NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Combined Level 2 and Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, and the Sample Location Report, SDG 320-21080-1

Naval Weapons Station Earle
Colts Neck, New Jersey

July 2019

N60478.SF.001866
NWS EARLE
5090.3c

LABORATORY DATA PACKAGE, 320-21080-1, NWS EARLE, NJ

08/18/2016

TESTAMERICA LABORATORIES, INC

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

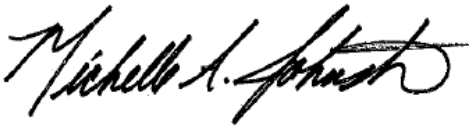
ANALYTICAL REPORT

Job Number: 320-21080-1

Job Description: Ensafe-NWS-Earle, NJ PFCs Potable Water

For:
Earth Toxics, Inc
PO BOX 3382
Logan, UT 84321

Attention: Mike Dryden



Approved for release.
Michelle A Johnston
Project Manager II
9/29/2016 9:51 AM

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09/29/2016

cc: Leslie Baechler
Tina Cantwell
Ms. Nicole Loos
Ms. Jennifer O'Keefe

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

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Qualifiers

LCMS

Qualifier	Qualifier Description
U	Undetected at the Limit of Detection.
M	Manual integrated compound.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

CASE NARRATIVE
Client: Earth Toxics, Inc
Project: Ensafe-NWS-Earle, NJ PFCs Potable Water
Report Number: 320-21080-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

Sample Receipt

The samples were received on 8/19/2016 9:40 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3º C.

The requested 537 modified PFCs analyses were logged on a 25 business day turn around time due to current laboratory capacity.

No other anomalies were encountered during sample receipt.

Perfluorinated Hydrocarbons (PFCs)

Samples PWSB2_0816 (320-21080-1), POSTTB2_0816 (320-21080-2), PWSF1_0816 (320-21080-3) and POSTTF1_0816 (320-21080-4) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with WS-LC-0025. The samples were prepared on 08/24/2016 and analyzed on 09/04/2016.

Reporting limits have been adjusted accordingly for the initial volumes extracted.

The level 1 standard from the ICAL (ICV 320-125915/12)(ICV 320-125915/22) is used to evaluate the tune criteria. The instrument mass windows are set at +/-0.5 amu. Detection of the analyte serves as verification that the assigned mass is within +/-0.5 amu of the true value, which meets the DOD tune criterion.

MS/MSD analyses for prep batch 320-123937 were not requested.

The injection times displayed in Chrome/TALS do not match the injection times listed on A8 instrument printouts. The instrument printout listing the injection times can be found at the end of the run log section.

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

Detection Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe-NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-21080-1

Client Sample ID: PWSB2_0816 — Lab Sample ID: 320-21080-1

No Detections.

Client Sample ID: POSTTB2_0816 — Lab Sample ID: 320-21080-2

No Detections.

Client Sample ID: PWSF1_0816 — Lab Sample ID: 320-21080-3

No Detections.

Client Sample ID: POSTTF1_0816 — Lab Sample ID: 320-21080-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample ID: PWSB2_0816
Lab Sample ID: 320-21080-1

Date Collected: 08/18/16 08:41
Matrix: Water

Date Received: 08/19/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.90	ng/L		09/04/16 15:24	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.79	ng/L		09/04/16 15:24	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86	ng/L		09/04/16 15:24	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.64	ng/L		09/04/16 15:24	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U	3.9	3.0	1.3	ng/L		09/04/16 15:24	1
Perfluorooctanoic acid (PFOA)	2.0	U M	2.5	2.0	0.74	ng/L		09/04/16 15:24	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*68*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:24*	*1*
13C4 PFOA	*66*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:24*	*1*
13C4 PFOS	*119*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:24*	*1*
13C4-PFHpA	*76*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:24*	*1*
13C5 PFNA	*62*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:24*	*1*
18O2 PFHxS	*121*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:24*	*1*

Client Sample ID: POSTTB2_0816
Lab Sample ID: 320-21080-2

Date Collected: 08/18/16 09:21
Matrix: Water

Date Received: 08/19/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.4	1.9	0.88	ng/L		09/04/16 15:31	1
Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	1.9	0.77	ng/L		09/04/16 15:31	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.4	1.9	0.84	ng/L		09/04/16 15:31	1
Perfluorononanoic acid (PFNA)	1.9	U	2.4	1.9	0.63	ng/L		09/04/16 15:31	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U M	3.8	2.9	1.2	ng/L		09/04/16 15:31	1
Perfluorooctanoic acid (PFOA)	1.9	U M	2.4	1.9	0.72	ng/L		09/04/16 15:31	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*92*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:31*	*1*
13C4 PFOA	*85*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:31*	*1*
13C4 PFOS	*121*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:31*	*1*
13C4-PFHpA	*95*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:31*	*1*
13C5 PFNA	*68*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:31*	*1*
18O2 PFHxS	*121*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:31*	*1*

Client Sample ID: PWSF1_0816
Lab Sample ID: 320-21080-3

Date Collected: 08/18/16 10:11
Matrix: Water

Date Received: 08/19/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.4	2.0	0.90	ng/L		09/04/16 15:39	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.4	2.0	0.79	ng/L		09/04/16 15:39	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.4	2.0	0.85	ng/L		09/04/16 15:39	1
Perfluorononanoic acid (PFNA)	2.0	U	2.4	2.0	0.64	ng/L		09/04/16 15:39	1
Perfluorooctanesulfonic acid (PFOS)	2.9	U M	3.9	2.9	1.2	ng/L		09/04/16 15:39	1
Perfluorooctanoic acid (PFOA)	2.0	U M	2.4	2.0	0.73	ng/L		09/04/16 15:39	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*94*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:39*	*1*
13C4 PFOA	*97*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:39*	*1*
13C4 PFOS	*115*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:39*	*1*
13C4-PFHpA	*103*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:39*	*1*
13C5 PFNA	*91*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:39*	*1*
18O2 PFHxS	*116*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:39*	*1*

Client Sample ID: POSTTF1_0816
Lab Sample ID: 320-21080-4

Date Collected: 08/18/16 10:41
Matrix: Water

Date Received: 08/19/16 09:40

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.91	ng/L		09/04/16 15:46	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.79	ng/L		09/04/16 15:46	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86	ng/L		09/04/16 15:46	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65	ng/L		09/04/16 15:46	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U M	4.0	3.0	1.3	ng/L		09/04/16 15:46	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.74	ng/L		09/04/16 15:46	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*90*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:46*	*1*
13C4 PFOA	*88*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:46*	*1*
13C4 PFOS	*114*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:46*	*1*
13C4-PFHpA	*98*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:46*	*1*
13C5 PFNA	*88*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:46*	*1*
18O2 PFHxS	*118*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:46*	*1*

Default Detection Limits

Client: Earth Toxics, Inc
Project/Site: Ensafe-NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-21080-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Prep: 3535

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	2.5	0.92	ng/L	537 (Modified)
Perfluoroheptanoic acid (PFHpA)	2.5	0.80	ng/L	537 (Modified)
Perfluorohexanesulfonic acid (PFHxS)	2.5	0.87	ng/L	537 (Modified)
Perfluorononanoic acid (PFNA)	2.5	0.65	ng/L	537 (Modified)
Perfluorooctanesulfonic acid (PFOS)	4.0	1.3	ng/L	537 (Modified)
Perfluorooctanoic acid (PFOA)	2.5	0.75	ng/L	537 (Modified)

Isotope Dilution Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe-NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-21080-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	3C2 PFHx (25-150)	3C4 PFO/ (25-150)	3C4 PFOS (25-150)	3C4-PFHp (25-150)	3C5 PFN/ (25-150)	3O2 PFHx (25-150)		
320-21080-1	PWSB2_0816	68	66	119	76	62	121		
320-21080-2	POSTTB2_0816	92	85	121	95	68	121		
320-21080-3	PWSF1_0816	94	97	115	103	91	116		
320-21080-4	POSTTF1_0816	90	88	114	98	88	118		
LCS 320-123937/2-A	Lab Control Sample	123	123	122	131 M	118	122		
MB 320-123937/1-A	Method Blank	131	138	133	145	134	132		

Surrogate Legend

13C2 PFHxA = 13C2 PFHxA
13C4 PFOA = 13C4 PFOA
13C4 PFOS = 13C4 PFOS
13C4-PFHpA = 13C4-PFHpA
13C5 PFNA = 13C5 PFNA
18O2 PFHxS = 18O2 PFHxS

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-123937/1-A
Matrix: Water
Analysis Batch: 126120

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 123937

Analyte	MB Result	MB Qualifier	LOQ	LOD	DL	Unit	D	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92	ng/L		09/04/16 15:09	1
Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80	ng/L		09/04/16 15:09	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87	ng/L		09/04/16 15:09	1
Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65	ng/L		09/04/16 15:09	1
Perfluorooctanesulfonic acid (PFOS)	3.0	U M	4.0	3.0	1.3	ng/L		09/04/16 15:09	1
Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75	ng/L		09/04/16 15:09	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*131*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:09*	*1*
13C4 PFOA	*138*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:09*	*1*
13C4 PFOS	*133*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:09*	*1*
13C4-PFHpA	*145*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:09*	*1*
13C5 PFNA	*134*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:09*	*1*
18O2 PFHxS	*132*		*25 - 150*	*08/24/16 14:17*	*09/04/16 15:09*	*1*

Lab Sample ID: LCS 320-123937/2-A
Matrix: Water
Analysis Batch: 126120

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 123937

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	35.4	52.3		ng/L		148	50 - 150
Perfluoroheptanoic acid (PFHpA)	40.0	50.5		ng/L		126	60 - 140
Perfluorohexanesulfonic acid (PFHxS)	36.4	47.2		ng/L		130	60 - 140
Perfluorononanoic acid (PFNA)	40.0	51.4		ng/L		129	60 - 140
Perfluorooctanesulfonic acid (PFOS)	37.1	43.6		ng/L		117	60 - 140
Perfluorooctanoic acid (PFOA)	40.0	52.4		ng/L		131	60 - 140

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C2 PFHxA	*123*		*25 - 150*
13C4 PFOA	*123*		*25 - 150*
13C4 PFOS	*122*		*25 - 150*
13C4-PFHpA	*131*	*M*	*25 - 150*
13C5 PFNA	*118*		*25 - 150*
18O2 PFHxS	*122*		*25 - 150*

QC Association Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe-NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-21080-1

LCMS

Prep Batch: 123937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-21080-1	PWSB2_0816	Total/NA	Water	3535	
320-21080-2	POSTTB2_0816	Total/NA	Water	3535	
320-21080-3	PWSF1_0816	Total/NA	Water	3535	
320-21080-4	POSTTF1_0816	Total/NA	Water	3535	
MB 320-123937/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-123937/2-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 126120

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-21080-1	PWSB2_0816	Total/NA	Water	537 (Modified)	123937
320-21080-2	POSTTB2_0816	Total/NA	Water	537 (Modified)	123937
320-21080-3	PWSF1_0816	Total/NA	Water	537 (Modified)	123937
320-21080-4	POSTTF1_0816	Total/NA	Water	537 (Modified)	123937
MB 320-123937/1-A	Method Blank	Total/NA	Water	537 (Modified)	123937
LCS 320-123937/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	123937

Lab Chronicle

Client: Earth Toxics, Inc
Project/Site: Ensafe-NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-21080-1

Client Sample ID: PWSB2_0816
Date Collected: 08/18/16 08:41
Date Received: 08/19/16 09:40

Lab Sample ID: 320-21080-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			508.1 mL	1.00 mL	123937	08/24/16 14:17	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			126120	09/04/16 15:24	JRB	TAL SAC
	Instrument ID: A8									

Client Sample ID: POSTTB2_0816
Date Collected: 08/18/16 09:21
Date Received: 08/19/16 09:40

Lab Sample ID: 320-21080-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			520.7 mL	1.00 mL	123937	08/24/16 14:17	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			126120	09/04/16 15:31	JRB	TAL SAC
	Instrument ID: A8									

Client Sample ID: PWSF1_0816
Date Collected: 08/18/16 10:11
Date Received: 08/19/16 09:40

Lab Sample ID: 320-21080-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			510.8 mL	1.00 mL	123937	08/24/16 14:17	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			126120	09/04/16 15:39	JRB	TAL SAC
	Instrument ID: A8									

Client Sample ID: POSTTF1_0816
Date Collected: 08/18/16 10:41
Date Received: 08/19/16 09:40

Lab Sample ID: 320-21080-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			505.8 mL	1.00 mL	123937	08/24/16 14:17	JER	TAL SAC
Total/NA	Analysis	537 (Modified)		1			126120	09/04/16 15:46	JRB	TAL SAC
	Instrument ID: A8									

Laboratory References:

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

Certification Summary

Client: Earth Toxics, Inc
TestAmerica Job ID: 320-21080-1
Project/Site: Ensafe-NWS-Earle, NJ PFCs Potable Water

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
New Jersey	NELAP	2	CA005	06-30-17

Laboratory: TestAmerica Denver

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
New Jersey	NELAP	2	CO004	06-30-17

Method Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe-NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-21080-1

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

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: Earth Toxics, Inc
Project/Site: Ensafe-NWS-Earle, NJ PFCs Potable Water

TestAmerica Job ID: 320-21080-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-21080-1	PWSB2_0816	Water	08/18/16 08:41	08/19/16 09:40
320-21080-2	POSTTB2_0816	Water	08/18/16 09:21	08/19/16 09:40
320-21080-3	PWSF1_0816	Water	08/18/16 10:11	08/19/16 09:40
320-21080-4	POSTTF1_0816	Water	08/18/16 10:41	08/19/16 09:40

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Instrument ID: A8 Analysis Batch Number: 125915

Lab Sample ID: IC 320-125915/14 Client Sample ID:

Date Analyzed: 09/03/16 16:53 Lab File ID: 03SEP2016A_014_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	3.87	Baseline	phomsopha t	09/07/16 14:50
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	4.05	Baseline	phomsopha t	09/07/16 14:50

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Instrument ID: A8 Analysis Batch Number: 126120

Lab Sample ID: MB 320-123937/1-A Client Sample ID:

Date Analyzed: 09/04/16 15:09 Lab File ID: 03SEP2016D_021_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.21	Baseline	barnettj	09/17/16 12:46

Lab Sample ID: LCS 320-123937/2-A Client Sample ID:

Date Analyzed: 09/04/16 15:16 Lab File ID: 03SEP2016D_022_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
13C4-PFHpA	2.55	Incomplete Integration	barnettj	09/17/16 13:27

Lab Sample ID: 320-21080-1 Client Sample ID: PWSB2_0816

Date Analyzed: 09/04/16 15:24 Lab File ID: 03SEP2016D_023_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.94	Isomers	barnettj	09/17/16 12:36

Lab Sample ID: 320-21080-2 Client Sample ID: POSTTB2_0816

Date Analyzed: 09/04/16 15:31 Lab File ID: 03SEP2016D_024_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.94	Isomers	barnettj	09/17/16 12:37
Perfluorooctanesulfonic acid (PFOS)	3.20	Isomers	barnettj	09/17/16 12:37

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Instrument ID: A8 Analysis Batch Number: 126120

Lab Sample ID: 320-21080-3 Client Sample ID: PWSF1_0816

Date Analyzed: 09/04/16 15:39 Lab File ID: 03SEP2016D_025_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.94	Isomers	barnettj	09/17/16 12:39
Perfluorooctanesulfonic acid (PFOS)	3.31	Isomers	barnettj	09/17/16 12:39

Lab Sample ID: 320-21080-4 Client Sample ID: POSTTF1_0816

Date Analyzed: 09/04/16 15:46 Lab File ID: 03SEP2016D_026_p1_e1.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanesulfonic acid (PFOS)	3.31	Isomers	barnettj	09/17/16 12:42

537 (Modified)

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
.LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHPA_00006	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUdA_00008	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
LCPFC-L1_00021	12/28/16	08/03/16	MeOH/H2O, Lot 90285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00057	25 uL	Perfluorobutyric acid	0.5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ng/mL
							Perfluorodecanoic acid	0.5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorododecanoic acid	0.5 ng/mL
							Perfluorodecane Sulfonic acid	0.482 ng/mL
							Perfluoroheptanoic acid (PFHpA)	0.5 ng/mL
							Perfluoroheptanesulfonic Acid	0.476 ng/mL
							Perfluorohexanoic acid	0.5 ng/mL
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.455 ng/mL
							Perfluorononanoic acid (PFNA)	0.5 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctadecanoic acid	0.5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.464 ng/mL
							Perfluorooctane Sulfonamide	0.5 ng/mL
							Perfluoropentanoic acid	0.5 ng/mL
							Perfluorotetradecanoic acid	0.5 ng/mL
							Perfluorotridecanoic acid	0.5 ng/mL
							Perfluoroundecanoic acid	0.5 ng/mL
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00006	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFCSP_00057	02/01/17	08/03/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00056	1000 uL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00004	01/30/20	Wellington Laboratories, Lot PFBA0115			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00004	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpS_00008	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00001	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00001	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00004	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L2_00022	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00057	50 uL	Perfluorobutyric acid	1 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	0.884 ng/mL
							Perfluorodecanoic acid	1 ng/mL
							Perfluorododecanoic acid	1 ng/mL
							Perfluorodecane Sulfonic acid	0.964 ng/mL
							Perfluoroheptanoic acid (PFHpA)	1 ng/mL
							Perfluoroheptanesulfonic Acid	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.91 ng/mL
							Perfluorononanoic acid (PFNA)	1 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctadecanoic acid	1 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	0.928 ng/mL
							Perfluorooctane Sulfonamide	1 ng/mL
							Perfluoropentanoic acid	1 ng/mL
							Perfluorotetradecanoic acid	1 ng/mL
							Perfluorotridecanoic acid	1 ng/mL
							Perfluoroundecanoic acid	1 ng/mL
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00006	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00057	02/01/17	08/03/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00056	1000 uL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00004	01/30/20	Wellington Laboratories, Lot PFBA0115			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00004	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpS_00008	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00001	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00001	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
...LCPFUdA_00004	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L3_00019	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00057	250 uL	Perfluorobutyric acid	5 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	4.42 ng/mL
							Perfluorodecanoic acid	5 ng/mL
							Perfluorododecanoic acid	5 ng/mL
							Perfluorodecane Sulfonic acid	4.82 ng/mL
							Perfluoroheptanoic acid (PFHpA)	5 ng/mL
							Perfluoroheptanesulfonic Acid	4.76 ng/mL
							Perfluorohexanoic acid	5 ng/mL
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	4.55 ng/mL
							Perfluorononanoic acid (PFNA)	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctadecanoic acid	5 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	4.64 ng/mL
							Perfluorooctane Sulfonamide	5 ng/mL
							Perfluoropentanoic acid	5 ng/mL
							Perfluorotetradecanoic acid	5 ng/mL
							Perfluorotridecanoic acid	5 ng/mL
							Perfluoroundecanoic acid	5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00006	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00057	02/01/17	08/03/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00056	1000 uL	Perfluorobutyric acid	0.1 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.0884 ug/mL
							Perfluorodecanoic acid	0.1 ug/mL
							Perfluorododecanoic acid	0.1 ug/mL
							Perfluorodecane Sulfonic acid	0.0964 ug/mL
							Perfluoroheptanoic acid (PFHpA)	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.091 ug/mL
							Perfluorononanoic acid (PFNA)	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoropentanoic acid	0.1 ug/mL
							Perfluorotetradecanoic acid	0.1 ug/mL
							Perfluorotridecanoic acid	0.1 ug/mL
							Perfluoroundecanoic acid	0.1 ug/mL
..LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
...LCPFBA_00004	01/30/20	Wellington Laboratories, Lot PFBA0115			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
...LCPFBS_00004	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
...LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
...LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
...LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
...LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
...LCPFHpS_00008	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
...LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
...LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
...LCPFHxS-br_00001	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
...LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
...LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
...LCPFOS-br_00001	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
...LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
...LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
...LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
...LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCPFUdA_00004	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L4_00022	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00056	100 uL	Perfluorobutyric acid	20 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	17.68 ng/mL
							Perfluorodecanoic acid	20 ng/mL
							Perfluorododecanoic acid	20 ng/mL
							Perfluorodecane Sulfonic acid	19.28 ng/mL
							Perfluoroheptanoic acid (PFHpA)	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	18.2 ng/mL
							Perfluorononanoic acid (PFNA)	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctadecanoic acid	20 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	18.56 ng/mL
							Perfluorooctane Sulfonamide	20 ng/mL
							Perfluoropentanoic acid	20 ng/mL
							Perfluorotetradecanoic acid	20 ng/mL
							Perfluorotridecanoic acid	20 ng/mL
							Perfluoroundecanoic acid	20 ng/mL
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00006	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00004	01/30/20	Wellington Laboratories, Lot PFBA0115			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00004	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpS_00008	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00001	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00001	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00004	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L5_00020	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00056	250 uL	Perfluorobutyric acid	50 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	44.2 ng/mL
							Perfluorodecanoic acid	50 ng/mL
							Perfluorododecanoic acid	50 ng/mL
							Perfluorodecane Sulfonic acid	48.2 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluoroheptanesulfonic Acid	47.6 ng/mL
							Perfluorohexanoic acid	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluorooctadecanoic acid	50 ng/mL

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluorooctanesulfonic acid (PFOS)	46.4 ng/mL
							Perfluorooctane Sulfonamide	50 ng/mL
							Perfluoropentanoic acid	50 ng/mL
							Perfluorotetradecanoic acid	50 ng/mL
							Perfluorotridecanoic acid	50 ng/mL
							Perfluoroundecanoic acid	50 ng/mL
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00006	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFHxS-br_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00004	01/30/20	Wellington Laboratories, Lot PFBA0115			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00004	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpS_00008	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00001	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00001	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00004	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L6_00019	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00056	1000 uL	Perfluorobutyric acid	200 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	176.8 ng/mL
							Perfluorodecanoic acid	200 ng/mL
							Perfluorododecanoic acid	200 ng/mL
							Perfluorodecane Sulfonic acid	192.8 ng/mL
							Perfluoroheptanoic acid (PFHpA)	200 ng/mL
							Perfluoroheptanesulfonic Acid	190.4 ng/mL
							Perfluorohexanoic acid	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	182 ng/mL
							Perfluorononanoic acid (PFNA)	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctadecanoic acid	200 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	185.6 ng/mL
							Perfluorooctane Sulfonamide	200 ng/mL
							Perfluoropentanoic acid	200 ng/mL
							Perfluorotetradecanoic acid	200 ng/mL
							Perfluorotridecanoic acid	200 ng/mL
							Perfluoroundecanoic acid	200 ng/mL
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00006	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00004	01/30/20	Wellington Laboratories, Lot PFBA0115			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00004	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
..LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpS_00008	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00001	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00001	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00004	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC-L7_00019	12/28/16	08/03/16	MeOH/H2O, Lot 090285	5 mL	LCMPFCSU_00044	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL
					LCPFCSP_00056	2000 uL	Perfluorobutyric acid	400 ng/mL
							Perfluorobutanesulfonic acid (PFBS)	353.6 ng/mL
							Perfluorodecanoic acid	400 ng/mL
							Perfluorododecanoic acid	400 ng/mL
							Perfluorodecane Sulfonic acid	385.6 ng/mL
							Perfluoroheptanoic acid (PFHpA)	400 ng/mL
							Perfluoroheptanesulfonic Acid	380.8 ng/mL
							Perfluorohexanoic acid	400 ng/mL
							Perfluorohexadecanoic acid	400 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	364 ng/mL
							Perfluorononanoic acid (PFNA)	400 ng/mL
							Perfluorooctanoic acid (PFOA)	400 ng/mL
							Perfluorooctadecanoic acid	400 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	371.2 ng/mL
							Perfluorooctane Sulfonamide	400 ng/mL
							Perfluoropentanoic acid	400 ng/mL
							Perfluorotetradecanoic acid	400 ng/mL
							Perfluorotridecanoic acid	400 ng/mL
							Perfluoroundecanoic acid	400 ng/mL
.LCMPFCSU_00044	12/28/16	06/28/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00006	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFCSP_00056	02/01/17	08/01/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00004	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00005	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00005	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00008	200 uL	Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00005	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
..LCPFBA_00004	01/30/20	Wellington Laboratories, Lot PFBA0115			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
..LCPFBS_00004	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
..LCPFDA_00005	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
..LCPFDoA_00005	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecane Sulfonic acid	48.2 ug/mL
..LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
..LCPFHpS_00008	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptanesulfonic Acid	47.6 ug/mL
..LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
..LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
..LCPFHxS-br_00001	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
..LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL
..LCPFOA_00006	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
..LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
..LCPFOS-br_00001	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
..LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
..LCPFPeA_00005	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
..LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
..LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
..LCPFUdA_00004	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL
LCPFC2-IC_00003	01/21/17	08/17/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00006	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
.LCMPFC2SU_00006	01/21/17	07/21/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
LCPFC2-L1_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	25 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.474 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.479 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-ethylperfluoro-1-octanesulfonamide	0.5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ng/mL
							MeFOSA	0.5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfonamide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17	WELLINGTON, Lot 62FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LC8:2FTS_00001	10/03/17	WELLINGTON, Lot 82FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19	WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18	WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19	WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L2_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	50 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	1 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	1 ng/mL
							MeFOSA	1 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	1 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfonamide	0.1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NEtFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NEtFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
...LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L3_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00014	250 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	4.74 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	4.79 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	5 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	5 ng/mL
							MeFOSA	5 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	5 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00014	01/20/17	07/20/16	Methanol, Lot 104453	5000 uL	LCPFC2SP_00013	500 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.0948 ug/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.0958 ug/mL
							N-ethylperfluoro-1-octanesulfonamide	0.1 ug/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
							MeFOSA	0.1 ug/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	0.1 ug/mL
..LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
...LC6:2FTS_00001	10/03/17	WELLINGTON, Lot 62FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
...LC8:2FTS_00001	10/03/17	WELLINGTON, Lot 82FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
...LCN-EtFOSA-M_00002	07/14/19	WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
...LCN-EtFOSAA_00001	01/29/18	WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
...LCN-MeFOSA-M_00001	07/15/19	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...LCN-MeFOSAA_00001	12/09/19	WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L4_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00013	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	18.96 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	19.16 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	20 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	20 ng/mL
							MeFOSA	20 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	20 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17	WELLINGTON, Lot 62FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..LC8:2FTS_00001	10/03/17	WELLINGTON, Lot 82FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19	WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18	WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19	WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L5_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00013	250 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	50 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	50 ng/mL
							MeFOSA	50 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	50 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17	WELLINGTON, Lot 62FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00001	10/03/17	WELLINGTON, Lot 82FTS1014			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19	WELLINGTON, Lot NEtFOSA0714M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18	WELLINGTON, Lot NEtFOSAA0113			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19	WELLINGTON, Lot NMeFOSAA1214			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L6_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00013	1000 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	189.6 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	191.6 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	200 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	200 ng/mL
							MeFOSA	200 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	200 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19	WELLINGTON, Lot dNMeFOSA0114M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18	WELLINGTON, Lot d3NMeFOSAA0113			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20	WELLINGTON, Lot d5NEtFOSAA0515			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17	WELLINGTON, Lot M262FTS0714			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17	WELLINGTON, Lot M282FTS0414			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NEtFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NEtFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L7_00002	01/08/17	07/20/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00005	250 uL	d-N-EtFOSA-M	50 ng/mL
							d-N-MeFOSA-M	50 ng/mL
							d3-NMeFOSAA	50 ng/mL
							d5-NEtFOSAA	50 ng/mL
							M2-6:2FTS	47.5 ng/mL
							M2-8:2FTS	47.9 ng/mL
					LCPFC2SP_00013	2000 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	379.2 ng/mL
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	383.2 ng/mL
							N-ethylperfluoro-1-octanesulfonamide	400 ng/mL
							N-ethyl perfluorooctane sulfonamidoacetic acid	400 ng/mL
							MeFOSA	400 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	400 ng/mL
.LCMPFC2SU_00005	01/08/17	07/08/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00001	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00001	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00001	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00001	200 uL	d5-NEtFOSAA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCM2-6:FTS_00001	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00001	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00001	03/10/19		WELLINGTON, Lot dNEtFOSA0314M		(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00001	01/28/19		WELLINGTON, Lot dNMeFOSA0114M		(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00001	01/31/18		WELLINGTON, Lot d3NMeFOSAA0113		(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00001	05/08/20		WELLINGTON, Lot d5NEtFOSAA0515		(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00001	07/15/17		WELLINGTON, Lot M262FTS0714		(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00001	04/13/17		WELLINGTON, Lot M282FTS0414		(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00013	01/20/17	07/20/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.948 ug/mL
					LC8:2FTS_00001	200 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.958 ug/mL
					LCN-EtFOSA-M_00002	200 uL	N-ethylperfluoro-1-octanesulfonamide	1 ug/mL
					LCN-EtFOSAA_00001	200 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
					LCN-MeFOSA-M_00001	200 uL	MeFOSA	1 ug/mL
					LCN-MeFOSAA_00001	200 uL	N-methyl perfluorooctane sulfonamidoacetic acid	1 ug/mL
..LC6:2FTS_00001	10/03/17		WELLINGTON, Lot 62FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00001	10/03/17		WELLINGTON, Lot 82FTS1014		(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00002	07/14/19		WELLINGTON, Lot NEtFOSA0714M		(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00001	01/29/18		WELLINGTON, Lot NEtFOSAA0113		(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00001	07/15/19		WELLINGTON, Lot NMeFOSA0714M		(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFCIC_00019	12/02/16	06/25/16	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00043	250 uL	13C2-PFHxDA	50 ng/mL
							13C2-PFTeDA	50 ng/mL
							13C4-PFHpA	50 ng/mL
							13C5-PFPeA	50 ng/mL
							13C8 FOSA	50 ng/mL
							13C4 PFBA	50 ng/mL
							13C2 PFDA	50 ng/mL
							13C2 PFDoA	50 ng/mL
							13C2 PFHxA	50 ng/mL
							18O2 PFHxS	47.3 ng/mL
							13C5 PFNA	50 ng/mL
							13C4 PFOA	50 ng/mL
							13C4 PFOS	47.8 ng/mL
							13C2 PFUnA	50 ng/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFACMXB_00007	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluoroheptanoic acid (PFHpA)	50 ng/mL
							Perfluorohexanesulfonic acid (PFHxS)	47.25 ng/mL
							Perfluorononanoic acid (PFNA)	50 ng/mL
							Perfluorooctanesulfonic acid (PFOS)	47.75 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
.LCMPFCSU_00043	12/02/16	06/02/16	Methanol, Lot Baker 115935	50000 uL	LCM2PFHxDA_00006	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00006	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00006	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00007	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00010	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00007	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00010	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00007	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00011	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00007	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00007	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00011	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00015	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00008	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00006	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00006	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00006	05/22/20	Wellington Laboratories, Lot M4PFHpA0515			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00007	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00010	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00007	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00010	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00007	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00011	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00007	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00007	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00011	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00015	01/22/21	Wellington Laboratories, Lot MPFOS0116			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00008	10/31/19	Wellington Laboratories, Lot MPFUdA1014			(Purchased Reagent)		13C2 PFUnA	50 ug/mL
.LCPFACMXB_00007	11/06/20	Wellington Laboratories, Lot PFACMXB1115			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	1.77 ug/mL
							Perfluoroheptanoic acid (PFHpA)	2 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	1.89 ug/mL
							Perfluorononanoic acid (PFNA)	2 ug/mL
							Perfluorooctanesulfonic acid (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCPFCSP_00049	11/17/16	05/17/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	200 uL	Perfluorobutyric acid	1 ug/mL
					LCPFBS_00003	200 uL	Perfluorobutane Sulfonate	0.884 ug/mL
					LCPFBSA_00001	200 uL	Perfluorobutanesulfonic acid (PFBS)	0.884 ug/mL
					LCPFDA_00004	200 uL	Perfluorodecanoic acid	1 ug/mL
					LCPFDoA_00004	200 uL	Perfluorododecanoic acid	1 ug/mL
					LCPFDS_00005	200 uL	Perfluorodecane Sulfonate	0.964 ug/mL
							Perfluorodecane Sulfonic acid	0.964 ug/mL
					LCPFHpA_00005	200 uL	Perfluoroheptanoic acid (PFHpA)	1 ug/mL
					LCPFHpS_00008	200 uL	Perfluoroheptane Sulfonate	0.952 ug/mL
							Perfluoroheptanesulfonic Acid	0.952 ug/mL
					LCPFHxA_00004	200 uL	Perfluorohexanoic acid	1 ug/mL
					LCPFHxDA_00004	200 uL	Perfluorohexadecanoic acid	1 ug/mL
					LCPFHxS-br_00001	200 uL	Perfluorohexane Sulfonate	0.91 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid (PFNA)	1 ug/mL
					LCPFNS_00002	200 uL	PFNS (Perflouro-1-nonanesulfonate)	0.96 ug/mL
					LCPFOA_00005	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL
					LCPFOS-br_00001	200 uL	Perfluorooctanesulfonic acid (PFOS)	0.928 ug/mL
					LCPFOSA_00006	200 uL	Perfluorooctane Sulfonamide	1 ug/mL
					LCPFPeA_00004	200 uL	Perfluoropentanoic acid	1 ug/mL
					LCPFPeS_00002	200 uL	PFPeS (Perflouro-1-pentanesulfonate)	0.938 ug/mL
					LCPFTeDA_00004	200 uL	Perfluorotetradecanoic acid	1 ug/mL
					LCPFTrDA_00004	200 uL	Perfluorotridecanoic acid	1 ug/mL
					LCPFUdA_00004	200 uL	Perfluoroundecanoic acid	1 ug/mL
.LCPFBA_00004	01/30/20	Wellington Laboratories, Lot PFBA0115			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
.LCPFBS_00003	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
.LCPFBSA_00001	10/09/19	Wellington Laboratories, Lot LPFBS1014			(Purchased Reagent)		Perfluorobutanesulfonic acid (PFBS)	44.2 ug/mL
.LCPFDA_00004	07/02/20	Wellington Laboratories, Lot PFDA0615			(Purchased Reagent)		Perfluorodecanoic acid	50 ug/mL
.LCPFDoA_00004	01/30/20	Wellington Laboratories, Lot PFDoA0115			(Purchased Reagent)		Perfluorododecanoic acid	50 ug/mL
.LCPFDS_00005	07/02/20	Wellington Laboratories, Lot LPFDS0615			(Purchased Reagent)		Perfluorodecane Sulfonate	48.2 ug/mL
							Perfluorodecane Sulfonic acid	48.2 ug/mL
.LCPFHpA_00005	01/22/21	Wellington Laboratories, Lot PFHpA0116			(Purchased Reagent)		Perfluoroheptanoic acid (PFHpA)	50 ug/mL
.LCPFHpS_00008	11/06/20	Wellington Laboratories, Lot LPFHpS1115			(Purchased Reagent)		Perfluoroheptane Sulfonate	47.6 ug/mL
							Perfluoroheptanesulfonic Acid	47.6 ug/mL
.LCPFHxA_00004	12/22/20	Wellington Laboratories, Lot PFHxA1215			(Purchased Reagent)		Perfluorohexanoic acid	50 ug/mL
.LCPFHxDA_00004	11/28/17	Wellington Laboratories, Lot PFHxDA0707			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00001	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid (PFHxS)	45.5 ug/mL
.LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid (PFNA)	50 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
.LCPFNS_00002	07/04/17	Wellington Laboratories, Lot LPFNS0712			(Purchased Reagent)		PFNS (Perflouro-1-nonanesulfonate)	48 ug/mL
.LCPFOA_00005	11/06/20	Wellington Laboratories, Lot PFOA1115			(Purchased Reagent)		Perfluorooctanoic acid (PFOA)	50 ug/mL
.LCPFODA_00005	01/30/20	Wellington Laboratories, Lot PFODA0115			(Purchased Reagent)		Perfluorooctadecanoic acid	50 ug/mL
.LCPFOS-br_00001	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctanesulfonic acid (PFOS)	46.4 ug/mL
.LCPFOSA_00006	09/02/17	Wellington Laboratories, Lot FOSA0815I			(Purchased Reagent)		Perfluorooctane Sulfonamide	50 ug/mL
.LCPFPeA_00004	01/30/20	Wellington Laboratories, Lot PFPeA0115			(Purchased Reagent)		Perfluoropentanoic acid	50 ug/mL
.LCPFPeS_00002	07/04/17	Wellington Laboratories, Lot LPFPeS0712			(Purchased Reagent)		PFPeS (Perflouro-1-pentanesulfonate)	46.9 ug/mL
.LCPFTeDA_00004	12/09/20	Wellington Laboratories, Lot PFTeDA1215			(Purchased Reagent)		Perfluorotetradecanoic acid	50 ug/mL
.LCPFTrDA_00004	12/10/18	Wellington Laboratories, Lot PFTrDA1213			(Purchased Reagent)		Perfluorotridecanoic acid	50 ug/mL
.LCPFUdA_00004	08/19/20	Wellington Laboratories, Lot PFUdA0815			(Purchased Reagent)		Perfluoroundecanoic acid	50 ug/mL

Reagent

LC6:2FTS_00001

r: 7/6/15 SV
S: 7/20/15 SV

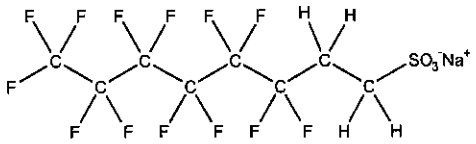
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS1014

