.5	30.0
13C4 PFOS	Ave	0.9465	0.9462		2.39	2.39	-0.0	30.0
13C5 PFNA	Ave	0.8048	0.8410		2.61	2.50	4.5	30.0
13C8 FOSA	Ave	1.405	1.400		2.49	2.50	-0.3	30.0
M2-8:2FTS	Ave	0.2470	0.2556		2.48	2.40	3.5	30.0
13C2 PFDA	Ave	0.7258	0.7523		2.59	2.50	3.6	30.0
d3-NMeFOSAA	Ave	0.3136	0.3214		2.56	2.50	2.5	30.0
d5-NEtFOSAA	Ave	0.3512	0.3558		2.53	2.50	1.3	30.0
13C2 PFUnA	Ave	0.6345	0.6349		2.50	2.50	0.0	30.0
13C2 PFDoA	Ave	0.6459	0.6387		2.47	2.50	-1.1	30.0
13C2-PFTeDA	Ave	0.6190	0.5735		2.32	2.50	-7.4	30.0
13C2-PFHxDA	Ave	0.9793	0.8816		2.25	2.50	-10.0	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61319.b\2018.07.19LLC_021.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCVIS
 Inject. Date: 19-Jul-2018 19:28:03 ALS Bottle#: 13 Worklist Smp#: 3
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61319.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 20-Jul-2018 16:38:14 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK011

First Level Reviewer: mongkols Date: 20-Jul-2018 16:38:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags	
2 Perfluorobutyric acid	212.90	> 169.00	1.441	1.441	0.0	1.004	1578258	0.9778	97.8	917	
D 1 13C4 PFBA	217.00	> 172.00	1.436	1.442	-0.006	0.528	4018965	2.43	97.2	62129	
4 Perfluoropentanoic acid	262.90	> 219.00	1.756	1.756	0.0	1.000	1325647	0.9564	95.6	548	M
D 3 13C5-PFPeA	267.90	> 223.00	1.756	1.757	-0.001	0.646	2825506	2.45	98.1	53594	M
5 Perfluorobutanesulfonic acid	298.90	> 80.00	1.801	1.801	0.0	1.005	1944062	0.8787	99.4	18135	
	298.90	> 99.00	1.801	1.801	0.0	1.005	808009	2.41(1.25-3.74)		10432	
D 47 13C3-PFBS	301.90	> 83.00	1.792	1.802	-0.010	0.659	66449	2.23	96.0	494	
D 60 M2-4:2FTS	329.00	> 81.00	2.015	2.016	-0.001	0.741	383857	NC		5728	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00	> 307.00	2.015	2.015	0.0	1.124	365723	0.9753	104	20369	
6 Perfluorohexanoic acid	313.00	> 269.00	2.060	2.060	0.0	1.006	1348958	0.9253	92.5	3794	
	313.00	> 119.00	2.060	2.060	0.0	1.006	116020	11.63(5.03-15.10)		2662	
D 7 13C2 PFHxA	315.00	> 270.00	2.049	2.061	-0.012	0.753	3352383	2.49	99.6	67869	
70 Perfluoropentanesulfonic acid	349.00	> 80.00	2.083	2.083	0.0	1.162	1979045	0.9533	102	45811	
	349.00	> 99.00	2.083	2.083	0.0	1.162	722719	2.74(1.36-4.07)		16712	
D 64 13C3 HFPO-DA	332.10	> 287.00	2.150	2.151	-0.001	0.791	226832	NC		3583	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.150	2.150	0.0	1.000	257603	NC		2157
10 Perfluoroheptanoic acid	363.00	> 319.00	2.372	2.372	0.0	1.000	1385401	0.9396	94.0	2935
	363.00	> 169.00	2.372	2.372	0.0	1.000	574842	2.41(1.13-3.40)		7952
D 9 13C4-PFHpA	367.00	> 322.00	2.372	2.386	-0.014	0.872	3217582	2.47	98.8	48224
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.385	2.385	0.0	1.000	1648528	0.8556	94.0	11269
	399.00	> 99.00	2.385	2.385	0.0	1.000	559898	2.94(1.50-4.49)		4469
D 11 18O2 PFHxS	403.00	> 84.00	2.385	2.397	-0.012	0.877	3984638	2.28	96.6	47037
65 ADONA	377.00	> 251.00	2.418	2.418	0.0	0.786	4210502	NC		42938
	377.00	> 85.00	2.418	2.418	0.0	0.786	2492020	1.69(0.84-2.53)		18132
D 12 M2-6:2FTS	429.00	> 81.00	2.698	2.699	-0.001	0.992	613774	2.44	103	15141
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.698	2.698	0.0	1.000	387982	0.9231	97.4	8647
D 14 13C4 PFOA	417.00	> 372.00	2.720	2.721	-0.001	1.000	3038053	2.41	96.5	30990
* 62 13C2-PFOA	415.00	> 370.00	2.720	2.720	0.0		3304797	2.50		43700
15 Perfluorooctanoic acid	413.00	> 369.00	2.720	2.720	0.0	1.000	1407811	0.9411	94.0	799
	413.00	> 169.00	2.720	2.720	0.0	1.000	753025	1.87(0.84-2.52)		5782
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.728	2.728	0.0	0.887	1539257	0.9171	96.3	18014
	449.00	> 99.00	2.728	2.728	0.0	0.887	423894	3.63(1.94-5.82)		7950
D 19 13C5 PFNA	468.00	> 423.00	3.076	3.085	-0.009	1.131	2779309	2.61	104	32121
D 18 13C4 PFOS	503.00	> 80.00	3.076	3.085	-0.009	1.131	2989428	2.39	100.0	26215
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.076	3.076	0.0	1.000	1283690	0.8671	93.4	18195
	499.00	> 99.00	3.076	3.076	0.0	1.000	295754	4.34(2.31-6.93)		5736
20 Perfluorononanoic acid	463.00	> 419.00	3.076	3.076	0.0	1.000	1143499	0.9112	91.1	2268
	463.00	> 169.00	3.076	3.076	0.0	1.000	292281	3.91(1.90-5.69)		7930
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.284	3.284	0.0	1.067	2182993	NC		22759
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.412	3.412	0.0	1.000	1851556	0.9808	98.1	19279
D 26 M2-8:2FTS	529.00	> 81.00	3.421	3.423	-0.002	1.258	809116	2.48	103	12512
D 21 13C8 FOSA	506.00	> 78.00	3.412	3.423	-0.011	1.254	4627811	2.49	99.7	30694

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.421	3.421	0.0	1.000	429105	0.9561	99.8	5233
68 Perfluorononanesulfonic acid	549.00	> 80.00	3.412	3.412	0.0	1.109	912800	0.8975	93.5	18069
	549.00	> 99.00	3.412	3.412	0.0	1.109	361543	2.52(1.33-3.97)		4237
24 Perfluorodecanoic acid	513.00	> 469.00	3.430	3.430	0.0	1.000	1003295	0.9365	93.7	5799
	513.00	> 169.00	3.430	3.430	0.0	1.000	186387	5.38(2.36-7.09)		8188
D 23 13C2 PFDA	515.00	> 470.00	3.430	3.441	-0.011	1.261	2486065	2.59	104	23872
D 27 d3-NMeFOSAA	573.00	> 419.00	3.579	3.593	-0.014	1.316	1062268	2.56	102	22576
28 N-methyl perfluorooctane sulfonami	570.00	> 419.00	3.579	3.579	0.0	1.000	419650	0.9839	98.4	4236
29 Perfluorodecane Sulfonic acid	599.00	> 80.00	3.733	3.733	0.0	1.213	780190	0.8898	92.3	12260
	599.00	> 99.00	3.733	3.733	0.0	1.213	285912	2.73(1.39-4.16)		7339
D 30 13C2 PFUnA	565.00	> 520.00	3.754	3.758	-0.004	1.380	2098085	2.50	100	33271
D 32 d5-NEtFOSAA	589.00	> 419.00	3.743	3.758	-0.015	1.376	1175674	2.53	101	3063
31 Perfluoroundecanoic acid	563.00	> 519.00	3.754	3.754	0.0	1.000	646377	0.9784	97.8	3247
	563.00	> 169.00	3.754	3.754	0.0	1.000	175158	3.69(2.12-6.36)		7207
33 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.754	3.754	0.0	1.003	418811	1.02	102	7100
66 11-Chloroeicosafuoro-3-oxaundecan	631.00	> 451.00	3.910	3.910	0.0	1.271	3199873	NC		42526
D 36 13C2 PFDaA	615.00	> 570.00	4.041	4.047	-0.006	1.486	2110649	2.47	98.9	17165
37 Perfluorododecanoic acid	613.00	> 569.00	4.041	4.041	0.0	1.000	922999	0.9896	99.0	644
	613.00	> 169.00	4.041	4.041	0.0	1.000	228073	4.05(2.13-6.40)		5961
41 Perfluorotridecanoic acid	663.00	> 619.00	4.300	4.300	0.0	1.064	864739	0.9125	91.2	430
	663.00	> 169.00	4.300	4.300	0.0	1.064	270269	3.20(1.25-3.76)		4868
D 43 13C2-PFTeDA	715.00	> 670.00	4.534	4.542	-0.008	1.667	1895216	2.32	92.6	10072
42 Perfluorotetradecanoic acid	713.00	> 169.00	4.534	4.534	0.0	1.000	201318	1.01	101	4260
	713.00	> 219.00	4.534	4.534	0.0	1.000	144789	1.39(0.71-2.13)		3086
D 44 13C2-PFHxDA	815.00	> 770.00	4.950	4.957	-0.007	1.820	2913562	2.25	90.0	10094
45 Perfluorohexadecanoic acid	813.00	> 769.00	4.950	4.950	0.0	1.000	1130895	NC		305
	813.00	> 169.00	4.950	4.950	0.0	1.000	185875	6.08(2.86-8.58)		2153

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.300	5.300	0.0	1.071	1224599	NC			310	
913.00 > 169.00	5.300	5.300	0.0	1.071	153355		7.99(3.83-11.48)		2166	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL4_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61319.b\2018.07.19LLC_021.d

Injection Date: 19-Jul-2018 19:28:03

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

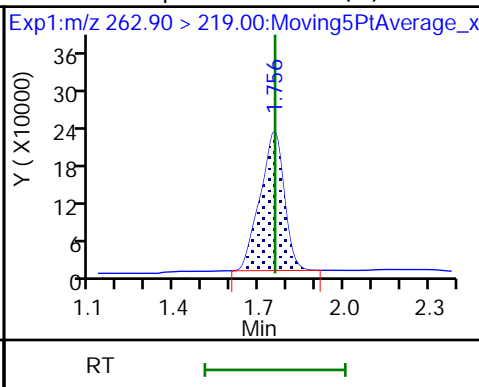
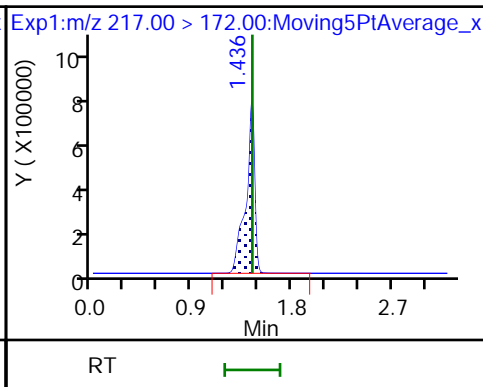
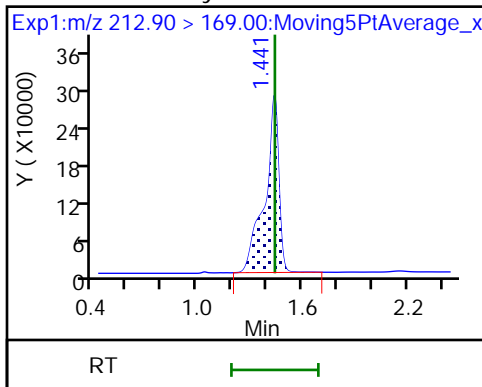
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

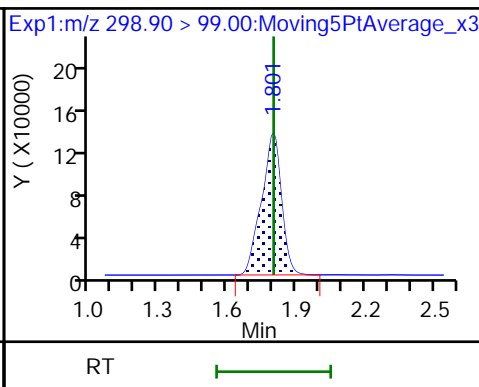
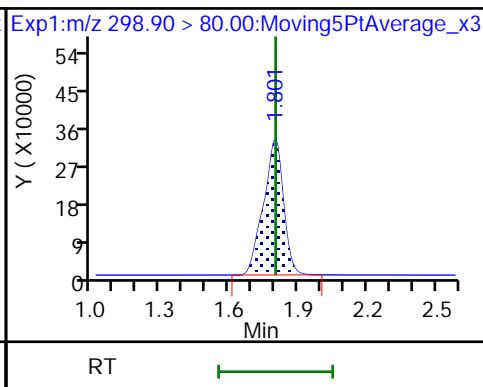
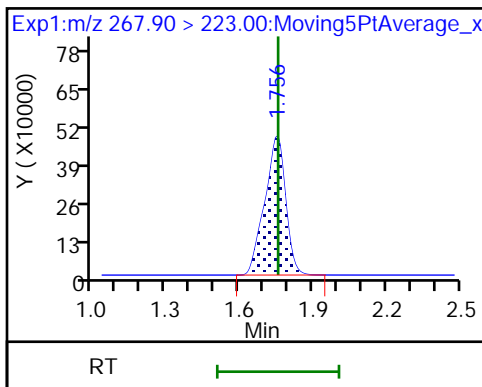
4 Perfluoropentanoic acid (M)



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

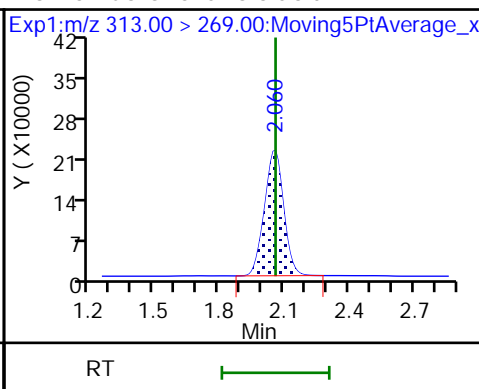
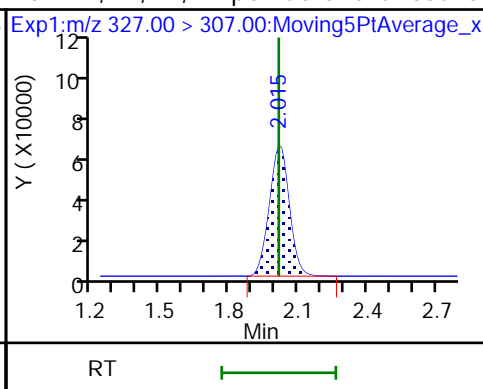
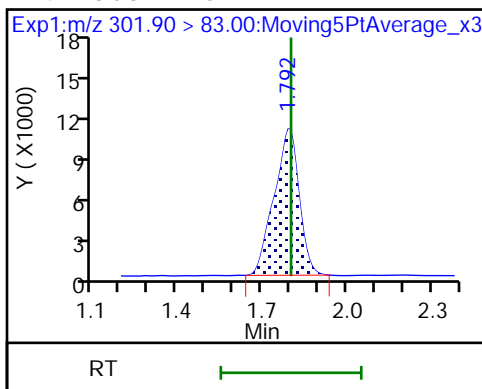
5 Perfluorobutanesulfonic acid



D 47 13C3-PFBS

61 1H,1H,2H,2H-perfluorohexanesulfoni

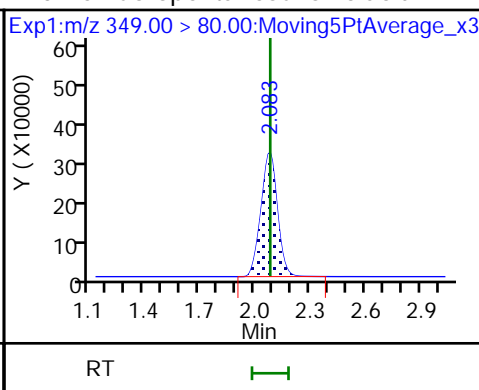
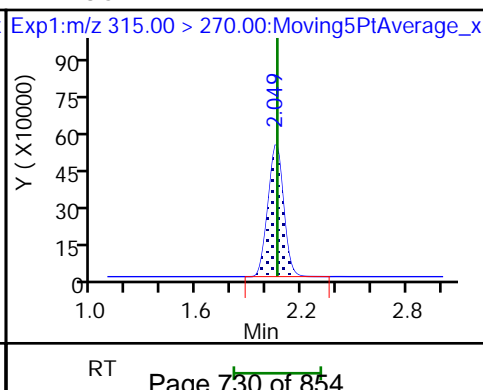
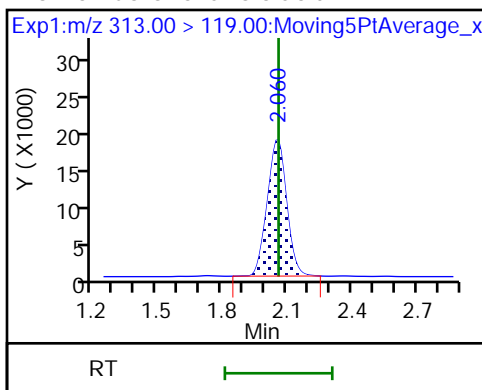
6 Perfluorohexanoic acid

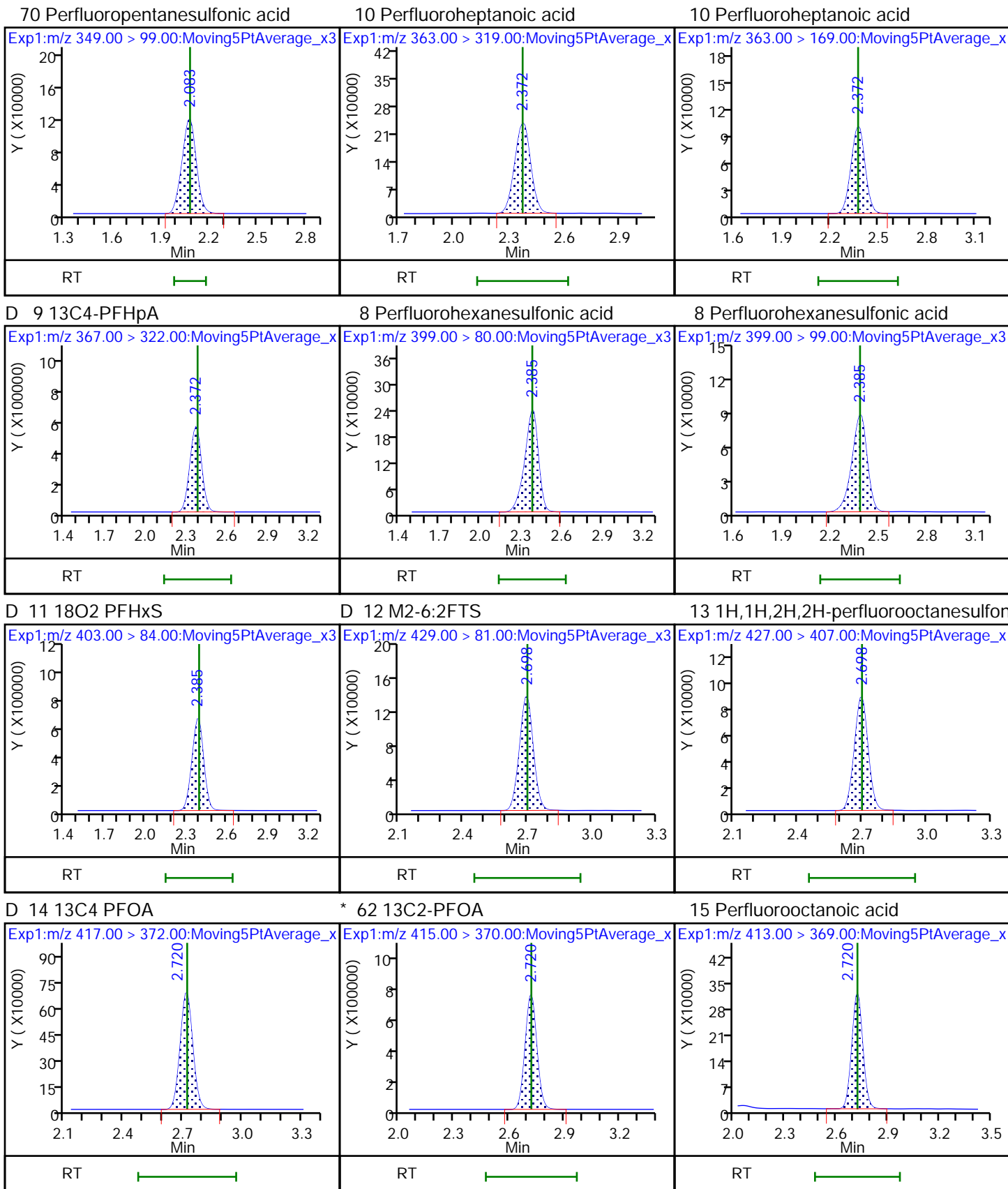


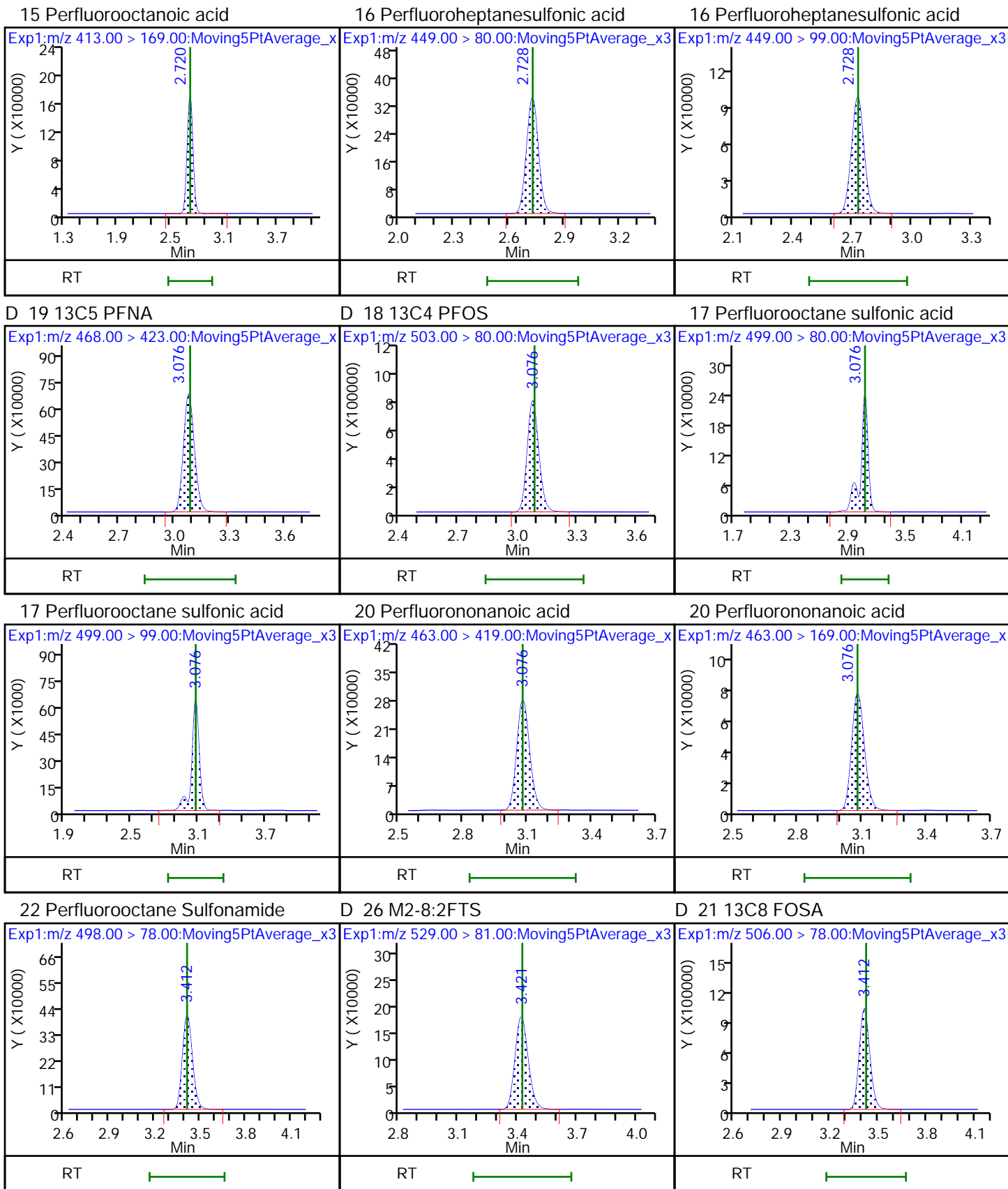
6 Perfluorohexanoic acid

D 7 13C2 PFHxA

70 Perfluoropentanesulfonic acid

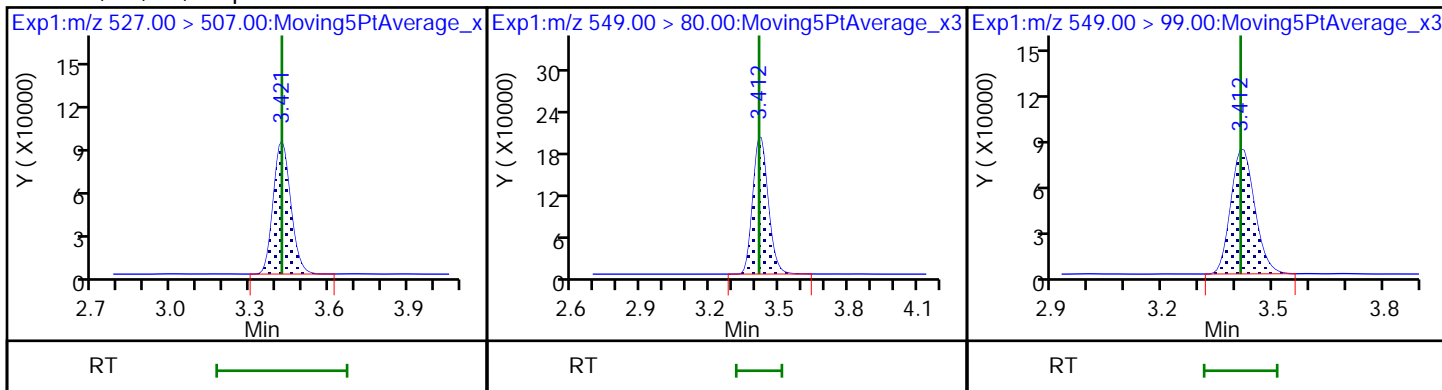






25 1H,1H,2H,2H-perfluorodecanesulfonyl 68 Perfluorononanesulfonic acid

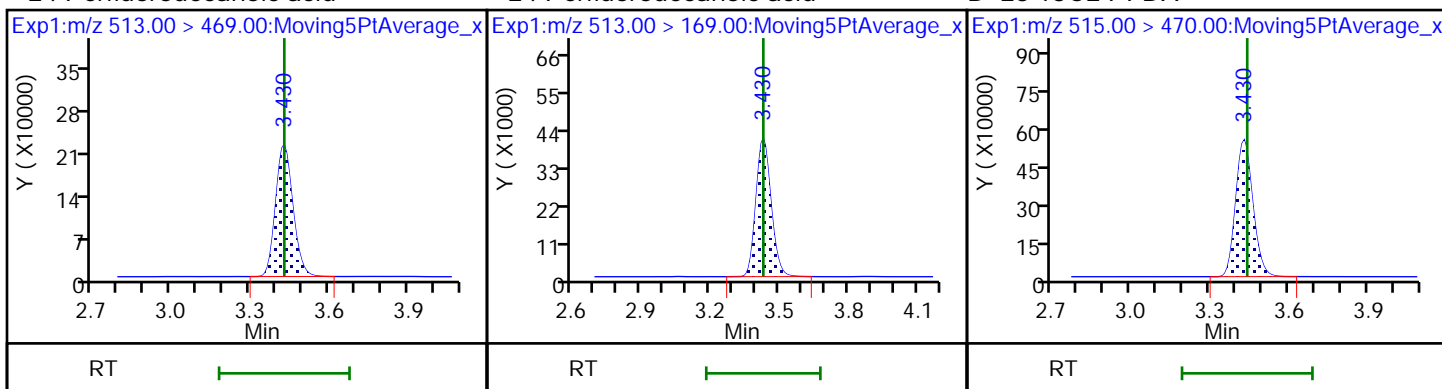
68 Perfluorononanesulfonic acid



24 Perfluorodecanoic acid

24 Perfluorodecanoic acid

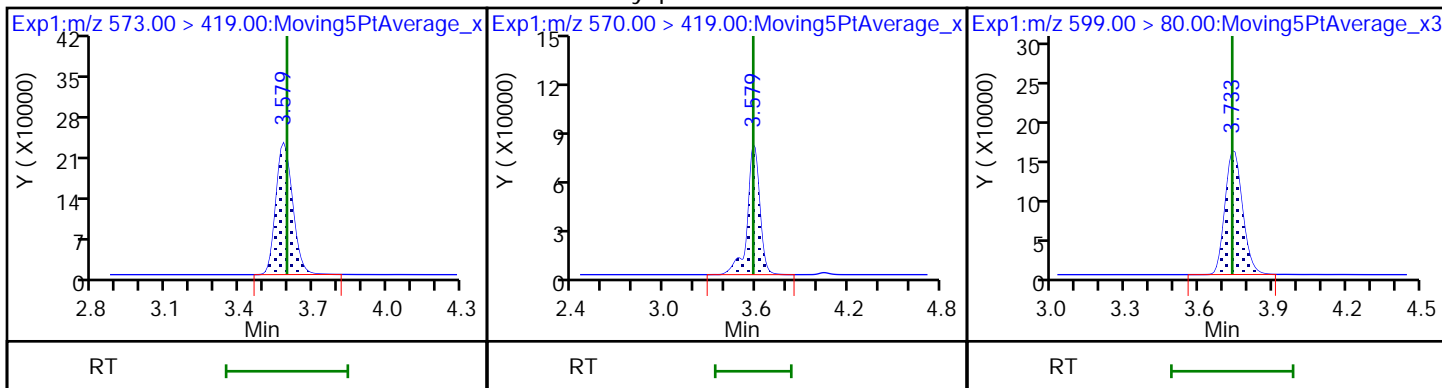
D 23 13C2 PFDA



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonami

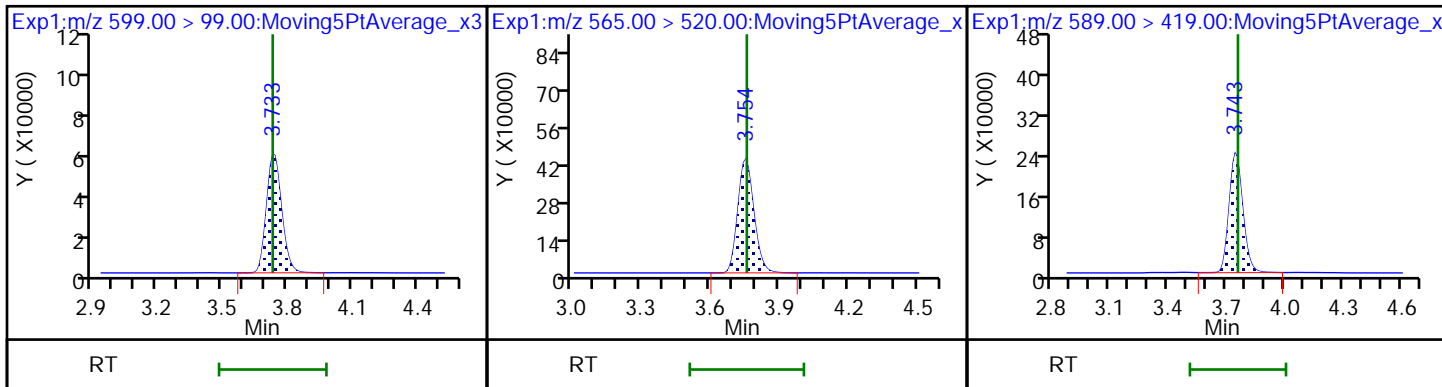
29 Perfluorodecane Sulfonic acid

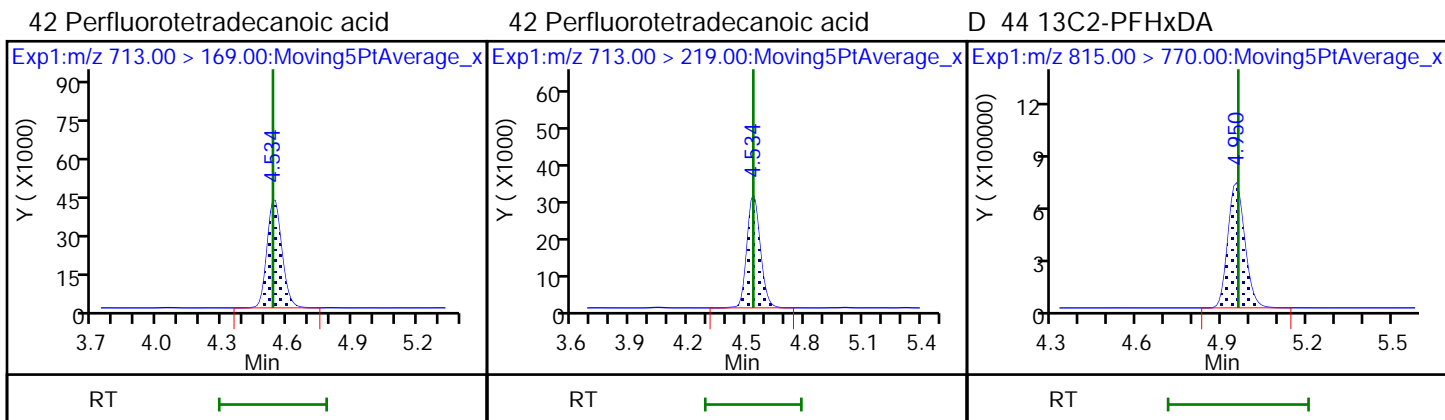
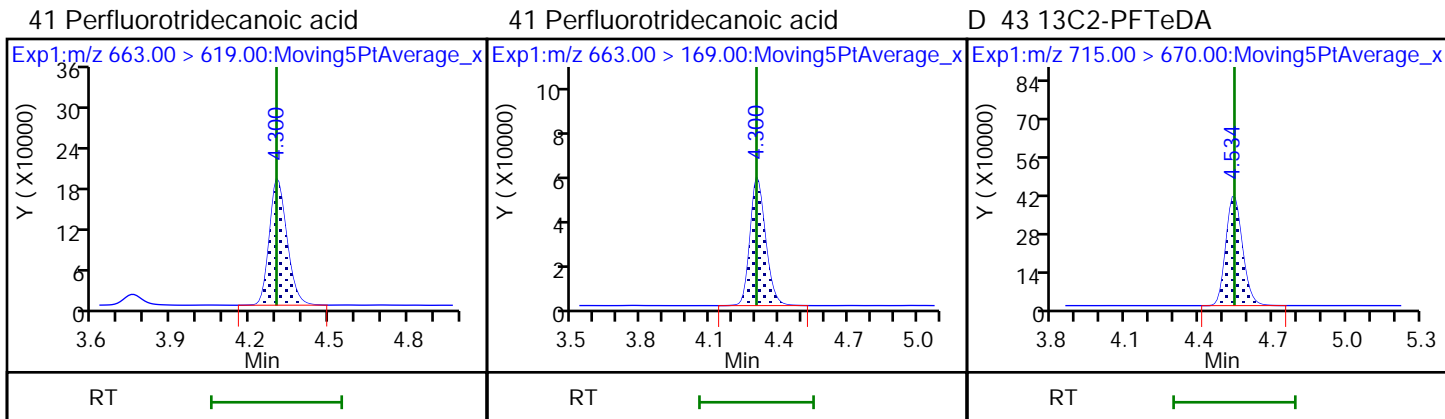
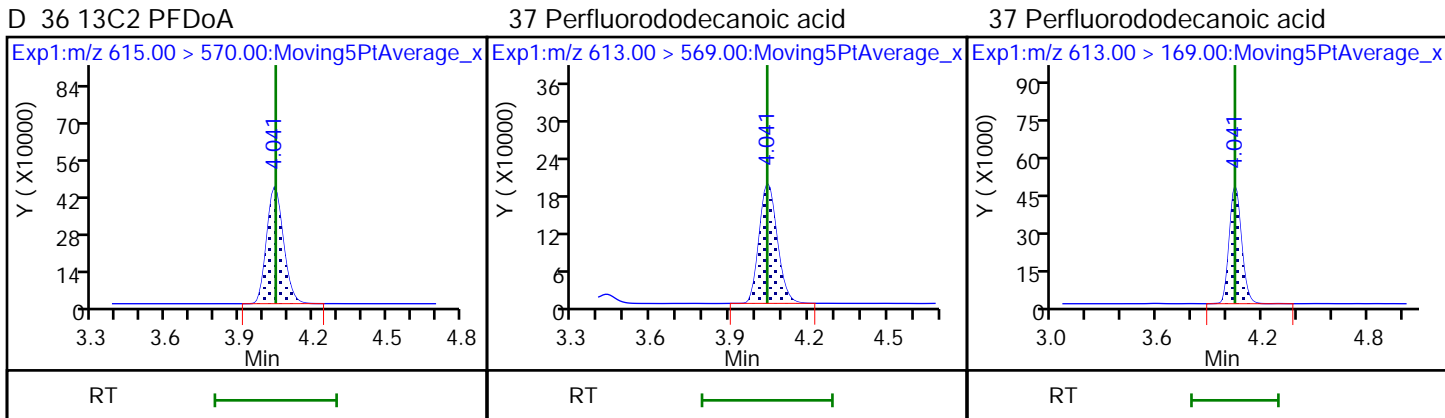
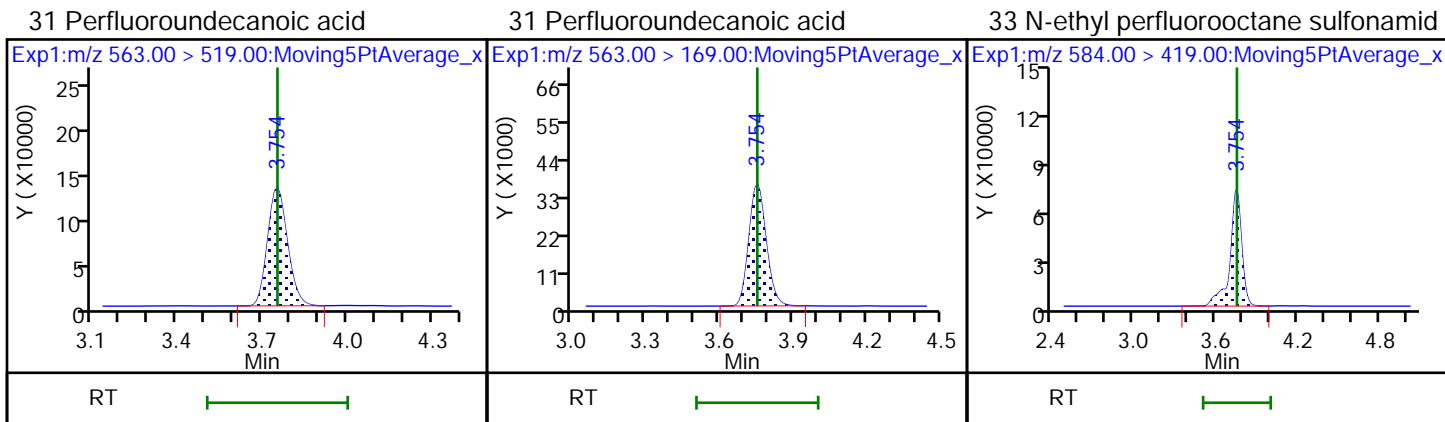


29 Perfluorodecane Sulfonic acid

D 30 13C2 PFUnA

D 32 d5-NEtFOSAA





TestAmerica Sacramento

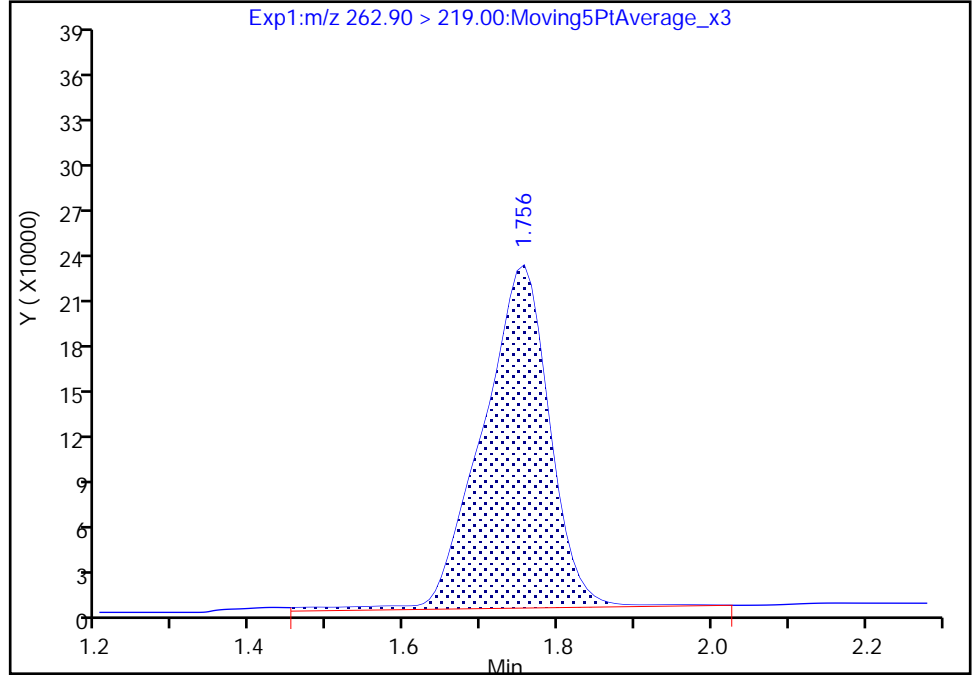
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61319.b\2018.07.19LLC_021.d
Injection Date: 19-Jul-2018 19:28:03 Instrument ID: A8_N
Lims ID: CCV L4
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 13 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

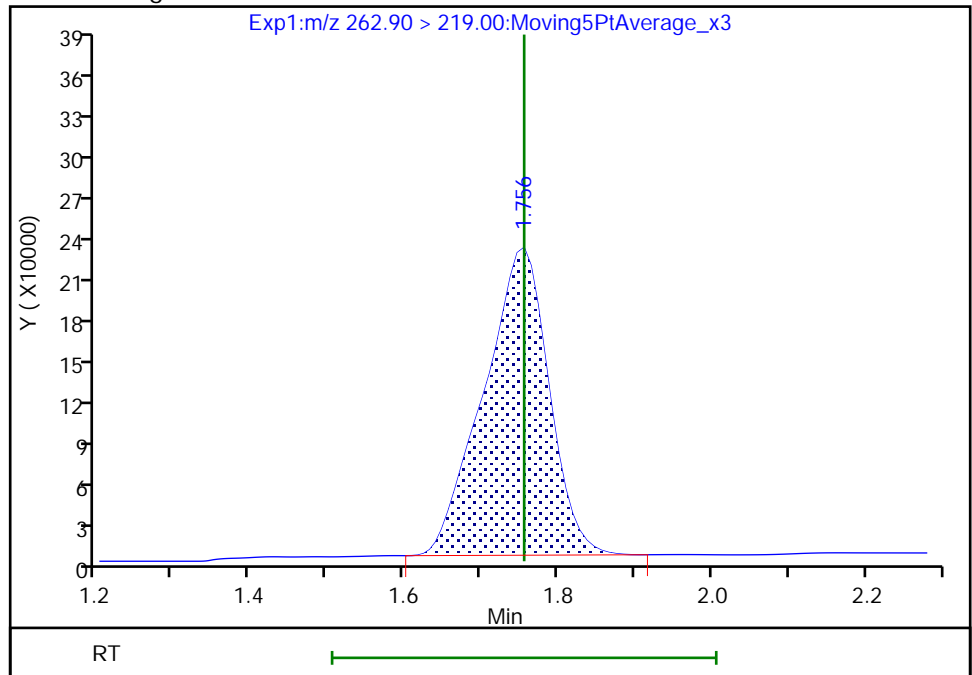
RT: 1.76
Area: 1378320
Amount: 0.994447
Amount Units: ng/ml

Processing Integration Results



RT: 1.76
Area: 1325647
Amount: 0.956444
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 20-Jul-2018 16:38:02
Audit Action: Manually Integrated

Audit Reason: Baseline
Page 736 of 854

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235047/1 Calibration Date: 07/20/2018 01:04
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_064.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.004	0.9453		0.941	1.00	-5.9	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.226	1.230		1.00	1.00	0.3	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.41	77.78		0.888	0.884	0.5	30.0
4:2 FTS	AveID	13.12	13.54		0.964	0.934	3.2	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.087	1.008		0.927	1.00	-7.3	30.0
Perfluoropentanesulfonic acid	AveID	72.64	73.11		0.944	0.938	0.7	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.146	1.059		0.925	1.00	-7.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.144	1.048		0.834	0.910	-8.4	30.0
6:2 FTS	AveID	1.626	1.639		0.955	0.948	0.7	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.231	1.191		0.968	1.00	-3.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.342	1.371		0.972	0.952	2.1	30.0
Perfluorononanoic acid (PFNA)	AveID	1.129	1.106		0.979	1.00	-2.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.184	1.117		0.876	0.928	-5.7	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.020	1.002		0.983	1.00	-1.7	30.0
8:2 FTS	AveID	1.328	1.303		0.940	0.958	-1.9	30.0
Perfluorononanesulfonic acid	AveID	0.8131	0.7779		0.918	0.960	-4.3	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.077	1.076		0.999	1.00	-0.1	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.004	0.9946		0.991	1.00	-0.9	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7010	0.6833		0.940	0.964	-2.5	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8755	0.8422		0.962	1.00	-3.8	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.7872	0.7486		0.951	1.00	-4.9	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.105	1.095		0.991	1.00	-0.9	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.122	0.9294		0.828	1.00	-17.2	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2633	0.2556		0.971	1.00	-2.9	30.0
13C4 PFBA	Ave	1.251	1.295		2.59	2.50	3.5	30.0
13C5 PFPeA	Ave	0.8714	0.8576		2.46	2.50	-1.6	30.0
13C3-PFBS	Ave	0.0225	0.0225		2.32	2.33	-0.3	30.0
13C2 PFHxA	Ave	1.018	1.028		2.52	2.50	1.0	30.0
13C4-PFHpA	Ave	0.9854	1.018		2.58	2.50	3.3	30.0
18O2 PFHxS	Ave	1.320	1.355		2.43	2.37	2.6	30.0
M2-6:2FTS	Ave	0.1903	0.1986		2.48	2.38	4.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235047/1 Calibration Date: 07/20/2018 01:04
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_064.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9522	0.9462		2.48	2.50	-0.6	30.0
13C4 PFOS	Ave	0.9465	0.9463		2.39	2.39	-0.0	30.0
13C5 PFNA	Ave	0.8048	0.8336		2.59	2.50	3.6	30.0
13C8 FOSA	Ave	1.405	1.474		2.62	2.50	4.9	30.0
M2-8:2FTS	Ave	0.2470	0.3137		3.04	2.40	27.0	30.0
13C2 PFDA	Ave	0.7258	0.7549		2.60	2.50	4.0	30.0
d3-NMeFOSAA	Ave	0.3136	0.3202		2.55	2.50	2.1	30.0
13C2 PFUnA	Ave	0.6345	0.6640		2.62	2.50	4.7	30.0
d5-NEtFOSAA	Ave	0.3512	0.3832		2.73	2.50	9.1	30.0
13C2 PFDoA	Ave	0.6459	0.6332		2.45	2.50	-2.0	30.0
13C2-PFTeDA	Ave	0.6190	0.5590		2.26	2.50	-9.7	30.0
13C2-PFHxDA	Ave	0.9793	0.8830		2.25	2.50	-9.8	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61321.b\2018.07.19LLC_064.d
 Lims ID: CCV L4
 Client ID:
 Sample Type: CCV
 Inject. Date: 20-Jul-2018 01:04:46 ALS Bottle#: 13 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L4
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61321.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 20-Jul-2018 16:45:45 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK011

First Level Reviewer: mongkols Date: 20-Jul-2018 16:45:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 1 13C4 PFBA	217.00 > 172.00	1.446	1.445	0.001	0.530	3901813	2.59	103	43739	
2 Perfluorobutyric acid	212.90 > 169.00	1.446	1.446	0.0	1.000	1475284	0.9414	94.1	679	
D 3 13C5-PFPeA	267.90 > 223.00	1.765	1.762	0.003	0.647	2583914	2.46	98.4	29404	
4 Perfluoropentanoic acid	262.90 > 219.00	1.765	1.765	0.0	1.000	1271261	1.00	100	559	
D 47 13C3-PFBS	301.90 > 83.00	1.801	1.807	-0.006	0.660	62913	2.32	99.7	350	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.810	1.810	0.0	1.005	1860446	0.8882	100	20930	
	298.90 > 99.00	1.810	1.810	0.0	1.005	756996	2.46(1.25-3.74)		10545	
D 60 M2-4:2FTS	329.00 > 81.00	2.025	2.022	0.003	0.743	383342	NC		5696	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.025	2.025	0.0	1.125	342177	0.9638	103	18880	
6 Perfluorohexanoic acid	313.00 > 269.00	2.059	2.059	0.0	1.000	1248900	0.9270	92.7	3127	
	313.00 > 119.00	2.059	2.059	0.0	1.000	113601	10.99(5.03-15.10)		1918	
D 7 13C2 PFHxA	315.00 > 270.00	2.059	2.068	-0.009	0.755	3098050	2.52	101	50639	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.082	2.082	0.0	1.156	1855638	0.9441	101	29699	
	349.00 > 99.00	2.082	2.082	0.0	1.156	671723	2.76(1.36-4.07)		18080	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.161	2.158	0.003	0.792	191418	NC		3531	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid										
329.10 > 285.00	2.161	2.161	0.0	1.000	231773	NC			1838	
D 9 13C4-PFHpA										
367.00 > 322.00	2.384	2.381	0.003	0.874	3067936	2.58		103	39250	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.384	2.384	0.0	1.000	1299943	0.9246		92.5	2746	
363.00 > 169.00	2.384	2.384	0.0	1.000	523712		2.48(1.13-3.40)		4842	
D 11 18O2 PFHxS										
403.00 > 84.00	2.395	2.392	0.003	0.878	3861157	2.43		103	54185	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.395	2.395	0.0	1.000	1556710	0.8338		91.6	11859	
399.00 > 99.00	2.395	2.395	0.0	1.000	524480		2.97(1.50-4.49)		3817	
65 ADONA										
377.00 > 251.00	2.418	2.418	0.0	0.784	3919389	NC			37904	
377.00 > 85.00	2.418	2.418	0.0	0.784	2302815		1.70(0.84-2.53)		20013	
D 12 M2-6:2FTS										
429.00 > 81.00	2.705	2.704	0.001	0.992	568478	2.48		104	12537	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.705	2.705	0.0	1.000	371795	0.9551		101	13771	
D 14 13C4 PFOA										
417.00 > 372.00	2.727	2.726	0.001	1.000	2850804	2.48		99.4	37556	
* 62 13C2-PFOA										
415.00 > 370.00	2.727	2.727	0.0		3012998	2.50			35317	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.727	2.727	0.0	1.000	1359490	0.9684		96.7	807	
413.00 > 169.00	2.727	2.727	0.0	1.000	731758		1.86(0.84-2.52)		3489	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.735	2.735	0.0	0.887	1488205	0.9725		102	15815	
449.00 > 99.00	2.735	2.735	0.0	0.887	388903		3.83(1.94-5.82)		9514	
D 18 13C4 PFOS										
503.00 > 80.00	3.084	3.076	0.008	1.131	2725773	2.39		100.0	23945	
D 19 13C5 PFNA										
468.00 > 423.00	3.084	3.083	0.001	1.131	2511484	2.59		104	35073	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.092	3.092	0.0	1.003	1181905	0.8755		94.3	11792	
499.00 > 99.00	3.084	3.092	-0.008	1.000	264988		4.46(2.31-6.93)		4950	
20 Perfluorononanoic acid										
463.00 > 419.00	3.092	3.092	0.0	1.003	1110575	0.9793		97.9	2249	
463.00 > 169.00	3.092	3.092	0.0	1.003	275153		4.04(1.90-5.69)		8135	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.292	3.292	0.0	1.067	1966537	NC			16508	
D 21 13C8 FOSA										
506.00 > 78.00	3.421	3.410	0.011	1.254	4439675	2.62		105	56627	
D 26 M2-8:2FTS										
529.00 > 81.00	3.430	3.420	0.010	1.258	905419	3.04		127	21797	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.421	3.421	0.0	1.000	1780282	0.9830		98.3	20319	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.440	3.429	0.011	1.261	2274543	2.60		104	23694	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.430	3.430	0.0	1.112	851676	0.9184		95.7	23437	
549.00 > 99.00	3.430	3.430	0.0	1.112	325098		2.62(1.33-3.97)		5112	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.430	3.430	0.0	1.000	472077	0.9400		98.1	5361	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.440	3.440	0.0	1.000	978901	1.00		99.9	5441	
513.00 > 169.00	3.440	3.440	0.0	1.000	171502		5.71(2.36-7.09)		6268	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.590	3.589	0.001	1.316	964652	2.55		102	24895	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.601	3.601	0.0	1.003	383776	0.99		99.1	6375	
D 30 13C2 PFUnA										
565.00 > 520.00	3.764	3.753	0.011	1.380	2000566	2.62		105	37687	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.764	3.753	0.011	1.380	1154495	2.73		109	2530	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.754	3.754	0.0	1.217	751185	0.9396		97.5	15461	
599.00 > 99.00	3.754	3.754	0.0	1.217	269195		2.79(1.39-4.16)		7896	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.764	3.764	0.0	1.000	599064	0.9510		95.1	3025	
563.00 > 169.00	3.764	3.764	0.0	1.000	157054		3.81(2.12-6.36)		5423	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.764	3.764	0.0	1.000	388920	0.9620		96.2	9651	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.921	3.921	0.0	1.271	2939993	NC			63047	
D 36 13C2 PFDoA										
615.00 > 570.00	4.052	4.051	0.001	1.486	1907697	2.45		98.0	17367	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.052	4.052	0.0	1.000	835466	0.99		99.1	598	
613.00 > 169.00	4.052	4.052	0.0	1.000	200527		4.17(2.13-6.40)		4655	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.309	4.309	0.0	1.063	709198	0.8280		82.8	373	
663.00 > 169.00	4.309	4.309	0.0	1.063	238850		2.97(1.25-3.76)		3875	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.544	4.544	0.0	1.666	1684137	2.26		90.3	9956	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.544	4.544	0.0	1.000	172159	0.9708		97.1	3331	
713.00 > 219.00	4.544	4.544	0.0	1.000	127371		1.35(0.71-2.13)		3040	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.959	4.950	0.009	1.818	2660573	2.25		90.2	9448	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.959	4.959	0.0	1.000	1038799	NC			350	
813.00 > 169.00	4.959	4.959	0.0	1.000	179303		5.79(2.86-8.58)		1969	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.307	5.307	0.0	1.070	1209690	NC			352	
913.00 > 169.00	5.307	5.307	0.0	1.070	156902		7.71(3.83-11.48)		1786	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL4_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61321.b\2018.07.19LLC_064.d

Injection Date: 20-Jul-2018 01:04:46

Instrument ID: A8_N

Lims ID: CCV L4

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 13

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

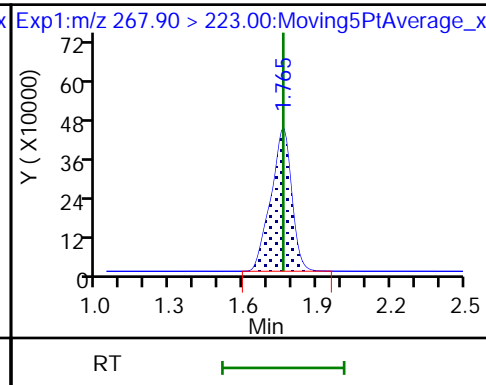
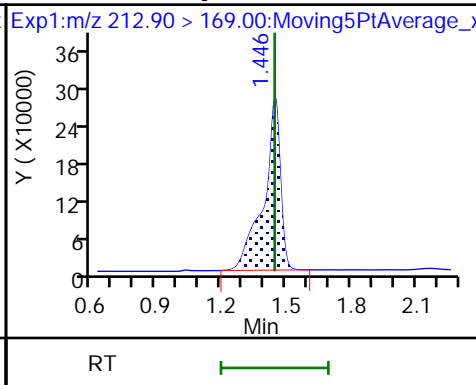
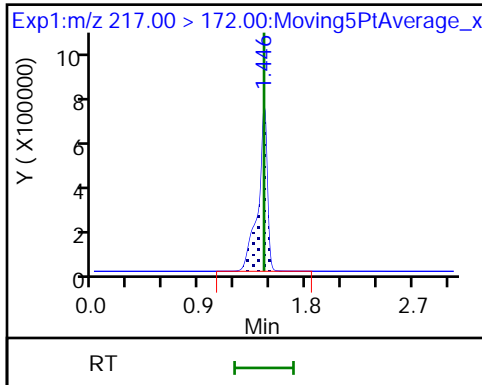
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

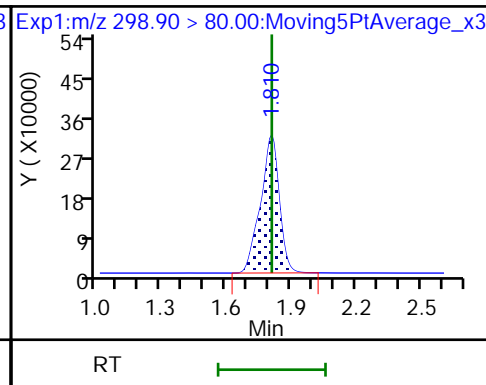
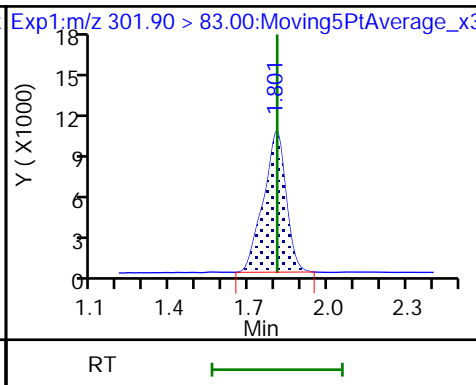
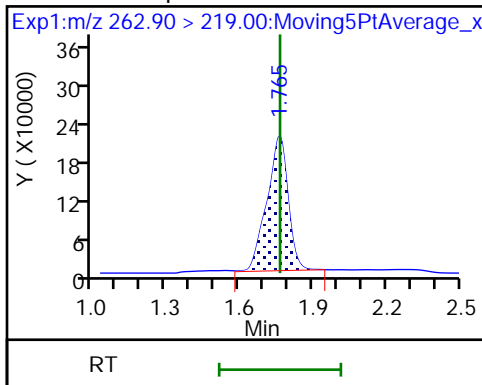
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

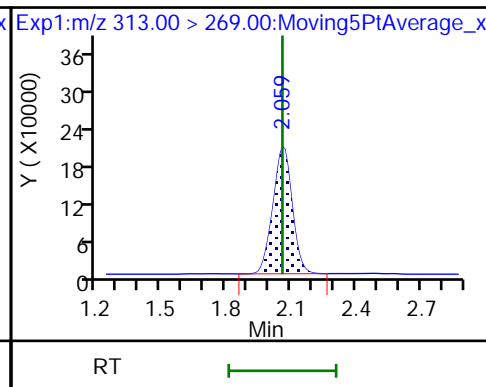
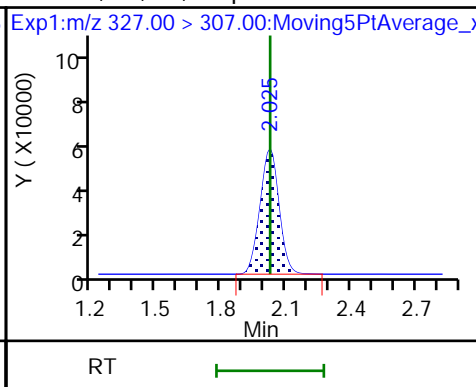
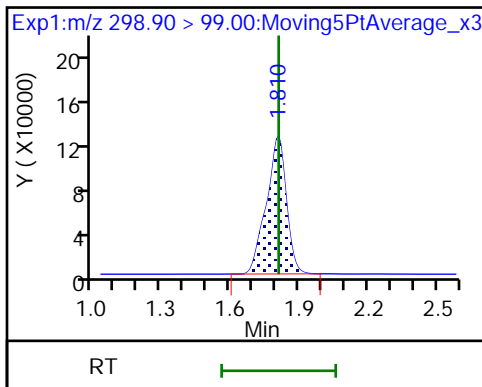
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfoni

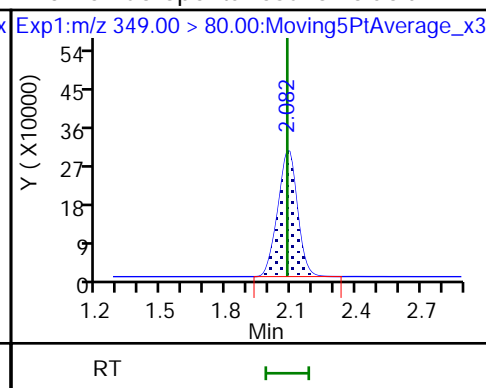
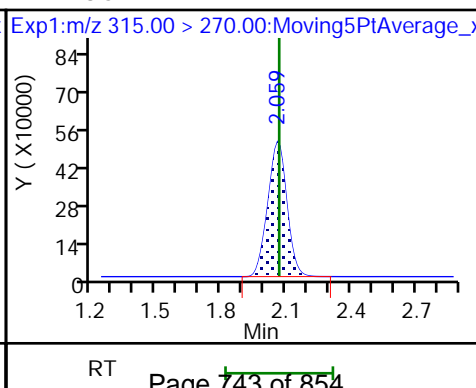
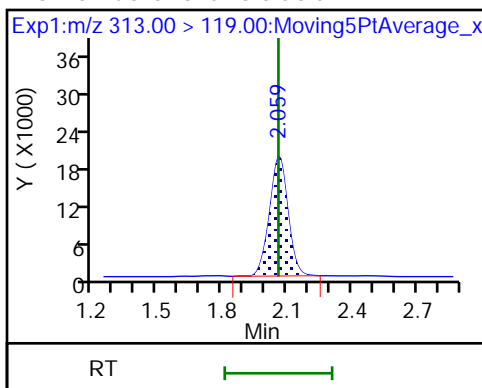
6 Perfluorohexanoic acid

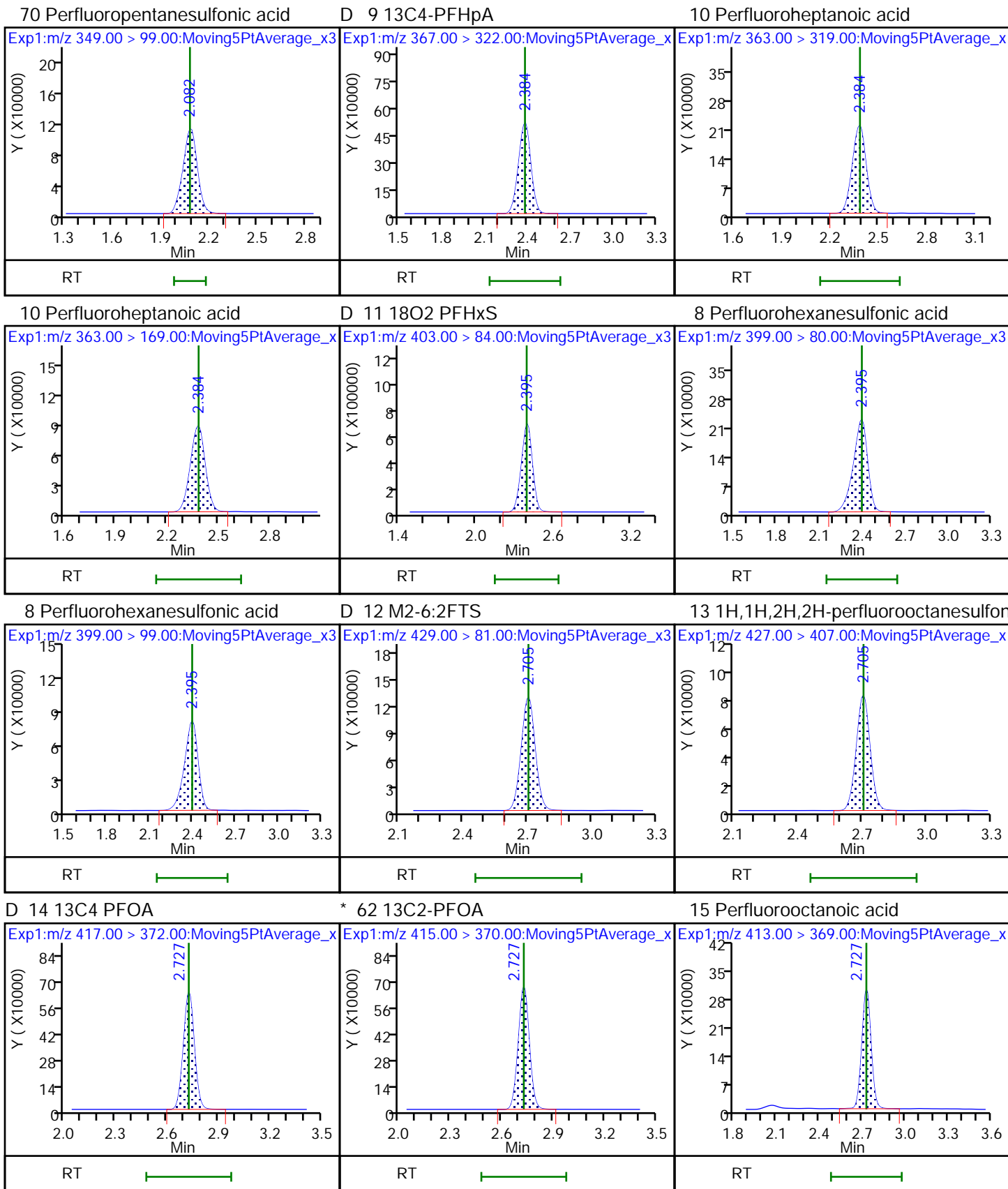


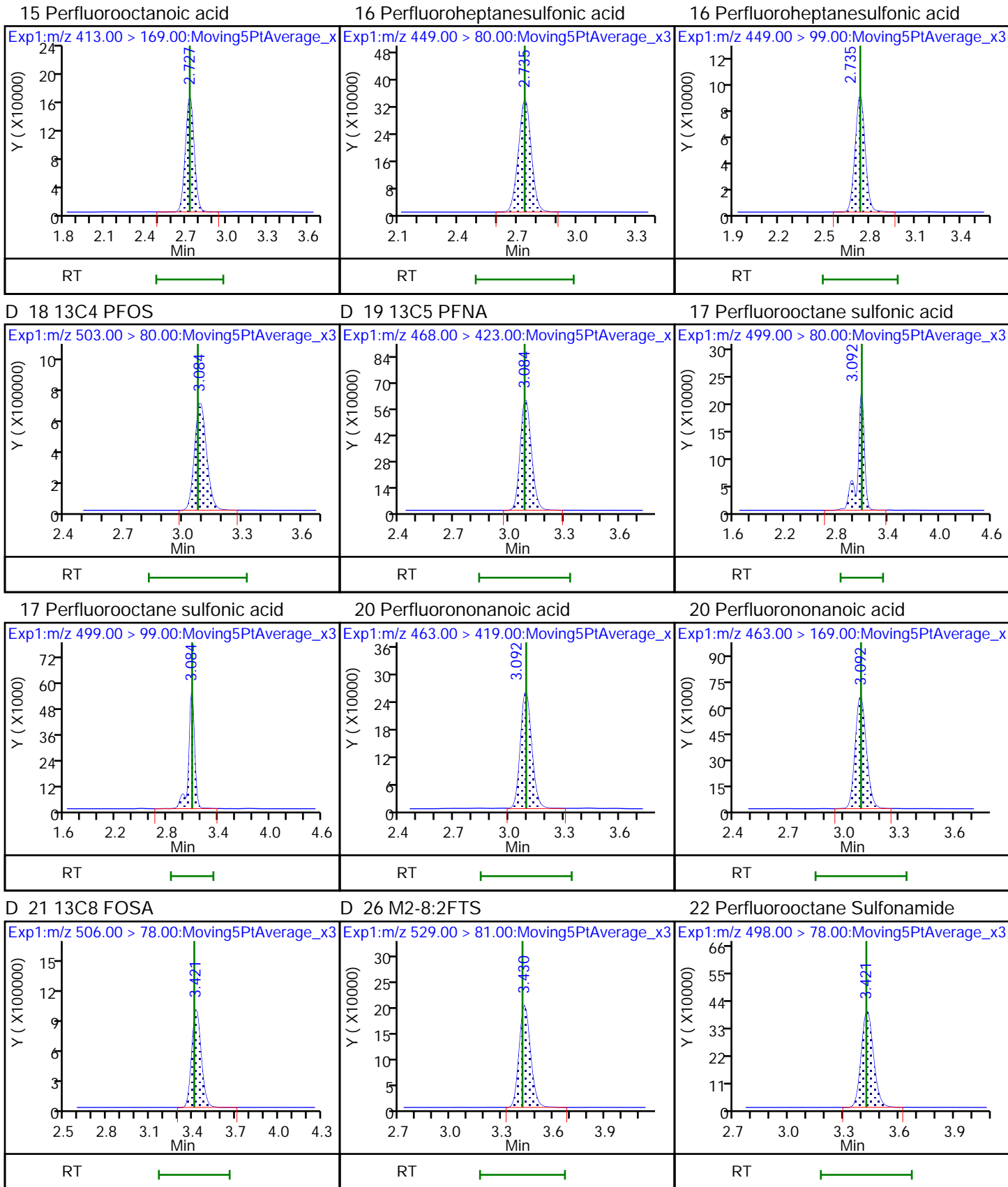
6 Perfluorohexanoic acid

D 7 13C2 PFHxA

70 Perfluoropentanesulfonic acid



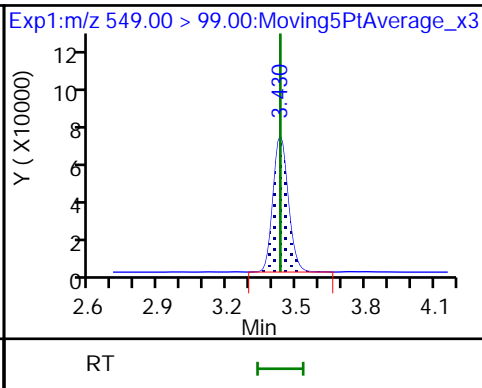
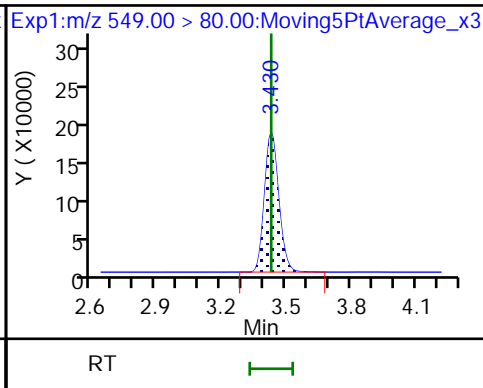
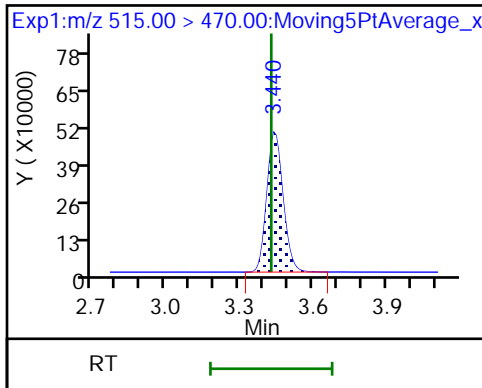




D 23 13C2 PFDA

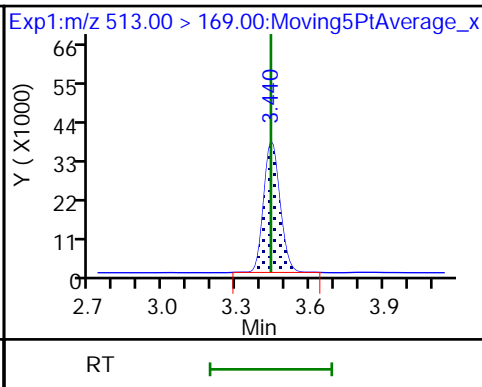
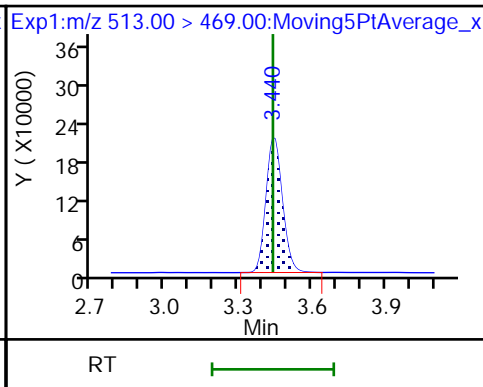
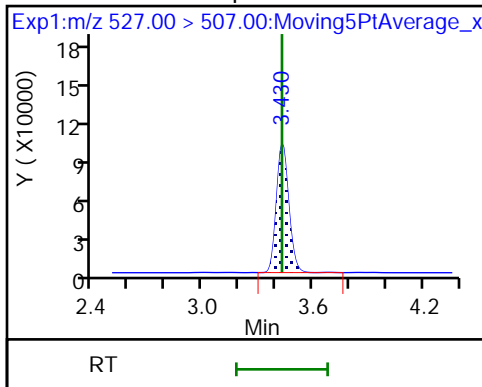
68 Perfluorononanesulfonic acid

68 Perfluorononanesulfonic acid



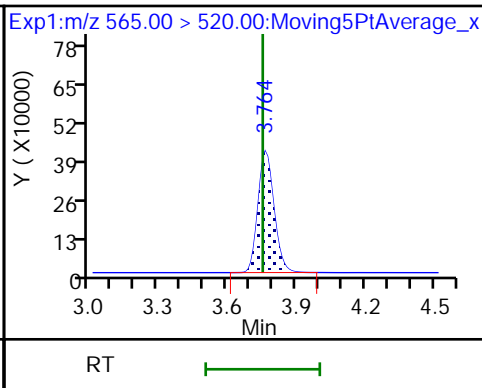
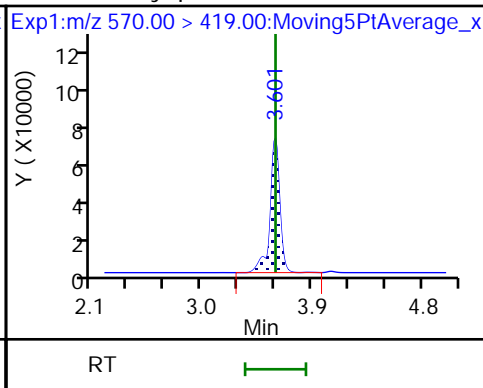
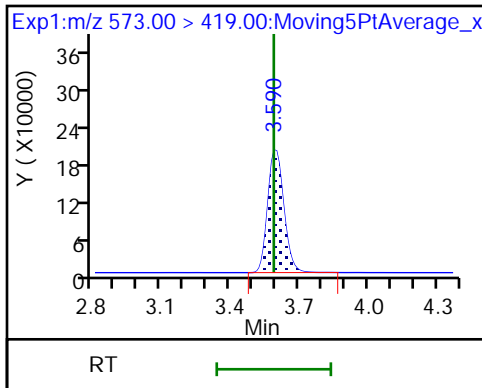
25 1H,1H,2H,2H-perfluorodecanesulfoni 24 Perfluorodecanoic acid

24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

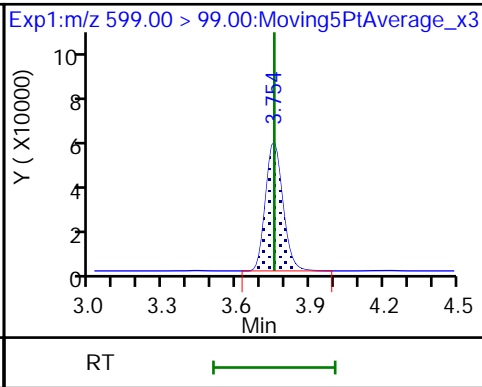
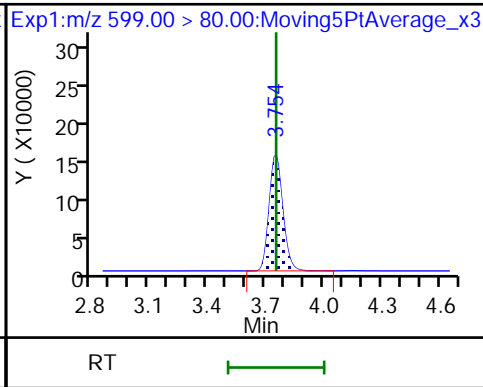
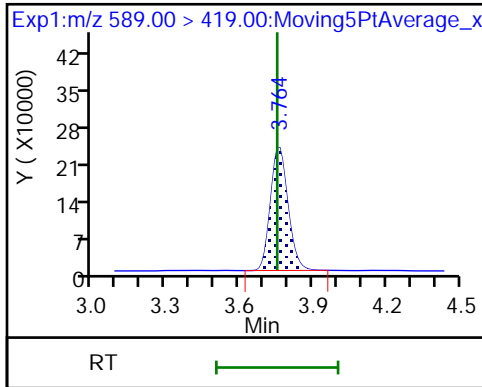
28 N-methyl perfluorooctane sulfonamiD 30 13C2 PFUnA