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_8H_4F_{13}SO_3Na$		**MOLECULAR WEIGHT:**	450.15
CONCENTRATION:	50.0 ± 2.5 µg/ml	(Na salt)	**SOLVENT(S):**	Methanol
	47.4 ± 2.4 µg/ml	(6:2FTS anion)		
CHEMICAL PURITY:	>98%			
LAST TESTED: (mm/dd/yyyy)	10/03/2014			
EXPIRY DATE: (mm/dd/yyyy)	10/03/2017			
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:** 03/27/2015 (mm/dd/yyyy)
B.G. Chittim

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,...x_n on which it depends is:

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

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 ±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:

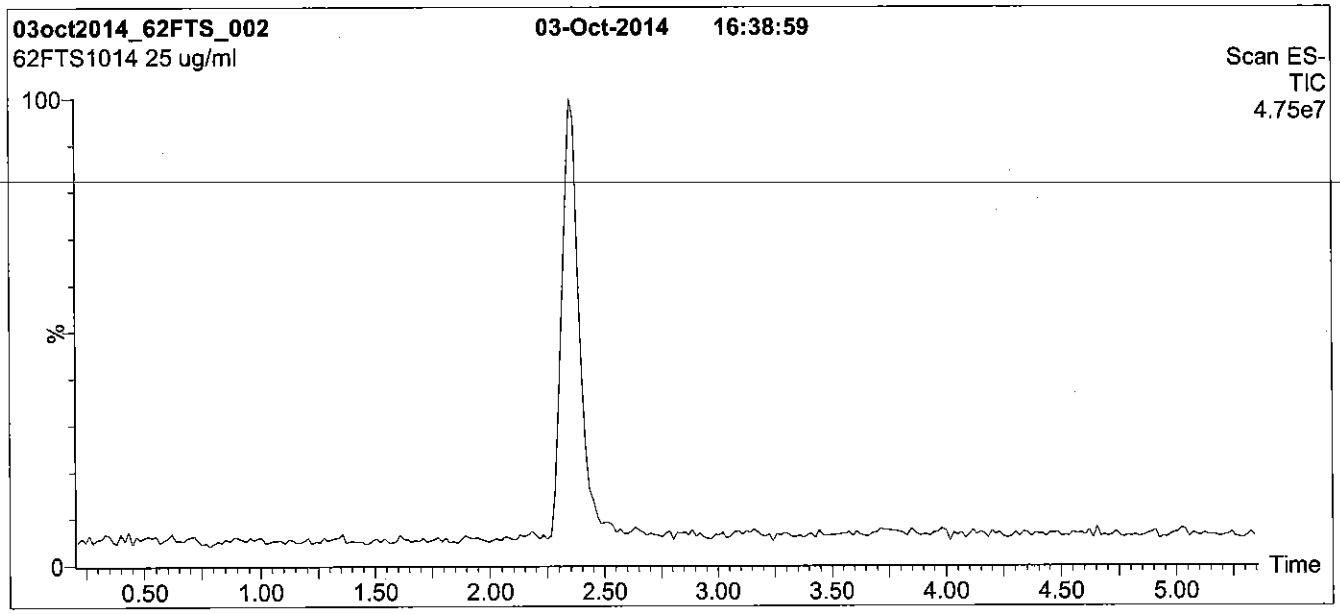
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

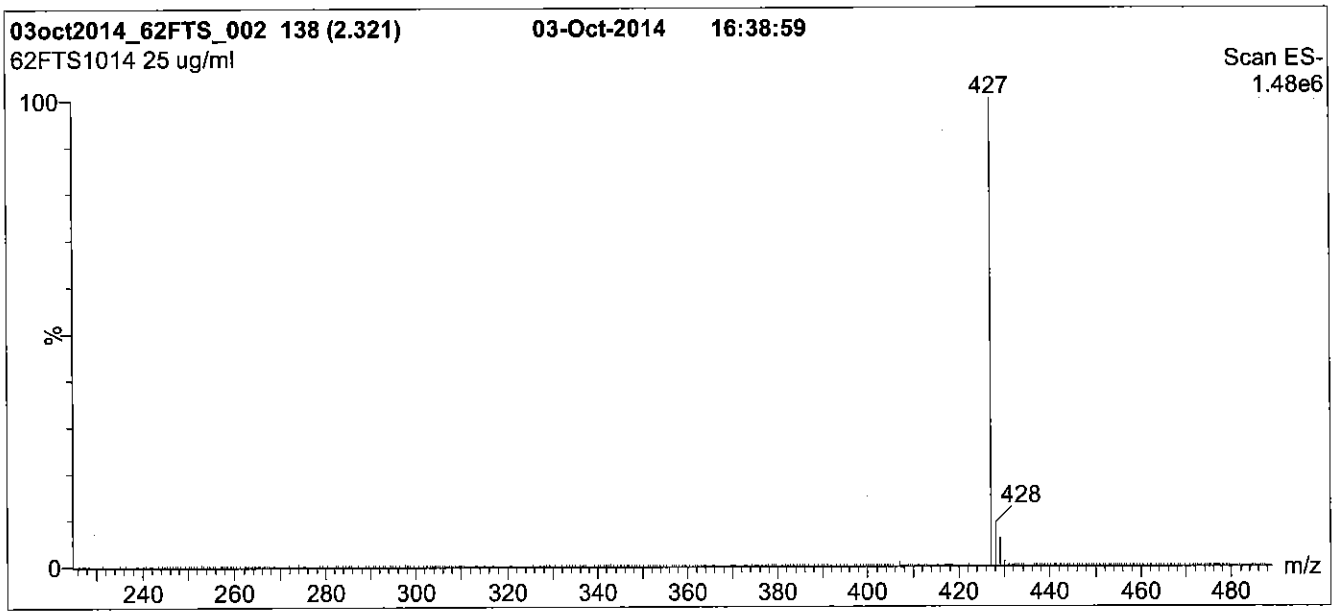
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO Guide 34 REFERENCE MATERIAL PRODUCER

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc 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

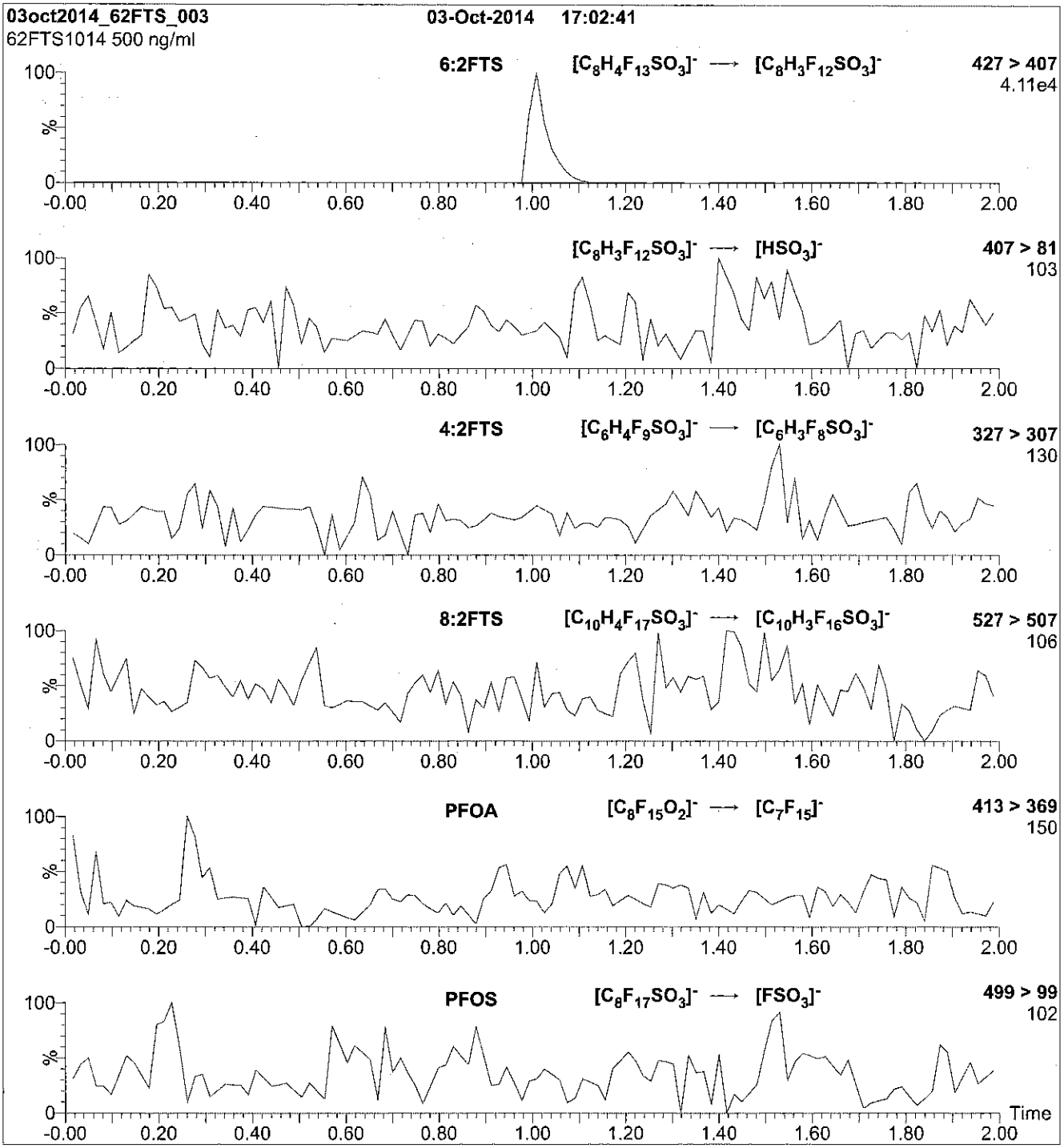
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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 µl (500 ng/ml 6:2FTS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.50e-3
Collision Energy (eV) = 25

Reagent

LC8:2FTS_00001

r: 7/16/15 SV
S: 7/24/15 SV

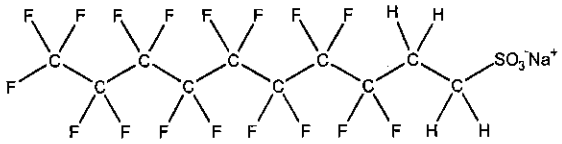
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1014

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)	10/03/2014			
EXPIRY DATE: (mm/dd/yyyy)	10/03/2017			
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:** 03/27/2015 (mm/dd/yyyy)
B.G. Chittim

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

INTENDED USE:

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HAZARDS:

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HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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 ±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).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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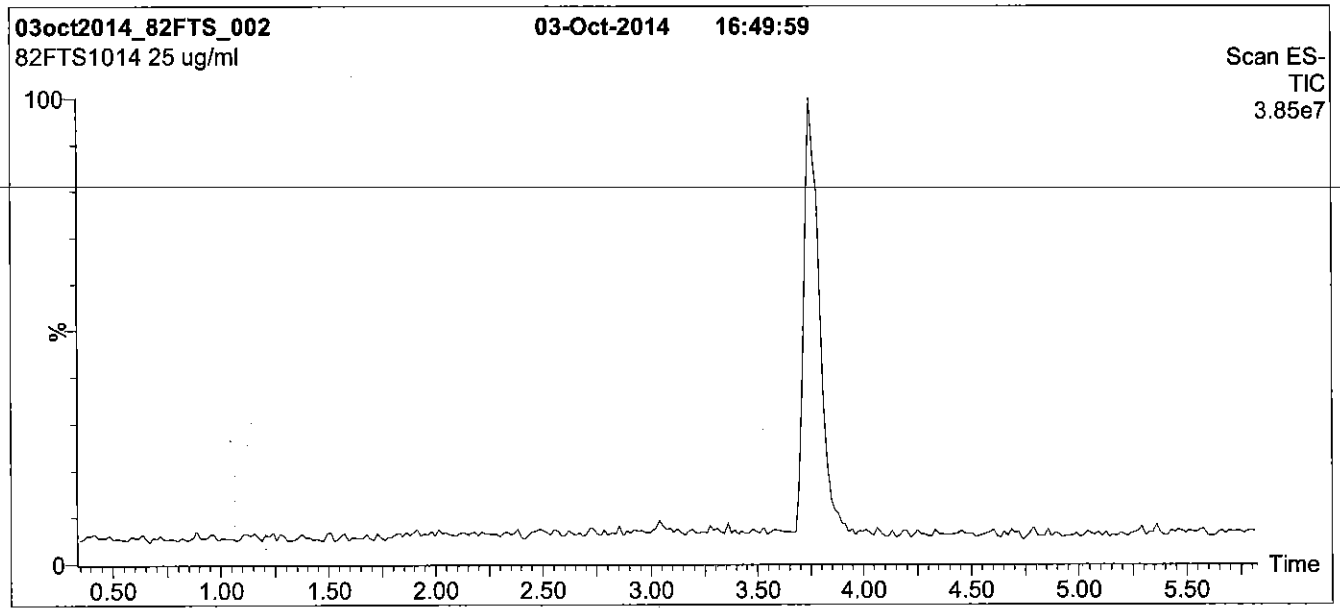
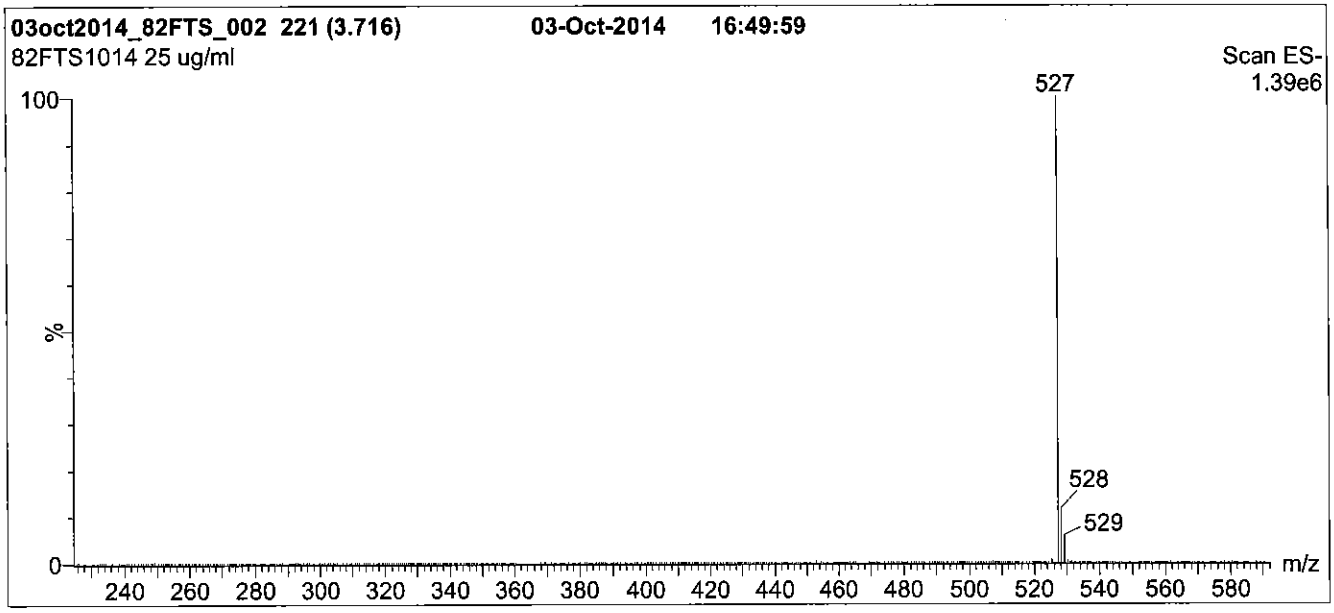
Figure 1: **8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 2 min.
Return to initial conditions in 0.5 min.
Time: 10 min

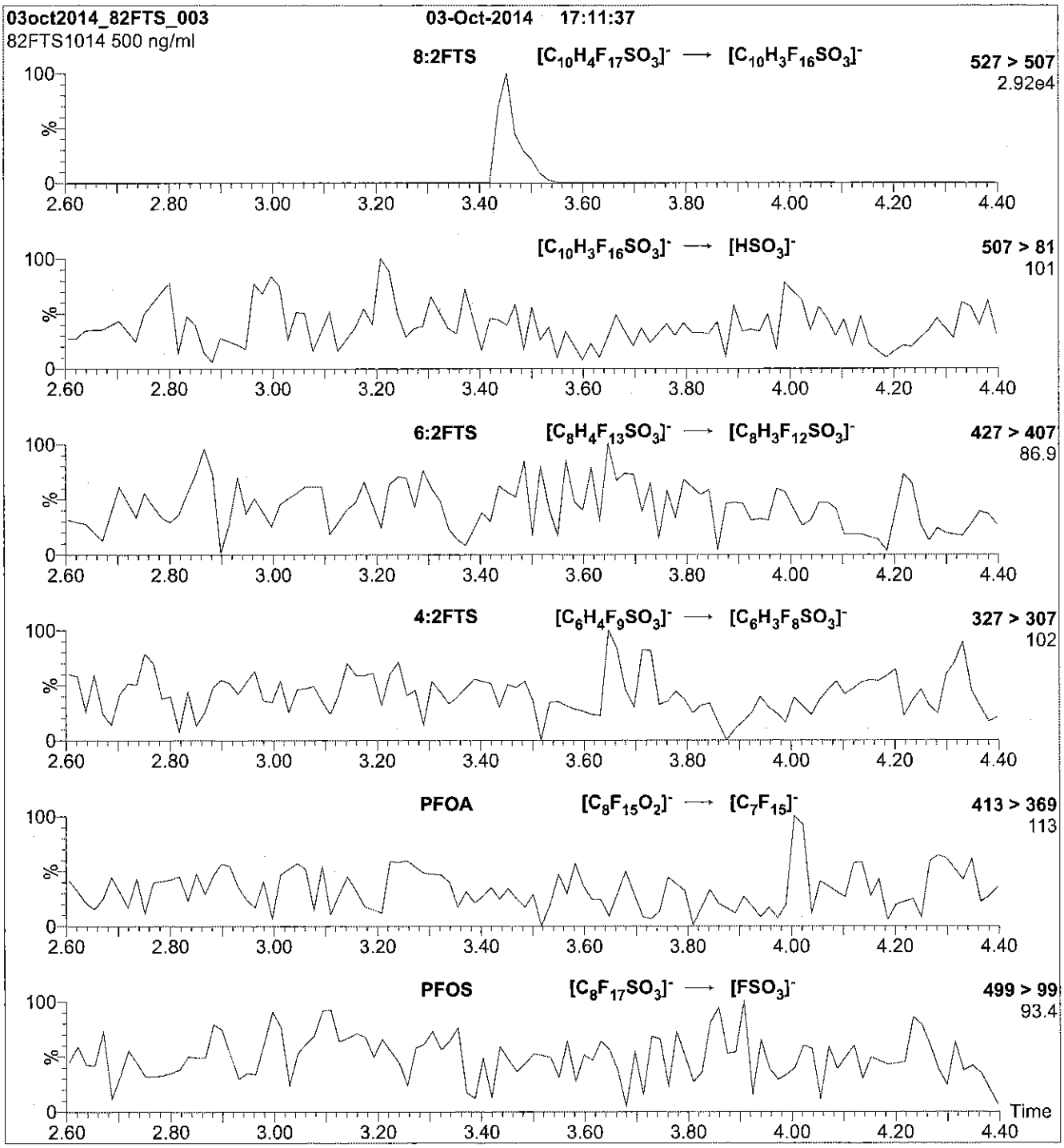
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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 µl (500 ng/ml 8:2FTS)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd-NEtFOSA-M_00001

R: 7/16/15 SV

WELLINGTON LABORATORIES

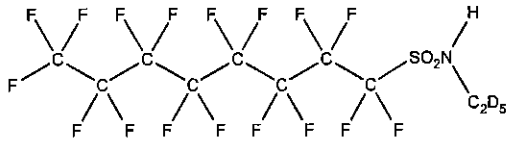
CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-EtFOSA-M
COMPOUND: N-ethyl-d_5-perfluoro-1-octanesulfonamide

LOT NUMBER: dNEtFOSA0314M

STRUCTURE:

CAS #: Not available



MOLECULAR FORMULA:	$C_{10}D_5HF_{17}NO_2S$	**MOLECULAR WEIGHT:**	532.23
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy)	03/10/2014		
EXPIRY DATE: (mm/dd/yyyy)	03/10/2019		
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.

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Certified By: _____ **Date:** 04/01/2015
B.G. Chittim (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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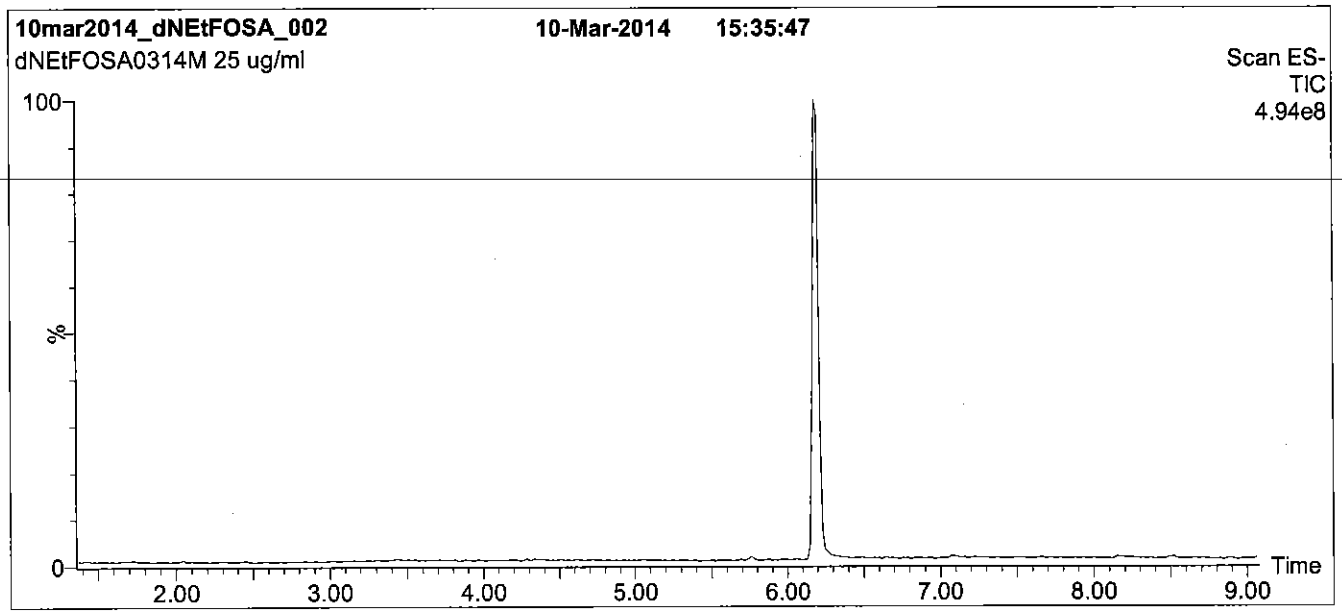
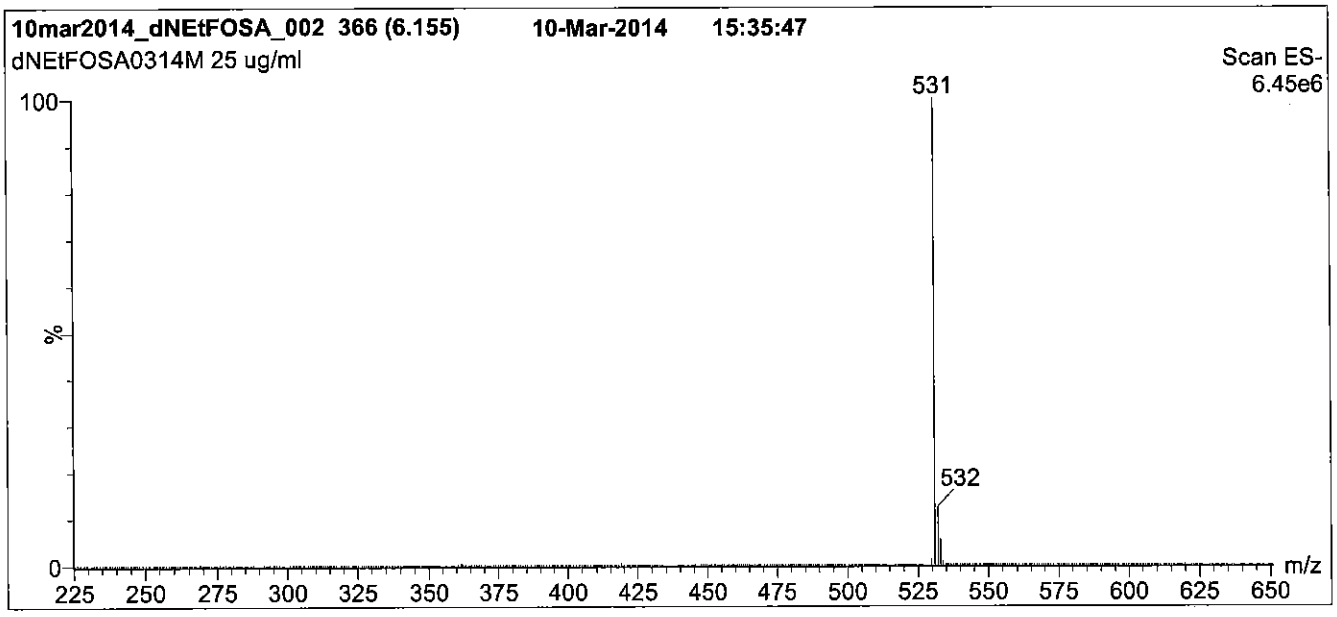
Figure 1: **d-N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gracient
Start: 40% H_2O / 60% (80:20 MeOH:ACN)
(both with 10mM NH_4OAc 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

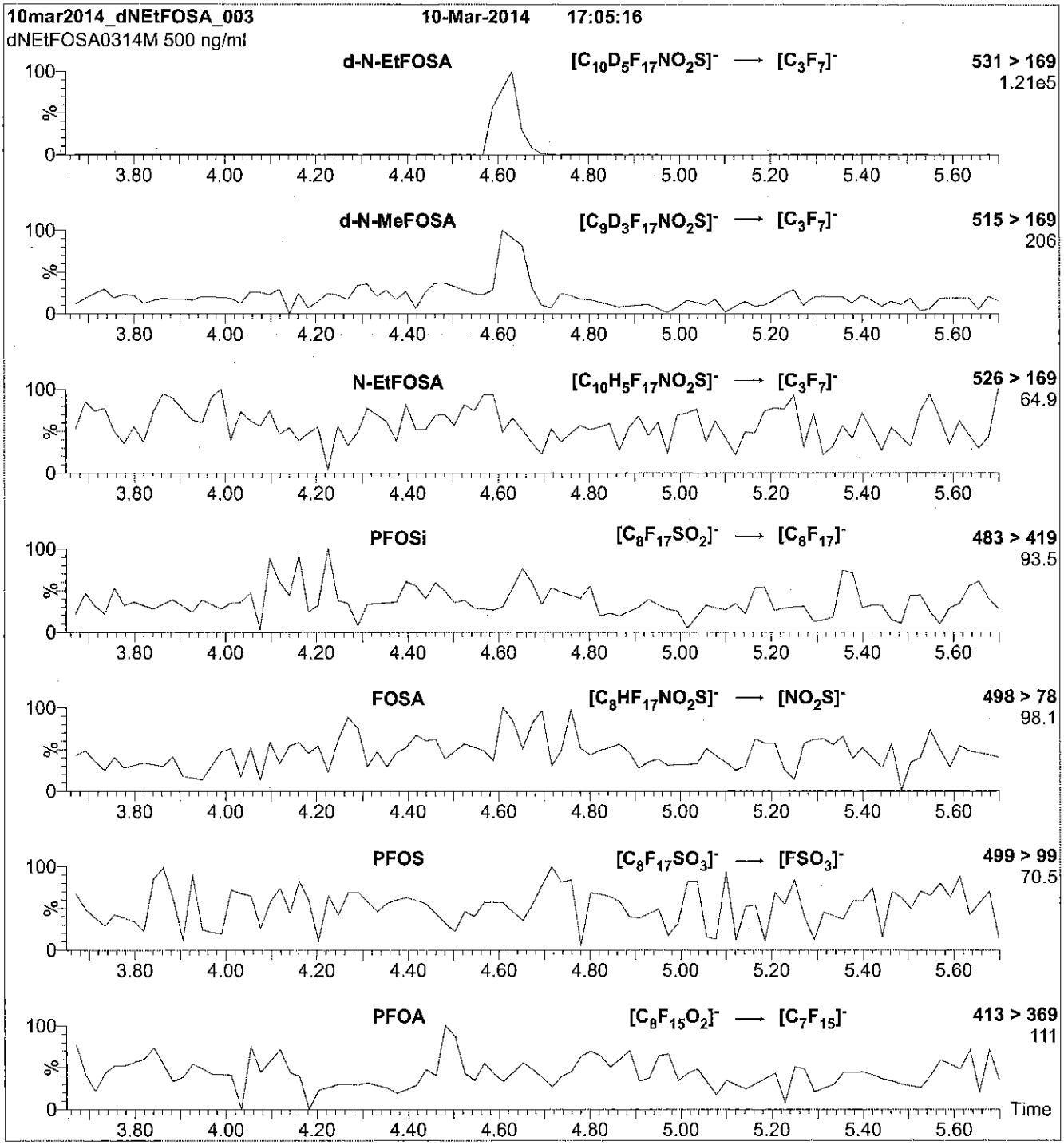
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCd-NMeFOSA-M_00001

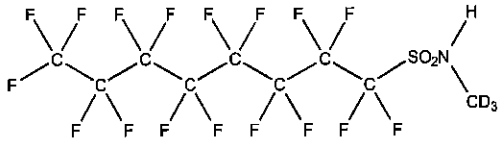
R: 7/16/15 SKV

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M
LOT NUMBER: dNMeFOSA0114M
COMPOUND: N-methyl-d_3-perfluoro-1-octanesulfonamide

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_9D_3HF_{17}NO_2S$	**MOLECULAR WEIGHT:**	516.19
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
LAST TESTED: (mm/dd/yyyy)	01/28/2014		
EXPIRY DATE: (mm/dd/yyyy)	01/28/2019		
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.

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Certified By: _____ **Date:** 04/01/2015 (mm/dd/yyyy)
B.G. Chittim

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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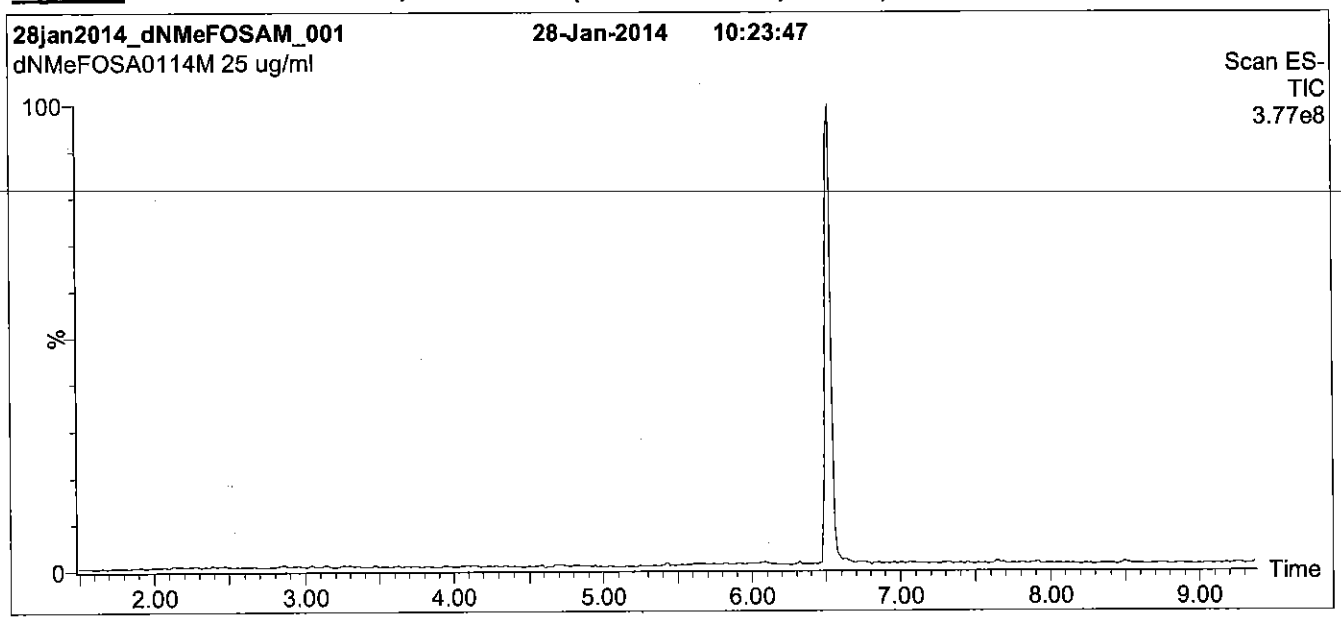
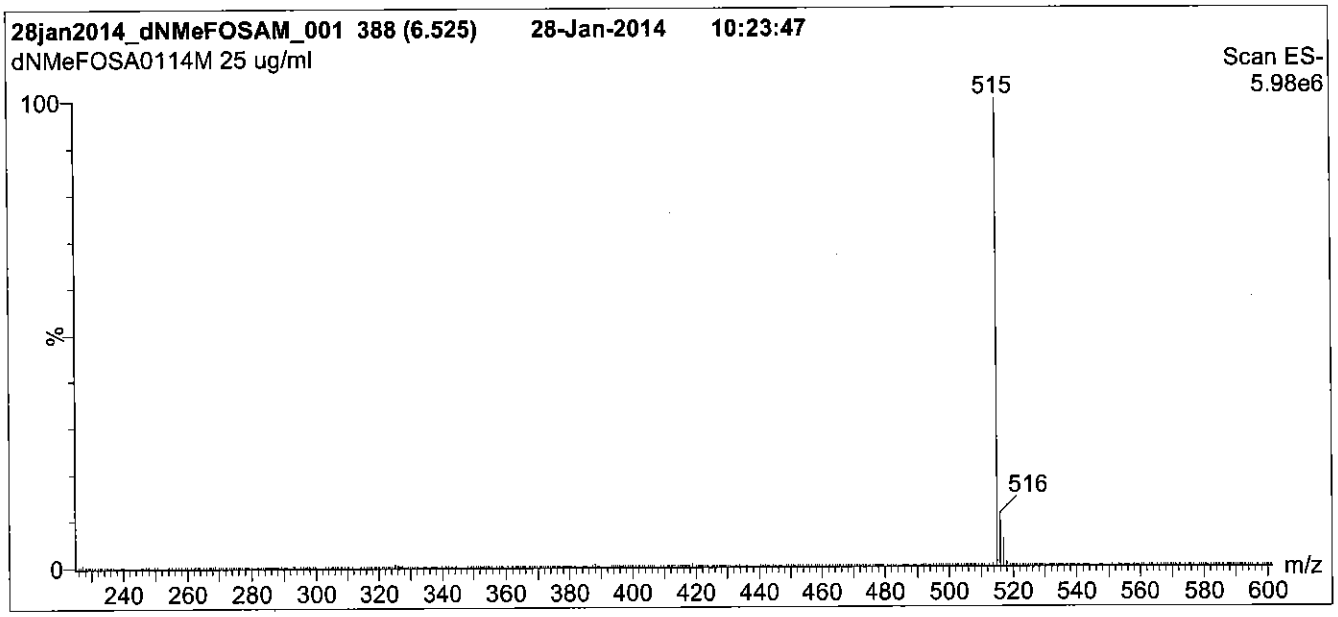
Figure 1: **d-N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% H_2O / 50% (80:20 MeOH:ACN)
(both with 10mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for
1.5 min. Return to initial conditions over 0.5 min.
Time: 10 min

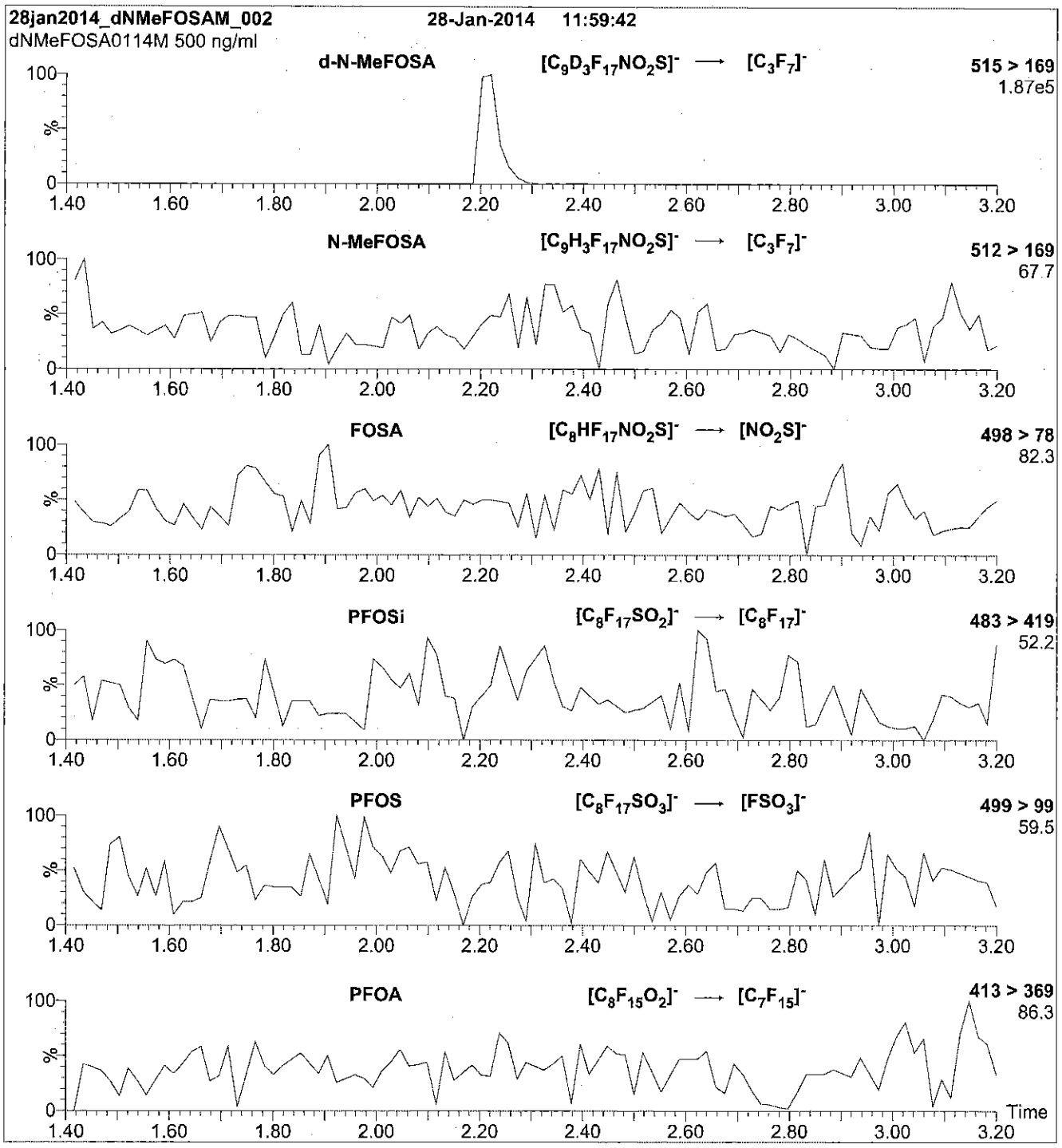
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd3-NMeFOSAA_00001

r: 7/16/15 SKV

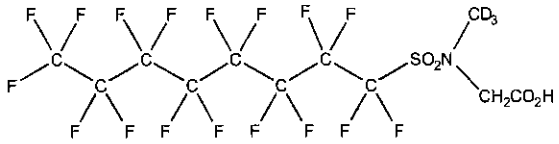
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0113

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA: $C_{11}D_3H_3F_{17}NO_4S$ **MOLECULAR WEIGHT:** 574.23

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol, Water (<1%)

CHEMICAL PURITY: >98% **ISOTOPIC PURITY:** ≥98% $^2H_3$

LAST TESTED: (mm/dd/yyyy) 01/31/2013

EXPIRY DATE: (mm/dd/yyyy) 01/31/2018

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.

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Certified By: B.G. Chittim **Date:** 04/06/2015 (mm/dd/yyyy)

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

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 ±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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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO/IEC 17025 REFERENCE MATERIAL PRODUCER

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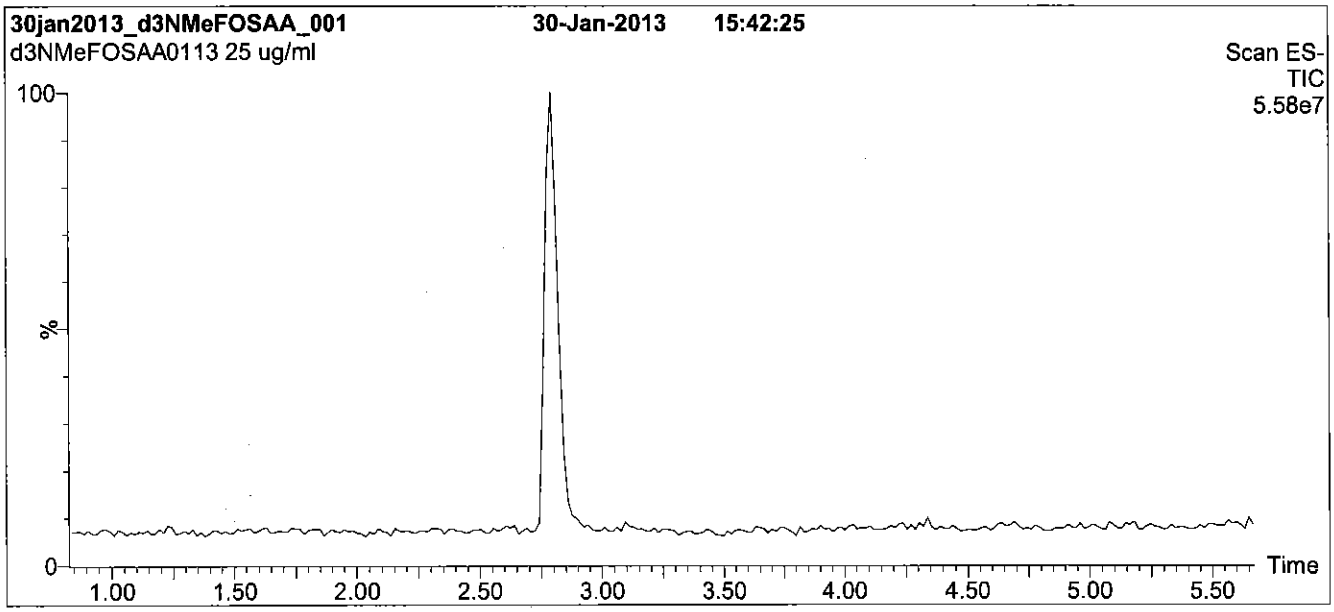
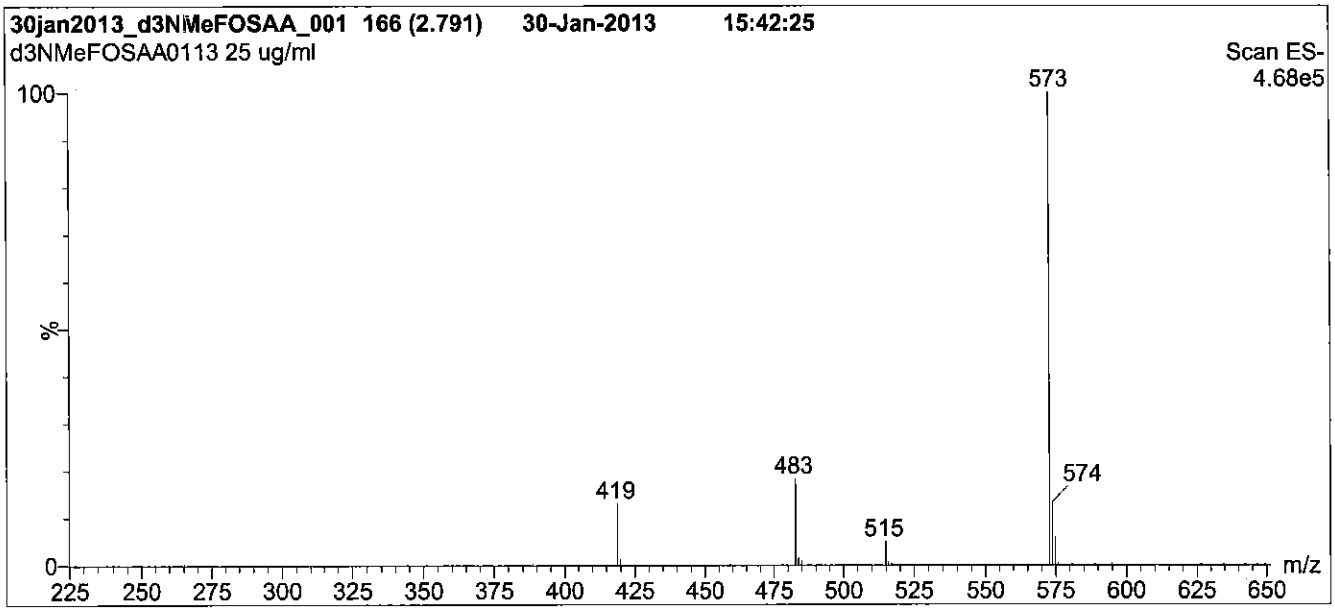
Figure 1: **d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc 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

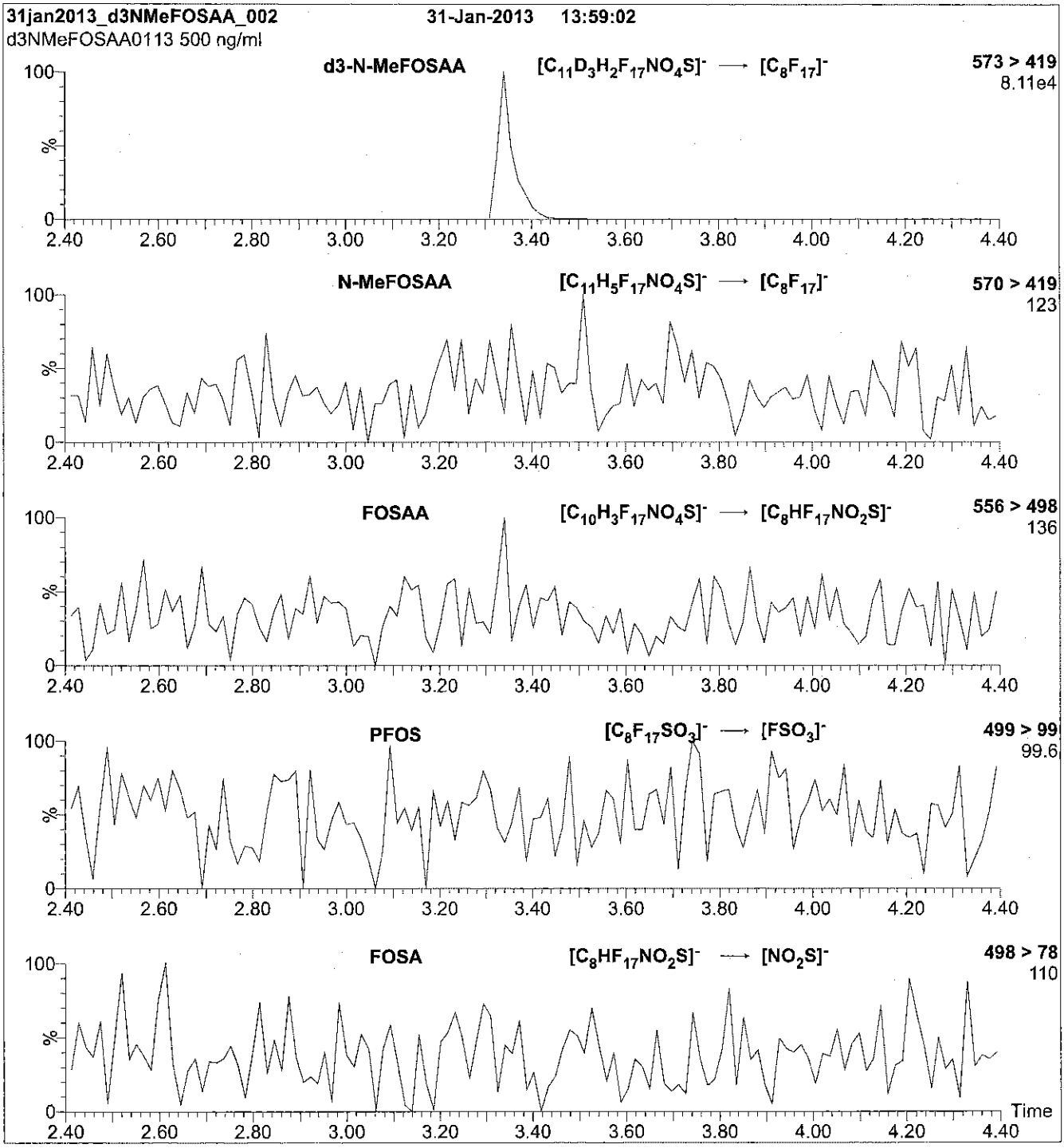
Flow: 300 µl/min

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 µl (500 ng/ml d3-N-MeFOSAA)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCd5-NEtFOSAA_00001

P: 7/10/15 SW

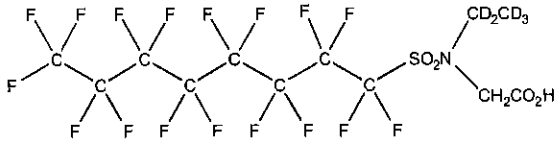
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA0515

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_{12}D_5H_3F_{17}NO_4S$	**MOLECULAR WEIGHT:**	590.27
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_5$
LAST TESTED: (mm/dd/yyyy)	05/08/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/08/2020		
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.

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Certified By: B.G. Chittim **Date:** 05/11/2015 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A 1226

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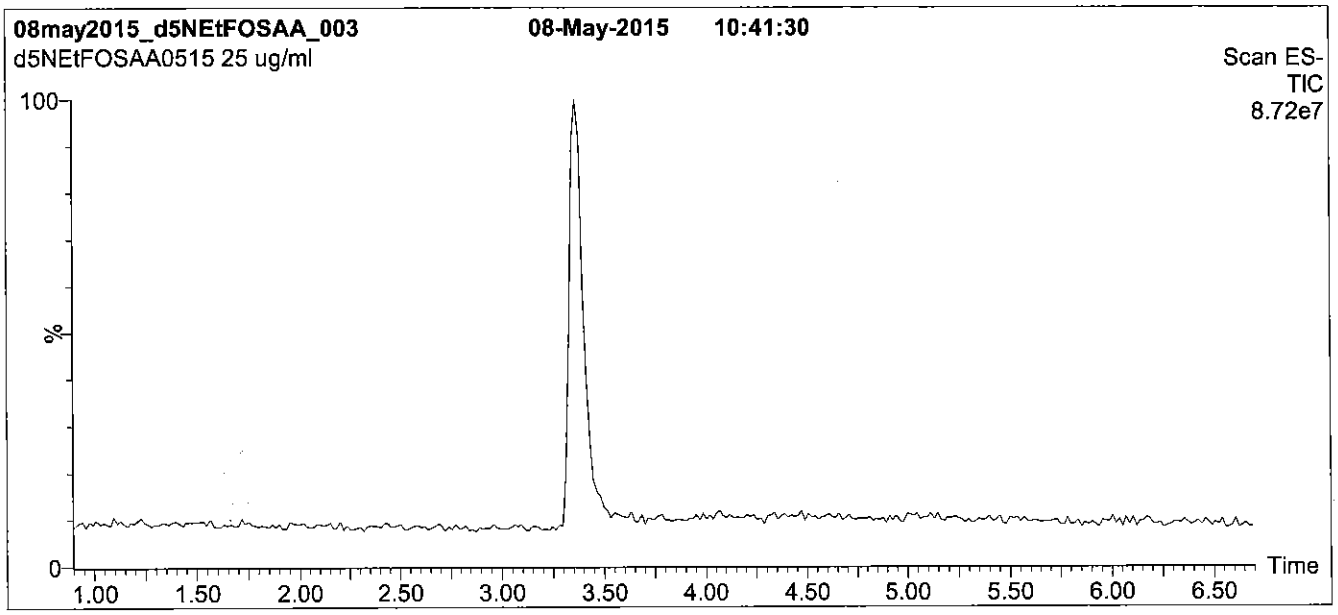
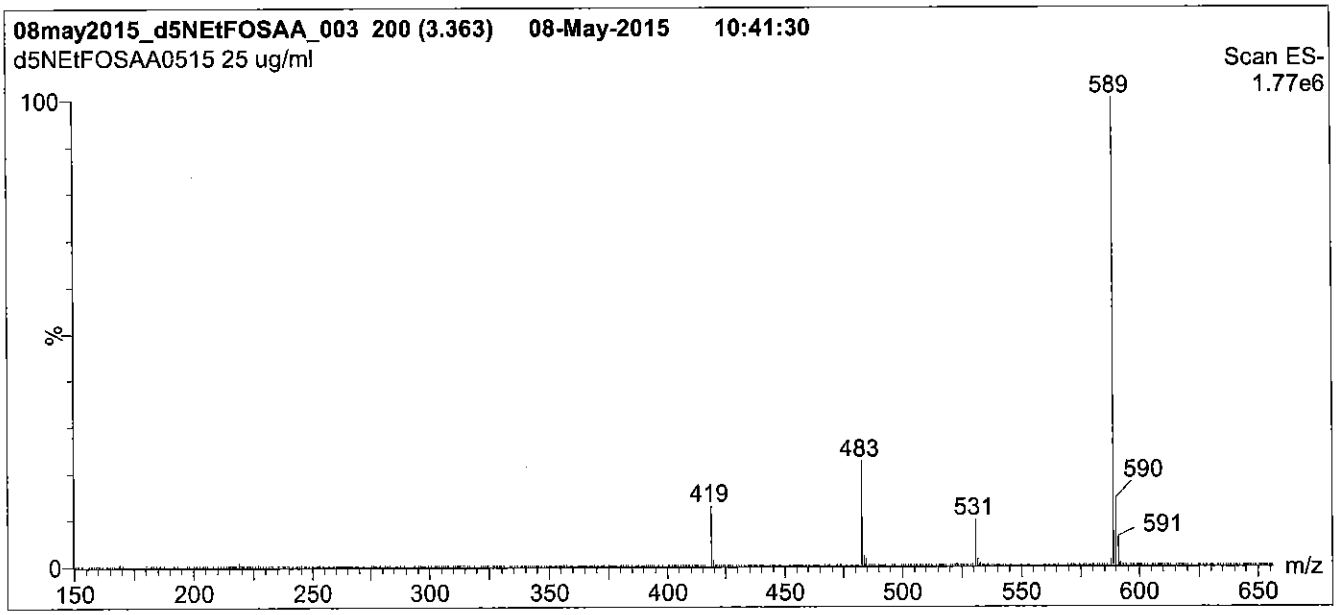




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc 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

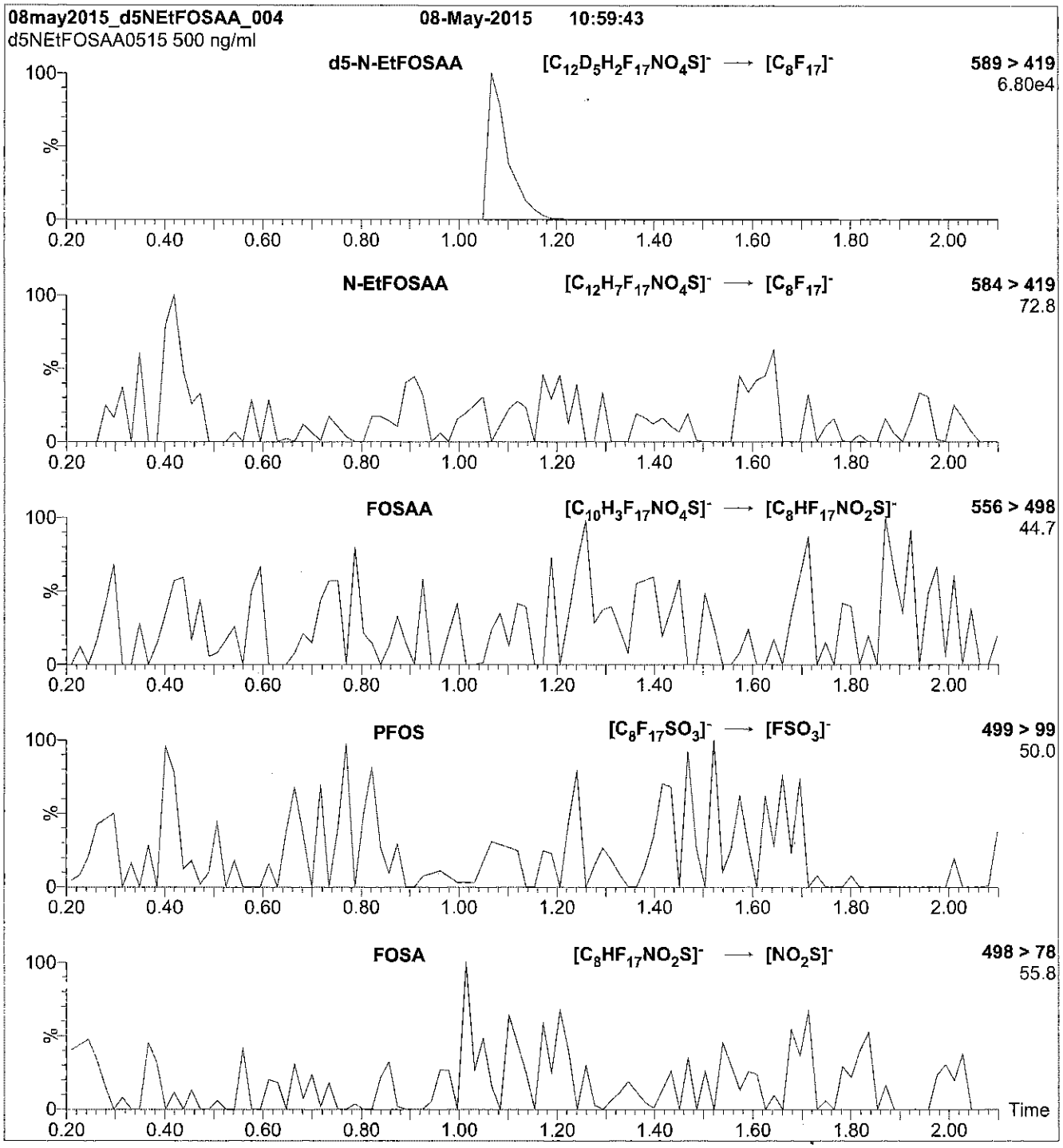
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml d5-N-EtFOSAA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 25

Reagent

LCM2-6:FTS_00001

R: 7/16/15 SN
S: 7/20/15 SN

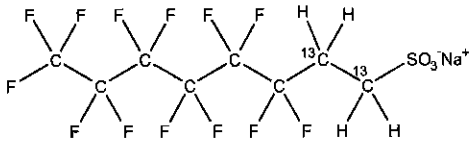
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0714

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]octane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_6H_4F_{13}SO_3Na$	**MOLECULAR WEIGHT:**	452.13
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.5 ± 2.4 µg/ml (M2-6:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	07/15/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/15/2017		
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 ^{34}S (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).

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Certified By: _____ **Date:** 03/27/2015 (mm/dd/yyyy)
B.G. Chittim

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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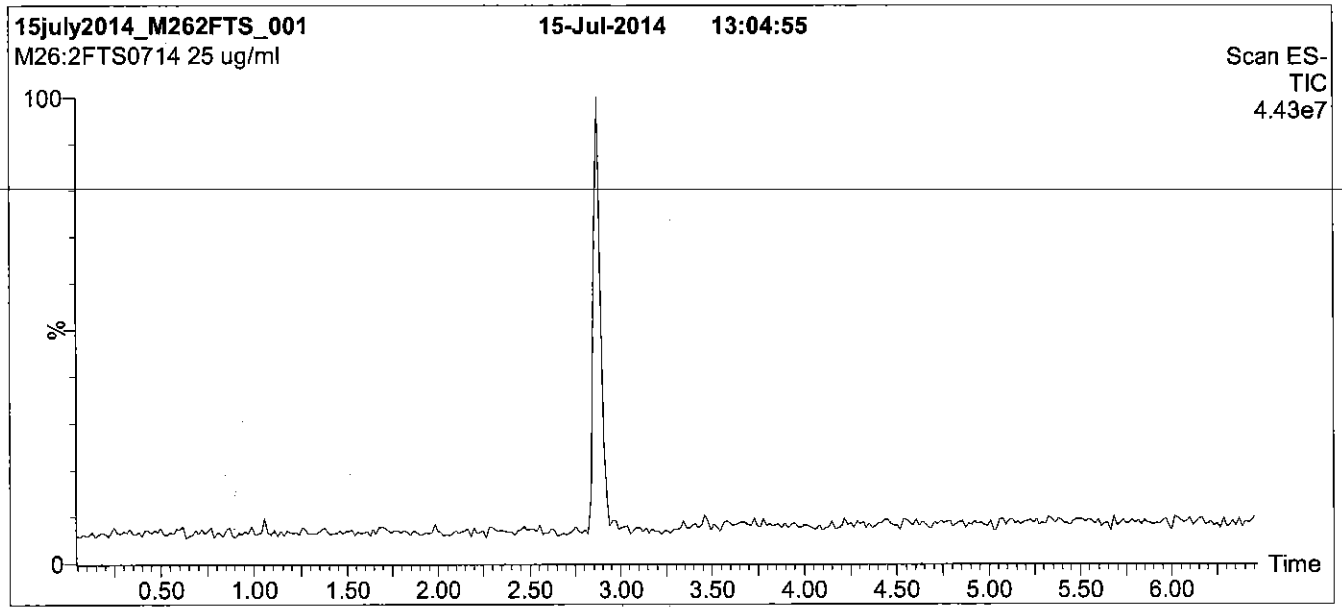
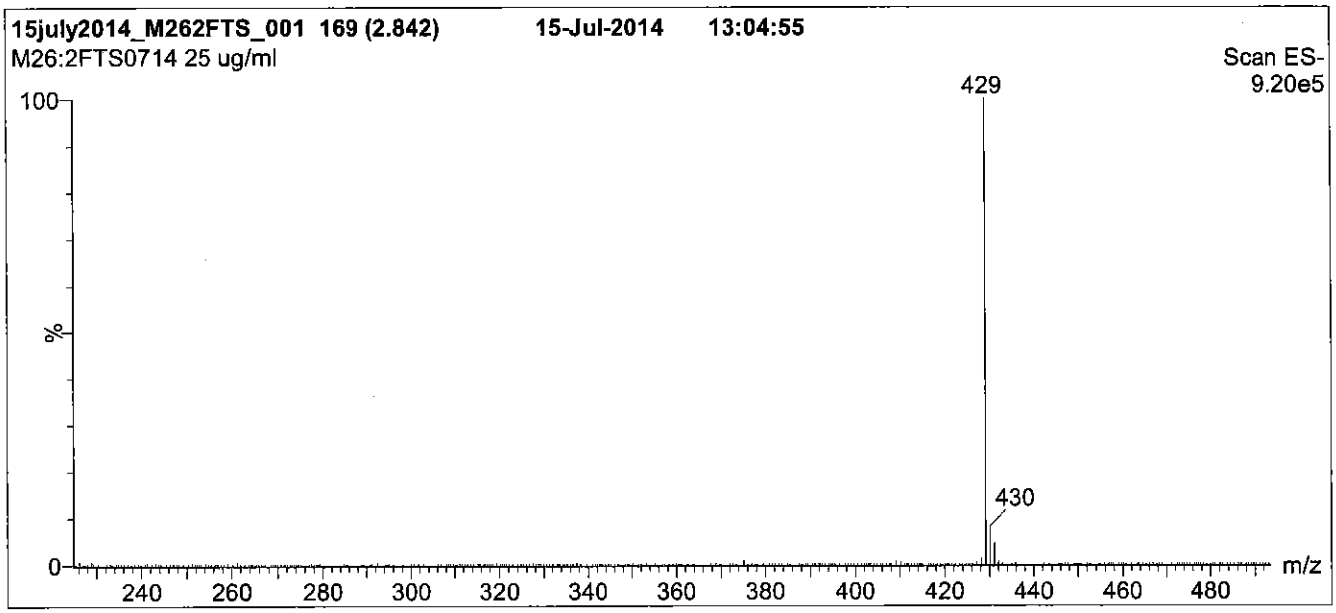




Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc 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

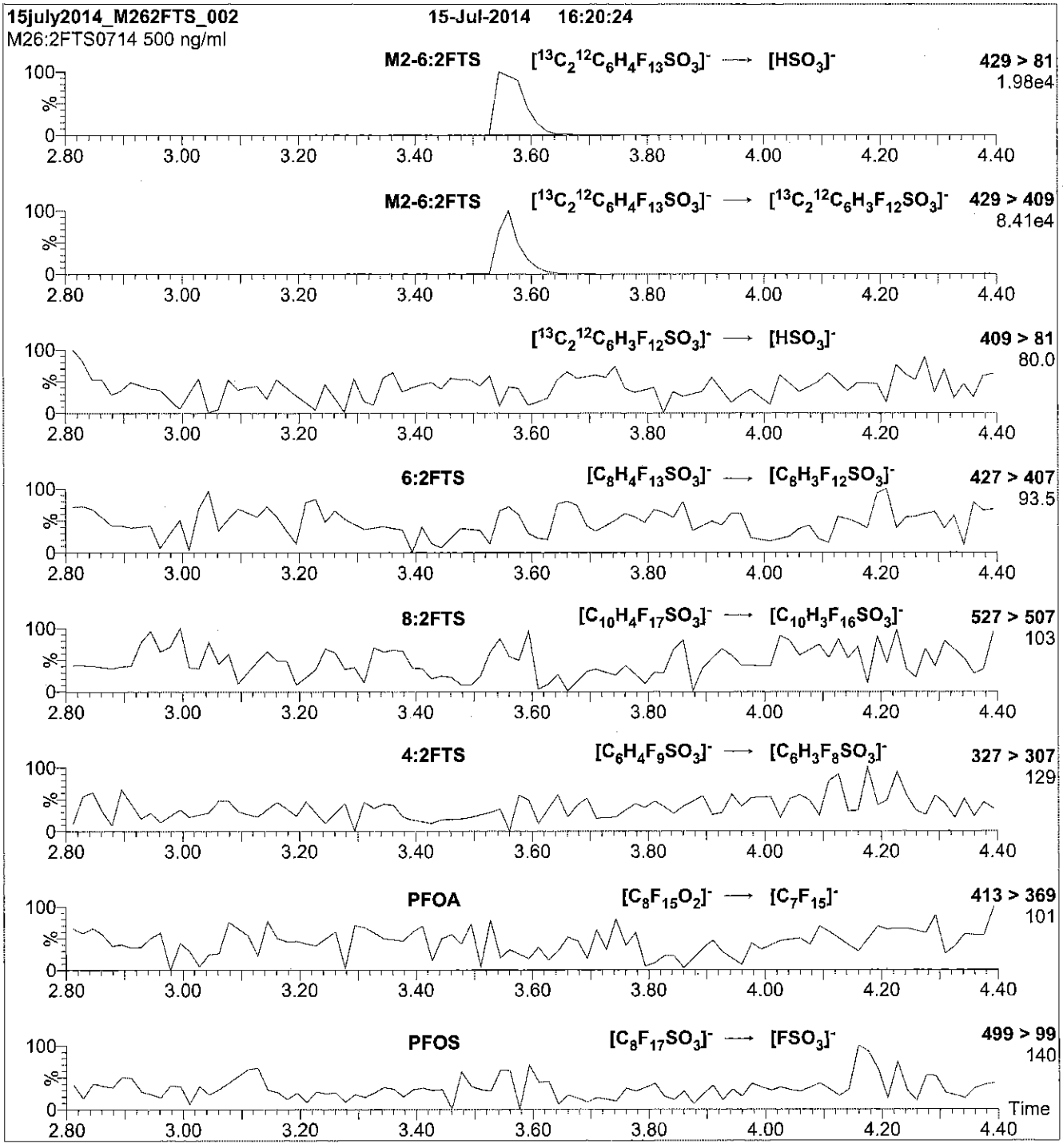
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 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 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCM2-8:2FTS_00001

r: 7/16/15 BV
S · 7/22/15 STV

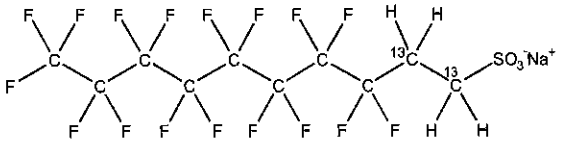
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0414

COMPOUND: Sodium 1H,1H,2H,2H-perfluoro-[1,2-$^{13}C_2$]decane sulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8H_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	552.15
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt)	**SOLVENT(S):**	Methanol
	47.9 ± 2.4 µg/ml (M2-8:2FTS anion)		
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/13/2014		
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ADDITIONAL INFORMATION:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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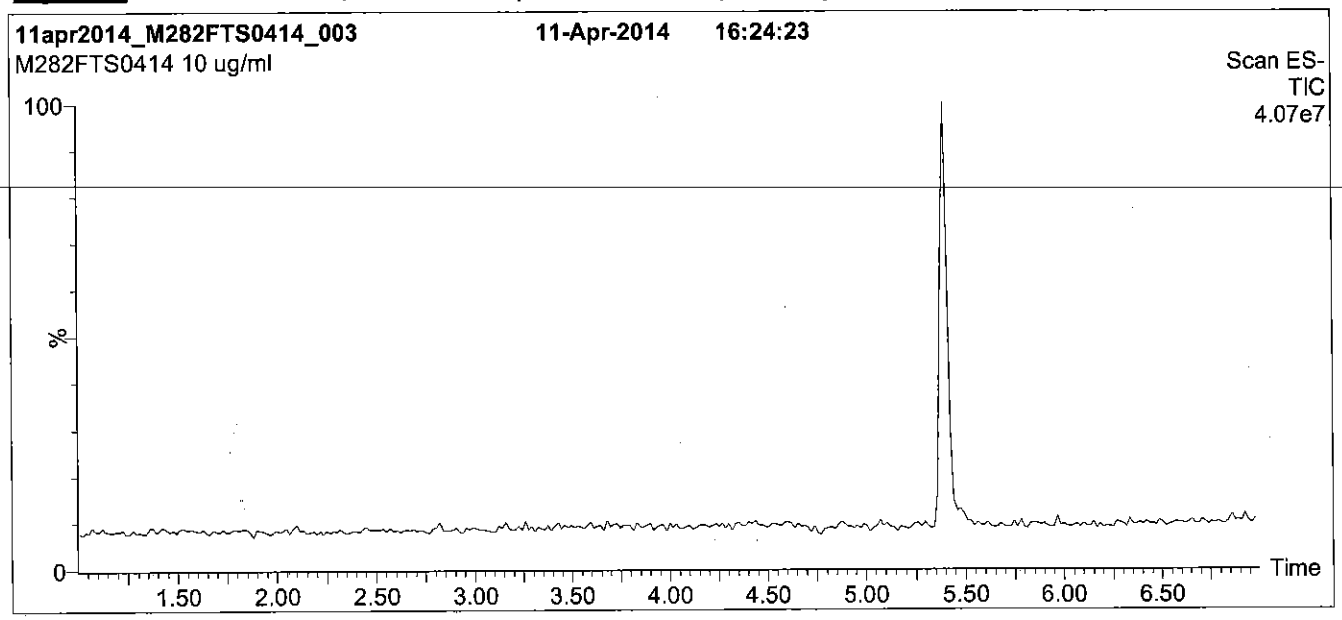
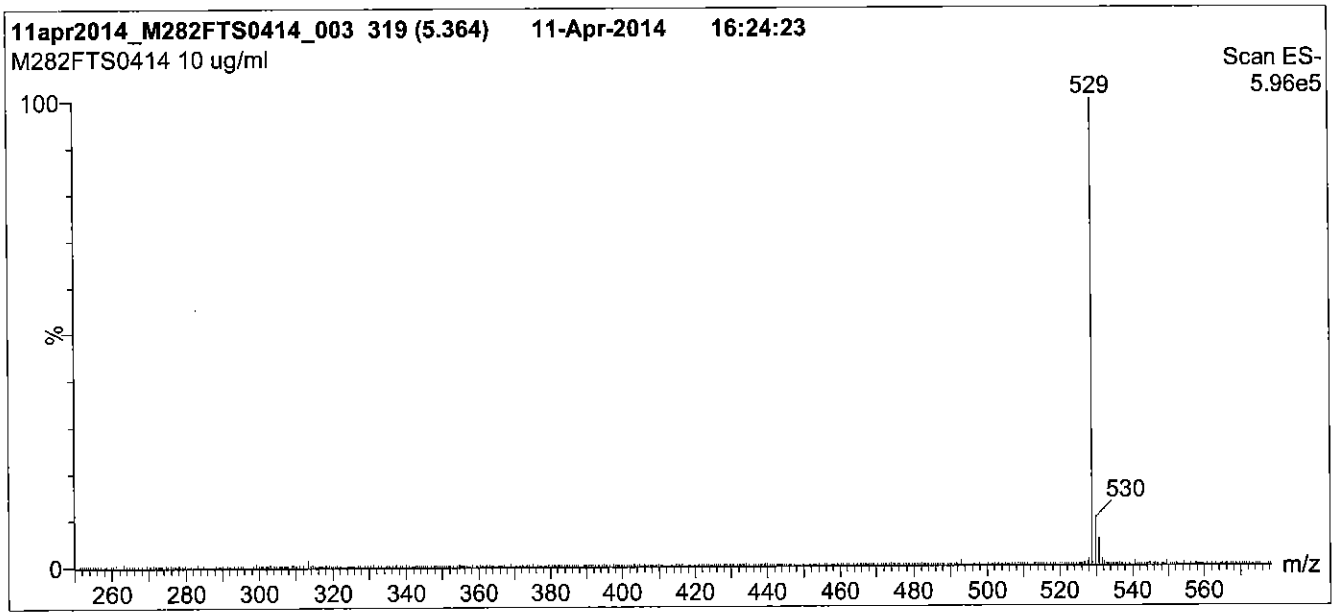
Figure 1: **M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

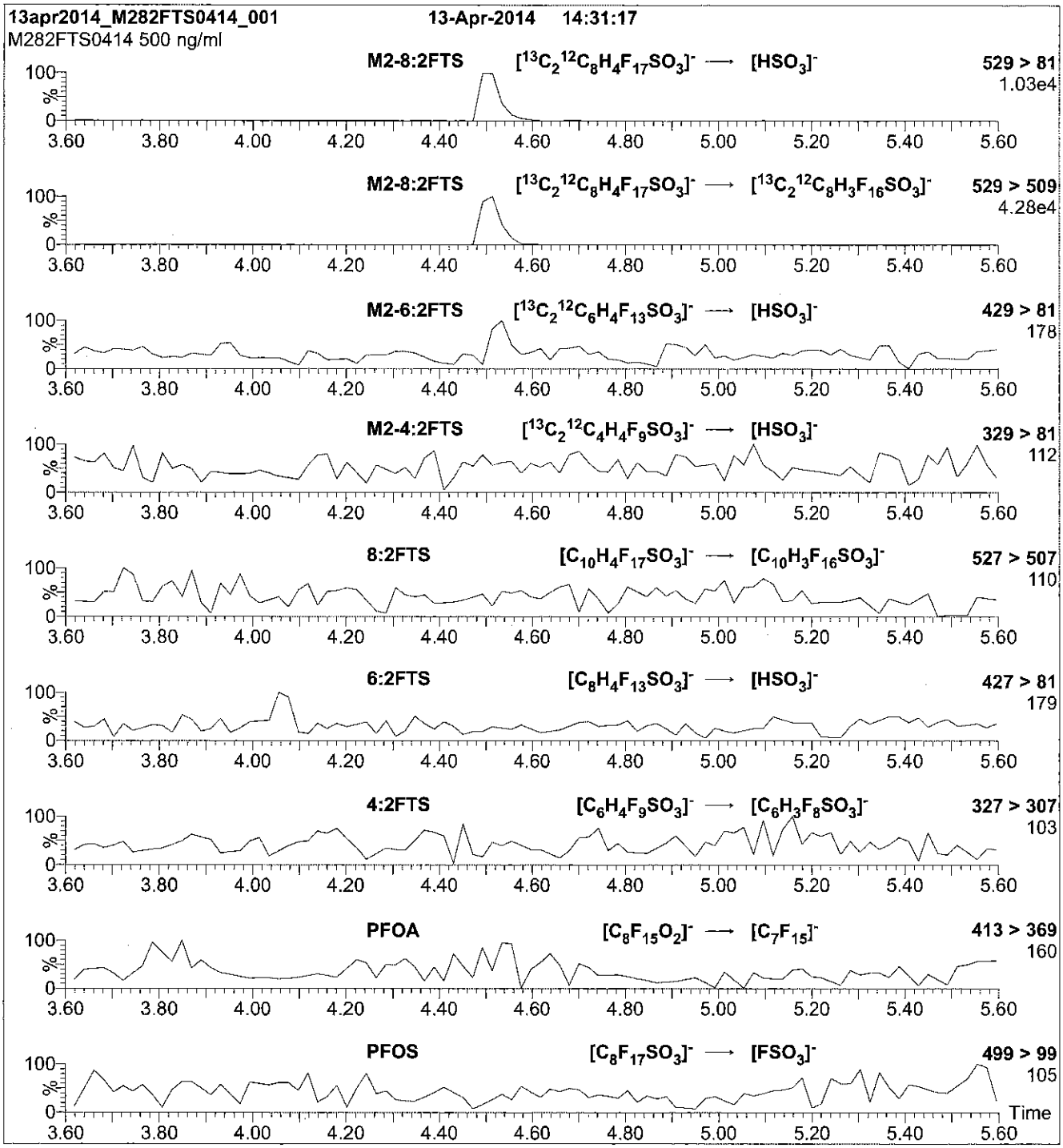
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 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 µl/min

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 25

Reagent

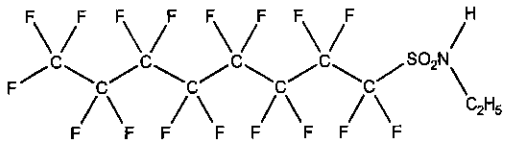
LCN-EtFOSA-M_00002

R: 7/16/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	N-EtFOSA-M	**LOT NUMBER:**	NEtFOSA0714M
COMPOUND:	N-ethylperfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	4151-50-2



MOLECULAR FORMULA:	$C_{10}H_6F_{17}NO_2S$	**MOLECULAR WEIGHT:**	527.20
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/14/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/14/2019		
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.