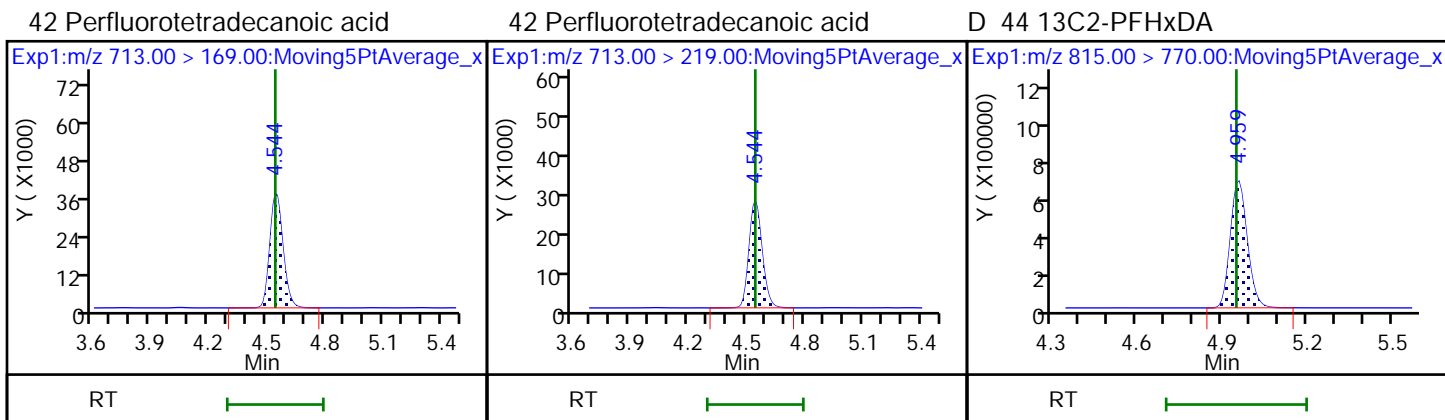
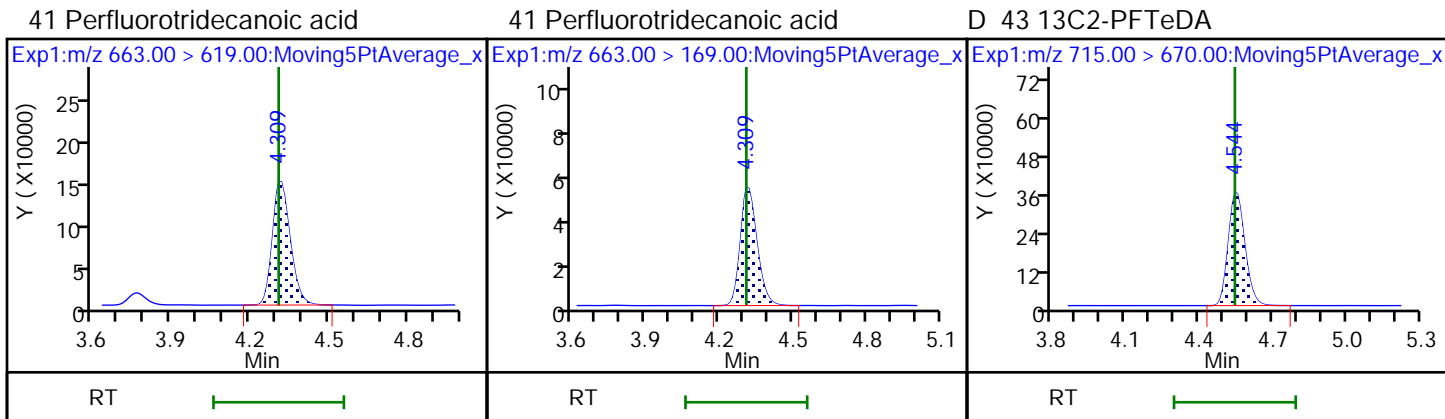
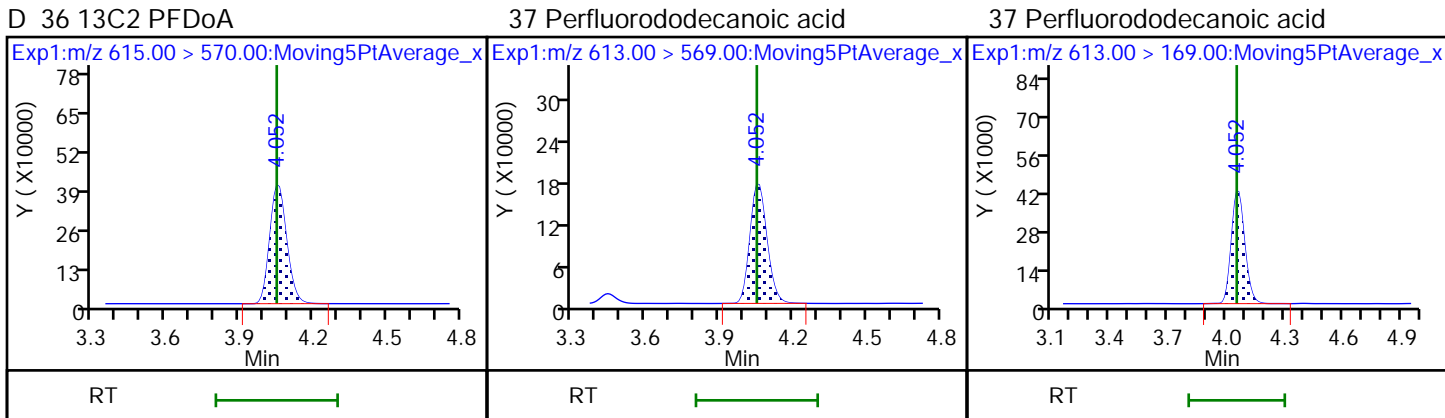
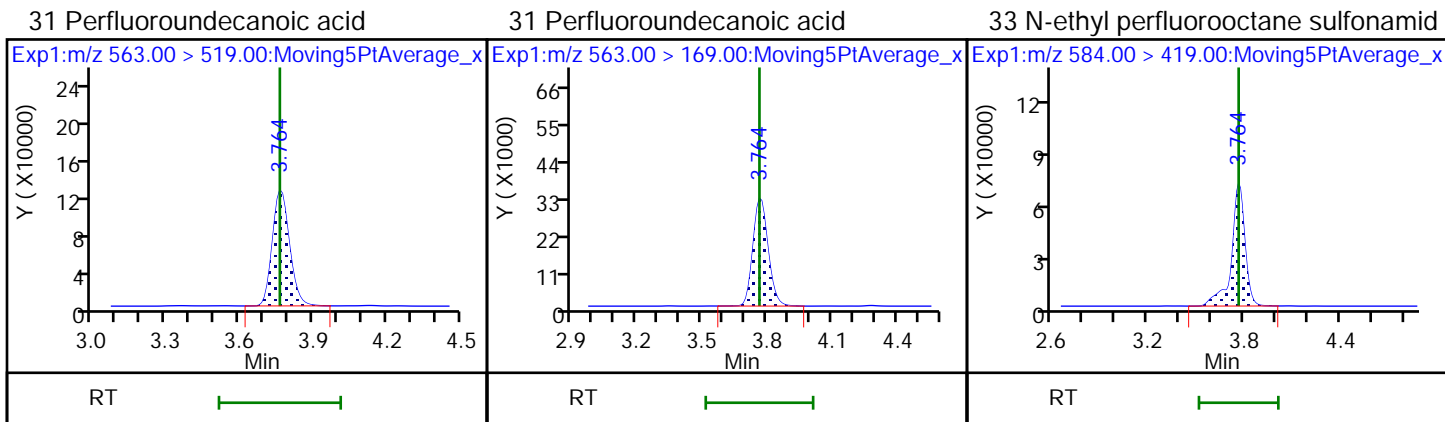


D 32 d5-NEtFOSAA

29 Perfluorodecane Sulfonic acid

29 Perfluorodecane Sulfonic acid





FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235047/4 Calibration Date: 07/20/2018 01:28
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_067.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.004	0.9880		2.46	2.50	-1.6	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.226	1.197		2.44	2.50	-2.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.41	78.57		2.24	2.21	1.5	30.0
4:2 FTS	AveID	13.12	13.57		2.41	2.34	3.4	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.087	1.046		2.41	2.50	-3.8	30.0
Perfluoropentanesulfonic acid	AveID	72.64	75.38		2.43	2.35	3.8	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.146	1.085		2.37	2.50	-5.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.144	1.100		2.19	2.28	-3.8	30.0
6:2 FTS	AveID	1.626	1.804		2.63	2.37	10.9	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.231	1.199		2.44	2.50	-2.6	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.342	1.438		2.55	2.38	7.2	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.184	1.201		2.35	2.32	1.5	30.0
Perfluorononanoic acid (PFNA)	AveID	1.129	1.084		2.40	2.50	-4.0	30.0
8:2 FTS	AveID	1.328	1.332		2.40	2.40	0.3	30.0
Perfluorononanesulfonic acid	AveID	0.8131	0.8427		2.49	2.40	3.6	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.020	1.045		2.56	2.50	2.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.077	1.070		2.48	2.50	-0.7	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.004	0.9736		2.42	2.50	-3.0	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7010	0.7173		2.47	2.41	2.3	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8755	0.8918		2.55	2.50	1.9	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.7872	0.7703		2.45	2.50	-2.2	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.105	1.087		2.46	2.50	-1.6	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.122	0.997		2.22	2.50	-11.2	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2633	0.2626		2.49	2.50	-0.2	30.0
13C4 PFBA	Ave	1.251	1.286		2.57	2.50	2.8	30.0
13C5 PFPeA	Ave	0.8714	0.8806		2.53	2.50	1.1	30.0
13C3-PFBS	Ave	0.0225	0.0227		2.34	2.33	0.8	30.0
13C2 PFHxA	Ave	1.018	1.042		2.56	2.50	2.3	30.0
13C4-PFHpA	Ave	0.9854	0.9943		2.52	2.50	0.9	30.0
18O2 PFHxS	Ave	1.320	1.352		2.42	2.37	2.4	30.0
M2-6:2FTS	Ave	0.1903	0.1911		2.38	2.38	0.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235047/4 Calibration Date: 07/20/2018 01:28
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_067.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9522	0.9285		2.44	2.50	-2.5	30.0
13C4 PFOS	Ave	0.9465	0.9531		2.41	2.39	0.7	30.0
13C5 PFNA	Ave	0.8048	0.8187		2.54	2.50	1.7	30.0
13C8 FOSA	Ave	1.405	1.403		2.50	2.50	-0.1	30.0
M2-8:2FTS	Ave	0.2470	0.2605		2.53	2.40	5.5	30.0
13C2 PFDA	Ave	0.7258	0.7426		2.56	2.50	2.3	30.0
d3-NMeFOSAA	Ave	0.3136	0.3366		2.68	2.50	7.3	30.0
13C2 PFUnA	Ave	0.6345	0.6383		2.52	2.50	0.6	30.0
d5-NEtFOSAA	Ave	0.3512	0.3497		2.49	2.50	-0.4	30.0
13C2 PFDoA	Ave	0.6459	0.6604		2.56	2.50	2.2	30.0
13C2-PFTeDA	Ave	0.6190	0.5463		2.21	2.50	-11.8	30.0
13C2-PFHxDA	Ave	0.9793	0.8163		2.08	2.50	-16.6	30.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61321.b\2018.07.19LLC_067.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 20-Jul-2018 01:28:12 ALS Bottle#: 14 Worklist Smp#: 4
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCV L5
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Sublist: chrom-A8_N*sub32
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61321.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 20-Jul-2018 16:47:31 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d

Column 1 : Det: EXP1
 Process Host: XAWRK011

First Level Reviewer: mongkols Date: 20-Jul-2018 16:47:31

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	1.441	1.445	-0.004	0.530	4354101	2.57	103	49399	
2 Perfluorobutyric acid	212.90 > 169.00	1.446	1.446	0.0	1.004	4301803	2.46	98.4	2056	
D 3 13C5-PFPeA	267.90 > 223.00	1.756	1.762	-0.006	0.646	2980767	2.53	101	34453	
4 Perfluoropentanoic acid	262.90 > 219.00	1.756	1.765	-0.009	1.000	3569312	2.44	97.6	1714	
D 47 13C3-PFBS	301.90 > 83.00	1.801	1.807	-0.006	0.662	71490	2.34	101	442	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.801	1.810	-0.009	1.000	5338965	2.24	101	45042	
	298.90 > 99.00	1.801	1.810	-0.009	1.000	2283291	2.34(1.25-3.74)		38670	
D 60 M2-4:2FTS	329.00 > 81.00	2.025	2.022	0.003	0.745	391055	NC		6557	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00 > 307.00	2.025	2.025	0.0	1.125	974250	2.41	103	54038	
6 Perfluorohexanoic acid	313.00 > 269.00	2.059	2.059	0.0	1.000	3689639	2.41	96.2	9886	
	313.00 > 119.00	2.059	2.059	0.0	1.000	336564	10.96(5.03-15.10)		6219	
D 7 13C2 PFHxA	315.00 > 270.00	2.059	2.068	-0.009	0.757	3527147	2.56	102	53854	
70 Perfluoropentanesulfonic acid	349.00 > 80.00	2.082	2.082	0.0	1.156	5434932	2.43	104	82630	
	349.00 > 99.00	2.082	2.082	0.0	1.156	1995170	2.72(1.36-4.07)		30188	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.150	2.158	-0.008	0.790	199607	NC		3741	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
67 Perfluoro(2-propoxypropanoic) acid	329.10	> 285.00	2.150	2.161	-0.011	1.000	685017	NC		5893
D 9 13C4-PFHpA	367.00	> 322.00	2.372	2.381	-0.009	0.872	3365400	2.52	101	47146
10 Perfluoroheptanoic acid	363.00	> 319.00	2.372	2.384	-0.012	1.000	3650652	2.37	94.7	6754
	363.00	> 169.00	2.372	2.384	-0.012	1.000	1541047	2.37(1.13-3.40)		14408
D 11 18O2 PFHxS	403.00	> 84.00	2.395	2.392	0.003	0.881	4329029	2.42	102	39017
8 Perfluorohexanesulfonic acid	399.00	> 80.00	2.395	2.395	0.0	1.000	4579475	2.19	96.2	21801
	399.00	> 99.00	2.395	2.395	0.0	1.000	1542976	2.97(1.50-4.49)		11468
65 ADONA	377.00	> 251.00	2.418	2.418	0.0	0.786	10865492	NC		60748
	377.00	> 85.00	2.418	2.418	0.0	0.786	6452074	1.68(0.84-2.53)		30657
D 12 M2-6:2FTS	429.00	> 81.00	2.697	2.704	-0.007	0.992	614320	2.38	100	12693
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.697	2.705	-0.008	1.000	1105883	2.63	111	25965
D 14 13C4 PFOA	417.00	> 372.00	2.720	2.726	-0.006	1.000	3142602	2.44	97.5	42593
* 62 13C2-PFOA	415.00	> 370.00	2.720	2.727	-0.007		3384786	2.50		39140
15 Perfluorooctanoic acid	413.00	> 369.00	2.720	2.727	-0.007	1.000	3771757	2.44	97.4	2066
	413.00	> 169.00	2.720	2.727	-0.007	1.000	1992094	1.89(0.84-2.52)		8100
16 Perfluoroheptanesulfonic acid	449.00	> 80.00	2.727	2.735	-0.008	0.887	4416801	2.55	107	42686
	449.00	> 99.00	2.727	2.735	-0.008	0.887	1164494	3.79(1.94-5.82)		19295
D 18 13C4 PFOS	503.00	> 80.00	3.075	3.076	-0.001	1.131	3084213	2.41	101	23773
D 19 13C5 PFNA	468.00	> 423.00	3.075	3.083	-0.008	1.131	2771103	2.54	102	33884
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.075	3.092	-0.017	1.000	3595933	2.35	101	52309
	499.00	> 99.00	3.075	3.092	-0.017	1.000	795762	4.52(2.31-6.93)		24671
20 Perfluorononanoic acid	463.00	> 419.00	3.083	3.092	-0.009	1.003	3004087	2.40	96.0	5458
	463.00	> 169.00	3.075	3.092	-0.017	1.000	758984	3.96(1.90-5.69)		18418
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.281	3.292	-0.011	1.067	5684303	NC		29369
D 21 13C8 FOSA	506.00	> 78.00	3.409	3.410	-0.001	1.254	4748386	2.50	99.9	36077
D 26 M2-8:2FTS	529.00	> 81.00	3.419	3.420	-0.001	1.257	844798	2.53	105	13133
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.419	3.421	-0.002	1.003	4961725	2.56	102	29456

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 23 13C2 PFDA										
515.00 > 470.00	3.428	3.429	-0.001	1.261	2513690	2.56		102	26260	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.419	3.430	-0.011	1.112	2609823	2.49		104	53263	
549.00 > 99.00	3.419	3.430	-0.011	1.112	972692		2.68(1.33-3.97)		12783	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.419	3.430	-0.011	1.000	1125173	2.40		100	16284	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.428	3.440	-0.012	1.000	2688432	2.48		99.3	17385	
513.00 > 169.00	3.428	3.440	-0.012	1.000	470361		5.72(2.36-7.09)		20524	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.577	3.589	-0.012	1.315	1139277	2.68		107	20030	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.588	3.601	-0.013	1.003	1109217	2.42		97.0	8271	
D 30 13C2 PFUnA										
565.00 > 520.00	3.753	3.753	0.0	1.380	2160497	2.52		101	26184	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.753	3.753	0.0	1.380	1183538	2.49		99.6	2473	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.742	3.754	-0.012	1.217	2230938	2.47		102	38206	
599.00 > 99.00	3.742	3.754	-0.012	1.217	758176		2.94(1.39-4.16)		14183	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.753	3.764	-0.011	1.000	1664137	2.45		97.8	8010	
563.00 > 169.00	3.753	3.764	-0.011	1.000	468764		3.55(2.12-6.36)		19114	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.753	3.764	-0.011	1.000	1055503	2.55		102	43863	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.911	3.921	-0.010	1.272	8206579	NC			87080	
D 36 13C2 PFDoA										
615.00 > 570.00	4.042	4.051	-0.009	1.486	2235282	2.56		102	16390	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.042	4.052	-0.010	1.000	2429441	2.46		98.4	1659	
613.00 > 169.00	4.042	4.052	-0.010	1.000	608978		3.99(2.13-6.40)		11663	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.301	4.309	-0.008	1.064	2228577	2.22		88.8	1085	
663.00 > 169.00	4.301	4.309	-0.008	1.064	747866		2.98(1.25-3.76)		12383	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.534	4.544	-0.010	1.667	1848947	2.21		88.2	7845	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.534	4.544	-0.010	1.000	485557	2.49		99.8	6337	
713.00 > 219.00	4.534	4.544	-0.010	1.000	354948		1.37(0.71-2.13)		6334	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.951	4.950	0.001	1.820	2762927	2.08		83.4	8784	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.951	4.959	-0.008	1.000	2639822	NC			734	
813.00 > 169.00	4.951	4.959	-0.008	1.000	466080		5.66(2.86-8.58)		4355	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.301	5.307	-0.006	1.071	3018027	NC			773	
913.00 > 169.00	5.301	5.307	-0.006	1.071	393491		7.67(3.83-11.48)		4221	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL5_00005

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61321.b\2018.07.19LLC_067.d

Injection Date: 20-Jul-2018 01:28:12

Instrument ID: A8_N

Lims ID: CCV L5

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 14

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

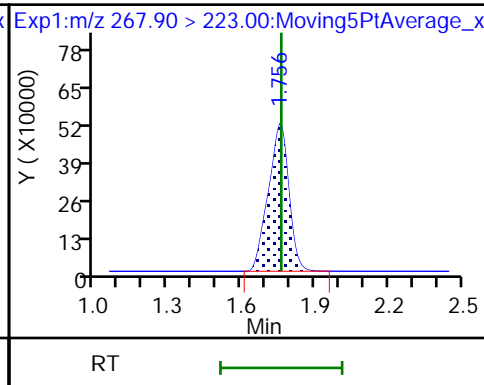
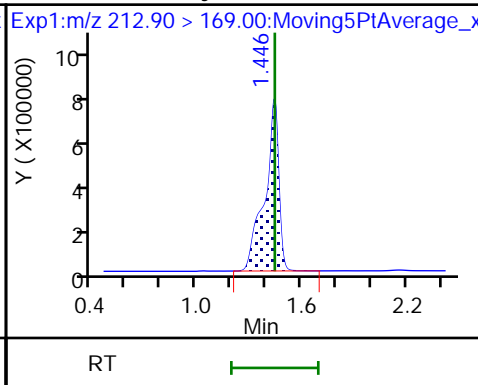
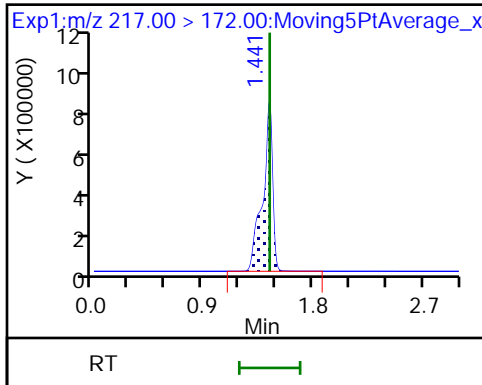
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

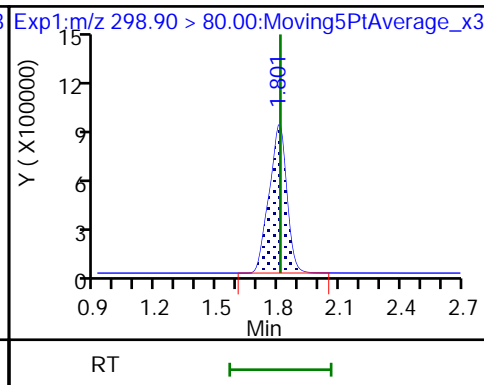
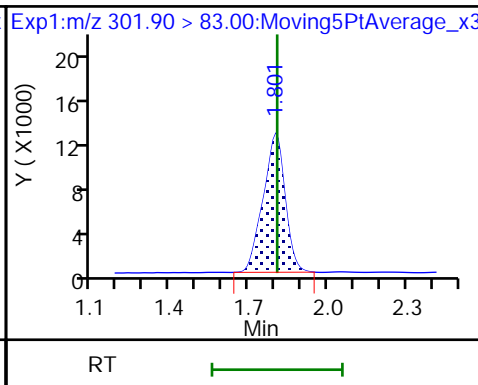
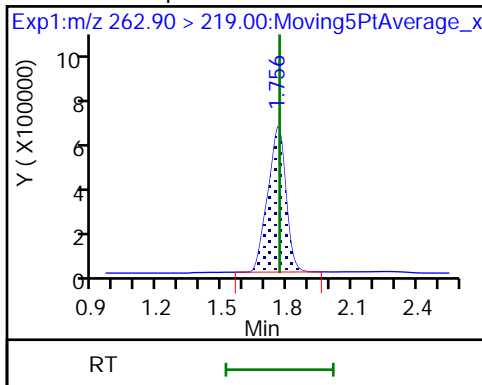
D 3 13C5-PFPeA



4 Perfluoropentanoic acid

D 47 13C3-PFBS

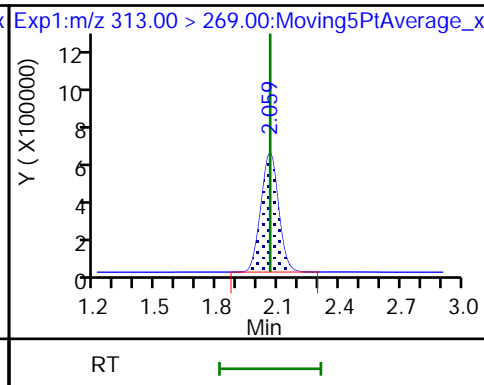
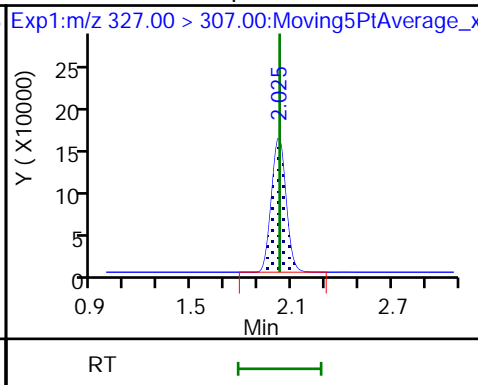
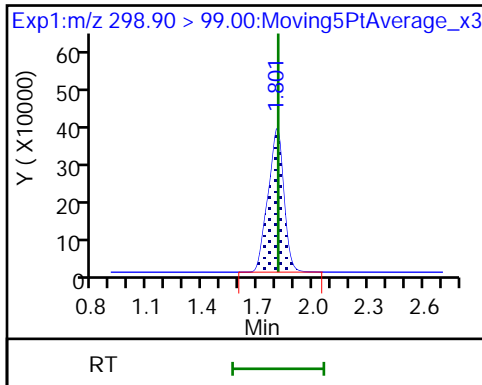
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

61 1H,1H,2H,2H-perfluorohexanesulfoni

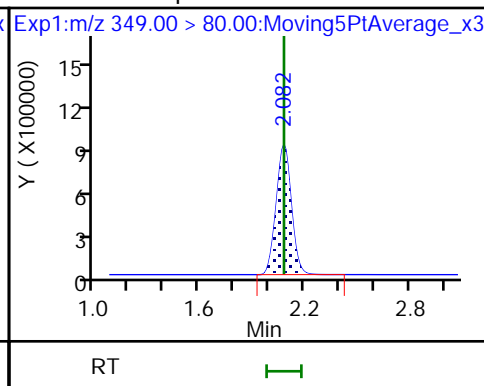
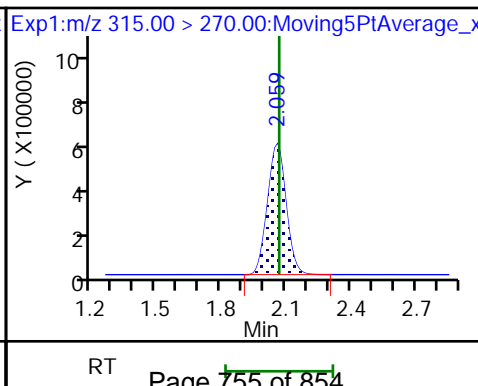
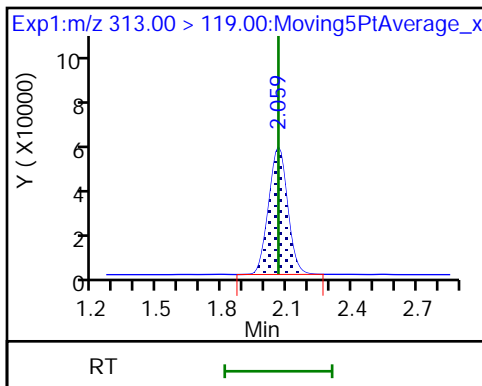
6 Perfluorohexanoic acid

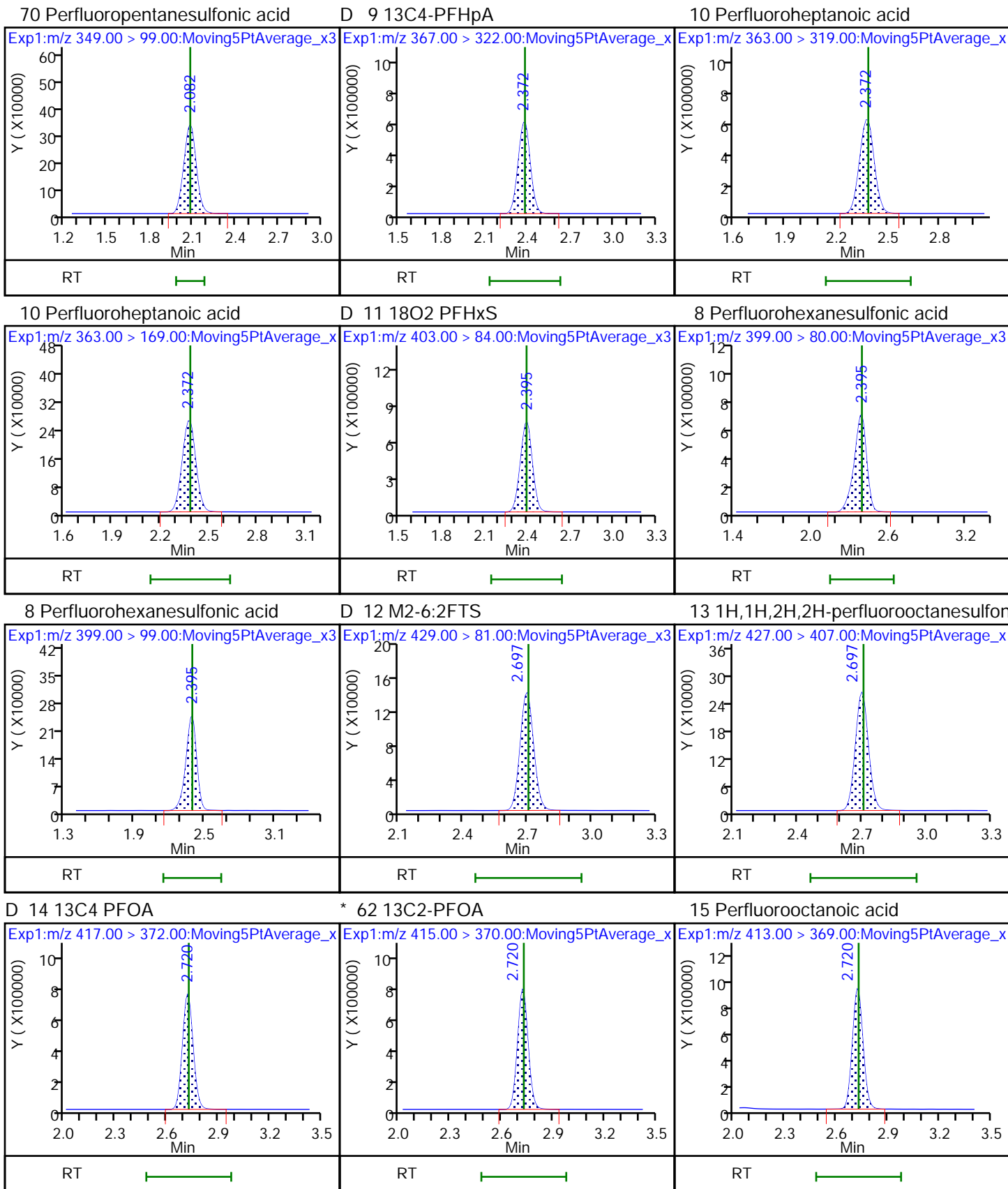


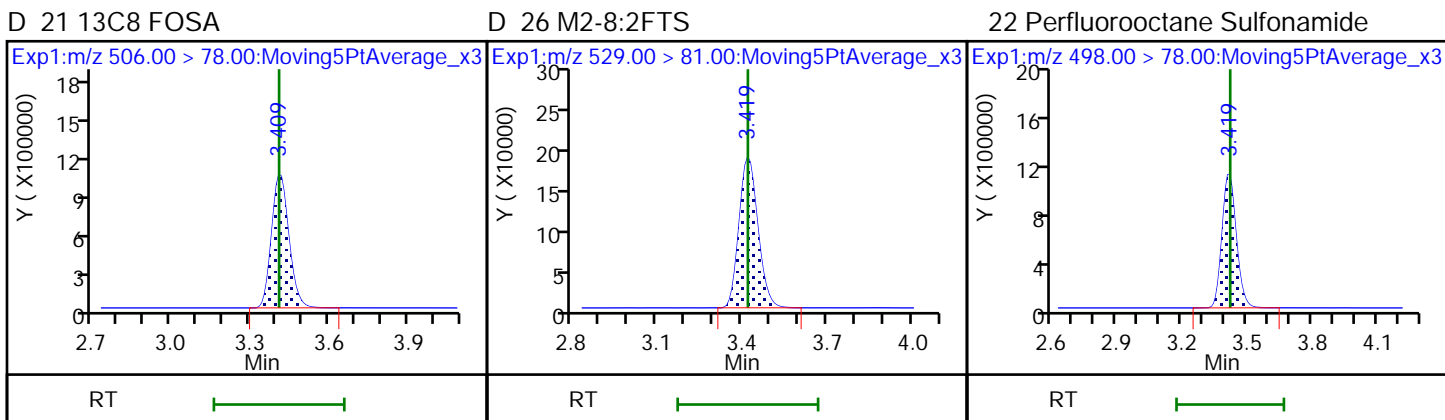
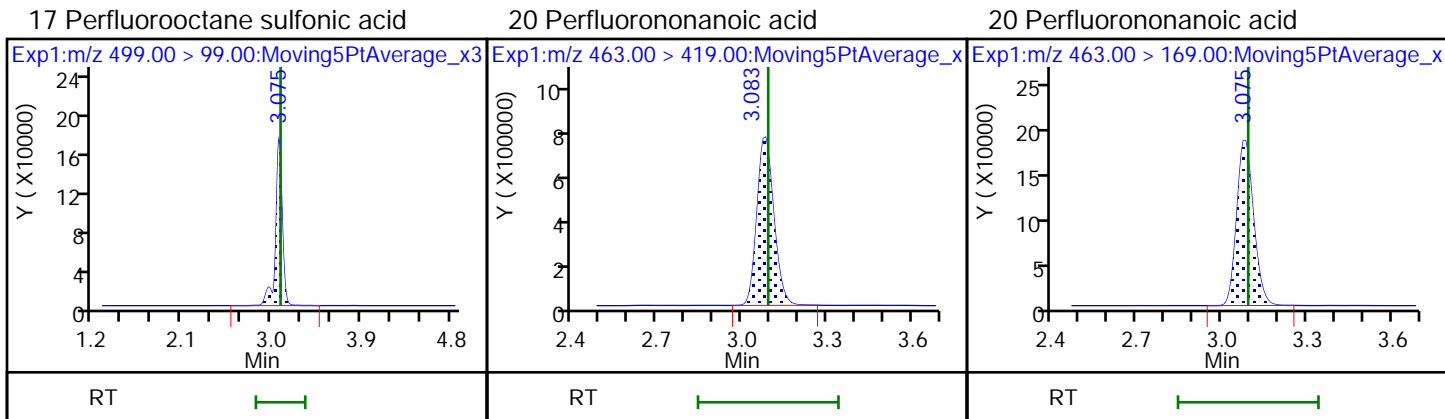
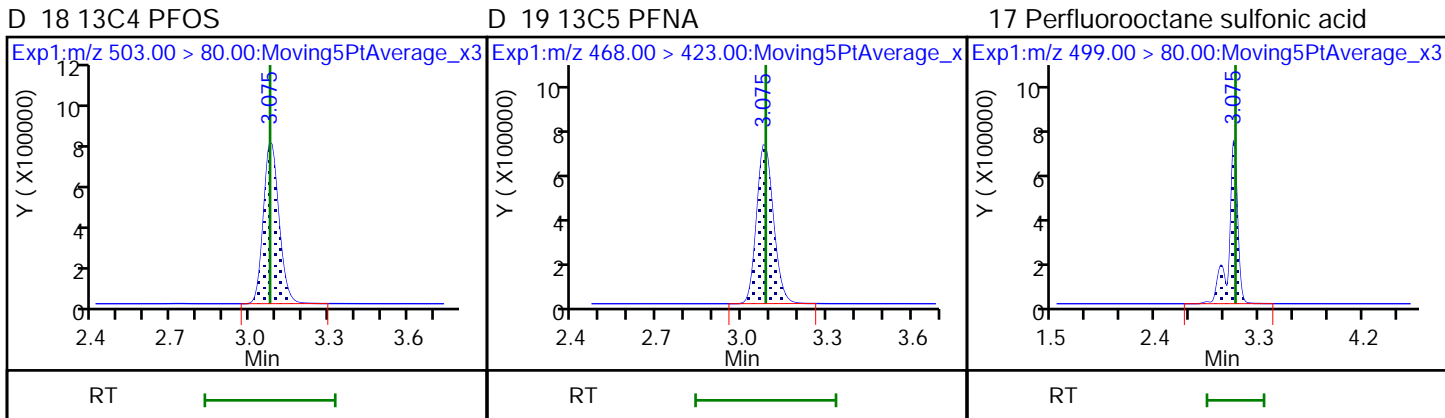
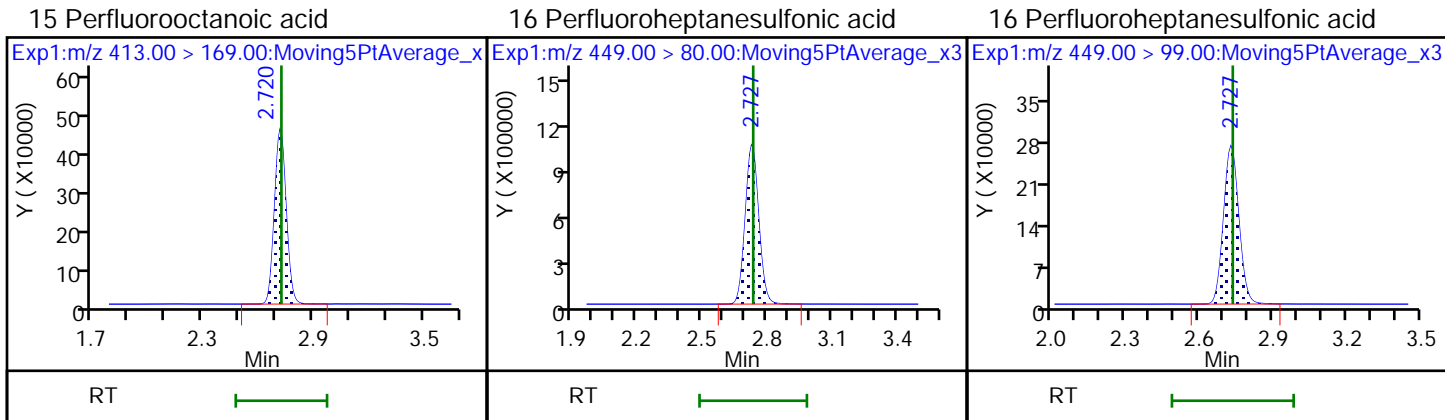
6 Perfluorohexanoic acid

D 7 13C2 PFHxA

70 Perfluoropentanesulfonic acid



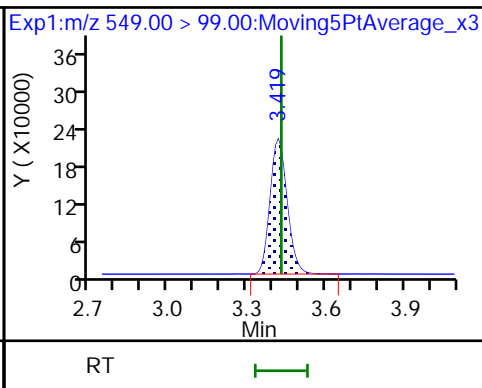
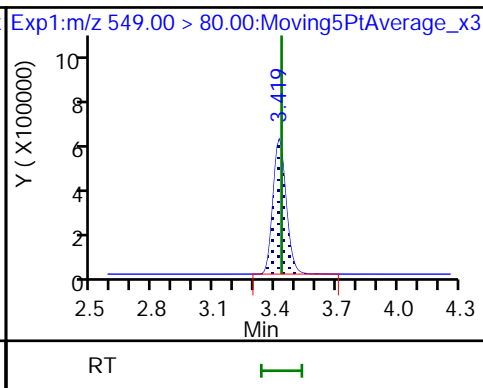
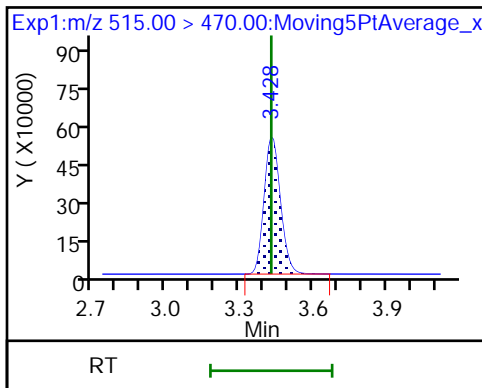




D 23 13C2 PFDA

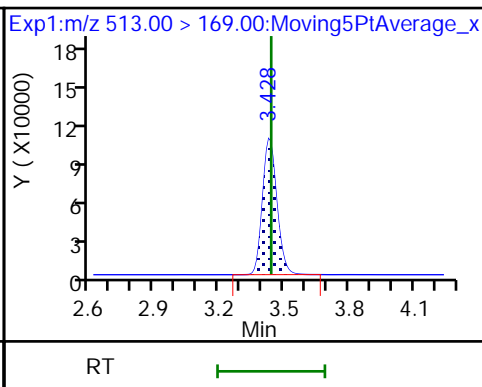
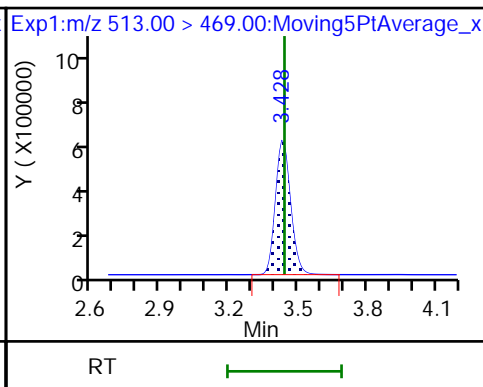
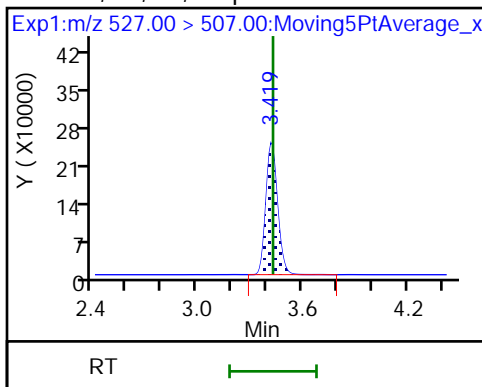
68 Perfluorononanesulfonic acid

68 Perfluorononanesulfonic acid



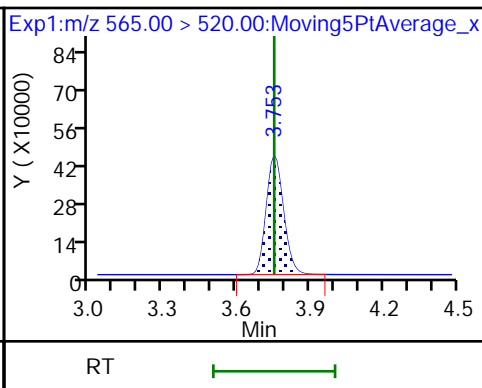
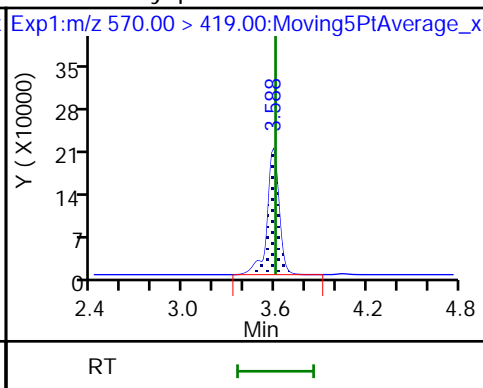
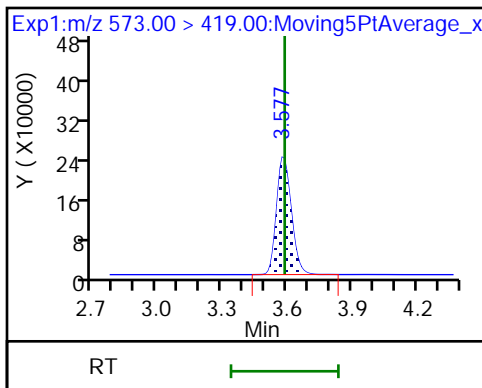
25 1H,1H,2H,2H-perfluorodecanesulfoni 24 Perfluorodecanoic acid

24 Perfluorodecanoic acid



D 27 d3-NMeFOSAA

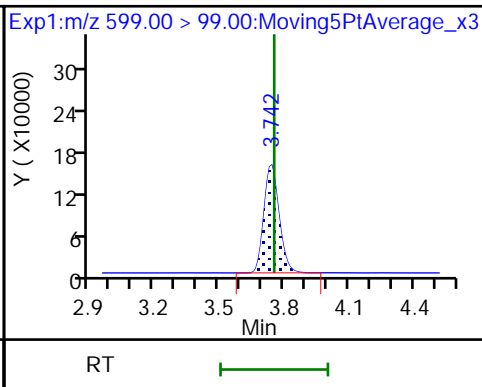
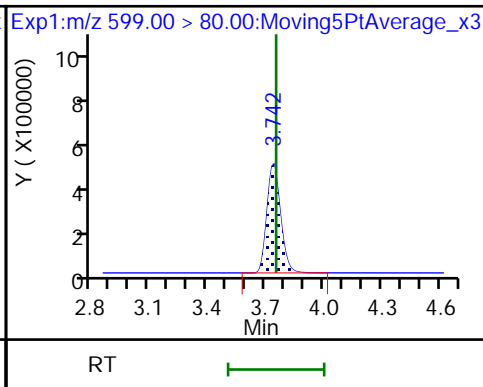
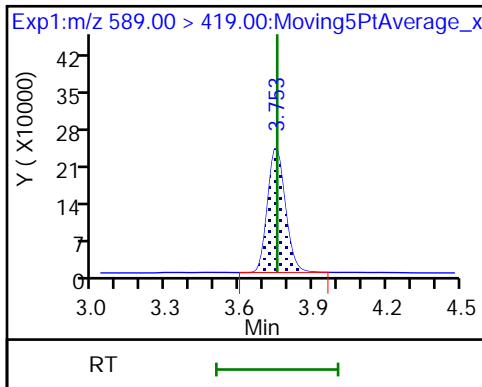
28 N-methyl perfluorooctane sulfonamiD 30 13C2 PFUnA

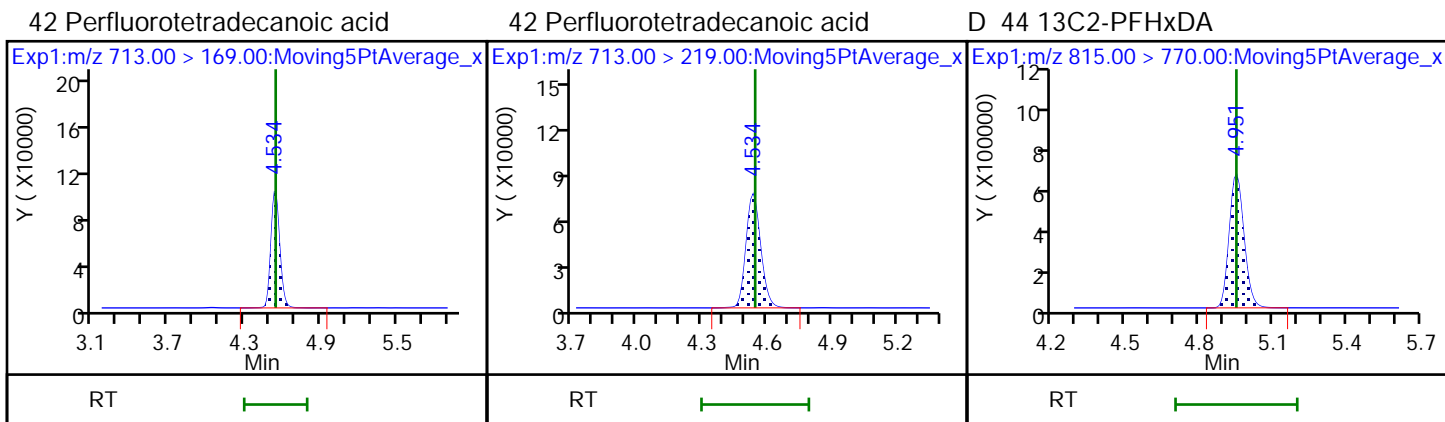
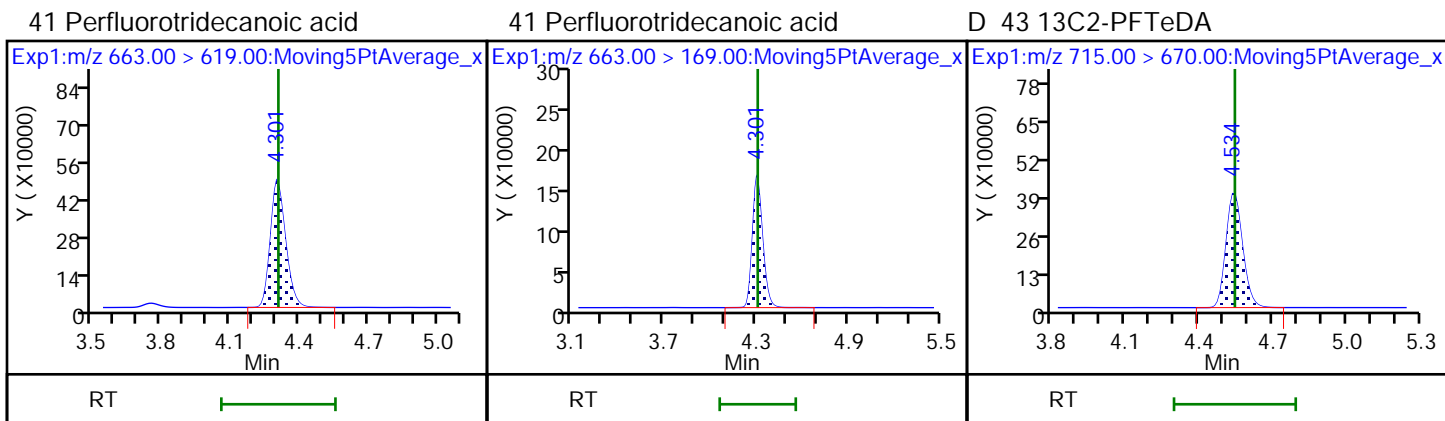
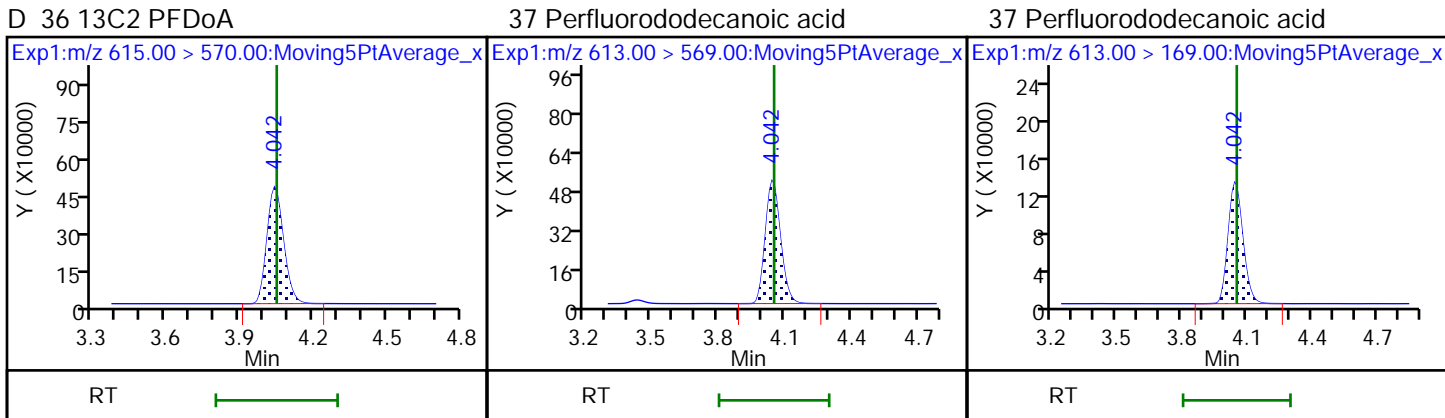
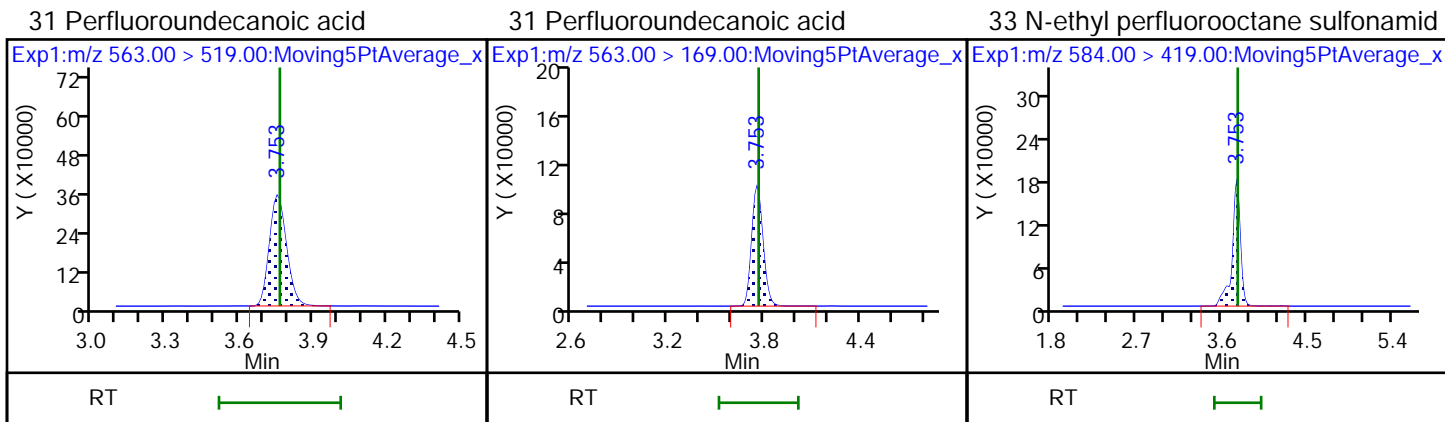


D 32 d5-NEtFOSAA

29 Perfluorodecane Sulfonic acid

29 Perfluorodecane Sulfonic acid





FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-233164/1-A
 Matrix: Water Lab File ID: 2018.07.18LLB_061.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 250 (mL) Date Analyzed: 07/18/2018 22:49
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.634	J	2.0	1.5	0.59
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.489	J M	2.0	1.0	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	1.0	U	2.0	1.0	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.0	1.0	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U	2.0	1.5	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	3.0	0.76
376-06-7	Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	3.0	0.83
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	1.0	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.0	U	2.0	1.0	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.56
754-91-6	Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-233164/1-A
 Matrix: Water Lab File ID: 2018.07.18LLB_061.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 250 (mL) Date Analyzed: 07/18/2018 22:49
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	80		50-150
STL00992	13C4 PFBA	85		50-150
STL01893	13C5 PFPeA	80		50-150
STL00993	13C2 PFHxA	89		50-150
STL01892	13C4-PFHpA	97		50-150
STL00990	13C4 PFOA	93		50-150
STL00995	13C5 PFNA	91		50-150
STL00996	13C2 PFDA	93		50-150
STL00997	13C2 PFUnA	93		50-150
STL00998	13C2 PFDoA	89		50-150
STL00994	18O2 PFHxS	90		50-150
STL02116	13C2-PFTeDA	83		50-150
STL00991	13C4 PFOS	84		50-150
STL02337	13C3-PFBS	80		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_061.d
 Lims ID: MB 320-233164/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 18-Jul-2018 22:49:34 ALS Bottle#: 45 Worklist Smp#: 2
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: mb 320-233164/1-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 14:17:23 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols Date: 19-Jul-2018 14:17:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.430	0.0	1.000	33329	0.0158			9.1	
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.436	-0.006	0.526	5337361	2.13		85.2	40056	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.747	1.748	-0.001	1.000	20715	0.0122			8.3	M
D 3 13C5-PFPeA										
267.90 > 223.00	1.747	1.748	-0.001	0.642	3489657	2.00		80.2	53087	
D 47 13C3-PFBS										
301.90 > 83.00	1.792	1.793	-0.001	0.659	81277	1.86		79.9	555	
D 7 13C2 PFHxA										
315.00 > 270.00	2.049	2.061	-0.012	0.753	4166358	2.22		88.7	57856	
D 64 13C3 HFPO-DA										
332.10 > 287.00	2.151	2.152	-0.001	0.791	304757	NC			7000	
D 9 13C4-PFHpA										
367.00 > 322.00	2.385	2.385	0.0	0.877	4198634	2.43		97.0	47107	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.396	2.385	0.011	1.000	19184	0.007581			274	
399.00 > 99.00	2.396	2.385	0.011	1.000	4904		3.91(1.50-4.49)		57.3	
D 11 18O2 PFHxS										
403.00 > 84.00	2.396	2.396	0.0	0.881	5213689	2.13		89.9	80209	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.698	2.691	0.007	1.000	2568	0.004325			81.3	
D 12 M2-6:2FTS										
429.00 > 81.00	2.698	2.698	0.0	0.992	901441	2.43		102	25113	
* 62 13C2-PFOA										
415.00 > 370.00	2.721	2.714	0.007		4618514	2.50			48724	
D 14 13C4 PFOA										
417.00 > 372.00	2.721	2.720	0.001	1.000	4122499	2.33		93.4	61221	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.721	2.721	0.0	1.000	12876	0.006340			5.1	
413.00 > 169.00	2.721	2.721	0.0	1.000	6763		1.90(0.84-2.52)		28.1	
D 18 13C4 PFOS										
503.00 > 80.00	3.079	3.076	0.003	1.132	3618262	2.01		84.1	44826	
D 19 13C5 PFNA										
468.00 > 423.00	3.079	3.076	0.003	1.132	3595290	2.28		91.1	34175	
20 Perfluorononanoic acid										
463.00 > 419.00	3.094	3.076	0.018	1.005	1700	0.001066			2.4	
463.00 > 169.00	3.087	3.076	0.011	1.003	850		2.00(1.90-5.69)		20.1	
D 21 13C8 FOSA										
506.00 > 78.00	3.415	3.412	0.003	1.255	5163950	1.99		79.6	41122	
D 26 M2-8:2FTS										
529.00 > 81.00	3.424	3.421	0.003	1.258	1373625	2.53		106	27840	
D 23 13C2 PFDA										
515.00 > 470.00	3.433	3.430	0.003	1.262	3233122	2.33		93.3	51764	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.584	3.579	0.005	1.317	1333651	2.35		93.9	28317	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.749	3.744	0.005	1.378	1458880	2.51		100	3649	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.749	3.744	0.005	1.000	2740	0.003095			14.3	R
563.00 > 169.00	3.749	3.744	0.005	1.000	2250		1.22(2.12-6.36)		91.5	R
D 30 13C2 PFUnA										
565.00 > 520.00	3.749	3.754	-0.005	1.378	2701218	2.33		93.3	43235	
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.916	3.902	0.014	1.272	3129	NC			87.5	
D 36 13C2 PFDoA										
615.00 > 570.00	4.038	4.034	0.004	1.484	2657309	2.21		88.6	23355	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.541	4.540	0.001	1.669	2578441	2.07		82.8	16153	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.947	4.947	0.0	1.000	27501	NC			7.1	
813.00 > 169.00	4.947	4.947	0.0	1.000	5384		5.11(2.86-8.58)		52.0	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.947	4.947	0.0	1.818	3364471	1.70		67.9	11139	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_061.d

Injection Date: 18-Jul-2018 22:49:34

Instrument ID: A8_N

Lims ID: MB 320-233164/1-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 45

Worklist Smp#: 2

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

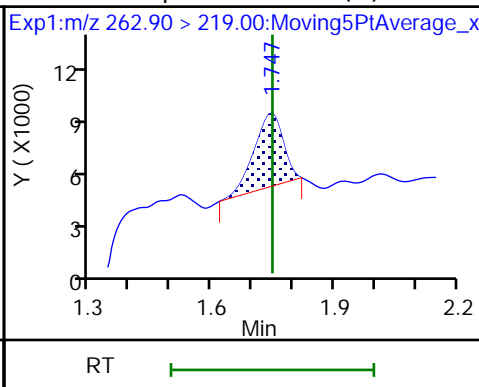
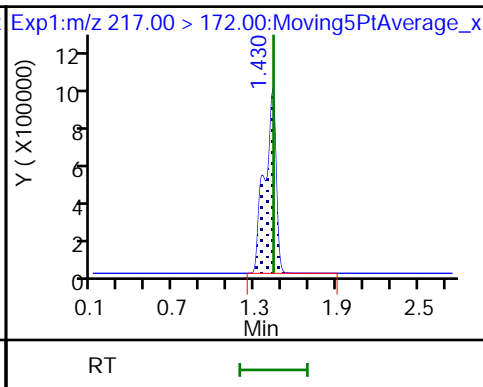
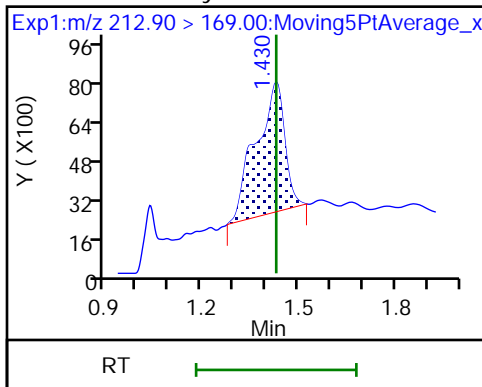
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid

D 1 13C4 PFBA

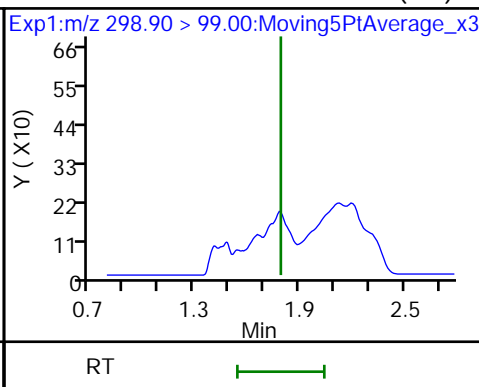
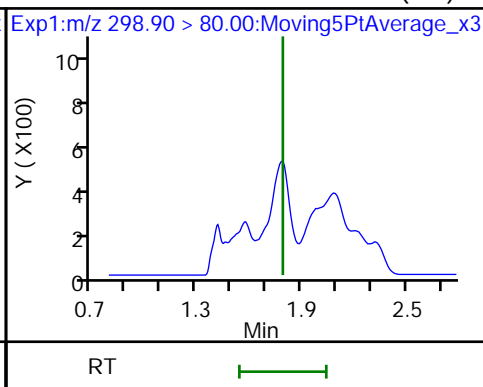
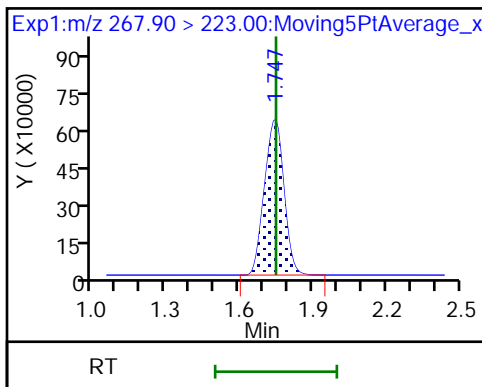
4 Perfluoropentanoic acid (M)



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid (ND)

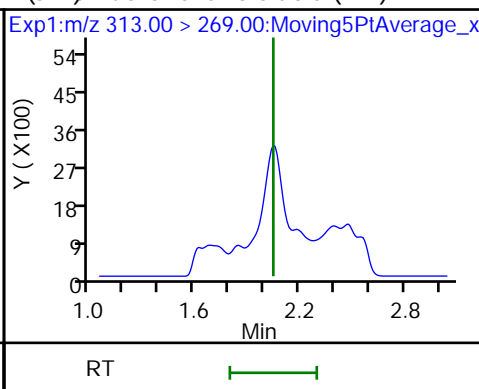
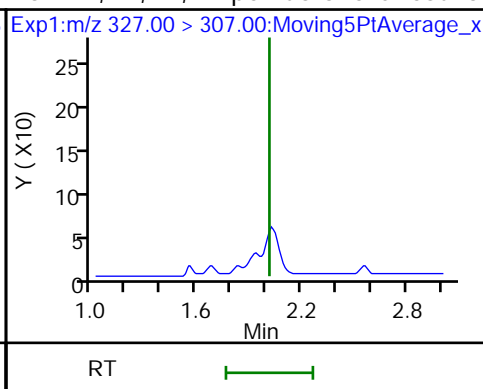
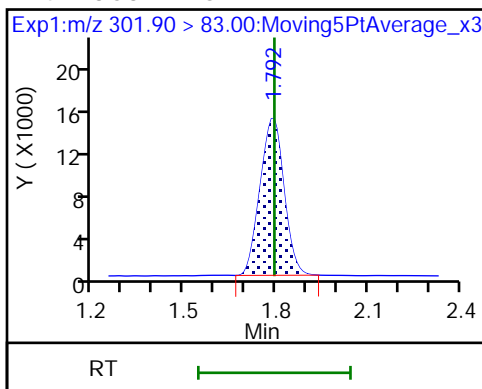
5 Perfluorobutanesulfonic acid (ND)



D 47 13C3-PFBS

61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)

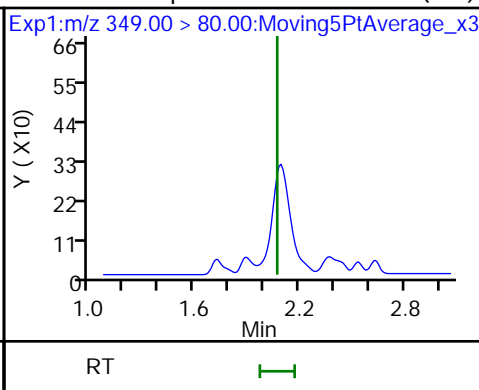
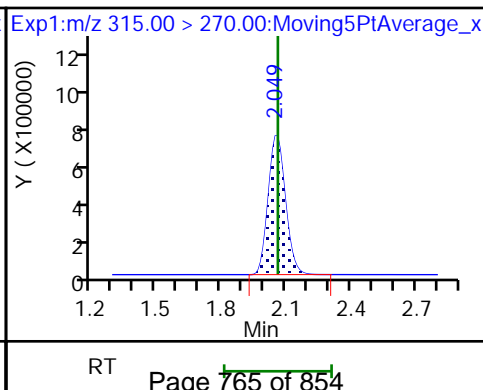
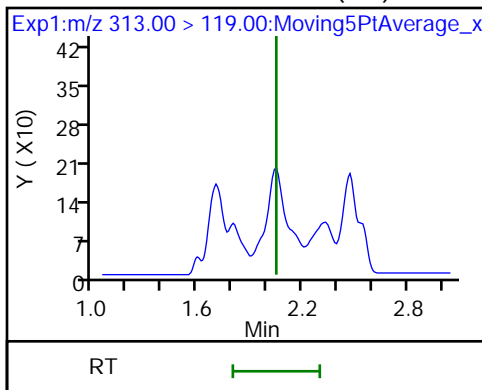
61 Perfluorohexanoic acid (ND)



6 Perfluorohexanoic acid (ND)

D 7 13C2 PFHxA

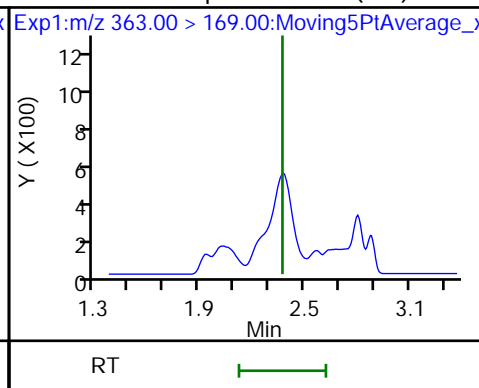
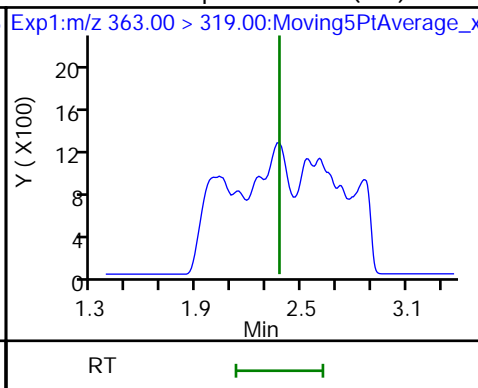
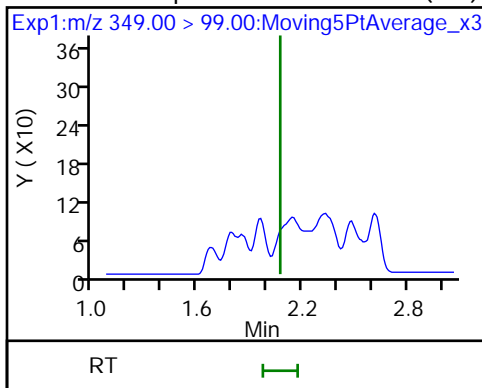
70 Perfluoropentanesulfonic acid (ND)



70 Perfluoropentanesulfonic acid (ND)

10 Perfluoroheptanoic acid (ND)

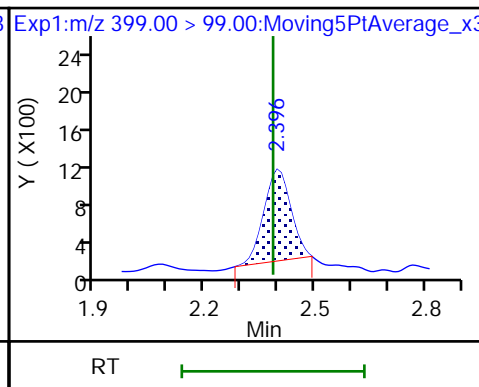
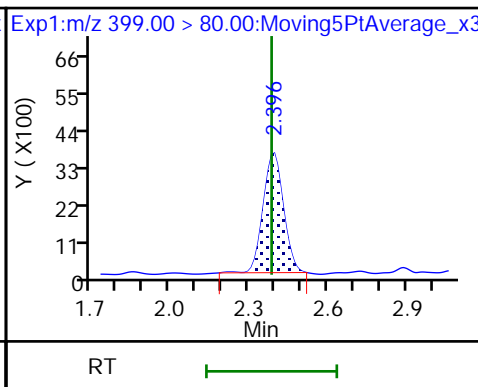
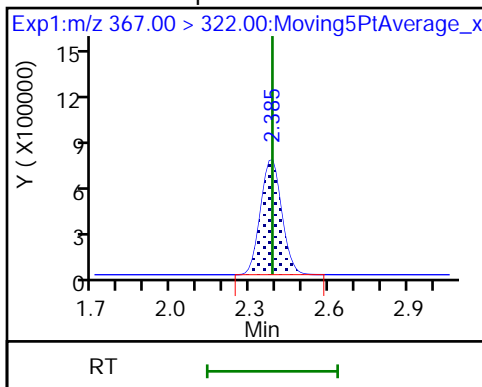
10 Perfluoroheptanoic acid (ND)



D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

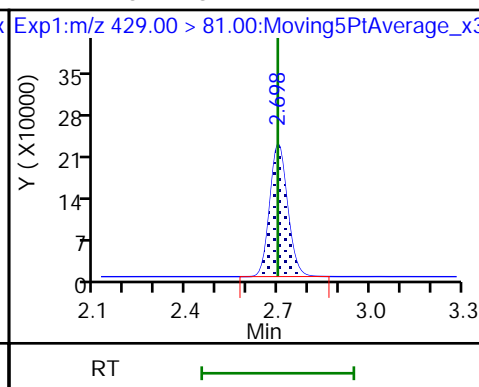
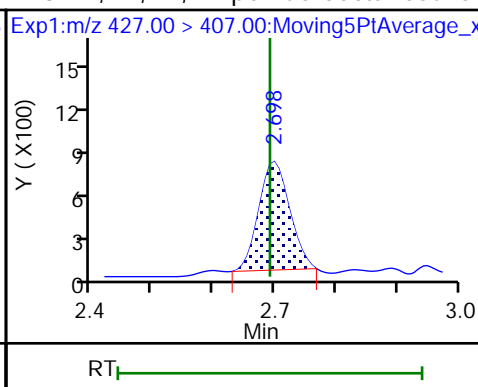
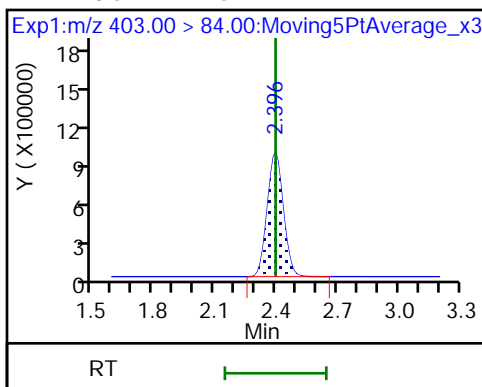
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

13 1H,1H,2H,2H-perfluorooctanesulfonD

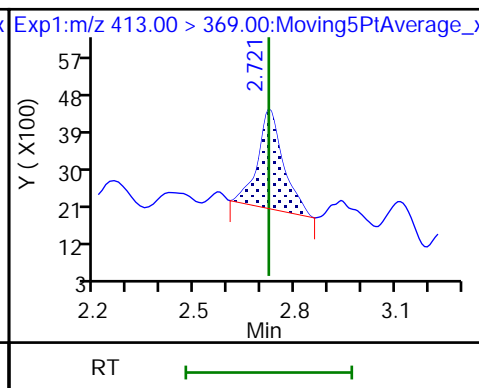
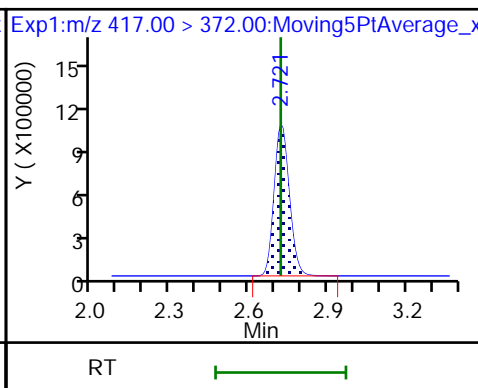
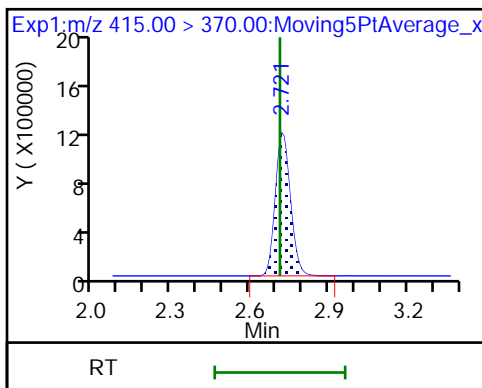
12 M2-6:2FTS

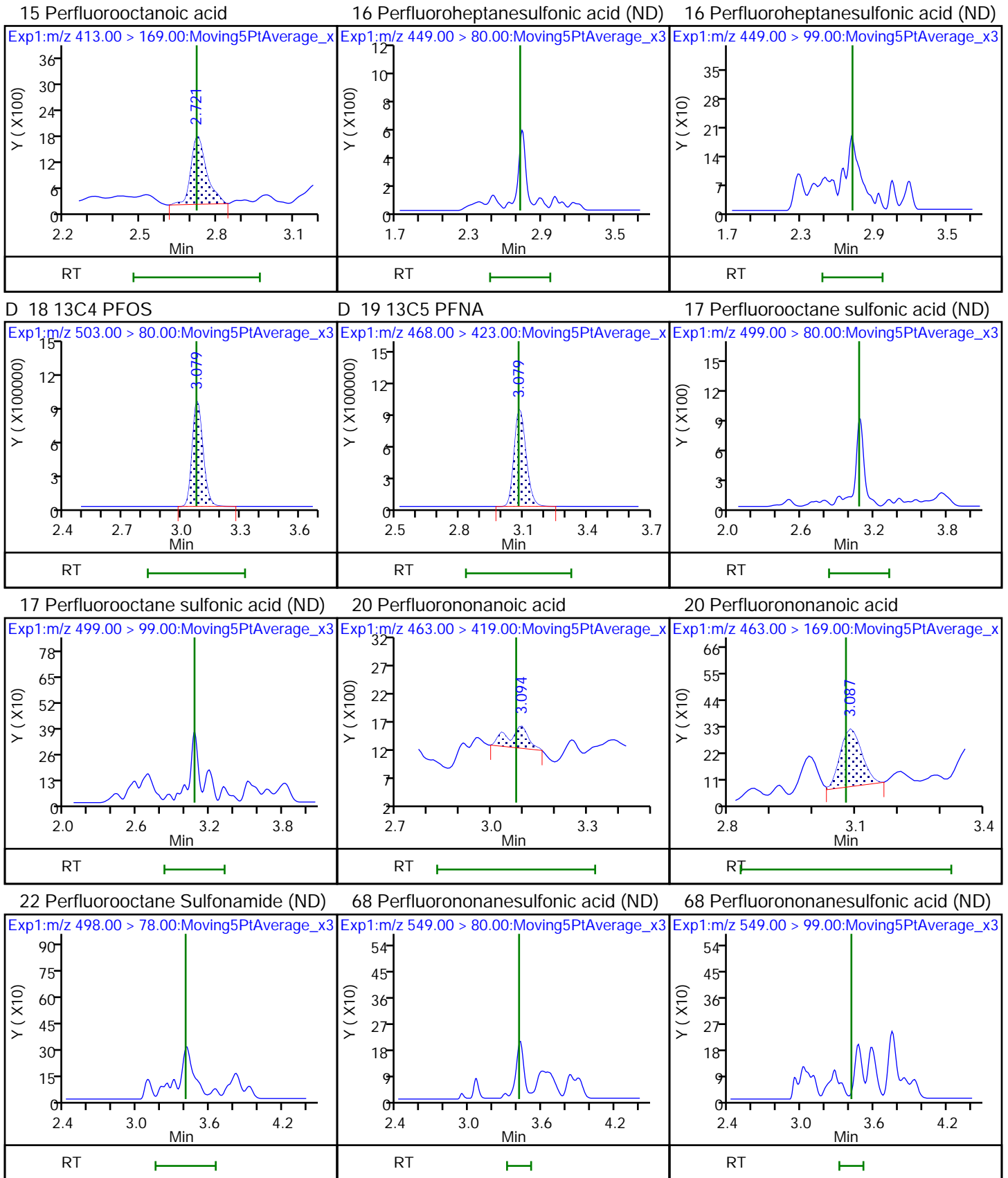


* 62 13C2-PFOA

D 14 13C4 PFOA

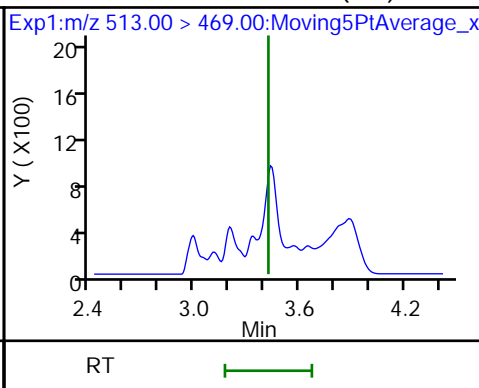
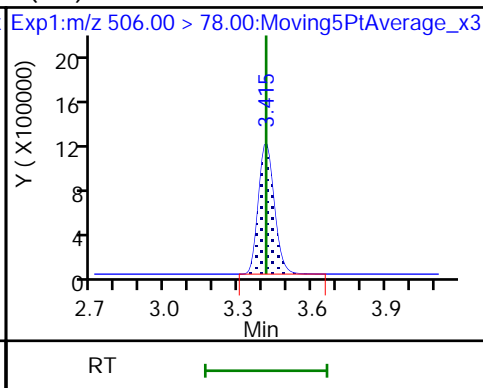
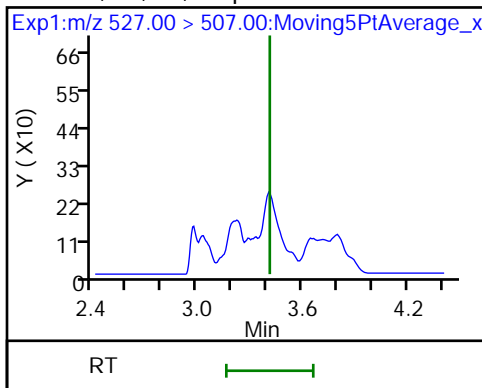
15 Perfluorooctanoic acid





25 1H,1H,2H,2H-perfluorodecanesulfonamide (ND) 3C8 FOSA

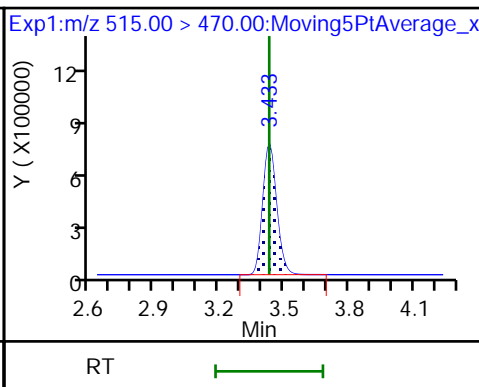
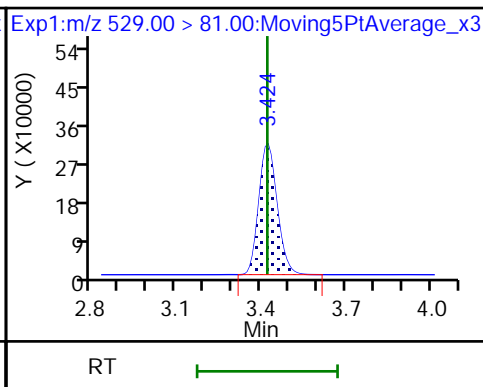
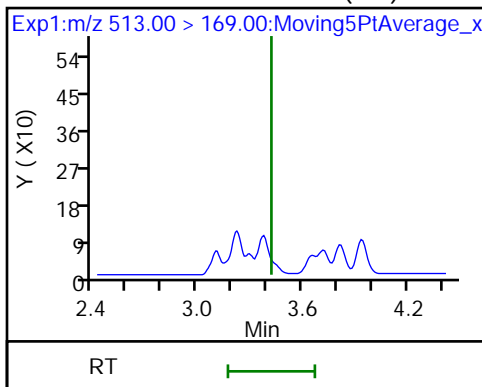
24 Perfluorodecanoic acid (ND)