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Certified By: _____ **Date:** 04/01/2015 (mm/dd/yyyy)
B.G. Chittim

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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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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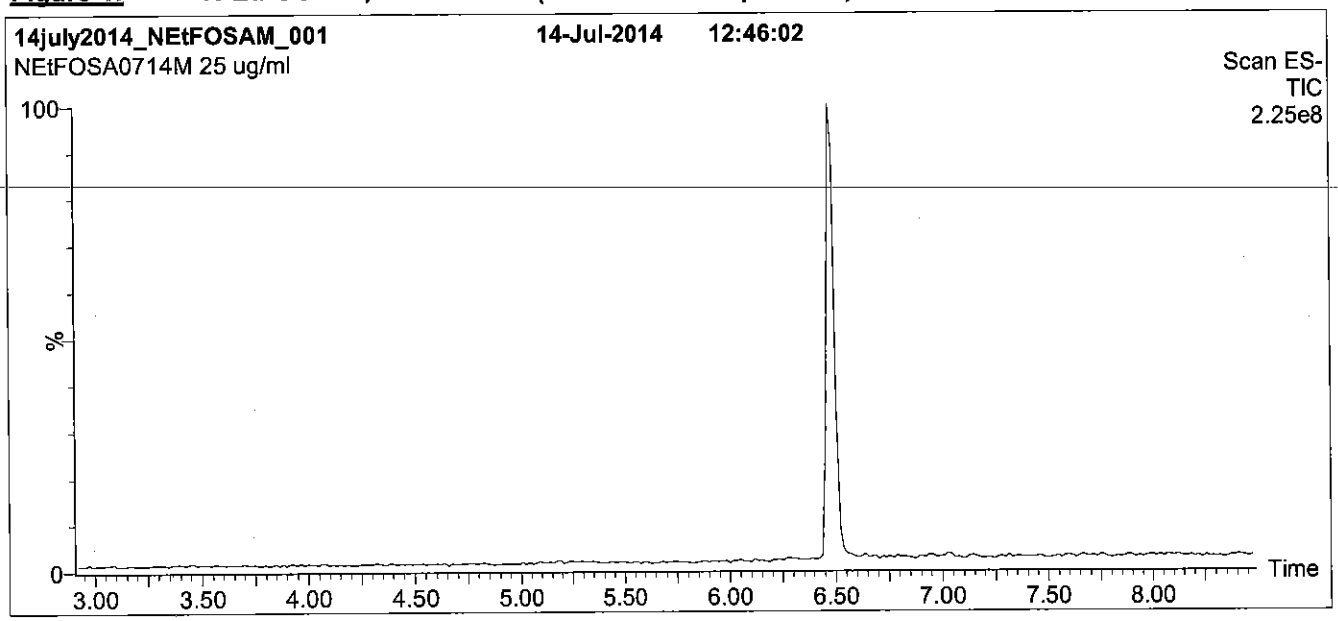
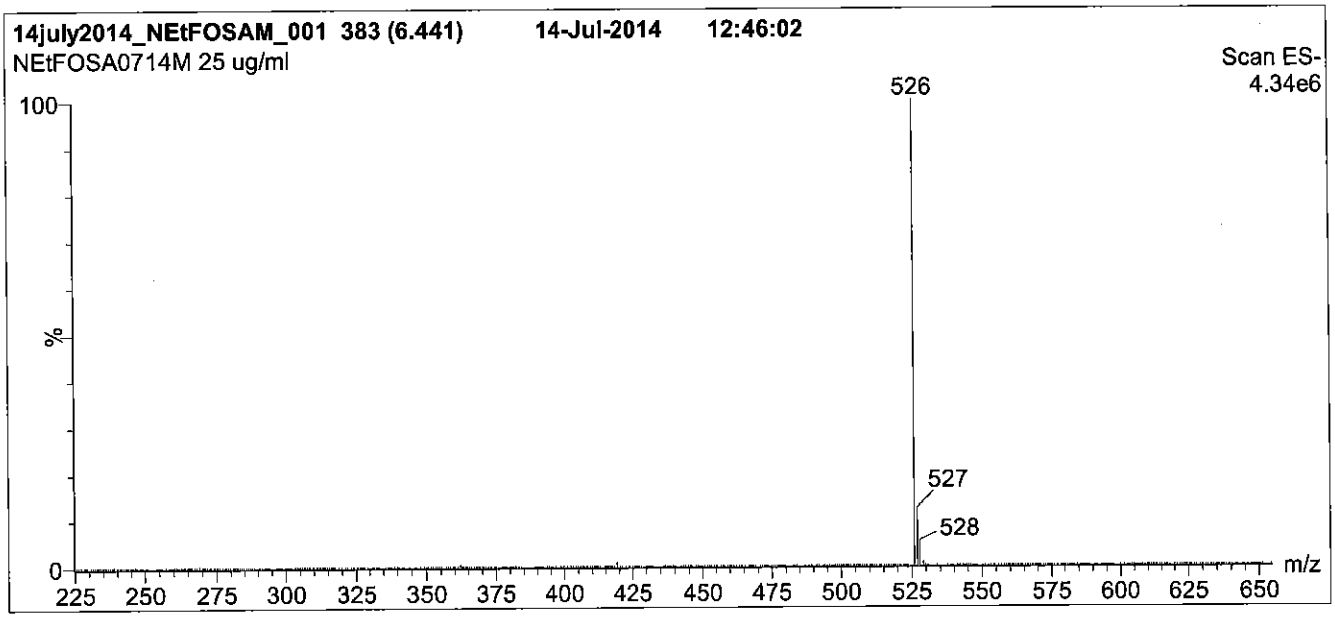
Figure 1: **N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% H_2O / 55% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc 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

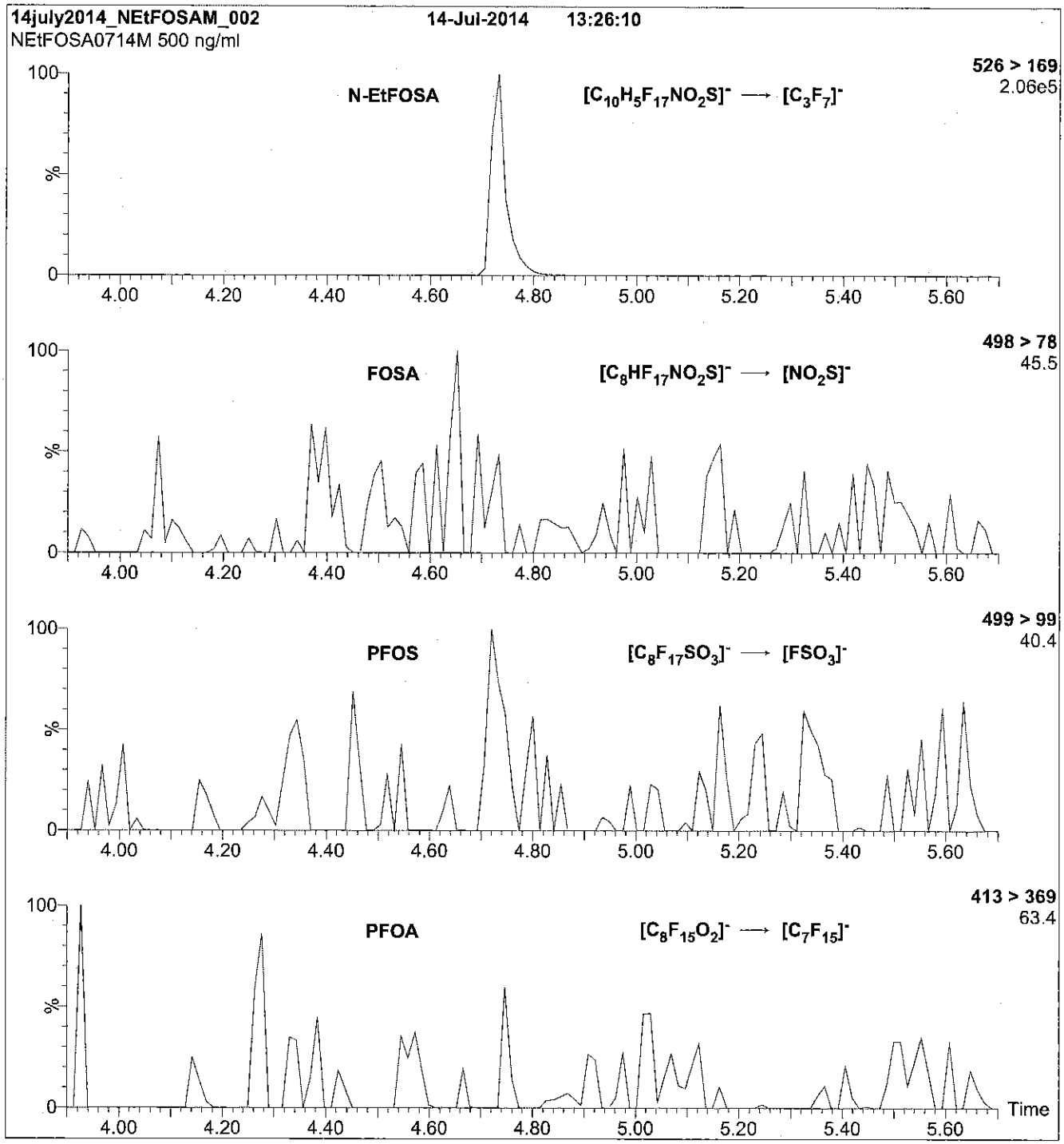
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCN-EtFOSAA_00001

N: 7/16/15 SKV

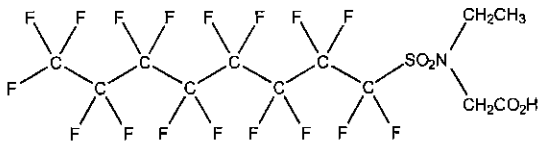
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0113

COMPOUND: N-ethylperfluoro-1-octanesulfonamidoacetic acid

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



MOLECULAR FORMULA: $C_{12}H_8F_{17}NO_4S$ **MOLECULAR WEIGHT:** 585.23

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 01/29/2013

EXPIRY DATE: (mm/dd/yyyy) 01/29/2018

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/06/2015 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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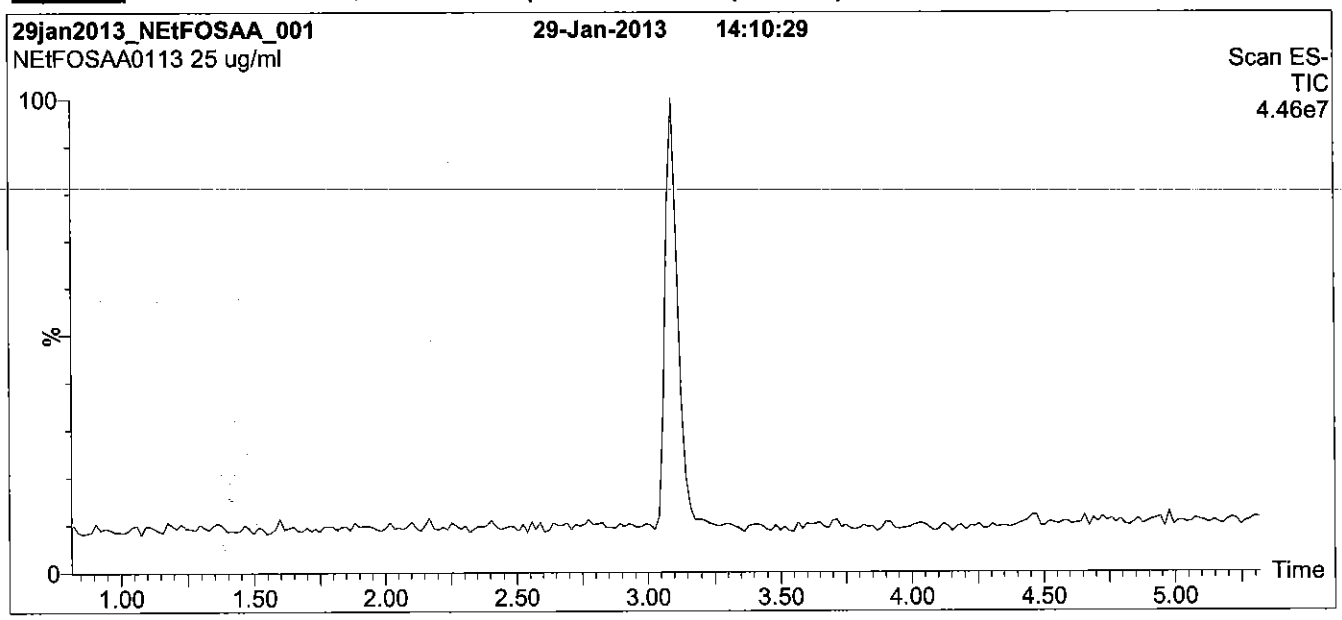
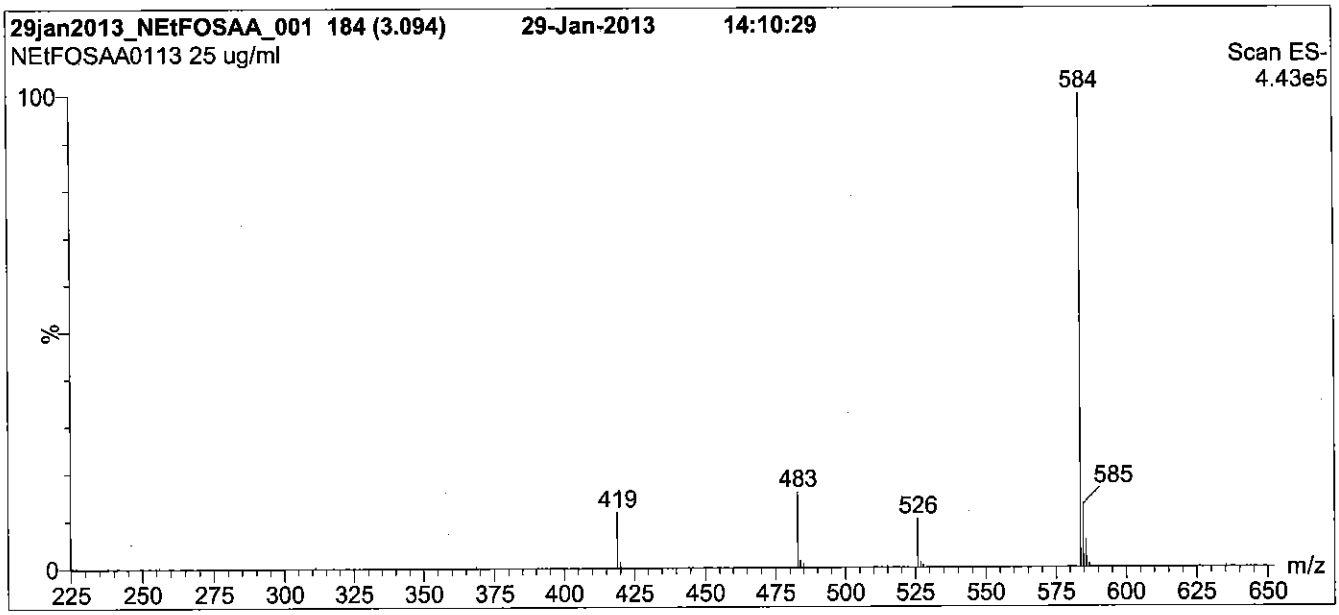
Figure 1: **N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc 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

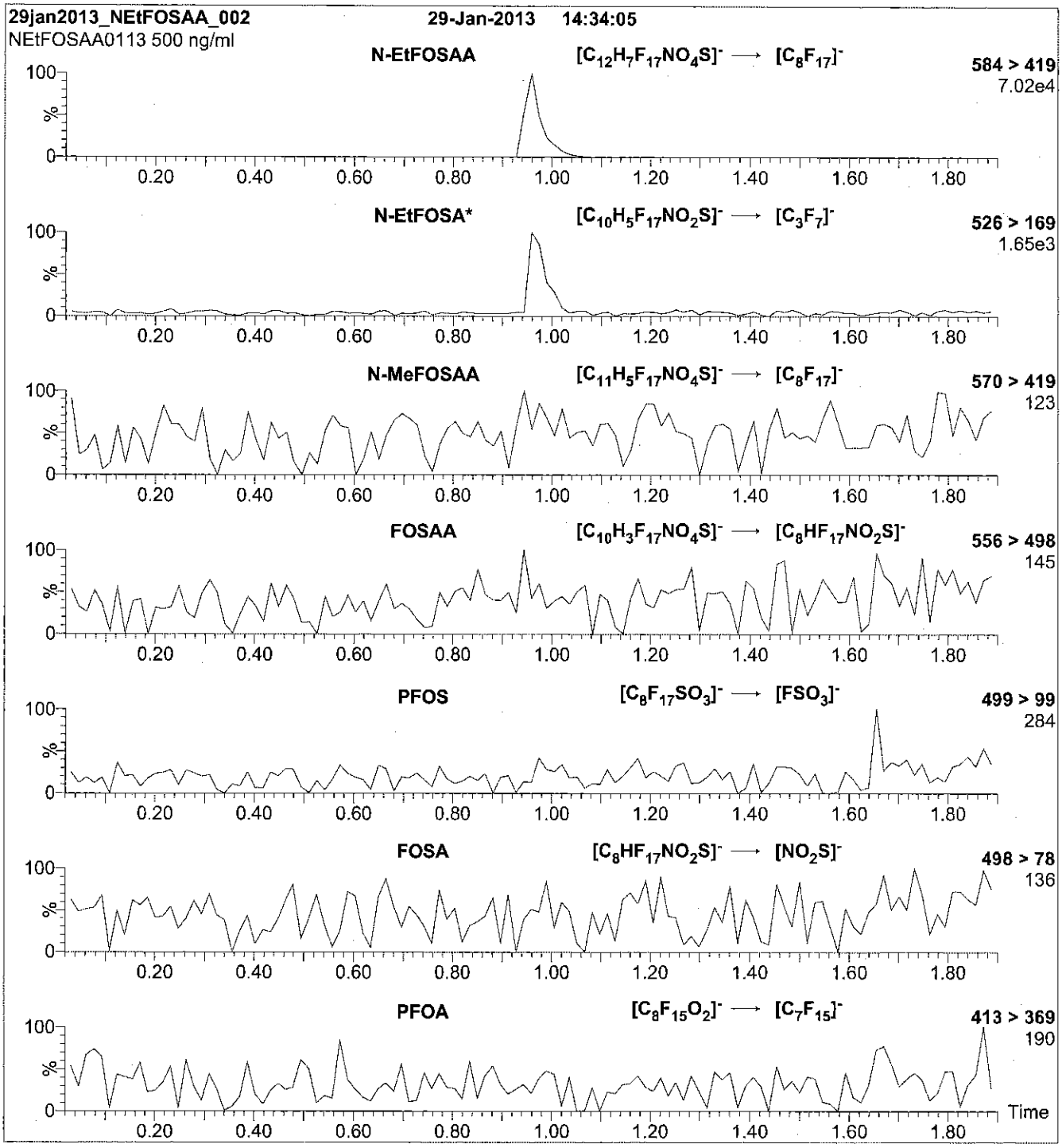
Flow: 300 µl/min

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



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

Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCN-MeFOSA-M_00001

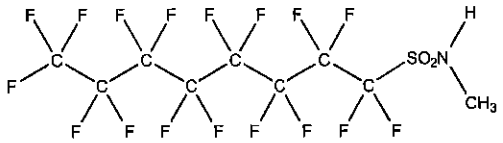
R: 7/16/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSA-M
COMPOUND: N-methylperfluoro-1-octanesulfonamide
LOT NUMBER: NMeFOSA0714M

STRUCTURE:
CAS #: 31506-32-8



MOLECULAR FORMULA:	$C_9H_4F_{17}NO_2S$	**MOLECULAR WEIGHT:**	513.17
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/15/2014		
EXPIRY DATE: (mm/dd/yyyy)	07/15/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

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CALA Testing Accreditation No. A 1226

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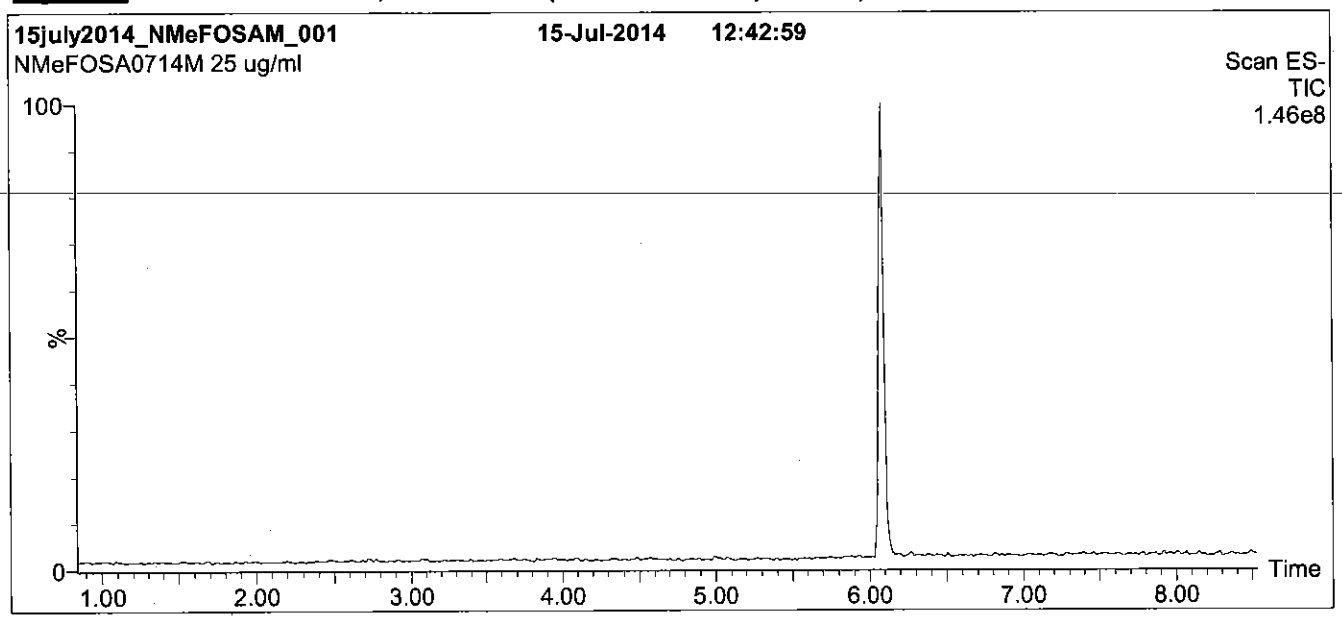

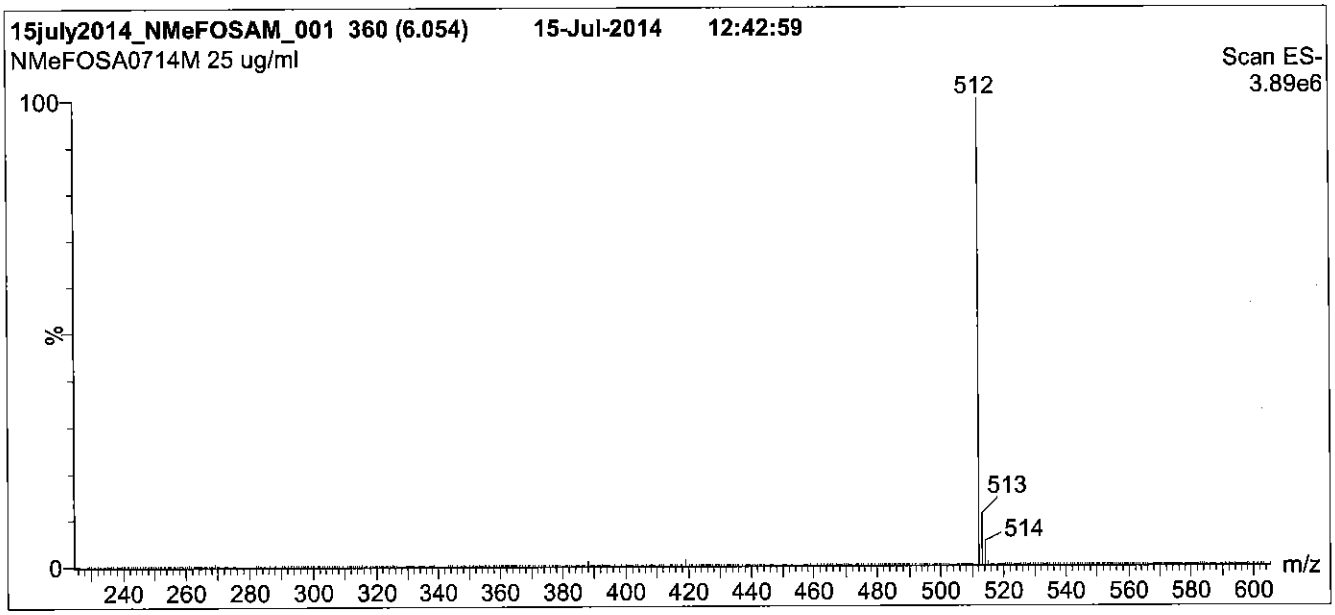

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Time: 10 min

Flow: 300 µl/min

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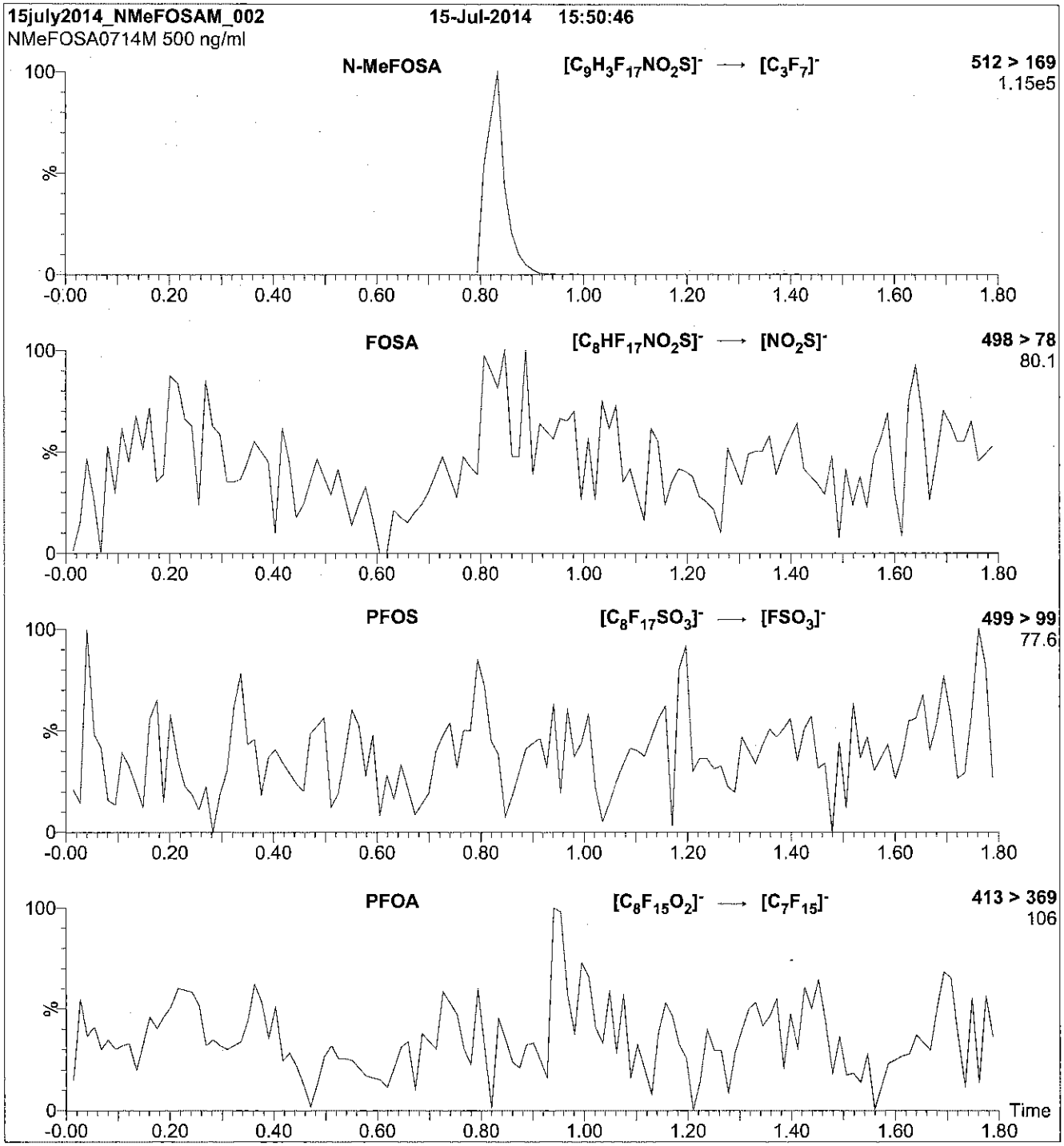
Source: Electrospray (negative)
Capillary Voltage (kV) = 2.50
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml N-MeFOSA-M)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

Reagent

LCN-MeFOSAA_00001

R: 7/10/15 SEU

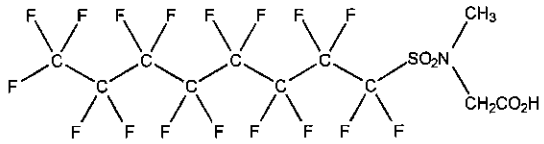
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA1214

COMPOUND: N-methylperfluoro-1-octanesulfonamidoacetic acid

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



MOLECULAR FORMULA: $C_{11}H_6F_{17}NO_4S$ **MOLECULAR WEIGHT:** 571.21

CONCENTRATION: 50 ± 2.5 µg/ml **SOLVENT(S):** Methanol
Water (<1%)

CHEMICAL PURITY: >98%

LAST TESTED: (mm/dd/yyyy) 12/09/2014

EXPIRY DATE: (mm/dd/yyyy) 12/09/2019

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/06/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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

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 ±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:

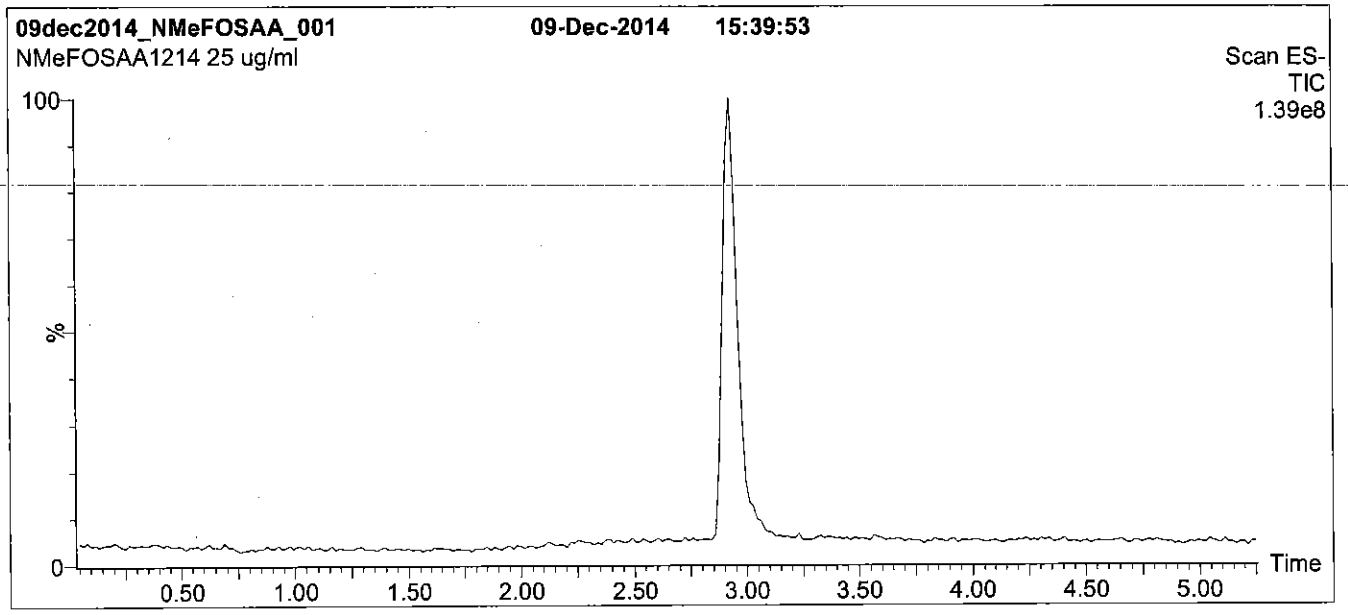
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