24 Perfluorodecanoic acid (ND)

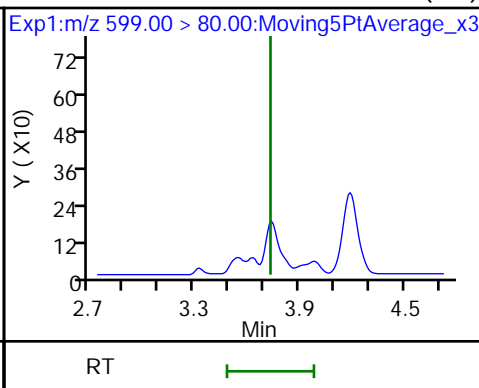
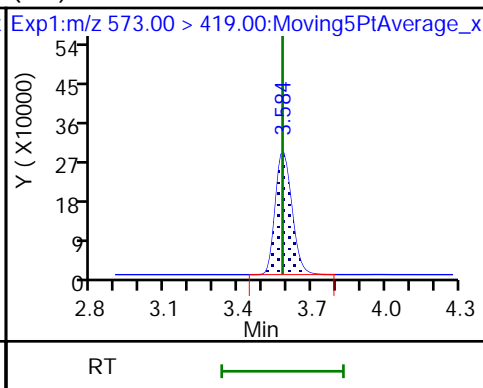
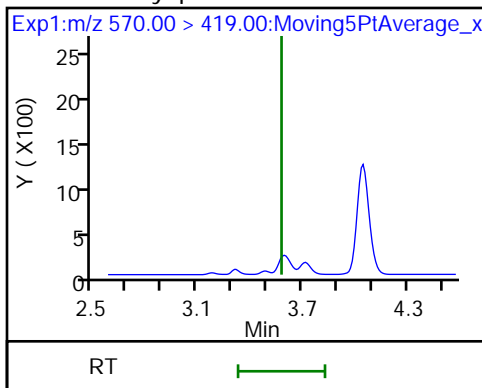
D 26 M2-8:2FTS

D 23 13C2 PFDA



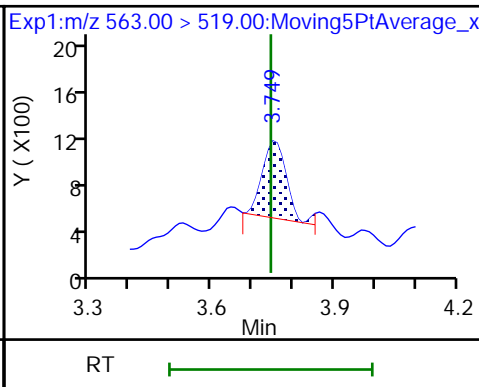
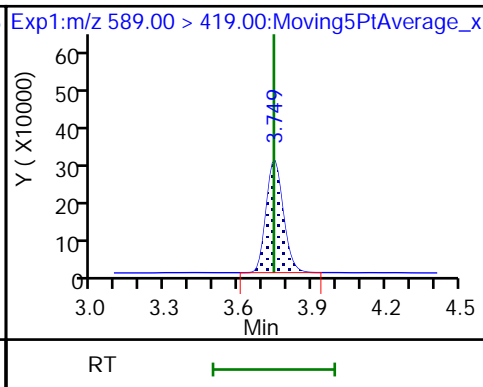
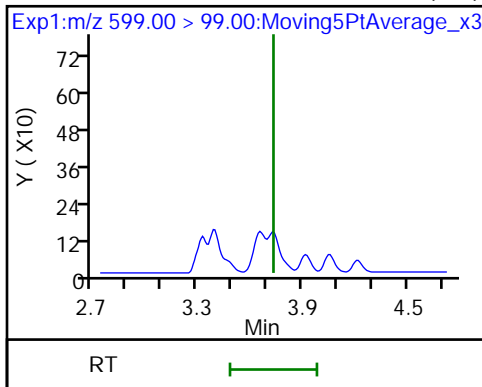
28 N-methyl perfluorooctane sulfonamide (ND) d3-NMeFOSAA

29 Perfluorodecane Sulfonic acid (ND)



29 Perfluorodecane Sulfonic acid (ND) D 32 d5-NEtFOSAA

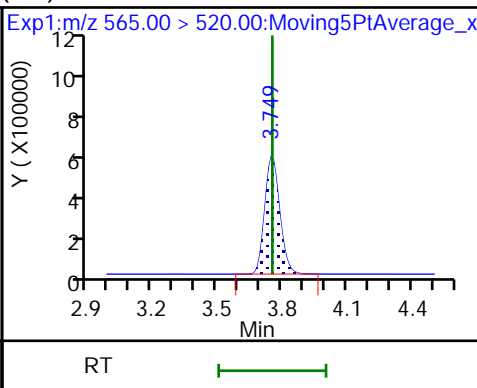
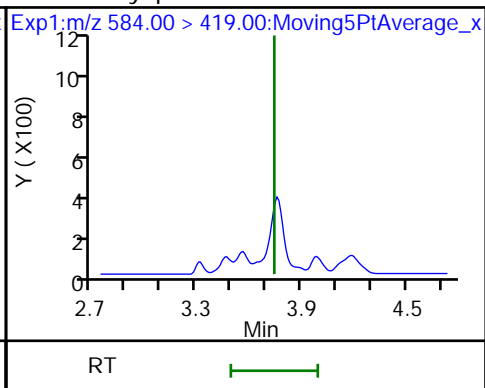
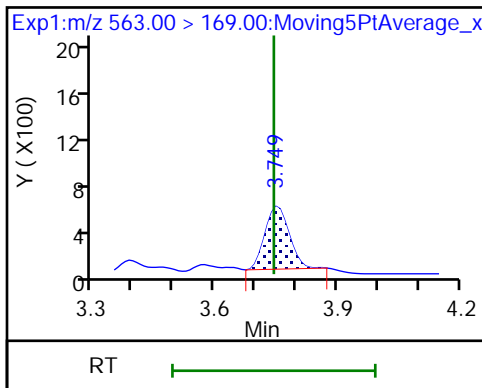
31 Perfluoroundecanoic acid



31 Perfluoroundecanoic acid

33 N-ethyl perfluorooctane sulfonamid (ND)

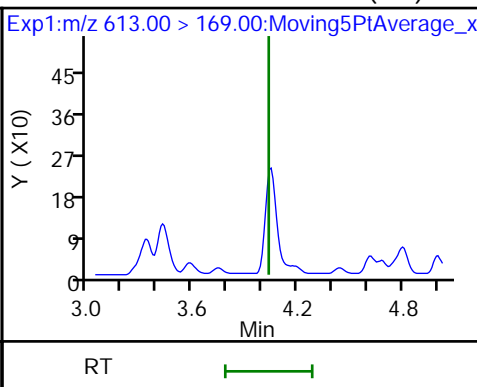
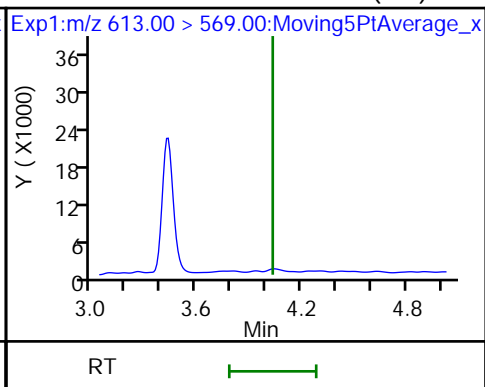
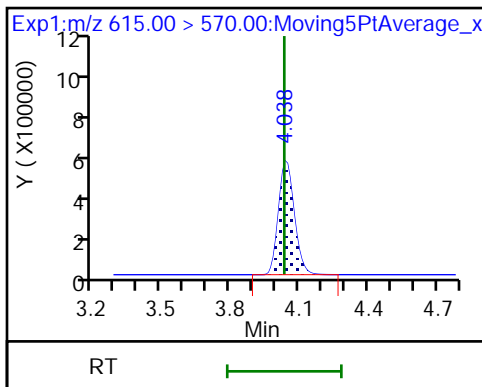
13C2 PFUnA



D 36 13C2 PFDaA

37 Perfluorododecanoic acid (ND)

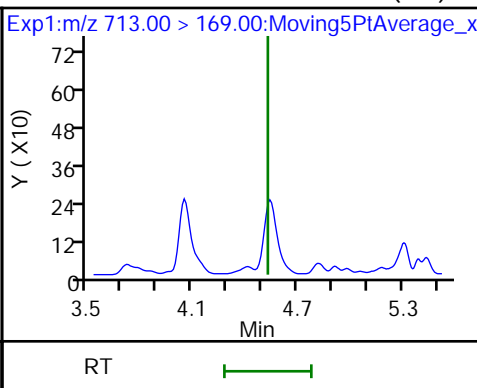
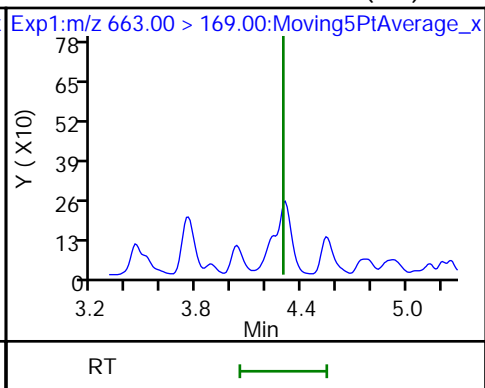
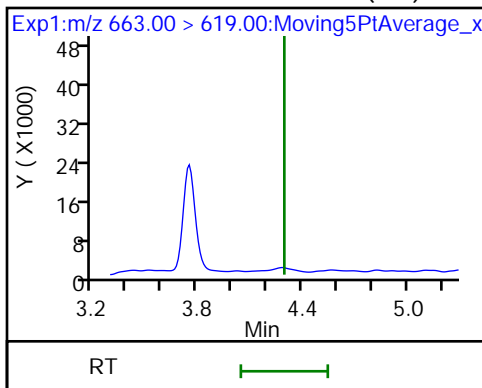
37 Perfluorododecanoic acid (ND)



41 Perfluorotridecanoic acid (ND)

41 Perfluorotridecanoic acid (ND)

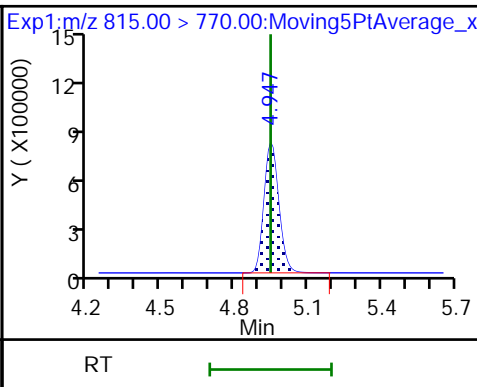
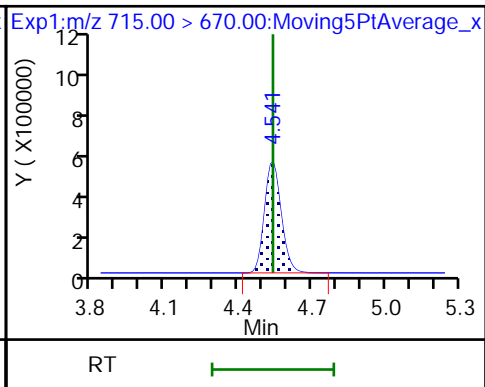
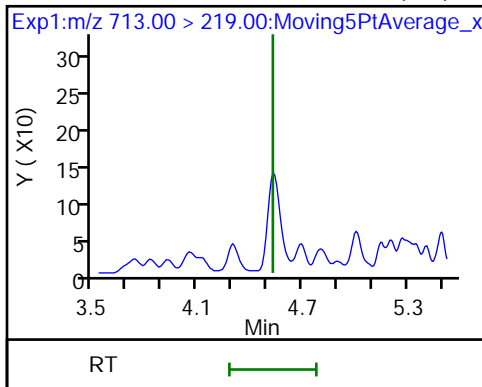
42 Perfluorotetradecanoic acid (ND)



42 Perfluorotetradecanoic acid (ND)

D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



TestAmerica Sacramento

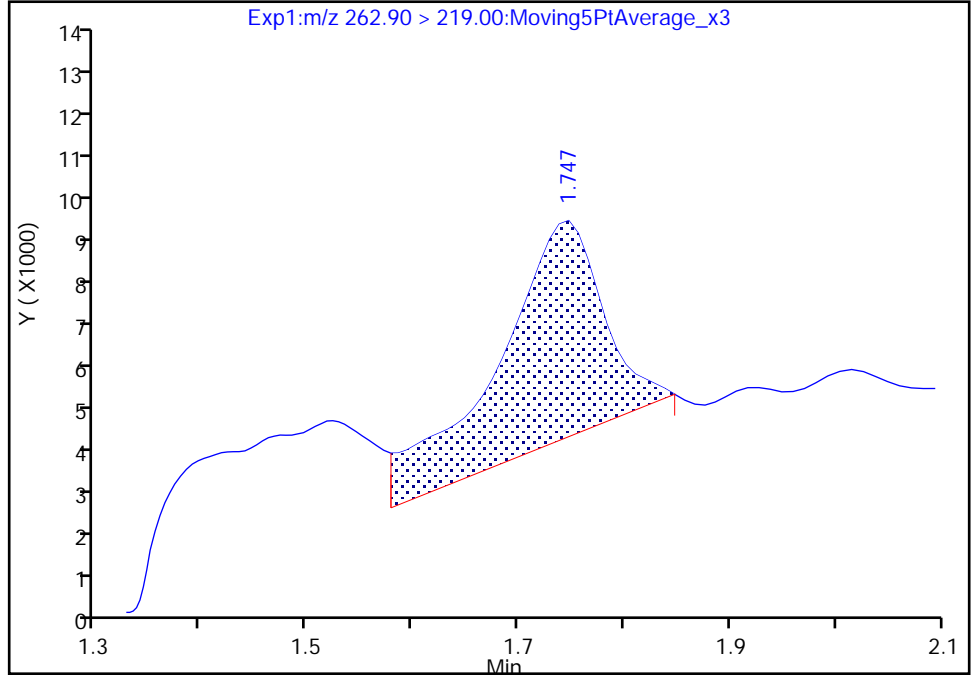
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_061.d
Injection Date: 18-Jul-2018 22:49:34 Instrument ID: A8_N
Lims ID: MB 320-233164/1-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 45 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

4 Perfluoropentanoic acid, CAS: 2706-90-3

Signal: 1

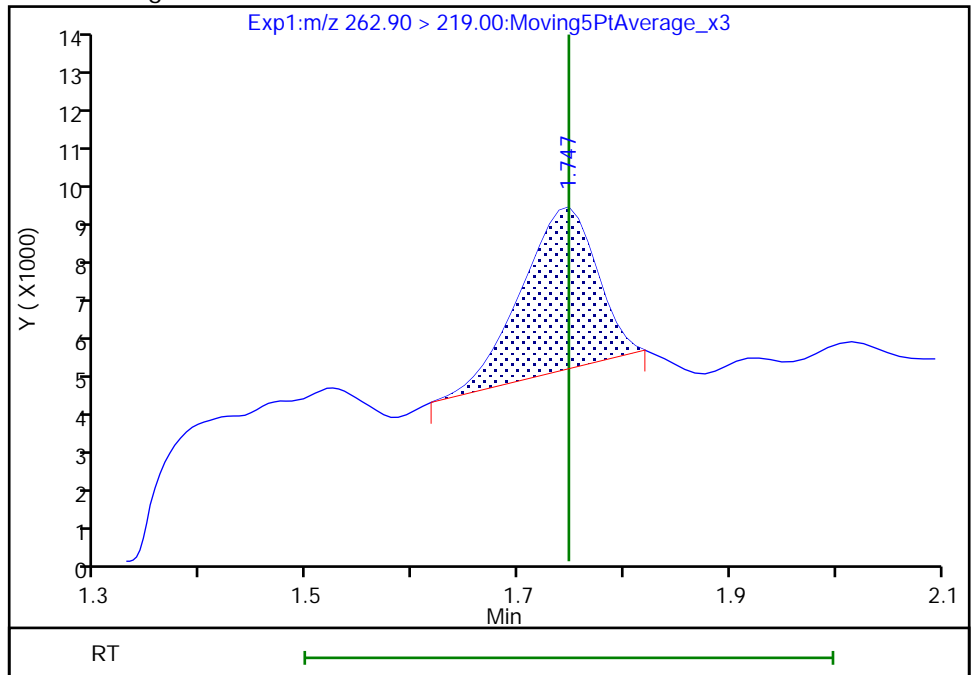
RT: 1.75
Area: 35686
Amount: 0.021074
Amount Units: ng/ml

Processing Integration Results



RT: 1.75
Area: 20715
Amount: 0.012233
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 14:17:12
Audit Action: Manually Integrated

Audit Reason: Baseline
Page 771 of 854

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-234756/1
 Matrix: Water Lab File ID: 2018.07.18LLAA_003.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/18/2018 16:41
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234756 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00681	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-234756/1
 Matrix: Water Lab File ID: 2018.07.18LLAA_003.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/18/2018 16:41
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234756 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	105		50-150
STL00992	13C4 PFBA	95		50-150
STL01893	13C5 PFPeA	95		50-150
STL00993	13C2 PFHxA	100		50-150
STL01892	13C4-PFHpA	106		50-150
STL00990	13C4 PFOA	105		50-150
STL00995	13C5 PFNA	99		50-150
STL00996	13C2 PFDA	105		50-150
STL00997	13C2 PFUnA	107		50-150
STL00998	13C2 PFDoA	100		50-150
STL00994	18O2 PFHxS	104		50-150
STL02116	13C2-PFTeDA	97		50-150
STL00991	13C4 PFOS	100		50-150
STL02337	13C3-PFBS	98		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61249.b\2018.07.18LLAA_003.d
 Lims ID: CCB
 Client ID:
 Sample Type: CCB
 Inject. Date: 18-Jul-2018 16:41:51 ALS Bottle#: 20 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCB
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61249.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 08:51:49 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICAL File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK025

First Level Reviewer: mongkols Date: 19-Jul-2018 10:18:55

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	1.436	1.424	0.012	0.525	4696904	2.39	95.5	87852	
D 3 13C5-PFPeA	267.90 > 223.00	1.757	1.738	0.019	0.642	3261717	2.38	95.4	51772	
D 47 13C3-PFBS	301.90 > 83.00	1.802	1.783	0.019	0.659	78560	2.29	98.3	513	
D 60 M2-4:2FTS	329.00 > 81.00	2.027	2.003	0.024	0.741	419368	NC		5511	
D 7 13C2 PFHxA	315.00 > 270.00	2.061	2.049	0.012	0.753	3685450	2.50	99.9	78363	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.163	2.139	0.024	0.791	233733	NC		4933	
D 9 13C4-PFHpA	367.00 > 322.00	2.386	2.372	0.014	0.872	3608817	2.65	106	47884	
D 11 18O2 PFHxS	403.00 > 84.00	2.408	2.385	0.023	0.880	4730823	2.46	104	36323	
10 Perfluoroheptanoic acid	363.00 > 319.00	2.386	2.385	0.001	1.000	2984	0.001787		7.1	R
	363.00 > 169.00	2.397	2.385	0.012	1.005	2739	1.09(1.13-3.40)		27.2	R
8 Perfluorohexanesulfonic acid	399.00 > 80.00	2.408	2.396	0.012	1.000	15626	0.006805		219	
	399.00 > 99.00	2.408	2.396	0.012	1.000	3827	4.08(1.50-4.49)		33.3	
D 12 M2-6:2FTS	429.00 > 81.00	2.713	2.690	0.023	0.992	680475	2.33	98.3	14835	
D 14 13C4 PFOA	417.00 > 372.00	2.736	2.713	0.023	1.000	3637359	2.62	105	56475	
* 62 13C2-PFOA	415.00 > 370.00	2.736	2.728	0.008		3628230	2.50		31547	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.743	2.728	0.015	1.003	7674	0.004283			4.2	
413.00 > 169.00	2.728	2.728	0.0	0.997	0		0.00(0.84-2.52)			
D 18 13C4 PFOS										
503.00 > 80.00	3.095	3.069	0.026	1.131	3390484	2.40		100	37676	
D 19 13C5 PFNA										
468.00 > 423.00	3.103	3.069	0.034	1.134	3075238	2.48		99.2	30992	
D 21 13C8 FOSA										
506.00 > 78.00	3.417	3.402	0.015	1.249	5352001	2.63		105	59467	
D 26 M2-8:2FTS										
529.00 > 81.00	3.444	3.411	0.033	1.259	1013427	2.38		99.2	17021	
D 23 13C2 PFDA										
515.00 > 470.00	3.454	3.421	0.033	1.262	2849538	2.62		105	29920	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.607	3.570	0.037	1.319	1105509	2.48		99.1	25474	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.771	3.733	0.038	1.379	1352156	2.96		118	3217	
D 30 13C2 PFUnA										
565.00 > 520.00	3.771	3.733	0.038	1.379	2442022	2.69		107	36277	
D 36 13C2 PFDoA										
615.00 > 570.00	4.061	4.023	0.038	1.484	2352256	2.50		99.8	19126	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.562	4.528	0.034	1.668	2373453	2.43		97.1	14980	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.983	4.936	0.047	1.821	3652004	2.34		93.8	10831	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.983	4.967	0.016	1.000	31827	NC			8.4	
813.00 > 169.00	4.991	4.967	0.024	1.002	5271		6.04(2.86-8.58)		58.5	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Reagents:

LCPFC_LLO_00007

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61249.b\2018.07.18LLAA_003.d

Injection Date: 18-Jul-2018 16:41:51

Instrument ID: A8_N

Lims ID: CCB

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 1

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

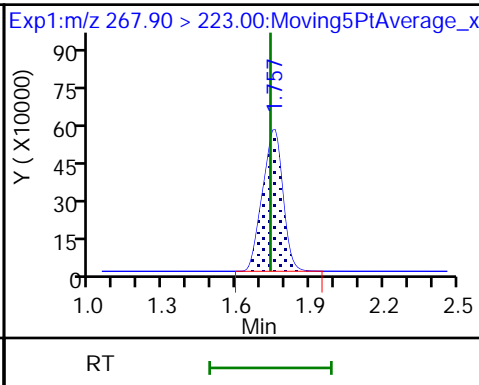
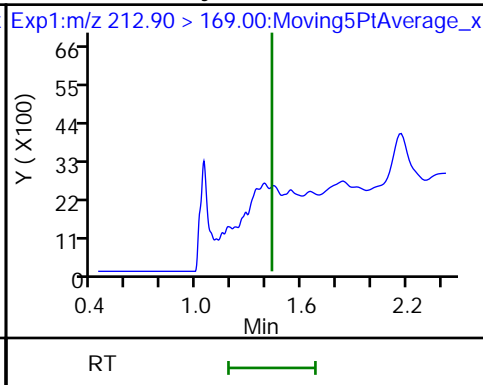
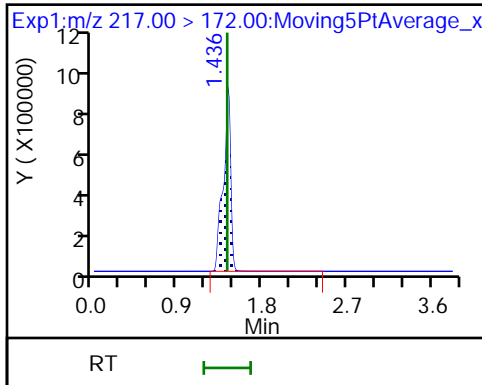
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid (ND)

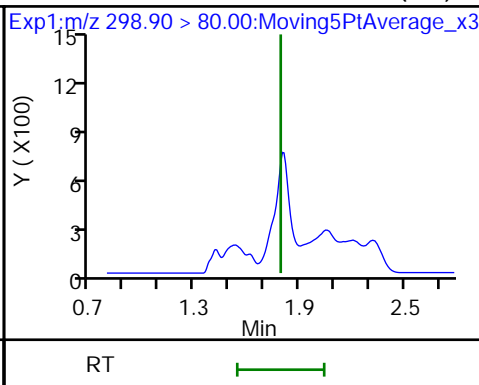
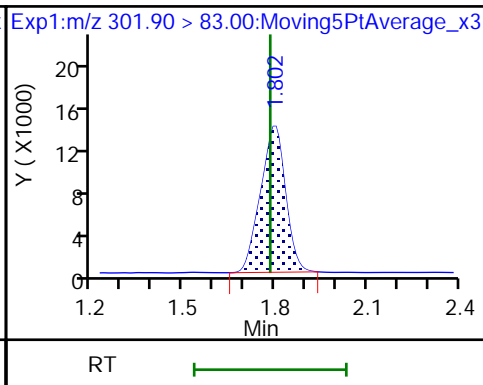
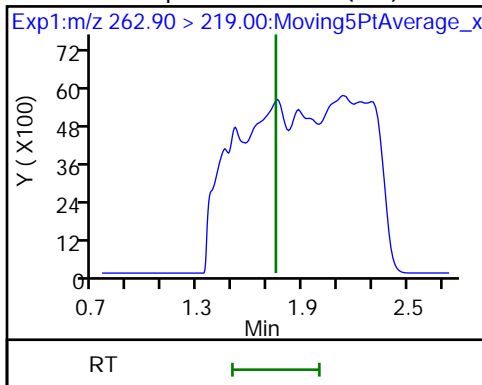
D 3 13C5-PFPeA



4 Perfluoropentanoic acid (ND)

D 47 13C3-PFBS

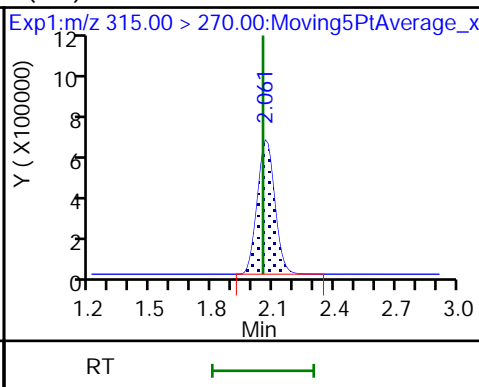
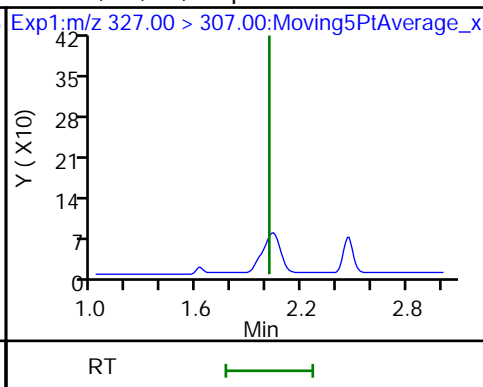
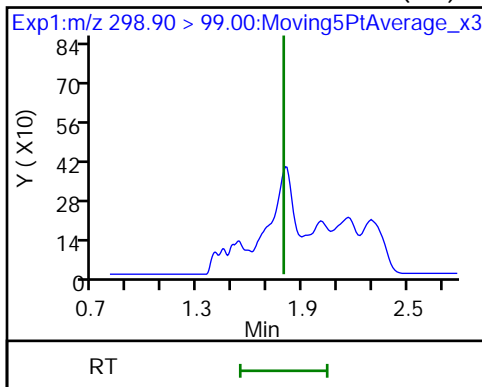
5 Perfluorobutanesulfonic acid (ND)



5 Perfluorobutanesulfonic acid (ND)

61 1H,1H,2H,2H-perfluorohexanesulfonate (ND)

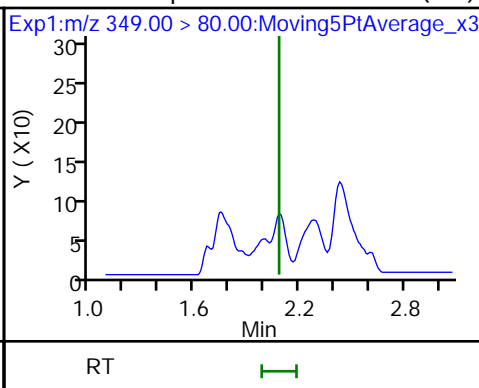
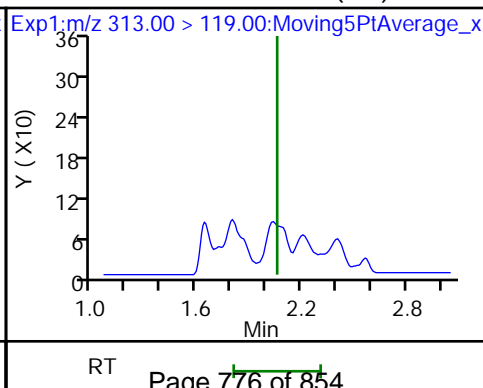
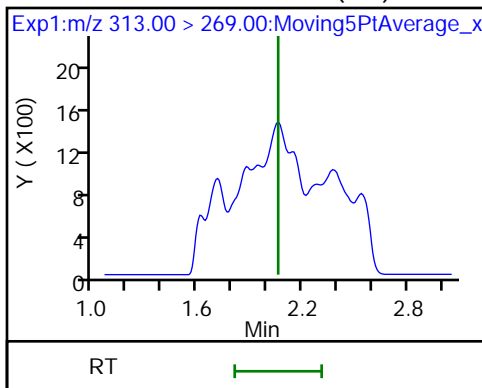
D 13C2 PFHxA



6 Perfluorohexanoic acid (ND)

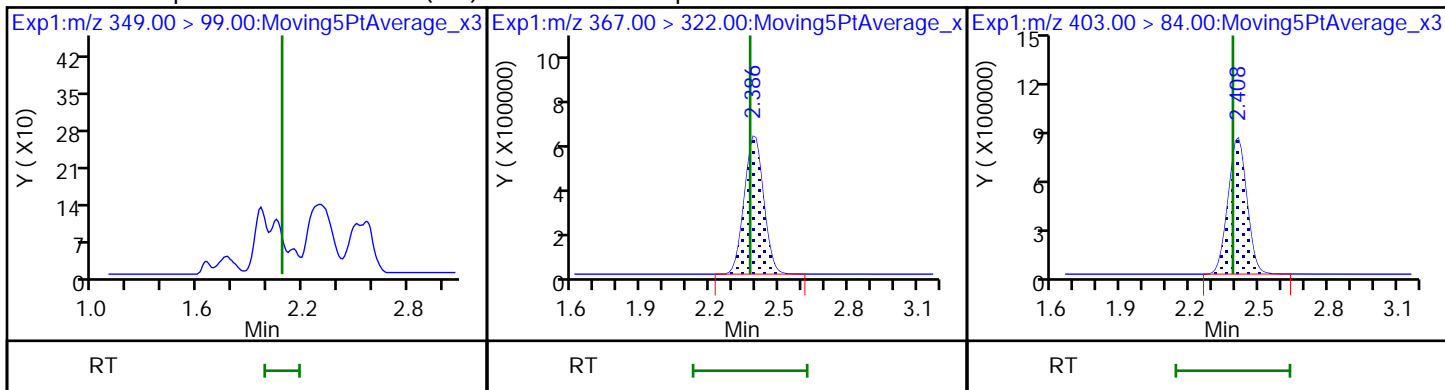
6 Perfluorohexanoic acid (ND)

70 Perfluoropentanesulfonic acid (ND)



70 Perfluoropentanesulfonic acid (ND) D 9 13C4-PFHpA

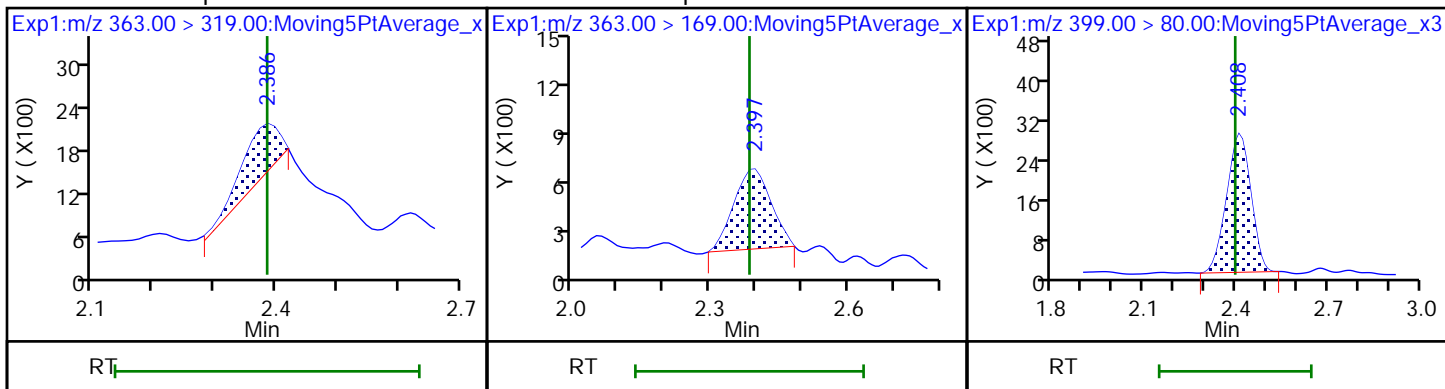
D 11 18O2 PFHxS



10 Perfluoroheptanoic acid

10 Perfluoroheptanoic acid

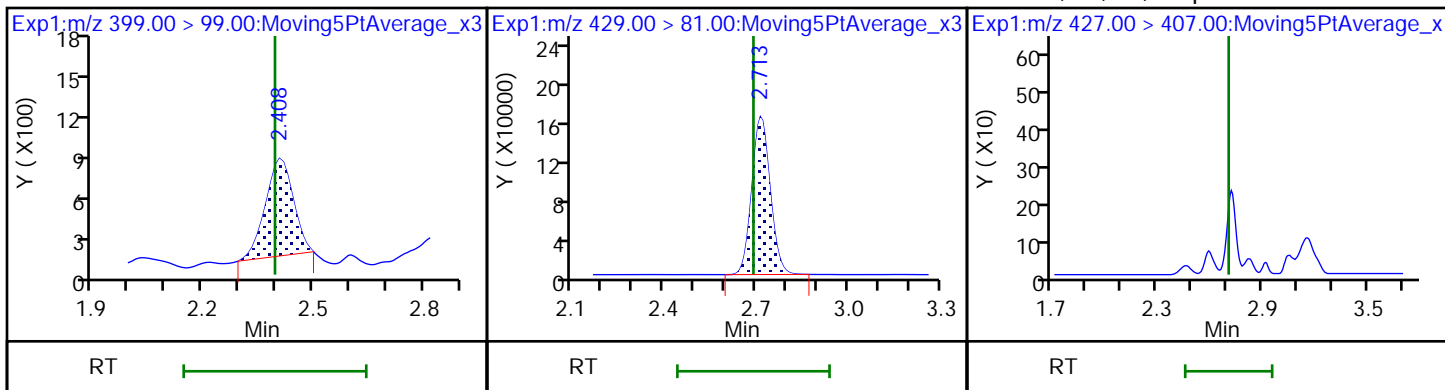
8 Perfluorohexanesulfonic acid



8 Perfluorohexanesulfonic acid

D 12 M2-6:2FTS

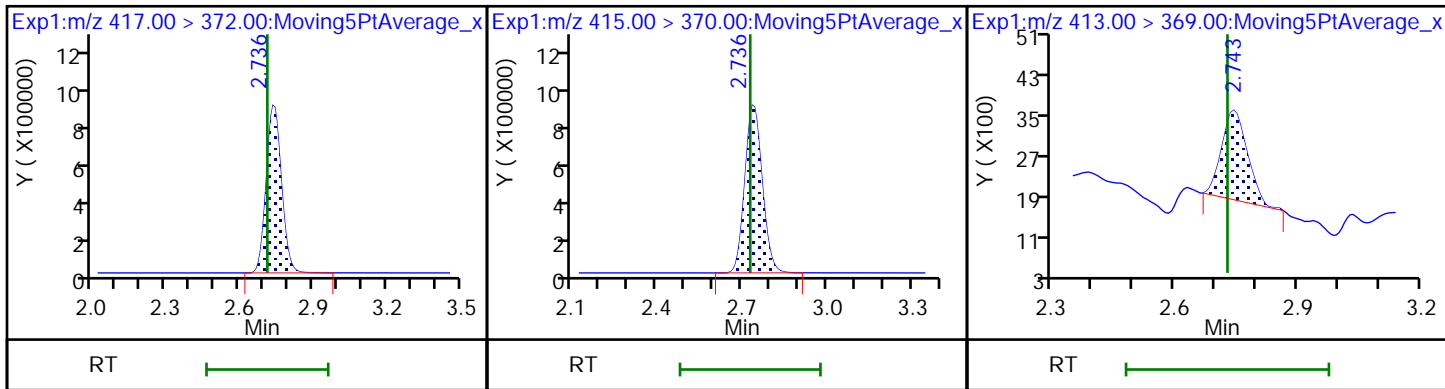
13 1H,1H,2H,2H-perfluorooctanesulfoni (ND)

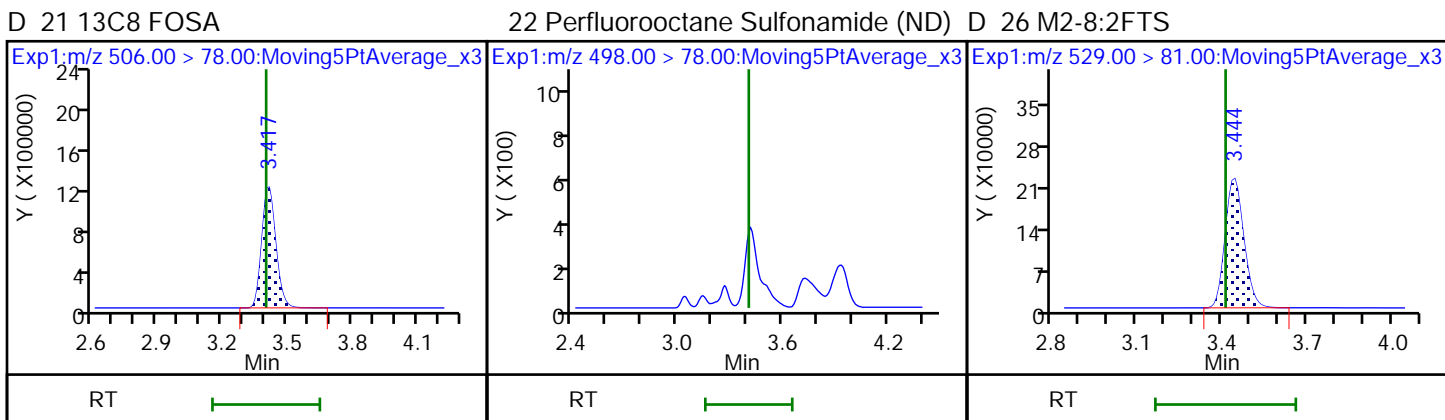
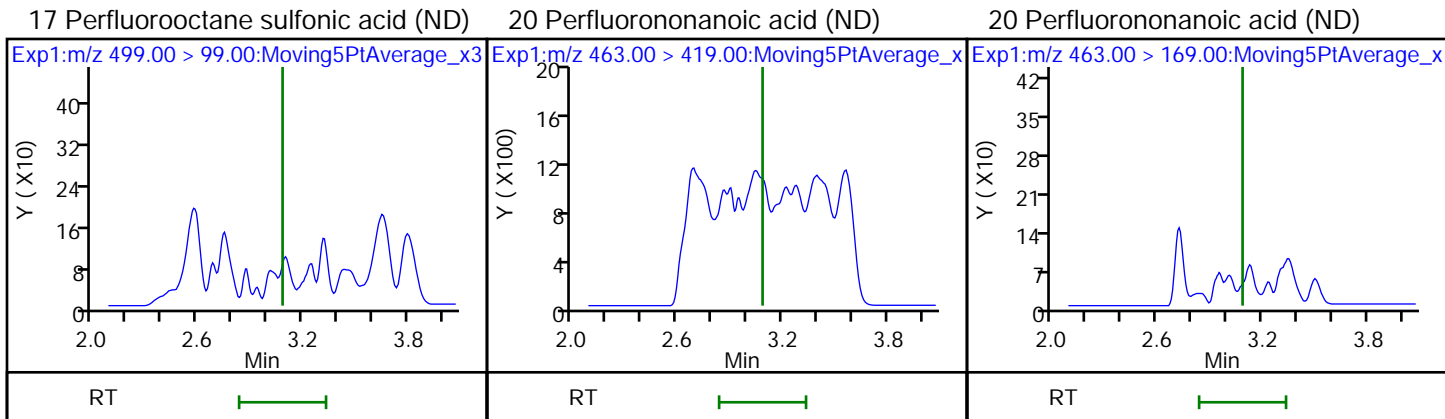
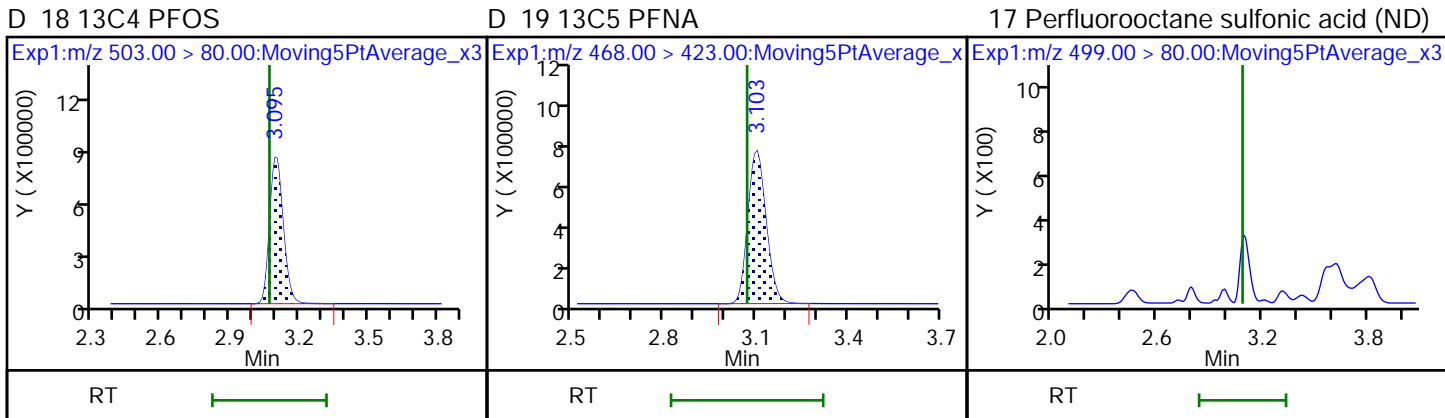
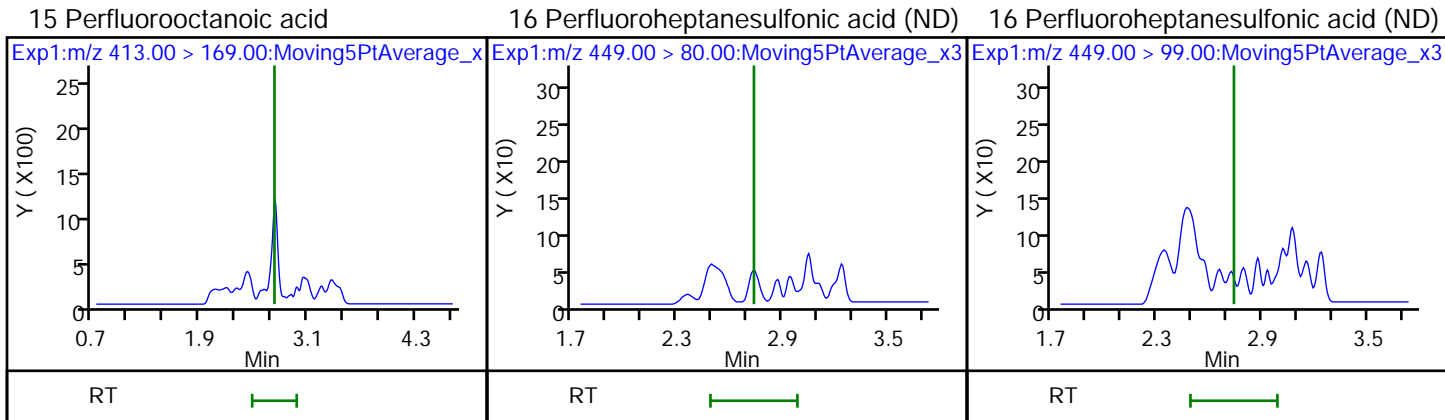


D 14 13C4 PFOA

* 62 13C2-PFOA

15 Perfluorooctanoic acid

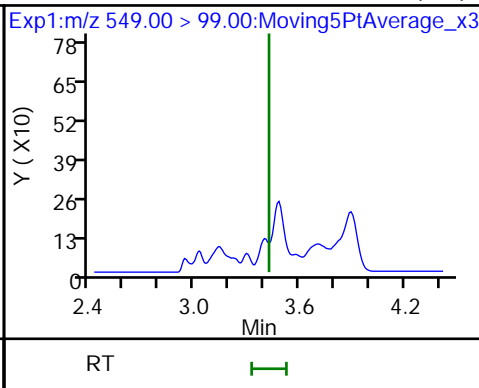
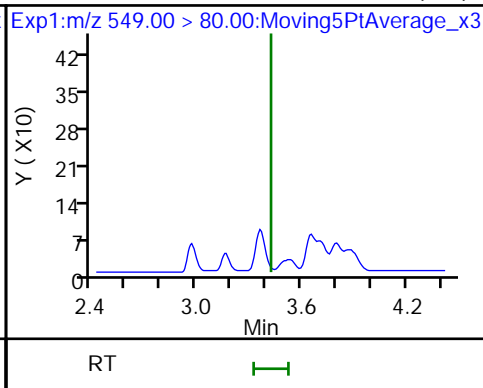
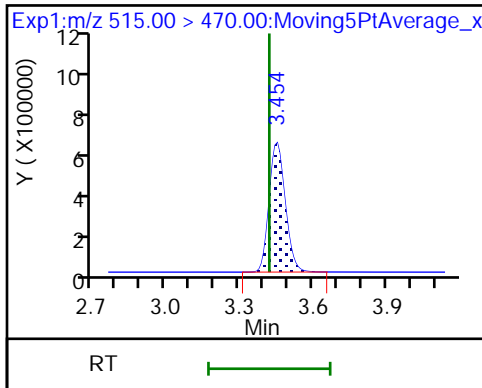




D 23 13C2 PFDA

68 Perfluorononanesulfonic acid (ND)

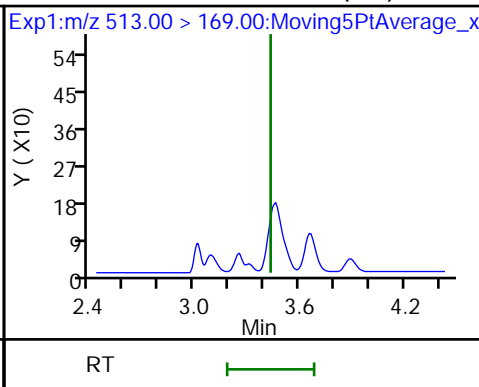
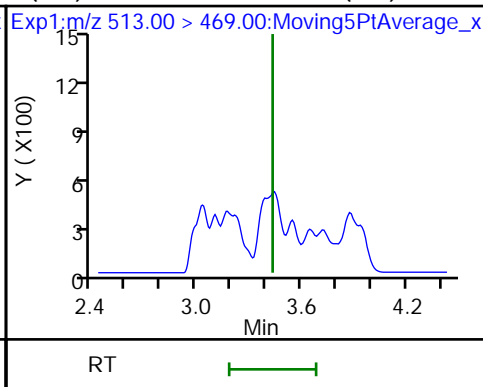
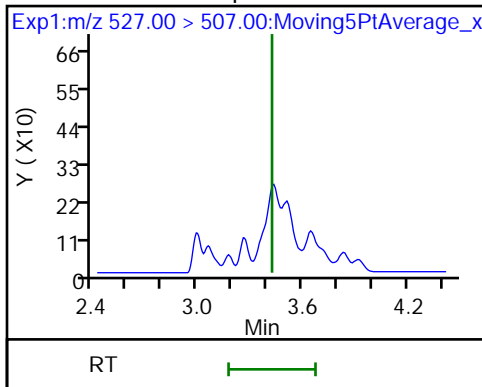
68 Perfluorononanesulfonic acid (ND)



25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND)

24 Perfluorodecanoic acid (ND)

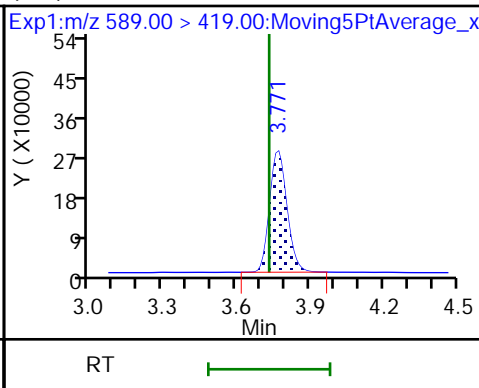
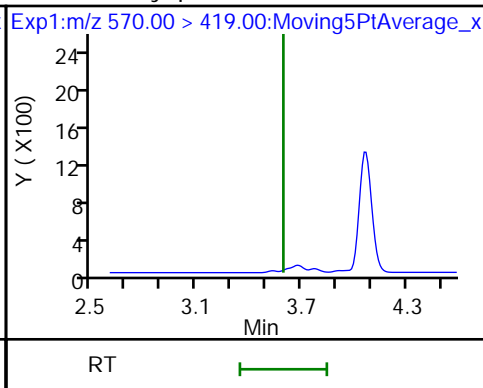
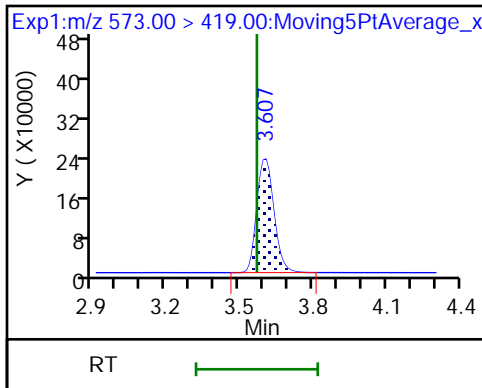
24 Perfluorodecanoic acid (ND)



D 27 d3-NMeFOSAA

28 N-methyl perfluorooctane sulfonamide (ND)

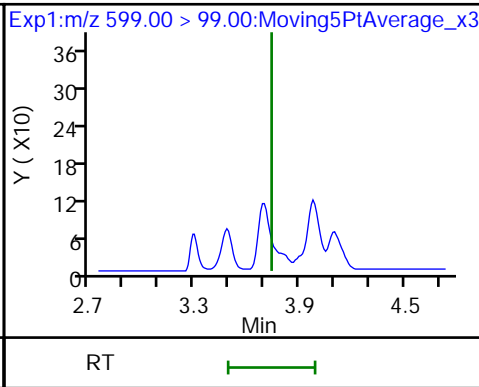
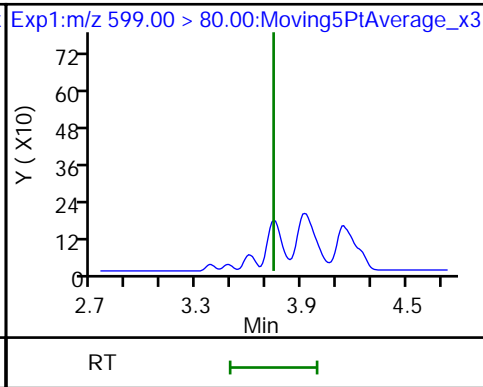
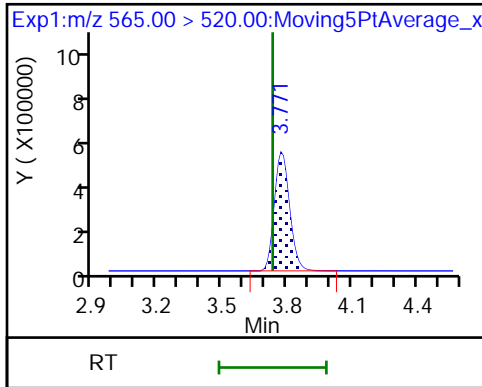
d5-NEtFOSAA



D 30 13C2 PFUnA

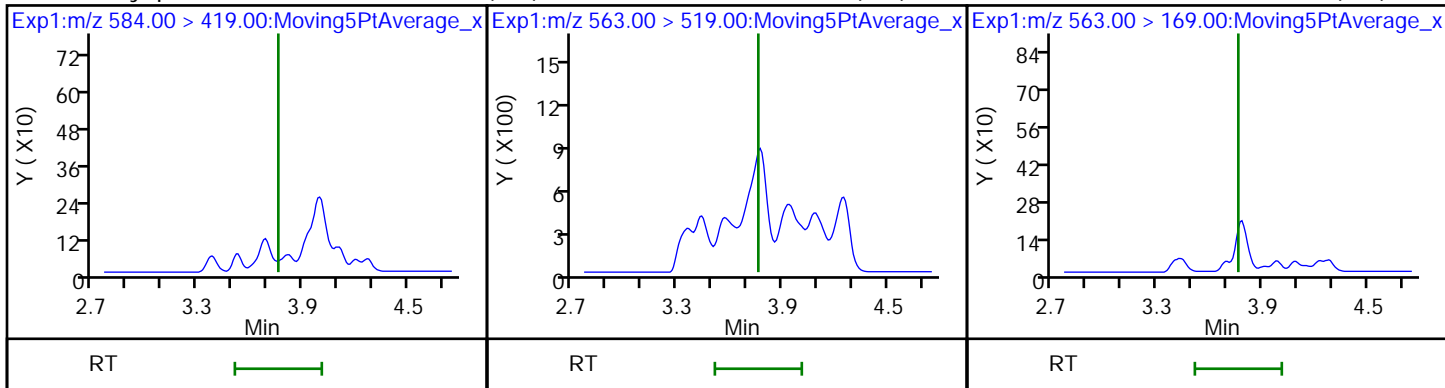
29 Perfluorodecane Sulfonic acid (ND)

29 Perfluorodecane Sulfonic acid (ND)



33 N-ethyl perfluorooctane sulfonamid (ND) Perfluoroundecanoic acid (ND)

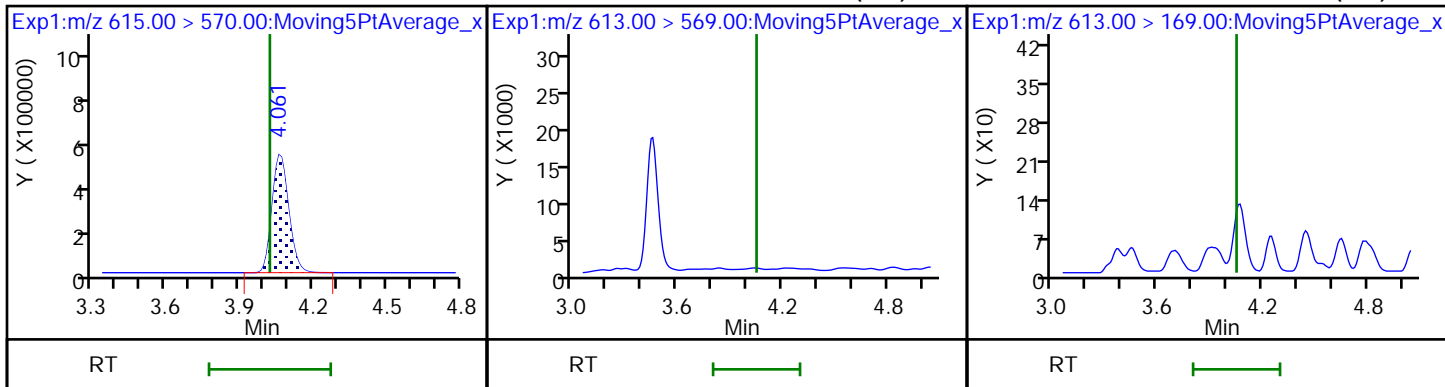
31 Perfluoroundecanoic acid (ND)



D 36 13C2 PFDaA

37 Perfluorododecanoic acid (ND)

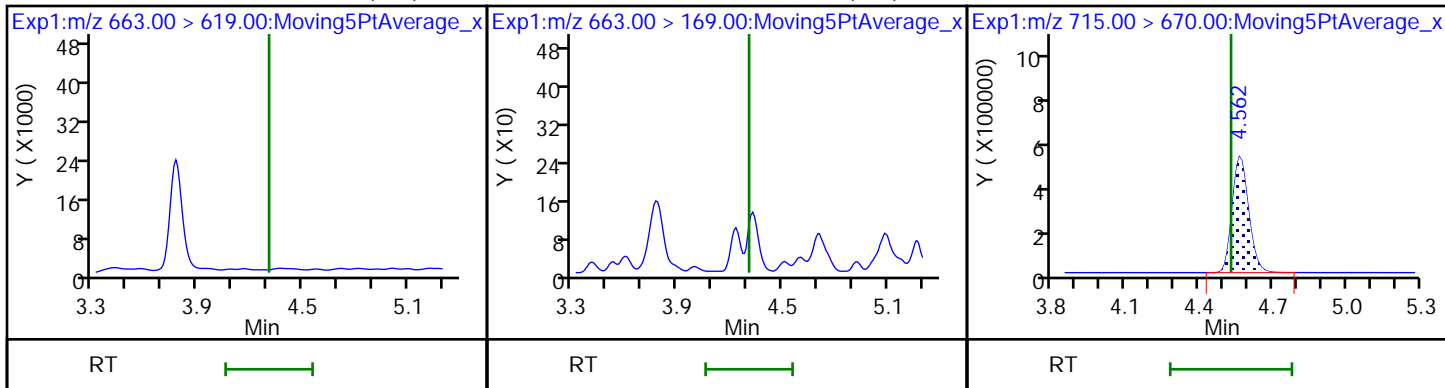
37 Perfluorododecanoic acid (ND)



41 Perfluorotridecanoic acid (ND)

41 Perfluorotridecanoic acid (ND)

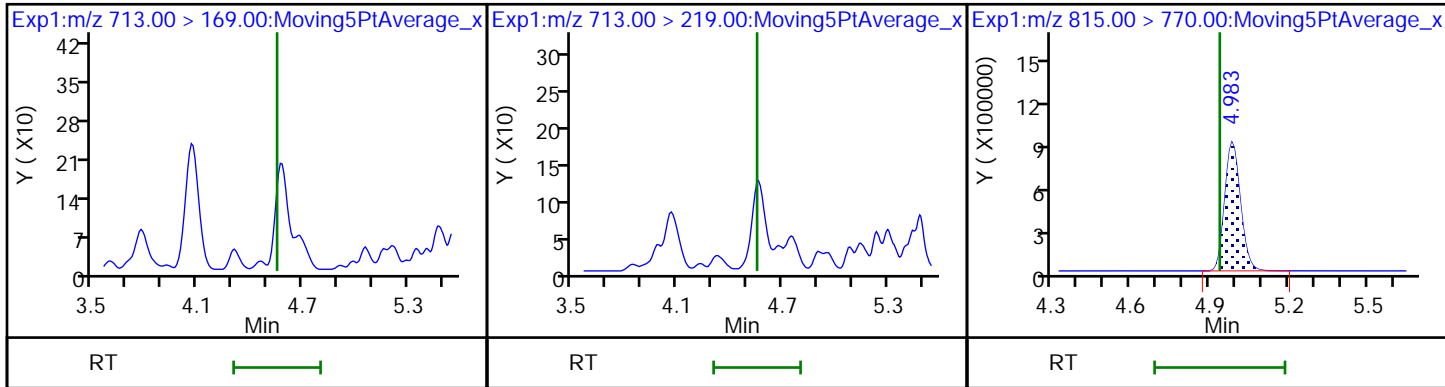
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid (ND)

42 Perfluorotetradecanoic acid (ND)

D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-235044/1
 Matrix: Water Lab File ID: 2018.07.19LLC_003.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/19/2018 19:12
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 235044 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00666	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-235044/1
 Matrix: Water Lab File ID: 2018.07.19LLC_003.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/19/2018 19:12
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 235044 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	105		50-150
STL00992	13C4 PFBA	101		50-150
STL01893	13C5 PFPeA	104		50-150
STL00993	13C2 PFHxA	99		50-150
STL01892	13C4-PFHpA	105		50-150
STL00990	13C4 PFOA	100		50-150
STL00995	13C5 PFNA	103		50-150
STL00996	13C2 PFDA	107		50-150
STL00997	13C2 PFUnA	102		50-150
STL00998	13C2 PFDoA	96		50-150
STL00994	18O2 PFHxS	102		50-150
STL02116	13C2-PFTeDA	92		50-150
STL00991	13C4 PFOS	102		50-150
STL02337	13C3-PFBS	97		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61319.b\2018.07.19LLC_003.d
 Lims ID: CCB
 Client ID:
 Sample Type: CCB
 Inject. Date: 19-Jul-2018 19:12:28 ALS Bottle#: 20 Worklist Smp#: 1
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: CCB
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61319.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 20-Jul-2018 15:47:05 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK011

First Level Reviewer: mongkols Date: 20-Jul-2018 16:37:15

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	1.447	1.442	0.005	0.530	4735742	2.52	101	76783	
D 3 13C5-PFPeA	267.90 > 223.00	1.757	1.757	0.0	0.644	3402193	2.60	104	41635	
D 47 13C3-PFBS	301.90 > 83.00	1.802	1.802	0.0	0.660	76099	2.25	96.6	592	
D 60 M2-4:2FTS	329.00 > 81.00	2.027	2.016	0.011	0.743	431043	NC		7428	
D 7 13C2 PFHxA	315.00 > 270.00	2.061	2.061	0.0	0.755	3803476	2.48	99.4	80727	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.162	2.151	0.011	0.792	239672	NC		4624	
D 9 13C4-PFHpA	367.00 > 322.00	2.385	2.386	-0.001	0.874	3901758	2.63	105	48350	
8 Perfluorohexanesulfonic acid	399.00 > 80.00	2.397	2.395	0.002	1.000	15406	0.006659		242	
	399.00 > 99.00	2.408	2.395	0.013	1.005	5111	3.01(1.50-4.49)		56.4	
D 11 18O2 PFHxS	403.00 > 84.00	2.397	2.397	0.0	0.878	4784687	2.41	102	36462	
D 12 M2-6:2FTS	429.00 > 81.00	2.706	2.699	0.007	0.992	687542	2.40	101	16476	
D 14 13C4 PFOA	417.00 > 372.00	2.729	2.721	0.008	1.000	3578241	2.50	100.0	34969	
* 62 13C2-PFOA	415.00 > 370.00	2.729	2.727	0.002		3759234	2.50		33939	
15 Perfluorooctanoic acid	413.00 > 369.00	2.714	2.727	-0.013	0.994	12001	0.006811		4.8	
	413.00 > 169.00	2.744	2.727	0.017	1.006	7179	1.67(0.84-2.52)		54.4	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA	468.00 > 423.00	3.087	3.085	0.002	1.131	3109267	2.57	103	48062	
D 18 13C4 PFOS	503.00 > 80.00	3.087	3.085	0.002	1.131	3452774	2.43	102	37028	
D 26 M2-8:2FTS	529.00 > 81.00	3.434	3.423	0.011	1.258	942597	2.54	106	12748	
D 21 13C8 FOSA	506.00 > 78.00	3.424	3.423	0.001	1.255	5548774	2.63	105	61730	
24 Perfluorodecanoic acid										R
513.00 > 469.00	3.443	3.438	0.005	1.000	1340	0.001061		11.0		R
513.00 > 169.00	3.434	3.438	-0.004	0.997	1263		1.06(2.36-7.09)	55.0		
D 23 13C2 PFDA	515.00 > 470.00	3.443	3.441	0.002	1.262	2932029	2.69	107	40816	
D 27 d3-NMeFOSAA	573.00 > 419.00	3.595	3.593	0.002	1.317	1081699	2.29	91.8	18691	
D 30 13C2 PFUnA	565.00 > 520.00	3.759	3.758	0.001	1.378	2433283	2.55	102	35770	
D 32 d5-NEtFOSAA	589.00 > 419.00	3.759	3.758	0.001	1.378	1404508	2.66	106	3283	
31 Perfluoroundecanoic acid										R
563.00 > 519.00	3.770	3.763	0.007	1.003	2059	0.002687		14.1		R
563.00 > 169.00	3.770	3.763	0.007	1.003	1361		1.51(2.12-6.36)	77.8		
D 36 13C2 PFDaA	615.00 > 570.00	4.049	4.047	0.002	1.484	2341920	2.41	96.5	18292	
D 43 13C2-PFTeDA	715.00 > 670.00	4.551	4.542	0.009	1.668	2134879	2.29	91.7	11432	
D 44 13C2-PFHxDA	815.00 > 770.00	4.956	4.957	-0.001	1.816	3340343	2.27	90.7	9979	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.956	4.958	-0.002	1.000	30677	NC		8.2		
813.00 > 169.00	4.956	4.958	-0.002	1.000	4666		6.57(2.86-8.58)	55.4		

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Reagents:

LCPFC_LL0_00007

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61319.b\2018.07.19LLC_003.d

Injection Date: 19-Jul-2018 19:12:28

Instrument ID: A8_N

Lims ID: CCB

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 1

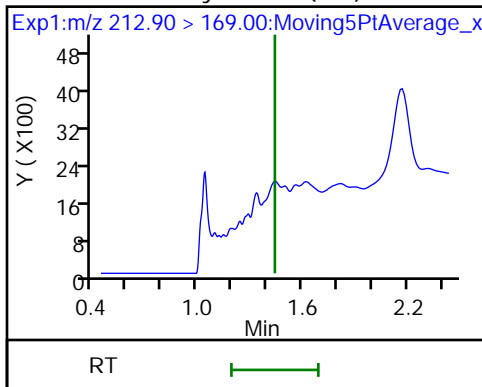
Injection Vol: 2.0 ul

Dil. Factor: 1.0000

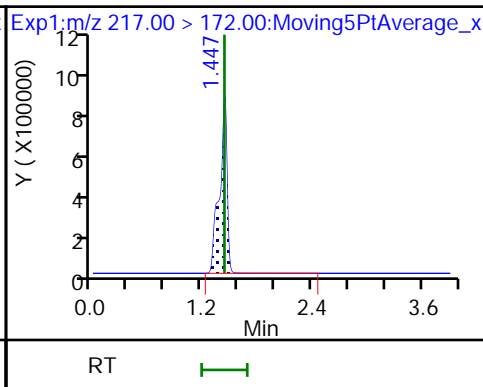
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

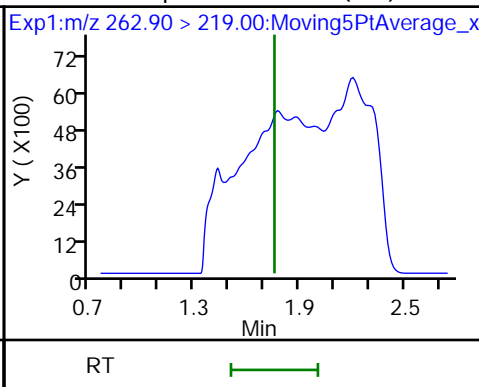
2 Perfluorobutyric acid (ND)



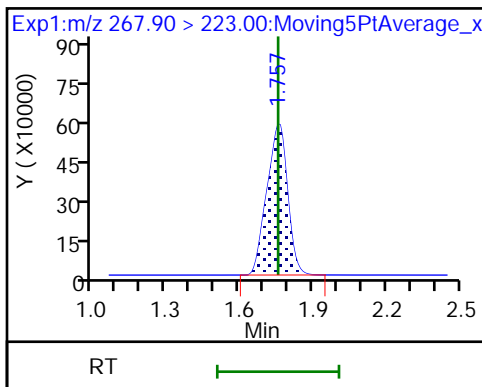
D 1 13C4 PFBA



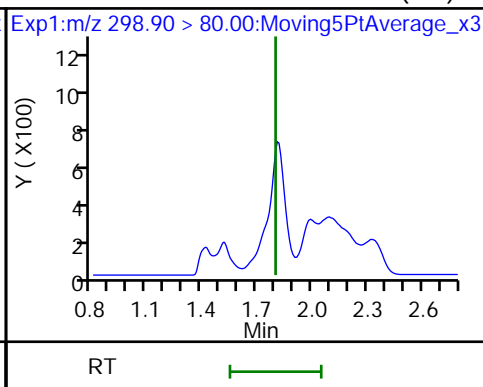
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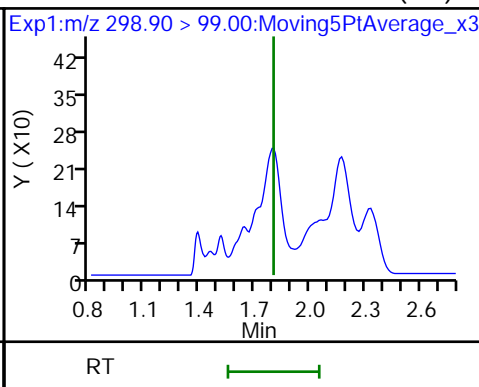
D 3 13C5-PFPeA



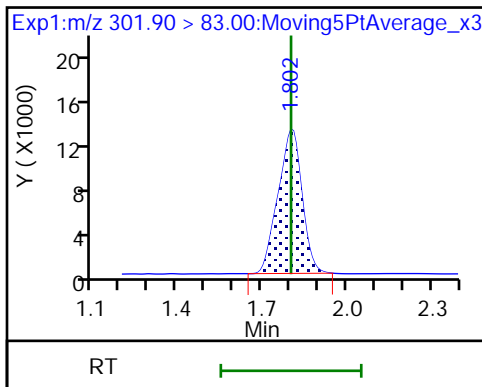
5 Perfluorobutanesulfonic acid (ND)



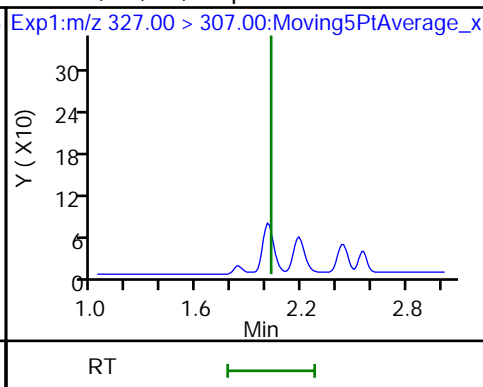
5 Perfluorobutanesulfonic acid (ND)



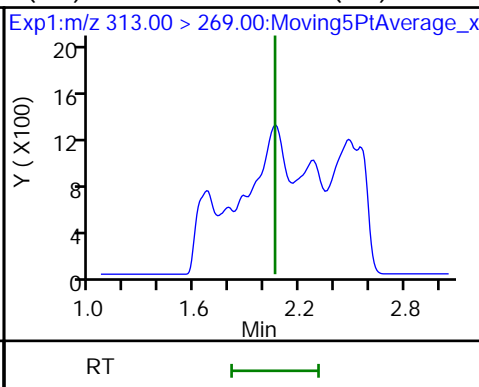
D 47 13C3-PFBS



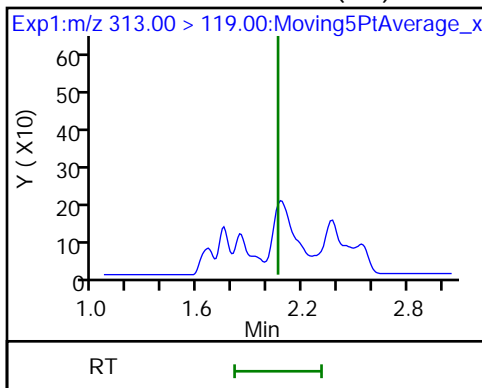
61 1H,1H,2H,2H-perfluorohexanesulfoni (ND)



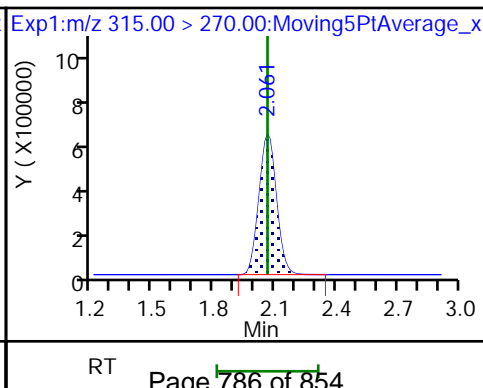
6 Perfluorohexanoic acid (ND)



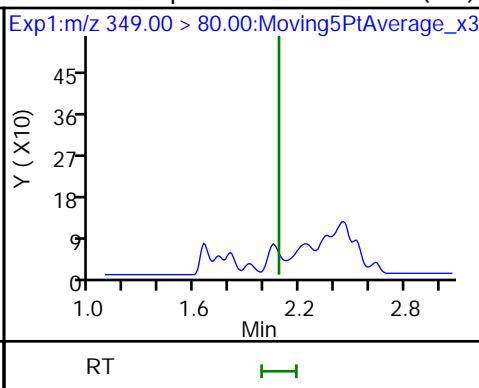
6 Perfluorohexanoic acid (ND)



D 7 13C2 PFHxA



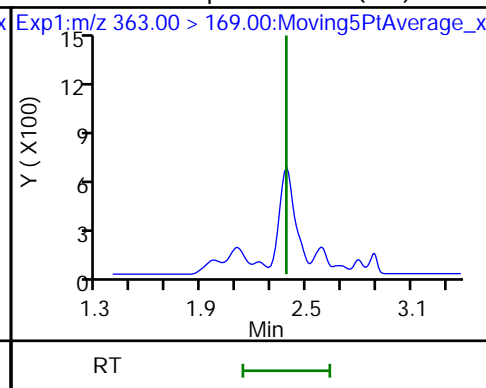
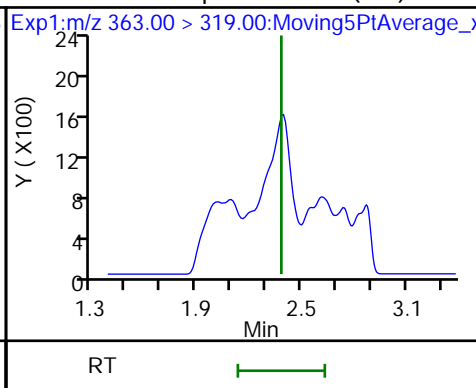
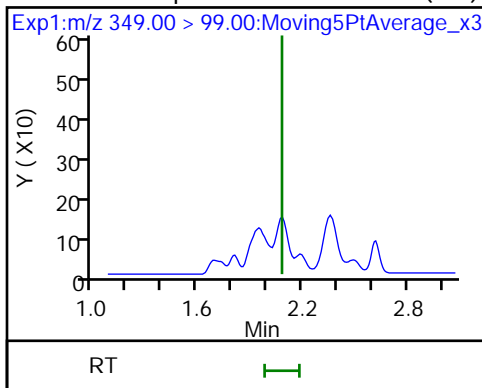
70 Perfluoropentanesulfonic acid (ND)



70 Perfluoropentanesulfonic acid (ND)

10 Perfluoroheptanoic acid (ND)

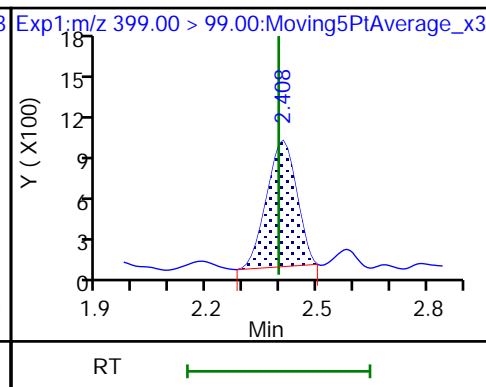
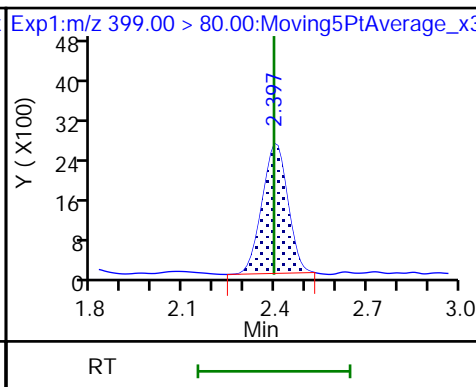
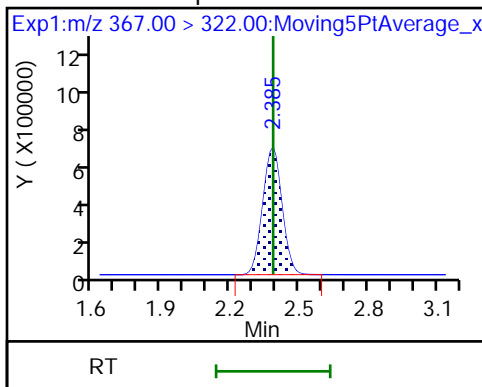
10 Perfluoroheptanoic acid (ND)



D 9 13C4-PFHpA

8 Perfluorohexanesulfonic acid

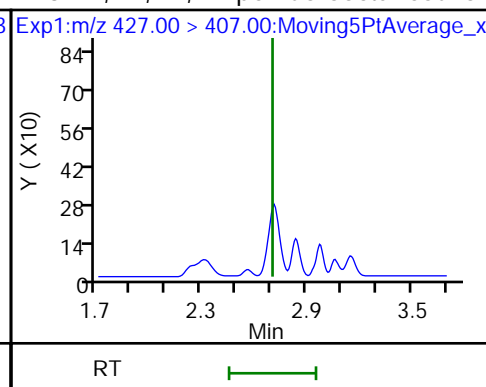
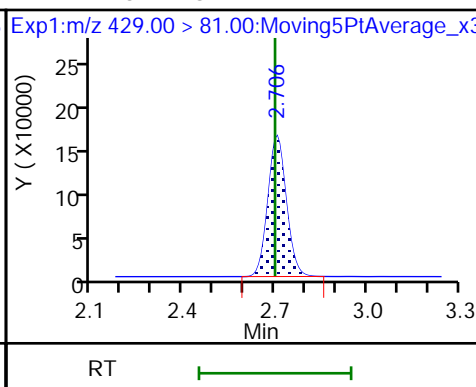
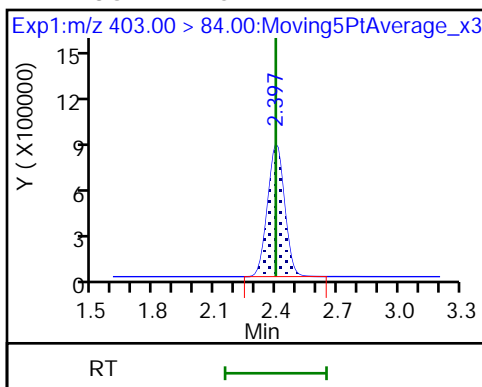
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

D 12 M2-6:2FTS

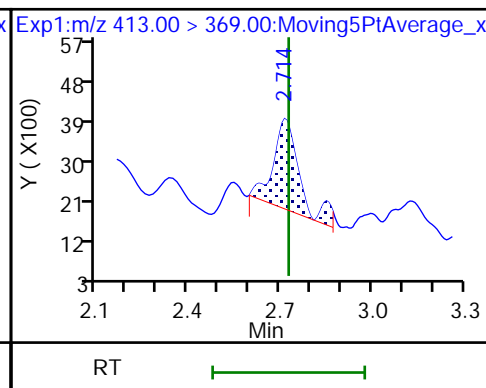
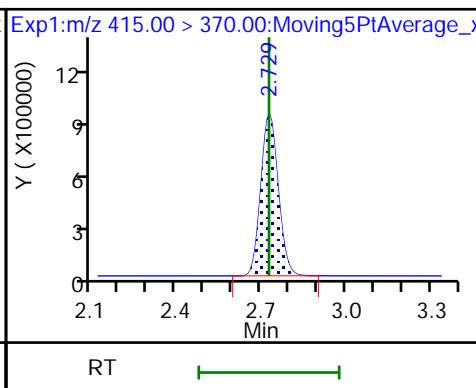
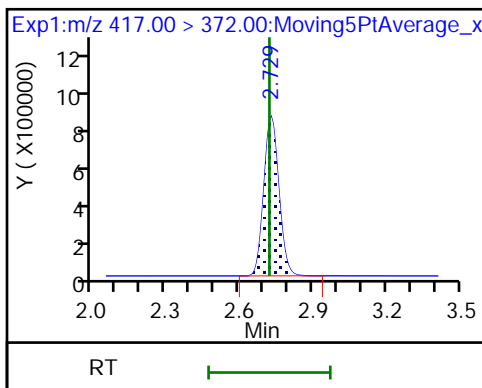
13 1H,1H,2H,2H-perfluorooctanesulfoni (ND)



D 14 13C4 PFOA

* 62 13C2-PFOA

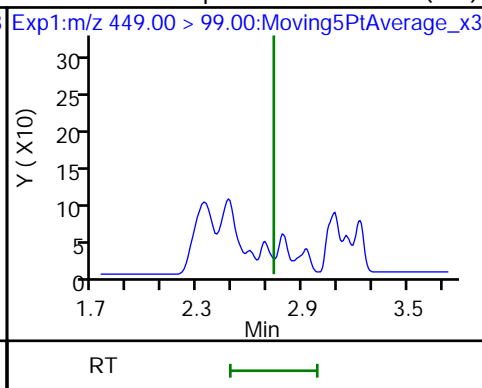
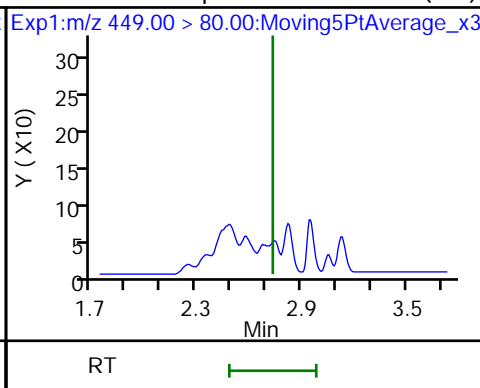
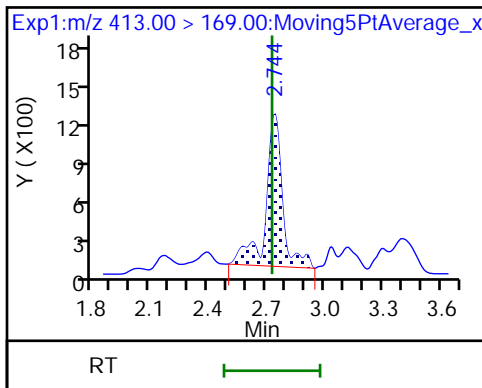
15 Perfluorooctanoic acid



15 Perfluorooctanoic acid

16 Perfluoroheptanesulfonic acid (ND)

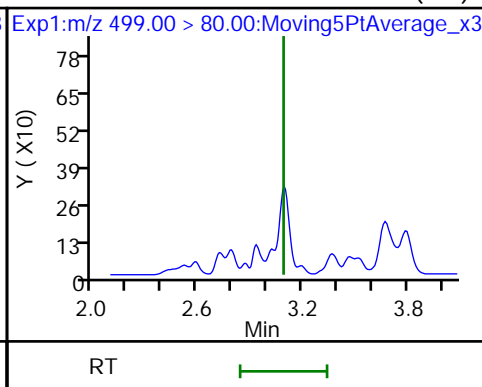
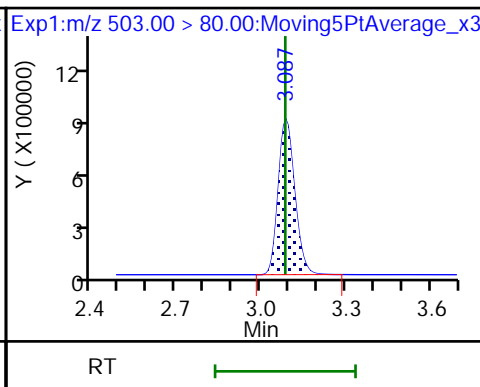
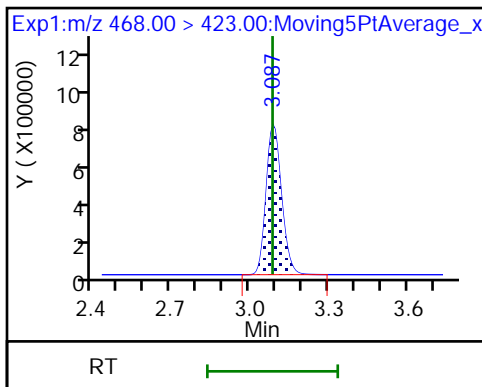
16 Perfluoroheptanesulfonic acid (ND)



D 19 13C5 PFNA

D 18 13C4 PFOS

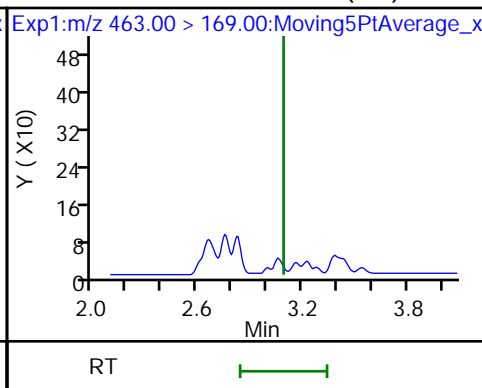
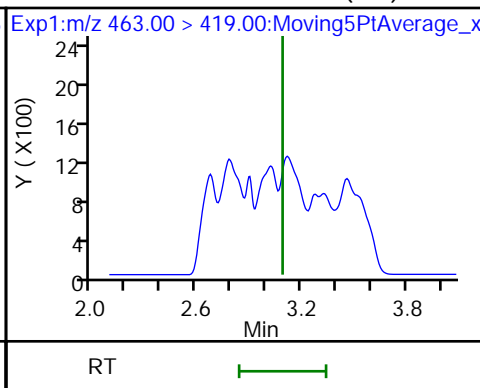
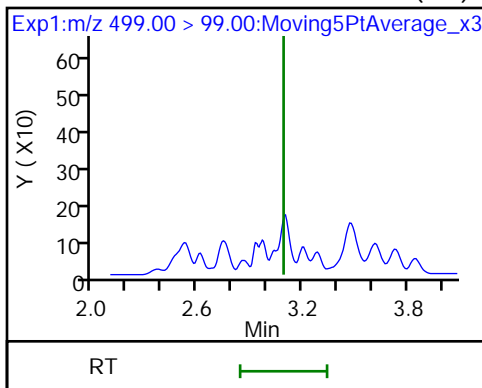
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)

20 Perfluorononanoic acid (ND)

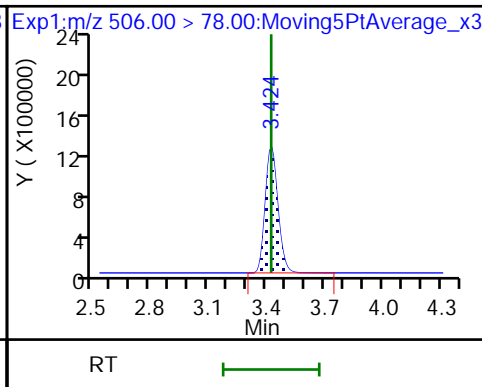
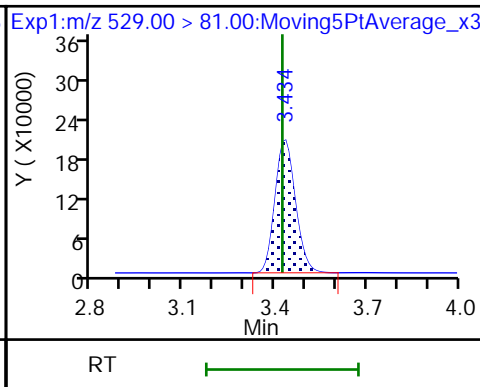
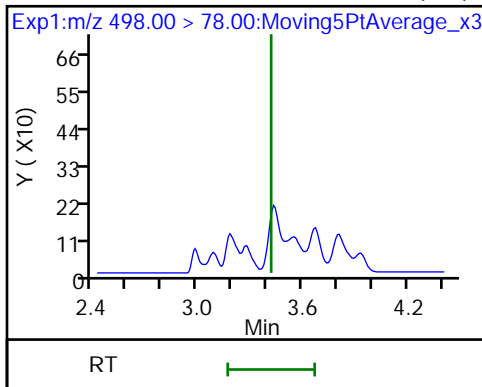
20 Perfluorononanoic acid (ND)



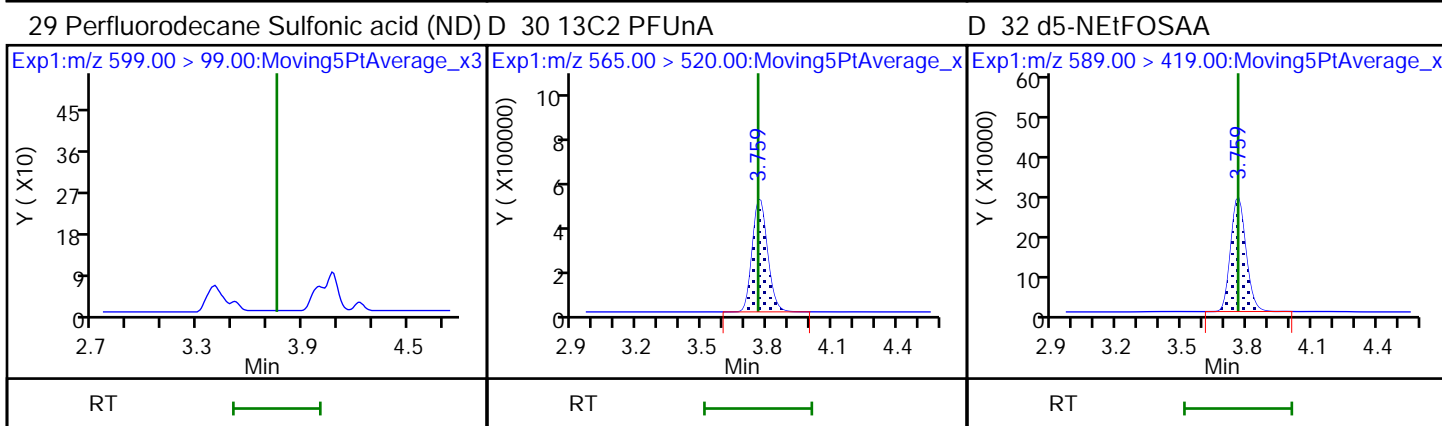
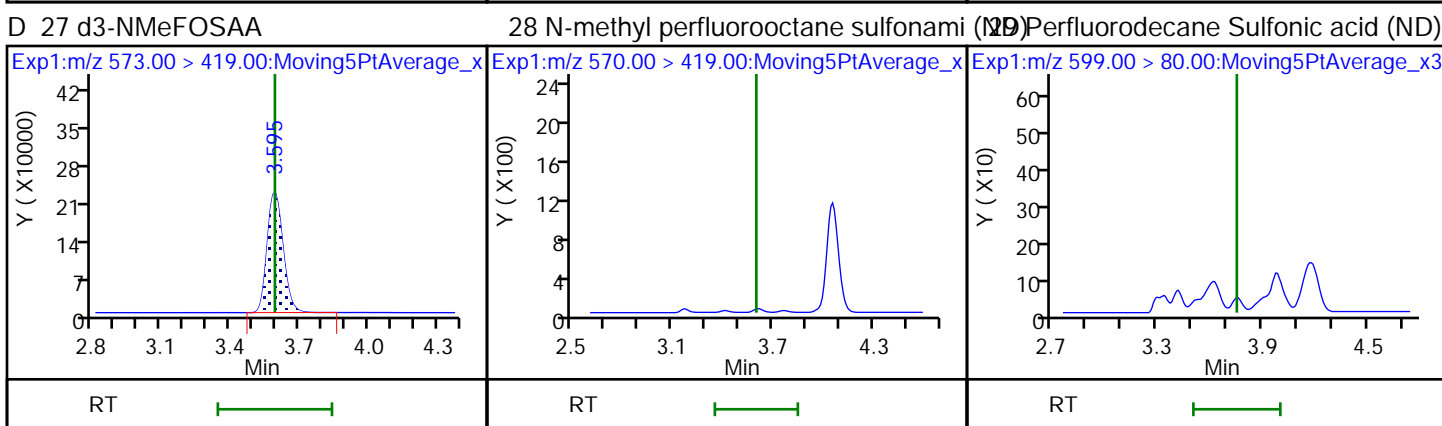
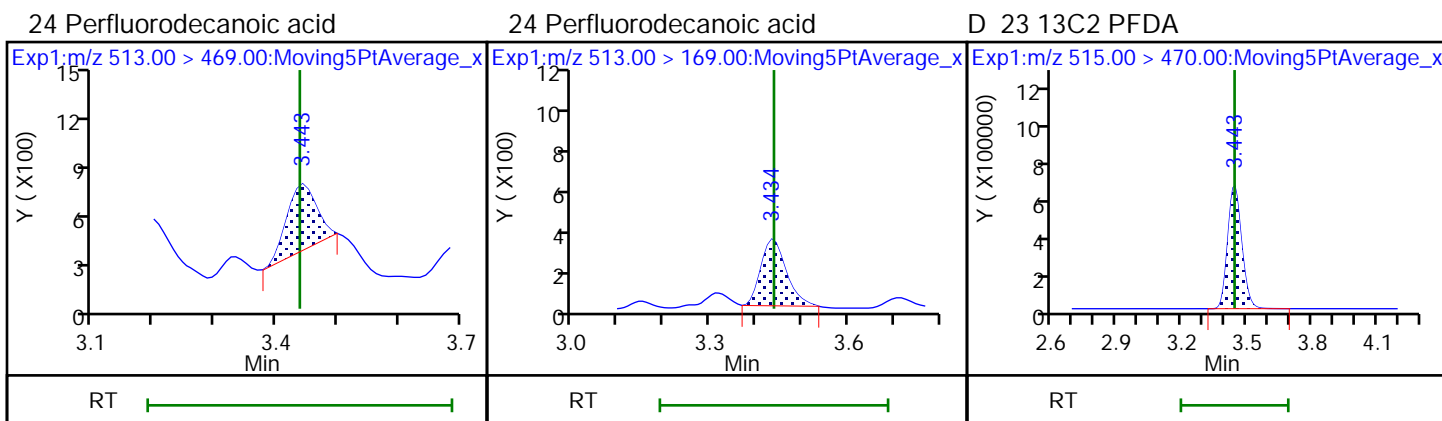
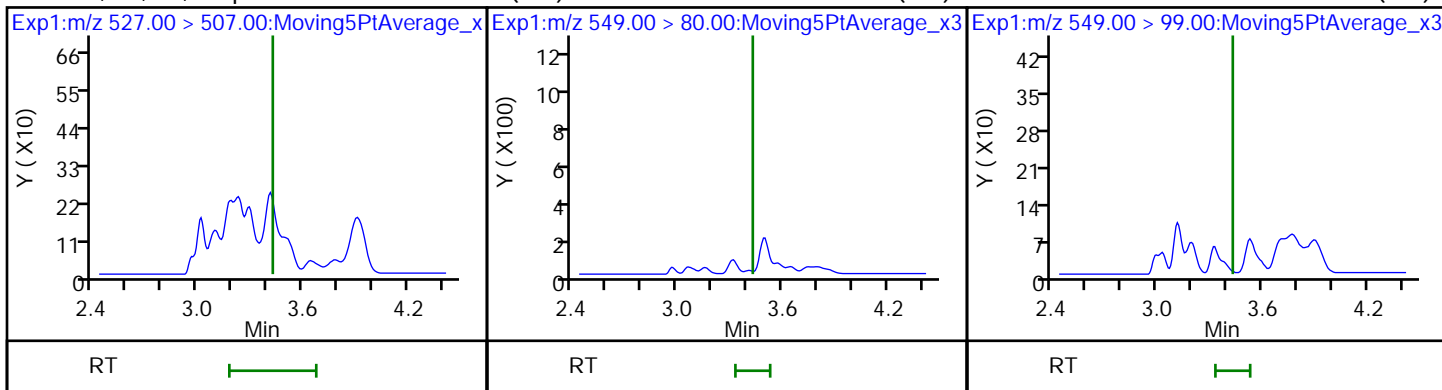
22 Perfluorooctane Sulfonamide (ND)

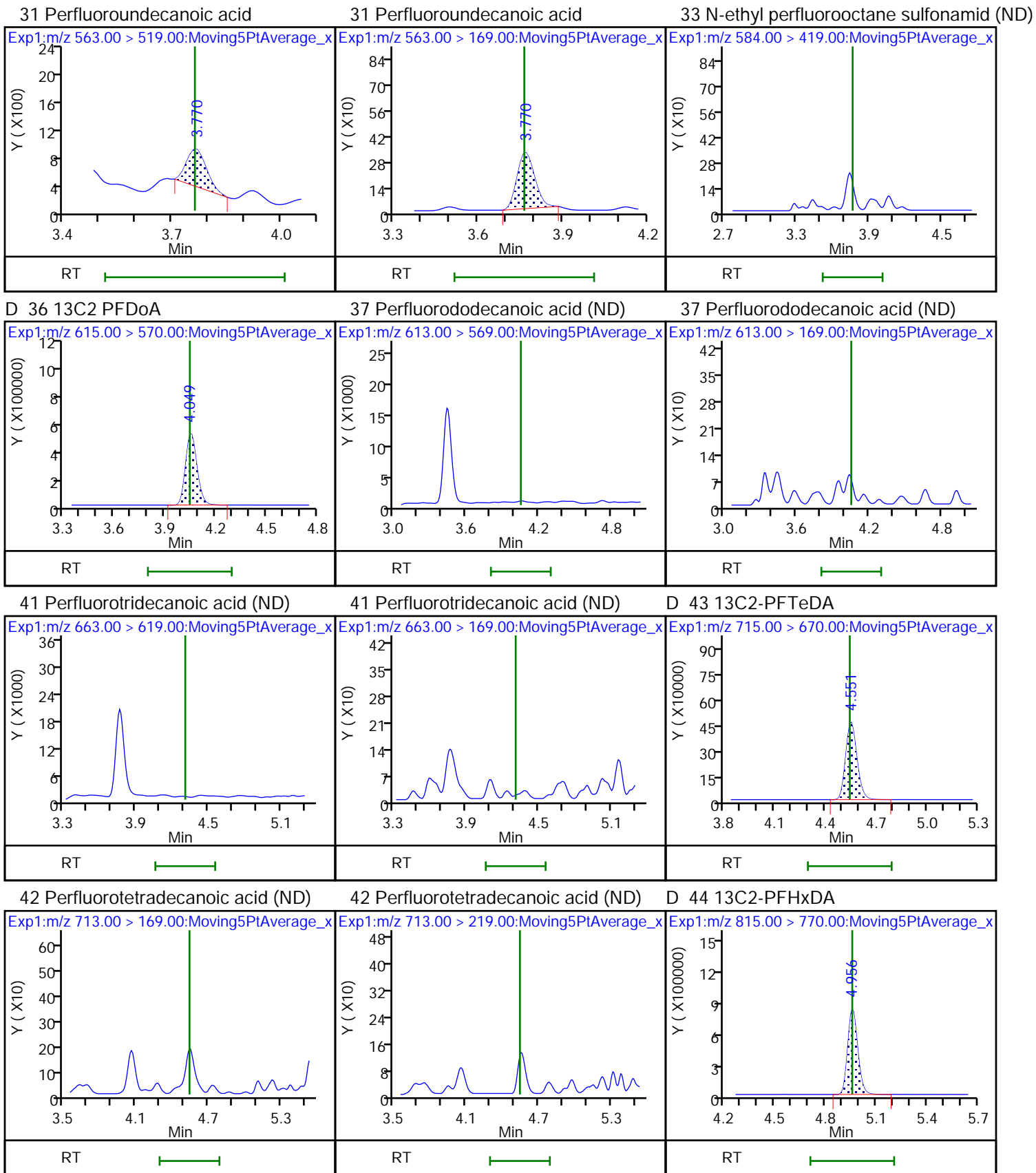
D 26 M2-8:2FTS

D 21 13C8 FOSA



25 1H,1H,2H,2H-perfluorodecanesulfonic acid (ND) 68 Perfluorononanesulfonic acid (ND) 24 Perfluorodecanoic acid 28 N-methyl perfluorooctane sulfonami (ND) 29 Perfluorodecane Sulfonic acid (ND) D 30 13C2 PFUnA D 32 d5-NEtFOSAA





FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-233477/9
 Matrix: Water Lab File ID: 2018.07.11LLICALA_009.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/11/2018 15:46
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 233477 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00831	J	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00769	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-233477/9
 Matrix: Water Lab File ID: 2018.07.11LLICALA_009.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/11/2018 15:46
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 233477 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	106		50-150
STL00992	13C4 PFBA	95		50-150
STL01893	13C5 PFPeA	98		50-150
STL00993	13C2 PFHxA	95		50-150
STL01892	13C4-PFHpA	100		50-150
STL00990	13C4 PFOA	99		50-150
STL00995	13C5 PFNA	103		50-150
STL00996	13C2 PFDA	105		50-150
STL00997	13C2 PFUnA	103		50-150
STL00998	13C2 PFDoA	98		50-150
STL00994	18O2 PFHxS	97		50-150
STL02116	13C2-PFTeDA	99		50-150
STL00991	13C4 PFOS	95		50-150
STL02337	13C3-PFBS	97		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_009.d
 Lims ID: ICB
 Client ID:
 Sample Type: ICB
 Inject. Date: 11-Jul-2018 15:46:32 ALS Bottle#: 20 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICB
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 11-Jul-2018 16:33:54 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK024

First Level Reviewer: westendorfc Date: 11-Jul-2018 16:22:41

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	1.424	1.431	-0.007	0.535	5105449	2.38	95.3	26366	
2 Perfluorobutyric acid	212.90 > 169.00	1.430	1.431	-0.001	1.004	3363	0.001671		2.5	
4 Perfluoropentanoic acid	262.90 > 219.00	1.711	1.702	0.009	1.000	14347	0.008110		5.4	
D 3 13C5-PFPeA	267.90 > 223.00	1.711	1.702	0.009	0.643	3645379	2.45	97.9	48729	
D 47 13C3-PFBS	301.90 > 83.00	1.747	1.748	-0.001	0.657	84496	2.26	97.1	497	
D 60 M2-4:2FTS	329.00 > 81.00	1.959	1.962	-0.003	0.737	417425	NC		6292	
D 7 13C2 PFHxA	315.00 > 270.00	1.991	1.996	-0.005	0.749	3834063	2.38	95.4	56611	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.082	2.093	-0.011	0.783	273473	NC		6925	
D 9 13C4-PFHpA	367.00 > 322.00	2.306	2.319	-0.013	0.867	3706447	2.50	100	38600	
8 Perfluorohexanesulfonic acid	399.00 > 80.00	2.332	2.332	0.0	1.006	18024	0.007688		263	
	399.00 > 99.00	2.332	2.332	0.0	1.006	5211	3.46(1.50-4.49)		47.2	
D 11 18O2 PFHxS	403.00 > 84.00	2.319	2.334	-0.015	0.872	4830258	2.30	97.3	28662	
65 Adona	377.00 > 251.00	2.358	2.360	-0.002	0.780	8760	NC		94.9	
	377.00 > 85.00	2.358	2.360	-0.002	0.780	5310	1.65(0.84-2.53)		33.0	
D 12 M2-6:2FTS	429.00 > 81.00	2.636	2.645	-0.009	0.991	755428	2.38	100	13924	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.659	2.672	-0.013	1.000	12631	0.006863			8.1	
413.00 > 169.00	2.667	2.672	-0.005	1.003	6539		1.93(0.84-2.52)		30.4	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.672	-0.013		3951281	2.50			32573	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.672	-0.013	1.000	3736078	2.47		98.9	44719	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.667	2.678	-0.011	0.883	3908	0.002022			118	
449.00 > 99.00	2.674	2.678	-0.004	0.885	1924		2.03(1.94-5.82)		36.2	
D 18 13C4 PFOS										
503.00 > 80.00	3.021	3.034	-0.013	1.136	3505886	2.28		95.3	21609	
D 19 13C5 PFNA										
468.00 > 423.00	3.021	3.035	-0.014	1.136	3473100	2.57		103	48187	
20 Perfluorononanoic acid										
463.00 > 419.00	3.028	3.036	-0.008	1.002	5793	0.003759			12.8	
463.00 > 169.00	3.028	3.036	-0.008	1.002	1384		4.19(1.90-5.69)		59.2	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.244	3.245	-0.001	1.074	10185	NC			75.6	
D 21 13C8 FOSA										
506.00 > 78.00	3.356	3.367	-0.011	1.262	5882153	2.65		106	32072	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.356	3.371	-0.015	1.000	8648	0.003729			91.7	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.365	3.380	-0.015	1.000	1962	0.003065			23.8	
D 26 M2-8:2FTS										
529.00 > 81.00	3.365	3.380	-0.015	1.265	1188636	2.56		107	14090	
D 23 13C2 PFDA										
515.00 > 470.00	3.374	3.391	-0.017	1.269	3120753	2.63		105	38969	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.384	3.392	-0.008	1.003	5226	0.003990			30.8	
513.00 > 169.00	3.384	3.392	-0.008	1.003	1124		4.65(2.36-7.09)		59.0	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.533	3.544	-0.011	1.329	1238407	2.55		102	19554	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.533	3.548	-0.015	1.000	9019	0.0185			87.7	
29 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.679	3.701	-0.022	1.218	2331	0.002367			56.6	
599.00 > 99.00	3.679	3.701	-0.022	1.218	1542		1.51(1.39-4.16)		33.6	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.701	3.710	-0.009	1.392	1336727	2.68		107	3379	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.716	-0.015	1.392	2544489	2.57		103	37707	
33 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.701	3.718	-0.017	1.000	9874	0.0209			202	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.701	3.718	-0.017	1.000	7096	0.008508			30.8	
563.00 > 169.00	3.722	3.718	0.004	1.006	2730		2.60(2.12-6.36)		107	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
66 11-Chloroeicosafuoro-3-oxaundecan										
631.00 > 451.00	3.868	3.874	-0.006	1.280	14206	NC			196	
D 36 13C2 PFDaA										
615.00 > 570.00	4.000	4.009	-0.009	1.504	2521880	2.46		98.2	20619	
37 Perfluorododecanoic acid										
613.00 > 569.00	4.000	4.011	-0.011	1.000	6793	0.006167			3.7	
613.00 > 169.00	4.000	4.011	-0.011	1.000	1248		5.44(2.13-6.40)		30.7	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.263	4.273	-0.010	1.066	5790	0.005376			2.7	
663.00 > 169.00	4.243	4.273	-0.030	1.061	1939		2.99(1.25-3.76)		34.3	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.491	4.508	-0.017	1.689	2645796	2.48		99.3	18076	
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.491	4.508	-0.017	1.000	2288	0.008309			35.8	
713.00 > 219.00	4.491	4.508	-0.017	1.000	2047		1.12(0.71-2.13)		50.1	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.905	4.918	-0.013	1.844	4322992	2.55		102	12800	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.905	4.918	-0.013	1.000	45931	NC			10.1	
813.00 > 169.00	4.905	4.918	-0.013	1.000	7683		5.98(2.86-8.58)		78.0	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.255	5.271	-0.016	1.071	19675	NC			3.7	
913.00 > 169.00	5.262	5.271	-0.009	1.073	2696		7.30(3.83-11.48)		29.2	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Reagents:

LCPFC_LL0_00007

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_009.d

Injection Date: 11-Jul-2018 15:46:32

Instrument ID: A8_N

Lims ID: ICB

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

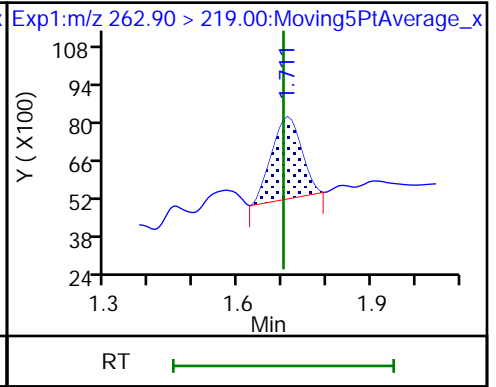
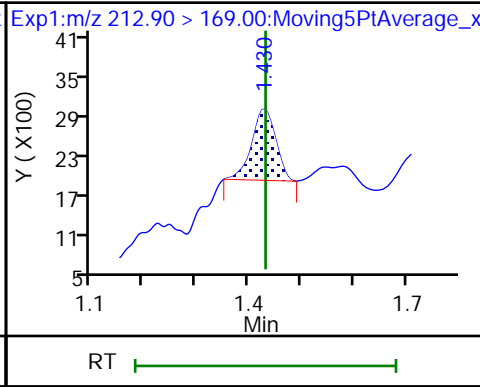
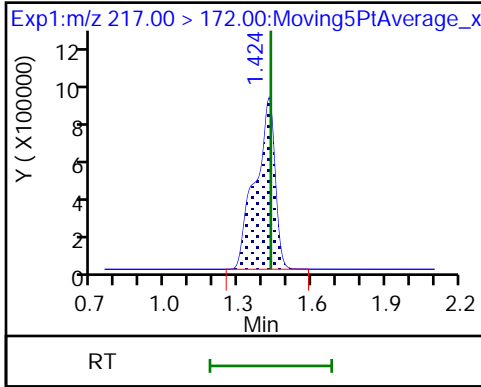
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

2 Perfluorobutyric acid

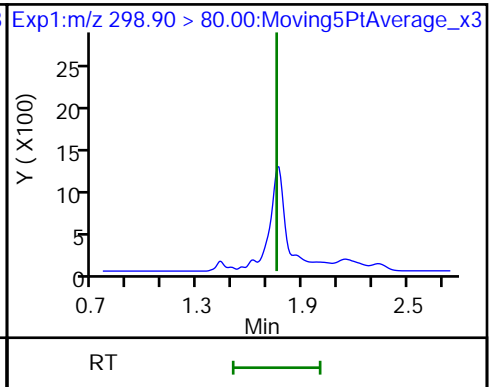
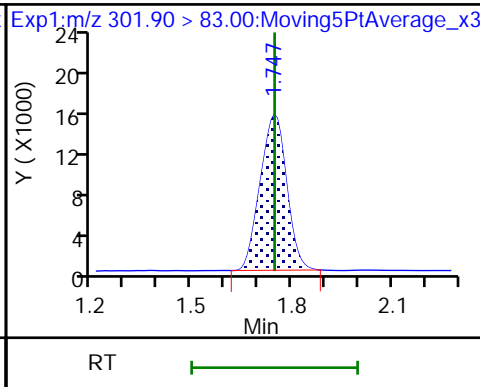
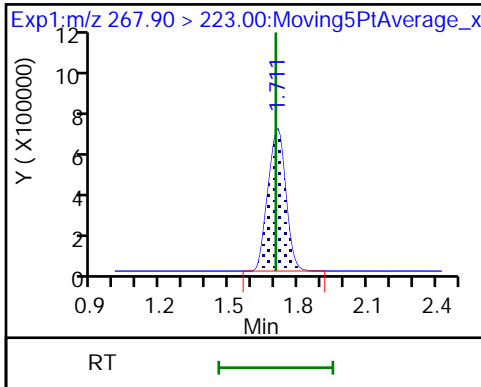
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

D 47 13C3-PFBS

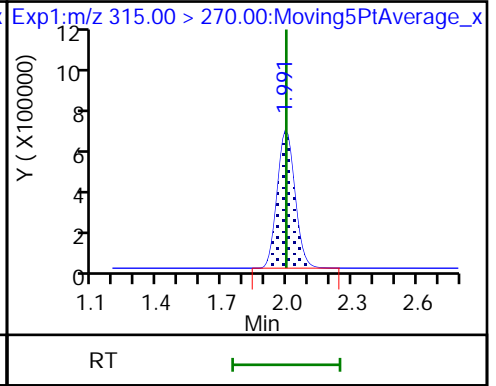
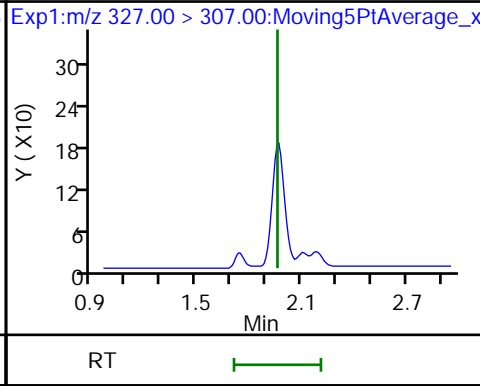
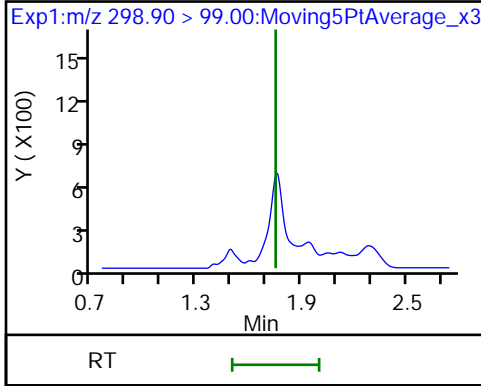
5 Perfluorobutanesulfonic acid (ND)



5 Perfluorobutanesulfonic acid (ND)

61 1H,1H,2H,2H-perfluorohexanesulfonate (ND)

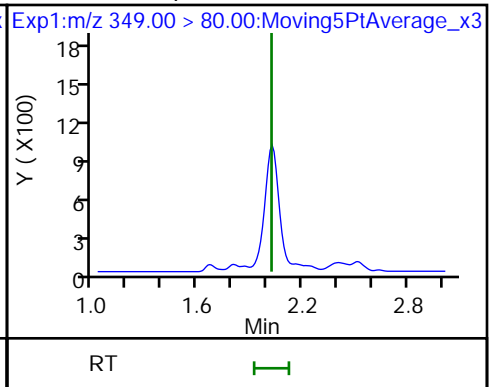
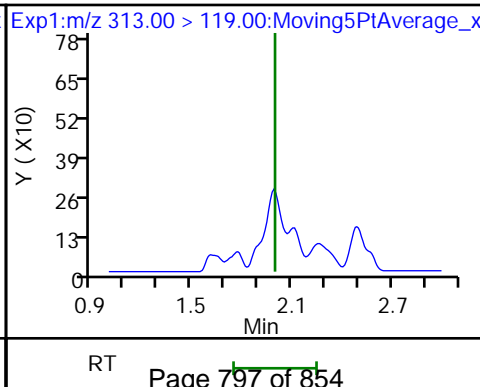
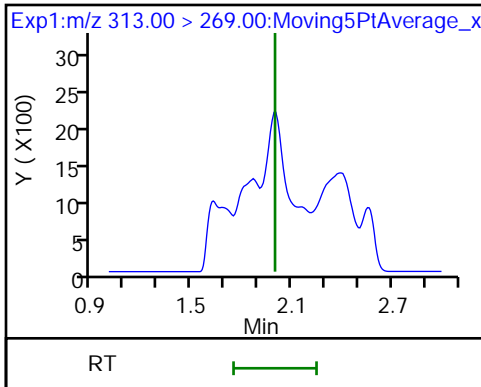
(ND) 3C2 PFHxA



6 Perfluorohexanoic acid (ND)

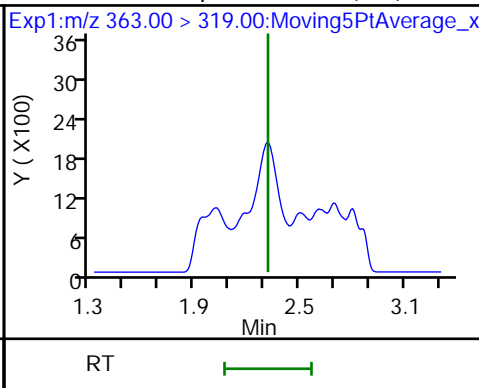
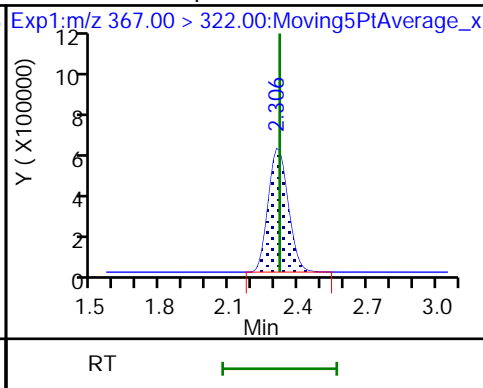
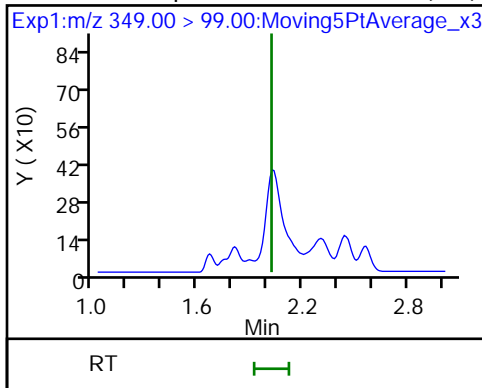
6 Perfluorohexanoic acid (ND)

70 Perfluoropentanesulfonic acid (ND)



70 Perfluoropentanesulfonic acid (ND) D 9 13C4-PFHpA

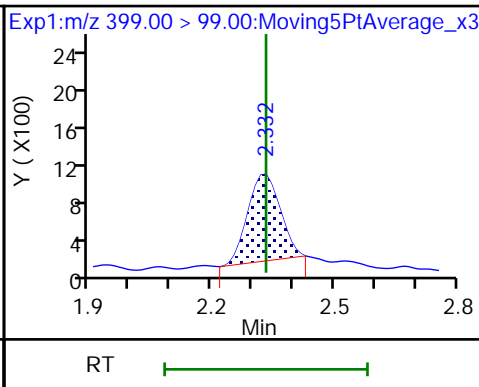
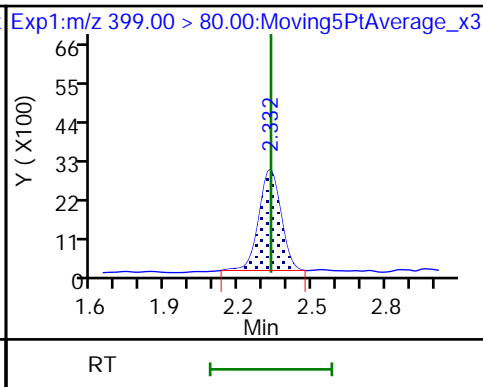
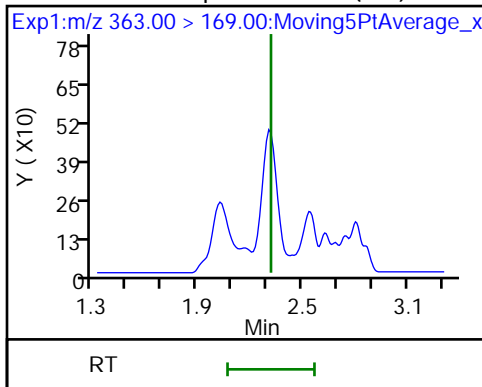
10 Perfluoroheptanoic acid (ND)



10 Perfluoroheptanoic acid (ND)

8 Perfluorohexanesulfonic acid

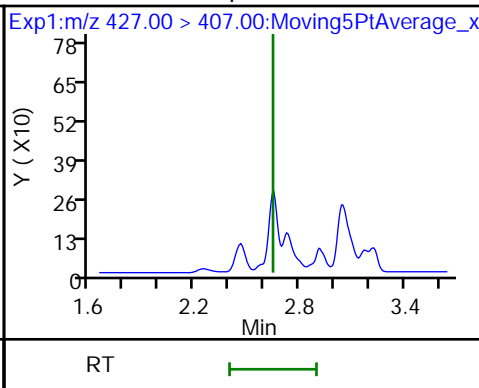
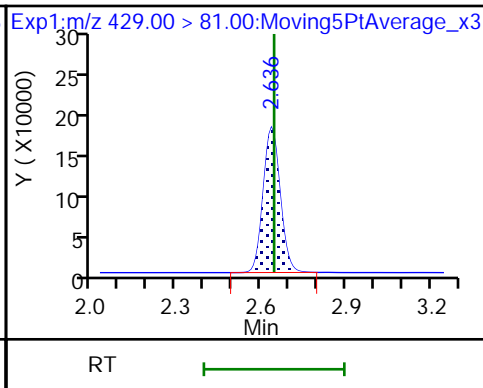
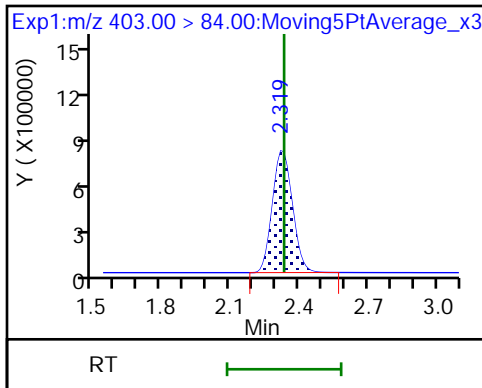
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

D 12 M2-6:2FTS

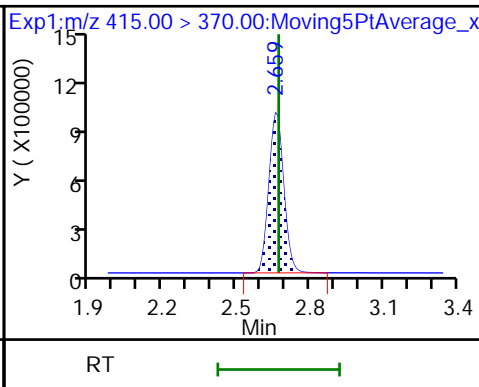
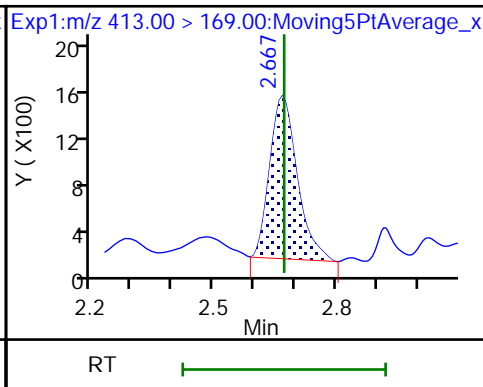
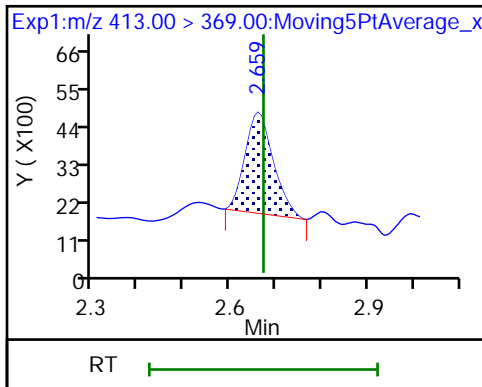
13 1H,1H,2H,2H-perfluorooctanesulfoni (ND)



15 Perfluorooctanoic acid

15 Perfluorooctanoic acid

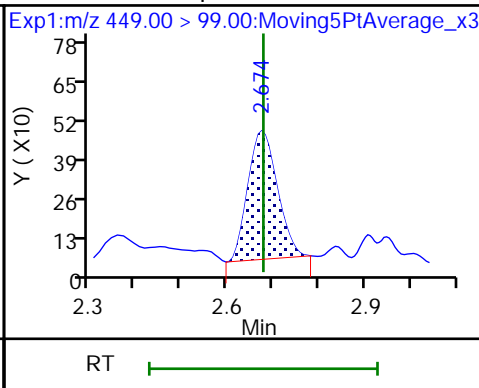
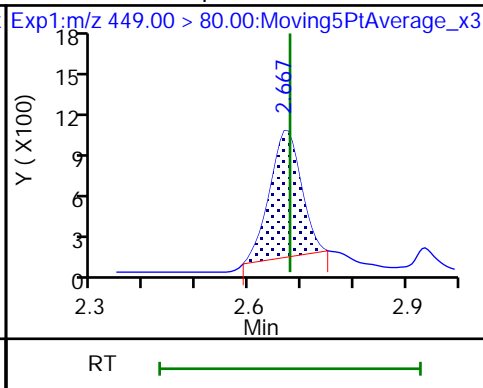
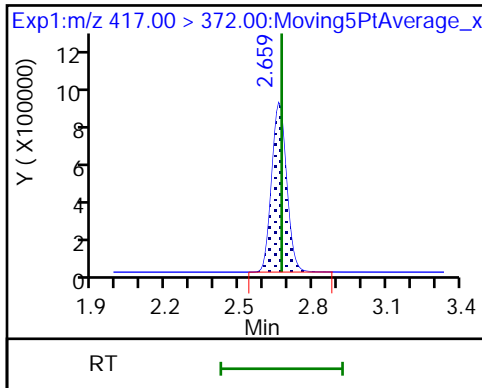
* 62 13C2-PFOA



D 14 13C4 PFOA

16 Perfluoroheptanesulfonic acid

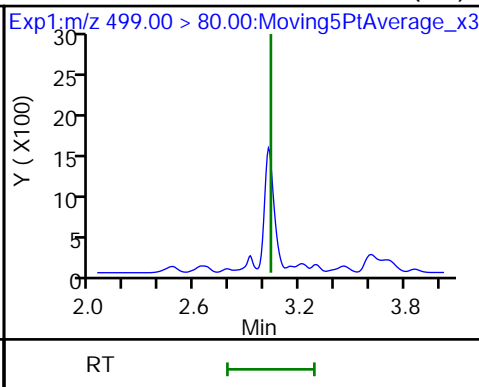
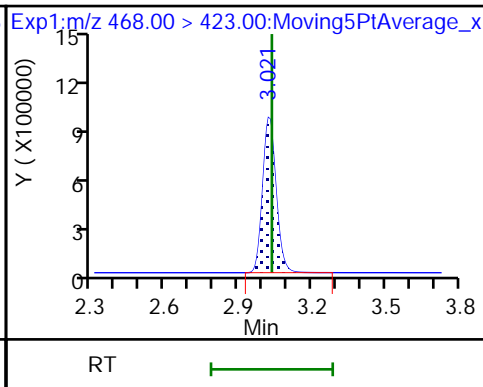
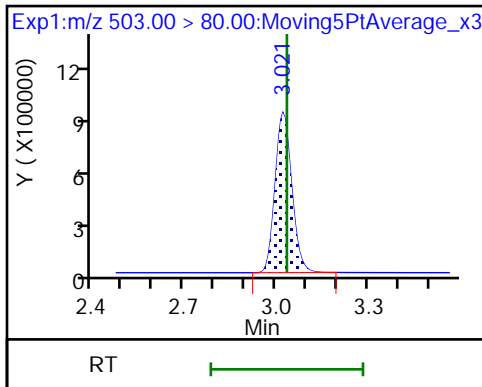
16 Perfluoroheptanesulfonic acid



D 18 13C4 PFOS

D 19 13C5 PFNA

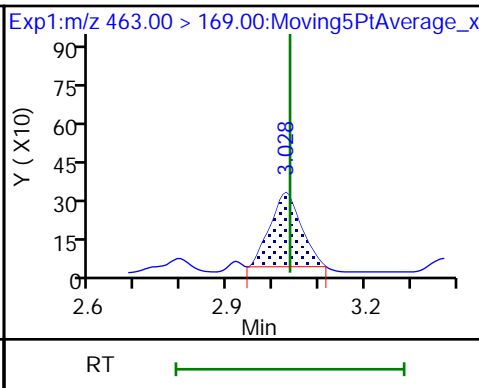
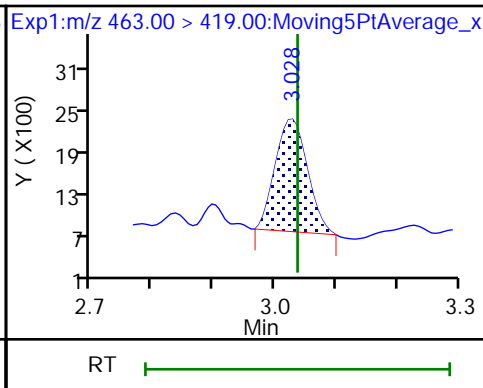
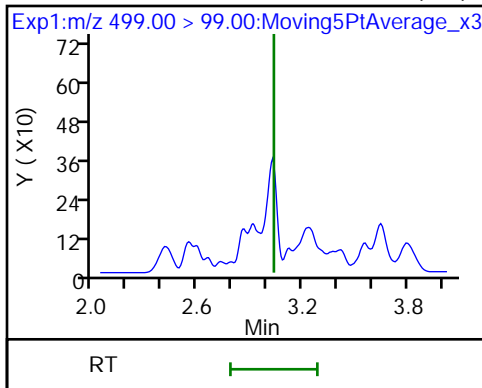
17 Perfluorooctane sulfonic acid (ND)



17 Perfluorooctane sulfonic acid (ND)

20 Perfluorononanoic acid

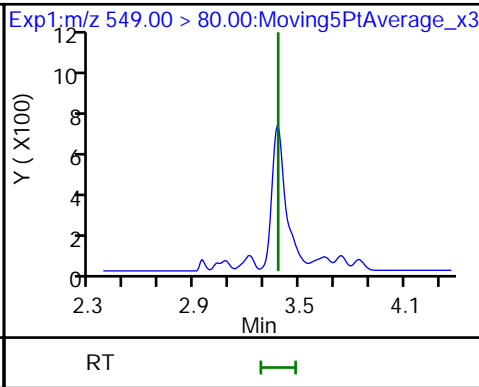
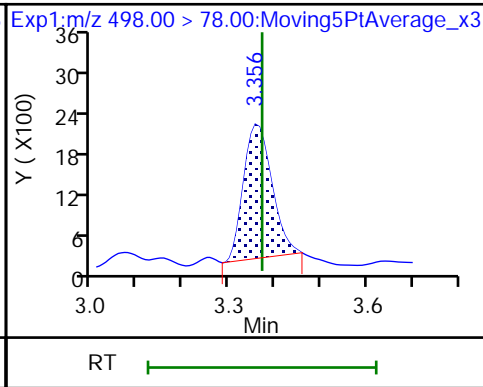
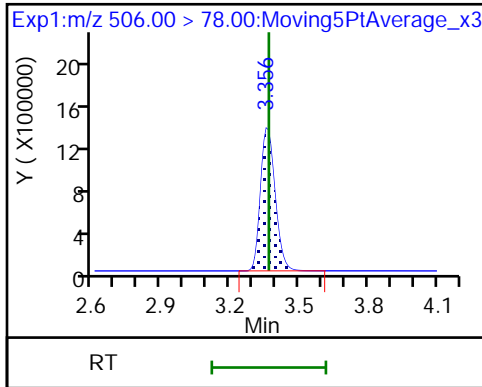
20 Perfluorononanoic acid



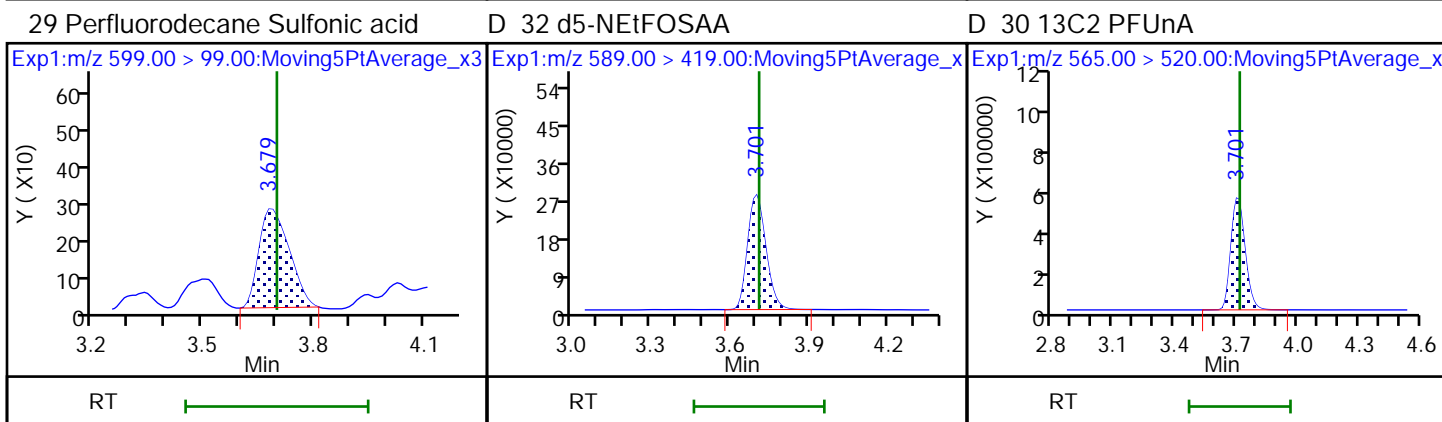
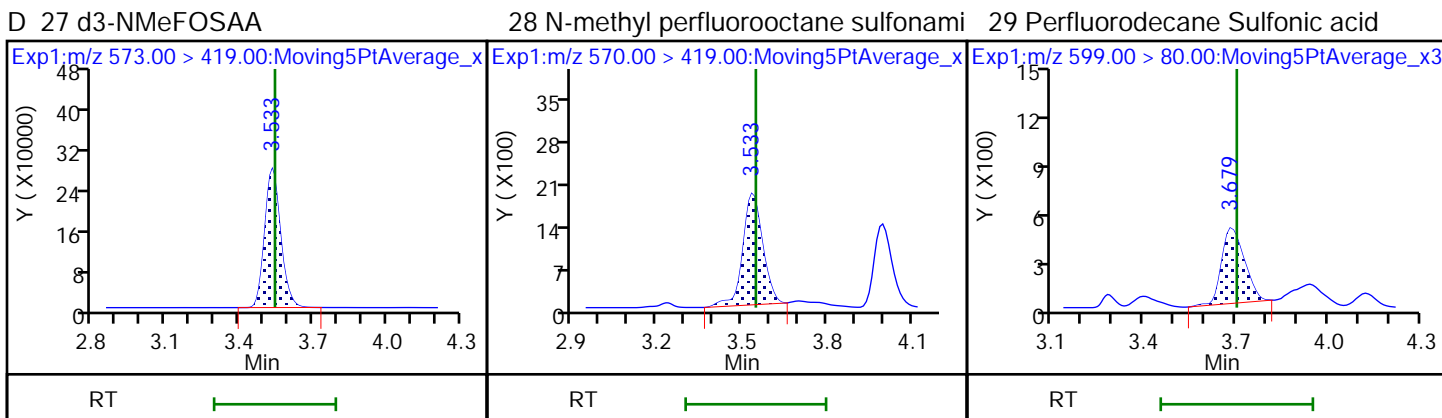
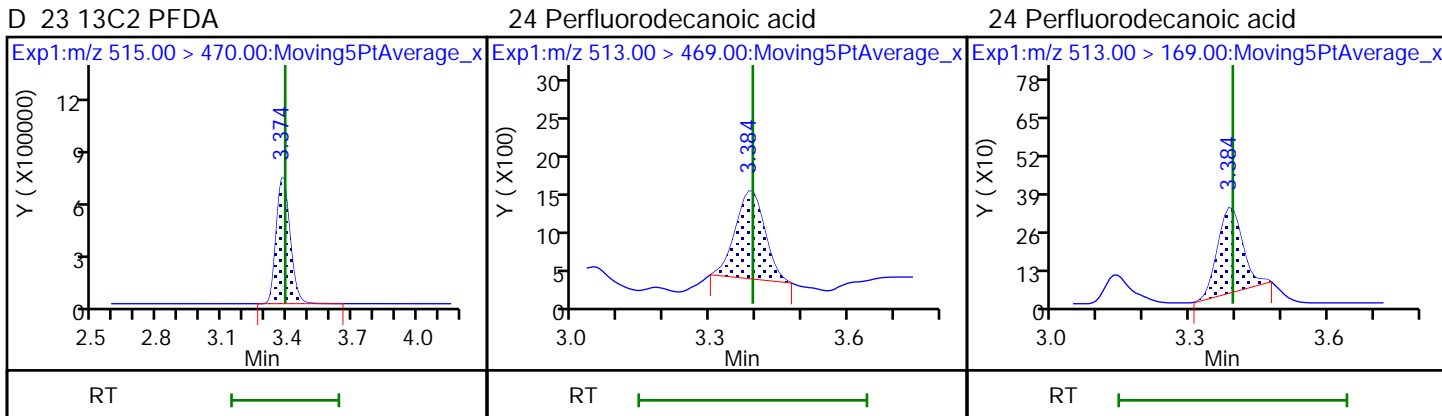
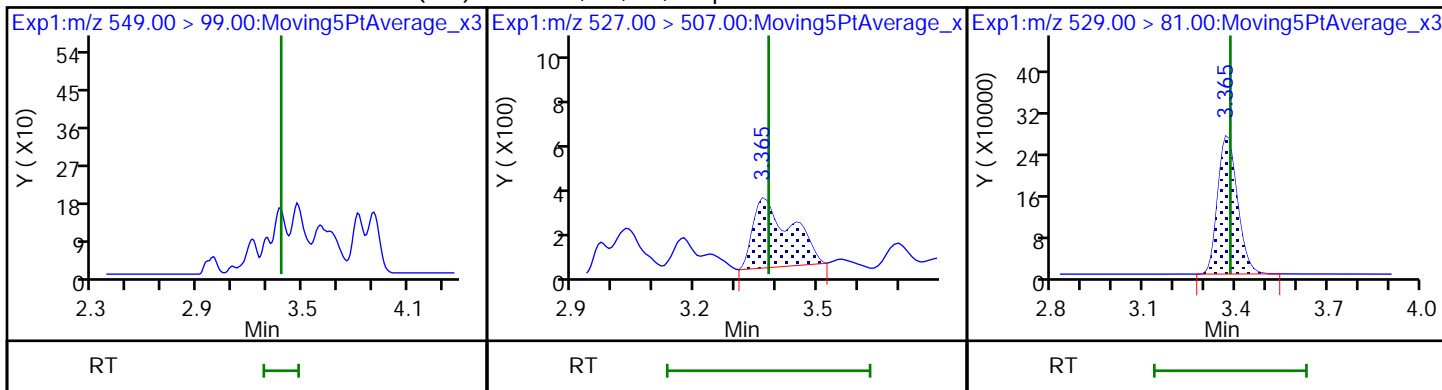
D 21 13C8 FOSA

22 Perfluorooctane Sulfonamide

68 Perfluorononanesulfonic acid (ND)



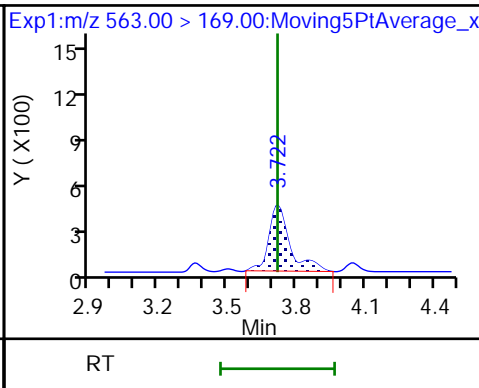
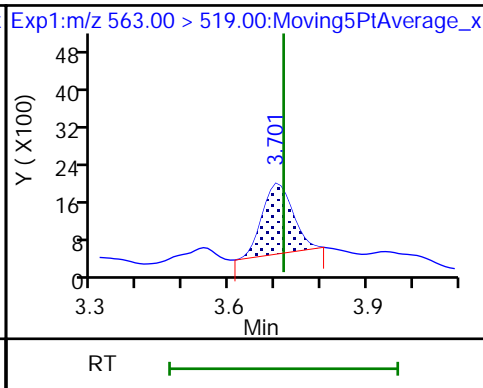
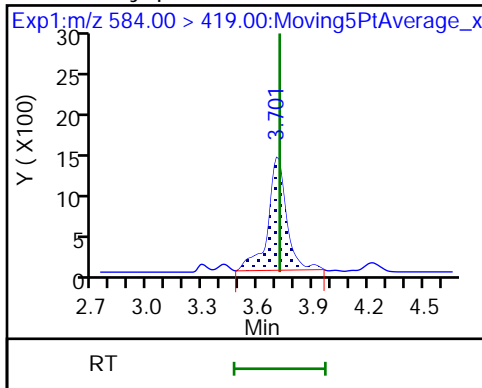
68 Perfluorononanesulfonic acid (ND) 25 1H,1H,2H,2H-perfluorodecanesulfon(D) 26 M2-8:2FTS



33 N-ethyl perfluorooctane sulfonamid

31 Perfluoroundecanoic acid

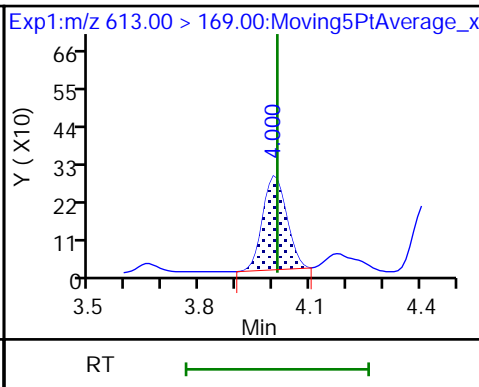
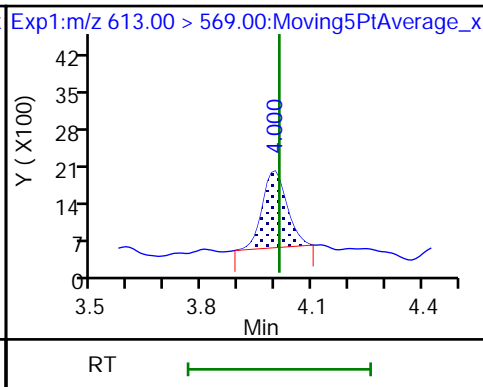
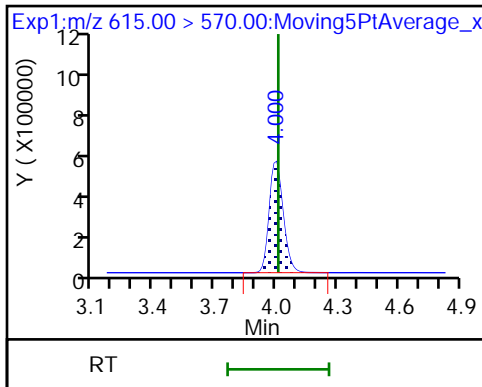
31 Perfluoroundecanoic acid



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

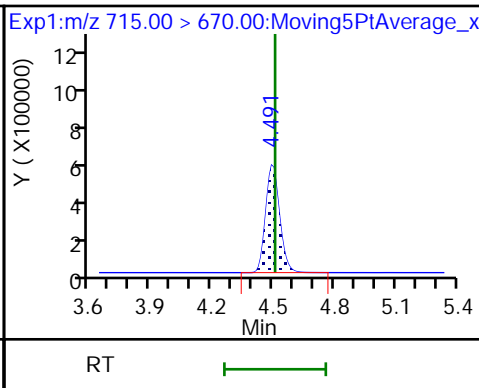
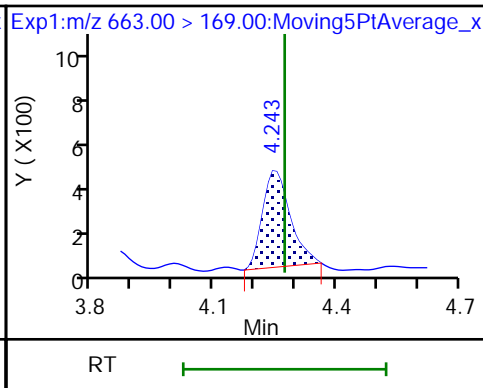
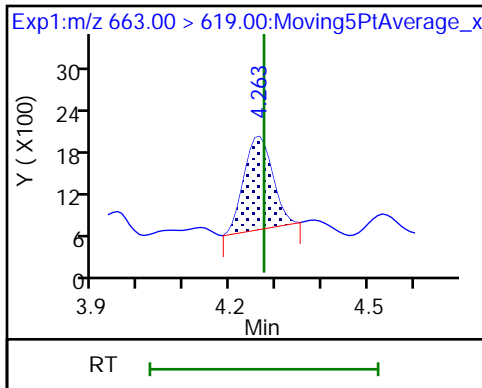
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

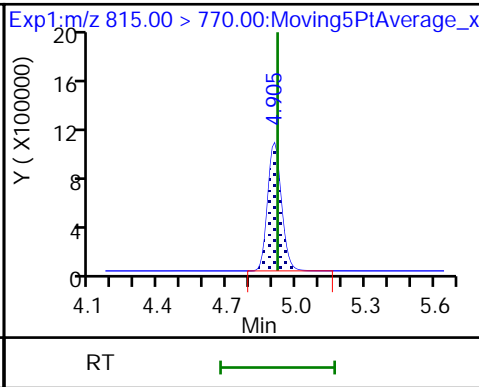
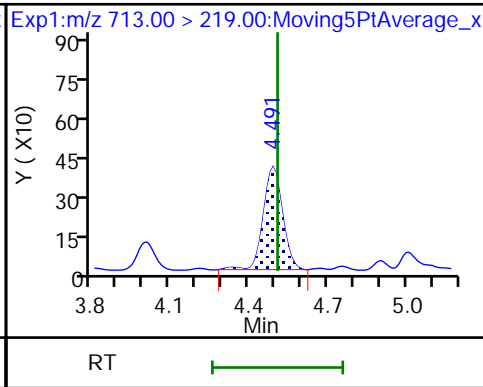
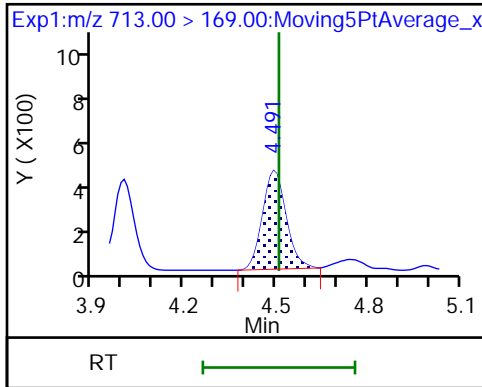
D 43 13C2-PFTeDA



42 Perfluorotetradecanoic acid

42 Perfluorotetradecanoic acid

D 44 13C2-PFHxDA



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-234930/9
 Matrix: Water Lab File ID: 2018.07.19LLICAL_009.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/19/2018 13:04
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234930 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U M	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0113	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U M	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-234930/9
 Matrix: Water Lab File ID: 2018.07.19LLICAL_009.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/19/2018 13:04
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234930 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	98		50-150
STL00992	13C4 PFBA	99		50-150
STL01893	13C5 PFPeA	100		50-150
STL00993	13C2 PFHxA	96		50-150
STL01892	13C4-PFHpA	102		50-150
STL00990	13C4 PFOA	100		50-150
STL00995	13C5 PFNA	103		50-150
STL00996	13C2 PFDA	97		50-150
STL00997	13C2 PFUnA	101		50-150
STL00998	13C2 PFDoA	97		50-150
STL00994	18O2 PFHxS	97		50-150
STL02116	13C2-PFTeDA	94		50-150
STL00991	13C4 PFOS	98		50-150
STL02337	13C3-PFBS	95		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_009.d
 Lims ID: ICB
 Client ID:
 Sample Type: ICB
 Inject. Date: 19-Jul-2018 13:04:34 ALS Bottle#: 20 Worklist Smp#: 9
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: ICB
 Misc. Info.: Plate: 1 Rack: 1
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 15:19:15 Calib Date: 19-Jul-2018 12:56:46
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK022

First Level Reviewer: roycea Date: 19-Jul-2018 15:15:05

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	1.435	1.435	0.0	0.528	5132840	2.46	98.6	53020	
D 3 13C5-PFPeA	267.90 > 223.00	1.747	1.750	-0.003	0.642	3617141	2.49	99.8	41825	
D 47 13C3-PFBS	301.90 > 83.00	1.792	1.795	-0.003	0.659	82702	2.21	94.9	493	
5 Perfluorobutanesulfonic acid	298.90 > 80.00	1.801	1.799	0.002	1.005	9787	0.003554		95.3	
	298.90 > 99.00	1.801	1.799	0.002	1.005	4596	2.13(1.25-3.74)		62.4	
D 60 M2-4:2FTS	329.00 > 81.00	2.014	2.019	-0.005	0.741	440976	NC		5515	
D 7 13C2 PFHxA	315.00 > 270.00	2.048	2.058	-0.010	0.753	4048329	2.39	95.6	77316	
D 64 13C3 HFPO-DA	332.10 > 287.00	2.150	2.151	-0.001	0.790	265000	NC		5944	
D 9 13C4-PFHpA	367.00 > 322.00	2.372	2.379	-0.007	0.872	4201008	2.56	102	56045	
10 Perfluoroheptanoic acid	363.00 > 319.00	2.372	2.380	-0.008	1.000	9264	0.004812		21.5	
	363.00 > 169.00	2.384	2.380	0.004	1.005	4684	1.98(1.13-3.40)		51.6	
8 Perfluorohexanesulfonic acid	399.00 > 80.00	2.395	2.394	0.001	1.000	27640	0.0113		281	
	399.00 > 99.00	2.395	2.394	0.001	1.000	7686	3.60(1.50-4.49)		63.6	
D 11 18O2 PFHxS	403.00 > 84.00	2.395	2.395	0.0	0.881	5057001	2.30	97.4	44290	
65 ADONA	377.00 > 251.00	2.429	2.421	0.008	0.790	5006	NC		108	R
	377.00 > 85.00	2.418	2.421	-0.003	0.786	1924	2.60(0.84-2.53)		16.7	R

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	> 81.00	2.697	2.701	-0.004	0.992	757664	2.39	101	18318	
13 1H,1H,2H,2H-perfluorooctanesulfoni	427.00	> 407.00	2.704	2.702	0.002	1.003	10517	0.0203		270	
D 14 13C4 PFOA	417.00	> 372.00	2.719	2.725	-0.006	1.000	3974569	2.51	100	50073	
* 62 13C2-PFOA	415.00	> 370.00	2.719	2.725	-0.006		4160361	2.50		43639	
15 Perfluorooctanoic acid	413.00	> 369.00	2.719	2.725	-0.006	1.000	15291	0.007813		6.7	M
	413.00	> 169.00	2.727	2.725	0.002	1.003	6342		2.41(0.84-2.52)	39.4	M
D 18 13C4 PFOS	503.00	> 80.00	3.076	3.083	-0.007	1.131	3677597	2.33	97.7	32282	
D 19 13C5 PFNA	468.00	> 423.00	3.076	3.085	-0.009	1.131	3461981	2.58	103	34657	
17 Perfluorooctane sulfonic acid	499.00	> 80.00	3.084	3.086	-0.002	1.003	15155	0.008321		214	M
	499.00	> 99.00	3.076	3.086	-0.010	1.000	4110		3.69(2.31-6.93)	62.0	M
20 Perfluorononanoic acid	463.00	> 419.00	3.084	3.086	-0.002	1.003	9993	0.006393		15.4	R
	463.00	> 169.00	3.084	3.086	-0.002	1.003	1616		6.18(1.90-5.69)	61.6	R
69 9-Chlorohexadecafluoro-3-oxanonane	531.00	> 351.00	3.283	3.291	-0.008	1.067	6159	NC		72.7	
D 21 13C8 FOSA	506.00	> 78.00	3.412	3.413	-0.001	1.255	5708997	2.44	97.7	51207	
22 Perfluorooctane Sulfonamide	498.00	> 78.00	3.421	3.415	0.006	1.003	4496	0.001931		52.4	
25 1H,1H,2H,2H-perfluorodecanesulfoni	527.00	> 507.00	3.421	3.426	-0.005	1.000	1638	0.002823		30.5	
D 26 M2-8:2FTS	529.00	> 81.00	3.421	3.426	-0.005	1.258	1046087	2.55	106	23209	
D 23 13C2 PFDA	515.00	> 470.00	3.430	3.438	-0.008	1.261	2934215	2.43	97.2	32660	
D 27 d3-NMeFOSAA	573.00	> 419.00	3.579	3.587	-0.008	1.316	1340004	2.57	103	31856	
D 32 d5-NEtFOSAA	589.00	> 419.00	3.743	3.754	-0.011	1.376	1432680	2.45	98.0	3374	
D 30 13C2 PFUnA	565.00	> 520.00	3.753	3.760	-0.007	1.380	2671024	2.53	101	39729	
31 Perfluoroundecanoic acid	563.00	> 519.00	3.753	3.760	-0.007	1.000	4598	0.005467		18.4	
	563.00	> 169.00	3.753	3.760	-0.007	1.000	1757		2.62(2.12-6.36)	88.0	
33 N-ethyl perfluorooctane sulfonamid	584.00	> 419.00	3.753	3.760	-0.007	1.003	6747	0.0134		190	
66 11-Chloroeicosafuoro-3-oxaundecan	631.00	> 451.00	3.910	3.916	-0.006	1.271	7882	NC		145	
D 36 13C2 PFDoA	615.00	> 570.00	4.041	4.051	-0.010	1.486	2606777	2.43	97.0	18962	

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	4.041	4.051	-0.010	1.000	6278	0.005450			3.6	
613.00 > 169.00	4.041	4.051	-0.010	1.000	1644		3.82(2.13-6.40)		47.9	
41 Perfluorotridecanoic acid										
663.00 > 619.00	4.300	4.311	-0.011	1.064	6545	0.005592			2.7	R
663.00 > 169.00	4.309	4.311	-0.002	1.066	1328		4.93(1.25-3.76)		25.5	R
42 Perfluorotetradecanoic acid										
713.00 > 169.00	4.542	4.546	-0.004	1.000	1181	0.004635			20.8	
713.00 > 219.00	4.532	4.546	-0.014	0.998	1626		0.73(0.71-2.13)		34.7	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.542	4.547	-0.005	1.670	2419840	2.35		94.0	14387	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.948	4.960	-0.012	1.820	3956324	2.43		97.1	10852	
45 Perfluorohexadecanoic acid										
813.00 > 769.00	4.957	4.962	-0.005	1.002	38620	NC			9.0	
813.00 > 169.00	4.957	4.962	-0.005	1.002	6786		5.69(2.86-8.58)		60.8	
46 Perfluorooctadecanoic acid										
913.00 > 869.00	5.306	5.316	-0.010	1.072	11424	NC			2.6	
913.00 > 169.00	5.306	5.316	-0.010	1.072	1062		10.76(3.83-11.48)		10.7	

QC Flag Legend

Processing Flags

NC - Not Calibrated

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

LCPFC_LL0_00007

Amount Added: 1.00

Units: mL

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_009.d

Injection Date: 19-Jul-2018 13:04:34

Instrument ID: A8_N

Lims ID: ICB

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

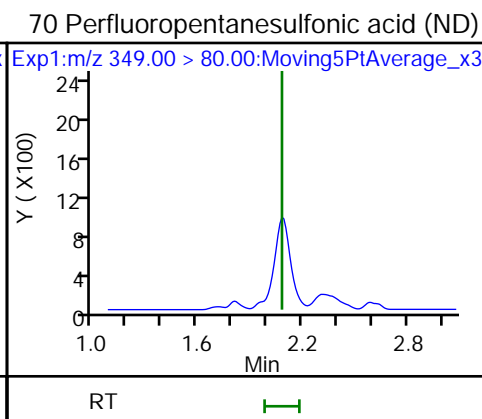
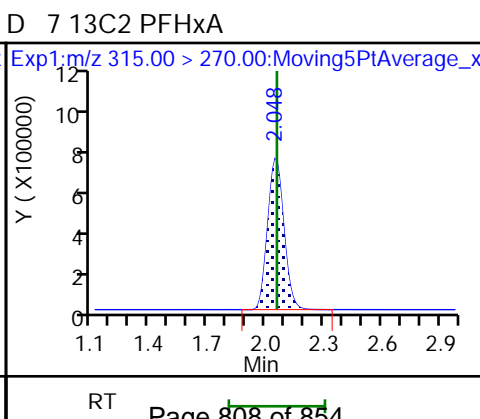
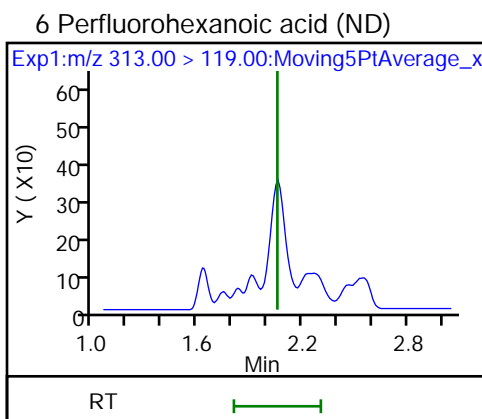
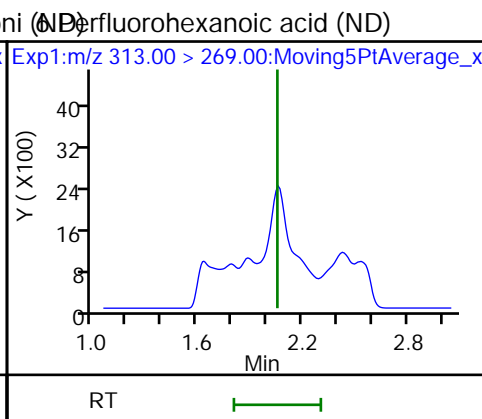
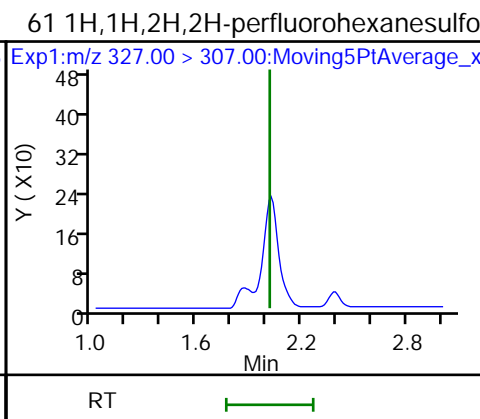
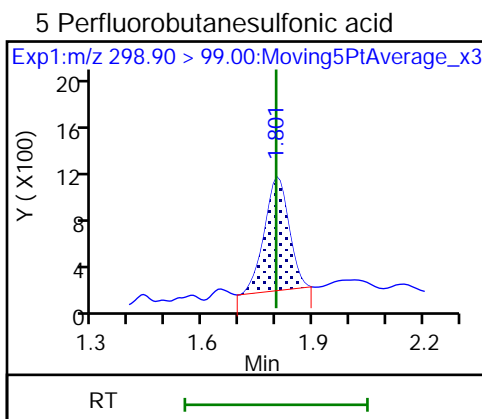
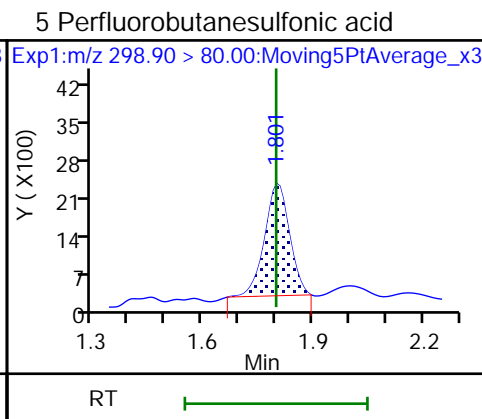
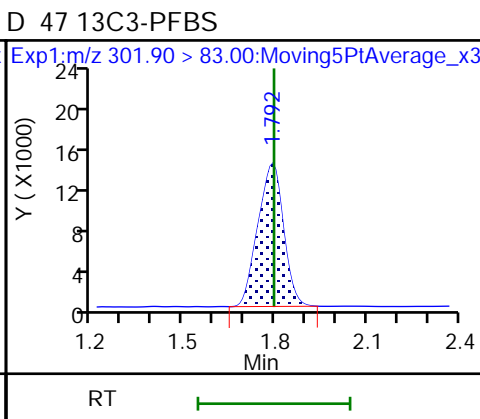
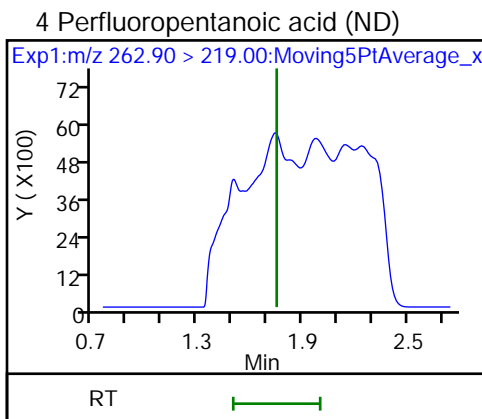
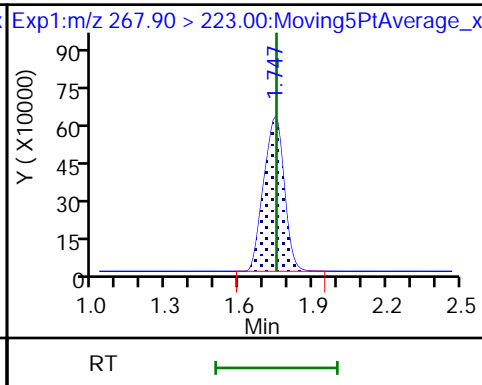
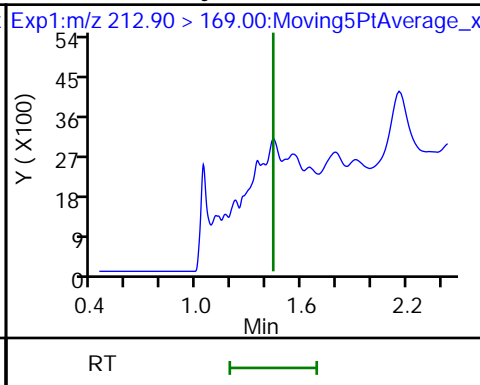
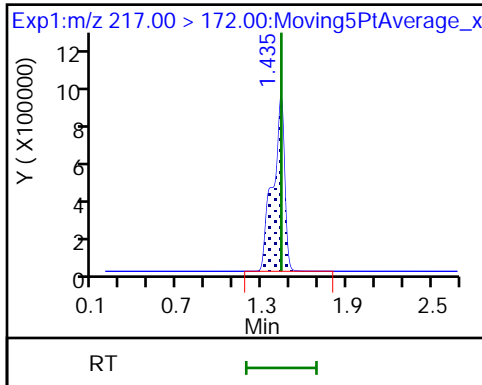
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