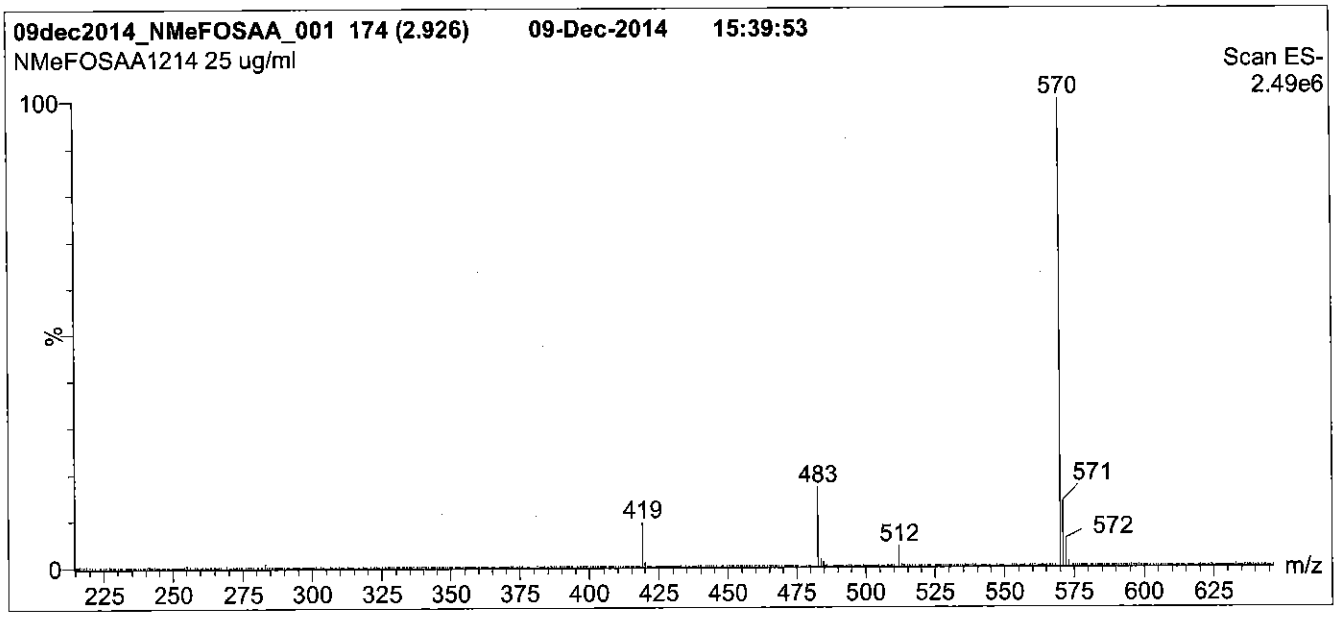
CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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

Figure 1: **N-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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc 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

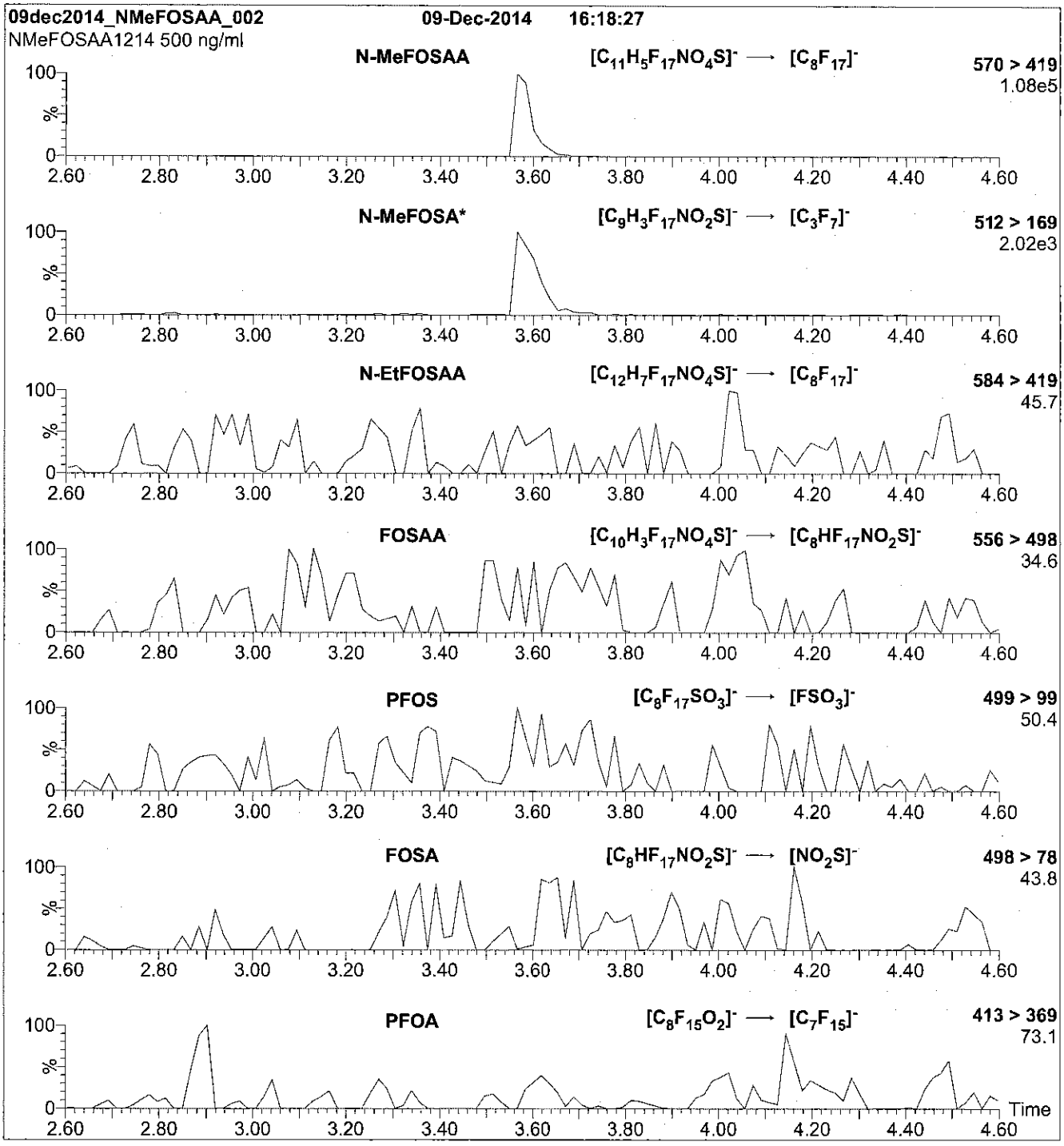
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

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

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



*__Note__: N-MeFOSA is formed by fragmentation of N-MeFOSAA.

Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFACMXB_00007

P: 12/30/15 CW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PFAC-MXB

Solution/Mixture of Native Perfluoroalkylcarboxylic Acids and Native Perfluoroalkylsulfonates

PRODUCT CODE:	PFAC-MXB
LOT NUMBER:	PFACMXB1115
SOLVENT(S):	Methanol / Water (<1%)
DATE PREPARED: (mm/dd/yyyy)	11/04/2015
LAST TESTED: (mm/dd/yyyy)	11/06/2015
EXPIRY DATE: (mm/dd/yyyy)	11/06/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

PFAC-MXB is a solution/mixture of thirteen native perfluoroalkylcarboxylic acids (C_4-C_{14}, C_{16}, and C_{18}) and four native perfluoroalkylsulfonates (C_4, C_6, C_8 and C_{10}). The full name, abbreviation and concentration for each of the components are given in Table A.

The individual perfluoroalkylcarboxylic acids and perfluoroalkylsulfonates all have chemical purities of >98%.

DOCUMENTATION/ DATA ATTACHED:

Table A: Components and Concentrations of the Solution/Mixture
Figure 1: LC/MS Data (SIR)
Figure 2: LC/MS/MS Data (Selected MRM Transitions)
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 carboxylic acids to their respective methyl esters.

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

INTENDED USE:

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

HAZARDS:

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,...x_n on which it depends is:

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

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 ±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).

CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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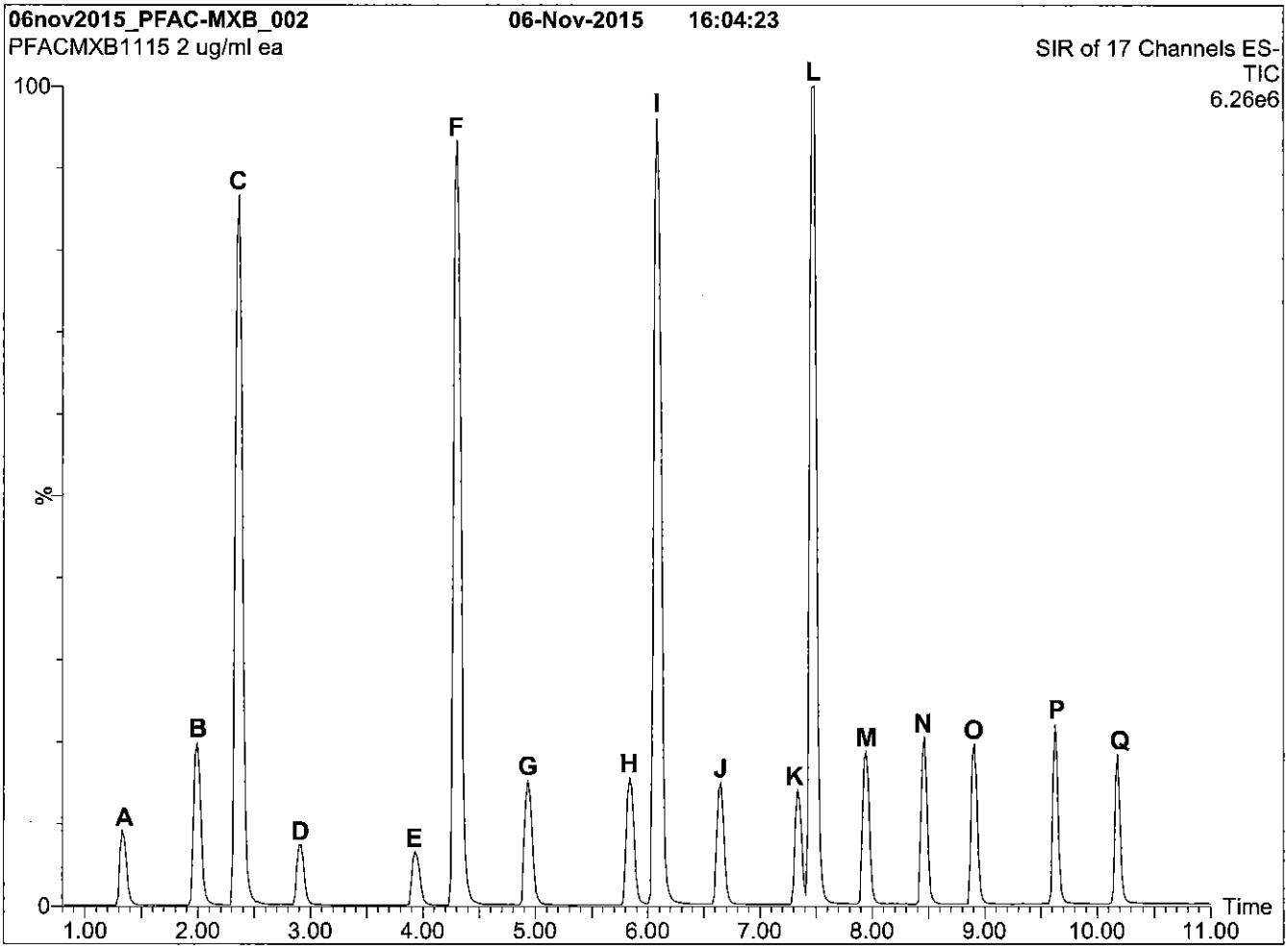
Table A: **PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))**

Name	Abbreviation	Concentration (ng/ml)	Peak Assignment In Figure 1
Perfluoro-n-butanoic acid	PFBA	2000	A
Perfluoro-n-pentanoic acid	PFPeA	2000	B
Perfluoro-n-hexanoic acid	PFHxA	2000	D
Perfluoro-n-heptanoic acid	PFHpA	2000	E
Perfluoro-n-octanoic acid	PFOA	2000	G
Perfluoro-n-nonanoic acid	PFNA	2000	H
Perfluoro-n-decanoic acid	PFDA	2000	J
Perfluoro-n-undecanoic acid	PFUdA	2000	K
Perfluoro-n-dodecanoic acid	PFDoA	2000	M
Perfluoro-n-tridecanoic acid	PFTrDA	2000	N
Perfluoro-n-tetradecanoic acid	PFTeDA	2000	O
Perfluoro-n-hexadecanoic acid	PFHxDA	2000	P
Perfluoro-n-octadecanoic acid	PFODA	2000	Q

Name	Abbreviation	Concentration (ng/ml)		Peak Assignment in Figure 1
		as the salt	as the anion	
Potassium perfluoro-1-butanesulfonate	L-PFBS	2000	1770	C
Sodium perfluoro-1-hexanesulfonate	L-PFHxS	2000	1890	F
Sodium perfluoro-1-octanesulfonate	L-PFOS	2000	1910	I
Sodium perfluoro-1-decanesulfonate	L-PFDS	2000	1930	L

Certified By: B.G. Chittim **Date:** 11/11/2015 (mm/dd/yyyy)

Figure 1: **PFAC-MXB; LC/MS Data (Total Ion Current Chromatogram; SIR)**



Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% H_2O / 45% (80:20 MeOH:ACN)
(both with 10 mM NH_4OAc buffer)
Ramp to 95% organic over 10 min and hold for 1 min
before returning to initial conditions in 0.5 min.

Time: 12 min

Flow: 300 µl/min

MS Parameters

Experiment: SIR of 17 Channels

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = variable (10-70)
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**

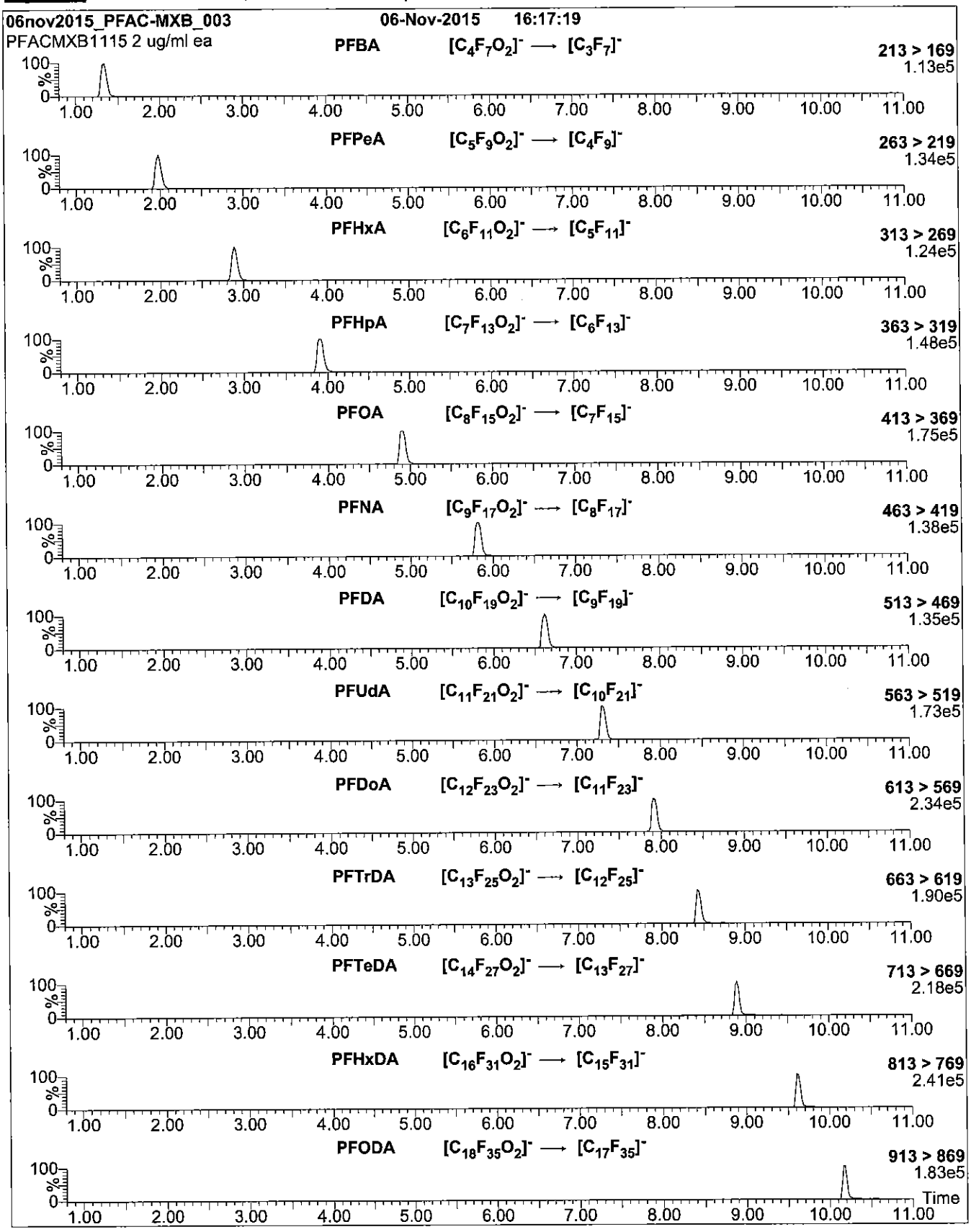
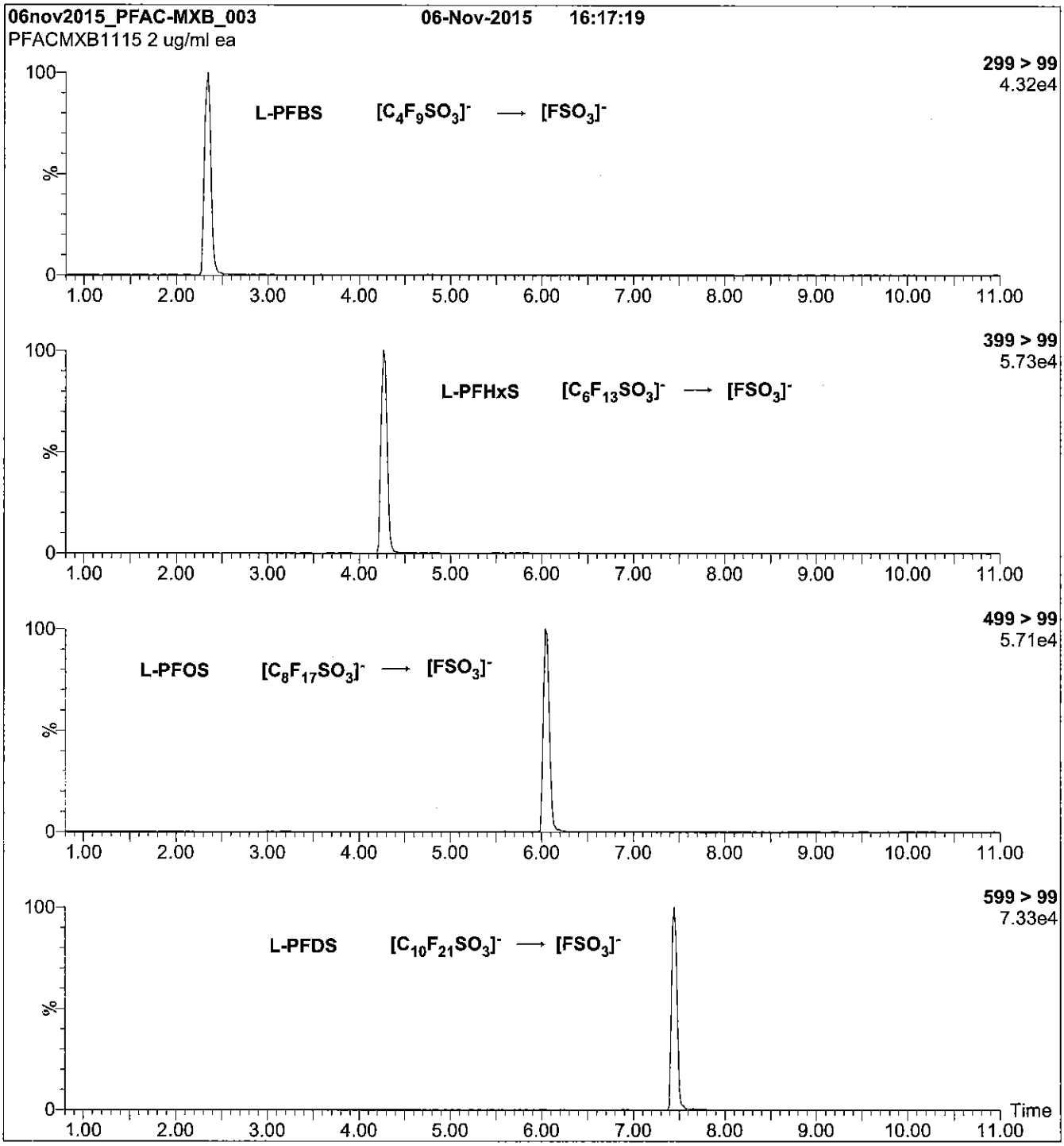


Figure 3: **PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figures 2 and 3:

Injection: on-column (PFAC-MXB)

Mobile phase: Same as Figure 1

Flow: 300 µl/min

MS Parameters
Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 8-50 (variable)

Reagent

LCPFBA_00004

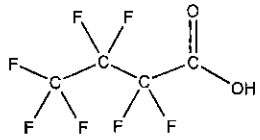
R: 2/25/16 CBW

587895
ID: LCPFBA_00004
Exp: 01/30/20 Prpd: CBW
PF-n-butanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFBA	**LOT NUMBER:**	PFBA0115
COMPOUND:	Perfluoro-n-butanoic acid		
STRUCTURE:		**CAS #:**	375-22-4



MOLECULAR FORMULA:	$C_4HF_7O_2$	**MOLECULAR WEIGHT:**	214.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	01/30/2015		
EXPIRY DATE: (mm/dd/yyyy)	01/30/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 03/25/2015 (mm/dd/yyyy)
B.G. Chittim

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

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

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

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CALA

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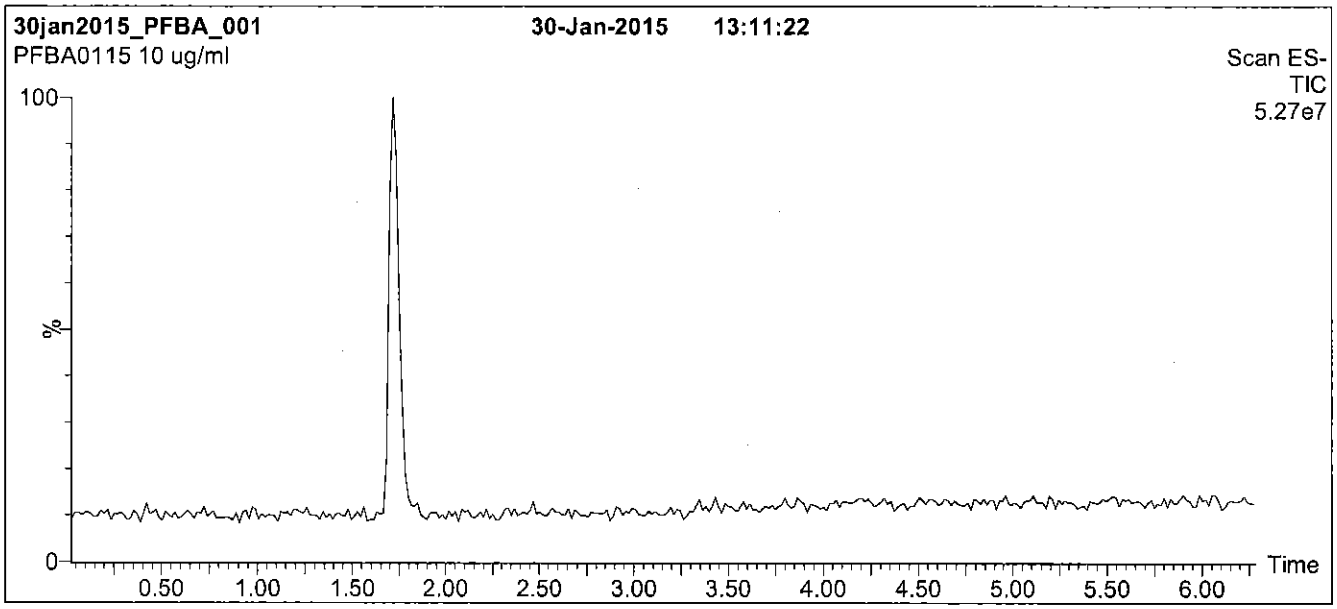
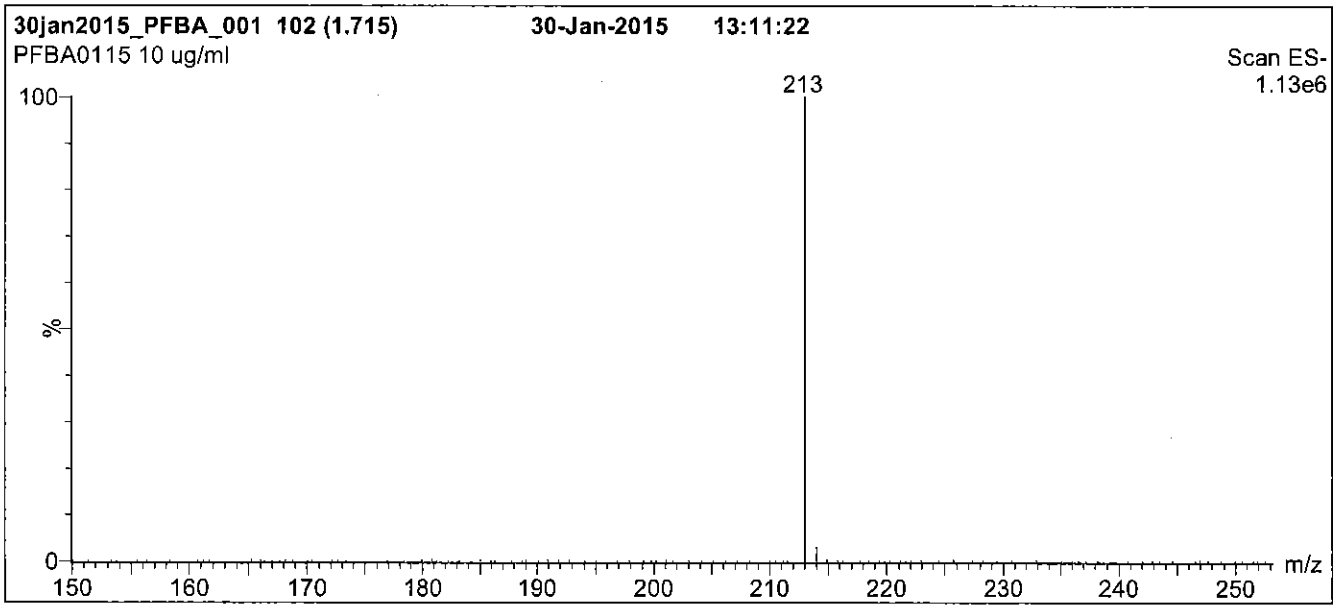
Figure 1: **PFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 10 min

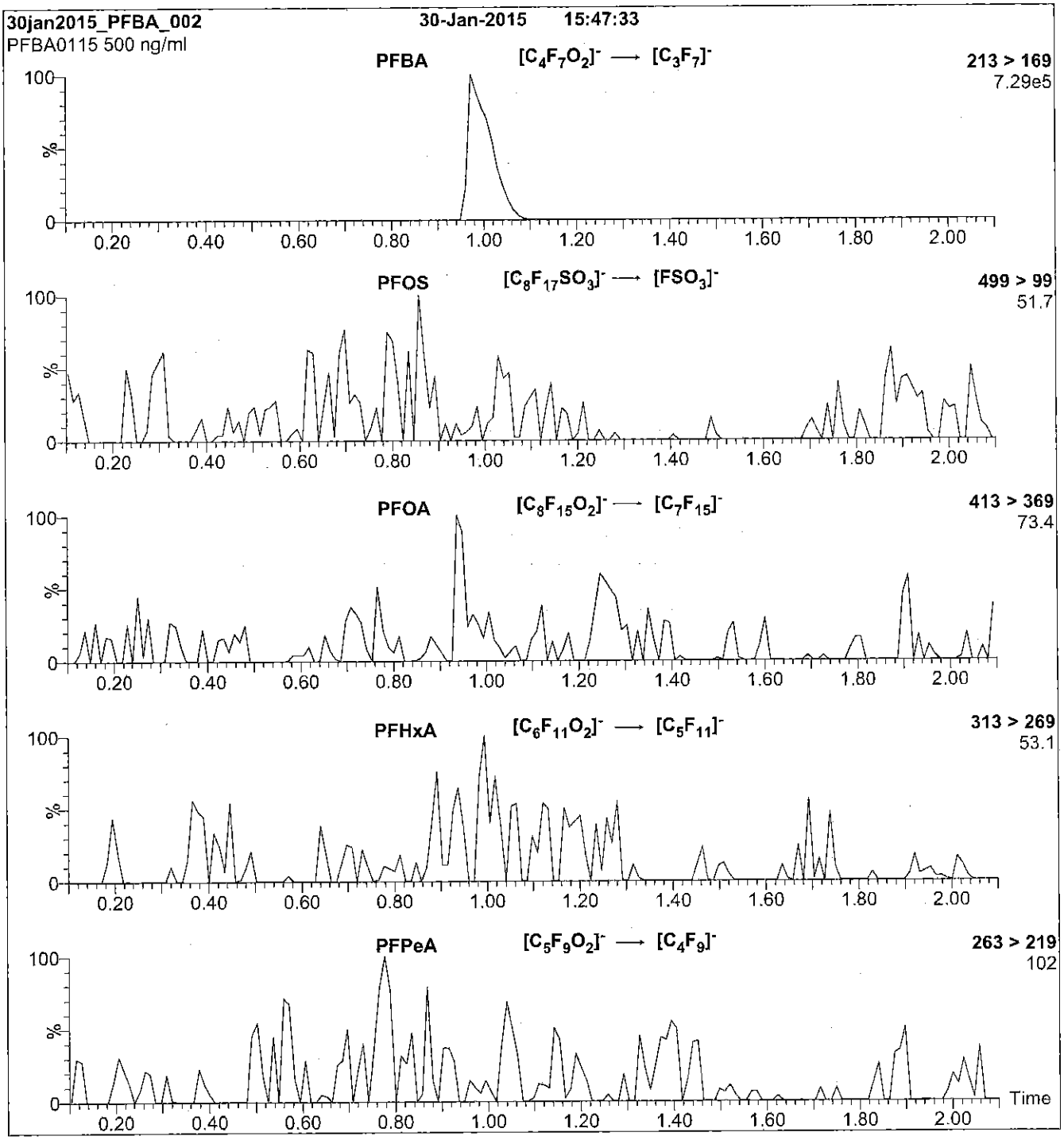
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 8.00
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 µl (500 ng/ml PFBA)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFBS_00003

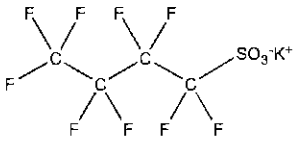
r. 2/11/15

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
LOT NUMBER: LPFBS1014
COMPOUND: Potassium perfluoro-1-butanesulfonate

STRUCTURE:
CAS #: 29420-49-3



MOLECULAR FORMULA:	$C_4F_9SO_3K$	**MOLECULAR WEIGHT:**	338.19
CONCENTRATION:	50.0 ± 2.5 µg/ml (K salt) 44.2 ± 2.2 µg/ml (PFBS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/09/2014		
EXPIRY DATE: (mm/dd/yyyy)	10/09/2019		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/17/2014 (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. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

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. Material Safety Data Sheets (MSDSs) 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, x-ray crystallography and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

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UNCERTAINTY:

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

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

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

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 ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all 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 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

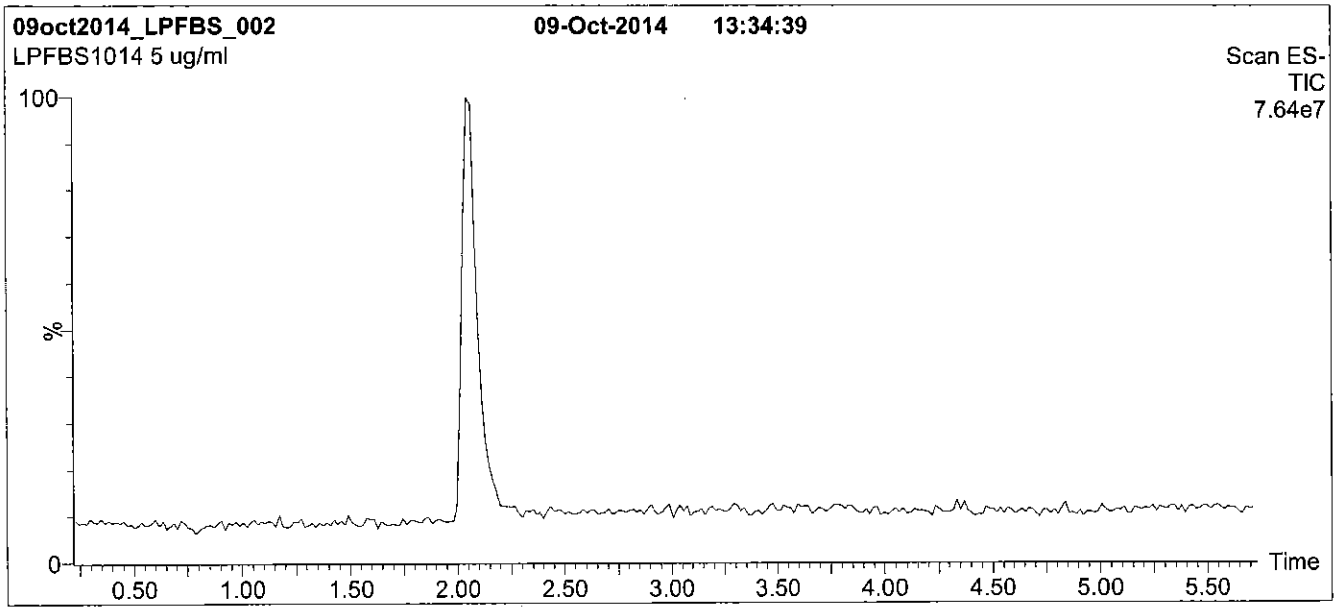
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

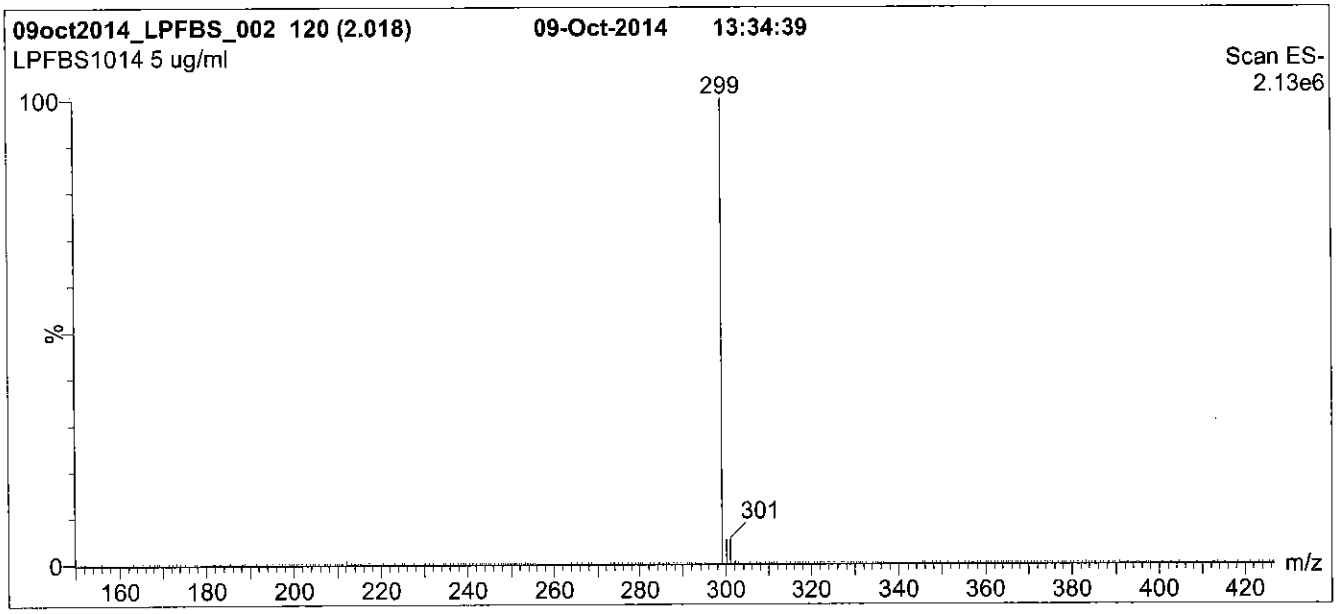
CALA Testing Accreditation No: A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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-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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc 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