D 1 13C4 PFBA

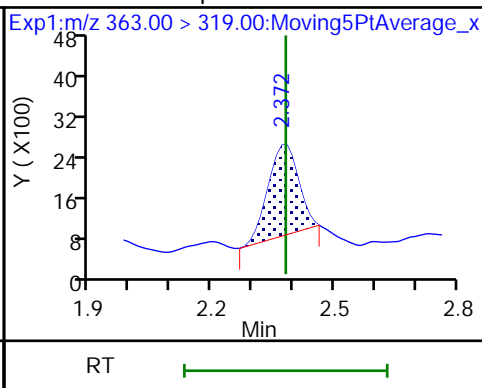
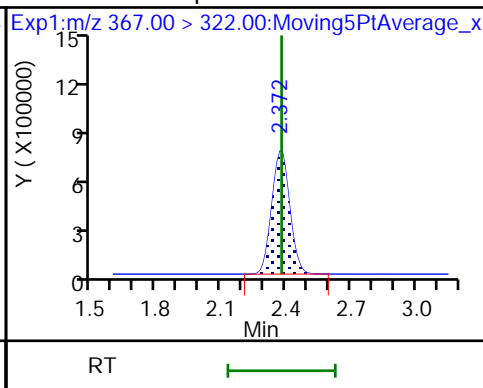
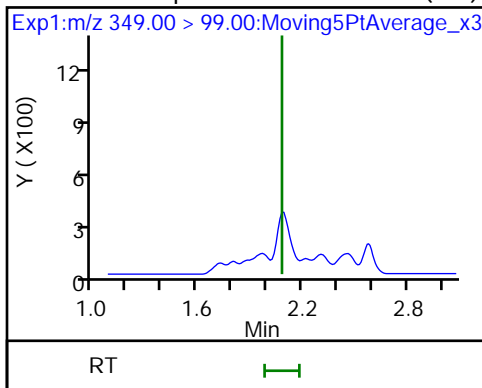
2 Perfluorobutyric acid (ND)

D 3 13C5-PFPeA



70 Perfluoropentanesulfonic acid (ND) D 9 13C4-PFHpA

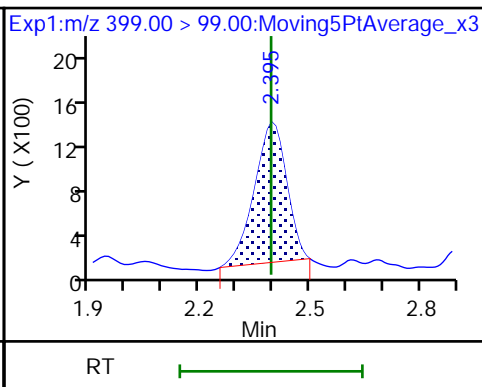
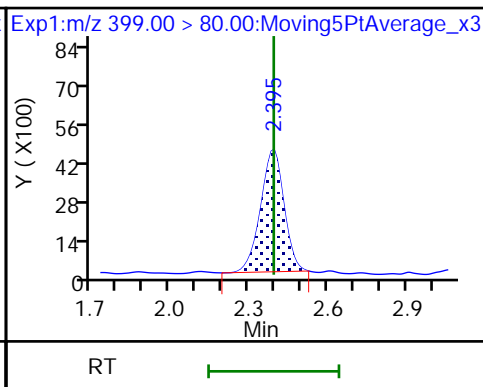
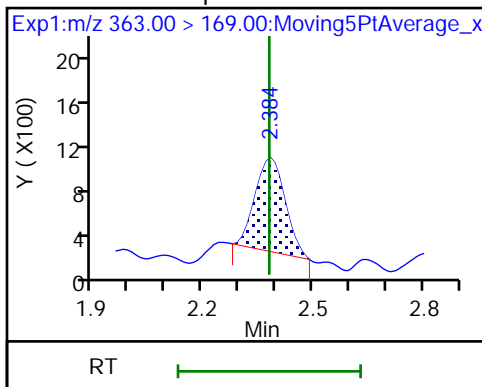
10 Perfluoroheptanoic acid



10 Perfluoroheptanoic acid

8 Perfluorohexanesulfonic acid

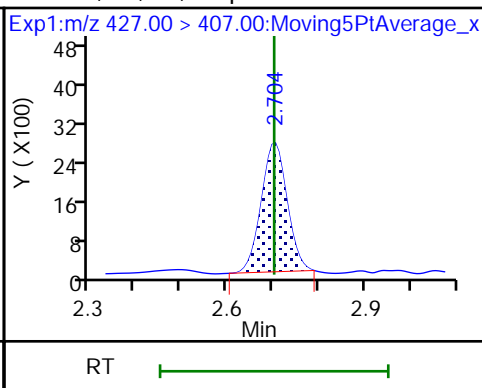
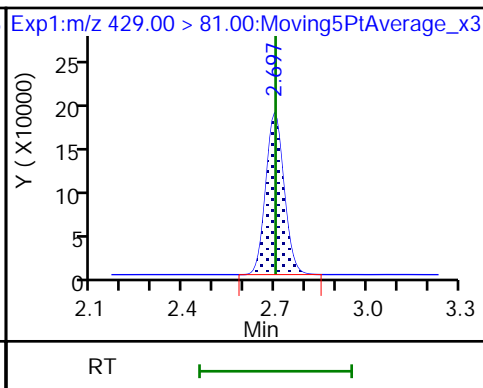
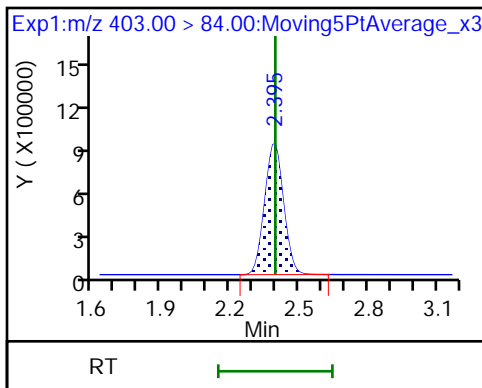
8 Perfluorohexanesulfonic acid



D 11 18O2 PFHxS

D 12 M2-6:2FTS

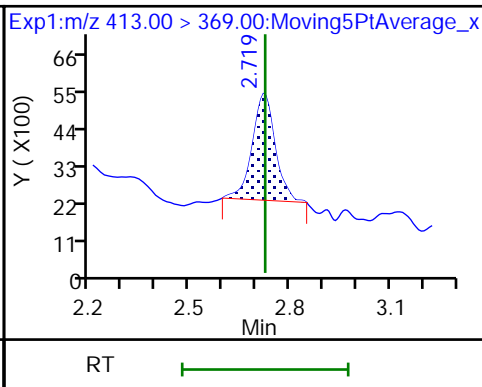
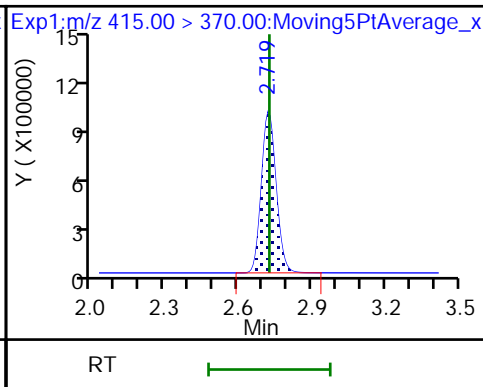
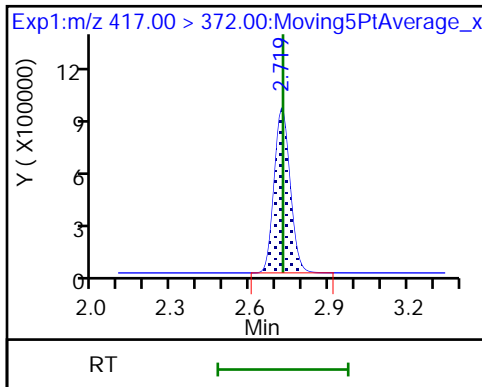
13 1H,1H,2H,2H-perfluorooctanesulfoni

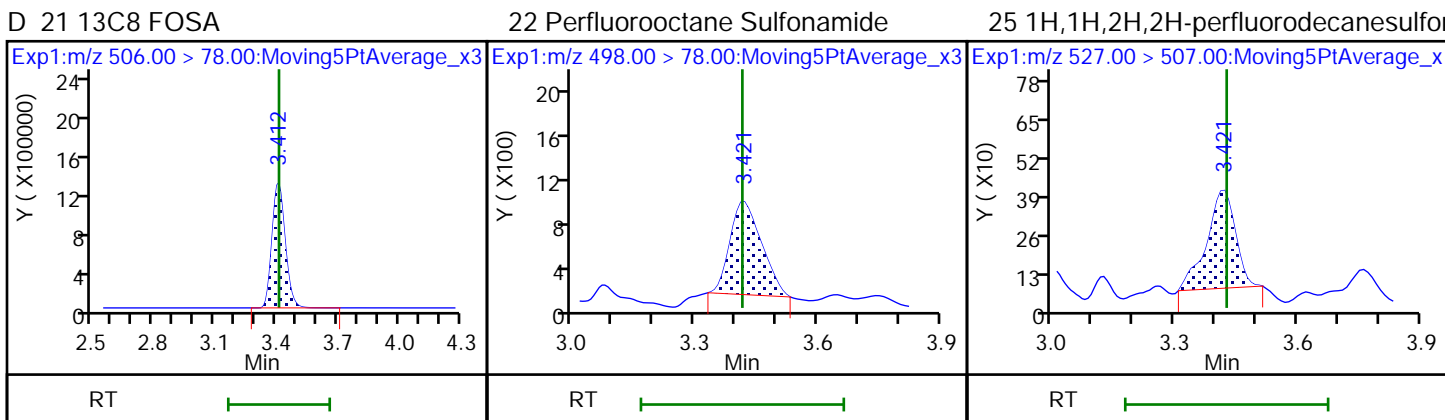
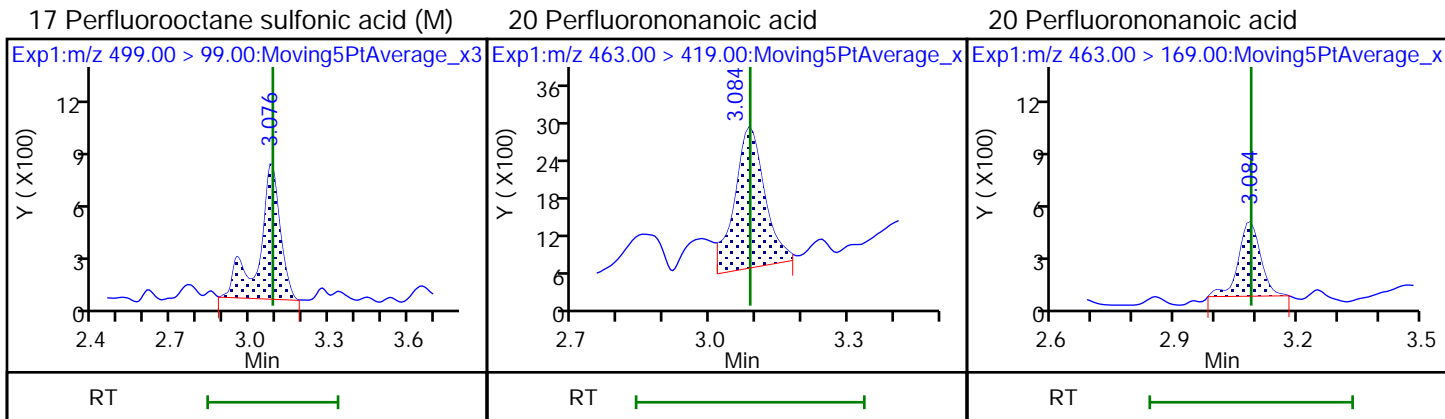
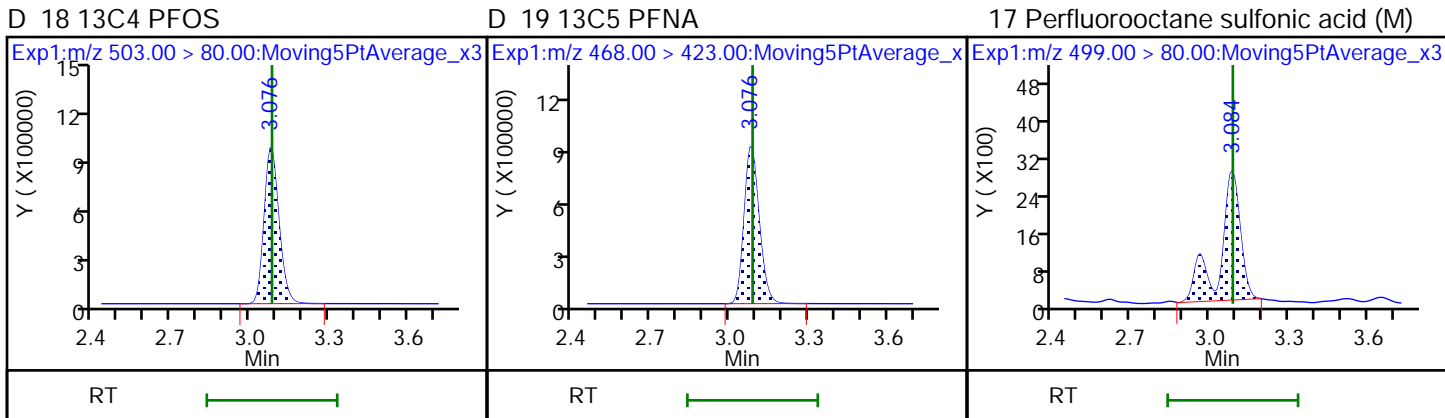
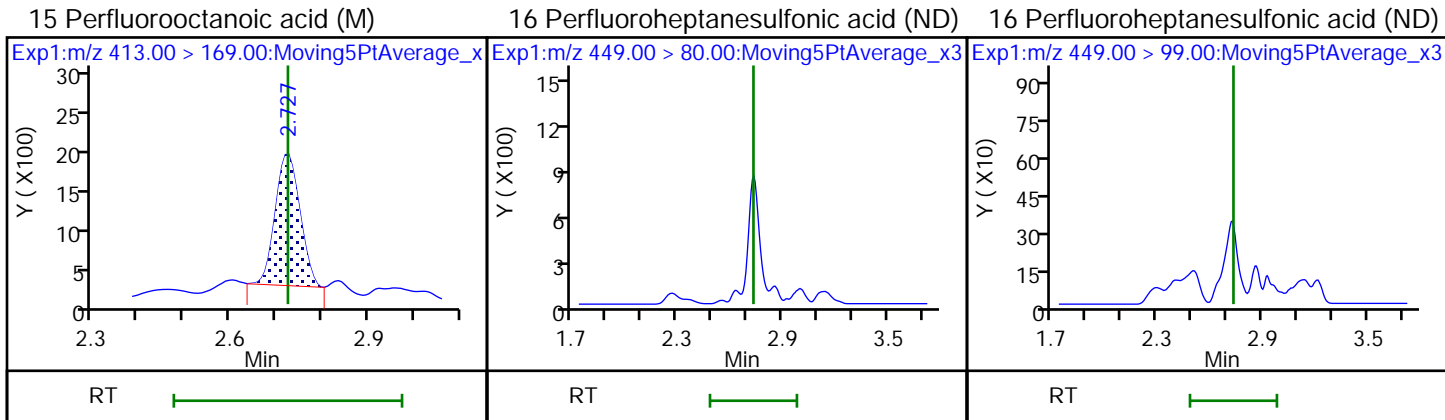


D 14 13C4 PFOA

* 62 13C2-PFOA

15 Perfluorooctanoic acid

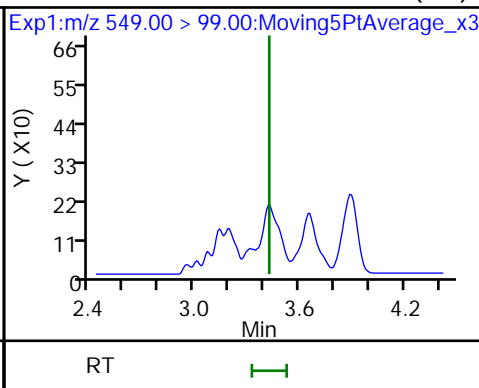
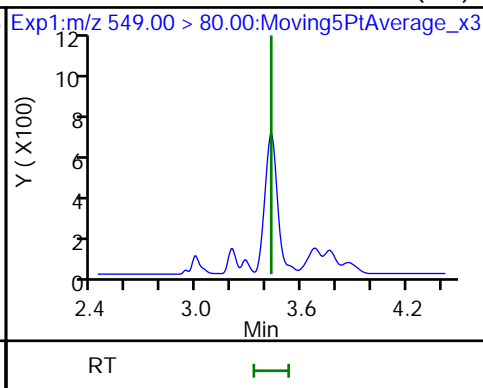
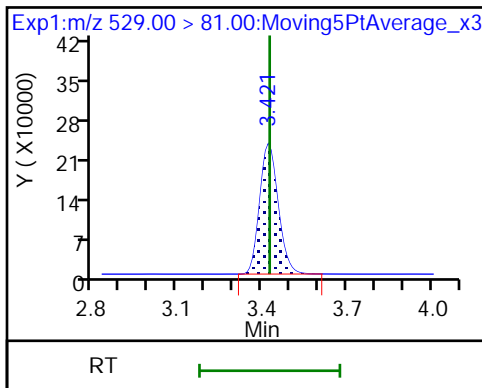




D 26 M2-8:2FTS

68 Perfluorononanesulfonic acid (ND)

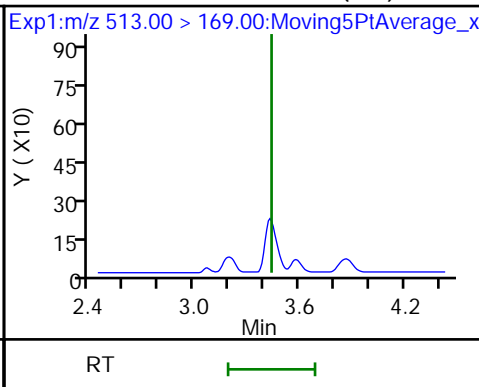
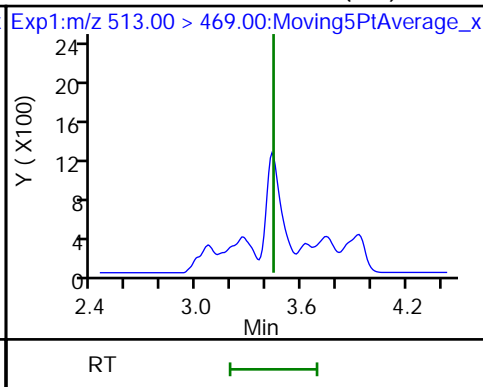
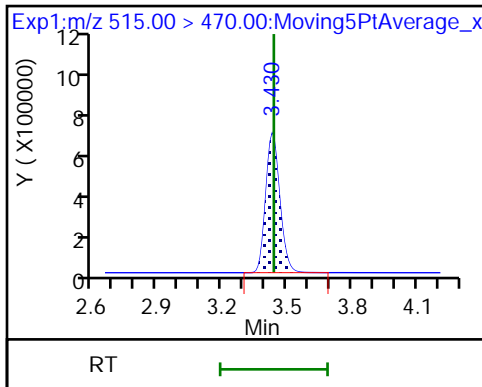
68 Perfluorononanesulfonic acid (ND)



D 23 13C2 PFDA

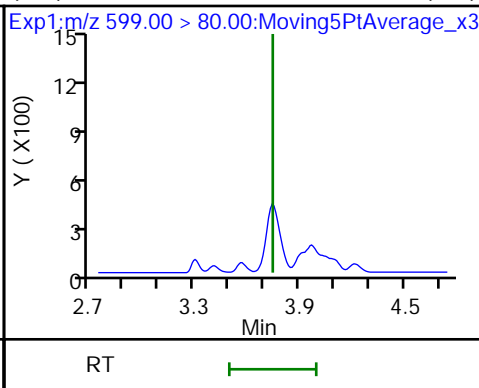
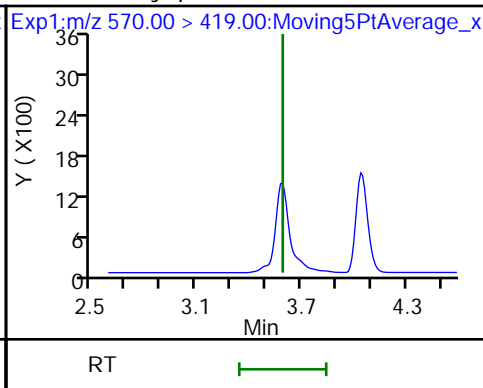
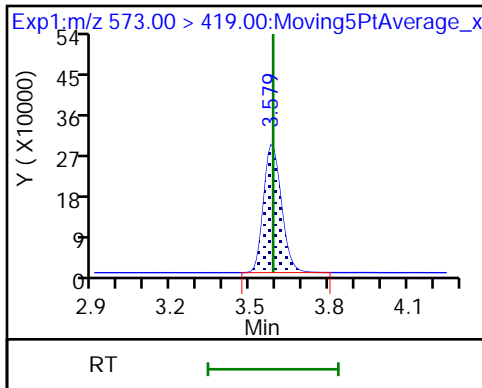
24 Perfluorodecanoic acid (ND)

24 Perfluorodecanoic acid (ND)



D 27 d3-NMeFOSAA

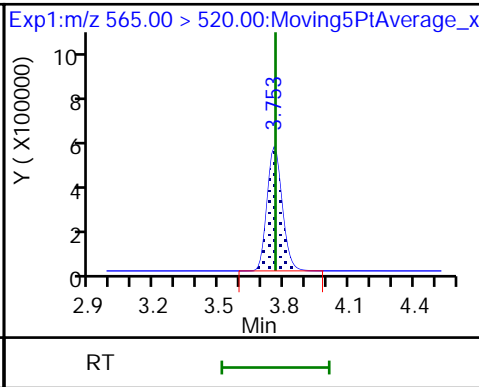
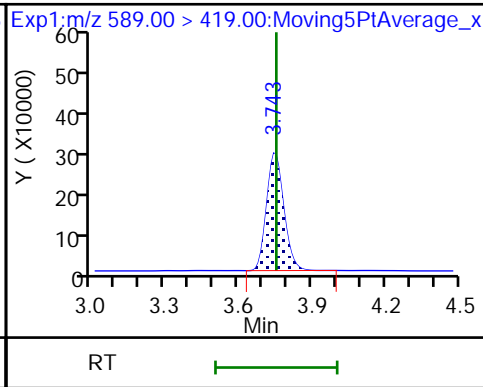
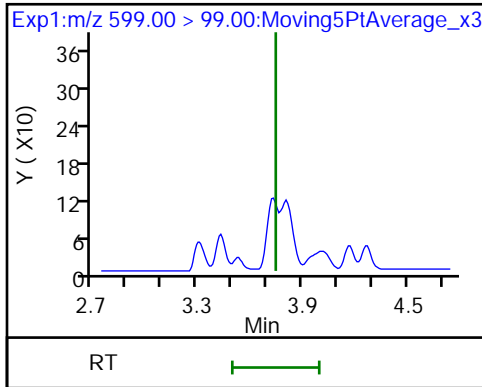
28 N-methyl perfluorooctane sulfonami (ND) 29 Perfluorodecane Sulfonic acid (ND)

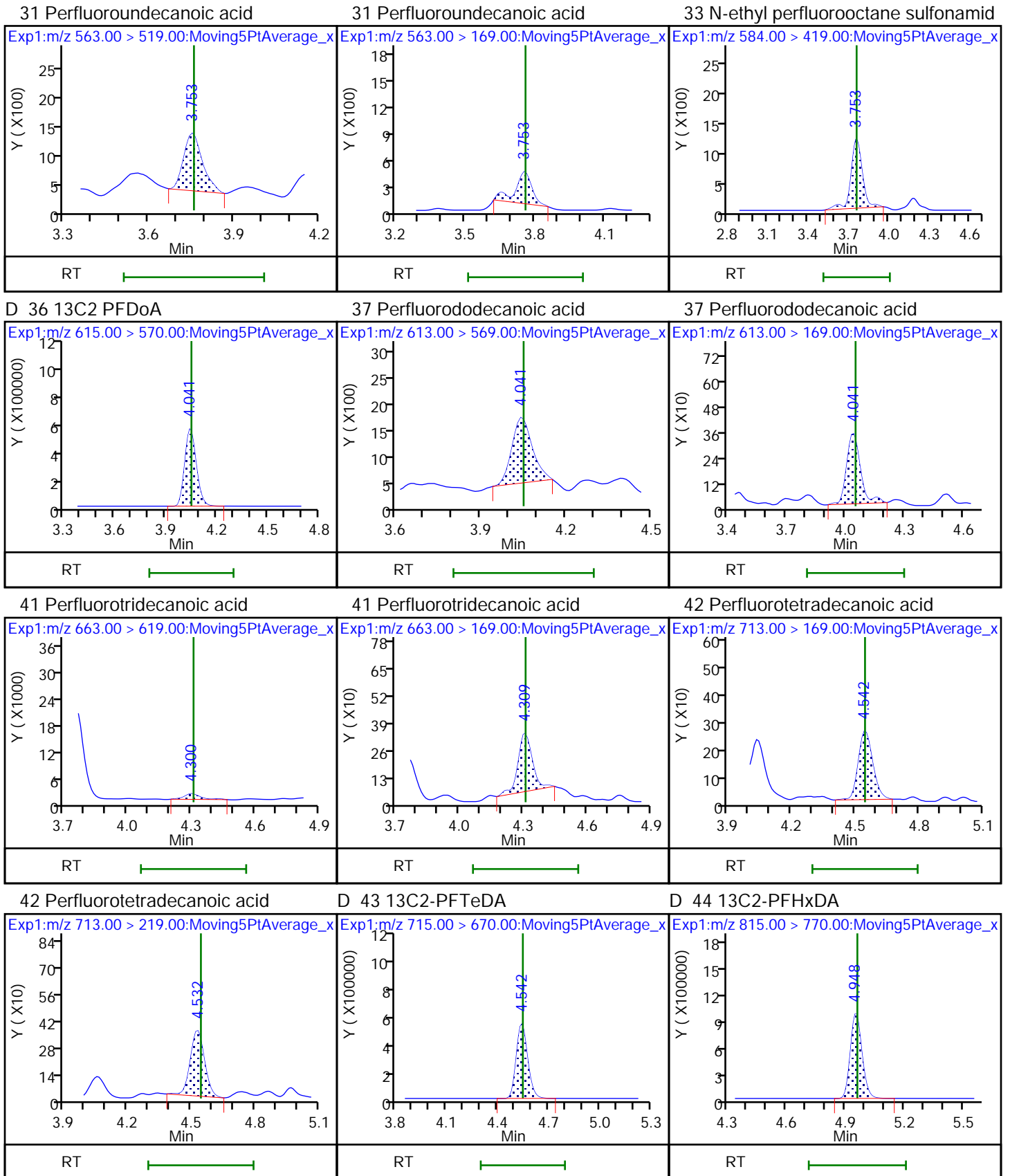


29 Perfluorodecane Sulfonic acid (ND)

D 32 d5-NEtFOSAA

D 30 13C2 PFUnA





TestAmerica Sacramento

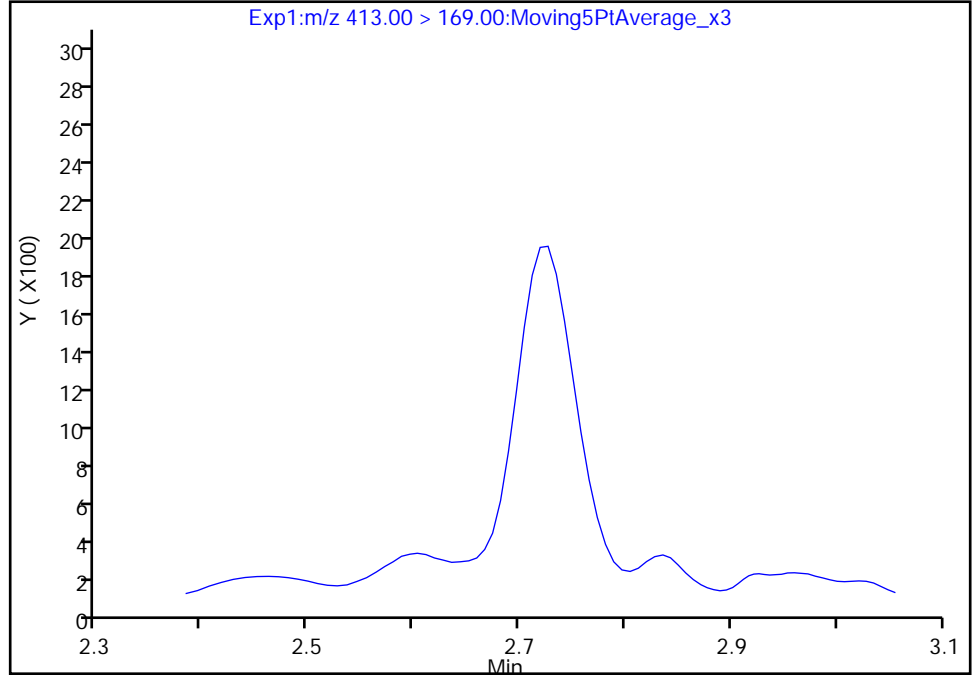
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_009.d
Injection Date: 19-Jul-2018 13:04:34 Instrument ID: A8_N
Lims ID: ICB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

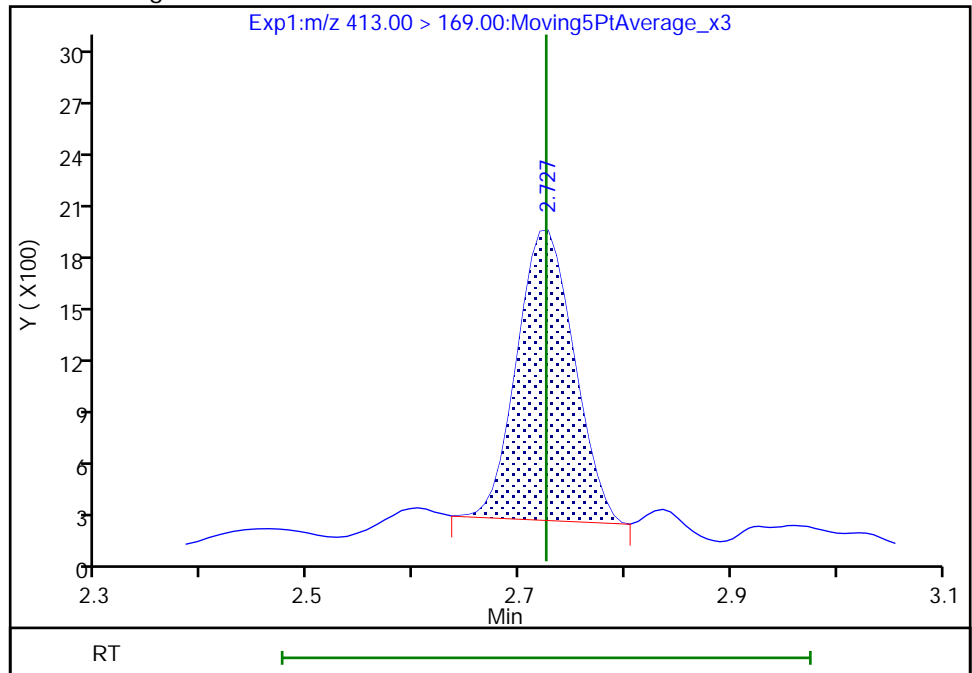
RT: 2.73
Area: 0
Amount: 0.007813
Amount Units: ng/ml

Processing Integration Results



RT: 2.73
Area: 6342
Amount: 0.007813
Amount Units: ng/ml

Manual Integration Results



Reviewer: roycea, 19-Jul-2018 15:11:37
Audit Action: Manually Integrated

Audit Reason: Assign Peak

TestAmerica Sacramento

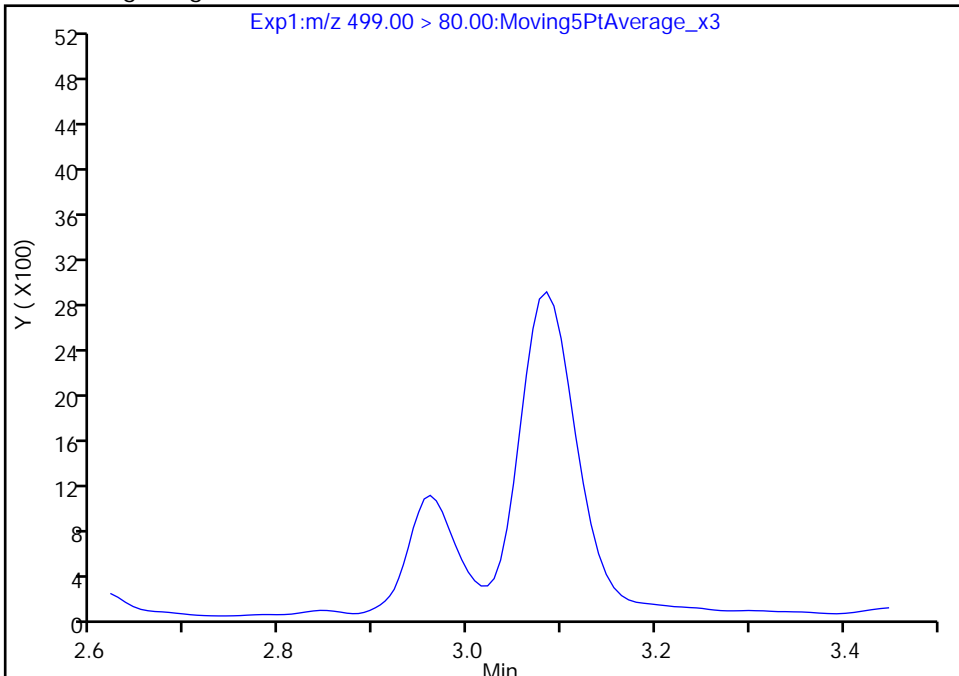
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_009.d
Injection Date: 19-Jul-2018 13:04:34 Instrument ID: A8_N
Lims ID: ICB
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 20 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

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

Signal: 1

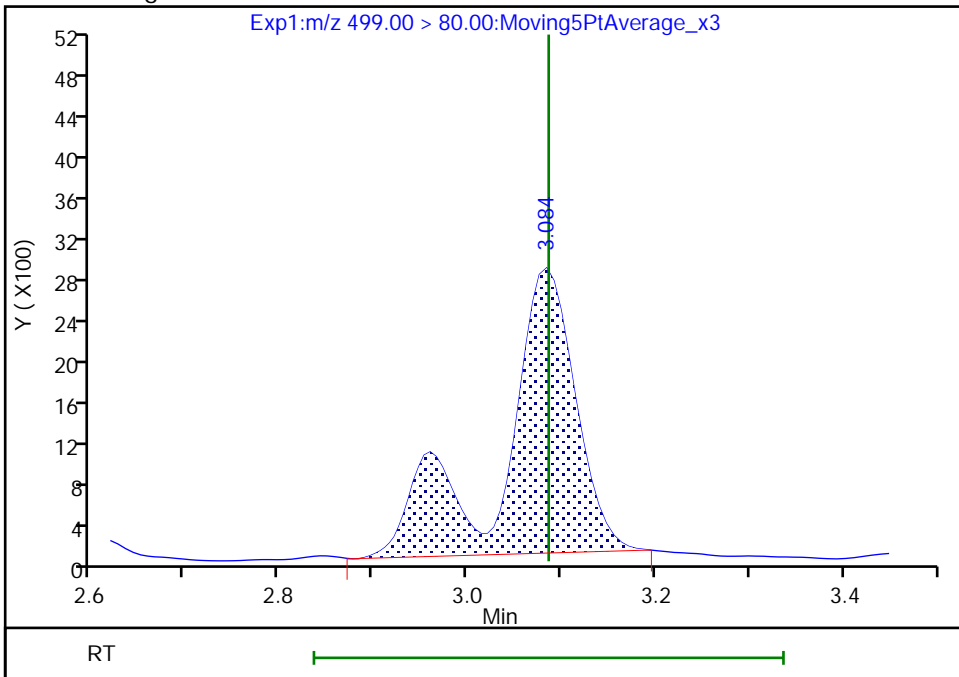
Not Detected
Expected RT: 3.09

Processing Integration Results



Manual Integration Results

RT: 3.08
Area: 15155
Amount: 0.008321
Amount Units: ng/ml



Reviewer: roycea, 19-Jul-2018 15:14:18
Audit Action: Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180719-61302.b\2018.07.19LLICAL_009.d

Injection Date: 19-Jul-2018 13:04:34

Instrument ID: A8_N

Lims ID: ICB

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 20

Worklist Smp#: 9

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

Column:

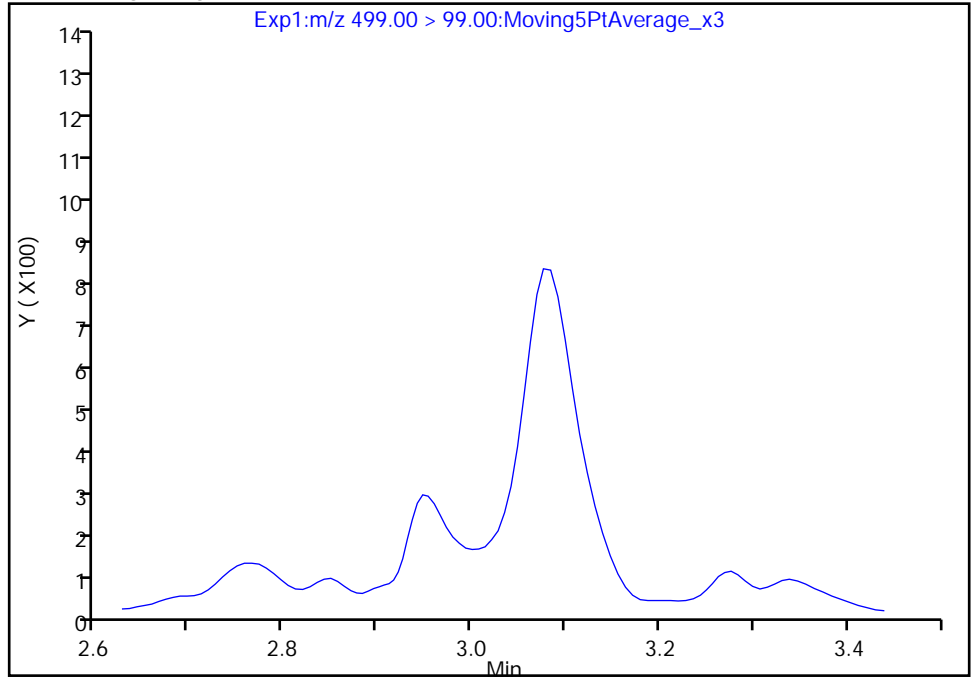
Detector: EXP1

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

Signal: 2

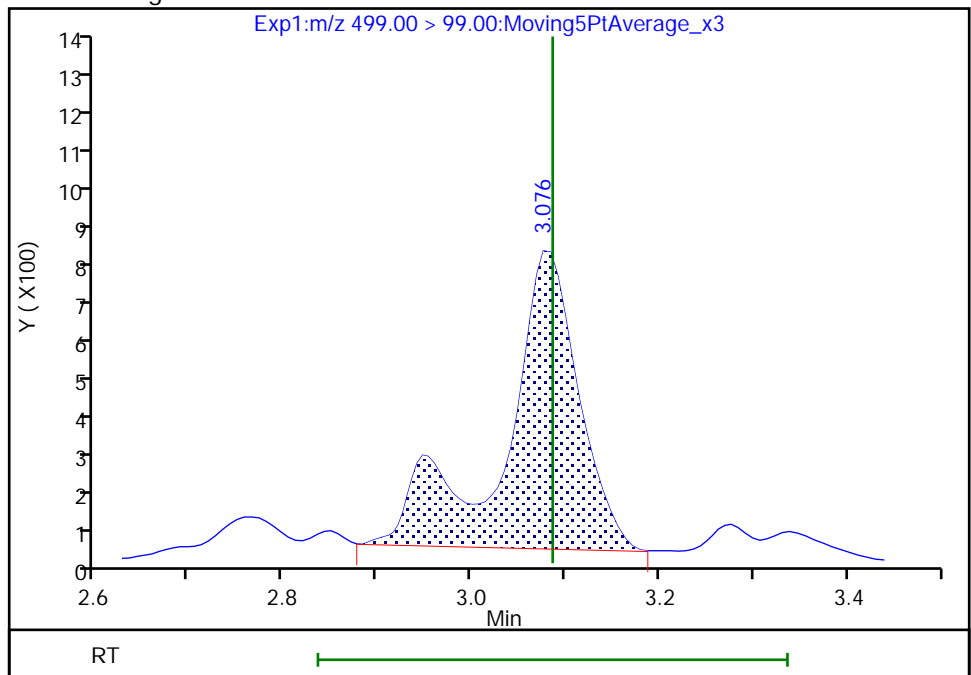
Not Detected
Expected RT: 3.09

Processing Integration Results



Manual Integration Results

RT: 3.08
Area: 4110
Amount: 0.008321
Amount Units: ng/ml



Reviewer: roycea, 19-Jul-2018 15:14:28

Audit Action: Manually Integrated

Audit Reason: Assign Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-233164/2-A
 Matrix: Water Lab File ID: 2018.07.18LLB_062.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 250 (mL) Date Analyzed: 07/18/2018 22:57
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	35.8	M	2.0	1.5	0.59
2706-90-3	Perfluoropentanoic acid (PFPeA)	35.0		2.0	1.0	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	38.0		2.0	1.0	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	36.8		2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	35.8		2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	35.2		2.0	1.5	0.52
335-76-2	Perfluorodecanoic acid (PFDA)	36.7		2.0	1.0	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	32.3		2.0	1.5	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	37.0		2.0	1.5	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	36.8		4.0	3.0	0.76
376-06-7	Perfluorotetradecanoic acid (PFTeA)	36.8		4.0	3.0	0.83
375-73-5	Perfluorobutanesulfonic acid (PFBS)	33.0		2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	31.9		2.0	1.0	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	34.9		2.0	1.0	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	34.2		4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	33.9		2.0	1.5	0.56
754-91-6	Perfluorooctane Sulfonamide (FOSA)	38.6		4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 320-233164/2-A
 Matrix: Water Lab File ID: 2018.07.18LLB_062.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 250 (mL) Date Analyzed: 07/18/2018 22:57
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	79		50-150
STL00992	13C4 PFBA	89		50-150
STL01893	13C5 PFPeA	84		50-150
STL00993	13C2 PFHxA	91		50-150
STL01892	13C4-PFHpA	97		50-150
STL00990	13C4 PFOA	92		50-150
STL00995	13C5 PFNA	91		50-150
STL00996	13C2 PFDA	92		50-150
STL00997	13C2 PFUnA	94		50-150
STL00998	13C2 PFDoA	87		50-150
STL00994	18O2 PFHxS	93		50-150
STL02116	13C2-PFTeDA	77		50-150
STL00991	13C4 PFOS	88		50-150
STL02337	13C3-PFBS	83		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_062.d

Lims ID: LCS 320-233164/2-A

Client ID:

Sample Type: LCS

Inject. Date: 18-Jul-2018 22:57:24

ALS Bottle#: 46

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Sample Info: lcs 320-233164/2-

Misc. Info.: Plate: 1 Rack: 5

Operator ID: SACINSTLCMS01

Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\A8_N.m

Limit Group: LC PFC_QSM5-1 ICAL

Last Update: 19-Jul-2018 14:17:58

Calib Date: 11-Jul-2018 15:38:42

Integrator: Picker

Quant Method: Isotopic Dilution

Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 :

Det: EXP1

Process Host: XAWRK007

First Level Reviewer: mongkols

Date: 19-Jul-2018 14:17:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid	212.90	1.430	1.430	0.0	2056112	0.8948		89.5	603	M
D 1 13C4 PFBA	217.00	1.425	1.436	-0.011	5828753	2.23		89.2	43205	
4 Perfluoropentanoic acid	262.90	1.739	1.748	-0.009	1620013	0.8755		87.6	681	
D 3 13C5-PFPeA	267.90	1.739	1.748	-0.009	3813155	2.10		83.9	42784	
5 Perfluorobutanesulfonic acid	298.90	1.784	1.793	-0.009	2388937	0.8249		93.3	21732	
	298.90	1.793	1.793	0.0	994287		2.40(1.25-3.74)		12725	
D 47 13C3-PFBS	301.90	1.784	1.793	-0.009	88020	1.93		82.9	605	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00	2.016	2.015	0.001	461388	0.9376		100	28627	
6 Perfluorohexanoic acid	313.00	2.050	2.049	0.001	1741582	0.9491		94.9	6585	
	313.00	2.050	2.049	0.001	156696		11.11(5.03-15.10)		2410	
D 7 13C2 PFHxA	315.00	2.050	2.061	-0.011	4456676	2.27		90.9	82988	
70 Perfluoropentanesulfonic acid	349.00	2.083	2.072	0.011	2472303	0.9358		99.8	66024	
	349.00	2.083	2.072	0.011	912103		2.71(1.36-4.07)		21241	
67 Perfluoro(2-propoxypropanoic) acid	329.10	2.151	2.151	0.0	305273	NC			2748	
D 64 13C3 HFPO-DA	332.10	2.151	2.152	-0.001	292660	NC			6125	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.373	2.373	0.0	1.000	1862372	0.9188		91.9	3973	
363.00 > 169.00	2.373	2.373	0.0	1.000	698801		2.67(1.13-3.40)		5515	
D 9 13C4-PFHpA										
367.00 > 322.00	2.373	2.385	-0.012	0.872	4381447	2.43		97.0	66288	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.397	2.385	0.012	1.000	2183258	0.7978		87.7	16841	
399.00 > 99.00	2.397	2.385	0.012	1.000	730649		2.99(1.50-4.49)		5812	
D 11 18O2 PFHxS										
403.00 > 84.00	2.397	2.396	0.001	0.881	5637980	2.20		93.1	58203	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.699	2.691	0.008	1.000	524093	0.8641		91.2	11329	
D 12 M2-6:2FTS										
429.00 > 81.00	2.699	2.698	0.001	0.992	920790	2.38		100	19873	
* 62 13C2-PFOA										
415.00 > 370.00	2.721	2.714	0.007		4819931	2.50			58739	
D 14 13C4 PFOA										
417.00 > 372.00	2.721	2.720	0.001	1.000	4259482	2.31		92.4	49074	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.721	2.721	0.0	1.000	1879834	0.8959		89.5	1119	
413.00 > 169.00	2.721	2.721	0.0	1.000	933404		2.01(0.84-2.52)		4598	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.729	2.721	0.008	0.887	1900436	0.8728		91.7	34555	
449.00 > 99.00	2.729	2.721	0.008	0.887	501581		3.79(1.94-5.82)		12771	
D 18 13C4 PFOS										
503.00 > 80.00	3.076	3.076	0.0	1.130	3949882	2.10		88.0	32477	
D 19 13C5 PFNA										
468.00 > 423.00	3.076	3.076	0.0	1.130	3766756	2.29		91.4	53804	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.076	3.076	0.0	1.000	1600253	0.8545		92.1	26413	
499.00 > 99.00	3.076	3.076	0.0	1.000	353499		4.53(2.31-6.93)		7192	
20 Perfluorononanoic acid										
463.00 > 419.00	3.084	3.076	0.008	1.003	1472300	0.8808		88.1	2760	
463.00 > 169.00	3.084	3.076	0.008	1.003	370542		3.97(1.90-5.69)		13356	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.283	3.277	0.007	1.067	2604507	NC			21761	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.412	3.403	0.009	1.000	2039421	0.9656		96.6	32967	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.421	3.412	0.009	1.112	1121263	0.8752		91.2	15977	
549.00 > 99.00	3.421	3.412	0.009	1.112	418983		2.68(1.33-3.97)		7254	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.421	3.412	0.009	1.000	630587	0.9340		97.5	8370	
D 21 13C8 FOSA										
506.00 > 78.00	3.412	3.412	0.0	1.254	5357382	1.98		79.1	48385	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.430	3.421	0.009	1.000	1287391	0.9176		91.8	8560	
513.00 > 169.00	3.430	3.421	0.009	1.000	250996		5.13(2.36-7.09)		14167	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS	529.00 > 81.00	3.421	3.421	0.0	1.257	1253505	2.21	92.4	27909	
D 23 13C2 PFDA	515.00 > 470.00	3.430	3.430	0.0	1.261	3342592	2.31	92.4	39638	
28 N-methyl perfluorooctane sulfonami	570.00 > 419.00	3.579	3.579	0.0	1.000	458505	0.8523	85.2	3540	
D 27 d3-NMeFOSAA	573.00 > 419.00	3.579	3.579	0.0	1.315	1364257	2.30	92.0	29620	
29 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.733	3.733	0.0	1.213	940153	0.8473	87.9	17760	
	599.00 > 99.00	3.733	3.733	0.0	1.213	322902	2.91(1.39-4.16)		9615	
D 32 d5-NEtFOSAA	589.00 > 419.00	3.743	3.744	-0.001	1.376	1441667	2.37	94.9	3822	
31 Perfluoroundecanoic acid	563.00 > 519.00	3.754	3.744	0.010	1.000	748552	0.8067	80.7	3861	
	563.00 > 169.00	3.754	3.744	0.010	1.000	202867	3.69(2.12-6.36)		5182	
33 N-ethyl perfluorooctane sulfonamid	584.00 > 419.00	3.754	3.744	0.010	1.003	466802	0.9157	91.6	11033	
D 30 13C2 PFUnA	565.00 > 520.00	3.754	3.754	0.0	1.380	2830932	2.34	93.7	44601	
66 11-Chloroeicosafuoro-3-oxaundecan	631.00 > 451.00	3.901	3.902	-0.001	1.268	3843045	NC		42618	
D 36 13C2 PFDaA	615.00 > 570.00	4.044	4.034	0.010	1.486	2723838	2.17	87.0	24913	
37 Perfluorododecanoic acid	613.00 > 569.00	4.044	4.035	0.009	1.000	1100293	0.9249	92.5	612	
	613.00 > 169.00	4.044	4.035	0.009	1.000	264225	4.16(2.13-6.40)		5518	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.303	4.295	0.008	1.064	1069888	0.9197	92.0	456	
	663.00 > 169.00	4.303	4.295	0.008	1.064	331224	3.23(1.25-3.76)		5840	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.539	4.529	0.010	1.000	239932	0.9190	91.9	4241	
	713.00 > 219.00	4.529	4.529	0.0	0.998	170329	1.41(0.71-2.13)		2787	
D 43 13C2-PFTeDA	715.00 > 670.00	4.539	4.540	-0.001	1.668	2508733	1.93	77.2	14478	
45 Perfluorohexadecanoic acid	813.00 > 769.00	4.946	4.947	-0.001	1.000	1070404	NC		257	
	813.00 > 169.00	4.946	4.947	-0.001	1.000	175747	6.09(2.86-8.58)		1850	
D 44 13C2-PFHxDA	815.00 > 770.00	4.946	4.947	-0.001	1.818	3246518	1.57	62.7	10273	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.297	5.297	0.0	1.071	886469	NC		213	
	913.00 > 169.00	5.297	5.297	0.0	1.071	107001	8.28(3.83-11.48)		1380	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_062.d

Injection Date: 18-Jul-2018 22:57:24

Instrument ID: A8_N

Lims ID: LCS 320-233164/2-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 46

Worklist Smp#: 3

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

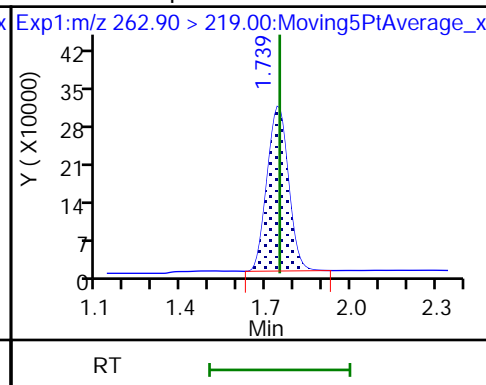
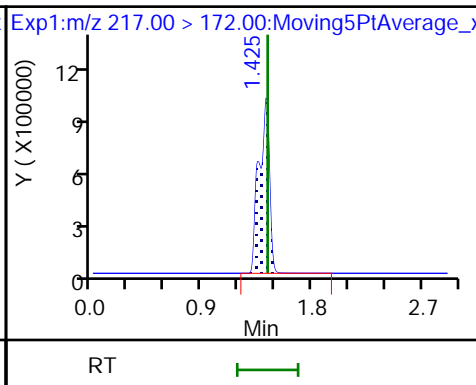
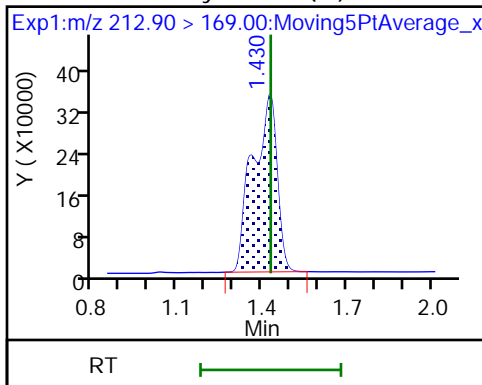
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid (M)

D 1 13C4 PFBA

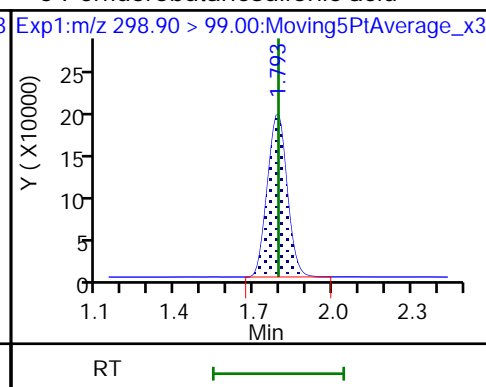
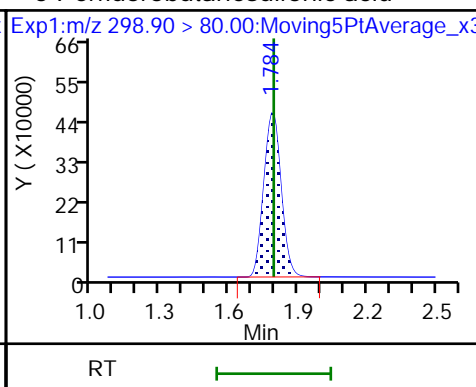
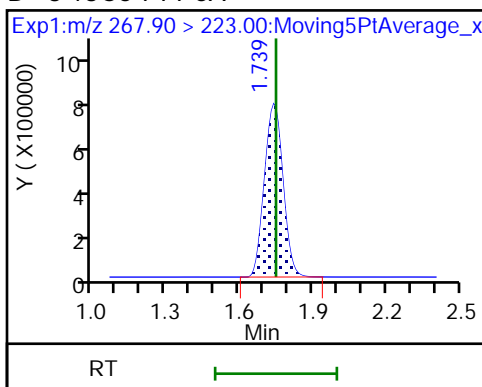
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

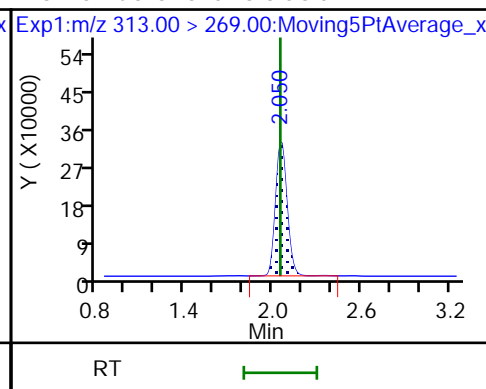
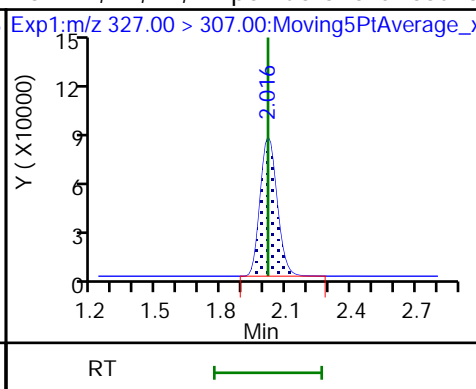
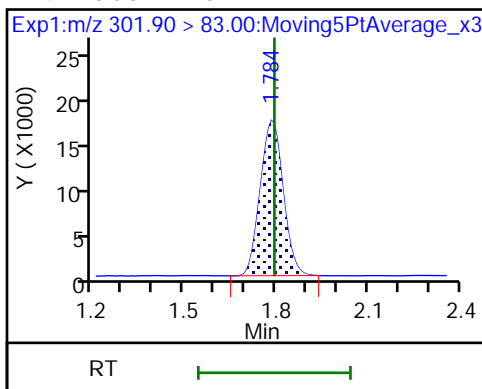
5 Perfluorobutanesulfonic acid



D 47 13C3-PFBS

61 1H,1H,2H,2H-perfluorohexanesulfoni

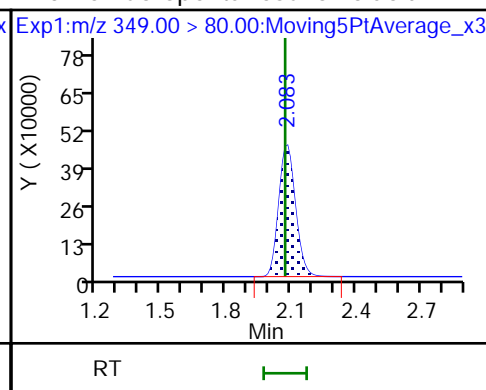
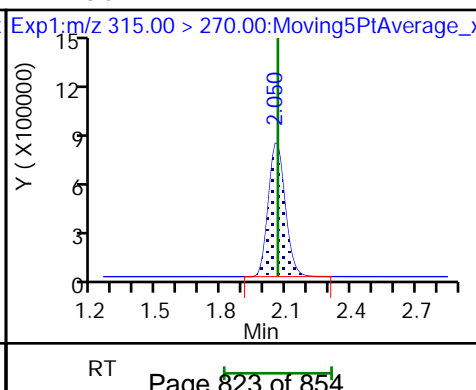
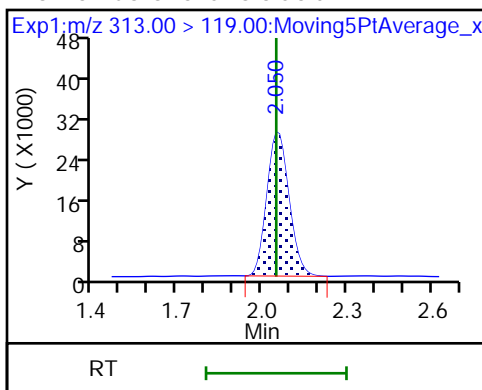
6 Perfluorohexanoic acid

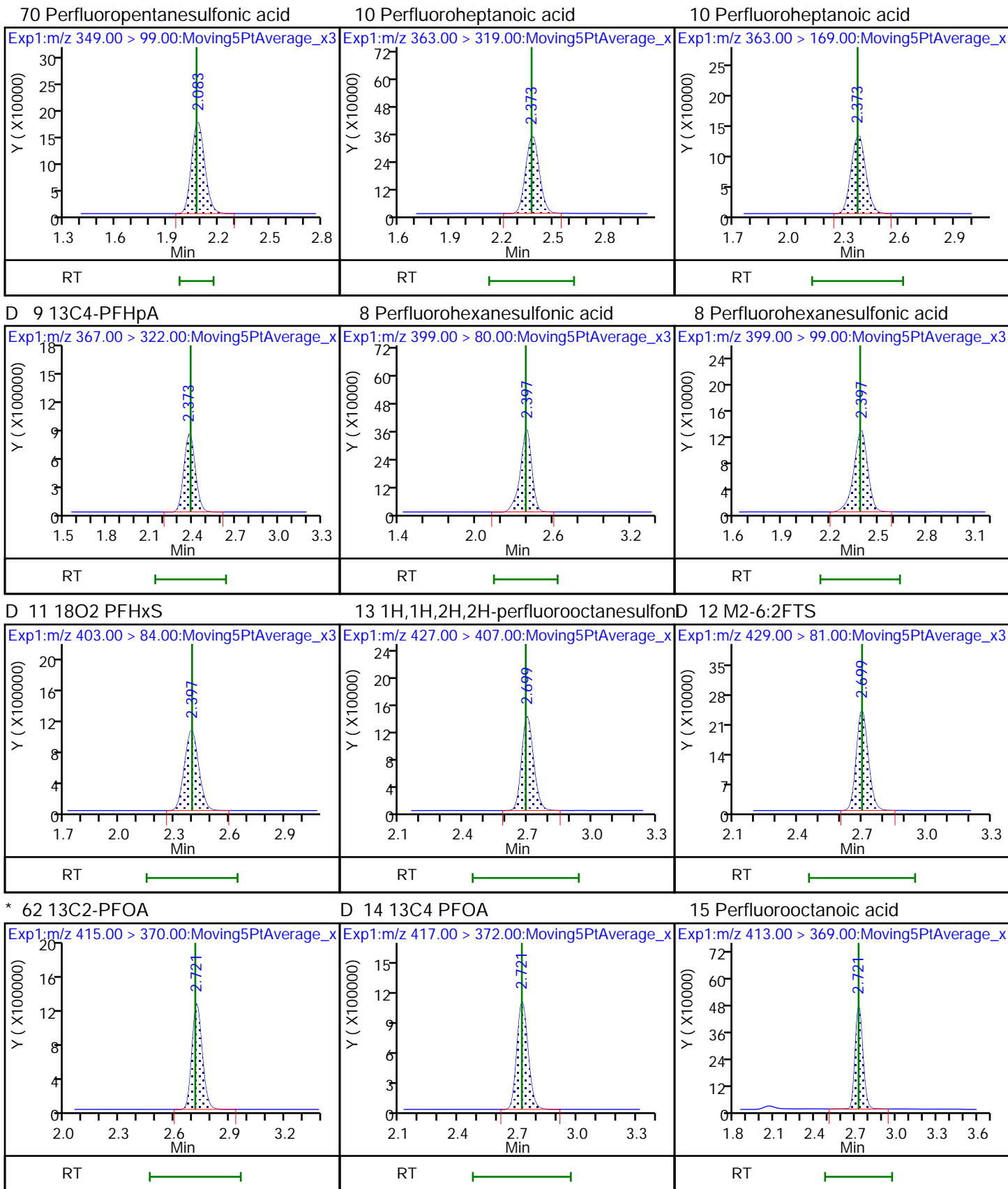


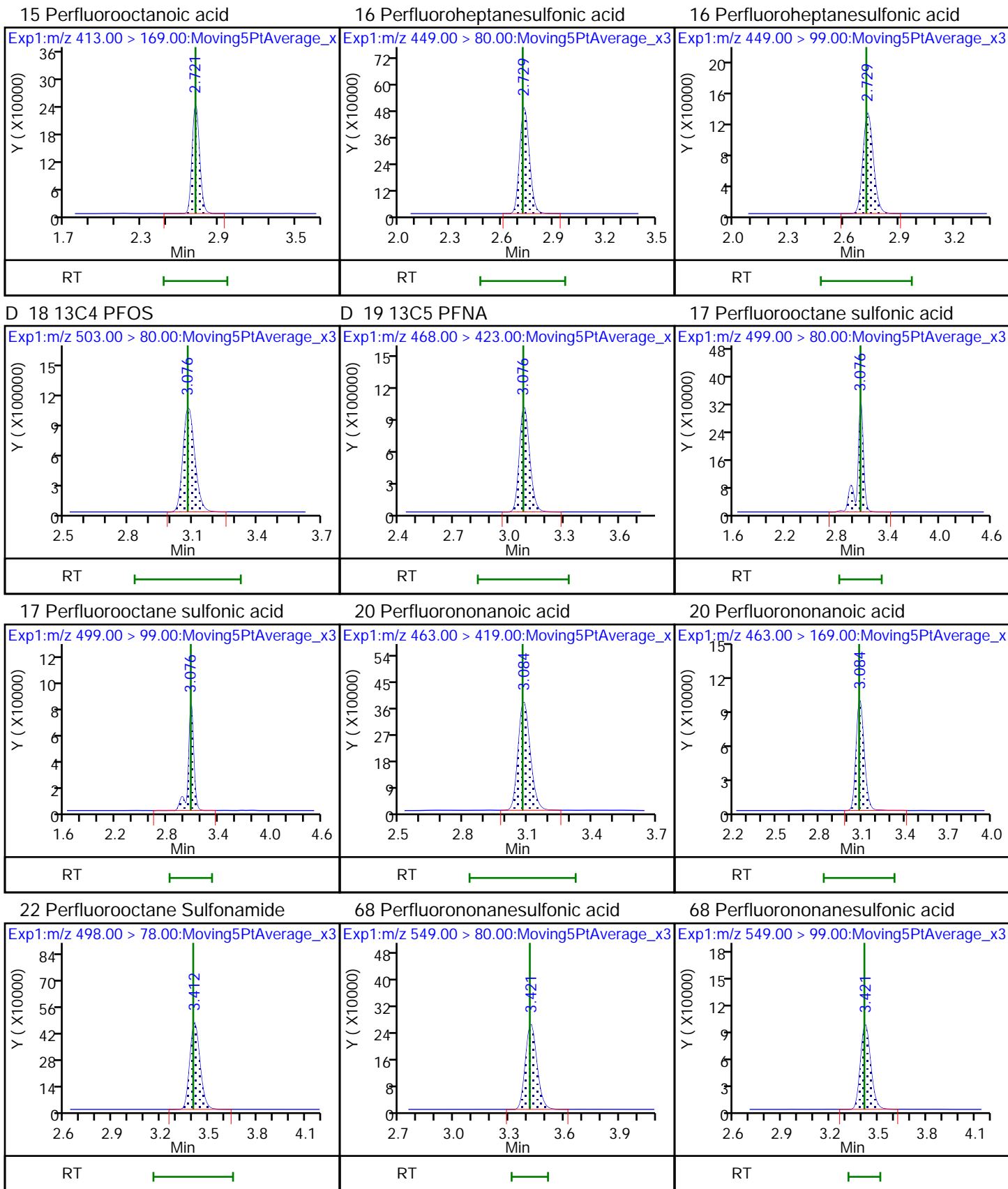
6 Perfluorohexanoic acid

D 7 13C2 PFHxA

70 Perfluoropentanesulfonic acid

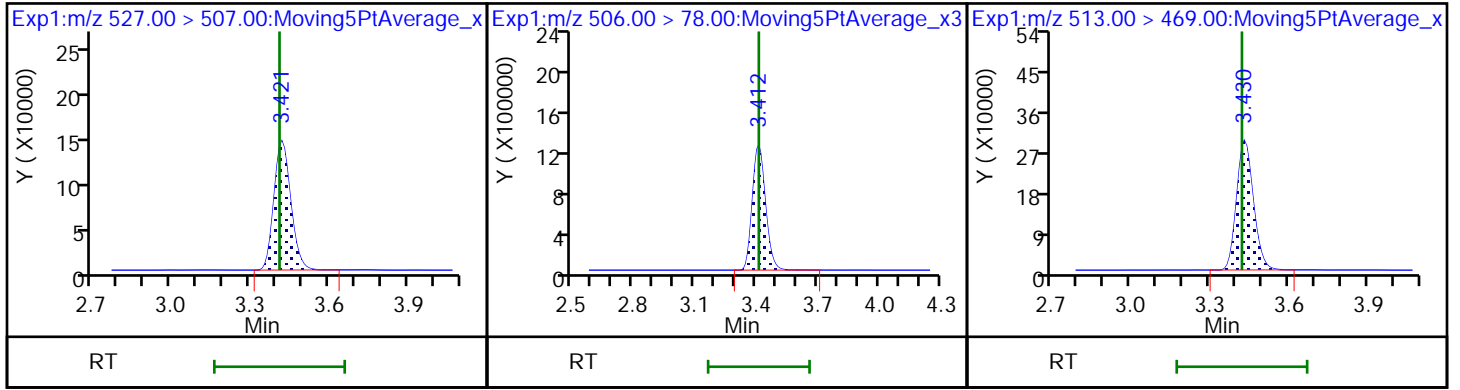






25 1H,1H,2H,2H-perfluorodecanesulfonamide D 21 13C8 FOSA

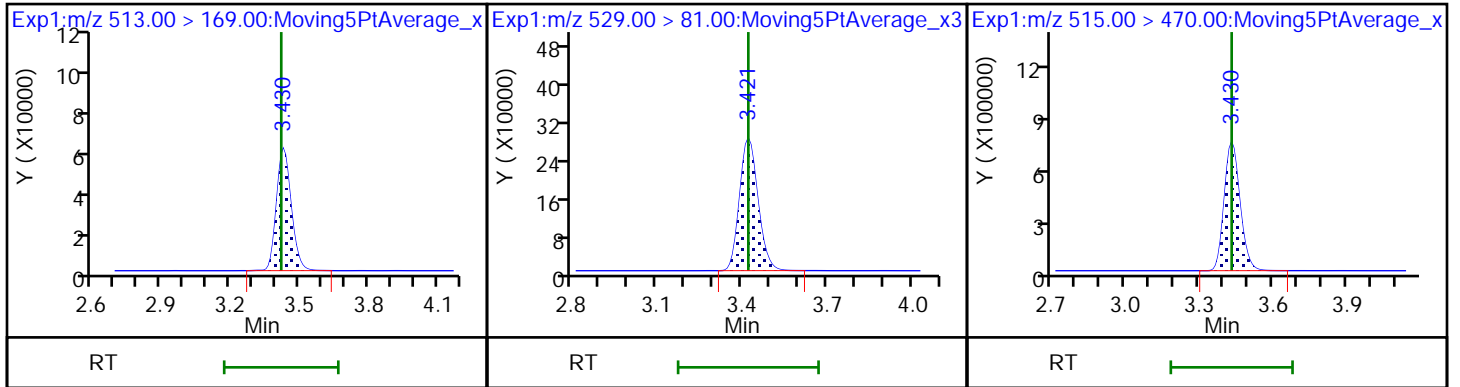
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

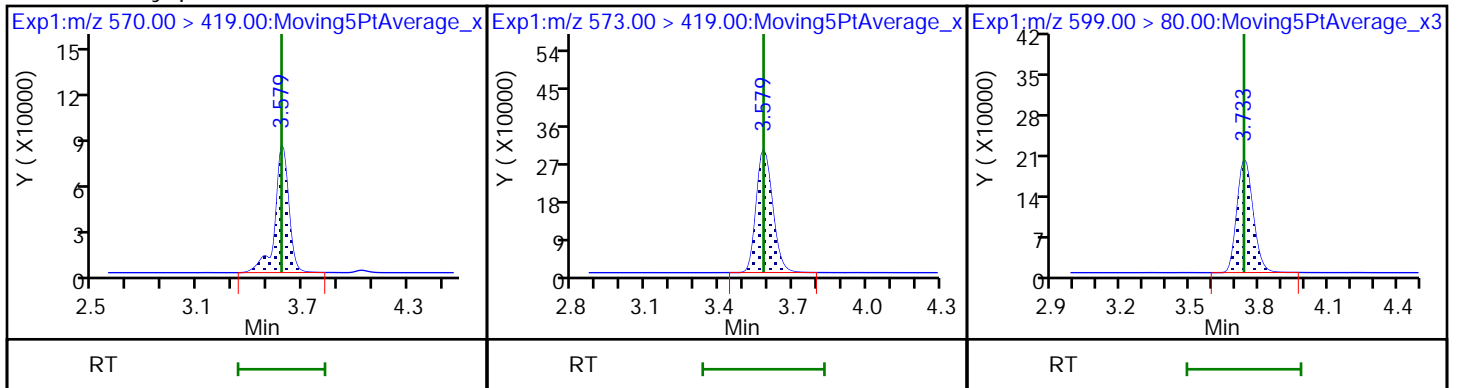
D 26 M2-8:2FTS

D 23 13C2 PFDA



28 N-methyl perfluorooctane sulfonamide D 27 d3-NMeFOSAA

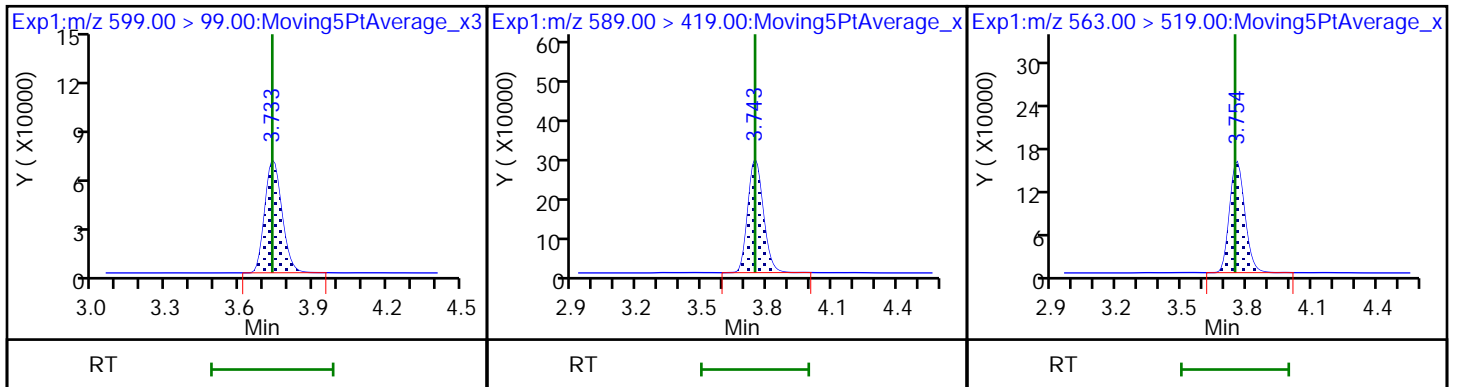
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

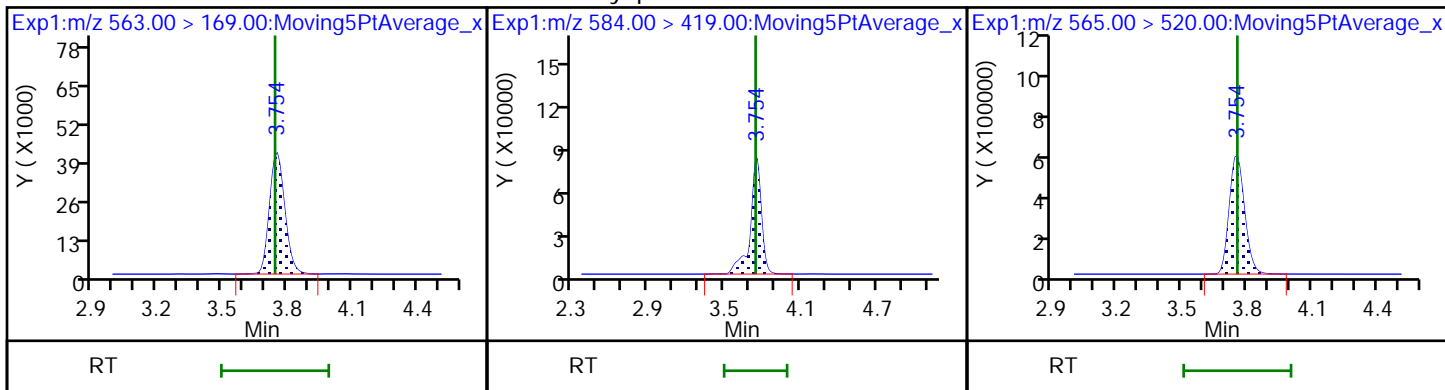
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



31 Perfluoroundecanoic acid

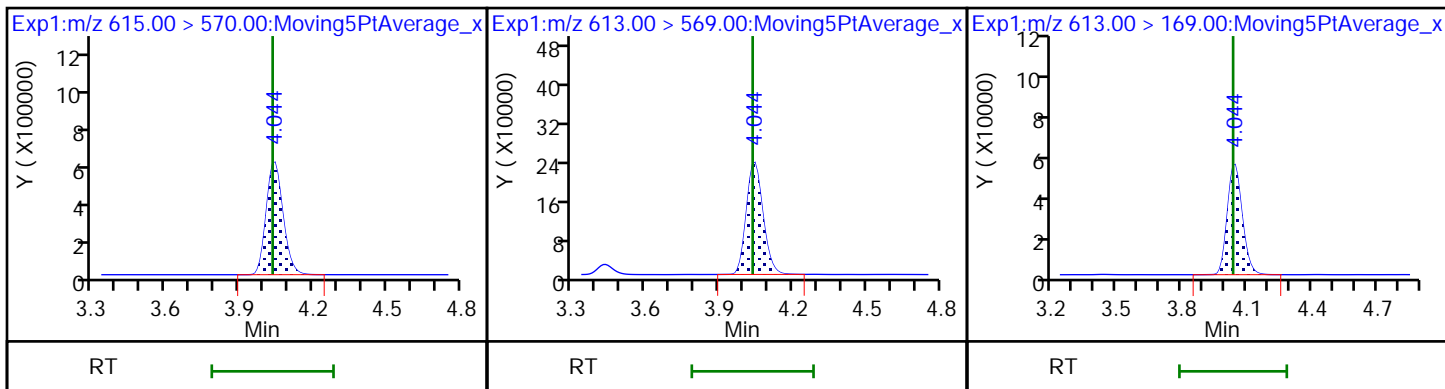
33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

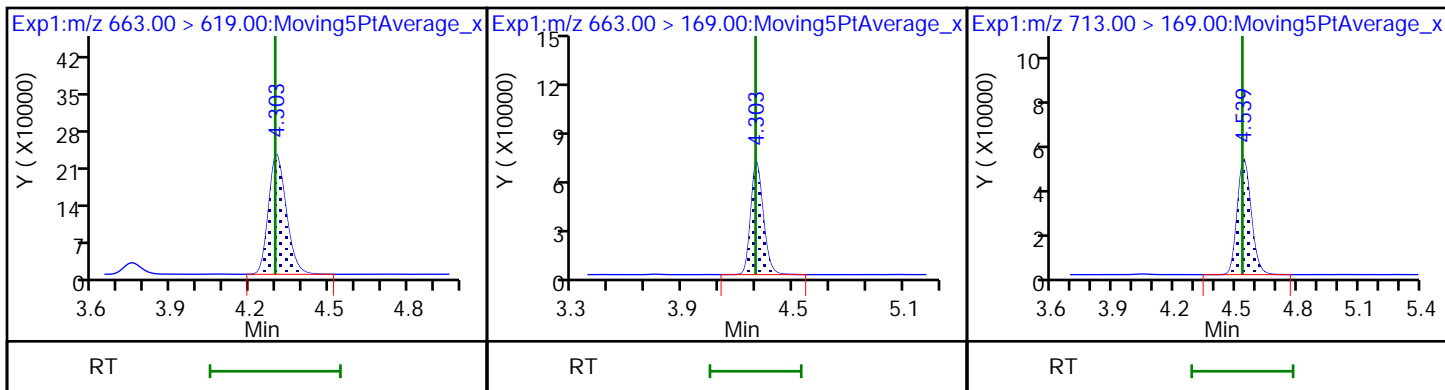
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

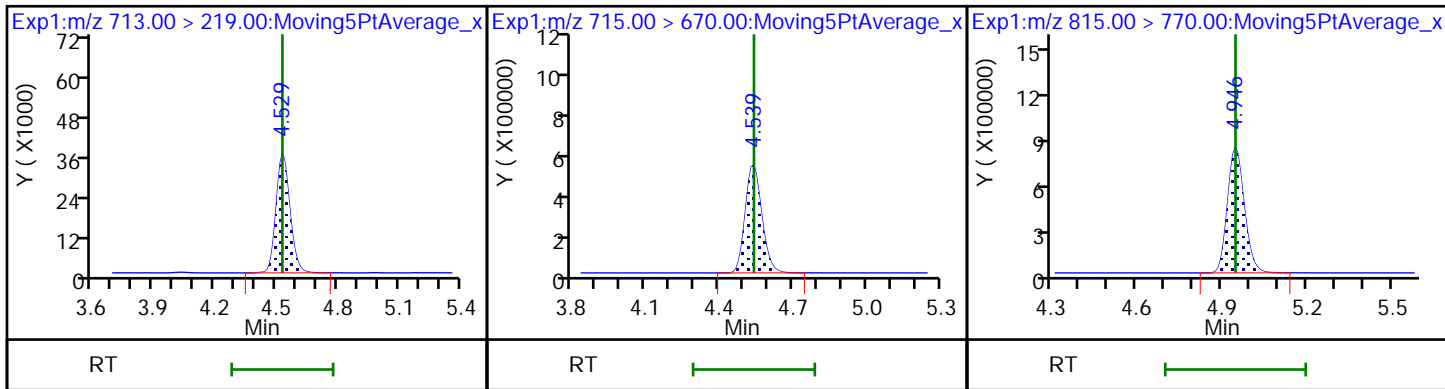
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



TestAmerica Sacramento

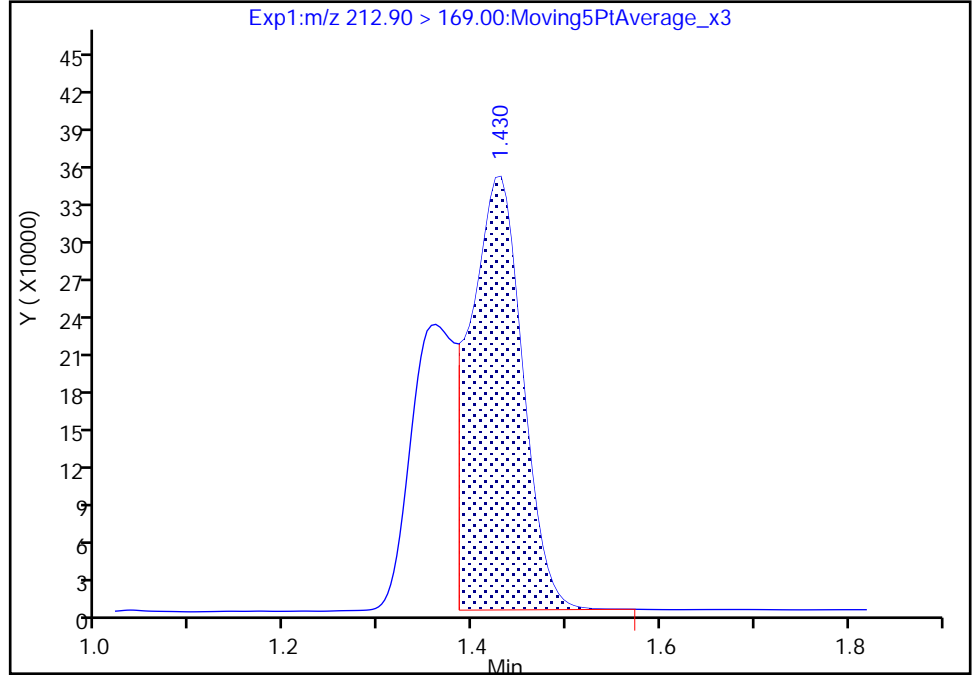
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_062.d
Injection Date: 18-Jul-2018 22:57:24 Instrument ID: A8_N
Lims ID: LCS 320-233164/2-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 46 Worklist Smp#: 3
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

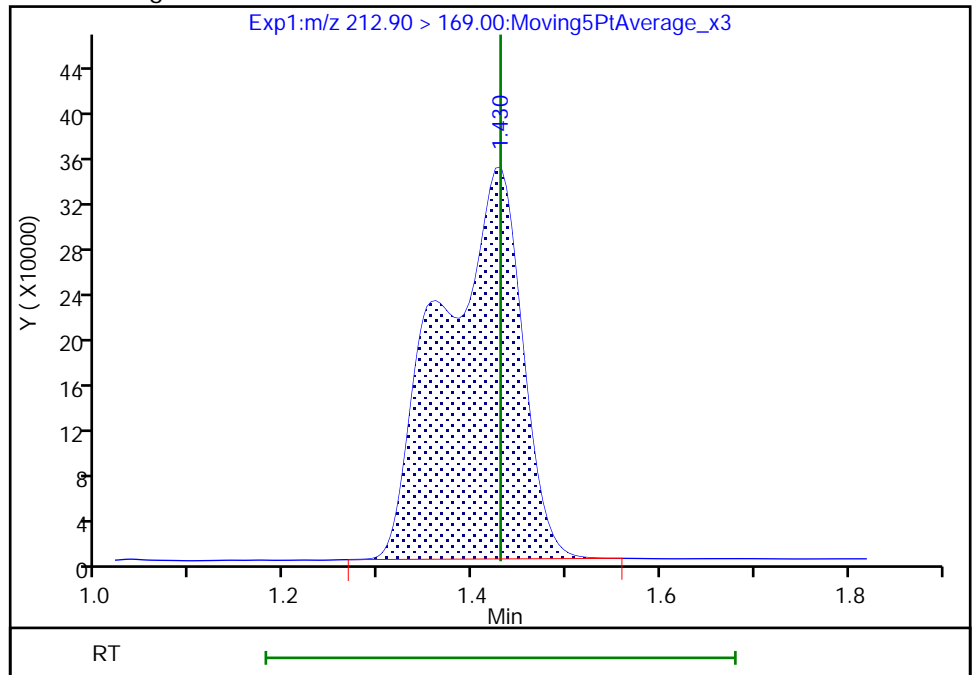
RT: 1.43
Area: 1309272
Amount: 0.569776
Amount Units: ng/ml

Processing Integration Results



RT: 1.43
Area: 2056112
Amount: 0.894789
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 14:17:45
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration
Page 829 of 854

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-233164/3-A
 Matrix: Water Lab File ID: 2018.07.18LLB_063.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 250 (mL) Date Analyzed: 07/18/2018 23:05
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	36.9	M	2.0	1.5	0.59
2706-90-3	Perfluoropentanoic acid (PFPeA)	37.8		2.0	1.0	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	38.6		2.0	1.0	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	35.5		2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	36.3		2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	37.2		2.0	1.5	0.52
335-76-2	Perfluorodecanoic acid (PFDA)	38.5		2.0	1.0	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	33.1		2.0	1.5	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	37.8		2.0	1.5	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	39.0		4.0	3.0	0.76
376-06-7	Perfluorotetradecanoic acid (PFTeA)	37.1		4.0	3.0	0.83
375-73-5	Perfluorobutanesulfonic acid (PFBS)	34.0		2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	31.1		2.0	1.0	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	38.5		2.0	1.0	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	35.7		4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	34.9		2.0	1.5	0.56
754-91-6	Perfluorooctane Sulfonamide (FOSA)	40.2		4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCSD 320-233164/3-A
 Matrix: Water Lab File ID: 2018.07.18LLB_063.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 250 (mL) Date Analyzed: 07/18/2018 23:05
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	79		50-150
STL00992	13C4 PFBA	89		50-150
STL01893	13C5 PFPeA	82		50-150
STL00993	13C2 PFHxA	91		50-150
STL01892	13C4-PFHpA	96		50-150
STL00990	13C4 PFOA	91		50-150
STL00995	13C5 PFNA	91		50-150
STL00996	13C2 PFDA	94		50-150
STL00997	13C2 PFUnA	93		50-150
STL00998	13C2 PFDoA	85		50-150
STL00994	18O2 PFHxS	96		50-150
STL02116	13C2-PFTeDA	78		50-150
STL00991	13C4 PFOS	86		50-150
STL02337	13C3-PFBS	83		50-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_063.d

Lims ID: LCSD 320-233164/3-A

Client ID:

Sample Type: LCSD

Inject. Date: 18-Jul-2018 23:05:13

ALS Bottle#: 47

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

Sample Info: lcsd 320-233164/3-a

Misc. Info.: Plate: 1 Rack: 5

Operator ID: SACINSTLCMS01

Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\A8_N.m

Limit Group: LC PFC_QSM5-1 ICAL

Last Update: 19-Jul-2018 14:18:34

Calib Date: 11-Jul-2018 15:38:42

Integrator: Picker

Quant Method: Isotopic Dilution

Quant By: Initial Calibration

Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d

Column 1 :

Det: EXP1

Process Host: XAWRK007

First Level Reviewer: mongkols

Date: 19-Jul-2018 14:18:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid	212.90	1.424	1.430	-0.006	1.000	2121012	0.9225	92.3	648	M
D 1 13C4 PFBA	217.00	1.424	1.436	-0.012	0.524	5831910	2.22	88.9	39956	
4 Perfluoropentanoic acid	262.90	1.738	1.748	-0.010	1.000	1715620	0.9448	94.5	773	
D 3 13C5-PFPeA	267.90	1.738	1.748	-0.010	0.639	3742108	2.05	82.0	44960	
5 Perfluorobutanesulfonic acid	298.90	1.783	1.793	-0.010	1.000	2479336	0.8496	96.1	22848	
	298.90	1.783	1.793	-0.010	1.000	1006011	2.46(1.25-3.74)		13838	
D 47 13C3-PFBS	301.90	1.783	1.793	-0.010	0.655	88692	1.93	83.2	645	
61 1H,1H,2H,2H-perfluorohexanesulfoni	327.00	2.015	2.015	0.0	1.130	492647	0.99	106	30737	
6 Perfluorohexanoic acid	313.00	2.049	2.049	0.0	1.000	1771581	0.9652	96.5	4875	
	313.00	2.049	2.049	0.0	1.000	164494	10.77(5.03-15.10)		4351	
D 7 13C2 PFHxA	315.00	2.049	2.061	-0.012	0.753	4457772	2.26	90.6	76050	
70 Perfluoropentanesulfonic acid	349.00	2.071	2.072	-0.001	1.162	2500801	0.9395	100	58659	
	349.00	2.071	2.072	-0.001	1.162	961026	2.60(1.36-4.07)		25731	
67 Perfluoro(2-propoxypropanoic) acid	329.10	2.150	2.151	-0.001	1.000	332242	NC		2982	
D 64 13C3 HFPO-DA	332.10	2.150	2.152	-0.002	0.790	296313	NC		8019	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.372	2.373	-0.001	1.000	1785198	0.8874		88.7	4052	
363.00 > 169.00	2.372	2.373	-0.001	1.000	747629		2.39(1.13-3.40)		5912	
D 9 13C4-PFHpA										
367.00 > 322.00	2.372	2.385	-0.013	0.872	4348326	2.40		95.9	46461	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.385	2.385	0.0	1.000	2193294	0.7780		85.5	16781	
399.00 > 99.00	2.385	2.385	0.0	1.000	756335		2.90(1.50-4.49)		7526	
D 11 18O2 PFHxS										
403.00 > 84.00	2.385	2.396	-0.011	0.877	5808502	2.26		95.6	97325	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.698	2.691	0.007	1.000	529081	0.9314		98.2	10268	
D 12 M2-6:2FTS										
429.00 > 81.00	2.698	2.698	0.0	0.992	862405	2.22		93.4	18051	
* 62 13C2-PFOA										
415.00 > 370.00	2.720	2.714	0.006		4838897	2.50			42506	
D 14 13C4 PFOA										
417.00 > 372.00	2.720	2.720	0.0	1.000	4230253	2.29		91.4	48890	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.720	2.721	-0.001	1.000	1891850	0.9078		90.7	1058	
413.00 > 169.00	2.720	2.721	-0.001	1.000	994612		1.90(0.84-2.52)		5356	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.728	2.721	0.007	0.887	2061623	0.9623		101	23019	
449.00 > 99.00	2.728	2.721	0.007	0.887	519227		3.97(1.94-5.82)		18928	
D 18 13C4 PFOS										
503.00 > 80.00	3.074	3.076	-0.002	1.130	3886086	2.06		86.2	35307	
D 19 13C5 PFNA										
468.00 > 423.00	3.074	3.076	-0.002	1.130	3775575	2.28		91.3	48952	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.074	3.076	-0.002	1.000	1645209	0.8929		96.2	27571	
499.00 > 99.00	3.074	3.076	-0.002	1.000	387217		4.25(2.31-6.93)		8962	
20 Perfluorononanoic acid										
463.00 > 419.00	3.074	3.076	-0.002	1.000	1556644	0.9291		92.9	2998	
463.00 > 169.00	3.074	3.076	-0.002	1.000	378682		4.11(1.90-5.69)		7006	
69 9-Chlorohexadecafluoro-3-oxanonane										
531.00 > 351.00	3.281	3.277	0.005	1.067	2705075	NC			26956	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.408	3.403	0.005	1.000	2140039	1.01		101	19395	
68 Perfluorononanesulfonic acid										
549.00 > 80.00	3.408	3.412	-0.004	1.109	1179021	0.9354		97.4	24232	
549.00 > 99.00	3.417	3.412	0.005	1.112	423822		2.78(1.33-3.97)		7948	
25 1H,1H,2H,2H-perfluorodecanesulfoni										
527.00 > 507.00	3.417	3.412	0.005	1.000	626779	1.01		105	12567	
D 21 13C8 FOSA										
506.00 > 78.00	3.408	3.412	-0.004	1.253	5396958	1.98		79.4	58099	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.427	3.421	0.006	1.000	1383756	0.9615		96.1	8648	
513.00 > 169.00	3.427	3.421	0.006	1.000	237824		5.82(2.36-7.09)		7713	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 26 M2-8:2FTS	529.00 > 81.00	3.417	3.421	-0.004	1.256	1153645	2.03	84.7	19500	
D 23 13C2 PFDA	515.00 > 470.00	3.427	3.430	-0.003	1.260	3428794	2.36	94.4	40818	
28 N-methyl perfluorooctane sulfonami	570.00 > 419.00	3.576	3.579	-0.003	1.000	496880	0.9579	95.8	3922	
D 27 d3-NMeFOSAA	573.00 > 419.00	3.576	3.579	-0.003	1.314	1315366	2.21	88.4	23714	
29 Perfluorodecane Sulfonic acid	599.00 > 80.00	3.730	3.733	-0.003	1.213	951536	0.8716	90.4	17950	
	599.00 > 99.00	3.730	3.733	-0.003	1.213	327116		2.91(1.39-4.16)	11380	
D 32 d5-NEtFOSAA	589.00 > 419.00	3.741	3.744	-0.003	1.375	1442197	2.37	94.6	3078	
31 Perfluoroundecanoic acid	563.00 > 519.00	3.741	3.744	-0.003	1.000	762398	0.8267	82.7	3892	
	563.00 > 169.00	3.741	3.744	-0.003	1.000	222367		3.43(2.12-6.36)	5622	
33 N-ethyl perfluorooctane sulfonamid	584.00 > 419.00	3.741	3.744	-0.003	1.000	472354	0.9262	92.6	15662	
D 30 13C2 PFUnA	565.00 > 520.00	3.741	3.754	-0.013	1.375	2813655	2.32	92.8	40945	
66 11-Chloroeicosafuoro-3-oxaundecan	631.00 > 451.00	3.899	3.902	-0.003	1.268	3923817	NC		64482	
D 36 13C2 PFDaA	615.00 > 570.00	4.030	4.034	-0.004	1.481	2679170	2.13	85.2	23364	
37 Perfluorododecanoic acid	613.00 > 569.00	4.041	4.035	0.005	1.003	1106435	0.9456	94.6	650	
	613.00 > 169.00	4.041	4.035	0.005	1.003	264057		4.19(2.13-6.40)	6127	
41 Perfluorotridecanoic acid	663.00 > 619.00	4.291	4.295	-0.004	1.065	1115970	0.9753	97.5	514	
	663.00 > 169.00	4.299	4.295	0.004	1.067	331711		3.36(1.25-3.76)	5149	
42 Perfluorotetradecanoic acid	713.00 > 169.00	4.533	4.529	0.004	1.000	245165	0.9276	92.8	3729	
	713.00 > 219.00	4.523	4.529	-0.006	0.998	176429		1.39(0.71-2.13)	3383	
D 43 13C2-PFTeDA	715.00 > 670.00	4.533	4.540	-0.007	1.666	2539503	1.95	77.9	15064	
45 Perfluorohexadecanoic acid	813.00 > 769.00	4.941	4.947	-0.006	1.000	1320216	NC		311	
	813.00 > 169.00	4.941	4.947	-0.006	1.000	215969		6.11(2.86-8.58)	2085	
D 44 13C2-PFHxDA	815.00 > 770.00	4.941	4.947	-0.006	1.816	3627099	1.75	69.8	10816	
46 Perfluorooctadecanoic acid	913.00 > 869.00	5.293	5.297	-0.004	1.071	1233539	NC		266	
	913.00 > 169.00	5.293	5.297	-0.004	1.071	152283		8.10(3.83-11.48)	1785	

QC Flag Legend

Processing Flags

NC - Not Calibrated

Review Flags

M - Manually Integrated

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_063.d

Injection Date: 18-Jul-2018 23:05:13

Instrument ID: A8_N

Lims ID: LCSD 320-233164/3-A

Client ID:

Operator ID: SACINSTLCMS01

ALS Bottle#: 47

Worklist Smp#: 4

Injection Vol: 2.0 ul

Dil. Factor: 1.0000

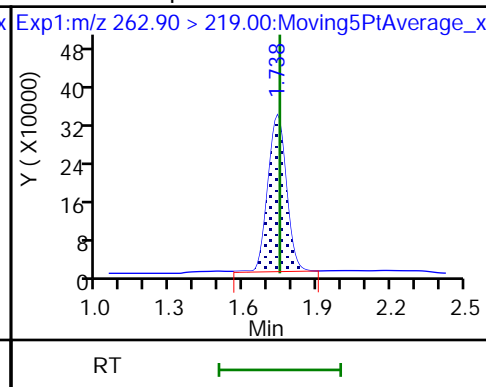
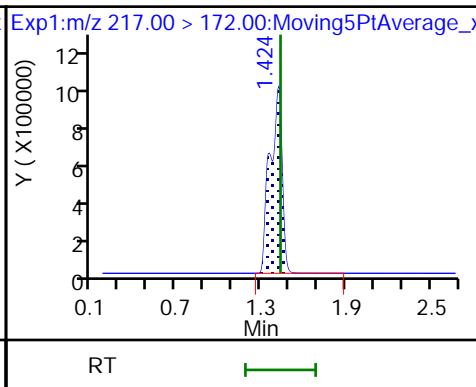
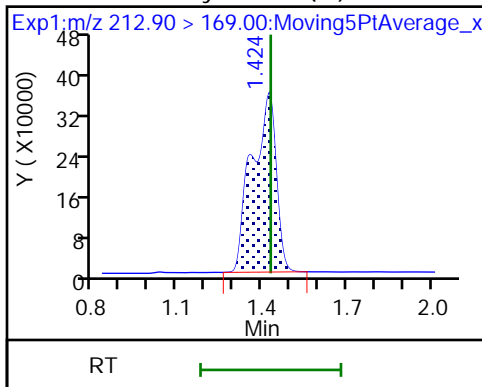
Method: A8_N

Limit Group: LC PFC_QSM5-1 ICAL

2 Perfluorobutyric acid (M)

D 1 13C4 PFBA

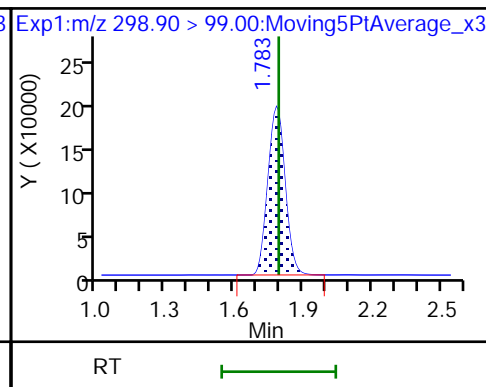
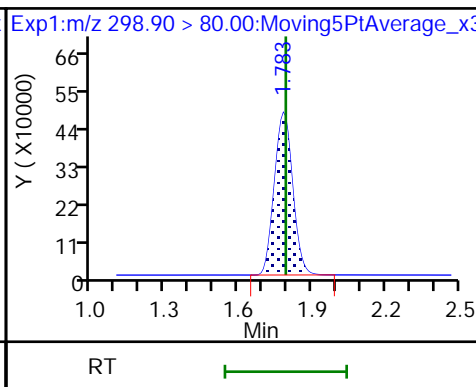
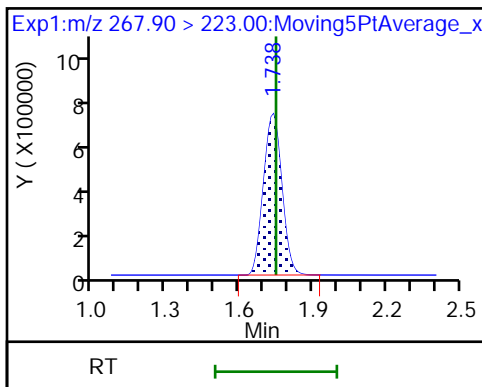
4 Perfluoropentanoic acid



D 3 13C5-PFPeA

5 Perfluorobutanesulfonic acid

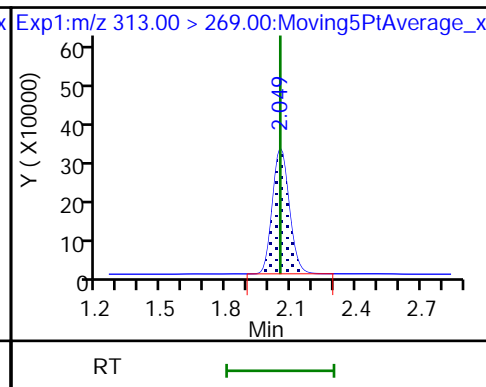
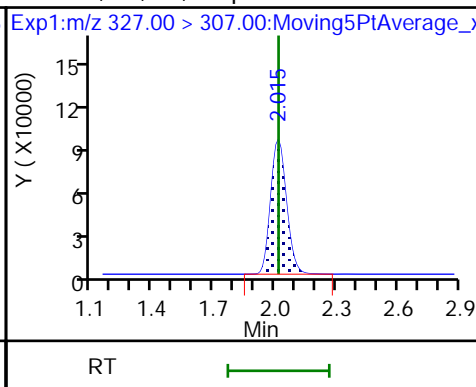
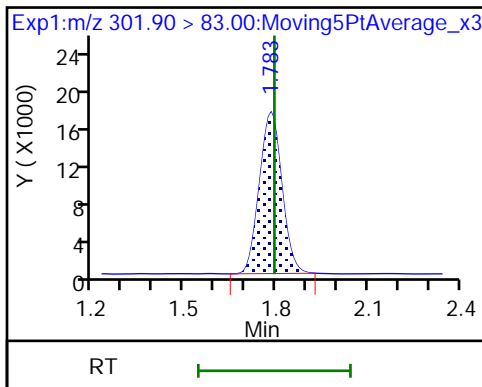
5 Perfluorobutanesulfonic acid



D 47 13C3-PFBS

61 1H,1H,2H,2H-perfluorohexanesulfoni

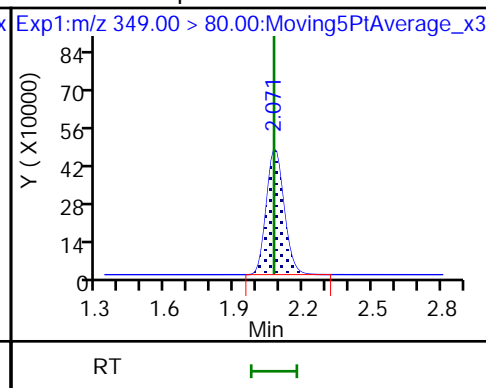
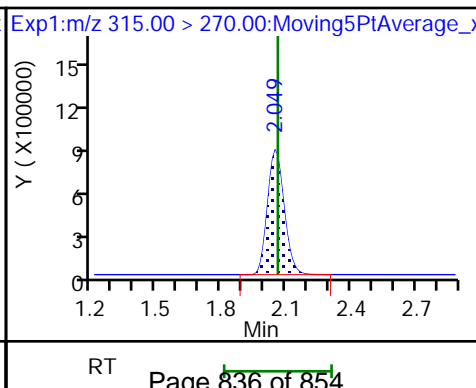
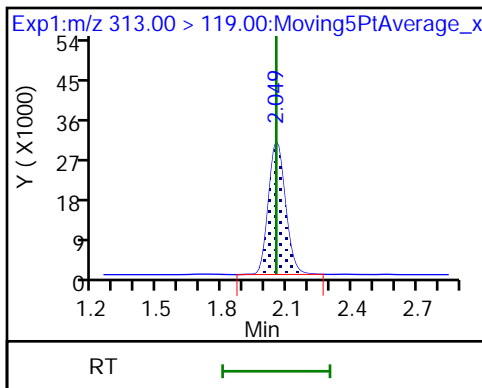
6 Perfluorohexanoic acid

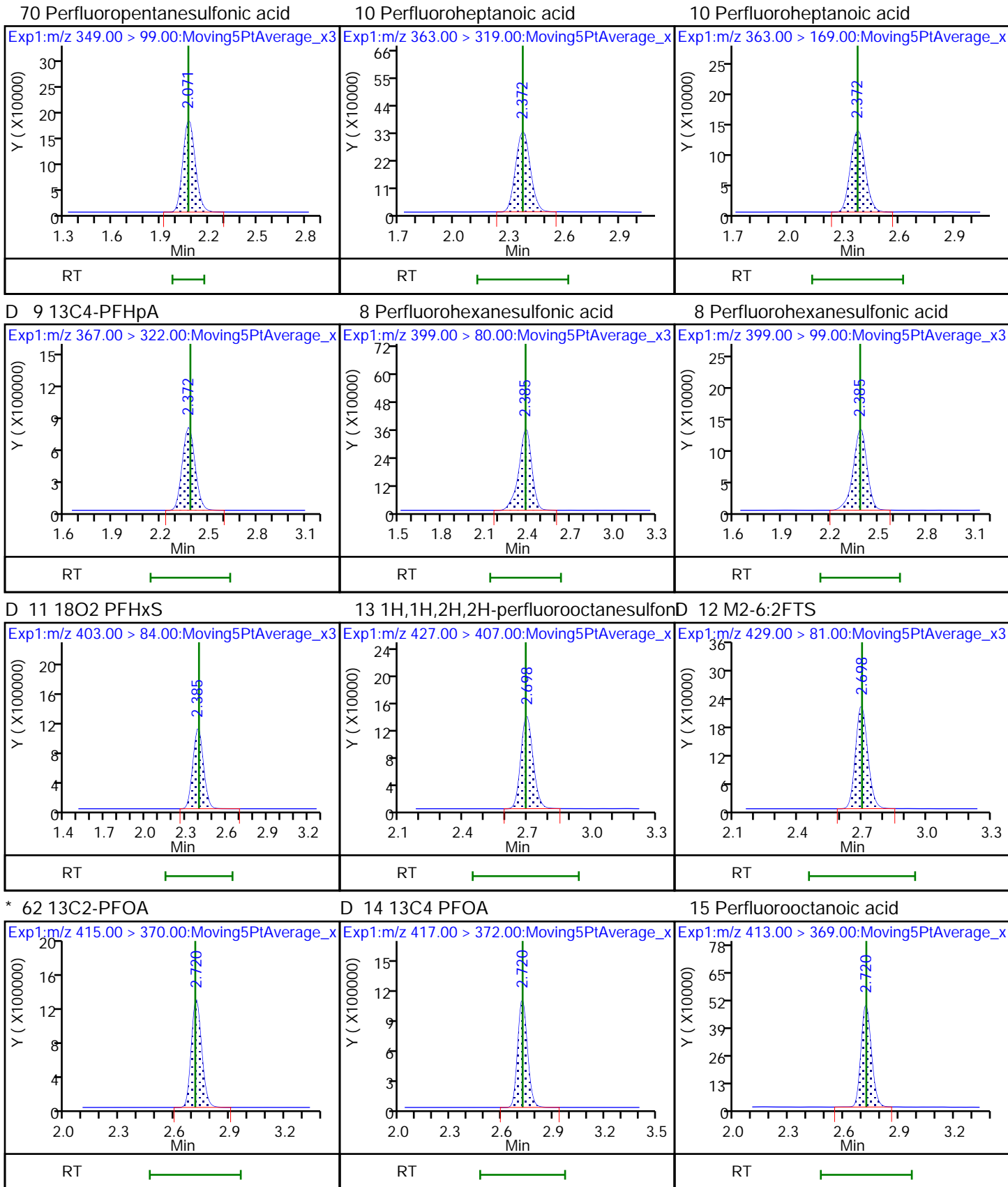


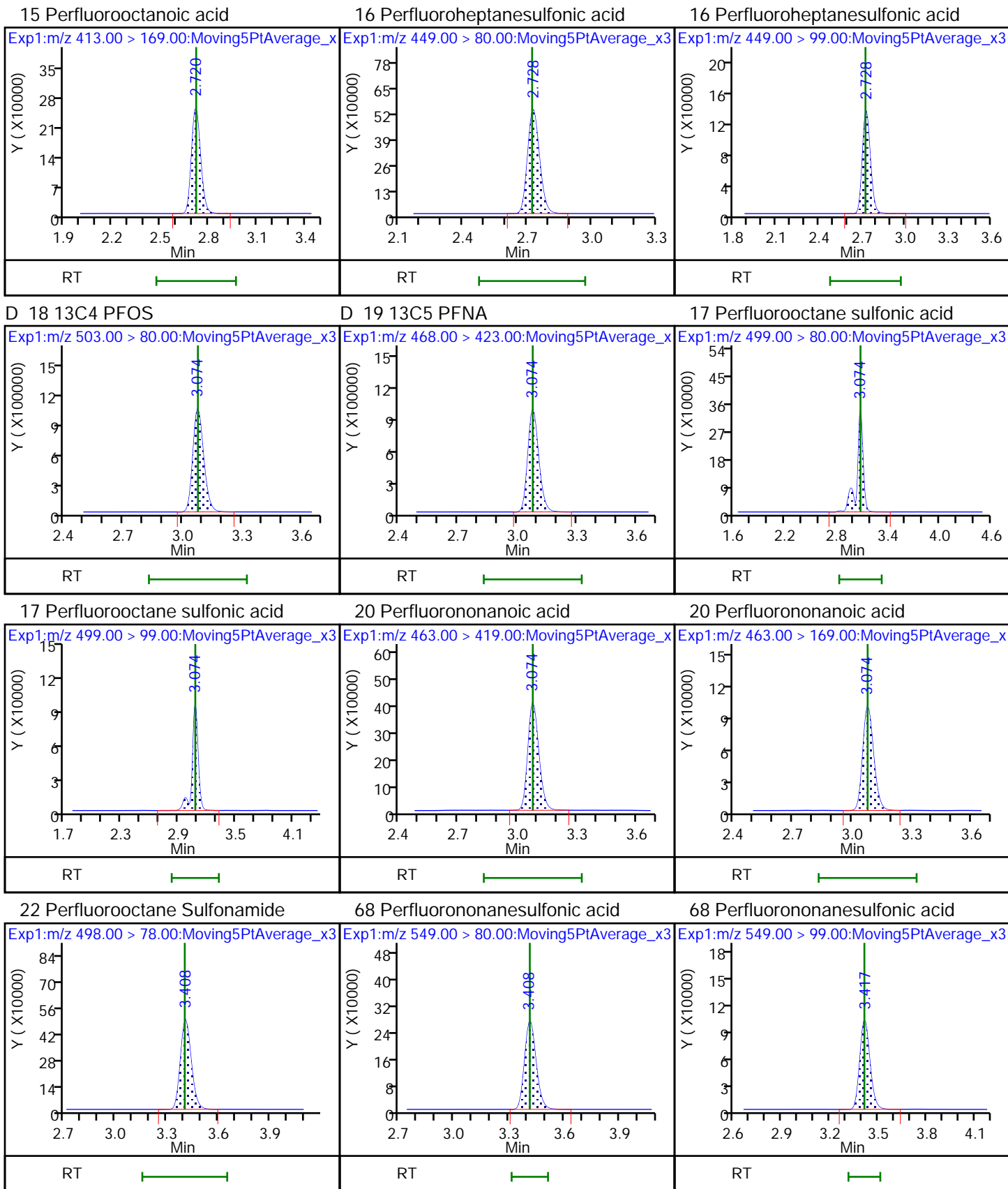
6 Perfluorohexanoic acid

D 7 13C2 PFHxA

70 Perfluoropentanesulfonic acid

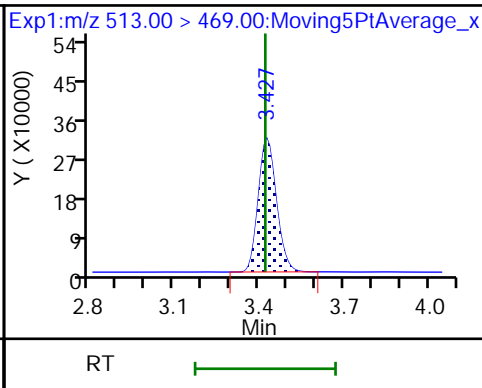
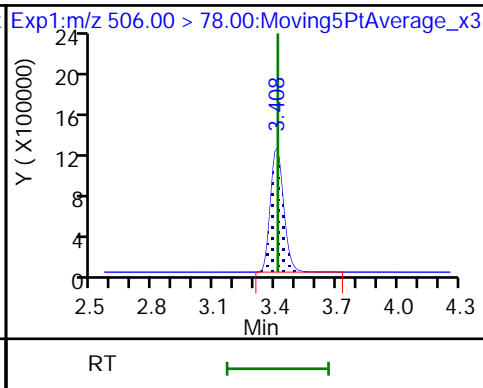
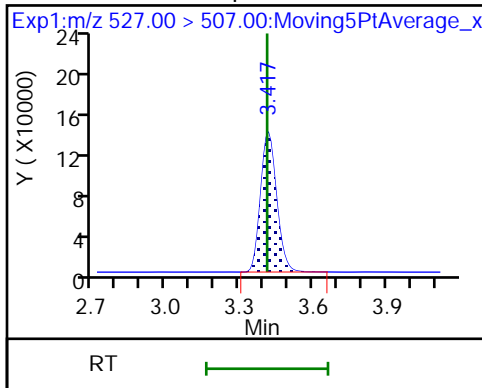






25 1H,1H,2H,2H-perfluorodecanesulfonamide 21 13C8 FOSA

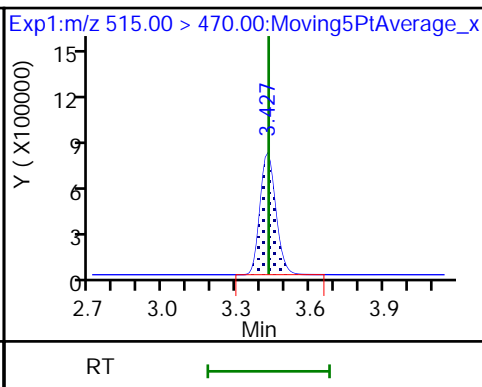
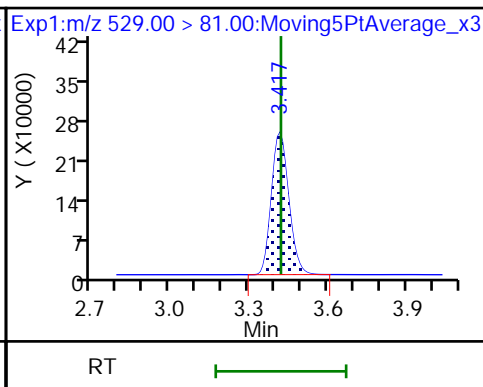
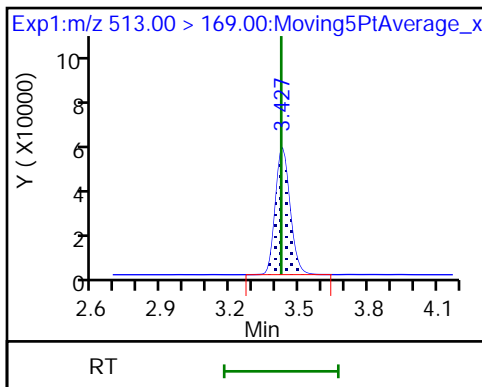
24 Perfluorodecanoic acid



24 Perfluorodecanoic acid

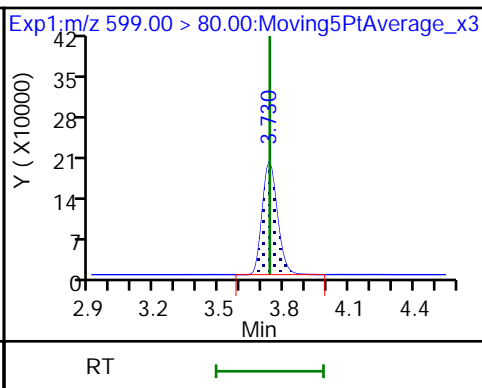
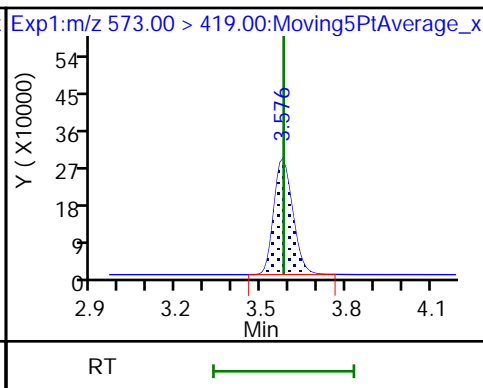
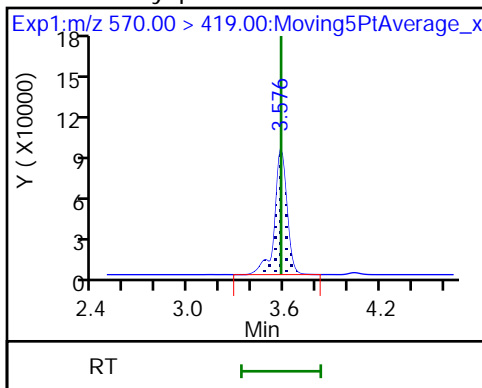
D 26 M2-8:2FTS

D 23 13C2 PFDA



28 N-methyl perfluorooctane sulfonamide 27 d3-NMeFOSAA

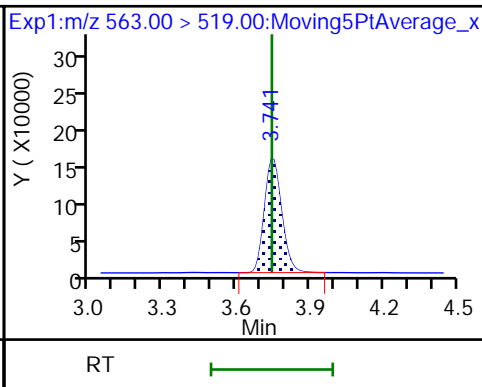
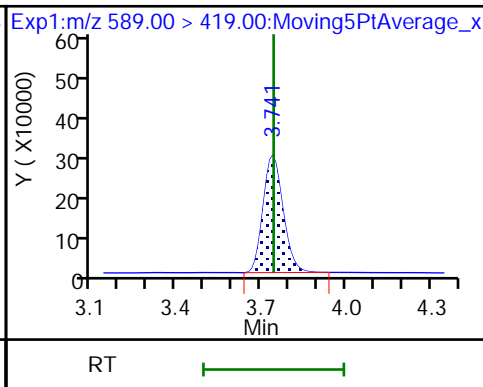
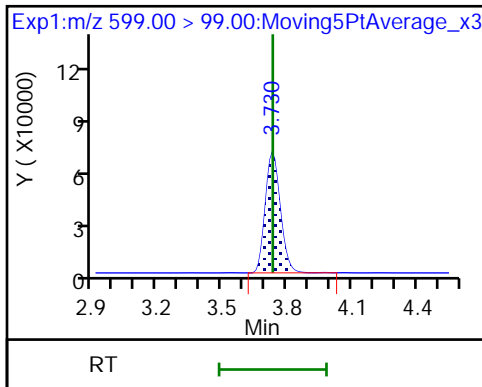
29 Perfluorodecane Sulfonic acid



29 Perfluorodecane Sulfonic acid

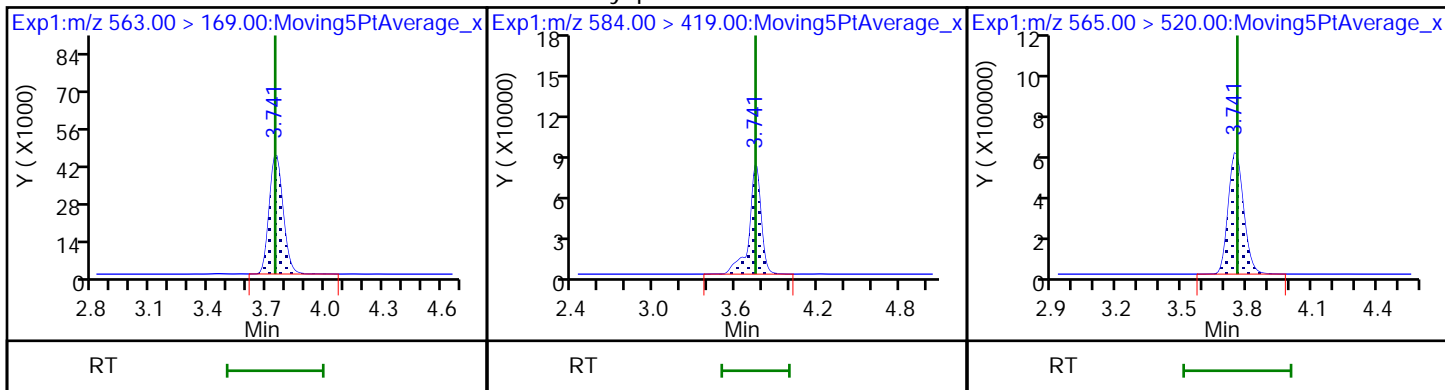
D 32 d5-NEtFOSAA

31 Perfluoroundecanoic acid



31 Perfluoroundecanoic acid

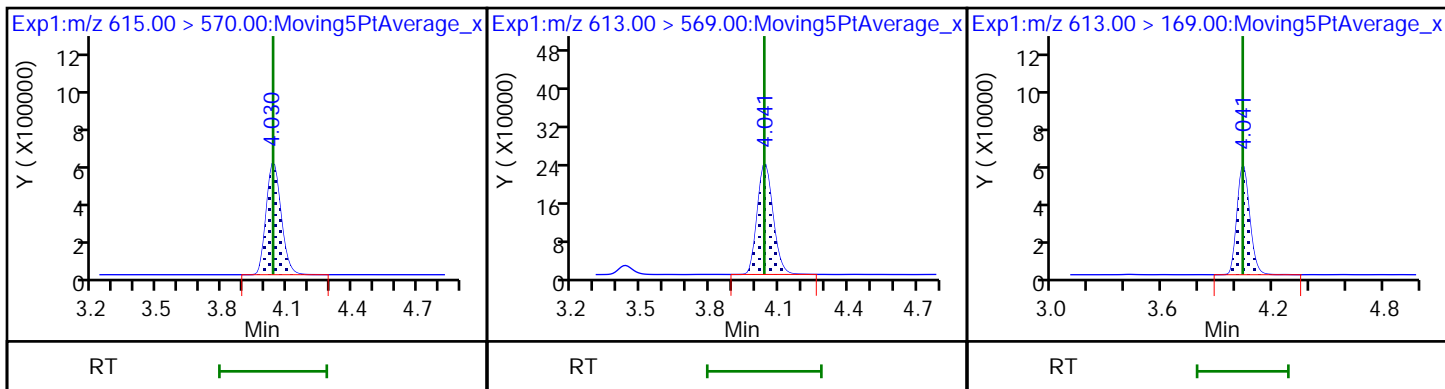
33 N-ethyl perfluorooctane sulfonamid D 30 13C2 PFUnA



D 36 13C2 PFDaA

37 Perfluorododecanoic acid

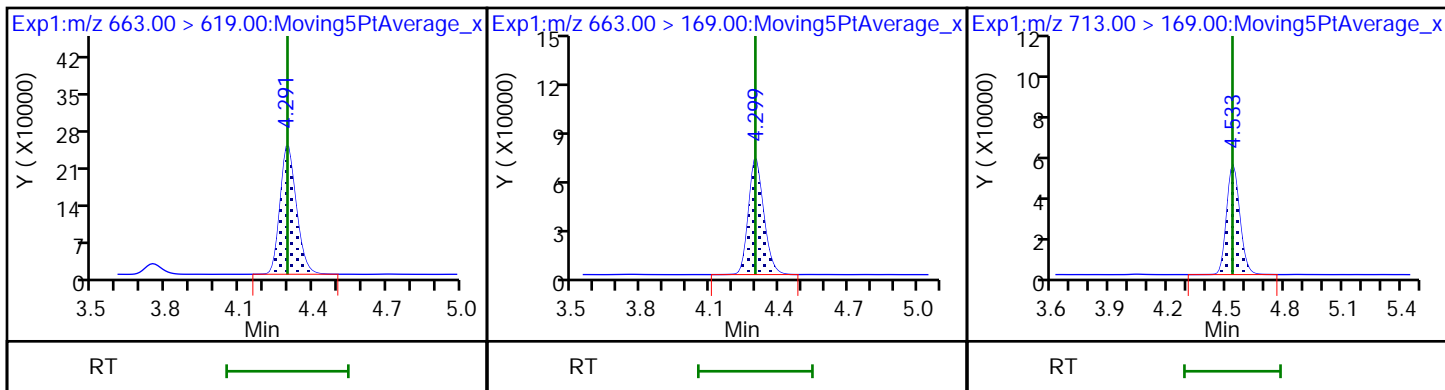
37 Perfluorododecanoic acid



41 Perfluorotridecanoic acid

41 Perfluorotridecanoic acid

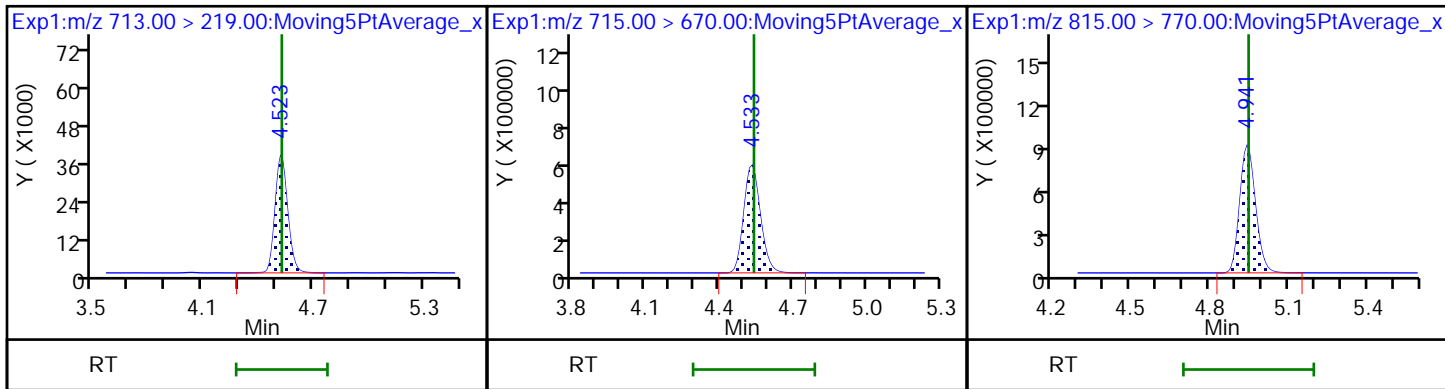
42 Perfluorotetradecanoic acid



42 Perfluorotetradecanoic acid

D 43 13C2-PFTeDA

D 44 13C2-PFHxDA



TestAmerica Sacramento

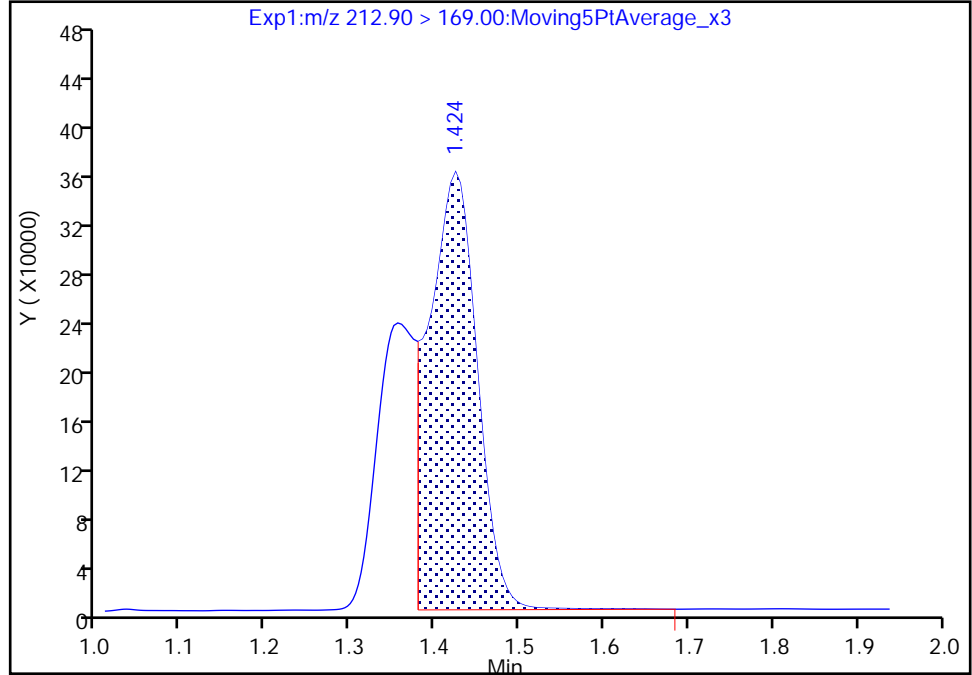
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_063.d
Injection Date: 18-Jul-2018 23:05:13 Instrument ID: A8_N
Lims ID: LCSD 320-233164/3-A
Client ID:
Operator ID: SACINSTLCMS01 ALS Bottle#: 47 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_QSM5-1 ICAL
Column: Detector EXP1

2 Perfluorobutyric acid, CAS: 375-22-4

Signal: 1

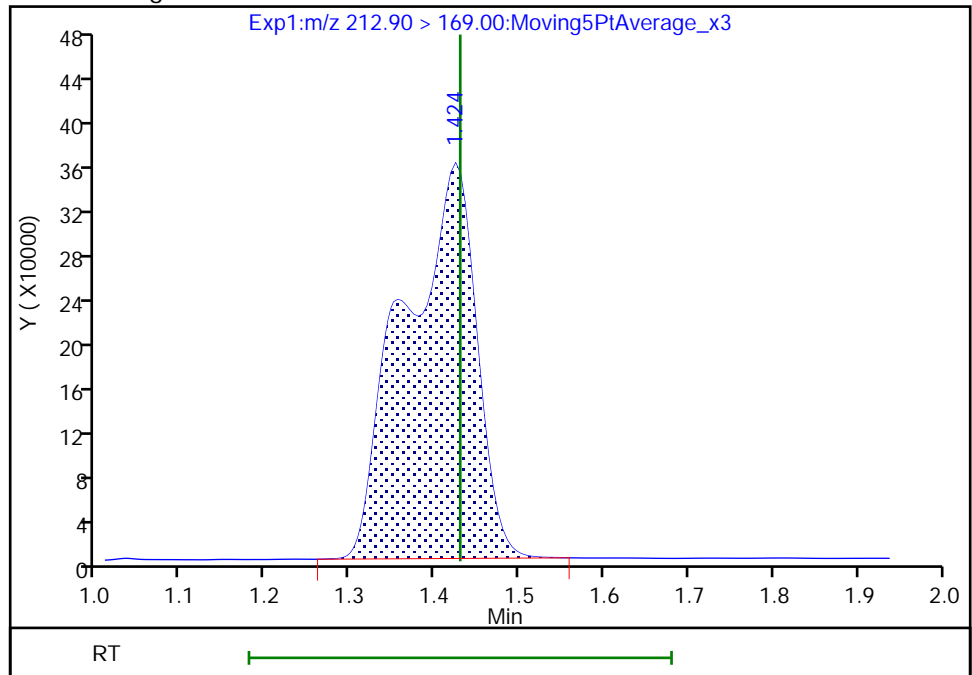
RT: 1.42
Area: 1396471
Amount: 0.607394
Amount Units: ng/ml

Processing Integration Results



RT: 1.42
Area: 2121012
Amount: 0.922533
Amount Units: ng/ml

Manual Integration Results



Reviewer: mongkols, 19-Jul-2018 14:18:17
Audit Action: Manually Integrated

Audit Reason: Incomplete Integration

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/11/2018 14:48

Analysis Batch Number: 233477 End Date: 07/11/2018 15:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-233477/2		07/11/2018 14:48	1	2018.07.11LLICA LA 002.d	GeminiC18 3x100 3(mm)
IC 320-233477/3		07/11/2018 14:59	1	2018.07.11LLICA LA 003.d	GeminiC18 3x100 3(mm)
IC 320-233477/4		07/11/2018 15:07	1	2018.07.11LLICA LA 004.d	GeminiC18 3x100 3(mm)
IC 320-233477/5 ICIS		07/11/2018 15:15	1	2018.07.11LLICA LA 005.d	GeminiC18 3x100 3(mm)
IC 320-233477/6		07/11/2018 15:23	1	2018.07.11LLICA LA 006.d	GeminiC18 3x100 3(mm)
IC 320-233477/7		07/11/2018 15:30	1	2018.07.11LLICA LA 007.d	GeminiC18 3x100 3(mm)
IC 320-233477/8		07/11/2018 15:38	1	2018.07.11LLICA LA 008.d	GeminiC18 3x100 3(mm)
ICB 320-233477/9		07/11/2018 15:46	1	2018.07.11LLICA LA 009.d	GeminiC18 3x100 3(mm)
ICV 320-233477/10		07/11/2018 15:54	1	2018.07.11LLICA LA 010.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/18/2018 16:41

Analysis Batch Number: 234756 End Date: 07/18/2018 18:15

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-234756/1		07/18/2018 16:41	1	2018.07.18LLAA_003.d	GeminiC18 3x100 3(mm)
CCVL 320-234756/2		07/18/2018 16:49	1	2018.07.18LLAA_004.d	GeminiC18 3x100 3(mm)
CCV 320-234756/3 CCVIS		07/18/2018 16:57	1	2018.07.18LLAA_056.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:05	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:13	100		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:20	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:28	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:36	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:44	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:52	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 18:00	20		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 18:07	10		GeminiC18 3x100 3(mm)
CCV 320-234756/13		07/18/2018 18:15	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/18/2018 22:41

Analysis Batch Number: 234762 End Date: 07/18/2018 23:44

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-234762/1		07/18/2018 22:41	1	2018.07.18LLB_0 60.d	GeminiC18 3x100 3(mm)
MB 320-233164/1-A		07/18/2018 22:49	1	2018.07.18LLB_0 61.d	GeminiC18 3x100 3(mm)
LCS 320-233164/2-A		07/18/2018 22:57	1	2018.07.18LLB_0 62.d	GeminiC18 3x100 3(mm)
LCSD 320-233164/3-A		07/18/2018 23:05	1	2018.07.18LLB_0 63.d	GeminiC18 3x100 3(mm)
320-40917-1		07/18/2018 23:13	1	2018.07.18LLB_0 64.d	GeminiC18 3x100 3(mm)
320-40917-2		07/18/2018 23:20	1	2018.07.18LLB_0 65.d	GeminiC18 3x100 3(mm)
320-40917-3		07/18/2018 23:28	1	2018.07.18LLB_0 66.d	GeminiC18 3x100 3(mm)
320-40917-4		07/18/2018 23:36	1	2018.07.18LLB_0 67.d	GeminiC18 3x100 3(mm)
CCV 320-234762/9		07/18/2018 23:44	1	2018.07.18LLB_0 68.d	GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/19/2018 12:09

Analysis Batch Number: 234930 End Date: 07/19/2018 13:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-234930/2		07/19/2018 12:09	1	2018.07.19LLICA L 002.d	GeminiC18 3x100 3(mm)
IC 320-234930/3		07/19/2018 12:17	1	2018.07.19LLICA L 003.d	GeminiC18 3x100 3(mm)
IC 320-234930/4		07/19/2018 12:25	1	2018.07.19LLICA L 004.d	GeminiC18 3x100 3(mm)
IC 320-234930/5 ICIS		07/19/2018 12:33	1	2018.07.19LLICA L 005.d	GeminiC18 3x100 3(mm)
IC 320-234930/6		07/19/2018 12:41	1	2018.07.19LLICA L 006.d	GeminiC18 3x100 3(mm)
IC 320-234930/7		07/19/2018 12:48	1	2018.07.19LLICA L 007.d	GeminiC18 3x100 3(mm)
IC 320-234930/8		07/19/2018 12:56	1	2018.07.19LLICA L 008.d	GeminiC18 3x100 3(mm)
ICB 320-234930/9		07/19/2018 13:04	1	2018.07.19LLICA L 009.d	GeminiC18 3x100 3(mm)
ICV 320-234930/10		07/19/2018 13:12	1	2018.07.19LLICA L 010.d	GeminiC18 3x100 3(mm)
CCB 320-234930/11		07/19/2018 13:20	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/19/2018 19:12

Analysis Batch Number: 235044 End Date: 07/20/2018 00:56

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-235044/1		07/19/2018 19:12	1	2018.07.19LLC_003.d	GeminiC18 3x100 3(mm)
CCVL 320-235044/2		07/19/2018 19:20	1	2018.07.19LLC_004.d	GeminiC18 3x100 3(mm)
CCV 320-235044/3 CCVIS		07/19/2018 19:28	1	2018.07.19LLC_021.d	GeminiC18 3x100 3(mm)
CCV 320-235044/14		07/19/2018 20:54	1		GeminiC18 3x100 3(mm)
CCV 320-235044/25		07/19/2018 22:20	1		GeminiC18 3x100 3(mm)
CCV 320-235044/36		07/19/2018 23:46	1		GeminiC18 3x100 3(mm)
CCV 320-235044/45		07/20/2018 00:56	1		GeminiC18 3x100 3(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/20/2018 01:04

Analysis Batch Number: 235047 End Date: 07/20/2018 01:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-235047/1		07/20/2018 01:04	1	2018.07.19LLC_0 64.d	GeminiC18 3x100 3(mm)
320-40917-1 DL		07/20/2018 01:12	10	2018.07.19LLC_0 65.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/20/2018 01:20	1		GeminiC18 3x100 3(mm)
CCV 320-235047/4		07/20/2018 01:28	1	2018.07.19LLC_0 67.d	GeminiC18 3x100 3(mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Batch Number: 233164 Batch Start Date: 07/10/18 08:14 Batch Analyst: Kouchari, Shamiran

Batch Method: 3535 Batch End Date: 07/10/18 15:55

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00083	LCPFC-IS 00058
MB 320-233164/1		3535, EPA 537 (Mod)				250 mL	10.00 mL	500 uL	500 uL
LCS 320-233164/2		3535, EPA 537 (Mod)				250 mL	10.00 mL	500 uL	500 uL
LCSD 320-233164/3		3535, EPA 537 (Mod)				250 mL	10.00 mL	500 uL	500 uL
320-40917-A-1	TP-PFC-031-TPI	3535, EPA 537 (Mod)	T	326.63 g	28.55 g	298.1 mL	10.00 mL	500 uL	500 uL
320-40917-A-2	TP-PFC-031-MID CARBON	3535, EPA 537 (Mod)	T	323.17 g	27.44 g	295.7 mL	10.00 mL	500 uL	500 uL
320-40917-A-3	TP-PFC-031-TPE	3535, EPA 537 (Mod)	T	315.14 g	28.44 g	286.7 mL	10.00 mL	500 uL	500 uL
320-40917-A-4	TP-PFC-031-TPE-D	3535, EPA 537 (Mod)	T	335.98 g	28.67 g	307.3 mL	10.00 mL	500 uL	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00155					
MB 320-233164/1		3535, EPA 537 (Mod)							
LCS 320-233164/2		3535, EPA 537 (Mod)		500 uL					
LCSD 320-233164/3		3535, EPA 537 (Mod)		500 uL					
320-40917-A-1	TP-PFC-031-TPI	3535, EPA 537 (Mod)	T						
320-40917-A-2	TP-PFC-031-MID CARBON	3535, EPA 537 (Mod)	T						
320-40917-A-3	TP-PFC-031-TPE	3535, EPA 537 (Mod)	T						
320-40917-A-4	TP-PFC-031-TPE-D	3535, EPA 537 (Mod)	T						

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Batch Number: 233164 Batch Start Date: 07/10/18 08:14 Batch Analyst: Kouchari, Shamiran

Batch Method: 3535 Batch End Date: 07/10/18 15:55

Batch Notes	
Analyst ID - Aliquot Step	SKD
Balance ID	QA-078
Batch Comment	Client labels match TA labels, SKD 07/10/18 ENVI Carb Lot # 103370
Analyst ID - Final Volume Step	SKD
H2O ID	07/09/18
Hexane ID	1286128
Internal Standard ID#	1276588
Manifold ID	H
Methanol ID	1294742
Sodium Hydroxide ID	1296965
Pipette ID	I46360G, N32728F
Analyst ID - Reagent Drop	HJA
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	SKD
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	SKD
Solvent Lot #	1282836
Solvent Name	0.3% NH4OH in meOH
SOP Number	WS-LC-0025
SPE Cartridge Type	Oasis WAX 500mg
Solid Phase Extraction Disk ID	003938109a

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.

Method ID PFC - LDA

Analyst (Print Name) Alyssa Hanning

Reagent ID LC-80:20-00009

Date 7/19/18

Job #	Sample #	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
320-40917	1	10,000	30	300	10

Comments:

Shipping and Receiving Documents

West Sacramento, CA 95605
Phone: 916.373.5600 Fax:

Regulatory Program: DW NPDES RCRA Other:

Client Contact	Project Manager: JEFF ORIENT	Site Contact: DAN Griben	Date: 7/5/2018	COC No: 240689
Company Name: TETRA TECH	Tel/Fax: 412-921-8660	Lab Contact: DAVID AHTUKKA	Carrier: FEDEX	1 of 1 COCs
Address: 881 ANDERSON DR. FOSTER PLAZA	Analysis Turnaround Time			Sampler: DB
City/State/Zip: PITTSBURGH/PA/15210	<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS	 320-40917 Chain of Custody		For Lab Use Only:
Phone: 412-921-0650	TAT if different from Below _____			Walk-in Client:
Fax:	<input type="checkbox"/> 2 weeks			Lab Sampling:
Project Name: BROWNSWICK GWETS	<input type="checkbox"/> 1 week			Job / SDG No.:
Site: FORMER WAS BROWNSWICK	<input type="checkbox"/> 2 days			
PO# 112608005-WE21	<input type="checkbox"/> 1 day			

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	PFC (Full list)	Sample Specific Notes:
TP-PFC-031-TPI	7/5	0915	G	W	4	N	N	X	
TP-PFC-031-MID CARBON		0920	G	W	4	N	N	X	
TP-PFC-031-TPE		0925	G	W	4	N	N	X	
TP-PFC-031-TPE-D		0900	G	W	4	N	N	X	
DK									

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



Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: Yes No

Custody Seal No.: _____ Cooler Temp. (°C): Obs'd: **4.2** Corr'd: **4.2** Therm ID No.: **A11-5**

Relinquished by: 	Company: T+	Date/Time: 7/5 1500	Received by: 	Company: TA-SAC	Date/Time: 07/06/18 0915
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-40917-1

Login Number: 40917

List Source: TestAmerica Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","300","ng/L","D","9.2","DL","","TRG","","","34","LOQ","NO",-99","","298.1","10.00","25",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","2058-94-8","Perfluoroundecanoic acid (PFUnA)","13","ng/L","U","6.0","DL","","TRG","","","17","LOQ","NO",-99","","298.1","10.00","13",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","2706-90-3","Perfluoropentanoic acid (PFPeA)","170","ng/L","D M","3.6","DL","","TRG","","","17","LOQ","NO",-99","","298.1","10.00","8.4",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","307-24-4","Perfluorohexanoic acid (PFHxA)","340","ng/L","D","3.9","DL","","TRG","","","17","LOQ","NO",-99","","298.1","10.00","8.4",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","307-55-1","Perfluorododecanoic acid (PFDoA)","13","ng/L","U","4.4","DL","","TRG","","","17","LOQ","NO",-99","","298.1","10.00","13",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","1600","ng/L","D M","4.5","DL","","TRG","","","17","LOQ","YES",-99","","298.1","10.00","13",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","335-76-2","Perfluorodecanoic acid (PFDA)","8.4","ng/L","U","4.0","DL","","TRG","","","17","LOQ","NO",-99","","298.1","10.00","8.4",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","335-77-3","Perfluorodecanesulfonic acid (PFDS)","13","ng/L","U","4.7","DL","","TRG","","","17","LOQ","NO",-99","","298.1","10.00","13",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","350","ng/L","D","3.2","DL","","TRG","","","17","LOQ","YES",-99","","298.1","10.00","8.4",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","375-22-4","Perfluorobutanoic acid (PFBA)","64","ng/L","D","4.9","DL","","TRG","","","17","LOQ","NO",-99","","298.1","10.00","13",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","55","ng/L","D","3.9","DL","","TRG","","","17","LOQ","NO",-99","","298.1","10.00","8.4",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","64","ng/L","D","5.1","DL","","TRG","","","17","LOQ","NO",-99","","298.1","10.00","13",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid (PFHpS)","7.3","ng/L","J D","3.1","DL","","TRG","","","17","LOQ","NO",-99","","298.1","10.00","8.4",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","13","ng/L","U M","4.4","DL","","TRG","","","17","LOQ","NO",-99","","298.1","10.00","13",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","376-06-7","Perfluorotetradecanoic acid (PFTeA)","25","ng/L","U","7.0","DL","","TRG","","","34","LOQ","NO",-99","","298.1","10.00","25",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","72629-94-8","Perfluorotridecanoic Acid (PFTriA)","25","ng/L","U","6.4","DL","","TRG","","","34","LOQ","NO",-99","","298.1","10.00","25",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","754-91-6","Perfluorooctane Sulfonamide (FOSA)","25","ng/L","U","11","DL","","TRG","","","34","LOQ","NO",-99","","298.1","10.00","25",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","STL00990","13C4 PFOA","73","ng/L","","-99","DL","","TRG","87","","-99","LOQ","YES","83.9","","298.1","10.00","840",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","STL00991","13C4 PFOS","69","ng/L","","-99","DL","","TRG","86","","-99","LOQ","YES","80.2","","298.1","10.00","840",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","STL00992","13C4 PFBA","79","ng/L","","-99","DL","","TRG","94","","-99","LOQ","YES","83.9","","298.1","10.00","840",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","STL00993","13C2 PFHxA","71","ng/L","","-99","DL","","TRG","85","","-99","LOQ","YES","83.9","","298.1","10.00","840",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","STL00994","18O2 PFHxS","73","ng/L","","-99","DL","","TRG","91","","-99","LOQ","YES","79.3","","298.1","10.00","840",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","STL00995","13C5 PFNA","77","ng/L","","-99","DL","","TRG","92","","-99","LOQ","YES","83.9","","298.1","10.00","840",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","STL00996","13C2 PFDA","86","ng/L","","-99","DL","","TRG","103","","-99","LOQ","YES","83.9","","298.1","10.00","840",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","STL00997","13C2 PFUnA","76","ng/L","","-99","DL","","TRG","91","","-99","LOQ","YES","83.9","","298.1","10.00","840",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","STL00998","13C2 PFDoA","71","ng/L","","-99","DL","","TRG","84","","-99","LOQ","YES","83.9","","298.1","10.00","840",""

"TP-PFC-031-TPI","EPA 537 (Mod)","DL","320-40917-1","TALSAC","STL01056","13C8

FOSA", "70", "ng/L", "", "-99", "DL", "", "TRG", "84", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "840", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "DL", "320-40917-1", "TALSAC", "STL01892", "13C4-
PFH_pA", "78", "ng/L", "", "-99", "DL", "", "TRG", "93", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "840", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "DL", "320-40917-1", "TALSAC", "STL01893", "13C5
PFPeA", "75", "ng/L", "", "-99", "DL", "", "TRG", "90", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "840", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "DL", "320-40917-1", "TALSAC", "STL02116", "13C2-
PFTeDA", "58", "ng/L", "", "-99", "DL", "", "TRG", "70", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "840", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "DL", "320-40917-1", "TALSAC", "STL02337", "13C3-
PFBS", "68", "ng/L", "", "-99", "DL", "", "TRG", "87", "", "-99", "LOQ", "YES", "78.0", "", "298.1", "10.00", "840", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid
(PFOS)", "300", "ng/L", "", "0.92", "DL", "", "TRG", "", "", "3.4", "LOQ", "YES", "-99", "", "298.1", "10.00", "2.5", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid
(PFUnA)", "1.3", "ng/L", "U", "0.60", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "298.1", "10.00", "1.3", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "2706-90-3", "Perfluoropentanoic acid
(PFPeA)", "180", "ng/L", "", "0.36", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "298.1", "10.00", "0.84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "307-24-4", "Perfluorohexanoic acid
(PFH_xA)", "320", "ng/L", "", "0.39", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "298.1", "10.00", "0.84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "307-55-1", "Perfluorododecanoic acid
(PFDoA)", "1.3", "ng/L", "U", "0.44", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "298.1", "10.00", "1.3", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "335-67-1", "Perfluorooctanoic acid
(PFOA)", "1200", "ng/L", "M E", "0.45", "DL", "", "TRG", "", "", "1.7", "LOQ", "NO", "-99", "", "298.1", "10.00", "1.3", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "335-76-2", "Perfluorodecanoic acid
(PFDA)", "0.89", "ng/L", "J", "0.40", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "298.1", "10.00", "0.84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid
(PFDS)", "1.3", "ng/L", "U", "0.47", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "298.1", "10.00", "1.3", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid
(PFH_xS)", "340", "ng/L", "E", "0.32", "DL", "", "TRG", "", "", "1.7", "LOQ", "NO", "-99", "", "298.1", "10.00", "0.84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "375-22-4", "Perfluorobutanoic acid
(PFBA)", "62", "ng/L", "M", "0.49", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "298.1", "10.00", "1.3", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid
(PFBS)", "45", "ng/L", "", "0.39", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "298.1", "10.00", "0.84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFH_pA)", "65", "ng/L", "", "0.51", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "298.1", "10.00", "1.3", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid
(PFH_pS)", "7.0", "ng/L", "", "0.31", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "298.1", "10.00", "0.84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "375-95-1", "Perfluorononanoic acid
(PFNA)", "2.4", "ng/L", "", "0.44", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "298.1", "10.00", "1.3", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid
(PFTeA)", "2.5", "ng/L", "U", "0.70", "DL", "", "TRG", "", "", "3.4", "LOQ", "YES", "-99", "", "298.1", "10.00", "2.5", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid
(PFTriA)", "2.5", "ng/L", "U", "0.64", "DL", "", "TRG", "", "", "3.4", "LOQ", "YES", "-99", "", "298.1", "10.00", "2.5", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide
(FOSA)", "2.5", "ng/L", "U M", "1.1", "DL", "", "TRG", "", "", "3.4", "LOQ", "YES", "-99", "", "298.1", "10.00", "2.5", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL00990", "13C4
PFOA", "72", "ng/L", "", "-99", "DL", "", "TRG", "86", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL00991", "13C4
PFOS", "81", "ng/L", "", "-99", "DL", "", "TRG", "102", "", "-99", "LOQ", "YES", "80.2", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL00992", "13C4
PFBA", "79", "ng/L", "", "-99", "DL", "", "TRG", "94", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL00993", "13C2
PFH_xA", "88", "ng/L", "", "-99", "DL", "", "TRG", "104", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL00994", "18O2
PFH_xS", "79", "ng/L", "", "-99", "DL", "", "TRG", "99", "", "-99", "LOQ", "YES", "79.3", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL00995", "13C5

PFNA", "83", "ng/L", "", "-99", "DL", "", "TRG", "99", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL00996", "13C2
PFDA", "90", "ng/L", "", "-99", "DL", "", "TRG", "107", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL00997", "13C2
PFUnA", "95", "ng/L", "", "-99", "DL", "", "TRG", "113", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL00998", "13C2
PFDaA", "86", "ng/L", "", "-99", "DL", "", "TRG", "103", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL01056", "13C8
FOSA", "81", "ng/L", "", "-99", "DL", "", "TRG", "96", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL01892", "13C4-
PFHpA", "88", "ng/L", "", "-99", "DL", "", "TRG", "105", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL01893", "13C5
PFPeA", "82", "ng/L", "", "-99", "DL", "", "TRG", "98", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL02116", "13C2-
PFTeDA", "80", "ng/L", "", "-99", "DL", "", "TRG", "95", "", "-99", "LOQ", "YES", "83.9", "", "298.1", "10.00", "84", ""
"TP-PFC-031-TPI", "EPA 537 (Mod)", "RES", "320-40917-1", "TALSAC", "STL02337", "13C3-
PFBS", "78", "ng/L", "", "-99", "DL", "", "TRG", "101", "", "-99", "LOQ", "YES", "78.0", "", "298.1", "10.00", "84", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "1763-23-
1", "Perfluorooctanesulfonic acid
(PFOS)", "2.5", "ng/L", "U", "0.93", "DL", "", "TRG", "", "", "3.4", "LOQ", "YES", "-99", "", "295.7", "10.00", "2.5", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "2058-94-
8", "Perfluoroundecanoic acid (PFUnA)", "1.3", "ng/L", "U
M", "0.61", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "1.3", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "2706-90-3", "Perfluoropentanoic
acid (PFPeA)", "260", "ng/L", "", "0.36", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "0.85", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "307-24-4", "Perfluorohexanoic
acid (PFHxA)", "200", "ng/L", "", "0.40", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "0.85", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "307-55-1", "Perfluorododecanoic
acid (PFDaA)", "1.3", "ng/L", "U", "0.44", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "1.3", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "335-67-1", "Perfluorooctanoic
acid (PFOA)", "29", "ng/L", "M", "0.46", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "1.3", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "335-76-2", "Perfluorodecanoic
acid (PFDA)", "0.85", "ng/L", "U", "0.41", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "0.85", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "335-77-
3", "Perfluorodecanesulfonic acid
(PFDS)", "1.3", "ng/L", "U", "0.47", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "1.3", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "355-46-
4", "Perfluorohexanesulfonic acid
(PFHxS)", "2.1", "ng/L", "", "0.32", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "0.85", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "375-22-4", "Perfluorobutanoic
acid (PFBA)", "110", "ng/L", "M", "0.50", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "1.3", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "375-73-
5", "Perfluorobutanesulfonic acid
(PFBS)", "7.1", "ng/L", "", "0.39", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "0.85", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "375-85-9", "Perfluoroheptanoic
acid (PFHpA)", "6.1", "ng/L", "", "0.52", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "1.3", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "375-92-
8", "Perfluoroheptanesulfonic Acid
(PFHpS)", "0.85", "ng/L", "U", "0.31", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "0.85", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "375-95-1", "Perfluorononanoic
acid (PFNA)", "1.3", "ng/L", "U", "0.44", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "295.7", "10.00", "1.3", ""
"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "376-06-
7", "Perfluorotetradecanoic acid
(PFTeA)", "2.5", "ng/L", "U", "0.70", "DL", "", "TRG", "", "", "3.4", "LOQ", "YES", "-99", "", "295.7", "10.00", "2.5", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid (PFTriA)", "2.5", "ng/L", "U", "0.64", "DL", "", "TRG", "", "", "3.4", "LOQ", "YES", "-99", "", "295.7", "10.00", "2.5", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "2.5", "ng/L", "U", "1.1", "DL", "", "TRG", "", "", "3.4", "LOQ", "YES", "-99", "", "295.7", "10.00", "2.5", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL00990", "13C4 PFOA", "80", "ng/L", "", "-99", "DL", "", "TRG", "94", "", "-99", "LOQ", "YES", "84.5", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL00991", "13C4 PFOS", "70", "ng/L", "", "-99", "DL", "", "TRG", "87", "", "-99", "LOQ", "YES", "80.8", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL00992", "13C4 PFBA", "75", "ng/L", "", "-99", "DL", "", "TRG", "89", "", "-99", "LOQ", "YES", "84.5", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL00993", "13C2 PFHxA", "74", "ng/L", "", "-99", "DL", "", "TRG", "88", "", "-99", "LOQ", "YES", "84.5", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL00994", "18O2 PFHxS", "74", "ng/L", "", "-99", "DL", "", "TRG", "93", "", "-99", "LOQ", "YES", "80.0", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL00995", "13C5 PFNA", "75", "ng/L", "", "-99", "DL", "", "TRG", "89", "", "-99", "LOQ", "YES", "84.5", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL00996", "13C2 PFDA", "77", "ng/L", "", "-99", "DL", "", "TRG", "91", "", "-99", "LOQ", "YES", "84.5", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL00997", "13C2 PFUnA", "80", "ng/L", "", "-99", "DL", "", "TRG", "95", "", "-99", "LOQ", "YES", "84.5", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL00998", "13C2 PFDoA", "74", "ng/L", "", "-99", "DL", "", "TRG", "87", "", "-99", "LOQ", "YES", "84.5", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL01056", "13C8 FOSA", "72", "ng/L", "", "-99", "DL", "", "TRG", "85", "", "-99", "LOQ", "YES", "84.5", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL01892", "13C4-PFHpA", "86", "ng/L", "", "-99", "DL", "", "TRG", "101", "", "-99", "LOQ", "YES", "84.5", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL01893", "13C5 PFPeA", "68", "ng/L", "", "-99", "DL", "", "TRG", "80", "", "-99", "LOQ", "YES", "84.5", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL02116", "13C2-PFTeDA", "67", "ng/L", "", "-99", "DL", "", "TRG", "79", "", "-99", "LOQ", "YES", "84.5", "", "295.7", "10.00", "85", ""