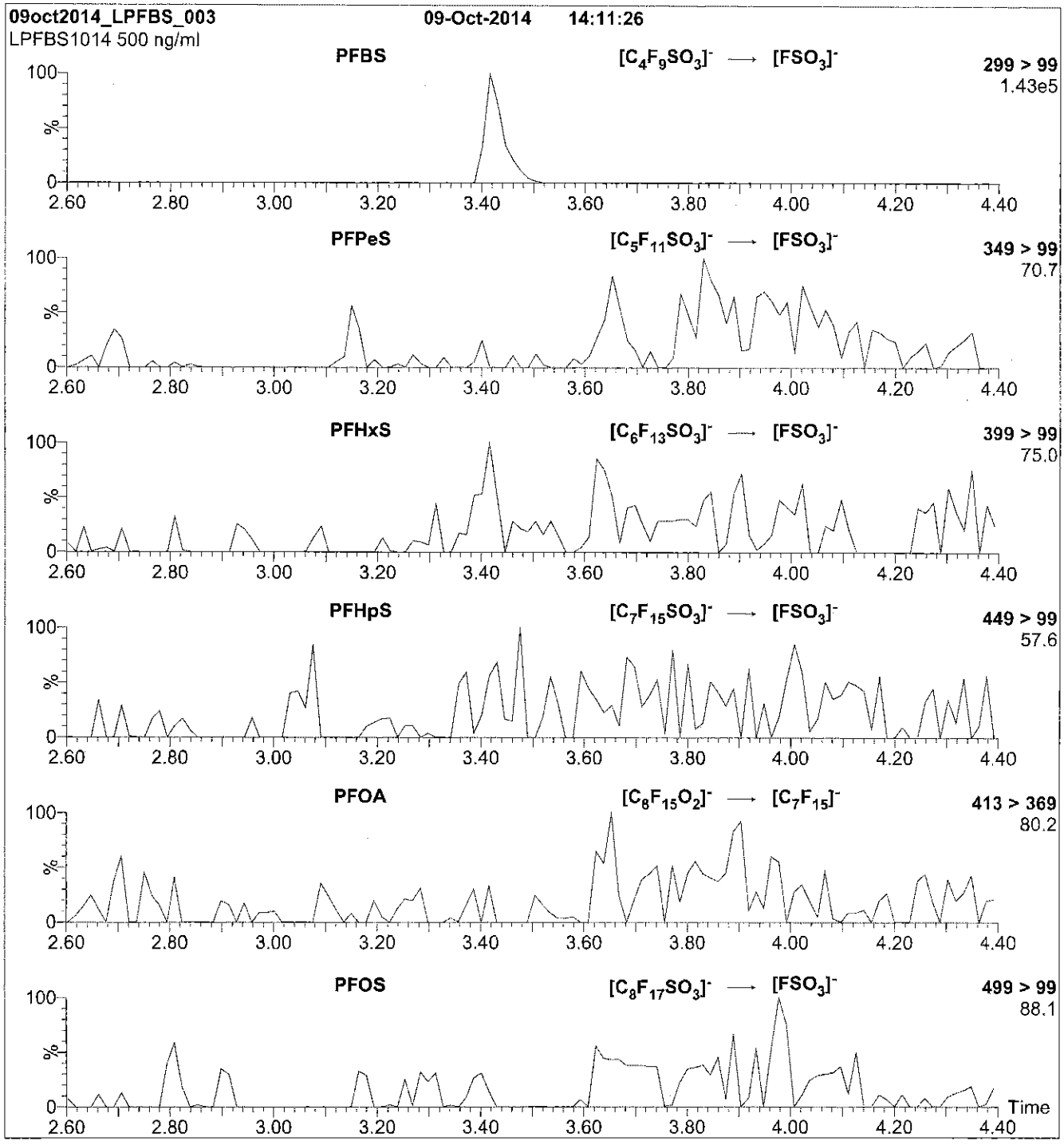
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml L-PFBS)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCPFBS_00004

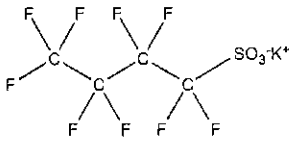
Rec. 3/29/16 JRB ✓

605236
ID: LCPFBS_00004
Exp: 10/09/19 Prpd: CBW
PF-1-butanesulfonate K sa

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFBS
LOT NUMBER: LPFBS1014
COMPOUND: Potassium perfluoro-1-butanesulfonate
STRUCTURE:
CAS #: 29420-49-3



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MOLECULAR WEIGHT: 338.19
CONCENTRATION: 50.0 ± 2.5 µg/ml (K salt)
44.2 ± 2.2 µg/ml (PFBS anion)
SOLVENT(S): Methanol
CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/09/2014
EXPIRY DATE: (mm/dd/yyyy) 10/09/2019
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/02/2015 (mm/dd/yyyy)

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

INTENDED USE:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

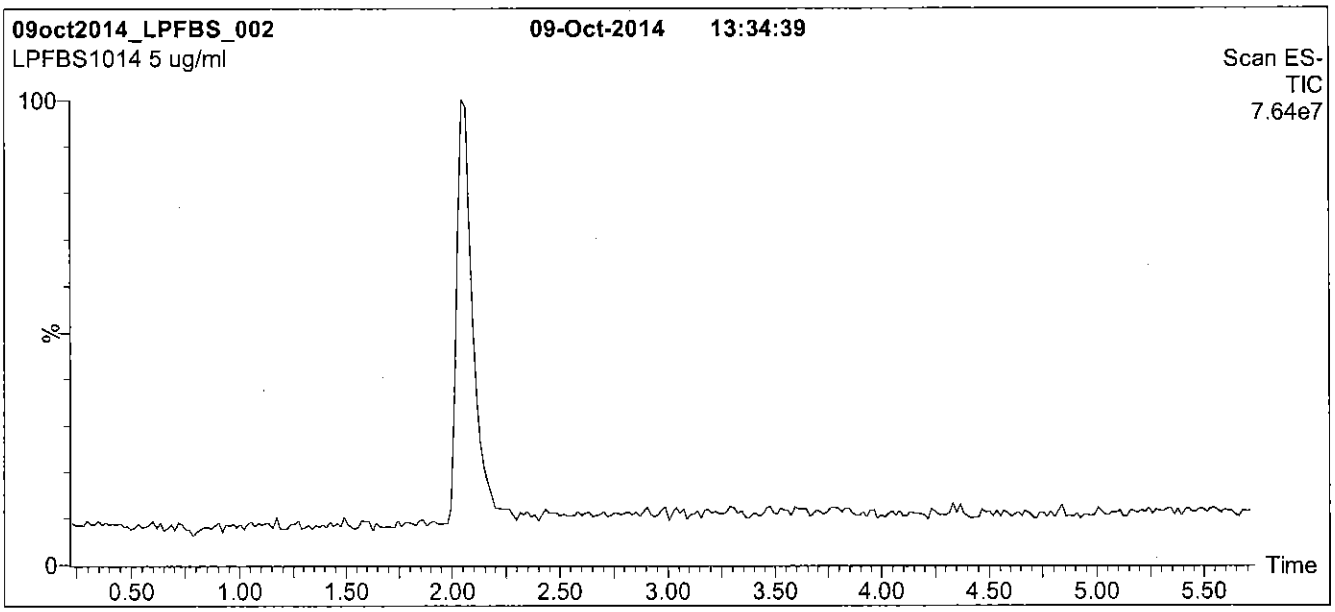
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

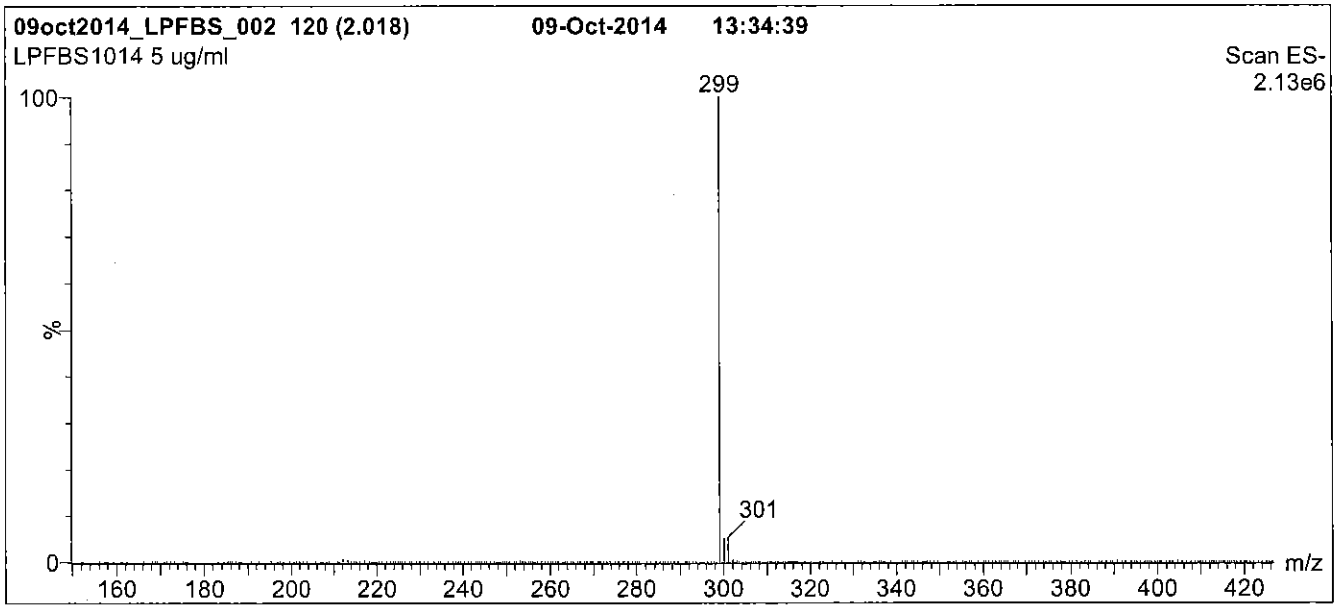
CALA Testing Accredited Calibration Lab. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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-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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc 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

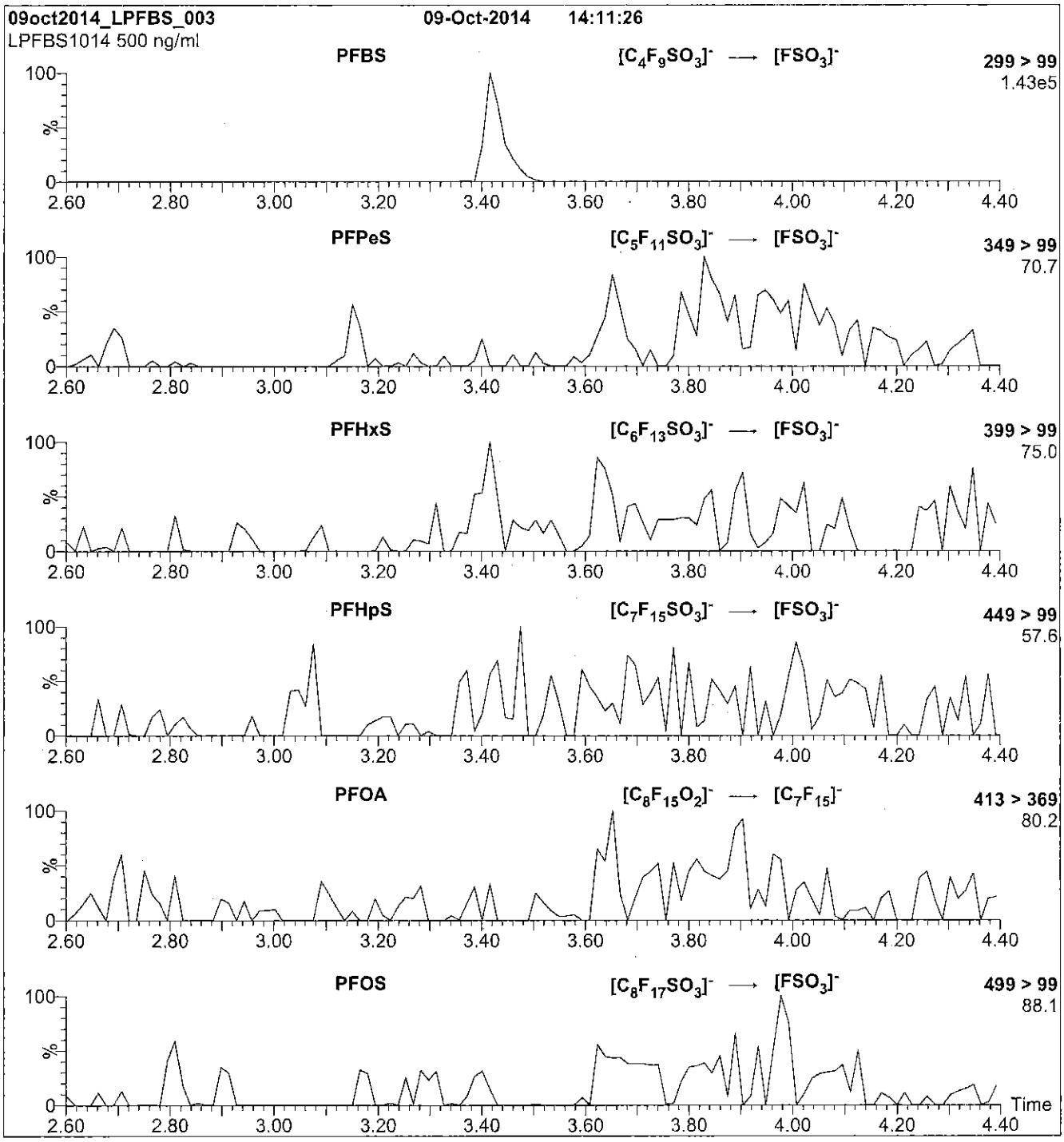
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml L-PFBS)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCPFDA_00004

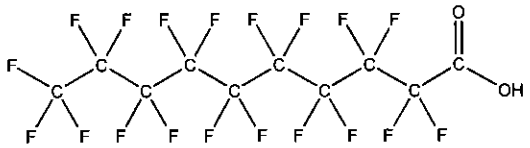
rec: 12/30/15 cw

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDA
LOT NUMBER: PFDA0615
COMPOUND: Perfluoro-n-decanoic acid

STRUCTURE:
CAS #: 335-76-2



MOLECULAR FORMULA: $C_{10}HF_{19}O_2$
MOLECULAR WEIGHT: 514.08
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 07/02/2015
EXPIRY DATE: (mm/dd/yyyy) 07/02/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.6% PFNA and ~ 0.3% PFOA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 07/24/2015 (mm/dd/yyyy)

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

INTENDED USE:

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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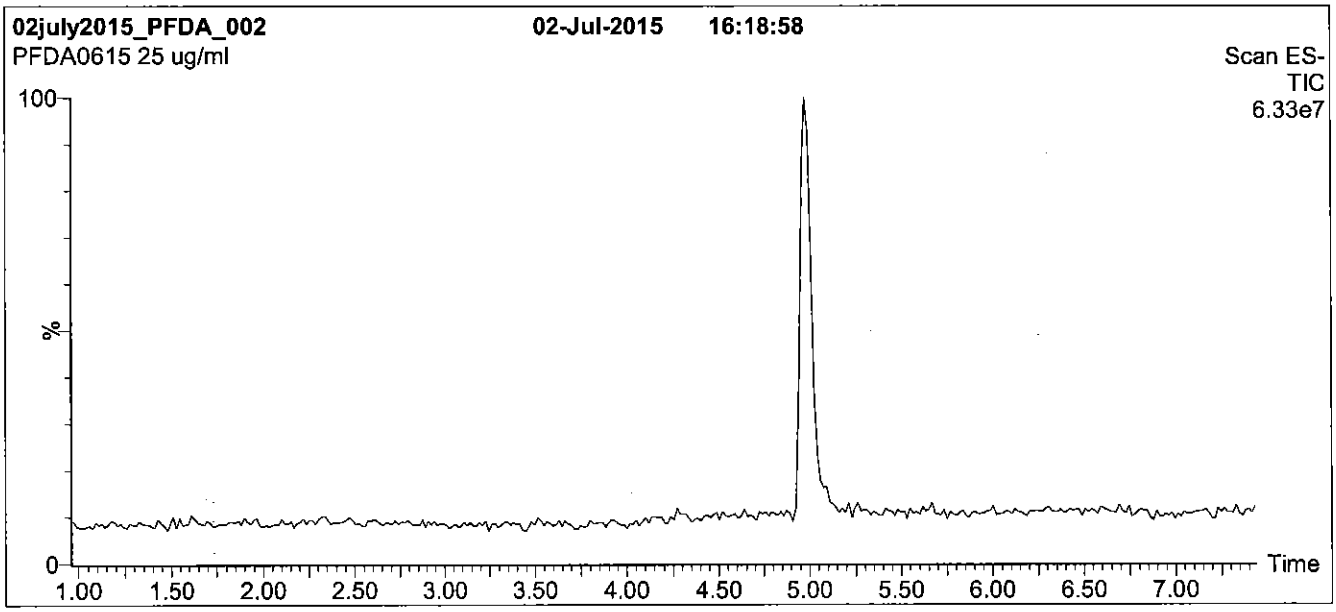
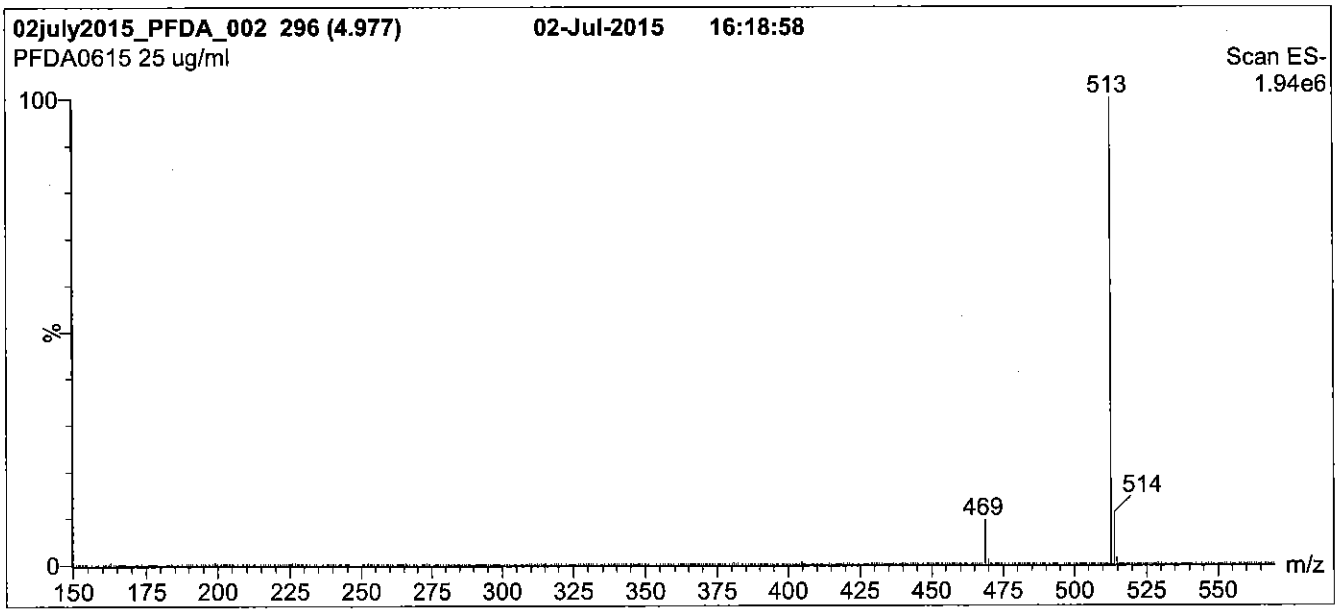
Figure 1: **PFDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

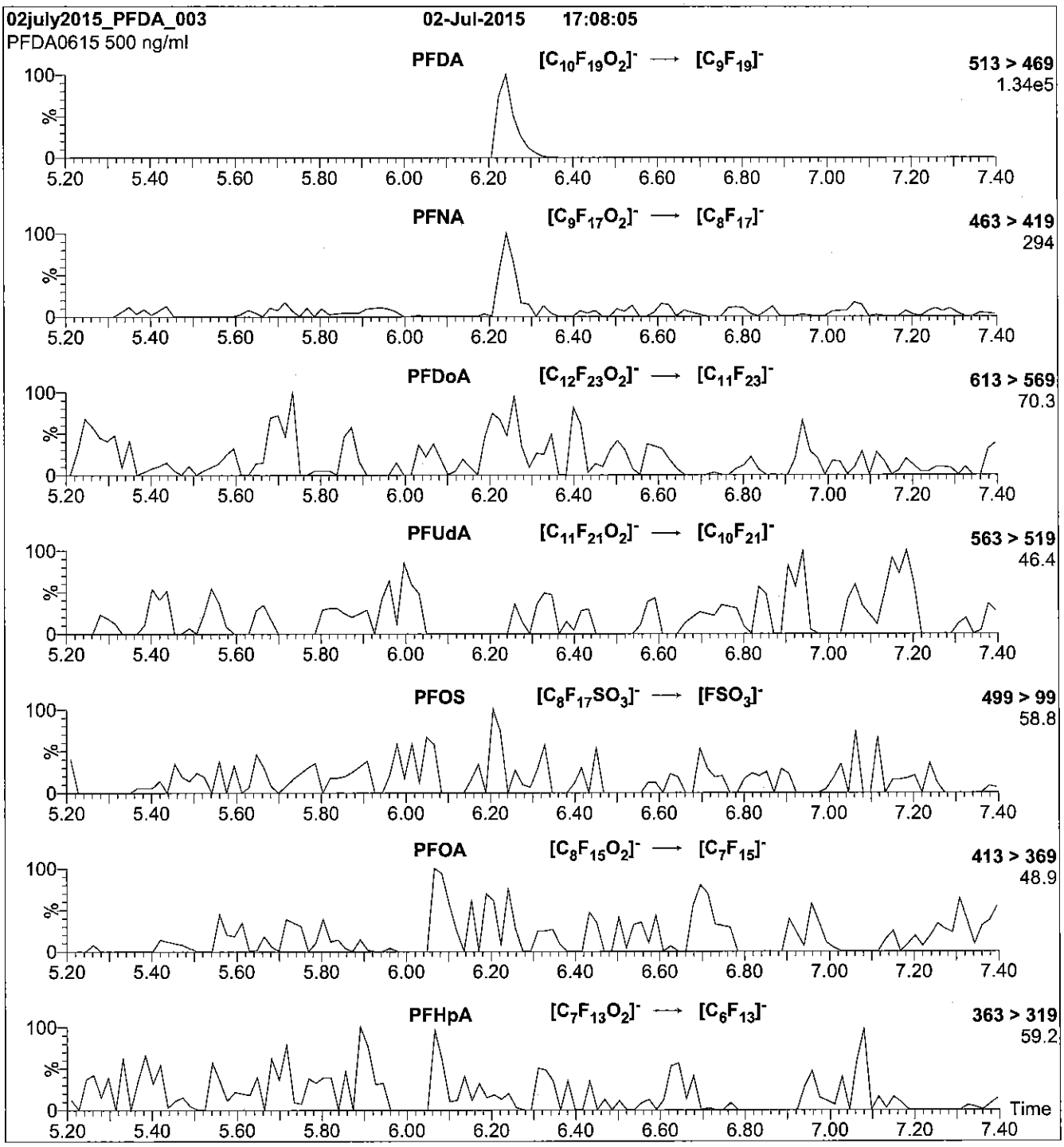
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.62e-3
Collision Energy (eV) = 13

Reagent

LCPFDoA_00004

Rec: 12/30/15 cw

WELLINGTON LABORATORIES

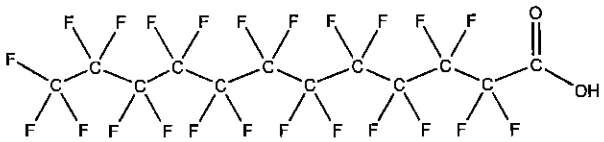
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFDoA
COMPOUND: Perfluoro-n-dodecanoic acid

LOT NUMBER: PFDoA0115

STRUCTURE:

CAS #: 307-55-1



MOLECULAR FORMULA: $C_{12}HF_{23}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 614.10
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/30/2015
EXPIRY DATE: (mm/dd/yyyy) 01/30/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/25/2015 (mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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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 ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

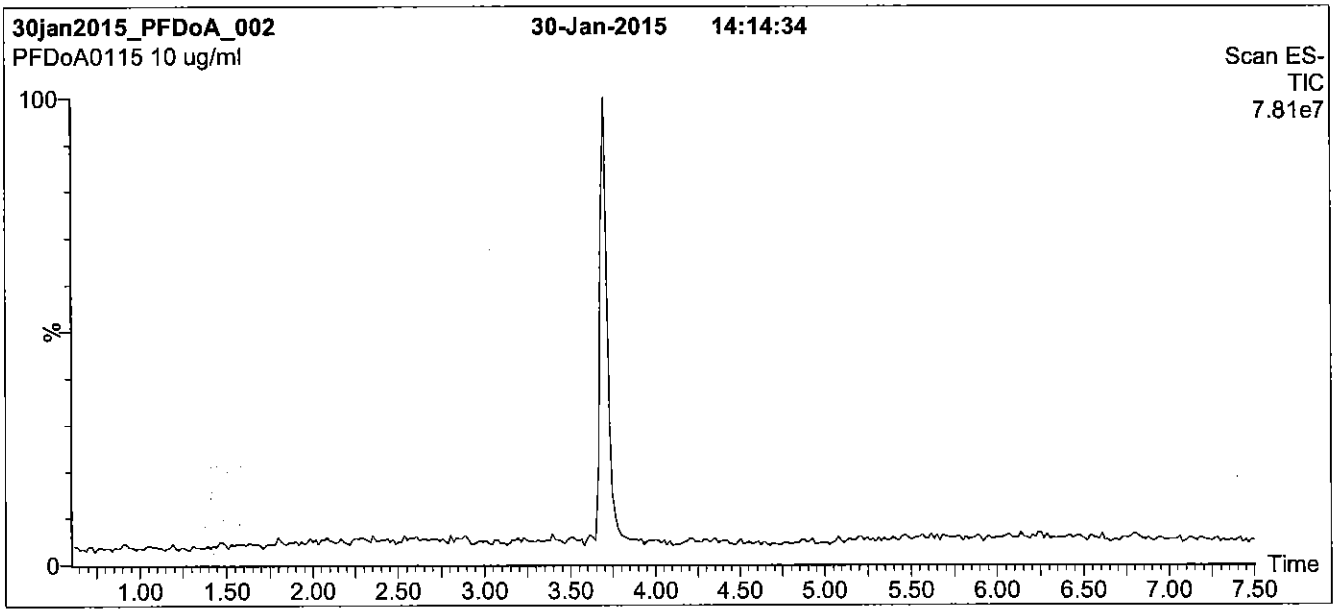
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

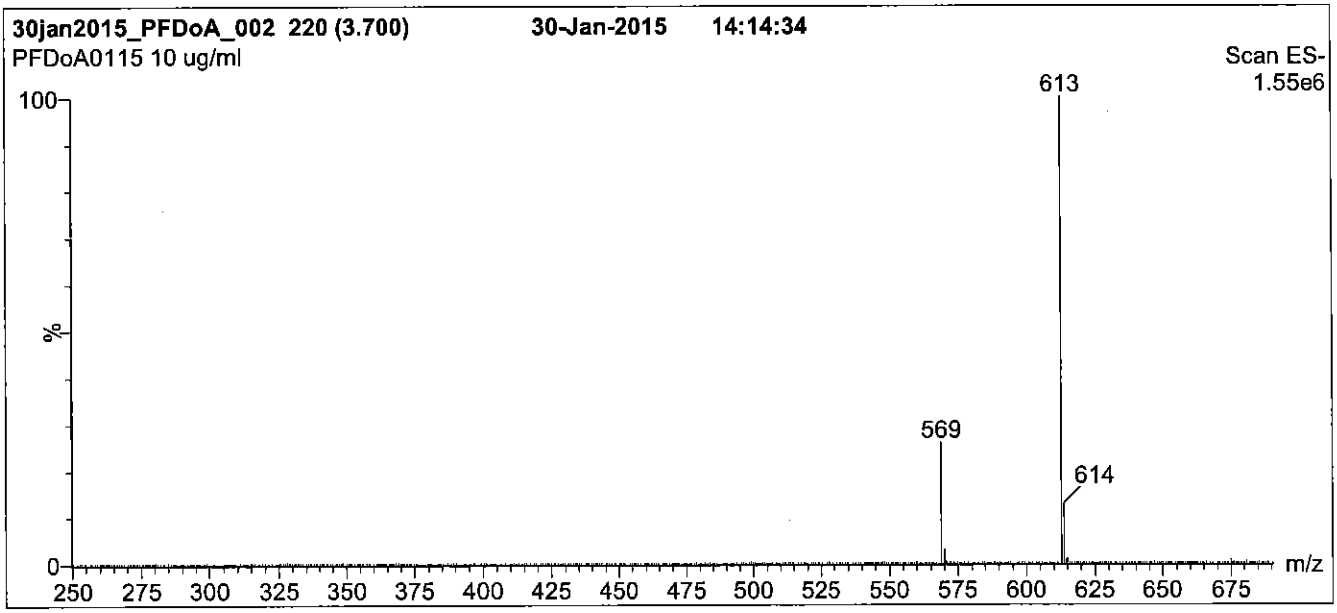
CALA Testing Accredited No. A1226

ANAB ACCREDITED ISO 17025 / 17034 REFERENCE MATERIAL PRODUCER

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc 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

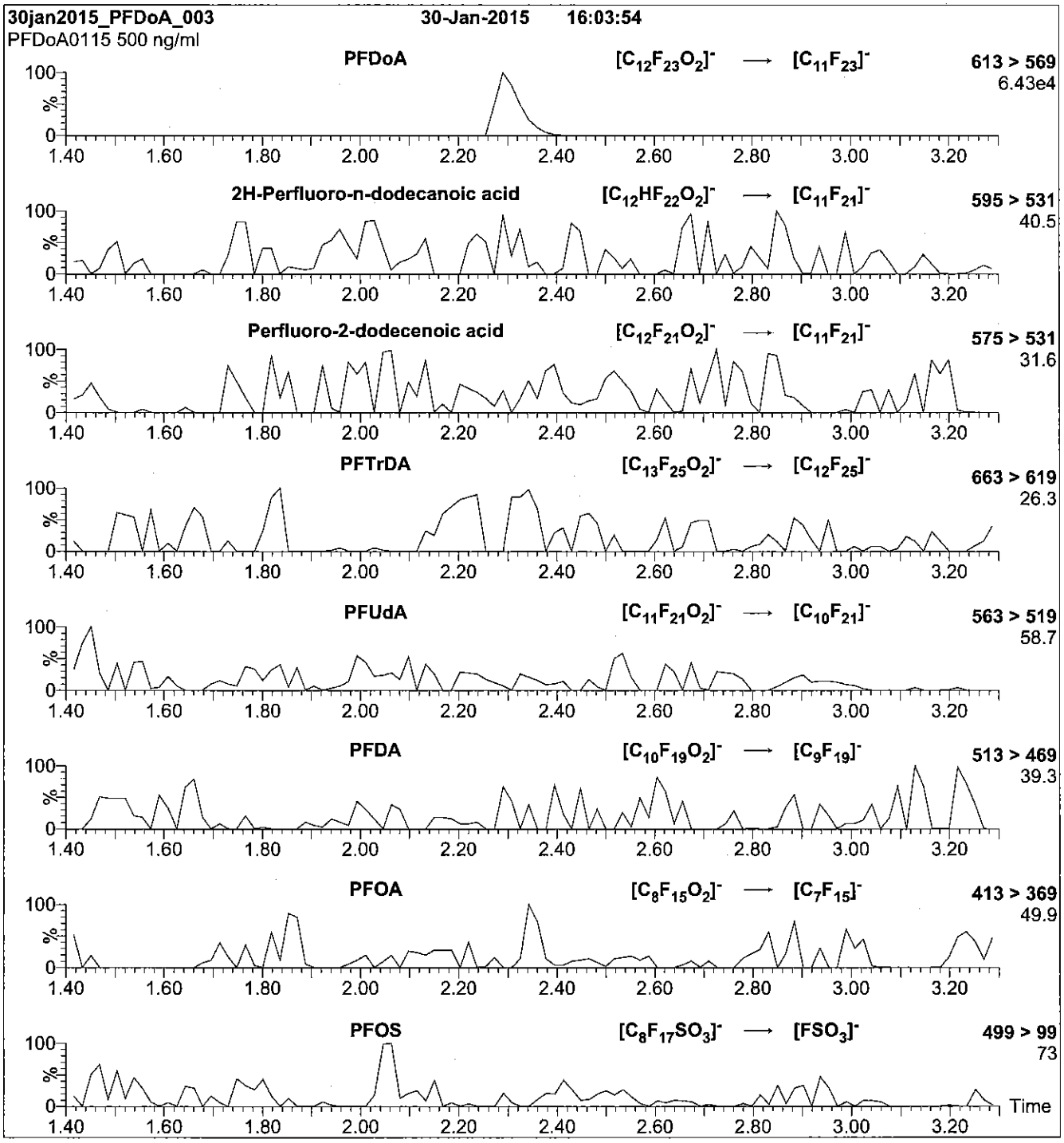
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 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 µl (500 ng/ml PFDoA)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 13

Reagent

LCPFDS_00005

605240
ID: LCPFDS_00005
Exp: 07/02/20 Prpd: CBW
PF-1-decanesulfonate sodi

Rec. 3/29/16 JRB

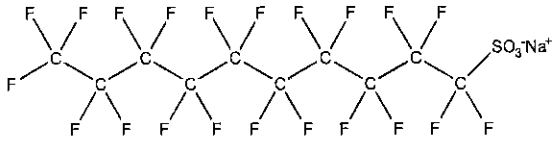
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFDS
LOT NUMBER: LPFDS0615
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 ± 2.5 µg/ml (Na salt) 48.2 ± 2.4 µg/ml (PFDS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/02/2015		
EXPIRY DATE: (mm/dd/yyyy)	07/02/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.9% of sodium perfluoro-1-dodecanesulfonate (L-PFDoS).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/07/2015 (mm/dd/yyyy)

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

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:

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

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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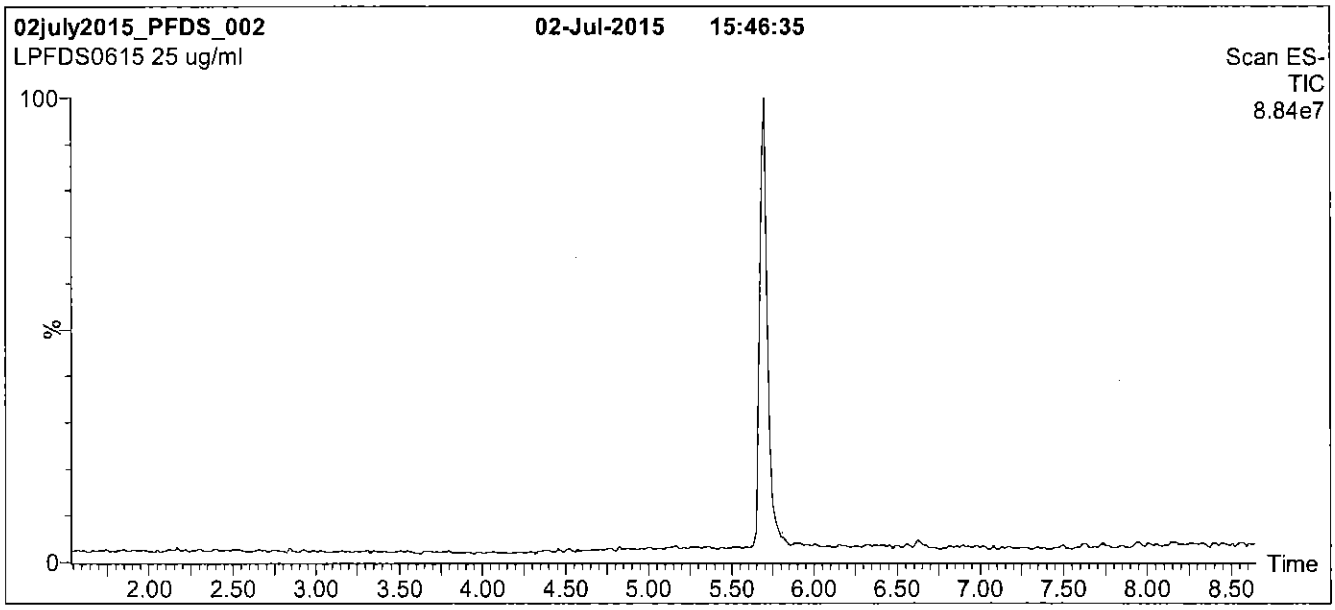
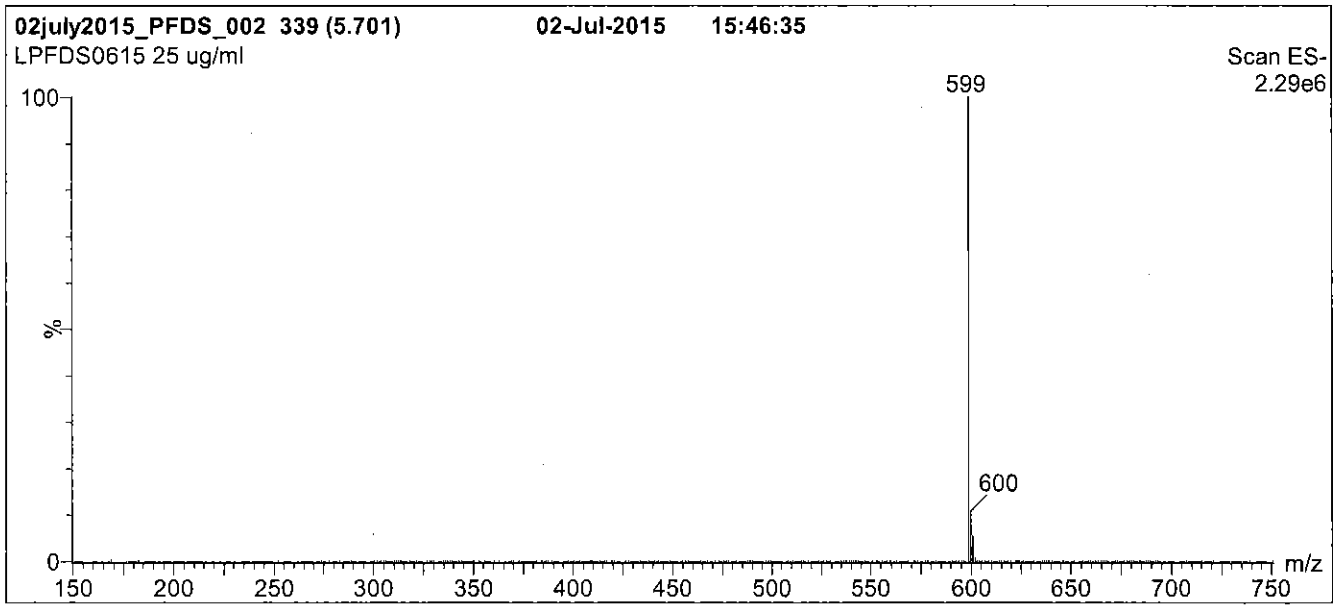
Figure 1: **L-PFDS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