"TP-PFC-031-MID CARBON", "EPA 537 (Mod)", "RES", "320-40917-2", "TALSAC", "STL02337", "13C3-PFBS", "63", "ng/L", "", "-99", "DL", "", "TRG", "80", "", "-99", "LOQ", "YES", "78.6", "", "295.7", "10.00", "85", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "2.6", "ng/L", "U", "0.96", "DL", "", "TRG", "", "", "3.5", "LOQ", "YES", "-99", "", "286.7", "10.00", "2.6", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid (PFUnA)", "1.3", "ng/L", "U M", "0.63", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "1.3", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "2706-90-3", "Perfluoropentanoic acid (PFPeA)", "220", "ng/L", "", "0.37", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "0.87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "307-24-4", "Perfluorohexanoic acid (PFHxA)", "110", "ng/L", "", "0.41", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "0.87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "307-55-1", "Perfluorododecanoic acid (PFDoA)", "1.3", "ng/L", "U", "0.45", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "1.3", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "4.1", "ng/L", "M", "0.47", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "1.3", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "335-76-2", "Perfluorodecanoic acid (PFDA)", "0.87", "ng/L", "U", "0.42", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "0.87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "335-77-3", "Perfluorodecanesulfonic acid (PFDS)", "1.3", "ng/L", "U", "0.49", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "1.3", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "355-46-4", "Perfluorohexanesulfonic acid (PFHxS)", "0.53", "ng/L", "J", "0.33", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "0.87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "375-22-4", "Perfluorobutanoic acid (PFBA)", "120", "ng/L", "M", "0.51", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "1.3", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "375-73-5", "Perfluorobutanesulfonic acid (PFBS)", "2.4", "ng/L", "", "0.40", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "0.87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "375-85-9", "Perfluoroheptanoic acid (PFHpA)", "2.0", "ng/L", "", "0.53", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "1.3", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid (PFHpS)", "0.87", "ng/L", "U", "0.32", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "0.87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "1.3", "ng/L", "U M", "0.45", "DL", "", "TRG", "", "", "1.7", "LOQ", "YES", "-99", "", "286.7", "10.00", "1.3", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid (PFTeA)", "2.6", "ng/L", "U", "0.72", "DL", "", "TRG", "", "", "3.5", "LOQ", "YES", "-99", "", "286.7", "10.00", "2.6", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid (PFTriA)", "2.6", "ng/L", "U", "0.66", "DL", "", "TRG", "", "", "3.5", "LOQ", "YES", "-99", "", "286.7", "10.00", "2.6", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "2.6", "ng/L", "U M", "1.1", "DL", "", "TRG", "", "", "3.5", "LOQ", "YES", "-99", "", "286.7", "10.00", "2.6", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL00990", "13C4 PFOA", "77", "ng/L", "", "-99", "DL", "", "TRG", "89", "", "-99", "LOQ", "YES", "87.2", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL00991", "13C4 PFOS", "68", "ng/L", "", "-99", "DL", "", "TRG", "81", "", "-99", "LOQ", "YES", "83.4", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL00992", "13C4 PFBA", "72", "ng/L", "", "-99", "DL", "", "TRG", "83", "", "-99", "LOQ", "YES", "87.2", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL00993", "13C2 PFHxA", "73", "ng/L", "", "-99", "DL", "", "TRG", "83", "", "-99", "LOQ", "YES", "87.2", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL00994", "18O2 PFHxS", "72", "ng/L", "", "-99", "DL", "", "TRG", "87", "", "-99", "LOQ", "YES", "82.5", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL00995", "13C5 PFNA", "73", "ng/L", "", "-99", "DL", "", "TRG", "84", "", "-99", "LOQ", "YES", "87.2", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL00996", "13C2 PFDA", "80", "ng/L", "", "-99", "DL", "", "TRG", "92", "", "-99", "LOQ", "YES", "87.2", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL00997", "13C2 PFUnA", "76", "ng/L", "", "-99", "DL", "", "TRG", "87", "", "-99", "LOQ", "YES", "87.2", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL00998", "13C2 PFDaA", "70", "ng/L", "", "-99", "DL", "", "TRG", "81", "", "-99", "LOQ", "YES", "87.2", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL01056", "13C8 FOSA", "72", "ng/L", "", "-99", "DL", "", "TRG", "82", "", "-99", "LOQ", "YES", "87.2", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL01892", "13C4-PFHpA", "80", "ng/L", "", "-99", "DL", "", "TRG", "92", "", "-99", "LOQ", "YES", "87.2", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL01893", "13C5 PFPeA", "67", "ng/L", "", "-99", "DL", "", "TRG", "77", "", "-99", "LOQ", "YES", "87.2", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL02116", "13C2-PFTeDA", "69", "ng/L", "", "-99", "DL", "", "TRG", "79", "", "-99", "LOQ", "YES", "87.2", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPE", "EPA 537 (Mod)", "RES", "320-40917-3", "TALSAC", "STL02337", "13C3-PFBS", "64", "ng/L", "", "-99", "DL", "", "TRG", "79", "", "-99", "LOQ", "YES", "81.1", "", "286.7", "10.00", "87", ""

"TP-PFC-031-TPI-D", "EPA 537 (Mod)", "RES", "320-40917-4", "TALSAC", "1763-23-1", "Perfluorooctanesulfonic acid (PFOS)", "2.4", "ng/L", "U", "0.89", "DL", "", "TRG", "", "", "3.3", "LOQ", "YES", "-99", "", "307.3", "10.00", "2.4", ""

"TP-PFC-031-TPI-D", "EPA 537 (Mod)", "RES", "320-40917-4", "TALSAC", "2058-94-8", "Perfluoroundecanoic acid (PFUnA)", "1.2", "ng/L", "U", "0.59", "DL", "", "TRG", "", "", "1.6", "LOQ", "YES", "-99", "", "307.3", "10.00", "1.2", ""

"TP-PFC-031-TPI-D", "EPA 537 (Mod)", "RES", "320-40917-4", "TALSAC", "2706-90-3", "Perfluoropentanoic acid (PFPeA)", "220", "ng/L", "", "0.35", "DL", "", "TRG", "", "", "1.6", "LOQ", "YES", "-99", "", "307.3", "10.00", "0.81", ""

"TP-PFC-031-TPI-D", "EPA 537 (Mod)", "RES", "320-40917-4", "TALSAC", "307-24-4", "Perfluorohexanoic acid (PFHxA)", "110", "ng/L", "", "0.38", "DL", "", "TRG", "", "", "1.6", "LOQ", "YES", "-99", "", "307.3", "10.00", "0.81", ""

"TP-PFC-031-TPI-D", "EPA 537 (Mod)", "RES", "320-40917-4", "TALSAC", "307-55-1", "Perfluorododecanoic acid (PFDaA)", "1.2", "ng/L", "U", "0.42", "DL", "", "TRG", "", "", "1.6", "LOQ", "YES", "-99", "", "307.3", "10.00", "1.2", ""

"TP-PFC-031-TPI-D", "EPA 537 (Mod)", "RES", "320-40917-4", "TALSAC", "335-67-1", "Perfluorooctanoic acid (PFOA)", "4.2", "ng/L", "M", "0.44", "DL", "", "TRG", "", "", "1.6", "LOQ", "YES", "-99", "", "307.3", "10.00", "1.2", ""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","335-76-2","Perfluorodecanoic acid (PFDA)","0.81","ng/L","U","0.39","DL","","TRG","","","1.6","LOQ","YES","-99","","307.3","10.00","0.81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","335-77-3","Perfluorodecanesulfonic acid (PFDS)","1.2","ng/L","U","0.46","DL","","TRG","","","1.6","LOQ","YES","-99","","307.3","10.00","1.2",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","0.44","ng/L","J","0.31","DL","","TRG","","","1.6","LOQ","YES","-99","","307.3","10.00","0.81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","375-22-4","Perfluorobutanoic acid (PFBA)","110","ng/L","M","0.48","DL","","TRG","","","1.6","LOQ","YES","-99","","307.3","10.00","1.2",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","2.4","ng/L","","0.37","DL","","TRG","","","1.6","LOQ","YES","-99","","307.3","10.00","0.81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","2.1","ng/L","","0.50","DL","","TRG","","","1.6","LOQ","YES","-99","","307.3","10.00","1.2",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid (PFHpS)","0.81","ng/L","U","0.30","DL","","TRG","","","1.6","LOQ","YES","-99","","307.3","10.00","0.81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","1.2","ng/L","U M","0.42","DL","","TRG","","","1.6","LOQ","YES","-99","","307.3","10.00","1.2",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","376-06-7","Perfluorotetradecanoic acid (PFTeA)","2.4","ng/L","U","0.68","DL","","TRG","","","3.3","LOQ","YES","-99","","307.3","10.00","2.4",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","72629-94-8","Perfluorotridecanoic Acid (PFTriA)","2.4","ng/L","U","0.62","DL","","TRG","","","3.3","LOQ","YES","-99","","307.3","10.00","2.4",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","754-91-6","Perfluorooctane Sulfonamide (FOSA)","2.4","ng/L","U","1.1","DL","","TRG","","","3.3","LOQ","YES","-99","","307.3","10.00","2.4",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL00990","13C4 PFOA","75","ng/L","","-99","DL","","TRG","92","","-99","LOQ","YES","81.4","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL00991","13C4 PFOS","68","ng/L","","-99","DL","","TRG","87","","-99","LOQ","YES","77.8","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL00992","13C4 PFBA","71","ng/L","","-99","DL","","TRG","88","","-99","LOQ","YES","81.4","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL00993","13C2 PFHxA","71","ng/L","","-99","DL","","TRG","87","","-99","LOQ","YES","81.4","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL00994","18O2 PFHxS","69","ng/L","","-99","DL","","TRG","90","","-99","LOQ","YES","77.0","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL00995","13C5 PFNA","74","ng/L","","-99","DL","","TRG","91","","-99","LOQ","YES","81.4","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL00996","13C2 PFDA","73","ng/L","","-99","DL","","TRG","90","","-99","LOQ","YES","81.4","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL00997","13C2 PFUnA","74","ng/L","","-99","DL","","TRG","91","","-99","LOQ","YES","81.4","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL00998","13C2 PFDaA","69","ng/L","","-99","DL","","TRG","85","","-99","LOQ","YES","81.4","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL01056","13C8 FOSA","68","ng/L","","-99","DL","","TRG","84","","-99","LOQ","YES","81.4","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL01892","13C4-PFHpA","78","ng/L","","-99","DL","","TRG","95","","-99","LOQ","YES","81.4","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL01893","13C5 PFPeA","65","ng/L","","-99","DL","","TRG","80","","-99","LOQ","YES","81.4","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL02116","13C2-PFTeDA","63","ng/L","","-99","DL","","TRG","77","","-99","LOQ","YES","81.4","","307.3","10.00","81",""

"TP-PFC-031-TPI-D","EPA 537 (Mod)","RES","320-40917-4","TALSAC","STL02337","13C3-PFBS","62","ng/L","","-99","DL","","TRG","81","","-99","LOQ","YES","75.7","","307.3","10.00","81",""

"LCS 320-233164/2-A","EPA 537 (Mod)","RES","LCS 320-233164/2-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","34.2","ng/L","","1.1","DL","","SPK","92","","4.0","LOQ","YES","37.1","","250","10.00","3.0",""

"LCS 320-233164/2-A","EPA 537 (Mod)","RES","LCS 320-233164/2-A","TALSAC","2058-94-

8", "Perfluoroundecanoic acid

(PFUnA), "32.3", "ng/L", "", "0.72", "DL", "", "SPK", "81", "", "2.0", "LOQ", "YES", "40.0", "", "250", "10.00", "1.5", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "2706-90-3", "Perfluoropentanoic
acid (PFPeA)", "35.0", "ng/L", "", "0.43", "DL", "", "SPK", "88", "", "2.0", "LOQ", "YES", "40.0", "", "250", "10.00", "1.0", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "307-24-4", "Perfluorohexanoic
acid (PFHxA)", "38.0", "ng/L", "", "0.47", "DL", "", "SPK", "95", "", "2.0", "LOQ", "YES", "40.0", "", "250", "10.00", "1.0", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "307-55-

1", "Perfluorododecanoic acid

(PFDoA), "37.0", "ng/L", "", "0.52", "DL", "", "SPK", "92", "", "2.0", "LOQ", "YES", "40.0", "", "250", "10.00", "1.5", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "335-67-1", "Perfluorooctanoic
acid (PFOA)", "35.8", "ng/L", "", "0.54", "DL", "", "SPK", "89", "", "2.0", "LOQ", "YES", "40.0", "", "250", "10.00", "1.5", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "335-76-2", "Perfluorodecanoic
acid (PFDA)", "36.7", "ng/L", "", "0.48", "DL", "", "SPK", "92", "", "2.0", "LOQ", "YES", "40.0", "", "250", "10.00", "1.0", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "335-77-

3", "Perfluorodecanesulfonic acid

(PFDS), "33.9", "ng/L", "", "0.56", "DL", "", "SPK", "88", "", "2.0", "LOQ", "YES", "38.6", "", "250", "10.00", "1.5", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "355-46-

4", "Perfluorohexanesulfonic acid

(PFHxS), "31.9", "ng/L", "", "0.38", "DL", "", "SPK", "88", "", "2.0", "LOQ", "YES", "36.4", "", "250", "10.00", "1.0", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "375-22-4", "Perfluorobutanoic
acid (PFBA)", "35.8", "ng/L", "M", "0.59", "DL", "", "SPK", "89", "", "2.0", "LOQ", "YES", "40.0", "", "250", "10.00", "1.5", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "375-73-

5", "Perfluorobutanesulfonic acid

(PFBS), "33.0", "ng/L", "", "0.46", "DL", "", "SPK", "93", "", "2.0", "LOQ", "YES", "35.4", "", "250", "10.00", "1.0", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "375-85-9", "Perfluoroheptanoic
acid (PFHpA)", "36.8", "ng/L", "", "0.61", "DL", "", "SPK", "92", "", "2.0", "LOQ", "YES", "40.0", "", "250", "10.00", "1.5", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "375-92-

8", "Perfluoroheptanesulfonic Acid

(PFHpS), "34.9", "ng/L", "", "0.37", "DL", "", "SPK", "92", "", "2.0", "LOQ", "YES", "38.1", "", "250", "10.00", "1.0", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "375-95-1", "Perfluorononanoic
acid (PFNA)", "35.2", "ng/L", "", "0.52", "DL", "", "SPK", "88", "", "2.0", "LOQ", "YES", "40.0", "", "250", "10.00", "1.5", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "376-06-

7", "Perfluorotetradecanoic acid

(PFTeA), "36.8", "ng/L", "", "0.83", "DL", "", "SPK", "92", "", "4.0", "LOQ", "YES", "40.0", "", "250", "10.00", "3.0", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "72629-94-

8", "Perfluorotridecanoic Acid

(PFTriA), "36.8", "ng/L", "", "0.76", "DL", "", "SPK", "92", "", "4.0", "LOQ", "YES", "40.0", "", "250", "10.00", "3.0", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "754-91-6", "Perfluorooctane
Sulfonamide

(FOSA), "38.6", "ng/L", "", "1.3", "DL", "", "SPK", "97", "", "4.0", "LOQ", "YES", "40.0", "", "250", "10.00", "3.0", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL00990", "13C4
PFOA", "92.4", "ng/L", "", "-99", "DL", "", "SPK", "92", "", "-99", "LOQ", "YES", "100", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL00991", "13C4
PFOS", "84.1", "ng/L", "", "-99", "DL", "", "SPK", "88", "", "-99", "LOQ", "YES", "95.6", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL00992", "13C4
PFBA", "89.2", "ng/L", "", "-99", "DL", "", "SPK", "89", "", "-99", "LOQ", "YES", "100", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL00993", "13C2
PFHxA", "90.9", "ng/L", "", "-99", "DL", "", "SPK", "91", "", "-99", "LOQ", "YES", "100", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL00994", "18O2
PFHxS", "88.1", "ng/L", "", "-99", "DL", "", "SPK", "93", "", "-99", "LOQ", "YES", "94.6", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL00995", "13C5
PFNA", "91.4", "ng/L", "", "-99", "DL", "", "SPK", "91", "", "-99", "LOQ", "YES", "100", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL00996", "13C2
PFDA", "92.4", "ng/L", "", "-99", "DL", "", "SPK", "92", "", "-99", "LOQ", "YES", "100", "", "250", "10.00", "100", ""

"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL00997", "13C2
PFUnA", "93.7", "ng/L", "", "-99", "DL", "", "SPK", "94", "", "-99", "LOQ", "YES", "100", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL00998", "13C2
PFDaA", "87.0", "ng/L", "", "-99", "DL", "", "SPK", "87", "", "-99", "LOQ", "YES", "100", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL01056", "13C8
FOFA", "79.1", "ng/L", "", "-99", "DL", "", "SPK", "79", "", "-99", "LOQ", "YES", "100", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL01892", "13C4-
PFHpA", "97.0", "ng/L", "", "-99", "DL", "", "SPK", "97", "", "-99", "LOQ", "YES", "100", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL01893", "13C5
PFPeA", "83.9", "ng/L", "", "-99", "DL", "", "SPK", "84", "", "-99", "LOQ", "YES", "100", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL02116", "13C2-
PFTeDA", "77.2", "ng/L", "", "-99", "DL", "", "SPK", "77", "", "-99", "LOQ", "YES", "100", "", "250", "10.00", "100", ""
"LCS 320-233164/2-A", "EPA 537 (Mod)", "RES", "LCS 320-233164/2-A", "TALSAC", "STL02337", "13C3-
PFBS", "77.1", "ng/L", "", "-99", "DL", "", "SPK", "83", "", "-99", "LOQ", "YES", "93.0", "", "250", "10.00", "100", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "1763-23-
1", "Perfluorooctanesulfonic acid
(PFOS)", "35.7", "ng/L", "", "1.1", "DL", "", "SPK", "96", "4", "4.0", "LOQ", "YES", "37.1", "LCS 320-233164/2-
A", "250", "10.00", "3.0", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "2058-94-
8", "Perfluoroundecanoic acid
(PFUnA)", "33.1", "ng/L", "", "0.72", "DL", "", "SPK", "83", "2", "2.0", "LOQ", "YES", "40.0", "LCS 320-233164/2-
A", "250", "10.00", "1.5", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "2706-90-
3", "Perfluoropentanoic acid
(PFPeA)", "37.8", "ng/L", "", "0.43", "DL", "", "SPK", "94", "8", "2.0", "LOQ", "YES", "40.0", "LCS 320-233164/2-
A", "250", "10.00", "1.0", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "307-24-
4", "Perfluorohexanoic acid
(PFHxA)", "38.6", "ng/L", "", "0.47", "DL", "", "SPK", "97", "2", "2.0", "LOQ", "YES", "40.0", "LCS 320-233164/2-
A", "250", "10.00", "1.0", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "307-55-
1", "Perfluorododecanoic acid
(PFDaA)", "37.8", "ng/L", "", "0.52", "DL", "", "SPK", "95", "2", "2.0", "LOQ", "YES", "40.0", "LCS 320-233164/2-
A", "250", "10.00", "1.5", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "335-67-
1", "Perfluorooctanoic acid (PFOA)", "36.3", "ng/L", "", "0.54", "DL", "", "SPK", "91", "1", "2.0", "LOQ", "YES", "40.0", "LCS
320-233164/2-A", "250", "10.00", "1.5", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "335-76-
2", "Perfluorodecanoic acid (PFDA)", "38.5", "ng/L", "", "0.48", "DL", "", "SPK", "96", "5", "2.0", "LOQ", "YES", "40.0", "LCS
320-233164/2-A", "250", "10.00", "1.0", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "335-77-
3", "Perfluorodecanesulfonic acid
(PFDS)", "34.9", "ng/L", "", "0.56", "DL", "", "SPK", "90", "3", "2.0", "LOQ", "YES", "38.6", "LCS 320-233164/2-
A", "250", "10.00", "1.5", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "355-46-
4", "Perfluorohexanesulfonic acid
(PFHxS)", "31.1", "ng/L", "", "0.38", "DL", "", "SPK", "85", "3", "2.0", "LOQ", "YES", "36.4", "LCS 320-233164/2-
A", "250", "10.00", "1.0", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "375-22-
4", "Perfluorobutanoic acid
(PFBA)", "36.9", "ng/L", "M", "0.59", "DL", "", "SPK", "92", "3", "2.0", "LOQ", "YES", "40.0", "LCS 320-233164/2-
A", "250", "10.00", "1.5", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "375-73-
5", "Perfluorobutanesulfonic acid

(PFBS)", "34.0", "ng/L", "", "0.46", "DL", "", "SPK", "96", "3", "2.0", "LOQ", "YES", "35.4", "LCS 320-233164/2-A", "250", "10.00", "1.0", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "375-85-9", "Perfluoroheptanoic acid
(PFHpA)", "35.5", "ng/L", "", "0.61", "DL", "", "SPK", "89", "3", "2.0", "LOQ", "YES", "40.0", "LCS 320-233164/2-A", "250", "10.00", "1.5", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "375-92-8", "Perfluoroheptanesulfonic Acid
(PFHpS)", "38.5", "ng/L", "", "0.37", "DL", "", "SPK", "101", "10", "2.0", "LOQ", "YES", "38.1", "LCS 320-233164/2-A", "250", "10.00", "1.0", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "375-95-1", "Perfluorononanoic acid (PFNA)", "37.2", "ng/L", "", "0.52", "DL", "", "SPK", "93", "5", "2.0", "LOQ", "YES", "40.0", "LCS 320-233164/2-A", "250", "10.00", "1.5", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "376-06-7", "Perfluorotetradecanoic acid
(PFTeA)", "37.1", "ng/L", "", "0.83", "DL", "", "SPK", "93", "1", "4.0", "LOQ", "YES", "40.0", "LCS 320-233164/2-A", "250", "10.00", "3.0", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "72629-94-8", "Perfluorotridecanoic Acid
(PFTriA)", "39.0", "ng/L", "", "0.76", "DL", "", "SPK", "98", "6", "4.0", "LOQ", "YES", "40.0", "LCS 320-233164/2-A", "250", "10.00", "3.0", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "754-91-6", "Perfluorooctane Sulfonamide (FOSA)", "40.2", "ng/L", "", "1.3", "DL", "", "SPK", "101", "4", "4.0", "LOQ", "YES", "40.0", "LCS 320-233164/2-A", "250", "10.00", "3.0", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "STL00990", "13C4 PFOA", "91.4", "ng/L", "", "-99", "DL", "", "SPK", "91", "", "-99", "LOQ", "YES", "100", "LCS 320-233164/2-A", "250", "10.00", "100", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "STL00991", "13C4 PFOS", "82.4", "ng/L", "", "-99", "DL", "", "SPK", "86", "", "-99", "LOQ", "YES", "95.6", "LCS 320-233164/2-A", "250", "10.00", "100", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "STL00992", "13C4 PFBA", "88.9", "ng/L", "", "-99", "DL", "", "SPK", "89", "", "-99", "LOQ", "YES", "100", "LCS 320-233164/2-A", "250", "10.00", "100", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "STL00993", "13C2 PFHxA", "90.6", "ng/L", "", "-99", "DL", "", "SPK", "91", "", "-99", "LOQ", "YES", "100", "LCS 320-233164/2-A", "250", "10.00", "100", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "STL00994", "18O2 PFHxS", "90.4", "ng/L", "", "-99", "DL", "", "SPK", "96", "", "-99", "LOQ", "YES", "94.6", "LCS 320-233164/2-A", "250", "10.00", "100", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "STL00995", "13C5 PFNA", "91.3", "ng/L", "", "-99", "DL", "", "SPK", "91", "", "-99", "LOQ", "YES", "100", "LCS 320-233164/2-A", "250", "10.00", "100", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "STL00996", "13C2 PFDA", "94.4", "ng/L", "", "-99", "DL", "", "SPK", "94", "", "-99", "LOQ", "YES", "100", "LCS 320-233164/2-A", "250", "10.00", "100", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "STL00997", "13C2 PFUnA", "92.8", "ng/L", "", "-99", "DL", "", "SPK", "93", "", "-99", "LOQ", "YES", "100", "LCS 320-233164/2-A", "250", "10.00", "100", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "STL00998", "13C2 PFDaA", "85.2", "ng/L", "", "-99", "DL", "", "SPK", "85", "", "-99", "LOQ", "YES", "100", "LCS 320-233164/2-A", "250", "10.00", "100", ""
"LCSD 320-233164/3-A", "EPA 537 (Mod)", "RES", "LCSD 320-233164/3-A", "TALSAC", "STL01056", "13C8 FOA", "79.4", "ng/L", "", "-99", "DL", "", "SPK", "79", "", "-99", "LOQ", "YES", "100", "LCS 320-233164/2-A", "250", "10.00", "100", ""

"LCSD 320-233164/3-A","EPA 537 (Mod)","RES","LCSD 320-233164/3-A","TALSAC","STL01892","13C4-PFHpA","95.9","ng/L","","-99","DL","","SPK","96","","-99","LOQ","YES","100","LCS 320-233164/2-A","250","10.00","100",""

"LCSD 320-233164/3-A","EPA 537 (Mod)","RES","LCSD 320-233164/3-A","TALSAC","STL01893","13C5-PFPeA","82.0","ng/L","","-99","DL","","SPK","82","","-99","LOQ","YES","100","LCS 320-233164/2-A","250","10.00","100",""

"LCSD 320-233164/3-A","EPA 537 (Mod)","RES","LCSD 320-233164/3-A","TALSAC","STL02116","13C2-PFTeDA","77.9","ng/L","","-99","DL","","SPK","78","","-99","LOQ","YES","100","LCS 320-233164/2-A","250","10.00","100",""

"LCSD 320-233164/3-A","EPA 537 (Mod)","RES","LCSD 320-233164/3-A","TALSAC","STL02337","13C3-PFBS","77.4","ng/L","","-99","DL","","SPK","83","","-99","LOQ","YES","93.0","LCS 320-233164/2-A","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","1763-23-1","Perfluorooctanesulfonic acid (PFOS)","3.0","ng/L","U","1.1","DL","","TRG","","","4.0","LOQ","YES","-99","","250","10.00","3.0",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","2058-94-8","Perfluoroundecanoic acid (PFUnA)","1.5","ng/L","U","0.72","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.5",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","2706-90-3","Perfluoropentanoic acid (PFPeA)","0.489","ng/L","J M","0.43","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.0",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","307-24-4","Perfluorohexanoic acid (PFHxA)","1.0","ng/L","U","0.47","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.0",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","307-55-1","Perfluorododecanoic acid (PFDoA)","1.5","ng/L","U","0.52","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.5",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","1.5","ng/L","U","0.54","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.5",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","335-76-2","Perfluorodecanoic acid (PFDA)","1.0","ng/L","U","0.48","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.0",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","335-77-3","Perfluorodecanesulfonic acid (PFDS)","1.5","ng/L","U","0.56","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.5",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","355-46-4","Perfluorohexanesulfonic acid (PFHxS)","1.0","ng/L","U","0.38","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.0",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","375-22-4","Perfluorobutanoic acid (PFBA)","0.634","ng/L","J","0.59","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.5",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","375-73-5","Perfluorobutanesulfonic acid (PFBS)","1.0","ng/L","U","0.46","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.0",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","375-85-9","Perfluoroheptanoic acid (PFHpA)","1.5","ng/L","U","0.61","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.5",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","375-92-8","Perfluoroheptanesulfonic Acid (PFHpS)","1.0","ng/L","U","0.37","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.0",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","375-95-1","Perfluorononanoic acid (PFNA)","1.5","ng/L","U","0.52","DL","","TRG","","","2.0","LOQ","YES","-99","","250","10.00","1.5",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","376-06-7","Perfluorotetradecanoic acid (PFTeA)","3.0","ng/L","U","0.83","DL","","TRG","","","4.0","LOQ","YES","-99","","250","10.00","3.0",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","72629-94-8","Perfluorotridecanoic Acid (PFTriA)","3.0","ng/L","U","0.76","DL","","TRG","","","4.0","LOQ","YES","-99","","250","10.00","3.0",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","754-91-6","Perfluorooctane Sulfonamide (FOSA)","3.0","ng/L","U","1.3","DL","","TRG","","","4.0","LOQ","YES","-99","","250","10.00","3.0",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL00990","13C4 PFOA","93.4","ng/L","",-99,"DL","","TRG","93","",-99,"LOQ","YES","100","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL00991","13C4 PFOS","80.4","ng/L","",-99,"DL","","TRG","84","",-99,"LOQ","YES","95.6","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL00992","13C4 PFBA","85.2","ng/L","",-99,"DL","","TRG","85","",-99,"LOQ","YES","100","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL00993","13C2 PFHxA","88.7","ng/L","",-99,"DL","","TRG","89","",-99,"LOQ","YES","100","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL00994","18O2 PFHxS","85.0","ng/L","",-99,"DL","","TRG","90","",-99,"LOQ","YES","94.6","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL00995","13C5 PFNA","91.1","ng/L","",-99,"DL","","TRG","91","",-99,"LOQ","YES","100","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL00996","13C2 PFDA","93.3","ng/L","",-99,"DL","","TRG","93","",-99,"LOQ","YES","100","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL00997","13C2 PFUnA","93.3","ng/L","",-99,"DL","","TRG","93","",-99,"LOQ","YES","100","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL00998","13C2 PFDaA","88.6","ng/L","",-99,"DL","","TRG","89","",-99,"LOQ","YES","100","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL01056","13C8 FOSA","79.6","ng/L","",-99,"DL","","TRG","80","",-99,"LOQ","YES","100","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL01892","13C4-PFHpA","97.0","ng/L","",-99,"DL","","TRG","97","",-99,"LOQ","YES","100","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL01893","13C5 PFPeA","80.2","ng/L","",-99,"DL","","TRG","80","",-99,"LOQ","YES","100","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL02116","13C2-PFTeDA","82.8","ng/L","",-99,"DL","","TRG","83","",-99,"LOQ","YES","100","","250","10.00","100",""

"MB 320-233164/1-A","EPA 537 (Mod)","RES","MB 320-233164/1-A","TALSAC","STL02337","13C3-PFBS","74.3","ng/L","",-99,"DL","","TRG","80","",-99,"LOQ","YES","93.0","","250","10.00","100",""

"Unknown","Unknown","TP-PFC-031-TPI","07/05/2018 09:15","AQ","320-40917-1","NM","","4.20","EPA 537 (Mod)","3535","RES","07/10/2018 08:16","07/18/2018 23:13","TALSAC","COA","WET","NA","1","NA","NA","","100","320-233164","320-233164","NA","320-234762","320-40917-1","07/06/2018 09:15","07/09/2018 10:50",""

"Unknown","Unknown","TP-PFC-031-TPI","07/05/2018 09:15","AQ","320-40917-1","NM","","4.20","EPA 537 (Mod)","3535","DL","07/10/2018 08:16","07/20/2018 01:12","TALSAC","COA","WET","NA","10","NA","NA","","100","320-233164","320-233164","NA","320-235047","320-40917-1","07/06/2018 09:15","07/09/2018 10:50",""

"Unknown","Unknown","TP-PFC-031-MID CARBON","07/05/2018 09:20","AQ","320-40917-2","NM","","4.20","EPA 537 (Mod)","3535","RES","07/10/2018 08:16","07/18/2018 23:20","TALSAC","COA","WET","NA","1","NA","NA","","100","320-233164","320-233164","NA","320-234762","320-40917-1","07/06/2018 09:15","07/09/2018 10:50",""

"Unknown","Unknown","TP-PFC-031-TPE","07/05/2018 09:25","AQ","320-40917-3","NM","","4.20","EPA 537 (Mod)","3535","RES","07/10/2018 08:16","07/18/2018 23:28","TALSAC","COA","WET","NA","1","NA","NA","","100","320-233164","320-233164","NA","320-234762","320-40917-1","07/06/2018 09:15","07/09/2018 10:50",""

"Unknown","Unknown","TP-PFC-031-TPI-D","07/05/2018 00:00","AQ","320-40917-4","FD","","4.20","EPA 537 (Mod)","3535","RES","07/10/2018 08:16","07/18/2018 23:36","TALSAC","COA","WET","NA","1","NA","NA","","100","320-233164","320-233164","NA","320-234762","320-40917-1","07/06/2018 09:15","07/09/2018 10:50",""

"Unknown","Unknown","LCS 320-233164/2-A","","AQ","LCS 320-233164/2-A","LCS","","-99","EPA 537 (Mod)","3535","RES","07/10/2018 08:16","07/18/2018 22:57","TALSAC","COA","WET","NA","1","NA","NA","","100","320-233164","320-233164","NA","320-234762","320-40917-1","07/10/2018 08:16","07/09/2018 10:50",""

"Unknown","Unknown","LCSD 320-233164/3-A","","AQ","LCSD 320-233164/3-A","LCSD","","-99","EPA 537 (Mod)","3535","RES","07/10/2018 08:16","07/18/2018

23:05","TALSAC","COA","WET","NA","1","NA","NA","","100","320-233164","320-233164","NA","320-234762","320-40917-1","07/10/2018 08:16","07/09/2018 10:50",""
"Unknown","Unknown","MB 320-233164/1-A","","AQ","MB 320-233164/1-A","MB","","-99","EPA 537 (Mod)","3535","RES","07/10/2018 08:16","07/18/2018
22:49","TALSAC","COA","WET","NA","1","NA","NA","","100","320-233164","320-233164","NA","320-234762","320-40917-1","07/10/2018 08:16","07/09/2018 10:50",""

PFAS

The following compounds were detected in the laboratory method and/or Initial/Continuing Calibration Blanks (ICBs/CCBs) at the following maximum concentrations:

<u>Analyte</u>	<u>Maximum Concentration (ng/L)</u>	<u>Action Level Limit of Quantitation (LOQ) > or <</u>
Perfluorobutanoic acid (PFBA) ⁽¹⁾	0.634	< LOQ
Perfluoropentanoic acid (PFPeA) ⁽¹⁾	0.489	< LOQ
Perfluorotetradecanoic acid (PFTeA) ⁽²⁾	0.00831 ng/ml	< LOQ
Perfluorohexanesulfonic acid (PFHxS) ⁽²⁾	0.00769 ng/ml	< LOQ
Perfluorohexanesulfonic acid (PFHxS) ⁽³⁾	0.0113 ng/ml	< LOQ

⁽¹⁾ – Maximum concentration detected in the laboratory method blank, MB 320-233164/1-A, affecting all samples.

⁽²⁾ – Maximum concentration detected in the ICB/CCB affecting all samples from analytical batch #233477.

⁽³⁾ – Maximum concentration detected in the ICB/CCB affecting sample TP-PFC-031-TPI.

The detected results reported for PFHxS reported below the Limit of Detection (LOD) was raised to LOD and qualified as non-detected, (U).

NOTES

Sample TP-PFC-031-TPE-D, as identified on the sample Chain of Custody (COC) was logged in by the laboratory incorrectly as TP-PFC-031-TPI-D. The sample Form I and electronic deliverable was manually corrected.

The injected internal standard compound, 13C2-perfluorooctanoic acid (13C2-PFOA), had an area below the 50% quality control limit in the diluted analysis of sample TP-PFC-031-TPI. No action was taken because the sample was diluted ten times and the internal standard area response varied as a result of the dilution.

Field Reagent Blanks (FRBs) were not provided with the environmental samples.

The concentrations of pentadecafluorooctanoic acid (perfluorooctanoic acid (PFOA)) and PFHxS exceeded the instrument calibration range in sample TP-PFC-031-TPI. The sample was reanalyzed at a 10X dilution. The results for these compounds from the dilution were used in the data validation.

Detected results reported below the LOQ but above the Detection Limit (DL) were qualified as estimated, (J). Non-detected results are reported to LOD.

EXECUTIVE SUMMARY

Laboratory Performance: One sample was incorrectly logged in. Contaminants were detected in the laboratory method blank, ICBs, and CCBs. The injected internal standard area was low in the diluted sample.

Other Factors Affecting Data Quality: One sample was further diluted. Detected results below the LOQ were estimated.

TO: J. ORIENT
SDGs: 320-40917-1

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The data for these analyses were reviewed with reference to the EPA New England Environmental Data Review Supplement for Regional Data Review Elements Superfund Guidance/Procedures (April 2013), National Functional Guidelines for Organic Data Validation (January 2017), and the Department of Defense (DoD) document entitled, "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013). The text of this report has been formulated to address only those areas affecting data quality.



Tetra Tech, Inc.
Michelle L. Woeber
Environmental Chemist



Tetra Tech, Inc.
Joseph A. Samchuck
Data Validation Manager

Attachments:

Appendix A - Qualified Analytical Results
Appendix B - Results as reported by the Laboratory
Appendix C - Support Documentation

Data Qualifier Definitions

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted detection limit.
J	The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
NJ	The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the sample.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in the sample.
X	The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided. Acceptance or rejection of the data should be decided by the project team, but exclusion of the data is recommended.

APPENDIX A

QUALIFIED LABORATORY 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

PROJ_NO: 08005-WE21 SDG: 320-40917-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	TP-PFC-031-MID CARBON			TP-PFC-031-TPE			TP-PFC-031-TPE-D			TP-PFC-031-TPI		
	LAB_ID	320-40917-2			320-40917-3			320-40917-4			320-40917-1		
	SAMP_DATE	7/5/2018			7/5/2018			7/5/2018			7/5/2018		
	QC_TYPE	NM			NM			FD			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF							TP-PFC-031-TPE					
PARAMETER	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	
PENTADECAFLUOROOCANOIC ACID (PFOA)	29			4.1			4.2						
PERFLUOROBUTANESULFONIC ACID (PFBS)	7.1			2.4			2.4			45			
PERFLUOROBUTANOIC ACID (PFBA)	110			120			110			62			
PERFLUORODECANESULFONIC ACID (PFDS)	1.3 U			1.3 U			1.2 U			1.3 U			
PERFLUORODECANOIC ACID (PFDA)	0.85 U			0.87 U			0.81 U			0.89 J		P	
PERFLUORODODECANOIC ACID (PFDOA)	1.3 U			1.3 U			1.2 U			1.3 U			
PERFLUOROHEPTANESULFONIC ACID	0.85 U			0.87 U			0.81 U			7			
PERFLUOROHEPTANOIC ACID (PFHPA)	6.1			2			2.1			65			
PERFLUOROHEXANESULFONIC ACID (PFHXS)	2.1			0.87 U		A	0.81 U		A				
PERFLUOROHEXANOIC ACID (PFHXA)	200			110			110			320			
PERFLUORONONANOIC ACID (PFNA)	1.3 U			1.3 U			1.2 U			2.4			
PERFLUOROOCOTANE SULFONAMIDE (FOSA)	2.5 U			2.6 U			2.4 U			2.5 U			
PERFLUOROOCOTANESULFONIC ACID (PFOS)	2.5 U			2.6 U			2.4 U			300			
PERFLUOROPENTANOIC ACID (PFPEA)	260			220			220			180			
PERFLUOROTETRADECANOIC ACID (PFTEA)	2.5 U			2.6 U			2.4 U			2.5 U			
PERFLUOROTRIDECANOIC ACID (PFTRIA)	2.5 U			2.6 U			2.4 U			2.5 U			
PERFLUOROUNDECANOIC ACID (PFUNA)	1.3 U			1.3 U			1.2 U			1.3 U			

PROJ_NO: 08005-WE21 SDG: 320-40917-1 FRACTION: PFAS MEDIA: WATER	NSAMPLE	TP-PFC-031-TPI-DL		
	LAB_ID	320-40917-1		
	SAMP_DATE	7/5/2018		
	QC_TYPE	NM		
	UNITS	NG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER	RESULT	VQL	QLCD	
PENTADECAFLUOROOCANOIC ACID (PFOA)	1600			
PERFLUOROBUTANESULFONIC ACID (PFBS)				
PERFLUOROBUTANOIC ACID (PFBA)				
PERFLUORODECANESULFONIC ACID (PFDS)				
PERFLUORODECANOIC ACID (PFDA)				
PERFLUORODODECANOIC ACID (PFDOA)				
PERFLUOROHEPTANESULFONIC ACID				
PERFLUOROHEPTANOIC ACID (PFHPA)				
PERFLUOROHEXANESULFONIC ACID (PFHXS)	350			
PERFLUOROHEXANOIC ACID (PFHXA)				
PERFLUORONONANOIC ACID (PFNA)				
PERFLUOROOCTANE SULFONAMIDE (FOSA)				
PERFLUOROOCTANESULFONIC ACID (PFOS)				
PERFLUOROPENTANOIC ACID (PFPEA)				
PERFLUOROTETRADECANOIC ACID (PFTEA)				
PERFLUOROTRIDECANOIC ACID (PFTRIA)				
PERFLUOROUNDECANOIC ACID (PFUNA)				

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPI Lab Sample ID: 320-40917-1
 Matrix: Water Lab File ID: 2018.07.18LLB_064.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:15
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 298.1 (mL) Date Analyzed: 07/18/2018 23:13
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	62	M	1.7	1.3	0.49
2706-90-3	Perfluoropentanoic acid (PFPeA)	180		1.7	0.84	0.36
307-24-4	Perfluorohexanoic acid (PFHxA)	320		1.7	0.84	0.39
375-85-9	Perfluoroheptanoic acid (PFHpA)	65		1.7	1.3	0.51
335-67-1	Perfluorooctanoic acid (PFOA)	1200	M E	1.7	1.3	0.45
375-95-1	Perfluorononanoic acid (PFNA)	2.4		1.7	1.3	0.44
335-76-2	Perfluorodecanoic acid (PFDA)	0.89	J	1.7	0.84	0.40
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.3	U	1.7	1.3	0.60
307-55-1	Perfluorododecanoic acid (PFDoA)	1.3	U	1.7	1.3	0.44
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.5	U	3.4	2.5	0.64
376-06-7	Perfluorotetradecanoic acid (PFTeA)	2.5	U	3.4	2.5	0.70
375-73-5	Perfluorobutanesulfonic acid (PFBS)	45		1.7	0.84	0.39
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	340	E	1.7	0.84	0.32
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	7.0		1.7	0.84	0.31
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	300		3.4	2.5	0.92
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.3	U	1.7	1.3	0.47
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.5	U M	3.4	2.5	1.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPI Lab Sample ID: 320-40917-1
 Matrix: Water Lab File ID: 2018.07.18LLB_064.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:15
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 298.1 (mL) Date Analyzed: 07/18/2018 23:13
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	96		50-150
STL00992	13C4 PFBA	94		50-150
STL01893	13C5 PFPeA	98		50-150
STL00993	13C2 PFHxA	104		50-150
STL01892	13C4-PFHpA	105		50-150
STL00990	13C4 PFOA	86		50-150
STL00995	13C5 PFNA	99		50-150
STL00996	13C2 PFDA	107		50-150
STL00997	13C2 PFUnA	113		50-150
STL00998	13C2 PFDoA	103		50-150
STL00994	18O2 PFHxS	99		50-150
STL02116	13C2-PFTeDA	95		50-150
STL00991	13C4 PFOS	102		50-150
STL02337	13C3-PFBS	101		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPI DL Lab Sample ID: 320-40917-1 DL
 Matrix: Water Lab File ID: 2018.07.19LLC_065.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:15
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 298.1(mL) Date Analyzed: 07/20/2018 01:12
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 10
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 235047 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	64	D	17	13	4.9
2706-90-3	Perfluoropentanoic acid (PFPeA)	170	D M	17	8.4	3.6
307-24-4	Perfluorohexanoic acid (PFHxA)	340	D	17	8.4	3.9
375-85-9	Perfluoroheptanoic acid (PFHpA)	64	D	17	13	5.1
335-67-1	Perfluorooctanoic acid (PFOA)	1600	D M	17	13	4.5
375-95-1	Perfluorononanoic acid (PFNA)	13	U M	17	13	4.4
335-76-2	Perfluorodecanoic acid (PFDA)	8.4	U	17	8.4	4.0
2058-94-8	Perfluoroundecanoic acid (PFUnA)	13	U	17	13	6.0
307-55-1	Perfluorododecanoic acid (PFDoA)	13	U	17	13	4.4
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	25	U	34	25	6.4
376-06-7	Perfluorotetradecanoic acid (PFTeA)	25	U	34	25	7.0
375-73-5	Perfluorobutanesulfonic acid (PFBS)	55	D	17	8.4	3.9
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	350	D	17	8.4	3.2
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	7.3	J D	17	8.4	3.1
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	300	D	34	25	9.2
335-77-3	Perfluorodecanesulfonic acid (PFDS)	13	U	17	13	4.7
754-91-6	Perfluorooctane Sulfonamide (FOSA)	25	U	34	25	11

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPI DL Lab Sample ID: 320-40917-1 DL
 Matrix: Water Lab File ID: 2018.07.19LLC_065.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:15
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 298.1(mL) Date Analyzed: 07/20/2018 01:12
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 10
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 235047 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	84		50-150
STL00992	13C4 PFBA	94		50-150
STL01893	13C5 PFPeA	90		50-150
STL00993	13C2 PFHxA	85		50-150
STL01892	13C4-PFHpA	93		50-150
STL00990	13C4 PFOA	87		50-150
STL00995	13C5 PFNA	92		50-150
STL00996	13C2 PFDA	103		50-150
STL00997	13C2 PFUnA	91		50-150
STL00998	13C2 PFDoA	84		50-150
STL00994	18O2 PFHxS	91		50-150
STL02116	13C2-PFTeDA	70		50-150
STL00991	13C4 PFOS	86		50-150
STL02337	13C3-PFBS	87		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-MID CARBON Lab Sample ID: 320-40917-2
 Matrix: Water Lab File ID: 2018.07.18LLB_065.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:20
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 295.7 (mL) Date Analyzed: 07/18/2018 23:20
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	110	M	1.7	1.3	0.50
2706-90-3	Perfluoropentanoic acid (PFPeA)	260		1.7	0.85	0.36
307-24-4	Perfluorohexanoic acid (PFHxA)	200		1.7	0.85	0.40
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.1		1.7	1.3	0.52
335-67-1	Perfluorooctanoic acid (PFOA)	29	M	1.7	1.3	0.46
375-95-1	Perfluorononanoic acid (PFNA)	1.3	U	1.7	1.3	0.44
335-76-2	Perfluorodecanoic acid (PFDA)	0.85	U	1.7	0.85	0.41
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.3	U M	1.7	1.3	0.61
307-55-1	Perfluorododecanoic acid (PFDoA)	1.3	U	1.7	1.3	0.44
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.5	U	3.4	2.5	0.64
376-06-7	Perfluorotetradecanoic acid (PFTeA)	2.5	U	3.4	2.5	0.70
375-73-5	Perfluorobutanesulfonic acid (PFBS)	7.1		1.7	0.85	0.39
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.1		1.7	0.85	0.32
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.85	U	1.7	0.85	0.31
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.5	U	3.4	2.5	0.93
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.3	U	1.7	1.3	0.47
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.5	U	3.4	2.5	1.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-MID CARBON Lab Sample ID: 320-40917-2
 Matrix: Water Lab File ID: 2018.07.18LLB_065.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:20
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 295.7(mL) Date Analyzed: 07/18/2018 23:20
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	85		50-150
STL00992	13C4 PFBA	89		50-150
STL01893	13C5 PFPeA	80		50-150
STL00993	13C2 PFHxA	88		50-150
STL01892	13C4-PFHpA	101		50-150
STL00990	13C4 PFOA	94		50-150
STL00995	13C5 PFNA	89		50-150
STL00996	13C2 PFDA	91		50-150
STL00997	13C2 PFUnA	95		50-150
STL00998	13C2 PFDoA	87		50-150
STL00994	18O2 PFHxS	93		50-150
STL02116	13C2-PFTeDA	79		50-150
STL00991	13C4 PFOS	87		50-150
STL02337	13C3-PFBS	80		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPE Lab Sample ID: 320-40917-3
 Matrix: Water Lab File ID: 2018.07.18LLB_066.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:25
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 286.7 (mL) Date Analyzed: 07/18/2018 23:28
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	120	M	1.7	1.3	0.51
2706-90-3	Perfluoropentanoic acid (PFPeA)	220		1.7	0.87	0.37
307-24-4	Perfluorohexanoic acid (PFHxA)	110		1.7	0.87	0.41
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0		1.7	1.3	0.53
335-67-1	Perfluorooctanoic acid (PFOA)	4.1	M	1.7	1.3	0.47
375-95-1	Perfluorononanoic acid (PFNA)	1.3	U M	1.7	1.3	0.45
335-76-2	Perfluorodecanoic acid (PFDA)	0.87	U	1.7	0.87	0.42
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.3	U M	1.7	1.3	0.63
307-55-1	Perfluorododecanoic acid (PFDoA)	1.3	U	1.7	1.3	0.45
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.6	U	3.5	2.6	0.66
376-06-7	Perfluorotetradecanoic acid (PFTeA)	2.6	U	3.5	2.6	0.72
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.4		1.7	0.87	0.40
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.53	J	1.7	0.87	0.33
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.87	U	1.7	0.87	0.32
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.6	U	3.5	2.6	0.96
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.3	U	1.7	1.3	0.49
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.6	U M	3.5	2.6	1.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPE Lab Sample ID: 320-40917-3
 Matrix: Water Lab File ID: 2018.07.18LLB_066.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 09:25
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 286.7(mL) Date Analyzed: 07/18/2018 23:28
 Con. Extract Vol.: 10.00(mL) Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	82		50-150
STL00992	13C4 PFBA	83		50-150
STL01893	13C5 PFPeA	77		50-150
STL00993	13C2 PFHxA	83		50-150
STL01892	13C4-PFHpA	92		50-150
STL00990	13C4 PFOA	89		50-150
STL00995	13C5 PFNA	84		50-150
STL00996	13C2 PFDA	92		50-150
STL00997	13C2 PFUnA	87		50-150
STL00998	13C2 PFDoA	81		50-150
STL00994	18O2 PFHxS	87		50-150
STL02116	13C2-PFTeDA	79		50-150
STL00991	13C4 PFOS	81		50-150
STL02337	13C3-PFBS	79		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPI-D Lab Sample ID: 320-40917-4
 Matrix: Water Lab File ID: 2018.07.18LLB_067.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 00:00
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 307.3 (mL) Date Analyzed: 07/18/2018 23:36
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	110	M	1.6	1.2	0.48
2706-90-3	Perfluoropentanoic acid (PFPeA)	220		1.6	0.81	0.35
307-24-4	Perfluorohexanoic acid (PFHxA)	110		1.6	0.81	0.38
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.1		1.6	1.2	0.50
335-67-1	Perfluorooctanoic acid (PFOA)	4.2	M	1.6	1.2	0.44
375-95-1	Perfluorononanoic acid (PFNA)	1.2	U M	1.6	1.2	0.42
335-76-2	Perfluorodecanoic acid (PFDA)	0.81	U	1.6	0.81	0.39
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.2	U	1.6	1.2	0.59
307-55-1	Perfluorododecanoic acid (PFDoA)	1.2	U	1.6	1.2	0.42
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	2.4	U	3.3	2.4	0.62
376-06-7	Perfluorotetradecanoic acid (PFTeA)	2.4	U	3.3	2.4	0.68
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.4		1.6	0.81	0.37
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.44	J	1.6	0.81	0.31
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.81	U	1.6	0.81	0.30
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.4	U	3.3	2.4	0.89
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.2	U	1.6	1.2	0.46
754-91-6	Perfluorooctane Sulfonamide (FOSA)	2.4	U	3.3	2.4	1.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: TP-PFC-031-TPI-D^E Lab Sample ID: 320-40917-4
 Matrix: Water Lab File ID: 2018.07.18LLB_067.d
 Analysis Method: EPA 537 (Mod) Date Collected: 07/05/2018 00:00
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 307.3 (mL) Date Analyzed: 07/18/2018 23:36
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	84		50-150
STL00992	13C4 PFBA	88		50-150
STL01893	13C5 PFPeA	80		50-150
STL00993	13C2 PFHxA	87		50-150
STL01892	13C4-PFHpA	95		50-150
STL00990	13C4 PFOA	92		50-150
STL00995	13C5 PFNA	91		50-150
STL00996	13C2 PFDA	90		50-150
STL00997	13C2 PFUnA	91		50-150
STL00998	13C2 PFDoA	85		50-150
STL00994	18O2 PFHxS	90		50-150
STL02116	13C2-PFTeDA	77		50-150
STL00991	13C4 PFOS	87		50-150
STL02337	13C3-PFBS	81		50-150

APPENDIX C

SUPPORT DOCUMENTATION

NAS BRUNSWICK
SDG 320-40917-1

SAMPLE IDENTIFICATION

TP-PFC-031-MIDCARBON

COMPOUND

PENTADECAFLUOROOCTANOIC ACID (PFOA)

COMPOUND AREA	1701044
INTERNAL STANDARD AMOUNT (ng/ml)	2.5
DILUTION FACTOR	1
INTERNAL STANDARD AREA	4043163
AVERAGE RRF	1.2315
SAMPLE VOLUME (ml)	295.7
VOLUME EXTRACT (ml)	10
ml to L	1000
CONCENTRATION =	28.88 ng/L

$1701044 \times 2.5 \text{ ng/ml} \times 1000 \text{ ml} \times 10 \text{ ml} \times 1 / (4043163 \times 1.2315 \times 295.7 \text{ ml} \times 1 \text{ L})$

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\2018.07.18LLB_065.d
 Lims ID: 320-40917-A-2-A
 Client ID: TP-PFC-031-MID CARBON
 Sample Type: Client
 Inject. Date: 18-Jul-2018 23:20:50 ALS Bottle#: 49 Worklist Smp#: 6
 Injection Vol: 2.0 ul Dil. Factor: 1.0000
 Sample Info: 320-40917-a-2-a
 Misc. Info.: Plate: 1 Rack: 5
 Operator ID: SACINSTLCMS01 Instrument ID: A8_N
 Method: \\ChromNa\Sacramento\ChromData\A8_N\20180718-61251.b\A8_N.m
 Limit Group: LC PFC_QSM5-1 ICAL
 Last Update: 19-Jul-2018 14:24:57 Calib Date: 11-Jul-2018 15:38:42
 Integrator: Picker
 Quant Method: Isotopic Dilution Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180711-60919.b\2018.07.11LLICALA_008.d
 Column 1 : Det: EXP1
 Process Host: XAWRK007

First Level Reviewer: mongkols Date: 19-Jul-2018 14:24:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.430	0.005	1.004	6848867	3.22			2223	M
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.436	-0.006	0.526	5398222	2.22		88.8	44446	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.747	1.748	-0.001	1.000	12400638	7.55			5783	
D 3 13C5-PFPeA										
267.90 > 223.00	1.747	1.748	-0.001	0.642	3386873	2.00		80.2	48592	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.792	1.793	-0.001	1.000	544005	0.2102			5222	
298.90 > 99.00	1.792	1.793	-0.001	1.000	250644		2.17(1.25-3.74)		3740	
D 47 13C3-PFBS										
301.90 > 83.00	1.792	1.793	-0.001	0.659	78670	1.85		79.7	593	
6 Perfluorohexanoic acid										R
313.00 > 269.00	2.049	2.049	-0.001	0.995	9718267	5.90			20519	R
313.00 > 119.00	2.060	2.049	0.011	1.000	630835		15.41(5.03-15.10)		19224	
D 7 13C2 PFHxA										
315.00 > 270.00	2.060	2.061	-0.001	0.757	4003442	2.20		87.8	81334	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.372	2.373	-0.001	0.995	357341	0.1818			623	
363.00 > 169.00	2.372	2.373	-0.001	0.995	148531		2.41(1.13-3.40)		1186	
D 9 13C4-PFHpA										
367.00 > 322.00	2.385	2.385	-0.001	0.877	4249464	2.53		101	69419	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.385	2.385	-0.001	0.995	156225	0.0616			1017	
399.00 > 99.00	2.385	2.385	-0.001	0.995	52976		2.95(1.50-4.49)		440	
D 11 18O2 PFHxS										
403.00 > 84.00	2.396	2.396	0.0	0.881	5226921	2.20		92.9	97451	

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	2.720	2.714	0.006		4481355	2.50		63139	
D 14 13C4 PFOA	417.00 > 372.00	2.720	2.720	0.0	1.000	4043163	2.36		94.4	38002
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.720	2.721	-0.001	1.000	1701044	0.8540			605	M
413.00 > 169.00	2.628	2.721	-0.093	0.966	1140541		1.49(0.84-2.52)		2941	M
D 18 13C4 PFOS	503.00 > 80.00	3.077	3.076	0.001	1.131	3620525	2.07		86.8	45398
D 19 13C5 PFNA	468.00 > 423.00	3.077	3.076	0.001	1.131	3408223	2.22		89.0	35667
D 21 13C8 FOSA	506.00 > 78.00	3.405	3.412	-0.007	1.252	5332931	2.12		84.7	50170
D 23 13C2 PFDA	515.00 > 470.00	3.423	3.430	-0.007	1.258	3045256	2.26		90.6	29917
D 30 13C2 PFUnA	565.00 > 520.00	3.748	3.754	-0.006	1.378	2665209	2.37		94.9	46398
D 36 13C2 PFDoA	615.00 > 570.00	4.037	4.034	0.003	1.484	2533969	2.18		87.0	19014
D 43 13C2-PFTeDA	715.00 > 670.00	4.530	4.540	-0.010	1.665	2390057	1.98		79.1	12443

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

ANALYTE	ORIGINAL	DUPLICATE	RL	RPD	RPD > 30%
PENTADEC AFLUORO OCTANOIC ACID (PFOA)	4.1	4.2	1.7	2.41	FALSE
PERFLUOROBUTANESULFONIC ACID (PFBS)	2.4	2.4	1.7	0.00	FALSE
PERFLUOROBUTANOIC ACID (PFBA)	120	110	1.7	8.70	FALSE
PERFLUOROHEPTANOIC ACID (PFHPA)	2	2.1	1.7	4.88	FALSE
PERFLUOROHEXANOIC ACID (PFHXA)	110	110	1.7	0.00	FALSE
PERFLUOROPENTANOIC ACID (PFPEA)	220	220	1.7	0.00	FALSE

ORIGINAL SAMPLE CONC >2xRL	DUPLICATE SAMPLE CONC >2xRL	DIFFERENCE >2xRL
TRUE	TRUE	FALSE
FALSE	FALSE	FALSE
TRUE	TRUE	TRUE
FALSE	FALSE	FALSE
TRUE	TRUE	FALSE
TRUE	TRUE	FALSE

SDG 320-40153-1

TP-PFC-030-TPE/TP-PFC-030-TPE-D

West Sacramento, CA 95605
Phone: 916.373.5600 Fax:

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: JEFF ORIENT		Site Contact: DAN Griben		Date: 7/15/2018		COC No: 240689	
Company Name: TETRA TECH		Tel/Fax: 412-921-8660		Lab Contact: DAVID AHITKA		Carrier: FEDEX		1 of 1 COCs	
Address: 881 ANDERSON DR. FOSTER PLAZA		Analysis Turnaround Time							
City/State/Zip: PITTSBURGH/PA/15210		<input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day							
Phone: 412-921-0650		<div style="text-align: center;">  320-40917 Chain of Custody </div>							
Fax:									
Project Name: BROADSWICK GWETS									
Site: FORMER WAS BROADSWICK									
PO# 112608005-WE21		Filtered Sample (Y/N) <input type="checkbox"/> Perform MS/MSD (Y/N) <input type="checkbox"/> PFC (Full list)							
Sampler: DB		For Lab Use Only:							
Walk-in Client:		Lab Sampling:							
Job / SDG No.:		Sample Specific Notes:							

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	PFC (Full list)
TP-PFC-031-TPI	7/5	0915	G	W	4	N	N	X
TP-PFC-031-MID CARBON		0920	G	W	4	N	N	X
TP-PFC-031-TPE		0925	G	W	4	N	N	X
TP-PFC-031-TPE-D		0900	G	W	4	N	N	X
DK						DK		

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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-Hazardous Flammable Skin Irritant Poison B Unknown



Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments:

Custody Seals Intact: Yes No

Custody Seal No.: _____ Cooler Temp. (°C): Obs'd: **4.2** Corr'd: **4.2** Therm ID No.: **A11-5**

Relinquished by: 	Company: T+	Date/Time: 7/15 1500	Received by: 	Company: TA-SAC	Date/Time: 07/16/18 0915
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-40917-1

Login Number: 40917

List Source: TestAmerica Sacramento

List Number: 1

Creator: Her, David A

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Job Narrative
320-40917-1

Receipt

The samples were received on 7/6/2018 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 4.2° C.

LCMS

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

Method(s) EPA 537 (Mod): The concentration of Perfluorooctanoic acid (PFOA) and Perfluorohexanesulfonic acid (PFHxS) associated with the following sample exceeded the instrument calibration range: TP-PFC-031-TPI (320-40917-1). These analytes have been qualified; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Method(s) EPA 537 (Mod): Results for sample TP-PFC-031-TPI (320-40917-1) were reported from the analysis of a diluted extract due to high concentration of the target analyte in the analysis of the undiluted extract. The dilution factor was applied to the labeled internal standard area counts and these area counts were within acceptance limits.

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 320-233164.

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

Definitions/Glossary

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

TestAmerica Job ID: 320-40917-1

Qualifiers

LCMS

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

Glossary

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

Sample Summary

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

TestAmerica Job ID: 320-40917-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-40917-1	TP-PFC-031-TPI	Water	07/05/18 09:15	07/06/18 09:15
320-40917-2	TP-PFC-031-MID CARBON	Water	07/05/18 09:20	07/06/18 09:15
320-40917-3	TP-PFC-031-TPE	Water	07/05/18 09:25	07/06/18 09:15
320-40917-4	TP-PFC-031-TPI-D	Water	07/05/18 00:00	07/06/18 09:15

Method Summary

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

TestAmerica Job ID: 320-40917-1

Method	Method Description	Protocol	Laboratory
EPA 537 (Mod)	PFAS for QSM 5.1, Table B-15	DOD 5.1	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

DOD 5.1 = Department of Defense Quality Systems Manual V5.1

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

Laboratory References:

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

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFBA #	PFPeA #	PFBS #	PFHxA #	PFHpA #	PFHxS #	PFOA #	PFNA #
TP-PFC-031-TPI	320-40917-1	94	98	101	104	105	99	86	99
TP-PFC-031-TPI DL	320-40917-1 DL	94	90	87	85	93	91	87	92
TP-PFC-031-MID CARBON	320-40917-2	89	80	80	88	101	93	94	89
TP-PFC-031-TPE	320-40917-3	83	77	79	83	92	87	89	84
TP-PFC-031-TPI-D	320-40917-4	88	80	81	87	95	90	92	91
	MB 320-233164/1-A	85	80	80	89	97	90	93	91
	LCS 320-233164/2-A	89	84	83	91	97	93	92	91
	LCSD 320-233164/3-A	89	82	83	91	96	96	91	91

PFBA = 13C4 PFBA
 PFPeA = 13C5 PFPeA
 PFBS = 13C3-PFBS
 PFHxA = 13C2 PFHxA
 PFHpA = 13C4-PFHpA
 PFHxS = 18O2 PFHxS
 PFOA = 13C4 PFOA
 PFNA = 13C5 PFNA

QC LIMITS
 50-150
 50-150
 50-150
 50-150
 50-150
 50-150
 50-150
 50-150

Column to be used to flag recovery values

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

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-031-TPI	320-40917-1	102	96	107	113	103	95
TP-PFC-031-TPI DL	320-40917-1 DL	86	84	103	91	84	70
TP-PFC-031-MID CARBON	320-40917-2	87	85	91	95	87	79
TP-PFC-031-TPE	320-40917-3	81	82	92	87	81	79
TP-PFC-031-TPI-D	320-40917-4	87	84	90	91	85	77
	MB 320-233164/1-A	84	80	93	93	89	83
	LCS 320-233164/2-A	88	79	92	94	87	77
	LCSD 320-233164/3-A	86	79	94	93	85	78

	<u>QC LIMITS</u>
PFOS = 13C4 PFOS	50-150
PFOSA = 13C8 FOSA	50-150
PFDA = 13C2 PFDA	50-150
PFUnA = 13C2 PFUnA	50-150
PFDoA = 13C2 PFDoA	50-150
PFTDA = 13C2-PFTeDA	50-150

Column to be used to flag recovery values

FORM II EPA 537 (Mod)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Sample No.: IC 320-233477/5 Date Analyzed: 07/11/2018 15:15
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.07.11LLICALA_0 Heated Purge: (Y/N) N
 Calibration ID: 39999

	13PFOA					
	AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT	4343809	2.67				
UPPER LIMIT	6515714	2.87				
LOWER LIMIT	2171905	2.47				
LAB SAMPLE ID	CLIENT SAMPLE ID					
ICB 320-233477/9		3951281	2.66			
ICV 320-233477/10		4109601	2.67			
CCV 320-234756/3 CCVIS		3893737	2.73			

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Sample No.: CCV 320-234756/3 Date Analyzed: 07/18/2018 16:57
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.07.18LLAA_056. Heated Purge: (Y/N) N
 Calibration ID: 39999

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3893737	2.73				
UPPER LIMIT		5840606	2.93				
LOWER LIMIT		1946869	2.53				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-234756/1		3628230	2.74				
CCVL 320-234756/2		4432604	2.73				
CCV 320-234762/1		3721178	2.71				
MB 320-233164/1-A		4618514	2.72				
LCS 320-233164/2-A		4819931	2.72				
LCSD 320-233164/3-A		4838897	2.72				
320-40917-1	TP-PFC-031-TPI	3977567	2.71				
320-40917-2	TP-PFC-031-MID CARBON	4481355	2.72				
320-40917-3	TP-PFC-031-TPE	4747501	2.72				
320-40917-4	TP-PFC-031-TPI-D	4570877	2.71				
CCV 320-234762/9		3723947	2.71				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Sample No.: IC 320-234930/5 Date Analyzed: 07/19/2018 12:33
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.07.19LLICAL_00 Heated Purge: (Y/N) N
 Calibration ID: 40194

	13PFOA		AREA #	RT #	AREA #	RT #
	AREA #	RT #				
INITIAL CALIBRATION MID-POINT	3899180	2.72				
UPPER LIMIT	5848770	2.92				
LOWER LIMIT	1949590	2.52				
LAB SAMPLE ID	CLIENT SAMPLE ID					
ICB 320-234930/9		4160361	2.72			
ICV 320-234930/10		3999659	2.72			
CCV 320-235044/3 CCVIS		3304797	2.72			

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Sample No.: CCV 320-235044/3 Date Analyzed: 07/19/2018 19:28
 Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3 (mm)
 Lab File ID (Standard): 2018.07.19LLC_021.d Heated Purge: (Y/N) N
 Calibration ID: 40194

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3304797	2.72				
UPPER LIMIT		4957196	2.92				
LOWER LIMIT		1652399	2.52				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-235044/1		3759234	2.73				
CCVL 320-235044/2		3942446	2.73				
CCV 320-235047/1		3012998	2.73				
320-40917-1 DL	TP-PFC-031-TPI DL	446861Q	2.73				
CCV 320-235047/4		3384786	2.72				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab File ID: 2018.07.18LLB_061.d Lab Sample ID: MB 320-233164/1-A
 Matrix: Water Date Extracted: 07/10/2018 08:16
 Instrument ID: A8_N Date Analyzed: 07/18/2018 22:49
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-233164/2-A	2018.07.18L LB 062.d	07/18/2018 22:57
	LCSD 320-233164/3-A	2018.07.18L LB 063.d	07/18/2018 23:05
TP-PFC-031-TPI	320-40917-1	2018.07.18L LB 064.d	07/18/2018 23:13
TP-PFC-031-MID CARBON	320-40917-2	2018.07.18L LB 065.d	07/18/2018 23:20
TP-PFC-031-TPE	320-40917-3	2018.07.18L LB 066.d	07/18/2018 23:28
TP-PFC-031-TPI-D	320-40917-4	2018.07.18L LB 067.d	07/18/2018 23:36
TP-PFC-031-TPI DL	320-40917-1 DL	2018.07.19L LC 065.d	07/20/2018 01:12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-233164/1-A
 Matrix: Water Lab File ID: 2018.07.18LLB_061.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 250 (mL) Date Analyzed: 07/18/2018 22:49
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.634	J	2.0	1.5	0.59
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.489	J M	2.0	1.0	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	1.0	U	2.0	1.0	0.47
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.5	U	2.0	1.5	0.61
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U	2.0	1.5	0.54
375-95-1	Perfluorononanoic acid (PFNA)	1.5	U	2.0	1.5	0.52
335-76-2	Perfluorodecanoic acid (PFDA)	1.0	U	2.0	1.0	0.48
2058-94-8	Perfluoroundecanoic acid (PFUnA)	1.5	U	2.0	1.5	0.72
307-55-1	Perfluorododecanoic acid (PFDoA)	1.5	U	2.0	1.5	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	3.0	U	4.0	3.0	0.76
376-06-7	Perfluorotetradecanoic acid (PFTeA)	3.0	U	4.0	3.0	0.83
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.0	U	2.0	1.0	0.46
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.0	U	2.0	1.0	0.38
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	1.0	U	2.0	1.0	0.37
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	4.0	3.0	1.1
335-77-3	Perfluorodecanesulfonic acid (PFDS)	1.5	U	2.0	1.5	0.56
754-91-6	Perfluorooctane Sulfonamide (FOSA)	3.0	U	4.0	3.0	1.3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 320-233164/1-A
 Matrix: Water Lab File ID: 2018.07.18LLB_061.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/10/2018 08:16
 Sample wt/vol: 250 (mL) Date Analyzed: 07/18/2018 22:49
 Con. Extract Vol.: 10.00 (mL) Dilution Factor: 1
 Injection Volume: 2 (uL) GC Column: GeminiC18 3x100 ID: 3 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234762 Units: ng/L

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	80		50-150
STL00992	13C4 PFBA	85		50-150
STL01893	13C5 PFPeA	80		50-150
STL00993	13C2 PFHxA	89		50-150
STL01892	13C4-PFHpA	97		50-150
STL00990	13C4 PFOA	93		50-150
STL00995	13C5 PFNA	91		50-150
STL00996	13C2 PFDA	93		50-150
STL00997	13C2 PFUnA	93		50-150
STL00998	13C2 PFDoA	89		50-150
STL00994	18O2 PFHxS	90		50-150
STL02116	13C2-PFTeDA	83		50-150
STL00991	13C4 PFOS	84		50-150
STL02337	13C3-PFBS	80		50-150

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2018.07.18LLB_062.d

Lab ID: LCS 320-233164/2-A

Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutanoic acid (PFBA)	40.0	35.8	89	83-118	M
Perfluoropentanoic acid (PFPeA)	40.0	35.0	88	83-108	
Perfluorohexanoic acid (PFHxA)	40.0	38.0	95	83-109	
Perfluoroheptanoic acid (PFHpA)	40.0	36.8	92	80-113	
Perfluorooctanoic acid (PFOA)	40.0	35.8	89	80-107	
Perfluorononanoic acid (PFNA)	40.0	35.2	88	83-113	
Perfluorodecanoic acid (PFDA)	40.0	36.7	92	85-113	
Perfluoroundecanoic acid (PFUnA)	40.0	32.3	81	76-105	
Perfluorododecanoic acid (PFDoA)	40.0	37.0	92	87-116	
Perfluorotridecanoic Acid (PFTriA)	40.0	36.8	92	75-129	
Perfluorotetradecanoic acid (PFTeA)	40.0	36.8	92	82-115	
Perfluorobutanesulfonic acid (PFBS)	35.4	33.0	93	87-120	
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.9	88	81-106	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	34.9	92	80-117	
Perfluorooctanesulfonic acid (PFOS)	37.1	34.2	92	82-112	
Perfluorodecanesulfonic acid (PFDS)	38.6	33.9	88	81-114	
Perfluorooctane Sulfonamide (FOSA)	40.0	38.6	97	85-114	
13C8 FOSA	100	79.1	79	50-150	
13C4 PFBA	100	89.2	89	50-150	
13C5 PFPeA	100	83.9	84	50-150	
13C2 PFHxA	100	90.9	91	50-150	
13C4-PFHpA	100	97.0	97	50-150	
13C4 PFOA	100	92.4	92	50-150	
13C5 PFNA	100	91.4	91	50-150	
13C2 PFDA	100	92.4	92	50-150	
13C2 PFUnA	100	93.7	94	50-150	
13C2 PFDoA	100	87.0	87	50-150	
18O2 PFHxS	94.6	88.1	93	50-150	
13C2-PFTeDA	100	77.2	77	50-150	
13C4 PFOS	95.6	84.1	88	50-150	
13C3-PFBS	93.0	77.1	83	50-150	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

SDG No.: _____

Matrix: Water Level: Low

Lab File ID: 2018.07.18LLB_063.d

Lab ID: LCSD 320-233164/3-A

Client ID: _____

COMPOUND	SPIKE ADDED (ng/L)	LCSD CONCENTRATION (ng/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutanoic acid (PFBA)	40.0	36.9	92	3	30	83-118	M
Perfluoropentanoic acid (PFPeA)	40.0	37.8	94	8	30	83-108	
Perfluorohexanoic acid (PFHxA)	40.0	38.6	97	2	30	83-109	
Perfluoroheptanoic acid (PFHpA)	40.0	35.5	89	3	30	80-113	
Perfluorooctanoic acid (PFOA)	40.0	36.3	91	1	30	80-107	
Perfluorononanoic acid (PFNA)	40.0	37.2	93	5	30	83-113	
Perfluorodecanoic acid (PFDA)	40.0	38.5	96	5	30	85-113	
Perfluoroundecanoic acid (PFUnA)	40.0	33.1	83	2	30	76-105	
Perfluorododecanoic acid (PFDoA)	40.0	37.8	95	2	30	87-116	
Perfluorotridecanoic Acid (PFTriA)	40.0	39.0	98	6	30	75-129	
Perfluorotetradecanoic acid (PFTeA)	40.0	37.1	93	1	30	82-115	
Perfluorobutanesulfonic acid (PFBS)	35.4	34.0	96	3	30	87-120	
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.1	85	3	30	81-106	
Perfluoroheptanesulfonic Acid (PFHpS)	38.1	38.5	101	10	30	80-117	
Perfluorooctanesulfonic acid (PFOS)	37.1	35.7	96	4	30	82-112	
Perfluorodecanesulfonic acid (PFDS)	38.6	34.9	90	3	30	81-114	
Perfluorooctane Sulfonamide (FOSA)	40.0	40.2	101	4	30	85-114	
13C8 FOSA	100	79.4	79			50-150	
13C4 PFBA	100	88.9	89			50-150	
13C5 PFPeA	100	82.0	82			50-150	
13C2 PFHxA	100	90.6	91			50-150	
13C4-PFHpA	100	95.9	96			50-150	
13C4 PFOA	100	91.4	91			50-150	
13C5 PFNA	100	91.3	91			50-150	
13C2 PFDA	100	94.4	94			50-150	
13C2 PFUnA	100	92.8	93			50-150	
13C2 PFDoA	100	85.2	85			50-150	
18O2 PFHxS	94.6	90.4	96			50-150	
13C2-PFTeDA	100	77.9	78			50-150	
13C4 PFOS	95.6	82.4	86			50-150	
13C3-PFBS	93.0	77.4	83			50-150	

Column to be used to flag recovery and RPD values

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/11/2018 14:48

Analysis Batch Number: 233477 End Date: 07/11/2018 15:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-233477/2		07/11/2018 14:48	1	2018.07.11LLICA LA 002.d	GeminiC18 3x100 3(mm)
IC 320-233477/3		07/11/2018 14:59	1	2018.07.11LLICA LA 003.d	GeminiC18 3x100 3(mm)
IC 320-233477/4		07/11/2018 15:07	1	2018.07.11LLICA LA 004.d	GeminiC18 3x100 3(mm)
IC 320-233477/5 ICIS		07/11/2018 15:15	1	2018.07.11LLICA LA 005.d	GeminiC18 3x100 3(mm)
IC 320-233477/6		07/11/2018 15:23	1	2018.07.11LLICA LA 006.d	GeminiC18 3x100 3(mm)
IC 320-233477/7		07/11/2018 15:30	1	2018.07.11LLICA LA 007.d	GeminiC18 3x100 3(mm)
IC 320-233477/8		07/11/2018 15:38	1	2018.07.11LLICA LA 008.d	GeminiC18 3x100 3(mm)
ICB 320-233477/9		07/11/2018 15:46	1	2018.07.11LLICA LA 009.d	GeminiC18 3x100 3(mm)
ICV 320-233477/10		07/11/2018 15:54	1	2018.07.11LLICA LA 010.d	GeminiC18 3x100 3(mm)

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477

SDG No.: _____

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

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-233477/2	2018.07.11LLICALA_002.d
Level 2	IC 320-233477/3	2018.07.11LLICALA_003.d
Level 3	IC 320-233477/4	2018.07.11LLICALA_004.d
Level 4	IC 320-233477/5	2018.07.11LLICALA_005.d
Level 5	IC 320-233477/6	2018.07.11LLICALA_006.d
Level 6	IC 320-233477/7	2018.07.11LLICALA_007.d
Level 7	IC 320-233477/8	2018.07.11LLICALA_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
Perfluorobutanoic acid (PFBA)	++++ 1.0129	0.9718 0.9875	0.9741	0.9685	0.9987	AveID		0.9856			1.8		20.0				
Perfluoropentanoic acid (PFPeA)	1.3707 1.1646	1.3311 1.1446	1.1808	1.1434	1.1567	AveID		1.2131			7.9		20.0				
Perfluorobutanesulfonic acid (PFBS)	79.113 76.960	76.692 70.480	75.620	75.784	80.820	AveID		76.496			4.2		20.0				
4:2 FTS	13.538 13.122	12.667 12.442	13.653	12.881	12.690	AveID		12.999			3.5		20.0				
Perfluorohexanoic acid (PFHxA)	1.0307 1.0261	1.1305 0.9984	0.9842	1.0000	1.0353	AveID		1.0293			4.7		20.0				
Perfluoropentanesulfonic acid	73.006 70.441	70.339 63.345	65.432	72.240	73.667	AveID		69.781			5.6		20.0				
Perfluoroheptanoic acid (PFHpA)	1.2918 1.1087	1.2500 1.0814	1.1033	1.0989	1.1620	AveID		1.1566			7.2		20.0				
Perfluorohexanesulfonic acid (PFHxS)	1.3490 1.1211	1.1536 1.1001	1.1020	1.0938	1.1158	AveID		1.1479			7.9		20.0				
6:2 FTS	1.4307 1.5705	1.5312 1.6799	1.5392	1.5534	1.6458	AveID		1.5644			5.2		20.0				
Perfluorooctanoic acid (PFOA)	1.4929 1.1887	1.3327 1.1135	1.2003	1.1335	1.1592	AveID		1.2315			11.0		20.0				
Perfluoroheptanesulfonic Acid (PFHpS)	1.3509 1.3688	1.2372 1.2042	1.2775	1.3810	1.4032	AveID		1.3175			5.9		20.0				
Perfluorooctanesulfonic acid (PFOS)	1.1761 1.1316	1.1320 1.0970	1.1094	1.1393	1.1467	AveID		1.1332			2.3		20.0				
Perfluorononanoic acid (PFNA)	1.1492 1.1085	1.1038 1.0564	1.1540	1.0890	1.1045	AveID		1.1093			3.0		20.0				
Perfluorooctane Sulfonamide (FOSA)	0.9447 1.0010	1.0015 0.9523	0.9424	1.0155	1.0419	AveID		0.9856			4.0		20.0				

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

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

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

Analy Batch No.: 233477

SDG No.: _____

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/11/2018 14:48

Calibration End Date: 07/11/2018 15:38

Calibration ID: 39999

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
Perfluorononanesulfonic acid	0.8131 0.8121	0.7419 0.7503	0.7613	0.7781	0.7695	AveID		0.7752			3.6		20.0				
8:2 FTS	1.4047 1.2898	1.2049 1.3194	1.2351	1.2424	1.3334	AveID		1.2900			5.3		20.0				
Perfluorodecanoic acid (PFDA)	0.9467 1.0931	1.1302 1.0145	1.0491	1.0636	1.0484	AveID		1.0494			5.6		20.0				
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	1.0236 0.9755	0.9472 1.0328	0.9128	0.9868	1.0221	AveID		0.9858			4.5		20.0				
Perfluorodecanesulfonic acid (PFDS)	0.6225 0.6912	0.6387 0.6423	0.6832	0.7141	0.7080	AveID		0.6714			5.4		20.0				
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.6464 0.9255	0.9301 0.9261	1.0028	0.8322	0.9253	AveID		0.8840			13.1		20.0				
Perfluoroundecanoic acid (PFUnA)	0.9434 0.7821	0.8699 0.8018	0.7503	0.7522	0.8365	AveID		0.8195			8.5		20.0				
Perfluorododecanoic acid (PFDoA)	1.1376 1.0839	0.9975 1.0907	1.0746	1.1154	1.1433	AveID		1.0919			4.5		20.0				
Perfluorotridecanoic Acid (PFTriA)	0.9687 1.0789	1.0292 1.0500	1.0796	1.0816	1.1857	AveID		1.0677			6.2		20.0				
Perfluorotetradecanoic acid (PFTeA)	0.2555 0.2589	0.2919 0.2636	0.2453	0.2569	0.2491	AveID		0.2602			5.9		20.0				
13C4 PFBA	++++ 1.4117	1.2696 1.5420	1.3076	1.2987	1.3059	Ave		1.3559			7.6		20.0				
13C5 PFPeA	0.9124 1.0054	0.8821 1.0349	0.9316	0.8944	0.9368	Ave		0.9425			6.0		20.0				
13C3-PFBS	0.0220 0.0248	0.0229 0.0269	0.0230	0.0231	0.0231	Ave		0.0237			6.9		20.0				
13C2 PFHxA	0.9821 1.0465	0.9787 1.1049	0.9969	1.0174	0.9938	Ave		1.0172			4.4		20.0				
13C4-PFHpA	0.9006 0.9748	0.8952 0.9872	0.9277	0.9373	0.9365	Ave		0.9371			3.7		20.0				
18O2 PFHxS	1.3480 1.3594	1.2940 1.3736	1.3258	1.2974	1.2946	Ave		1.3275			2.5		20.0				
M2-6:2FTS	0.2035 0.2073	0.1985 0.1979	0.2090	0.1987	0.1914	Ave		0.2009			3.0		20.0				
13C4 PFOA	0.9476 0.9571	0.9504 0.9746	0.9553	0.9586	0.9488	Ave		0.9560			1.0		20.0				
13C4 PFOS	0.9448 1.0026	0.9615 1.0887	0.9374	0.9230	0.9612	Ave		0.9742			5.8		20.0				
13C5 PFNA	0.8507 0.8495	0.8673 0.8781	0.8351	0.8465	0.8552	Ave		0.8546			1.7		20.0				

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
13C8 FOSA	1.4178 1.4370	1.3891 1.3807	1.4145	1.3980	1.3958	Ave		1.4047			1.4		20.0				
M2-8:2FTS	0.3145 0.2790	0.3204 0.2470	0.3241	0.2983	0.2738	Ave		0.2939			9.7		20.0				
13C2 PFDA	0.7752 0.7109	0.7395 0.7327	0.7855	0.7427	0.7657	Ave		0.7503			3.5		20.0				
d3-NMeFOSAA	0.2939 0.3280	0.2883 0.3404	0.2973	0.3039	0.3008	Ave		0.3075			6.3		20.0				
d5-NEtFOSAA	0.3122 0.3175	0.3225 0.3114	0.3121	0.3252	0.3044	Ave		0.3150			2.3		20.0				
13C2 PUnA	0.6068 0.6358	0.6382 0.6158	0.6383	0.6306	0.6206	Ave		0.6266			2.0		20.0				
13C2 PFDoA	0.6316 0.6752	0.6317 0.6905	0.6629	0.6311	0.6243	Ave		0.6496			4.0		20.0				
13C2-PFTeDA	0.6485 0.6992	0.6025 0.7344	0.7008	0.6559	0.6769	Ave		0.6740			6.4		20.0				
13C2-PFHxDA	1.0898 1.0988	0.9225 1.1203	1.0956	1.0747	1.1137	Ave		1.0736			6.4		20.0				

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477

SDG No.: _____

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

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-233477/2	2018.07.11LLICALA_002.d
Level 2	IC 320-233477/3	2018.07.11LLICALA_003.d
Level 3	IC 320-233477/4	2018.07.11LLICALA_004.d
Level 4	IC 320-233477/5	2018.07.11LLICALA_005.d
Level 5	IC 320-233477/6	2018.07.11LLICALA_006.d
Level 6	IC 320-233477/7	2018.07.11LLICALA_007.d
Level 7	IC 320-233477/8	2018.07.11LLICALA_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7				LVL 6	LVL 7			
Perfluorobutanoic acid (PFBA)		AveID	++++ 10623913	109256 22835400	529569	2185459	5273443	++++ 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	51727 8699476	103977 17766142	457354	1776986	4381627	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	63723 12546505	137206 25119744	638814	2692471	6674181	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	11521 2260293	23943 4685101	121859	483517	1107254	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	41864 7978958	97977 16543784	407905	1767805	4160132	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanesulfonic acid		AveID	62396 12185262	133528 23955798	586514	2723317	6455101	0.0235 4.69	0.0469 9.38	0.235	0.938	2.35
Perfluoroheptanoic acid (PFHpA)		AveID	48115 8030466	99091 16011091	425549	1789760	4400212	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	68440 10305090	120291 20622639	552716	2243830	5315063	0.0228 4.55	0.0455 9.10	0.228	0.910	2.28
6:2 FTS		AveID	11415 2292840	25517 4726825	126798	508387	1207511	0.0237 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	58566 8461263	112267 16291262	477183	1889955	4451468	0.0250 5.01	0.0501 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	50252 9707552	100280 18718055	473940	2108438	5191820	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorooctanesulfonic acid (PFOS)		AveID	42647 7822689	89440 16622900	401226	1695511	4135858	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorononanoic acid (PFNA)		AveID	40436 6996919	84772 13910795	400644	1601728	3819652	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctane Sulfonamide (FOSA)		AveID	55398 10688141	123192 19718955	554186	2466657	5880155	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorononanesulfonic acid		AveID	30501 5807858	60641 11760635	284813	1198001	2871112	0.0240 4.80	0.0480 9.60	0.240	0.960	2.40

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477

SDG No.: _____

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

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

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
8:2 FTS		AveID	17506 2561237	32747 4682146	159408	616956	1414341	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40
Perfluorodecanoic acid (PFDA)		AveID	30353 5773802	74013 11148372	342607	1372481	3246129	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	12441 2377396	24180 5272635	112830	521077	1243187	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	23450 4963395	52427 10109747	256645	1104012	2652406	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	8347 2183486	26557 4325460	130099	470221	1138694	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	23675 3694320	49158 7405393	199100	824114	2099121	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid (PFDoA)		AveID	29719 5437907	55796 11295646	296160	1222974	2886271	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	25307 5412702	57570 10874073	297546	1185888	2993320	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	6854 1344804	15573 2903345	71477	292793	681755	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	+++++ 5244451	5621166 5781235	5436336	5641372	5280540	+++++ 2.50	2.50 2.50	2.50	2.50	2.50
13C5 PFPeA	13PF OA	Ave	3773636 3734969	3905774 3880280	3873105	3885306	3788119	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	84738 85755	94108 93739	88873	93442	86878	2.33 2.33	2.33 2.33	2.33	2.33	2.33
13C2 PFHxA	13PF OA	Ave	4061845 3887868	4333312 4142603	4144632	4419532	4018475	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PF OA	Ave	3724726 3621431	3963601 3701454	3856910	4071620	3786835	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5274150 4777689	5419785 4872001	5214223	5331177	4952007	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	799554 731524	834970 704932	825525	819911	735229	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	3919080 3555536	4207903 3653899	3971401	4164105	3836329	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	3735610 3560852	4069838 3902400	3725581	3832872	3715442	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	3518663 3155893	3839924 3292167	3471672	3677166	3458178	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	5863894 5338756	6150410 5176580	5880733	6072674	5643811	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	1246262 992916	1358867 887172	1290698	1241456	1060685	2.40 2.40	2.40 2.40	2.40	2.40	2.40

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477

SDG No.: _____

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

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7				LVL 6	LVL 7			
13C2 PFDA	13PF OA	Ave	3206069 2641138	3274309 2747254	3265845	3225992	3096188	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	1215393 1218514	1276369 1276287	1236119	1320092	1216339	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d5-NEtFOSAA	13PF OA	Ave	1291362 1179674	1427681 1167600	1297377	1412562	1230676	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFunA	13PF OA	Ave	2509506 2361908	2825527 2308936	2653699	2739039	2509304	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDoA	13PF OA	Ave	2612394 2508500	2796780 2588991	2756034	2741167	2524421	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	2682209 2597628	2667637 2753301	2913500	2848985	2737226	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	4507577 4082261	4084288 4200183	4554944	4668246	4503233	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477

SDG No.: _____

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

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-233477/2	2018.07.11LLICALA_002.d
Level 2	IC 320-233477/3	2018.07.11LLICALA_003.d
Level 3	IC 320-233477/4	2018.07.11LLICALA_004.d
Level 4	IC 320-233477/5	2018.07.11LLICALA_005.d
Level 5	IC 320-233477/6	2018.07.11LLICALA_006.d
Level 6	IC 320-233477/7	2018.07.11LLICALA_007.d
Level 7	IC 320-233477/8	2018.07.11LLICALA_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid (PFBA)	++++ 0.2	-1.4	-1.2	-1.7	1.3	2.8	30	30	30	30	30	30
Perfluoropentanoic acid (PFPeA)	13.0 -5.6	9.7	-2.7	-5.7	-4.7	-4.0	30 30	30	30	30	30	30
Perfluorobutanesulfonic acid (PFBS)	3.4 -7.9	0.3	-1.1	-0.9	5.7	0.6	30 30	30	30	30	30	30
4:2 FTS	4.1 -4.3	-2.6	5.0	-0.9	-2.4	0.9	30 30	30	30	30	30	30
Perfluorohexanoic acid (PFHxA)	0.1 -3.0	9.8	-4.4	-2.8	0.6	-0.3	30 30	30	30	30	30	30
Perfluoropentanesulfonic acid	4.6 -9.2	0.8	-6.2	3.5	5.6	0.9	30 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	11.7 -6.5	8.1	-4.6	-5.0	0.5	-4.1	30 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	17.5 -4.2	0.5	-4.0	-4.7	-2.8	-2.3	30 30	30	30	30	30	30
6:2 FTS	-8.5 7.4	-2.1	-1.6	-0.7	5.2	0.4	30 30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	21.2 -9.6	8.2	-2.5	-8.0	-5.9	-3.5	30 30	30	30	30	30	30
Perfluoroheptanesulfonic Acid (PFHpS)	2.5 -8.6	-6.1	-3.0	4.8	6.5	3.9	30 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	3.8 -3.2	-0.1	-2.1	0.5	1.2	-0.1	30 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	3.6 -4.8	-0.5	4.0	-1.8	-0.4	-0.1	30 30	30	30	30	30	30
Perfluorooctane Sulfonamide (FOSA)	-4.1 -3.4	1.6	-4.4	3.0	5.7	1.6	30 30	30	30	30	30	30
Perfluorononanesulfonic acid	4.9 -3.2	-4.3	-1.8	0.4	-0.7	4.8	30 30	30	30	30	30	30

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 233477

SDG No.: _____

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

Calibration Start Date: 07/11/2018 14:48 Calibration End Date: 07/11/2018 15:38 Calibration ID: 39999

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
8:2 FTS	8.9 2.3	-6.6	-4.3	-3.7	3.4	0.0	30 30	30	30	30	30	30
Perfluorodecanoic acid (PFDA)	-9.8 -3.3	7.7	0.0	1.4	-0.1	4.2	30 30	30	30	30	30	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	3.8 4.8	-3.9	-7.4	0.1	3.7	-1.0	30 30	30	30	30	30	30
Perfluorodecanesulfonic acid (PFDS)	-7.3 -4.3	-4.9	1.7	6.4	5.4	2.9	30 30	30	30	30	30	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	-26.9 4.8	5.2	13.4	-5.9	4.7	4.7	30 30	30	30	30	30	30
Perfluoroundecanoic acid (PFUnA)	15.1 -2.2	6.2	-8.4	-8.2	2.1	-4.6	30 30	30	30	30	30	30
Perfluorododecanoic acid (PFDoA)	4.2 -0.1	-8.6	-1.6	2.2	4.7	-0.7	30 30	30	30	30	30	30
Perfluorotridecanoic Acid (PFTriA)	-9.3 -1.7	-3.6	1.1	1.3	11.1	1.0	30 30	30	30	30	30	30
Perfluorotetradecanoic acid (PFTeA)	-1.8 1.3	12.2	-5.7	-1.2	-4.3	-0.5	30 30	30	30	30	30	30

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: ICV 320-233477/10 Calibration Date: 07/11/2018 15:54
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.11LLICALA_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	1.006		2.55	2.50	2.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.190		2.45	2.50	-1.9	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	75.70		2.19	2.21	-1.0	30.0
4:2 FTS	AveID	13.00	12.39		2.23	2.34	-4.7	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.045		2.54	2.50	1.6	30.0
Perfluoropentanesulfonic acid	AveID	69.78	67.50		2.27	2.35	-3.3	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.129		2.44	2.50	-2.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.139		2.26	2.28	-0.8	30.0
6:2 FTS	AveID	1.564	1.662		2.52	2.37	6.2	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.189		2.42	2.50	-3.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.338		2.42	2.38	1.5	30.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.129		2.54	2.50	1.8	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.100		2.25	2.32	-2.9	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9614		2.44	2.50	-2.5	30.0
8:2 FTS	AveID	1.290	1.301		2.42	2.40	0.9	30.0
Perfluorononanesulfonic acid	AveID	0.7752	0.7807		2.42	2.40	0.7	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.088		2.59	2.50	3.7	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9853		2.50	2.50	-0.0	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6730		2.42	2.41	0.2	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8891		2.51	2.50	0.6	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7701		2.35	2.50	-6.0	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.087		2.49	2.50	-0.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.119		2.62	2.50	4.8	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2656		2.55	2.50	2.1	30.0
13C4 PFBA	Ave	1.356	1.378		2.54	2.50	1.6	30.0
13C5 PFPeA	Ave	0.9425	0.9608		2.55	2.50	1.9	30.0
13C3-PFBS	Ave	0.0237	0.0248		2.43	2.33	4.5	30.0
13C2 PFHxA	Ave	1.017	1.045		2.57	2.50	2.7	30.0
13C4-PFHpA	Ave	0.9371	0.9594		2.56	2.50	2.4	30.0
18O2 PFHxS	Ave	1.328	1.310		2.33	2.37	-1.3	30.0
M2-6:2FTS	Ave	0.2009	0.1917		2.27	2.38	-4.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: ICV 320-233477/10 Calibration Date: 07/11/2018 15:54
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.11LLICALA_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9560	0.9622		2.52	2.50	0.6	30.0
13C4 PFOS	Ave	0.9742	1.017		2.49	2.39	4.4	30.0
13C5 PFNA	Ave	0.8546	0.8534		2.50	2.50	-0.1	30.0
13C8 FOSA	Ave	1.405	1.507		2.68	2.50	7.3	30.0
M2-8:2FTS	Ave	0.2939	0.2961		2.41	2.40	0.8	30.0
13C2 PFDA	Ave	0.7503	0.7467		2.49	2.50	-0.5	30.0
d3-NMeFOSAA	Ave	0.3075	0.3211		2.61	2.50	4.4	30.0
d5-NEtFOSAA	Ave	0.3150	0.3212		2.55	2.50	1.9	30.0
13C2 PFUnA	Ave	0.6266	0.6524		2.60	2.50	4.1	30.0
13C2 PFDoA	Ave	0.6496	0.6654		2.56	2.50	2.4	30.0
13C2-PFTeDA	Ave	0.6740	0.6932		2.57	2.50	2.8	30.0
13C2-PFHxDA	Ave	1.074	1.173		2.73	2.50	9.3	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/18/2018 16:41

Analysis Batch Number: 234756 End Date: 07/18/2018 18:15

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-234756/1		07/18/2018 16:41	1	2018.07.18LLAA_003.d	GeminiC18 3x100 3(mm)
CCVL 320-234756/2		07/18/2018 16:49	1	2018.07.18LLAA_004.d	GeminiC18 3x100 3(mm)
CCV 320-234756/3 CCVIS		07/18/2018 16:57	1	2018.07.18LLAA_056.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:05	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:13	100		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:20	1		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:28	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:36	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:44	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 17:52	10		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 18:00	20		GeminiC18 3x100 3(mm)
ZZZZZ		07/18/2018 18:07	10		GeminiC18 3x100 3(mm)
CCV 320-234756/13		07/18/2018 18:15	1		GeminiC18 3x100 3(mm)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-234756/2 Calibration Date: 07/18/2018 16:49
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLAA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9840		0.0499	0.0500	-0.2	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.167		0.0481	0.0500	-3.8	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	76.75		0.0443	0.0442	0.3	30.0
4:2 FTS	AveID	13.00	13.36		0.400	0.0467	2.7	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.038		0.0504	0.0500	0.9	30.0
Perfluoropentanesulfonic acid	AveID	69.78	71.38		0.0480	0.0469	2.3	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.182		0.0511	0.0500	2.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.286		0.0510	0.0455	12.1	30.0
6:2 FTS	AveID	1.564	1.601		0.400	0.0474	2.3	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.245		0.0506	0.0501	1.1	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.324		0.0478	0.0476	0.5	30.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.141		0.0514	0.0500	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.135		0.0465	0.0464	0.1	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	0.9237		0.0469	0.0500	-6.3	30.0
8:2 FTS	AveID	1.290	1.323		0.400	0.0479	2.6	30.0
Perfluorononanesulfonic acid	AveID	0.7752	0.7967		0.0493	0.0480	2.8	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.053		0.0502	0.0500	0.3	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9526		0.400	0.0500	-3.4	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6374		0.0458	0.0482	-5.1	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8687		0.0491	0.0500	-1.7	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7939		0.0484	0.0500	-3.1	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.072		0.0491	0.0500	-1.8	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.022		0.0479	0.0500	-4.3	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2797		0.0537	0.0500	7.5	30.0
13C4 PFBA	Ave	1.356	1.270		2.34	2.50	-6.4	30.0
13C5 PFPeA	Ave	0.9425	0.8801		2.33	2.50	-6.6	30.0
13C3-PFBS	Ave	0.0237	0.0221		2.17	2.33	-6.7	30.0
13C2 PFHxA	Ave	1.017	0.9642		2.37	2.50	-5.2	30.0
13C4-PFHpA	Ave	0.9371	0.9610		2.56	2.50	2.6	30.0
18O2 PFHxS	Ave	1.328	1.363		2.43	2.37	2.7	30.0
M2-6:2FTS	Ave	0.2009	0.1997		2.36	2.38	-0.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-234756/2 Calibration Date: 07/18/2018 16:49
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLAA_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9560	0.9714		2.54	2.50	1.6	30.0
13C4 PFOS	Ave	0.9742	0.9576		2.35	2.39	-1.7	30.0
13C5 PFNA	Ave	0.8546	0.8546		2.50	2.50	-0.0	30.0
13C8 FOSA	Ave	1.405	1.410		2.51	2.50	0.4	30.0
M2-8:2FTS	Ave	0.2939	0.2922		2.38	2.40	-0.6	30.0
13C2 PFDA	Ave	0.7503	0.7713		2.57	2.50	2.8	30.0
d3-NMeFOSAA	Ave	0.3075	0.3218		2.62	2.50	4.7	30.0
d5-NEtFOSAA	Ave	0.3150	0.3506		2.78	2.50	11.3	30.0
13C2 PFUnA	Ave	0.6266	0.6499		2.59	2.50	3.7	30.0
13C2 PFDoA	Ave	0.6496	0.6612		2.54	2.50	1.8	30.0
13C2-PFTeDA	Ave	0.6740	0.6364		2.36	2.50	-5.6	30.0
13C2-PFHxDA	Ave	1.074	1.004		2.34	2.50	-6.5	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234756/3 Calibration Date: 07/18/2018 16:57
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLAA_056.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.998		2.53	2.50	1.2	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.186		2.44	2.50	-2.2	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	77.80		2.25	2.21	1.7	30.0
4:2 FTS	AveID	13.00	13.01		2.34	2.34	0.1	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.078		2.62	2.50	4.8	30.0
Perfluoropentanesulfonic acid	AveID	69.78	76.08		2.56	2.35	9.0	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.161		2.51	2.50	0.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.109		2.20	2.28	-3.4	30.0
6:2 FTS	AveID	1.564	1.616		2.45	2.37	3.3	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.145		2.33	2.50	-7.0	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.395		2.52	2.38	5.9	30.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.100		2.48	2.50	-0.8	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.163		2.38	2.32	2.6	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.031		2.62	2.50	4.6	30.0
8:2 FTS	AveID	1.290	1.259		2.34	2.40	-2.4	30.0
Perfluorononanesulfonic acid	AveID	0.7752	0.8163		2.53	2.40	5.3	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.058		2.52	2.50	0.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	1.070		2.71	2.50	8.5	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.7154		2.57	2.41	6.5	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8782		2.48	2.50	-0.7	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7377		2.25	2.50	-10.0	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.130		2.59	2.50	3.5	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.110		2.60	2.50	4.0	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2428		2.33	2.50	-6.7	30.0
13C4 PFBA	Ave	1.356	1.275		2.35	2.50	-6.0	30.0
13C5 PFPeA	Ave	0.9425	0.8884		2.36	2.50	-5.7	30.0
13C3-PFBS	Ave	0.0237	0.0225		2.21	2.33	-4.8	30.0
13C2 PFHxA	Ave	1.017	1.001		2.46	2.50	-1.5	30.0
13C4-PFHpA	Ave	0.9371	0.996		2.66	2.50	6.3	30.0
18O2 PFHxS	Ave	1.328	1.380		2.46	2.37	3.9	30.0
M2-6:2FTS	Ave	0.2009	0.1955		2.31	2.38	-2.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234756/3 Calibration Date: 07/18/2018 16:57
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLAA_056.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9560	0.9756		2.55	2.50	2.0	30.0
13C4 PFOS	Ave	0.9742	0.9682		2.38	2.39	-0.6	30.0
13C5 PFNA	Ave	0.8546	0.8495		2.49	2.50	-0.6	30.0
13C8 FOSA	Ave	1.405	1.430		2.54	2.50	1.8	30.0
M2-8:2FTS	Ave	0.2939	0.2639		2.15	2.40	-10.2	30.0
13C2 PFDA	Ave	0.7503	0.7489		2.50	2.50	-0.2	30.0
d3-NMeFOSAA	Ave	0.3075	0.3078		2.50	2.50	0.0	30.0
d5-NEtFOSAA	Ave	0.3150	0.3474		2.76	2.50	10.3	30.0
13C2 PFUnA	Ave	0.6266	0.6528		2.60	2.50	4.2	30.0
13C2 PFDoA	Ave	0.6496	0.6505		2.50	2.50	0.1	30.0
13C2-PFTeDA	Ave	0.6740	0.6617		2.45	2.50	-1.8	30.0
13C2-PFHxDA	Ave	1.074	1.016		2.37	2.50	-5.4	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/18/2018 22:41

Analysis Batch Number: 234762 End Date: 07/18/2018 23:44

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-234762/1		07/18/2018 22:41	1	2018.07.18LLB_0 60.d	GeminiC18 3x100 3(mm)
MB 320-233164/1-A		07/18/2018 22:49	1	2018.07.18LLB_0 61.d	GeminiC18 3x100 3(mm)
LCS 320-233164/2-A		07/18/2018 22:57	1	2018.07.18LLB_0 62.d	GeminiC18 3x100 3(mm)
LCSD 320-233164/3-A		07/18/2018 23:05	1	2018.07.18LLB_0 63.d	GeminiC18 3x100 3(mm)
320-40917-1		07/18/2018 23:13	1	2018.07.18LLB_0 64.d	GeminiC18 3x100 3(mm)
320-40917-2		07/18/2018 23:20	1	2018.07.18LLB_0 65.d	GeminiC18 3x100 3(mm)
320-40917-3		07/18/2018 23:28	1	2018.07.18LLB_0 66.d	GeminiC18 3x100 3(mm)
320-40917-4		07/18/2018 23:36	1	2018.07.18LLB_0 67.d	GeminiC18 3x100 3(mm)
CCV 320-234762/9		07/18/2018 23:44	1	2018.07.18LLB_0 68.d	GeminiC18 3x100 3(mm)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234762/1 Calibration Date: 07/18/2018 22:41
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLB_060.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9660		2.45	2.50	-2.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.156		2.38	2.50	-4.7	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	80.24		2.32	2.21	4.9	30.0
4:2 FTS	AveID	13.00	13.90		2.50	2.34	7.0	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.075		2.61	2.50	4.5	30.0
Perfluoropentanesulfonic acid	AveID	69.78	78.78		2.65	2.35	12.9	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.123		2.43	2.50	-2.9	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.102		2.18	2.28	-4.0	30.0
6:2 FTS	AveID	1.564	1.588		2.41	2.37	1.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.445		2.61	2.38	9.7	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.212		2.46	2.50	-1.6	30.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.120		2.52	2.50	0.9	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.170		2.40	2.32	3.3	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.027		2.61	2.50	4.2	30.0
8:2 FTS	AveID	1.290	1.397		2.59	2.40	8.3	30.0
Perfluorononanesulfonic acid	AveID	0.7752	0.7945		2.46	2.40	2.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.095		2.61	2.50	4.3	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9729		2.47	2.50	-1.3	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6994		2.51	2.41	4.2	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8483		2.40	2.50	-4.0	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7555		2.30	2.50	-7.8	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.186		2.72	2.50	8.6	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.250		2.93	2.50	17.1	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2520		2.42	2.50	-3.2	30.0
13C4 PFBA	Ave	1.356	1.334		2.46	2.50	-1.6	30.0
13C5 PFPeA	Ave	0.9425	0.8962		2.38	2.50	-4.9	30.0
13C3-PFBS	Ave	0.0237	0.0218		2.14	2.33	-8.1	30.0
13C2 PFHxA	Ave	1.017	0.995		2.45	2.50	-2.1	30.0
13C4-PFHpA	Ave	0.9371	0.9884		2.64	2.50	5.5	30.0
18O2 PFHxS	Ave	1.328	1.334		2.38	2.37	0.5	30.0
M2-6:2FTS	Ave	0.2009	0.2137		2.53	2.38	6.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234762/1 Calibration Date: 07/18/2018 22:41
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLB_060.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9560	0.9403		2.46	2.50	-1.6	30.0
13C4 PFOS	Ave	0.9742	0.9317		2.29	2.39	-4.4	30.0
13C5 PFNA	Ave	0.8546	0.8468		2.48	2.50	-0.9	30.0
13C8 FOSA	Ave	1.405	1.368		2.43	2.50	-2.6	30.0
M2-8:2FTS	Ave	0.2939	0.3375		2.75	2.40	14.8	30.0
13C2 PFDA	Ave	0.7503	0.7697		2.56	2.50	2.6	30.0
d3-NMeFOSAA	Ave	0.3075	0.3669		2.98	2.50	19.3	30.0
13C2 PFUnA	Ave	0.6266	0.6545		2.61	2.50	4.5	30.0
d5-NEtFOSAA	Ave	0.3150	0.3796		3.01	2.50	20.5	30.0
13C2 PFDoA	Ave	0.6496	0.6344		2.44	2.50	-2.3	30.0
13C2-PFTeDA	Ave	0.6740	0.6883		2.55	2.50	2.1	30.0
13C2-PFHxDA	Ave	1.074	1.063		2.47	2.50	-1.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234762/9 Calibration Date: 07/18/2018 23:44
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLB_068.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.9856	0.9776		0.992	1.00	-0.8	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.213	1.176		0.969	1.00	-3.1	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	76.50	76.32		0.882	0.884	-0.2	30.0
4:2 FTS	AveID	13.00	13.62		0.978	0.934	4.7	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.029	1.032		1.00	1.00	0.3	30.0
Perfluoropentanesulfonic acid	AveID	69.78	73.38		0.986	0.938	5.2	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.157	1.171		1.01	1.00	1.2	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.148	1.103		0.874	0.910	-3.9	30.0
6:2 FTS	AveID	1.564	1.629		0.987	0.948	4.1	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.232	1.154		0.938	1.00	-6.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.318	1.321		0.955	0.952	0.3	30.0
Perfluorononanoic acid (PFNA)	AveID	1.109	1.071		0.965	1.00	-3.5	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.133	1.097		0.898	0.928	-3.2	30.0
Perfluorononanesulfonic acid	AveID	0.7752	0.7655		0.948	0.960	-1.3	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9856	1.016		1.03	1.00	3.1	30.0
8:2 FTS	AveID	1.290	1.184		0.880	0.958	-8.2	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.049	1.030		0.981	1.00	-1.9	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.9858	0.9528		0.967	1.00	-3.3	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6714	0.6313		0.906	0.964	-6.0	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8840	0.8347		0.944	1.00	-5.6	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.8195	0.7986		0.974	1.00	-2.6	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.092	1.042		0.954	1.00	-4.6	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.068	1.055		0.988	1.00	-1.2	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2602	0.2561		0.984	1.00	-1.6	30.0
13C4 PFBA	Ave	1.356	1.307		2.41	2.50	-3.6	30.0
13C5 PFPeA	Ave	0.9425	0.8799		2.33	2.50	-6.6	30.0
13C3-PFBS	Ave	0.0237	0.0226		2.21	2.33	-4.8	30.0
13C2 PFHxA	Ave	1.017	1.018		2.50	2.50	0.1	30.0
13C4-PFHpA	Ave	0.9371	0.9617		2.57	2.50	2.6	30.0
18O2 PFHxS	Ave	1.328	1.357		2.42	2.37	2.2	30.0
M2-6:2FTS	Ave	0.2009	0.2131		2.52	2.38	6.1	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-234762/9 Calibration Date: 07/18/2018 23:44
 Instrument ID: A8_N Calib Start Date: 07/11/2018 14:48
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/11/2018 15:38
 Lab File ID: 2018.07.18LLB_068.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9560	0.9653		2.52	2.50	1.0	30.0
13C4 PFOS	Ave	0.9742	0.9728		2.39	2.39	-0.1	30.0
13C5 PFNA	Ave	0.8546	0.8357		2.44	2.50	-2.2	30.0
13C8 FOSA	Ave	1.405	1.390		2.47	2.50	-1.0	30.0
M2-8:2FTS	Ave	0.2939	0.2926		2.38	2.40	-0.4	30.0
13C2 PFDA	Ave	0.7503	0.7692		2.56	2.50	2.5	30.0
d3-NMeFOSAA	Ave	0.3075	0.3329		2.71	2.50	8.2	30.0
d5-NEtFOSAA	Ave	0.3150	0.3655		2.90	2.50	16.0	30.0
13C2 PFUnA	Ave	0.6266	0.6264		2.50	2.50	-0.0	30.0
13C2 PFDoA	Ave	0.6496	0.6680		2.57	2.50	2.8	30.0
13C2-PFTeDA	Ave	0.6740	0.6405		2.38	2.50	-5.0	30.0
13C2-PFHxDA	Ave	1.074	0.9858		2.30	2.50	-8.2	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/19/2018 12:09

Analysis Batch Number: 234930 End Date: 07/19/2018 13:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-234930/2		07/19/2018 12:09	1	2018.07.19LLICA L 002.d	GeminiC18 3x100 3(mm)
IC 320-234930/3		07/19/2018 12:17	1	2018.07.19LLICA L 003.d	GeminiC18 3x100 3(mm)
IC 320-234930/4		07/19/2018 12:25	1	2018.07.19LLICA L 004.d	GeminiC18 3x100 3(mm)
IC 320-234930/5 ICIS		07/19/2018 12:33	1	2018.07.19LLICA L 005.d	GeminiC18 3x100 3(mm)
IC 320-234930/6		07/19/2018 12:41	1	2018.07.19LLICA L 006.d	GeminiC18 3x100 3(mm)
IC 320-234930/7		07/19/2018 12:48	1	2018.07.19LLICA L 007.d	GeminiC18 3x100 3(mm)
IC 320-234930/8		07/19/2018 12:56	1	2018.07.19LLICA L 008.d	GeminiC18 3x100 3(mm)
ICB 320-234930/9		07/19/2018 13:04	1	2018.07.19LLICA L 009.d	GeminiC18 3x100 3(mm)
ICV 320-234930/10		07/19/2018 13:12	1	2018.07.19LLICA L 010.d	GeminiC18 3x100 3(mm)
CCB 320-234930/11		07/19/2018 13:20	1		GeminiC18 3x100 3(mm)

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930

SDG No.: _____

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

Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-234930/2	2018.07.19LLICAL_002.d
Level 2	IC 320-234930/3	2018.07.19LLICAL_003.d
Level 3	IC 320-234930/4	2018.07.19LLICAL_004.d
Level 4	IC 320-234930/5	2018.07.19LLICAL_005.d
Level 5	IC 320-234930/6	2018.07.19LLICAL_006.d
Level 6	IC 320-234930/7	2018.07.19LLICAL_007.d
Level 7	IC 320-234930/8	2018.07.19LLICAL_008.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R ² OR COD	#	MIN R ² OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
Perfluorobutanoic acid (PFBA)	1.0657 0.9915	1.0426 0.9803	0.9743	0.9770	0.9973	AveID		1.0041			3.6		20.0				
Perfluoropentanoic acid (PFPeA)	1.3279 1.1889	1.3238 1.1906	1.1967	1.1389	1.2176	AveID		1.2263			5.9		20.0				
Perfluorobutanesulfonic acid (PFBS)	77.326 79.272	78.334 75.062	75.678	77.769	78.435	AveID		77.411			2.0		20.0				
4:2 FTS	14.357 12.828	12.621 12.449	12.801	13.179	13.607	AveID		13.120			5.1		20.0				
Perfluorohexanoic acid (PFHxA)	1.2658 1.0749	1.1081 1.0380	1.0775	1.0052	1.0404	AveID		1.0871			7.9		20.0				
Perfluoropentanesulfonic acid	75.149 71.203	72.005 67.907	72.861	73.951	75.370	AveID		72.635			3.6		20.0				
Perfluoroheptanoic acid (PFHpA)	1.2795 1.1091	1.1701 1.1046	1.1123	1.1095	1.1344	AveID		1.1456			5.5		20.0				
Perfluorohexanesulfonic acid (PFHxS)	++++ 1.1074	1.2811 1.1115	1.1292	1.0923	1.1402	AveID		1.1436			6.1		20.0				
6:2 FTS	++++ 1.7094	1.5793 1.6518	1.6077	1.5538	1.6562	AveID		1.6264			3.5		20.0				
Perfluorooctanoic acid (PFOA)	1.3981 1.1966	1.2137 1.1777	1.2600	1.1566	1.2146	AveID		1.2310			6.5		20.0				
Perfluoroheptanesulfonic Acid (PFHpS)	1.2902 1.4109	1.3230 1.2856	1.3775	1.3593	1.3463	AveID		1.3418			3.4		20.0				
Perfluorononanoic acid (PFNA)	1.2557 1.1107	1.1428 1.1186	1.0482	1.0918	1.1339	AveID		1.1288			5.7		20.0				
Perfluorooctanesulfonic acid (PFOS)	1.3968 1.1686	1.1654 1.1416	1.1585	1.1147	1.1399	AveID		1.1836			8.1		20.0				
Perfluorooctane Sulfonamide (FOSA)	1.1513 0.9961	1.0268 0.9239	1.0164	1.0140	1.0102	AveID		1.0198			6.6		20.0				

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

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

Lab Name: TestAmerica Sacramento

Job No.: 320-40917-1

Analy Batch No.: 234930

SDG No.: _____

Instrument ID: A8_N

GC Column: GeminiC18 3 ID: 3(mm)

Heated Purge: (Y/N) N

Calibration Start Date: 07/19/2018 12:09

Calibration End Date: 07/19/2018 12:56

Calibration ID: 40194

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
8:2 FTS	1.4257 1.2899	1.4010 1.1867	1.3318	1.3734	1.2906	AveID		1.3284			6.1		20.0				
Perfluorononanesulfonic acid	0.7604 0.8323	0.8775 0.8064	0.7965	0.7838	0.8349	AveID		0.8131			4.7		20.0				
Perfluorodecanoic acid (PFDA)	1.1799 1.0765	1.0889 1.0531	1.0431	1.0160	1.0836	AveID		1.0773			4.8		20.0				
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	1.0493 1.0097	1.0359 1.0533	0.9524	0.9399	0.9860	AveID		1.0038			4.6		20.0				
Perfluorodecanesulfonic acid (PFDS)	0.7273 0.7656	0.5860 0.7164	0.6978	0.7114	0.7025	AveID		0.7010			7.9		20.0				
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.7061 0.8659	1.0497 0.9322	0.8413	0.8332	0.9000	AveID		0.8755			12.0		20.0				
Perfluoroundecanoic acid (PFUnA)	0.8704 0.7505	0.8075 0.8068	0.7432	0.7571	0.7751	AveID		0.7872			5.7		20.0				
Perfluorododecanoic acid (PFDoA)	1.0881 1.1120	1.1817 1.1155	1.0876	1.0980	1.0502	AveID		1.1047			3.6		20.0				
Perfluorotridecanoic Acid (PFTriA)	1.3376 1.0853	1.2591 1.0693	1.0534	1.0708	0.9818	AveID		1.1225			11.3		20.0				
Perfluorotetradecanoic acid (PFTeA)	0.2848 0.2527	0.2996 0.2438	0.2417	0.2676	0.2526	AveID		0.2633			8.3		20.0				
13C4 PFBA	1.2205 1.2787	1.2003 1.3466	1.2592	1.2293	1.2257	Ave		1.2515			3.9		20.0				
13C5 PFPeA	0.8491 0.8926	0.8371 0.9182	0.8924	0.8539	0.8567	Ave		0.8714			3.4		20.0				
13C3-PFBS	0.0224 0.0228	0.0219 0.0239	0.0225	0.0219	0.0222	Ave		0.0225			3.1		20.0				
13C2 PFHxA	1.0007 1.0129	1.0070 1.0521	1.0278	1.0177	1.0090	Ave		1.0182			1.7		20.0				
13C4-PFHpA	0.9679 0.9982	0.9487 0.9964	1.0056	0.9771	1.0038	Ave		0.9854			2.2		20.0				
18O2 PFHxS	1.3227 1.3237	1.2881 1.3467	1.3580	1.3268	1.2730	Ave		1.3198			2.3		20.0				
M2-6:2FTS	0.1916 0.1858	0.1979 0.1931	0.2042	0.1804	0.1791	Ave		0.1903			4.8		20.0				
13C4 PFOA	0.9407 0.9523	0.9612 0.9528	0.9769	0.9560	0.9252	Ave		0.9522			1.7		20.0				
13C4 PFOS	0.9511 0.9408	0.9139 0.9835	0.9444	0.9427	0.9489	Ave		0.9465			2.2		20.0				
13C5 PFNA	0.8064 0.8039	0.7893 0.7914	0.8530	0.8076	0.7823	Ave		0.8048			2.9		20.0				

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3(mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7															
13C8 FOSA	1.4328 1.3846	1.4051 1.3614	1.4694	1.4074	1.3737	Ave		1.4049			2.6		20.0				
M2-8:2FTS	0.2676 0.2337	0.2493 0.2397	0.2601	0.2402	0.2381	Ave		0.2470			5.1		20.0				
13C2 PFDA	0.7300 0.7016	0.7123 0.6785	0.7837	0.7584	0.7162	Ave		0.7258			4.9		20.0				
d3-NMeFOSAA	0.3099 0.3105	0.3074 0.3338	0.3147	0.3131	0.3058	Ave		0.3136			3.0		20.0				
d5-NEtFOSAA	0.3591 0.3346	0.3477 0.3292	0.3895	0.3602	0.3385	Ave		0.3512			5.9		20.0				
13C2 PUnA	0.6564 0.6022	0.6406 0.6107	0.6835	0.6363	0.6116	Ave		0.6345			4.6		20.0				
13C2 PFDoA	0.6246 0.6474	0.6176 0.6560	0.6784	0.6376	0.6597	Ave		0.6459			3.3		20.0				
13C2-PFTeDA	0.5966 0.6183	0.6130 0.6691	0.6519	0.5661	0.6182	Ave		0.6190			5.5		20.0				
13C2-PFHxDA	1.0273 1.0072	0.9126 1.0209	1.0493	0.9238	0.9140	Ave		0.9793			6.1		20.0				

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

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930

SDG No.: _____

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

Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-234930/2	2018.07.19LLICAL_002.d
Level 2	IC 320-234930/3	2018.07.19LLICAL_003.d
Level 3	IC 320-234930/4	2018.07.19LLICAL_004.d
Level 4	IC 320-234930/5	2018.07.19LLICAL_005.d
Level 5	IC 320-234930/6	2018.07.19LLICAL_006.d
Level 6	IC 320-234930/7	2018.07.19LLICAL_007.d
Level 7	IC 320-234930/8	2018.07.19LLICAL_008.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7				LVL 6	LVL 7			
Perfluorobutanoic acid (PFBA)		AveID	52670 9696851	105456 19024514	482861	1873207	4834495	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanoic acid (PFPeA)		AveID	45657 8116517	93384 15754215	420319	1516785	4125780	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorobutanesulfonic acid (PFBS)		AveID	62042 12218559	127942 22855887	593344	2345694	6089802	0.0221 4.42	0.0442 8.84	0.221	0.884	2.21
4:2 FTS		AveID	12171 2089150	21779 4004970	106043	420002	1116204	0.0234 4.67	0.0467 9.34	0.234	0.934	2.34
Perfluorohexanoic acid (PFHxA)		AveID	51298 8327454	94033 15739825	435878	1595558	4151685	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoropentanesulfonic acid		AveID	63978 11645386	124789 21940048	606155	2366814	6209317	0.0235 4.69	0.0469 9.38	0.235	0.938	2.35
Perfluoroheptanoic acid (PFHpA)		AveID	50147 8467214	93551 15861987	440214	1690871	4504008	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorohexanesulfonic acid (PFHxS)		AveID	++++ 10201210	126552 19629490	549204	2056963	5224139	++++ 4.55	0.0455 9.10	0.228	0.910	2.28
6:2 FTS		AveID	++++ 2302708	24967 4357116	122487	414355	1112155	++++ 4.74	0.0474 9.48	0.237	0.948	2.37
Perfluorooctanoic acid (PFOA)		AveID	53308 8724041	98416 16186908	484925	1726255	4449174	0.0250 5.01	0.0501 10.0	0.250	1.00	2.50
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	47308 9664303	97002 17346927	487403	1902646	4810287	0.0238 4.76	0.0476 9.52	0.238	0.952	2.38
Perfluorononanoic acid (PFNA)		AveID	41007 6828387	76014 12757725	351911	1375214	3508214	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorooctanesulfonic acid (PFOS)		AveID	49924 7802715	83291 15014814	399592	1521008	3970364	0.0232 4.64	0.0464 9.28	0.232	0.928	2.32
Perfluorooctane Sulfonamide (FOSA)		AveID	66797 10548466	121582 18126132	587792	2225796	5488897	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
8:2 FTS		AveID	14803 2208807	28196 3926521	130625	493007	1164233	0.0240 4.79	0.0479 9.58	0.240	0.958	2.40

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930

SDG No.: _____

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

Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

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
Perfluorononanesulfonic acid		AveID	28114 5748732	64875 10972799	284213	1106418	3008282	0.0240 4.80	0.0480 9.60	0.240	0.960	2.40
Perfluorodecanoic acid (PFDA)		AveID	34878 5775807	65359 10297645	321742	1201844	3069470	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	13169 2397468	26839 5066769	117955	459077	1192671	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorodecanesulfonic acid (PFDS)		AveID	27003 5310555	43503 9788549	250025	1008302	2541789	0.0241 4.82	0.0482 9.64	0.241	0.964	2.41
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	10268 2215550	30754 4422149	128945	468159	1205053	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluoroundecanoic acid (PFUnA)		AveID	23135 3456566	43590 7100567	199917	751363	1874945	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorododecanoic acid (PFDoA)		AveID	27523 5505258	61498 10545821	290395	1092036	2740213	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotridecanoic Acid (PFTriA)		AveID	33833 5373341	65530 10108462	281272	1064933	2561741	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
Perfluorotetradecanoic acid (PFTeA)		AveID	6880 1194747	15477 2351179	62002	236302	617686	0.0250 5.00	0.0500 10.0	0.250	1.00	2.50
13C4 PFBA	13PF OA	Ave	4942436 4889821	5057478 4851709	4955778	4793333	4847784	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C5 PFPeA	13PF OA	Ave	3438228 3413396	3527106 3308147	3512376	3329350	3388559	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C3-PFBS	13PF OA	Ave	84409 81078	85914 80084	82484	79330	81682	2.33 2.33	2.33 2.33	2.33	2.33	2.33
13C2 PFHxA	13PF OA	Ave	4052458 3873424	4243020 3790746	4045162	3968266	3990656	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4-PFHpA	13PF OA	Ave	3919328 3817190	3997421 3590021	3957747	3810067	3970331	2.50 2.50	2.50 2.50	2.50	2.50	2.50
18O2 PFHxS	13PF OA	Ave	5066859 4788343	5134486 4589887	5055888	4894221	4763091	2.37 2.37	2.37 2.37	2.37	2.37	2.37
M2-6:2FTS	13PF OA	Ave	736949 674960	792094 660830	763465	668108	672928	2.38 2.38	2.38 2.38	2.38	2.38	2.38
13C4 PFOA	13PF OA	Ave	3809215 3641760	4050166 3432703	3844808	3727566	3659304	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C4 PFOS	13PF OA	Ave	3681992 3439242	3681269 3387461	3553250	3514122	3588037	2.39 2.39	2.39 2.39	2.39	2.39	2.39
13C5 PFNA	13PF OA	Ave	3265651 3073959	3325893 2851303	3357135	3148950	3093998	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C8 FOSA	13PF OA	Ave	5802008 5294769	5920583 4904839	5782925	5487673	5433217	2.50 2.50	2.50 2.50	2.50	2.50	2.50
M2-8:2FTS	13PF OA	Ave	1038289 856171	1006292 827207	980840	897394	902064	2.40 2.40	2.40 2.40	2.40	2.40	2.40

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930

SDG No.: _____

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

Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5
			LVL 6	LVL 7				LVL 6	LVL 7			
13C2 PFDA	13PF OA	Ave	2955913 2682731	3001274 2444489	3084448	2957312	2832614	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d3-NMeFOSAA	13PF OA	Ave	1254985 1187210	1295422 1202587	1238553	1221019	1209562	2.50 2.50	2.50 2.50	2.50	2.50	2.50
d5-NEtFOSAA	13PF OA	Ave	1454179 1279332	1464896 1185901	1532769	1404624	1338986	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFOA	13PF OA	Ave	2658013 2302925	2699230 2200298	2689968	2481019	2418893	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2 PFDoA	13PF OA	Ave	2529382 2475466	2602208 2363413	2670150	2486312	2609131	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFTeDA	13PF OA	Ave	2415938 2364341	2583089 2410726	2565538	2207313	2445039	2.50 2.50	2.50 2.50	2.50	2.50	2.50
13C2-PFHxDA	13PF OA	Ave	4159895 3851333	3845258 3678172	4129611	3601873	3615084	2.50 2.50	2.50 2.50	2.50	2.50	2.50

Curve Type Legend:

Ave = Average ISTD
AveID = Average isotope dilution

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930

SDG No.: _____

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

Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-234930/2	2018.07.19LLICAL_002.d
Level 2	IC 320-234930/3	2018.07.19LLICAL_003.d
Level 3	IC 320-234930/4	2018.07.19LLICAL_004.d
Level 4	IC 320-234930/5	2018.07.19LLICAL_005.d
Level 5	IC 320-234930/6	2018.07.19LLICAL_006.d
Level 6	IC 320-234930/7	2018.07.19LLICAL_007.d
Level 7	IC 320-234930/8	2018.07.19LLICAL_008.d

ANALYTE	PERCENT ERROR						PERCENT ERROR LIMIT					
	LVL 1 # LVL 7 #	LVL 2 #	LVL 3 #	LVL 4 #	LVL 5 #	LVL 6 #	LVL 1 LVL 7	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6
Perfluorobutanoic acid (PFBA)	6.1 -2.4	3.8	-3.0	-2.7	-0.7	-1.3	30 30	30	30	30	30	30
Perfluoropentanoic acid (PFPeA)	8.3 -2.9	7.9	-2.4	-7.1	-0.7	-3.1	30 30	30	30	30	30	30
Perfluorobutanesulfonic acid (PFBS)	-0.1 -3.0	1.2	-2.2	0.5	1.3	2.4	30 30	30	30	30	30	30
4:2 FTS	9.4 -5.1	-3.8	-2.4	0.4	3.7	-2.2	30 30	30	30	30	30	30
Perfluorohexanoic acid (PFHxA)	16.4 -4.5	1.9	-0.9	-7.5	-4.3	-1.1	30 30	30	30	30	30	30
Perfluoropentanesulfonic acid	3.5 -6.5	-0.9	0.3	1.8	3.8	-2.0	30 30	30	30	30	30	30
Perfluoroheptanoic acid (PFHpA)	11.7 -3.6	2.1	-2.9	-3.2	-1.0	-3.2	30 30	30	30	30	30	30
Perfluorohexanesulfonic acid (PFHxS)	++++ -2.8	12.0	-1.3	-4.5	-0.3	-3.2	30	30	30	30	30	30
6:2 FTS	++++ 1.6	-2.9	-1.1	-4.5	1.8	5.1	30	30	30	30	30	30
Perfluorooctanoic acid (PFOA)	13.6 -4.3	-1.4	2.4	-6.0	-1.3	-2.8	30 30	30	30	30	30	30
Perfluoroheptanesulfonic Acid (PFHpS)	-3.8 -4.2	-1.4	2.7	1.3	0.3	5.1	30 30	30	30	30	30	30
Perfluorononanoic acid (PFNA)	11.2 -0.9	1.2	-7.1	-3.3	0.4	-1.6	30 30	30	30	30	30	30
Perfluorooctanesulfonic acid (PFOS)	18.0 -3.6	-1.5	-2.1	-5.8	-3.7	-1.3	30 30	30	30	30	30	30
Perfluorooctane Sulfonamide (FOSA)	12.9 -9.4	0.7	-0.3	-0.6	-0.9	-2.3	30 30	30	30	30	30	30
8:2 FTS	7.3 -10.7	5.5	0.2	3.4	-2.8	-2.9	30 30	30	30	30	30	30

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

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1 Analy Batch No.: 234930
 SDG No.: _____
 Instrument ID: A8_N GC Column: GeminiC18 3 ID: 3 (mm) Heated Purge: (Y/N) N
 Calibration Start Date: 07/19/2018 12:09 Calibration End Date: 07/19/2018 12:56 Calibration ID: 40194

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
Perfluorononanesulfonic acid	-6.5 -0.8	7.9	-2.0	-3.6	2.7	2.4	30 30	30	30	30	30	30
Perfluorodecanoic acid (PFDA)	9.5 -2.2	1.1	-3.2	-5.7	0.6	-0.1	30 30	30	30	30	30	30
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	4.5 4.9	3.2	-5.1	-6.4	-1.8	0.6	30 30	30	30	30	30	30
Perfluorodecanesulfonic acid (PFDS)	3.8 2.2	-16.4	-0.5	1.5	0.2	9.2	30 30	30	30	30	30	30
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	-19.3 6.5	19.9	-3.9	-4.8	2.8	-1.1	30 30	30	30	30	30	30
Perfluoroundecanoic acid (PFUnA)	10.6 2.5	2.6	-5.6	-3.8	-1.5	-4.7	30 30	30	30	30	30	30
Perfluorododecanoic acid (PFDoA)	-1.5 1.0	7.0	-1.6	-0.6	-4.9	0.7	30 30	30	30	30	30	30
Perfluorotridecanoic Acid (PFTriA)	19.2 -4.7	12.2	-6.2	-4.6	-12.5	-3.3	30 30	30	30	30	30	30
Perfluorotetradecanoic acid (PFTeA)	8.2 -7.4	13.8	-8.2	1.7	-4.0	-4.0	30 30	30	30	30	30	30

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: ICV 320-234930/10 Calibration Date: 07/19/2018 13:12
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLICAL_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.004	0.9938		2.47	2.50	-1.0	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.226	1.207		2.46	2.50	-1.6	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.41	77.66		2.22	2.21	0.3	30.0
4:2 FTS	AveID	13.12	13.25		2.36	2.34	1.0	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.087	1.043		2.40	2.50	-4.1	30.0
Perfluoropentanesulfonic acid	AveID	72.64	74.60		2.41	2.35	2.7	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.146	1.162		2.54	2.50	1.4	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.144	1.101		2.19	2.28	-3.7	30.0
6:2 FTS	AveID	1.626	1.683		2.45	2.37	3.5	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.231	1.196		2.43	2.50	-2.8	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.342	1.343		2.38	2.38	0.1	30.0
Perfluorononanoic acid (PFNA)	AveID	1.129	1.102		2.44	2.50	-2.4	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.184	1.163		2.28	2.32	-1.8	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.020	1.004		2.46	2.50	-1.5	30.0
8:2 FTS	AveID	1.328	1.351		2.44	2.40	1.7	30.0
Perfluorononanesulfonic acid	AveID	0.8131	0.8322		2.46	2.40	2.3	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.077	1.004		2.33	2.50	-6.8	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.004	0.9208		2.29	2.50	-8.3	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7010	0.7274		2.50	2.41	3.8	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8755	0.8497		2.43	2.50	-2.9	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.7872	0.7997		2.54	2.50	1.6	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.105	1.004		2.27	2.50	-9.1	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.122	1.046		2.33	2.50	-6.8	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2633	0.2502		2.38	2.50	-5.0	30.0
13C4 PFBA	Ave	1.251	1.295		2.59	2.50	3.4	30.0
13C5 PFPeA	Ave	0.8714	0.8895		2.55	2.50	2.1	30.0
13C3-PFBS	Ave	0.0225	0.0227		2.34	2.33	0.6	30.0
13C2 PFHxA	Ave	1.018	1.045		2.57	2.50	2.6	30.0
13C4-PFHpA	Ave	0.9854	1.003		2.54	2.50	1.7	30.0
18O2 PFHxS	Ave	1.320	1.356		2.43	2.37	2.7	30.0
M2-6:2FTS	Ave	0.1903	0.1866		2.33	2.38	-2.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: ICV 320-234930/10 Calibration Date: 07/19/2018 13:12
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLICAL_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9522	0.9582		2.52	2.50	0.6	30.0
13C4 PFOS	Ave	0.9465	0.9820		2.48	2.39	3.8	30.0
13C5 PFNA	Ave	0.8048	0.8333		2.59	2.50	3.5	30.0
13C8 FOSA	Ave	1.405	1.430		2.55	2.50	1.8	30.0
M2-8:2FTS	Ave	0.2470	0.2468		2.39	2.40	-0.0	30.0
13C2 PFDA	Ave	0.7258	0.7524		2.59	2.50	3.7	30.0
d3-NMeFOSAA	Ave	0.3136	0.3408		2.72	2.50	8.7	30.0
d5-NEtFOSAA	Ave	0.3512	0.3660		2.60	2.50	4.2	30.0
13C2 PFUnA	Ave	0.6345	0.6255		2.46	2.50	-1.4	30.0
13C2 PFDoA	Ave	0.6459	0.7090		2.74	2.50	9.8	30.0
13C2-PFTeDA	Ave	0.6190	0.6649		2.69	2.50	7.4	30.0
13C2-PFHxDA	Ave	0.9793	1.039		2.65	2.50	6.1	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/19/2018 19:12Analysis Batch Number: 235044 End Date: 07/20/2018 00:56

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCB 320-235044/1		07/19/2018 19:12	1	2018.07.19LLC_003.d	GeminiC18 3x100 3(mm)
CCVL 320-235044/2		07/19/2018 19:20	1	2018.07.19LLC_004.d	GeminiC18 3x100 3(mm)
CCV 320-235044/3 CCVIS		07/19/2018 19:28	1	2018.07.19LLC_021.d	GeminiC18 3x100 3(mm)
CCV 320-235044/14		07/19/2018 20:54	1		GeminiC18 3x100 3(mm)
CCV 320-235044/25		07/19/2018 22:20	1		GeminiC18 3x100 3(mm)
CCV 320-235044/36		07/19/2018 23:46	1		GeminiC18 3x100 3(mm)
CCV 320-235044/45		07/20/2018 00:56	1		GeminiC18 3x100 3(mm)

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-235044/2 Calibration Date: 07/19/2018 19:20
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.004	0.995		0.0496	0.0500	-0.9	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.226	1.313		0.0535	0.0500	7.1	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.41	73.43		0.0419	0.0442	-5.1	30.0
4:2 FTS	AveID	13.12	11.48		0.400	0.0467	-12.5	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.087	1.131		0.0520	0.0500	4.0	30.0
Perfluoropentanesulfonic acid	AveID	72.64	71.33		0.0461	0.0469	-1.8	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.146	1.140		0.0498	0.0500	-0.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.144	1.278		0.0509	0.0455	11.8	30.0
6:2 FTS	AveID	1.626	1.657		0.400	0.0474	1.9	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.231	1.258		0.0512	0.0501	2.2	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.342	1.286		0.0456	0.0476	-4.2	30.0
Perfluorononanoic acid (PFNA)	AveID	1.129	1.134		0.0502	0.0500	0.4	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.184	1.170		0.0459	0.0464	-1.1	30.0
8:2 FTS	AveID	1.328	1.438		0.0519	0.0479	8.3	30.0
Perfluorononanesulfonic acid	AveID	0.8131	0.8080		0.0477	0.0480	-0.6	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.020	0.9636		0.0472	0.0500	-5.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.077	1.072		0.0497	0.0500	-0.5	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.004	0.9016		0.400	0.0500	-10.2	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7010	0.7877		0.0542	0.0482	12.4	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8755	0.9282		0.0530	0.0500	6.0	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.7872	0.7389		0.0469	0.0500	-6.1	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.105	1.082		0.0490	0.0500	-2.1	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.122	1.058		0.0471	0.0500	-5.7	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2633	0.2631		0.0500	0.0500	-0.0	30.0
13C4 PFBA	Ave	1.251	1.230		2.46	2.50	-1.7	30.0
13C5 PFPeA	Ave	0.8714	0.8727		2.50	2.50	0.1	30.0
13C3-PFBS	Ave	0.0225	0.0226		2.33	2.33	0.2	30.0
13C2 PFHxA	Ave	1.018	1.011		2.48	2.50	-0.7	30.0
13C4-PFHpA	Ave	0.9854	1.010		2.56	2.50	2.5	30.0
18O2 PFHxS	Ave	1.320	1.324		2.37	2.37	0.3	30.0
M2-6:2FTS	Ave	0.1903	0.1926		2.40	2.38	1.2	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCVL 320-235044/2 Calibration Date: 07/19/2018 19:20
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_004.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9522	0.9647		2.53	2.50	1.3	30.0
13C4 PFOS	Ave	0.9465	0.9629		2.43	2.39	1.7	30.0
13C5 PFNA	Ave	0.8048	0.8244		2.56	2.50	2.4	30.0
13C8 FOSA	Ave	1.405	1.433		2.55	2.50	2.0	30.0
M2-8:2FTS	Ave	0.2470	0.2632		2.55	2.40	6.6	30.0
13C2 PFDA	Ave	0.7258	0.7659		2.64	2.50	5.5	30.0
d3-NMeFOSAA	Ave	0.3136	0.3153		2.51	2.50	0.5	30.0
13C2 PFUnA	Ave	0.6345	0.6823		2.69	2.50	7.5	30.0
d5-NEtFOSAA	Ave	0.3512	0.3646		2.60	2.50	3.8	30.0
13C2 PFDoA	Ave	0.6459	0.6481		2.51	2.50	0.3	30.0
13C2-PFTeDA	Ave	0.6190	0.6065		2.45	2.50	-2.0	30.0
13C2-PFHxDA	Ave	0.9793	0.9893		2.53	2.50	1.0	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235044/3 Calibration Date: 07/19/2018 19:28
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.004	0.9818		0.978	1.00	-2.2	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.226	1.173		0.956	1.00	-4.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.41	76.95		0.879	0.884	-0.6	30.0
4:2 FTS	AveID	13.12	13.70		0.975	0.934	4.4	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.087	1.006		0.925	1.00	-7.5	30.0
Perfluoropentanesulfonic acid	AveID	72.64	73.82		0.953	0.938	1.6	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.146	1.076		0.940	1.00	-6.0	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.144	1.075		0.856	0.910	-6.0	30.0
6:2 FTS	AveID	1.626	1.584		0.923	0.948	-2.6	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.231	1.157		0.941	1.00	-6.0	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.342	1.293		0.917	0.952	-3.7	30.0
Perfluorononanoic acid (PFNA)	AveID	1.129	1.029		0.911	1.00	-8.9	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.184	1.106		0.867	0.928	-6.6	30.0
Perfluorononanesulfonic acid	AveID	0.8131	0.7602		0.897	0.960	-6.5	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.020	1.000		0.981	1.00	-1.9	30.0
8:2 FTS	AveID	1.328	1.326		0.956	0.958	-0.2	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.077	1.009		0.937	1.00	-6.3	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.004	0.9876		0.984	1.00	-1.6	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7010	0.6470		0.890	0.964	-7.7	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8755	0.8906		1.02	1.00	1.7	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.7872	0.7702		0.978	1.00	-2.2	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.105	1.093		0.990	1.00	-1.0	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.122	1.024		0.912	1.00	-8.8	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2633	0.2656		1.01	1.00	0.9	30.0
13C4 PFBA	Ave	1.251	1.216		2.43	2.50	-2.8	30.0
13C5 PFPeA	Ave	0.8714	0.8550		2.45	2.50	-1.9	30.0
13C3-PFBS	Ave	0.0225	0.0216		2.23	2.33	-4.0	30.0
13C2 PFHxA	Ave	1.018	1.014		2.49	2.50	-0.4	30.0
13C4-PFHpA	Ave	0.9854	0.9736		2.47	2.50	-1.2	30.0
18O2 PFHxS	Ave	1.320	1.275		2.28	2.37	-3.4	30.0
M2-6:2FTS	Ave	0.1903	0.1955		2.44	2.38	2.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235044/3 Calibration Date: 07/19/2018 19:28
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_021.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9522	0.9193		2.41	2.50	-3.5	30.0
13C4 PFOS	Ave	0.9465	0.9462		2.39	2.39	-0.0	30.0
13C5 PFNA	Ave	0.8048	0.8410		2.61	2.50	4.5	30.0
13C8 FOSA	Ave	1.405	1.400		2.49	2.50	-0.3	30.0
M2-8:2FTS	Ave	0.2470	0.2556		2.48	2.40	3.5	30.0
13C2 PFDA	Ave	0.7258	0.7523		2.59	2.50	3.6	30.0
d3-NMeFOSAA	Ave	0.3136	0.3214		2.56	2.50	2.5	30.0
d5-NEtFOSAA	Ave	0.3512	0.3558		2.53	2.50	1.3	30.0
13C2 PFUnA	Ave	0.6345	0.6349		2.50	2.50	0.0	30.0
13C2 PFDoA	Ave	0.6459	0.6387		2.47	2.50	-1.1	30.0
13C2-PFTeDA	Ave	0.6190	0.5735		2.32	2.50	-7.4	30.0
13C2-PFHxDA	Ave	0.9793	0.8816		2.25	2.50	-10.0	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Instrument ID: A8_N Start Date: 07/20/2018 01:04

Analysis Batch Number: 235047 End Date: 07/20/2018 01:28

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-235047/1		07/20/2018 01:04	1	2018.07.19LLC_064.d	GeminiC18 3x100 3(mm)
320-40917-1 DL		07/20/2018 01:12	10	2018.07.19LLC_065.d	GeminiC18 3x100 3(mm)
ZZZZZ		07/20/2018 01:20	1		GeminiC18 3x100 3(mm)
CCV 320-235047/4		07/20/2018 01:28	1	2018.07.19LLC_067.d	GeminiC18 3x100 3(mm)

PFOA AND PFHxS ONLY

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235047/1 Calibration Date: 07/20/2018 01:04
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_064.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.004	0.9453		0.941	1.00	-5.9	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.226	1.230		1.00	1.00	0.3	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.41	77.78		0.888	0.884	0.5	30.0
4:2 FTS	AveID	13.12	13.54		0.964	0.934	3.2	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.087	1.008		0.927	1.00	-7.3	30.0
Perfluoropentanesulfonic acid	AveID	72.64	73.11		0.944	0.938	0.7	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.146	1.059		0.925	1.00	-7.5	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.144	1.048		0.834	0.910	-8.4	30.0
6:2 FTS	AveID	1.626	1.639		0.955	0.948	0.7	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.231	1.191		0.968	1.00	-3.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.342	1.371		0.972	0.952	2.1	30.0
Perfluorononanoic acid (PFNA)	AveID	1.129	1.106		0.979	1.00	-2.1	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.184	1.117		0.876	0.928	-5.7	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.020	1.002		0.983	1.00	-1.7	30.0
8:2 FTS	AveID	1.328	1.303		0.940	0.958	-1.9	30.0
Perfluorononanesulfonic acid	AveID	0.8131	0.7779		0.918	0.960	-4.3	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.077	1.076		0.999	1.00	-0.1	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.004	0.9946		0.991	1.00	-0.9	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7010	0.6833		0.940	0.964	-2.5	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8755	0.8422		0.962	1.00	-3.8	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.7872	0.7486		0.951	1.00	-4.9	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.105	1.095		0.991	1.00	-0.9	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.122	0.9294		0.828	1.00	-17.2	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2633	0.2556		0.971	1.00	-2.9	30.0
13C4 PFBA	Ave	1.251	1.295		2.59	2.50	3.5	30.0
13C5 PFPeA	Ave	0.8714	0.8576		2.46	2.50	-1.6	30.0
13C3-PFBS	Ave	0.0225	0.0225		2.32	2.33	-0.3	30.0
13C2 PFHxA	Ave	1.018	1.028		2.52	2.50	1.0	30.0
13C4-PFHpA	Ave	0.9854	1.018		2.58	2.50	3.3	30.0
18O2 PFHxS	Ave	1.320	1.355		2.43	2.37	2.6	30.0
M2-6:2FTS	Ave	0.1903	0.1986		2.48	2.38	4.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235047/1 Calibration Date: 07/20/2018 01:04
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_064.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9522	0.9462		2.48	2.50	-0.6	30.0
13C4 PFOS	Ave	0.9465	0.9463		2.39	2.39	-0.0	30.0
13C5 PFNA	Ave	0.8048	0.8336		2.59	2.50	3.6	30.0
13C8 FOSA	Ave	1.405	1.474		2.62	2.50	4.9	30.0
M2-8:2FTS	Ave	0.2470	0.3137		3.04	2.40	27.0	30.0
13C2 PFDA	Ave	0.7258	0.7549		2.60	2.50	4.0	30.0
d3-NMeFOSAA	Ave	0.3136	0.3202		2.55	2.50	2.1	30.0
13C2 PFUnA	Ave	0.6345	0.6640		2.62	2.50	4.7	30.0
d5-NEtFOSAA	Ave	0.3512	0.3832		2.73	2.50	9.1	30.0
13C2 PFDoA	Ave	0.6459	0.6332		2.45	2.50	-2.0	30.0
13C2-PFTeDA	Ave	0.6190	0.5590		2.26	2.50	-9.7	30.0
13C2-PFHxDA	Ave	0.9793	0.8830		2.25	2.50	-9.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235047/4 Calibration Date: 07/20/2018 01:28
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_067.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	1.004	0.9880		2.46	2.50	-1.6	30.0
Perfluoropentanoic acid (PFPeA)	AveID	1.226	1.197		2.44	2.50	-2.4	30.0
Perfluorobutanesulfonic acid (PFBS)	AveID	77.41	78.57		2.24	2.21	1.5	30.0
4:2 FTS	AveID	13.12	13.57		2.41	2.34	3.4	30.0
Perfluorohexanoic acid (PFHxA)	AveID	1.087	1.046		2.41	2.50	-3.8	30.0
Perfluoropentanesulfonic acid	AveID	72.64	75.38		2.43	2.35	3.8	30.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.146	1.085		2.37	2.50	-5.3	30.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.144	1.100		2.19	2.28	-3.8	30.0
6:2 FTS	AveID	1.626	1.804		2.63	2.37	10.9	30.0
Perfluorooctanoic acid (PFOA)	AveID	1.231	1.199		2.44	2.50	-2.6	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.342	1.438		2.55	2.38	7.2	30.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.184	1.201		2.35	2.32	1.5	30.0
Perfluorononanoic acid (PFNA)	AveID	1.129	1.084		2.40	2.50	-4.0	30.0
8:2 FTS	AveID	1.328	1.332		2.40	2.40	0.3	30.0
Perfluorononanesulfonic acid	AveID	0.8131	0.8427		2.49	2.40	3.6	30.0
Perfluorooctane Sulfonamide (FOSA)	AveID	1.020	1.045		2.56	2.50	2.5	30.0
Perfluorodecanoic acid (PFDA)	AveID	1.077	1.070		2.48	2.50	-0.7	30.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	1.004	0.9736		2.42	2.50	-3.0	30.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.7010	0.7173		2.47	2.41	2.3	30.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.8755	0.8918		2.55	2.50	1.9	30.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.7872	0.7703		2.45	2.50	-2.2	30.0
Perfluorododecanoic acid (PFDoA)	AveID	1.105	1.087		2.46	2.50	-1.6	30.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.122	0.997		2.22	2.50	-11.2	30.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.2633	0.2626		2.49	2.50	-0.2	30.0
13C4 PFBA	Ave	1.251	1.286		2.57	2.50	2.8	30.0
13C5 PFPeA	Ave	0.8714	0.8806		2.53	2.50	1.1	30.0
13C3-PFBS	Ave	0.0225	0.0227		2.34	2.33	0.8	30.0
13C2 PFHxA	Ave	1.018	1.042		2.56	2.50	2.3	30.0
13C4-PFHpA	Ave	0.9854	0.9943		2.52	2.50	0.9	30.0
18O2 PFHxS	Ave	1.320	1.352		2.42	2.37	2.4	30.0
M2-6:2FTS	Ave	0.1903	0.1911		2.38	2.38	0.4	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Lab Sample ID: CCV 320-235047/4 Calibration Date: 07/20/2018 01:28
 Instrument ID: A8_N Calib Start Date: 07/19/2018 12:09
 GC Column: GeminiC18 3x100 ID: 3.00 (mm) Calib End Date: 07/19/2018 12:56
 Lab File ID: 2018.07.19LLC_067.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
13C4 PFOA	Ave	0.9522	0.9285		2.44	2.50	-2.5	30.0
13C4 PFOS	Ave	0.9465	0.9531		2.41	2.39	0.7	30.0
13C5 PFNA	Ave	0.8048	0.8187		2.54	2.50	1.7	30.0
13C8 FOSA	Ave	1.405	1.403		2.50	2.50	-0.1	30.0
M2-8:2FTS	Ave	0.2470	0.2605		2.53	2.40	5.5	30.0
13C2 PFDA	Ave	0.7258	0.7426		2.56	2.50	2.3	30.0
d3-NMeFOSAA	Ave	0.3136	0.3366		2.68	2.50	7.3	30.0
13C2 PFUnA	Ave	0.6345	0.6383		2.52	2.50	0.6	30.0
d5-NEtFOSAA	Ave	0.3512	0.3497		2.49	2.50	-0.4	30.0
13C2 PFDoA	Ave	0.6459	0.6604		2.56	2.50	2.2	30.0
13C2-PFTeDA	Ave	0.6190	0.5463		2.21	2.50	-11.8	30.0
13C2-PFHxDA	Ave	0.9793	0.8163		2.08	2.50	-16.6	30.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-233477/9
 Matrix: Water Lab File ID: 2018.07.11LLICALA_009.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/11/2018 15:46
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 233477 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.00831	J	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00769	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-233477/9
 Matrix: Water Lab File ID: 2018.07.11LLICALA_009.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/11/2018 15:46
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 233477 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	106		50-150
STL00992	13C4 PFBA	95		50-150
STL01893	13C5 PFPeA	98		50-150
STL00993	13C2 PFHxA	95		50-150
STL01892	13C4-PFHpA	100		50-150
STL00990	13C4 PFOA	99		50-150
STL00995	13C5 PFNA	103		50-150
STL00996	13C2 PFDA	105		50-150
STL00997	13C2 PFUnA	103		50-150
STL00998	13C2 PFDoA	98		50-150
STL00994	18O2 PFHxS	97		50-150
STL02116	13C2-PFTeDA	99		50-150
STL00991	13C4 PFOS	95		50-150
STL02337	13C3-PFBS	97		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-234756/1
 Matrix: Water Lab File ID: 2018.07.18LLAA_003.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/18/2018 16:41
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234756 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00681	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-234756/1
 Matrix: Water Lab File ID: 2018.07.18LLAA_003.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/18/2018 16:41
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234756 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	105		50-150
STL00992	13C4 PFBA	95		50-150
STL01893	13C5 PFPeA	95		50-150
STL00993	13C2 PFHxA	100		50-150
STL01892	13C4-PFHpA	106		50-150
STL00990	13C4 PFOA	105		50-150
STL00995	13C5 PFNA	99		50-150
STL00996	13C2 PFDA	105		50-150
STL00997	13C2 PFUnA	107		50-150
STL00998	13C2 PFDoA	100		50-150
STL00994	18O2 PFHxS	104		50-150
STL02116	13C2-PFTeDA	97		50-150
STL00991	13C4 PFOS	100		50-150
STL02337	13C3-PFBS	98		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-234930/9
 Matrix: Water Lab File ID: 2018.07.19LLICAL_009.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/19/2018 13:04
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234930 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U M	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U M	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.0113	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U M	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 320-234930/9
 Matrix: Water Lab File ID: 2018.07.19LLICAL_009.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/19/2018 13:04
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 234930 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	98		50-150
STL00992	13C4 PFBA	99		50-150
STL01893	13C5 PFPeA	100		50-150
STL00993	13C2 PFHxA	96		50-150
STL01892	13C4-PFHpA	102		50-150
STL00990	13C4 PFOA	100		50-150
STL00995	13C5 PFNA	103		50-150
STL00996	13C2 PFDA	97		50-150
STL00997	13C2 PFUnA	101		50-150
STL00998	13C2 PFDoA	97		50-150
STL00994	18O2 PFHxS	97		50-150
STL02116	13C2-PFTeDA	94		50-150
STL00991	13C4 PFOS	98		50-150
STL02337	13C3-PFBS	95		50-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-235044/1
 Matrix: Water Lab File ID: 2018.07.19LLC_003.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/19/2018 19:12
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 235044 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-22-4	Perfluorobutanoic acid (PFBA)	0.040	U	0.050	0.040	0.0088
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.040	U	0.050	0.040	0.012
307-24-4	Perfluorohexanoic acid (PFHxA)	0.040	U	0.050	0.040	0.015
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.040	U	0.050	0.040	0.0063
335-67-1	Perfluorooctanoic acid (PFOA)	0.040	U	0.050	0.040	0.021
375-95-1	Perfluorononanoic acid (PFNA)	0.040	U	0.050	0.040	0.0068
335-76-2	Perfluorodecanoic acid (PFDA)	0.040	U	0.050	0.040	0.0078
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.040	U	0.050	0.040	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	0.040	U	0.050	0.040	0.014
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	0.040	U	0.050	0.040	0.033
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.040	U	0.050	0.040	0.0073
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.040	U	0.050	0.040	0.0050
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.00666	J	0.050	0.040	0.0043
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.040	U	0.050	0.040	0.0048
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.040	U	0.050	0.040	0.014
335-77-3	Perfluorodecanesulfonic acid (PFDS)	0.040	U	0.050	0.040	0.0080
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.040	U	0.050	0.040	0.0088

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: CCB 320-235044/1
 Matrix: Water Lab File ID: 2018.07.19LLC_003.d
 Analysis Method: EPA 537 (Mod) Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 07/19/2018 19:12
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 235044 Units: ng/mL

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL01056	13C8 FOSA	105		50-150
STL00992	13C4 PFBA	101		50-150
STL01893	13C5 PFPeA	104		50-150
STL00993	13C2 PFHxA	99		50-150
STL01892	13C4-PFHpA	105		50-150
STL00990	13C4 PFOA	100		50-150
STL00995	13C5 PFNA	103		50-150
STL00996	13C2 PFDA	107		50-150
STL00997	13C2 PFUnA	102		50-150
STL00998	13C2 PFDoA	96		50-150
STL00994	18O2 PFHxS	102		50-150
STL02116	13C2-PFTeDA	92		50-150
STL00991	13C4 PFOS	102		50-150
STL02337	13C3-PFBS	97		50-150

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Batch Number: 233164 Batch Start Date: 07/10/18 08:14 Batch Analyst: Kouchari, Shamiran

Batch Method: 3535 Batch End Date: 07/10/18 15:55

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFC_ALL_SU 00083	LCPFC-IS 00058
MB 320-233164/1		3535, EPA 537 (Mod)				250 mL	10.00 mL	500 uL	500 uL
LCS 320-233164/2		3535, EPA 537 (Mod)				250 mL	10.00 mL	500 uL	500 uL
LCSD 320-233164/3		3535, EPA 537 (Mod)				250 mL	10.00 mL	500 uL	500 uL
320-40917-A-1	TP-PFC-031-TPI	3535, EPA 537 (Mod)	T	326.63 g	28.55 g	298.1 mL	10.00 mL	500 uL	500 uL
320-40917-A-2	TP-PFC-031-MID CARBON	3535, EPA 537 (Mod)	T	323.17 g	27.44 g	295.7 mL	10.00 mL	500 uL	500 uL
320-40917-A-3	TP-PFC-031-TPE	3535, EPA 537 (Mod)	T	315.14 g	28.44 g	286.7 mL	10.00 mL	500 uL	500 uL
320-40917-A-4	TP-PFC-031-TPI-D	3535, EPA 537 (Mod)	T	335.98 g	28.67 g	307.3 mL	10.00 mL	500 uL	500 uL

Lab Sample ID	Client Sample ID	Method Chain	Basis	LCPFCSP 00155					
MB 320-233164/1		3535, EPA 537 (Mod)							
LCS 320-233164/2		3535, EPA 537 (Mod)		500 uL					
LCSD 320-233164/3		3535, EPA 537 (Mod)		500 uL					
320-40917-A-1	TP-PFC-031-TPI	3535, EPA 537 (Mod)	T						
320-40917-A-2	TP-PFC-031-MID CARBON	3535, EPA 537 (Mod)	T						
320-40917-A-3	TP-PFC-031-TPE	3535, EPA 537 (Mod)	T						
320-40917-A-4	TP-PFC-031-TPI-D	3535, EPA 537 (Mod)	T						

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-40917-1

SDG No.: _____

Batch Number: 233164 Batch Start Date: 07/10/18 08:14 Batch Analyst: Kouchari, Shamiran

Batch Method: 3535 Batch End Date: 07/10/18 15:55

Batch Notes	
Analyst ID - Aliquot Step	SKD
Balance ID	QA-078
Batch Comment	Client labels match TA labels, SKD 07/10/18 ENVI Carb Lot # 103370
Analyst ID - Final Volume Step	SKD
H2O ID	07/09/18
Hexane ID	1286128
Internal Standard ID#	1276588
Manifold ID	H
Methanol ID	1294742
Sodium Hydroxide ID	1296965
Pipette ID	I46360G, N32728F
Analyst ID - Reagent Drop	HJA
Analyst ID - IS Reagent Drop	VPM
Analyst ID - IS Reagent Drop Witness	SKD
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	SKD
Solvent Lot #	1282836
Solvent Name	0.3% NH4OH in meOH
SOP Number	WS-LC-0025
SPE Cartridge Type	Oasis WAX 500mg
Solid Phase Extraction Disk ID	003938109a

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.

Method ID PFC - LDR

Analyst (Print Name) Alyssa Hanning

Reagent ID LC-80:20-00009

Date 7/19/18

Job #	Sample #	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
320-40917	1	10,000	30	300	10

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	320-40917-1	SITE 00011	SITE 00011	TP-PFC-INFLUENT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-031-TPI	Ground water	Normal (Regular)	5-Jul-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-40917-1	SITE 00011	SITE 00011	TP-PFC-MIDPOINT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-031-MID CARBON	Ground water	Normal (Regular)	5-Jul-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-40917-1	SITE 00011	SITE 00011	TP-PFC-EFFLUENT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-031-TPE-D	Ground water	Field duplicate	5-Jul-18	537	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-40917-1	SITE 00011	SITE 00011	TP-PFC-EFFLUENT	Monitoring well	3015831.52	384866.155	N6247016D9008	WE21	TETRA TECH, INC.	TP-PFC-031-TPE	Ground water	Normal (Regular)	5-Jul-18	537	Perfluoroalkyl Compounds