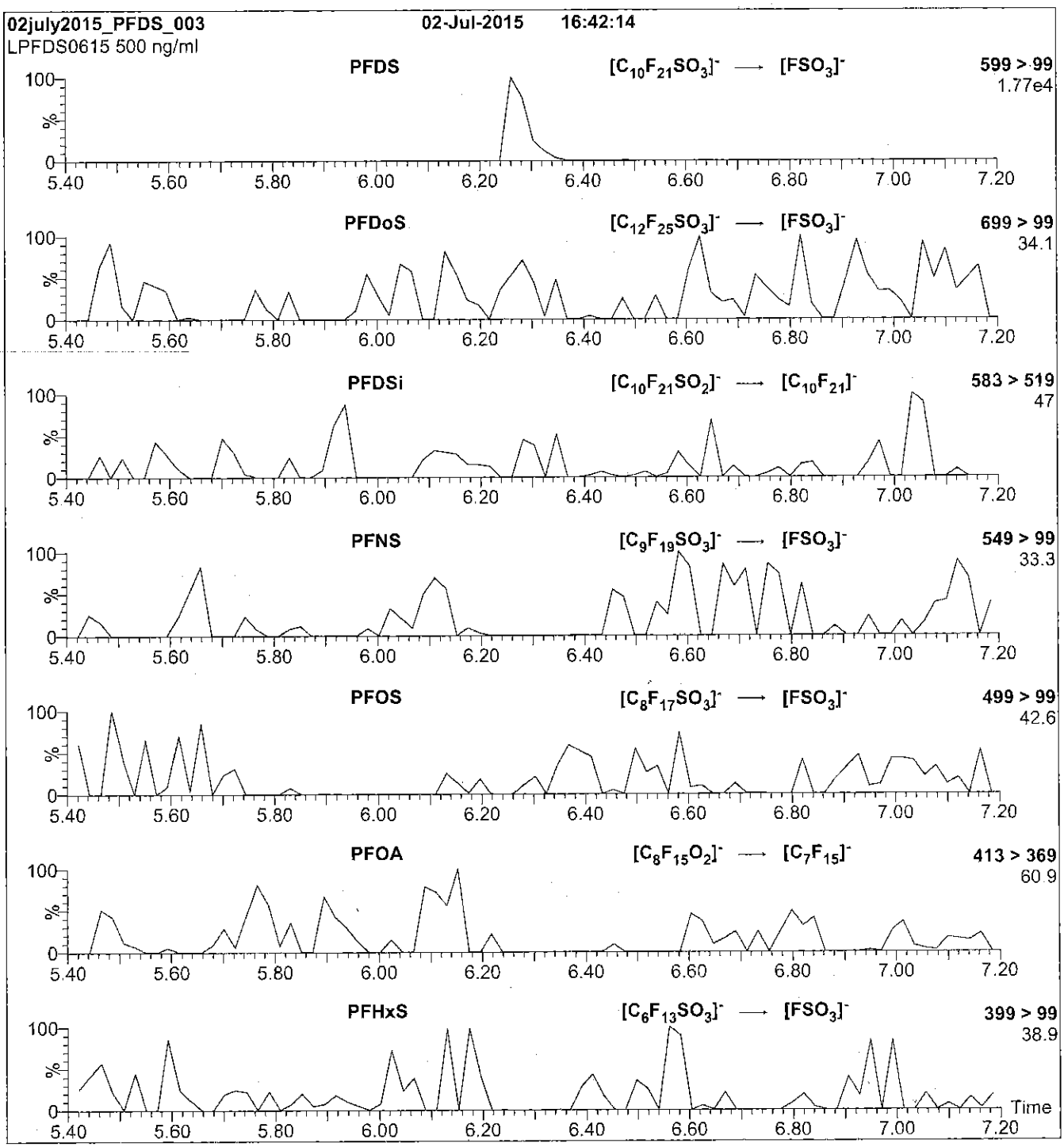
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 70.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection: Direct loop injection
10 µl (500 ng/ml L-PFDS)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFHpA_00005

609699
ID: LCPFHpA_00005
Exp: 01/22/21 Prpd: CBW
PF-n-heptanoic acid

R: 4/7/16 CBW

WELLINGTON LABORATORIES

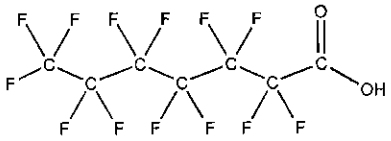
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHpA
COMPOUND: Perfluoro-n-heptanoic acid

LOT NUMBER: PFHpA0116

STRUCTURE:

CAS #: 375-85-9



MOLECULAR FORMULA: $C_7HF_{13}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 364.06
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/22/2016
EXPIRY DATE: (mm/dd/yyyy) 01/22/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

UNCERTAINTY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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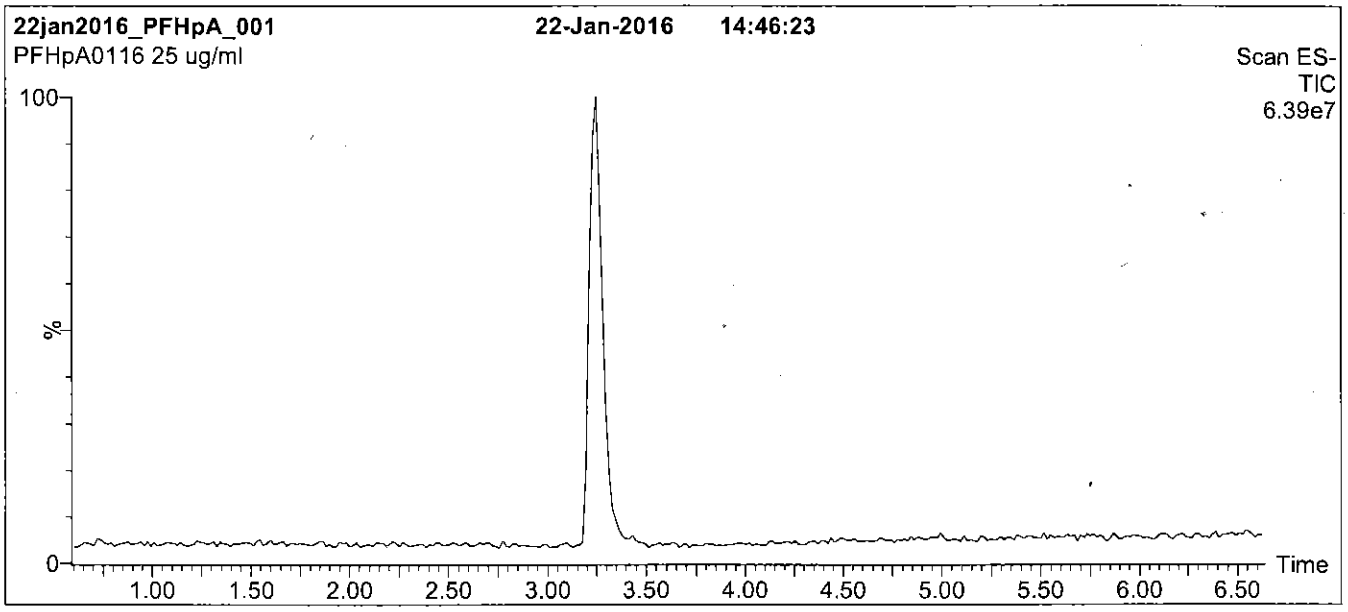
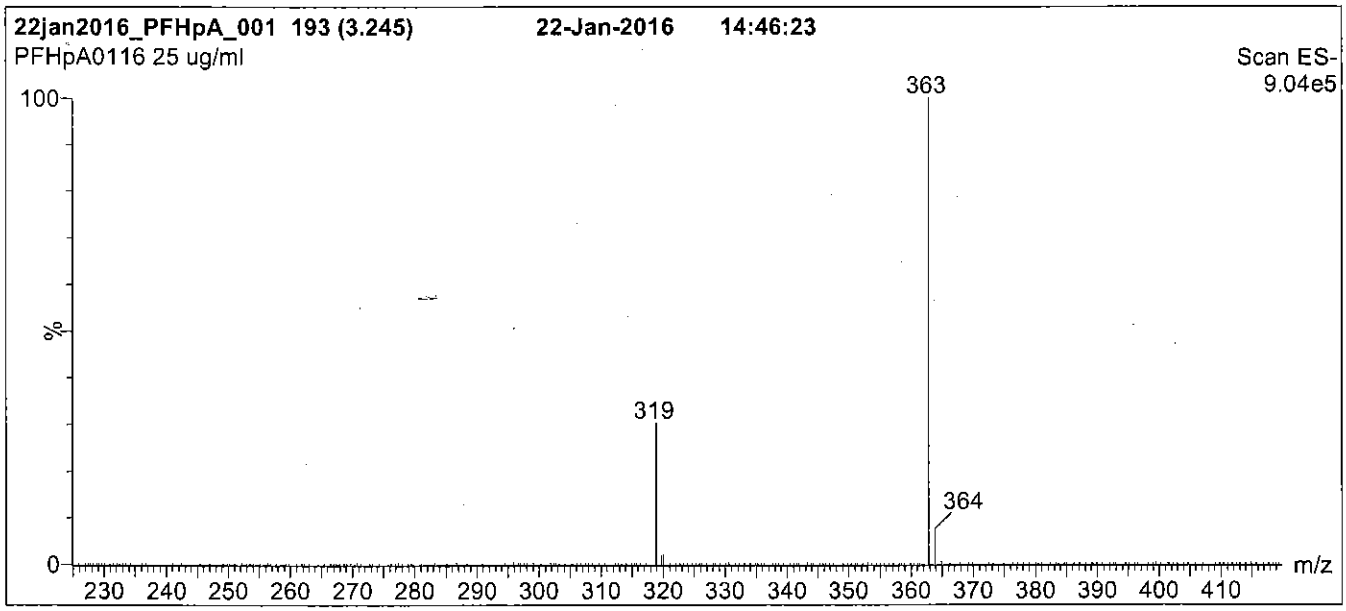
Figure 1: **PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc 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

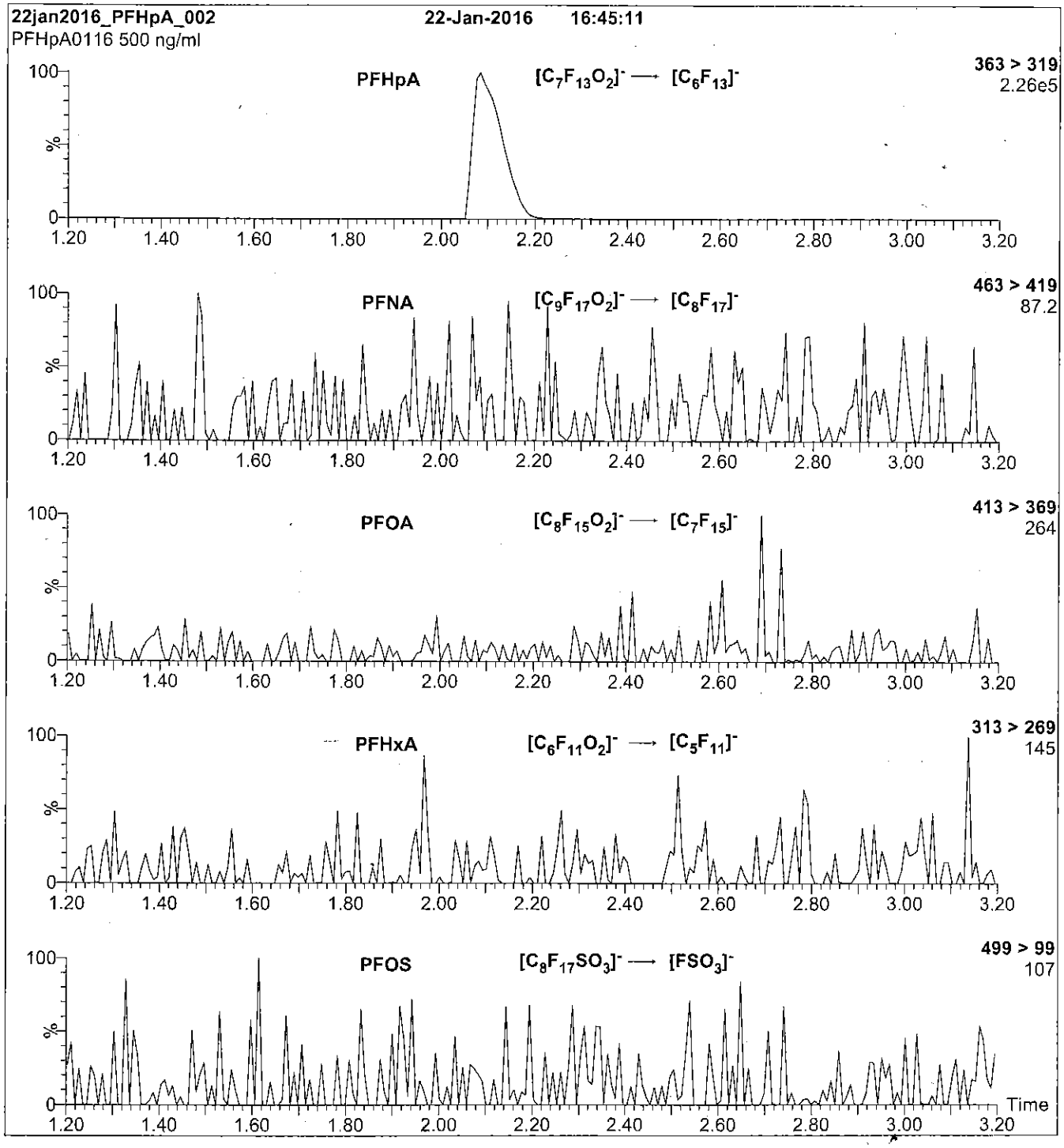
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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 µl (500 ng/ml PFHpA)

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFHpS_00008

R: 5/10/16 CBW

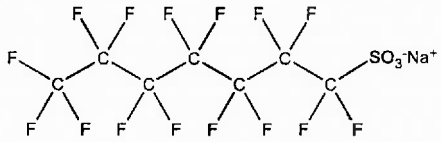
627751
ID: LCPFHpS_00008
Exp: 11/06/20 Prpd: CBW
PFHpS at 47.6ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: L-PFHpS
COMPOUND: Sodium perfluoro-1-heptanesulfonate
LOT NUMBER: LPFHpS1115

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_7F_{15}SO_3Na$	**MOLECULAR WEIGHT:**	472.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.6 ± 2.4 µg/ml (PFHpS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	11/06/2015		
EXPIRY DATE: (mm/dd/yyyy)	11/06/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.1% of L-PFHxS ($C_6F_{13}SO_3Na$) and ~ 0.2% of L-PFOS ($C_8F_{17}SO_3Na$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 11/09/2015 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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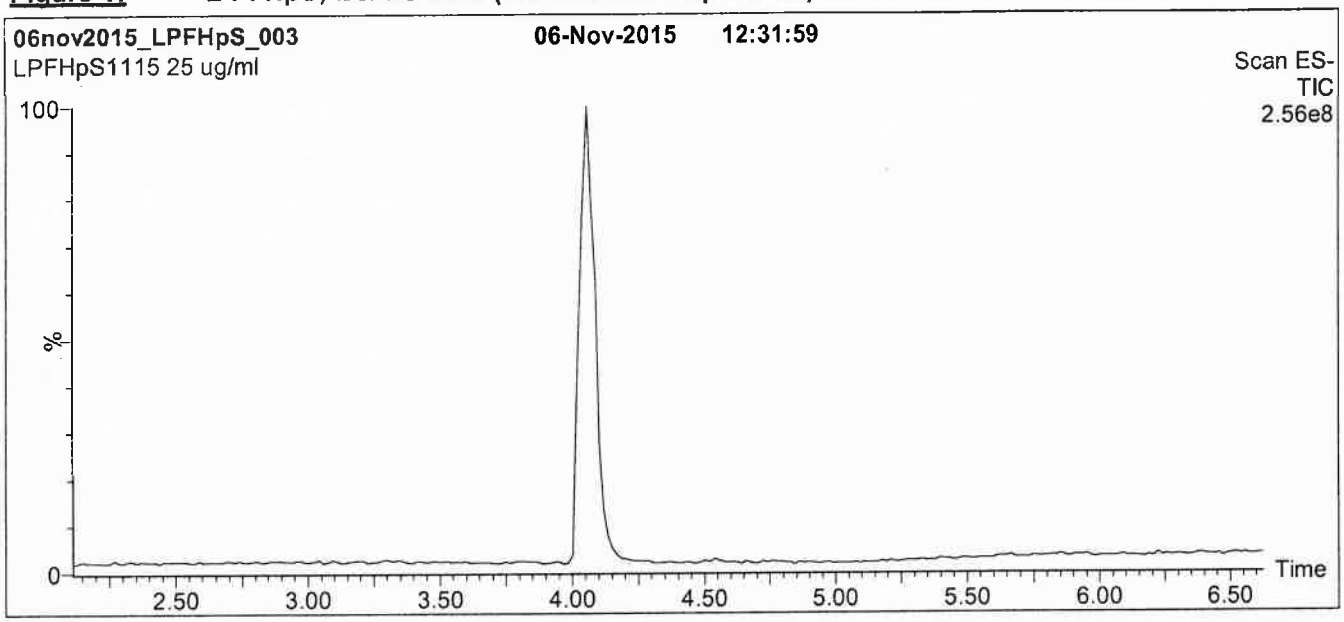
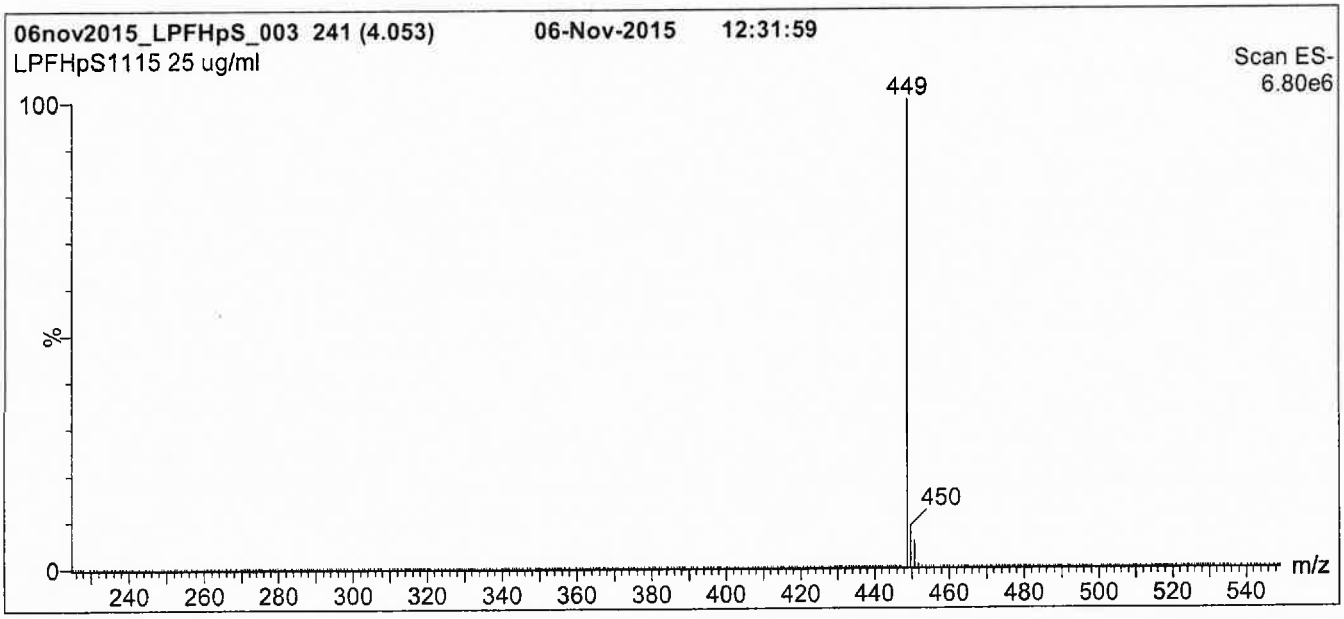
Figure 1: **L-PFHpS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

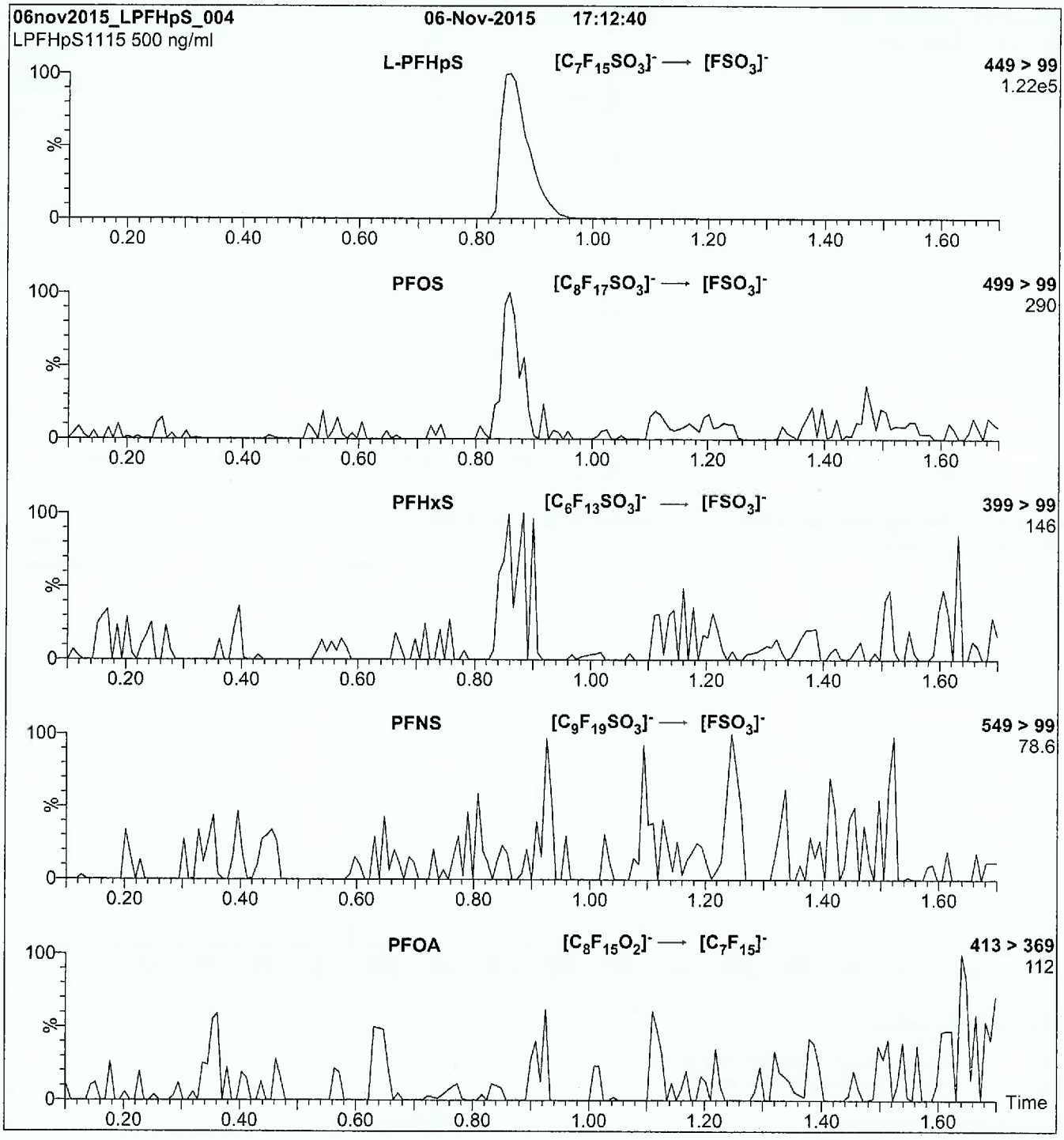
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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 µl (500 ng/ml L-PFHpS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 35

Reagent

LCPFHxA_00004

609702
ID: LCPFHxA_00004
Exp: 12/22/20 Prpd: CBW
PF-n-hexanoic acid

R: 4/7/16 CBW

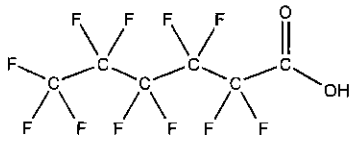
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxA
LOT NUMBER: PFHxA1215
COMPOUND: Perfluoro-n-hexanoic acid

STRUCTURE:

CAS #: 307-24-4



MOLECULAR FORMULA: $C_6HF_{11}O_2$
MOLECULAR WEIGHT: 314.05
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/22/2015
EXPIRY DATE: (mm/dd/yyyy) 12/22/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/23/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

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

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 ±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).

CALA Testing

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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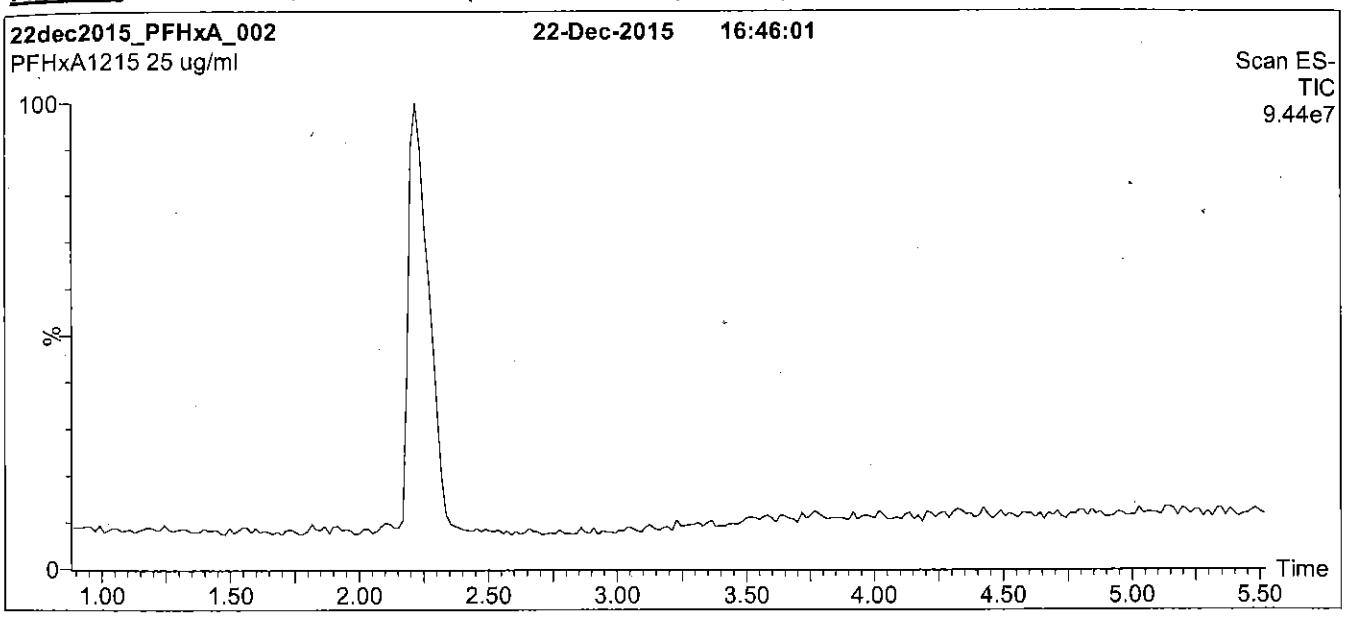
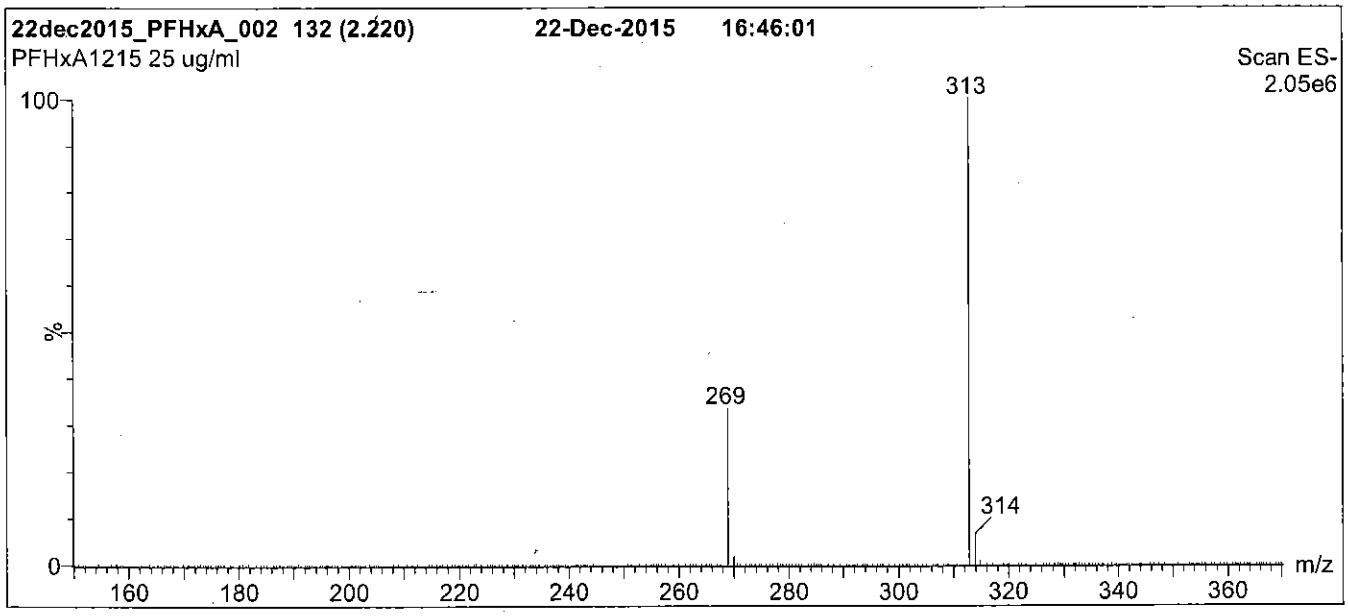
Figure 1: **PFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

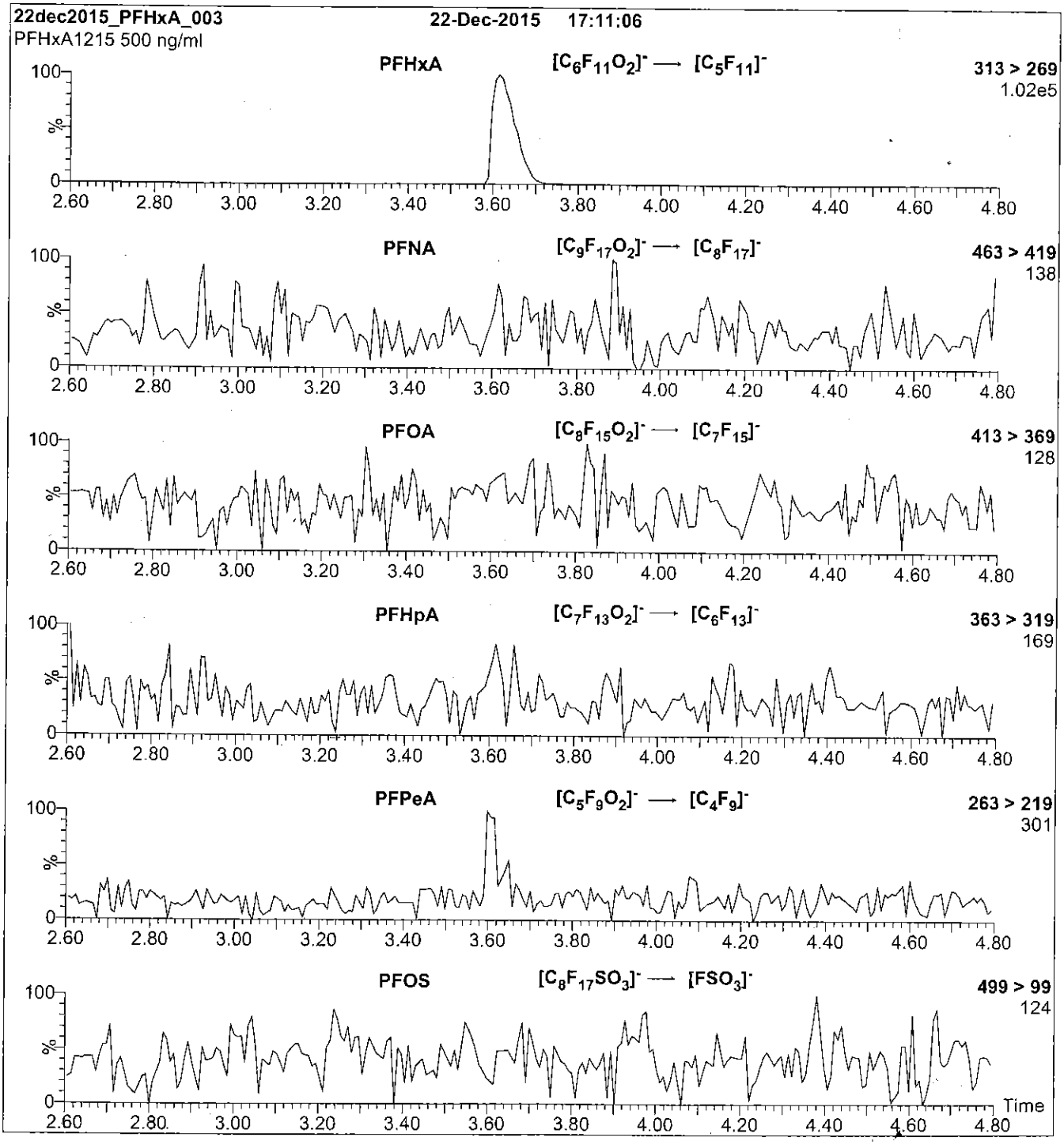
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 15.00
Cone Gas Flow (l/hr) = 100
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 10

Reagent

LCPFHxS-br_00001

P: 12/9/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFHxSK

**Potassium Perfluorohexanesulfonate
Solution/Mixture of Linear and
Branched Isomers**

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

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

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HAZARDS:

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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 $x_1, x_2,...x_n$ on which it depends is:

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

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 ±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:

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).

CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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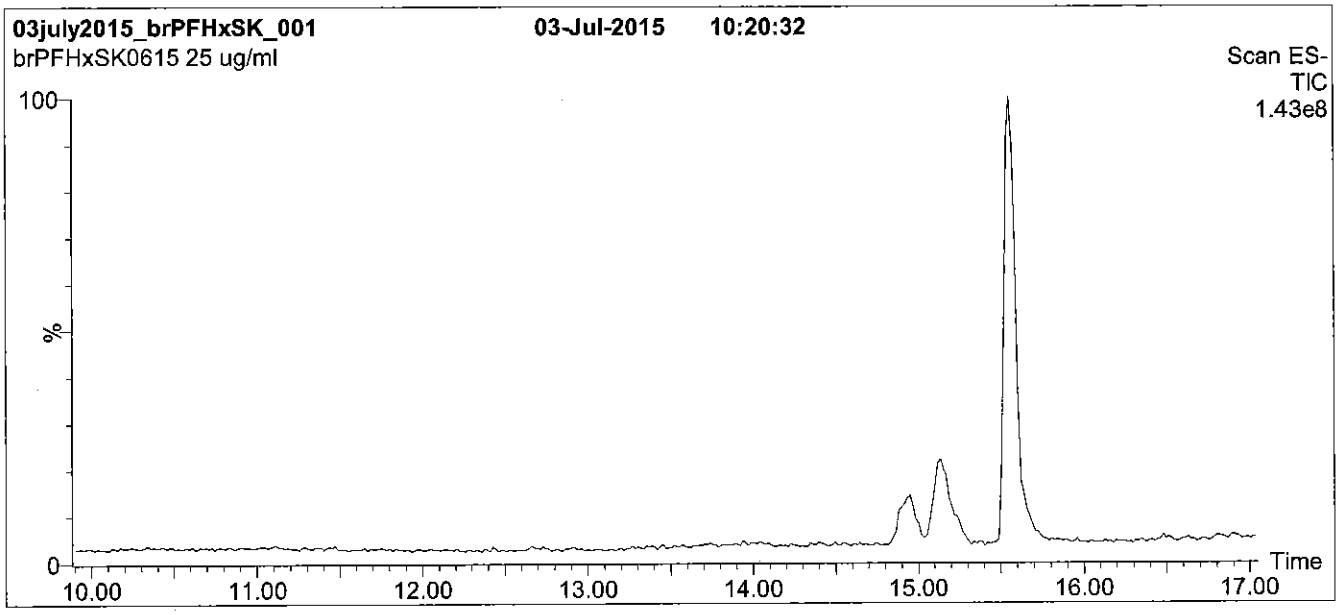
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

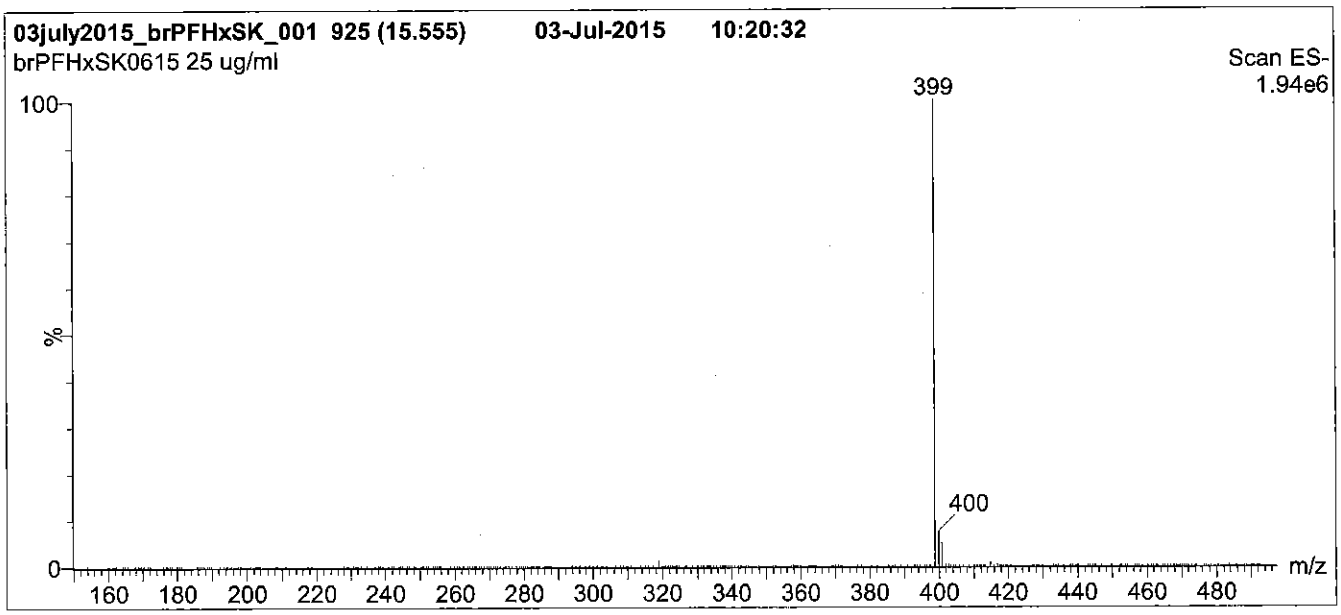
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	8.9
6	Potassium 3,3-di(trifluoromethyl)perfluorobutanesulfonate	$CF_3C(CF_3)CF_2CF_2SO_3^-K^+$	0.2
7	Other Unidentified Isomers		0.5

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

Certified By: _____ **Date:** 07/15/2015
B.G. Chittim (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 RP_{18}
1.7 µm, 2.1 x 100 mm

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

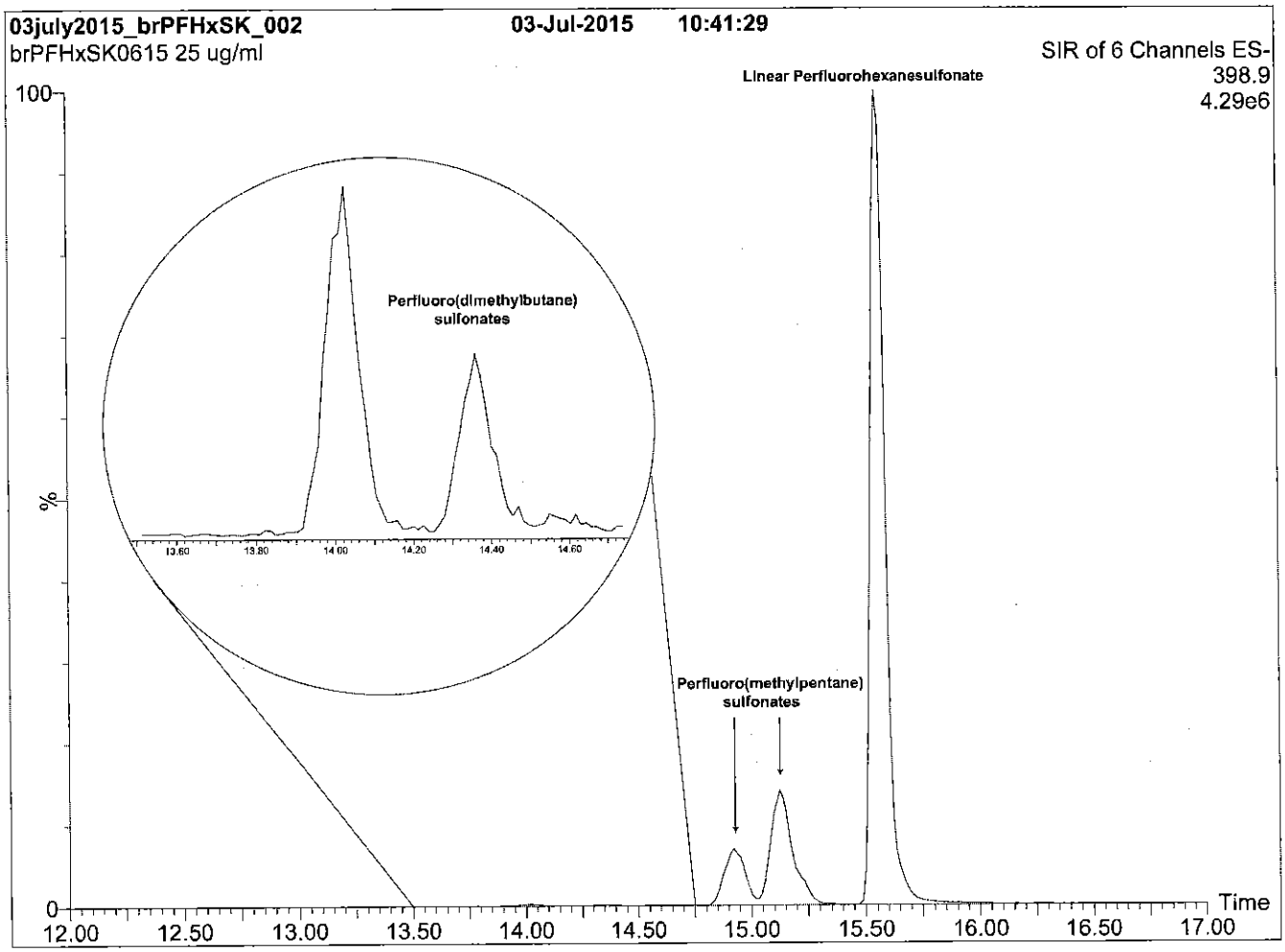
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

Figure 2: **br-PFHxSK; LC/MS Data**



Conditions for Figure 2:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

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

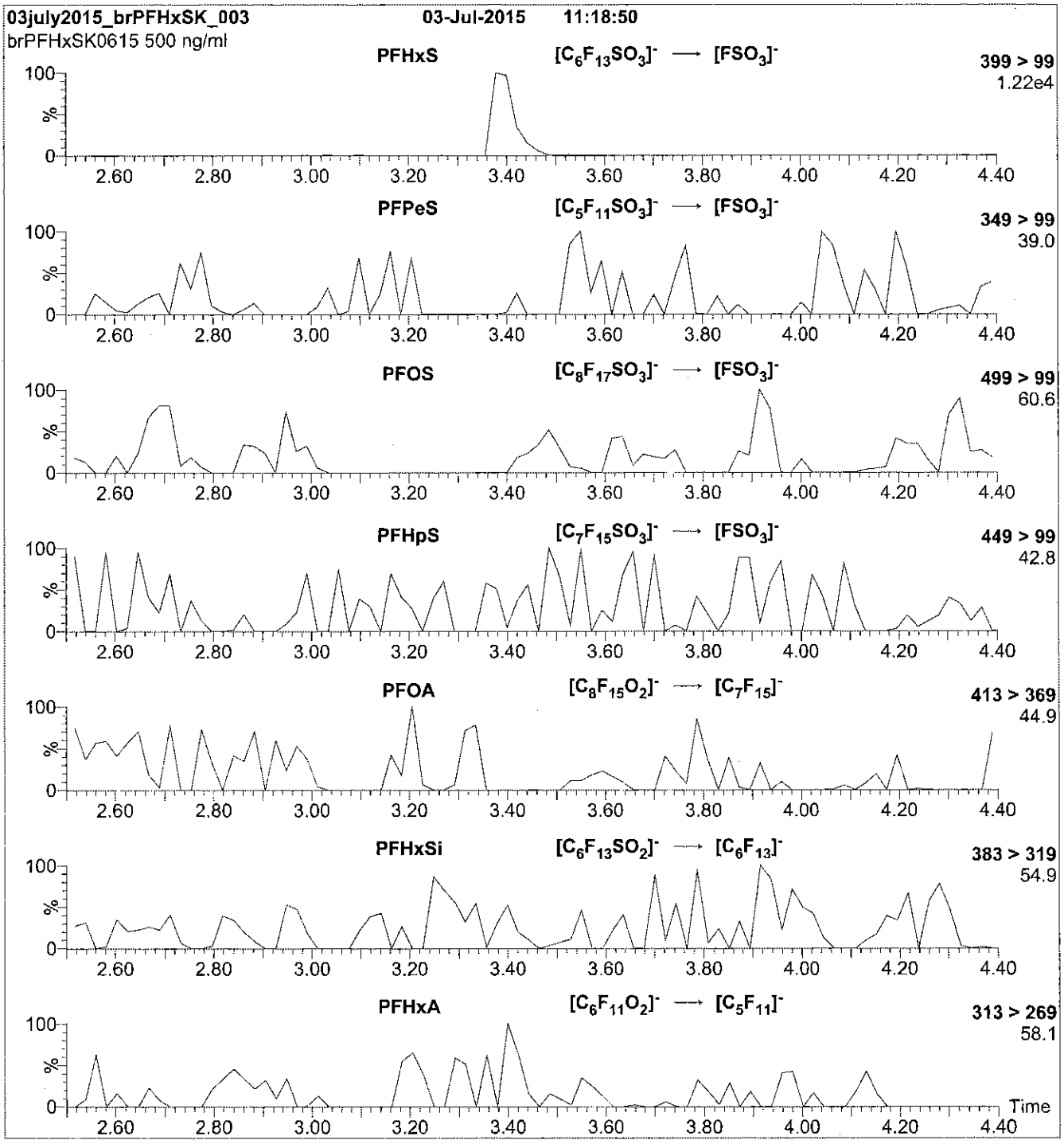
Flow: 300 µl/min

MS Parameters

Experiment: SIR (6 channels)

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

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



Conditions for Figure 3:

Injection:	Direct loop injection 10 µl (500 ng/ml br-PFHxSK)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

Reagent

LCPFNA_00005

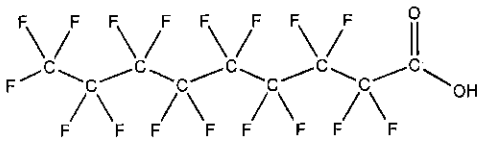
609703
ID: LCPFNA_00005
Exp: 10/23/20 Prpd: CBW
PF-n-nonanoic acid

R·4/7/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFNA	**LOT NUMBER:**	PFNA1015
COMPOUND:	Perfluoro-n-nonanoic acid		
STRUCTURE:		**CAS #:**	375-95-1



MOLECULAR FORMULA:	$C_9HF_{17}O_2$	**MOLECULAR WEIGHT:**	464.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	10/23/2015		
EXPIRY DATE: (mm/dd/yyyy)	10/23/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ **Date:** 10/30/2015
B.G. Chittim (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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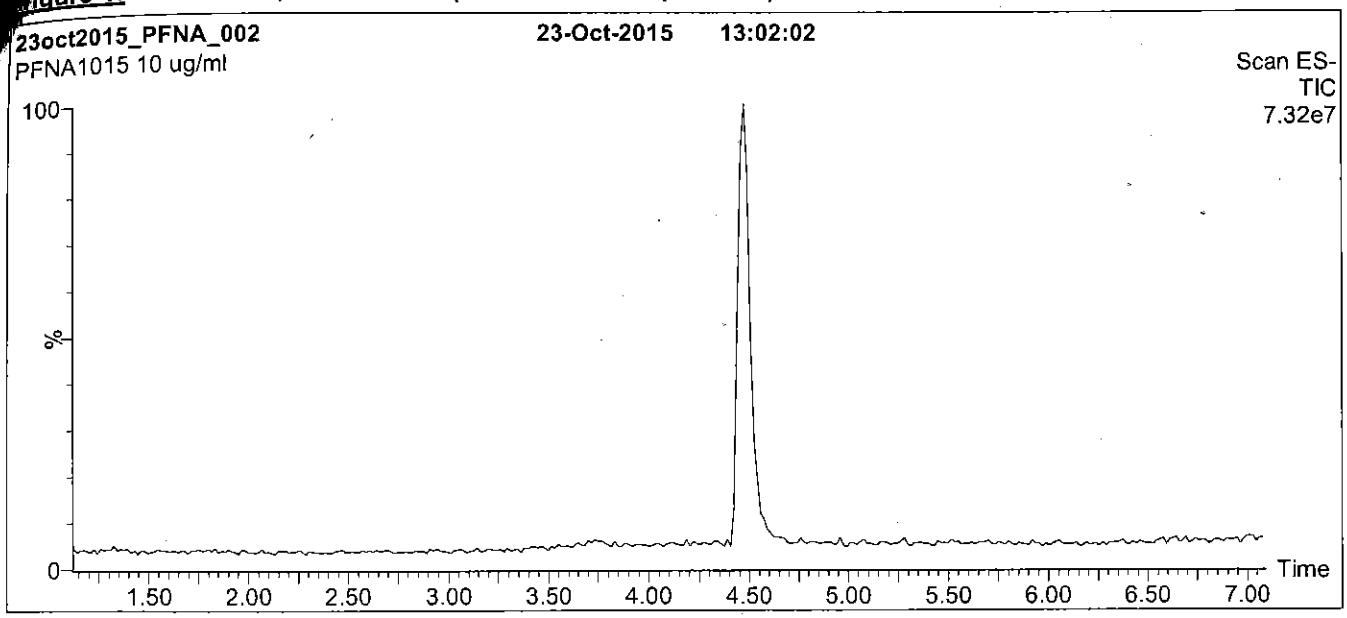
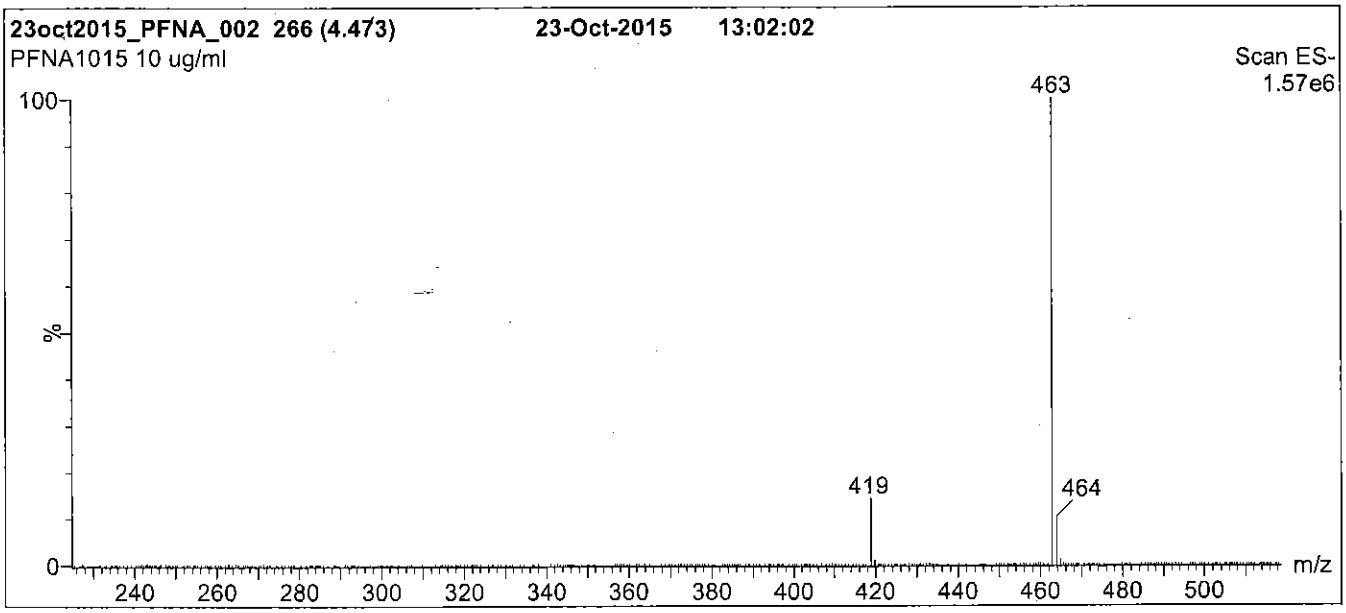
Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

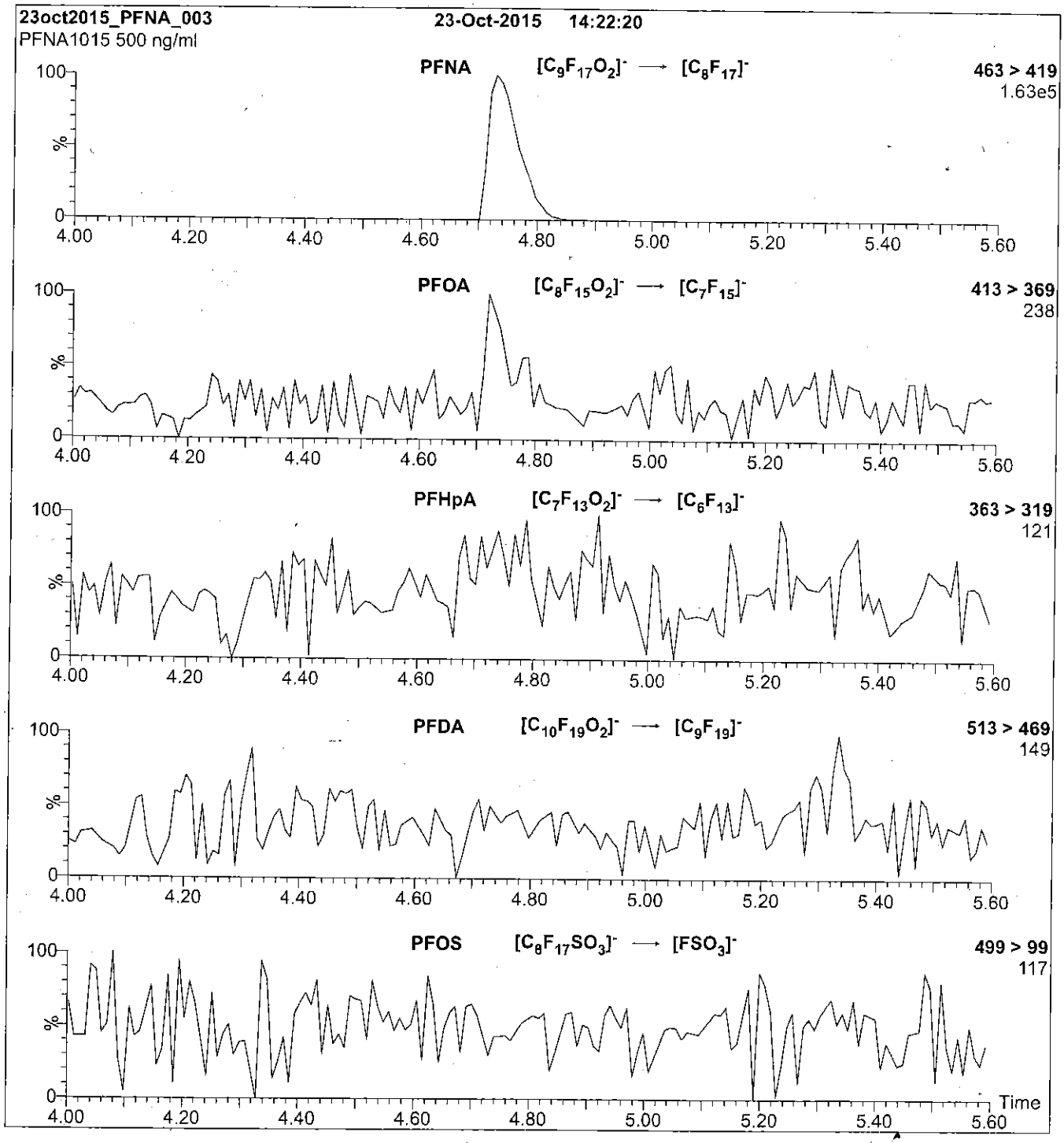
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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 µl (500 ng/ml PFNA)

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

Flow: 300 µl/min

MS Parameters

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

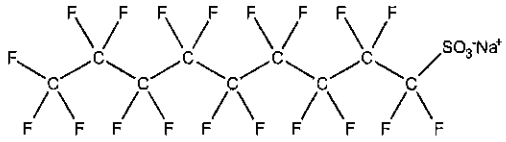
Reagent

LCPFNS_00002

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFNS
COMPOUND: Sodium perfluoro-1-nonanesulfonate
LOT NUMBER: LPFNS0712
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) 48.0 ± 2.4 µg/ml (PFNS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/04/2012		
EXPIRY DATE: (mm/dd/yyyy)	07/04/2017		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/15/2013 (mm/dd/yyyy)

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

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

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. Material Safety Data Sheets (MSDSs) 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, 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 and/or LC/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 $x_1, x_2, \ldots x_n$ on which it depends is:

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

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 ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all 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 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

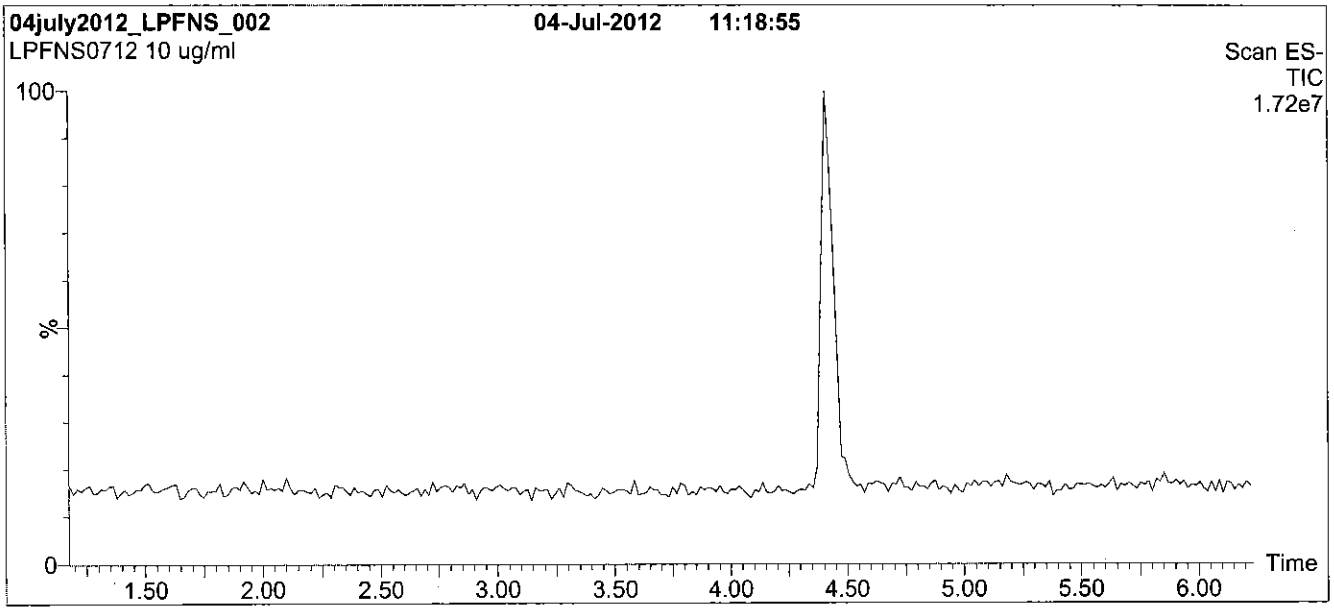
This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

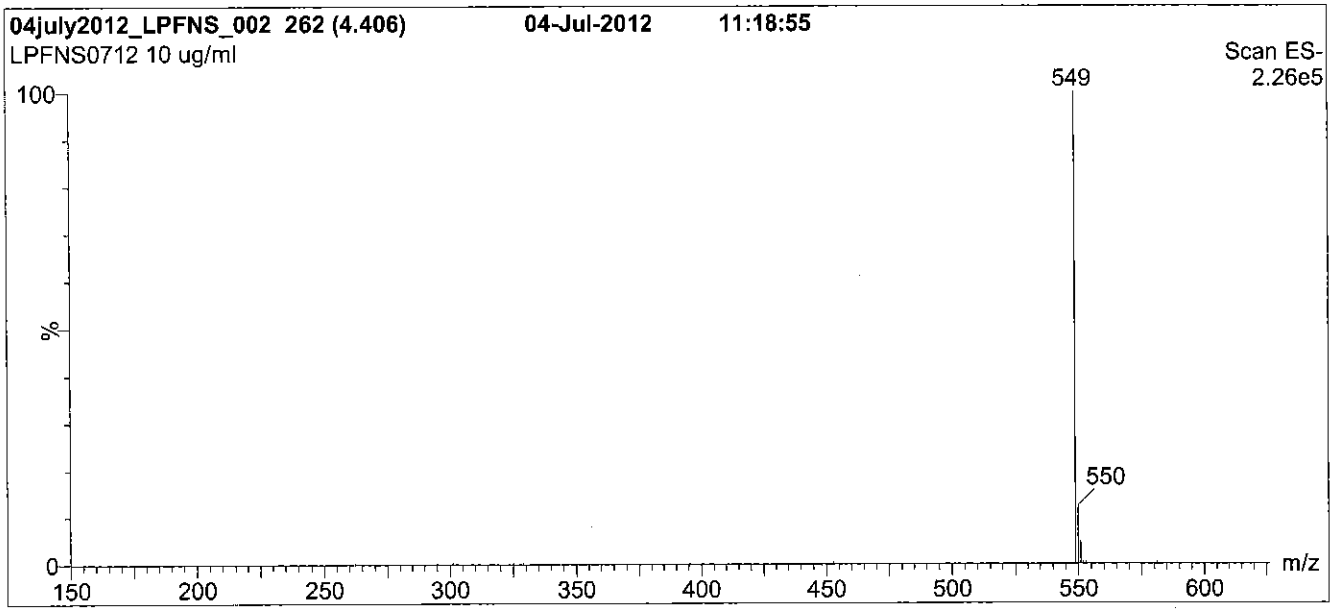
CALA Testing Accreditation No. A1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 55% (80:20 MeOH:ACN) / 45% H_2O
(both with 10 mM NH_4OAc 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

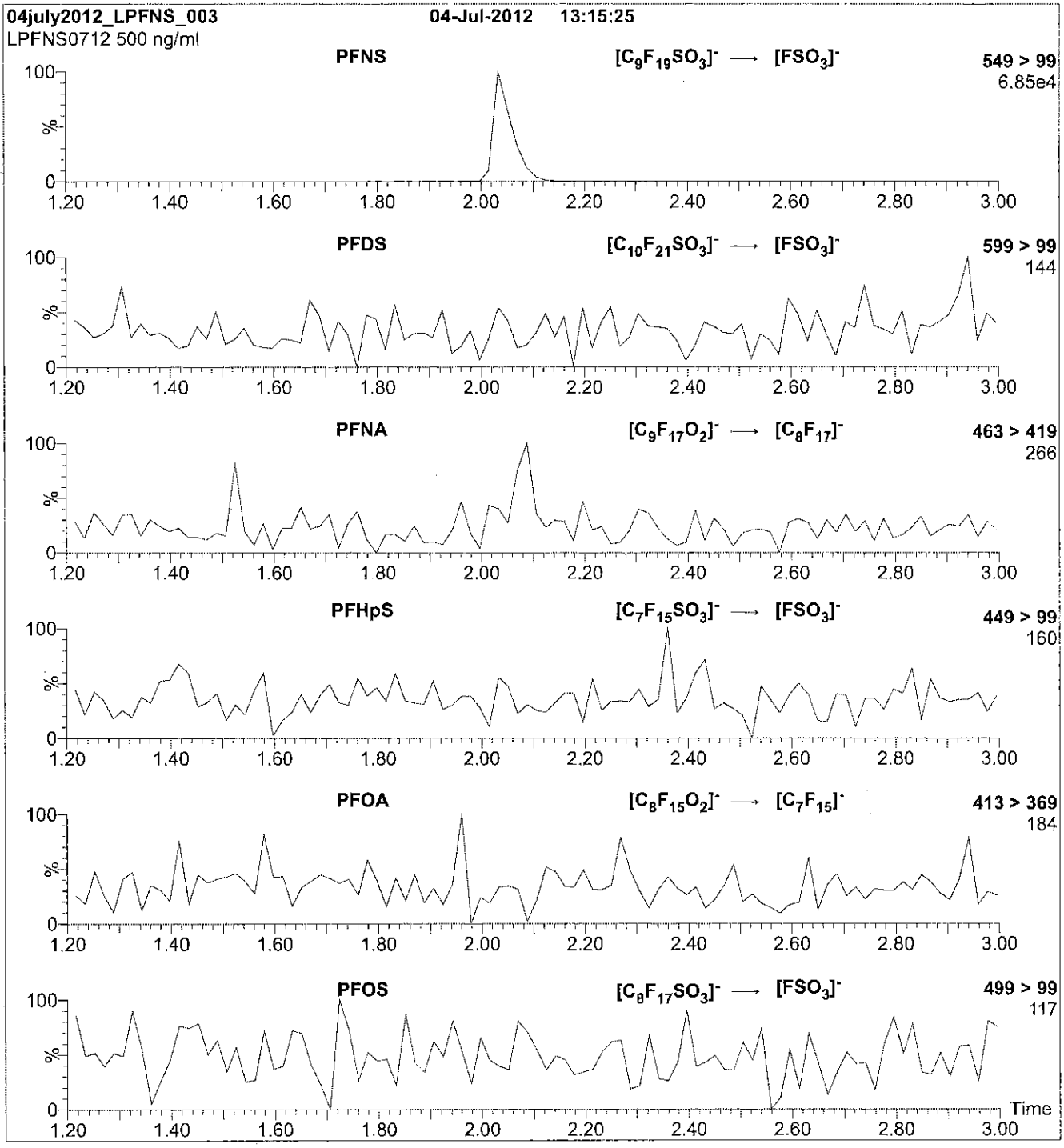
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 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 µl (500 ng/ml L-PFNS)

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.54e-3
Collision Energy (eV) = 45

Reagent

LCPFOA_00005

Rec 4/30/15 CW

WELLINGTON LABORATORIES

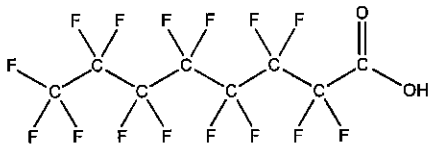
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFOA
COMPOUND: Perfluoro-n-octanoic acid

LOT NUMBER: PFOA1115

STRUCTURE:

CAS #: 335-67-1



MOLECULAR FORMULA: $C_8HF_{15}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 414.07
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 11/06/2015
EXPIRY DATE: (mm/dd/yyyy) 11/06/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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:** 11/11/2015 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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

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 ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all of our products.

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EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

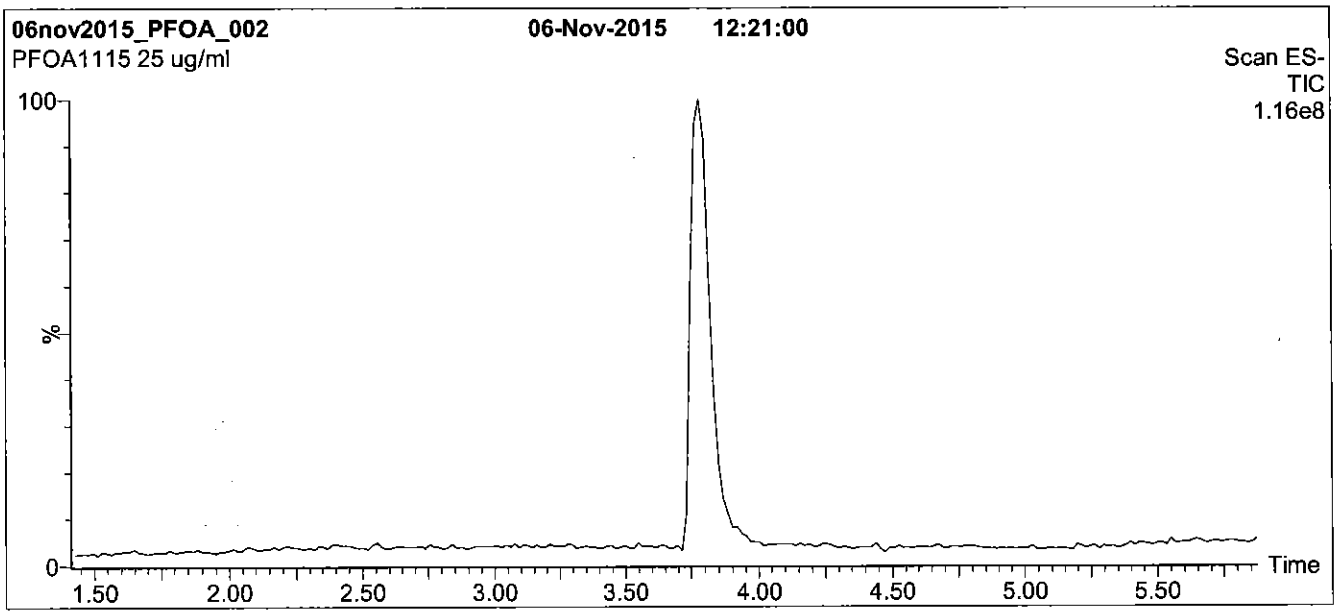
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

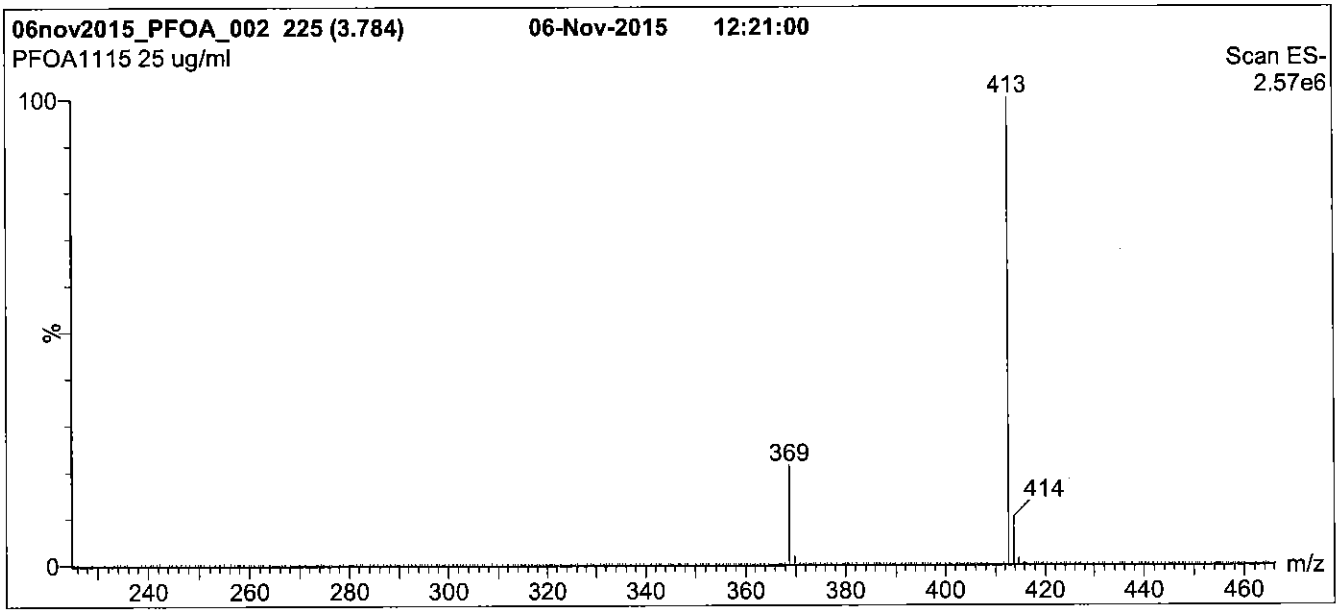
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 ISO 17034 REFERENCE MATERIAL PRODUCER

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: **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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

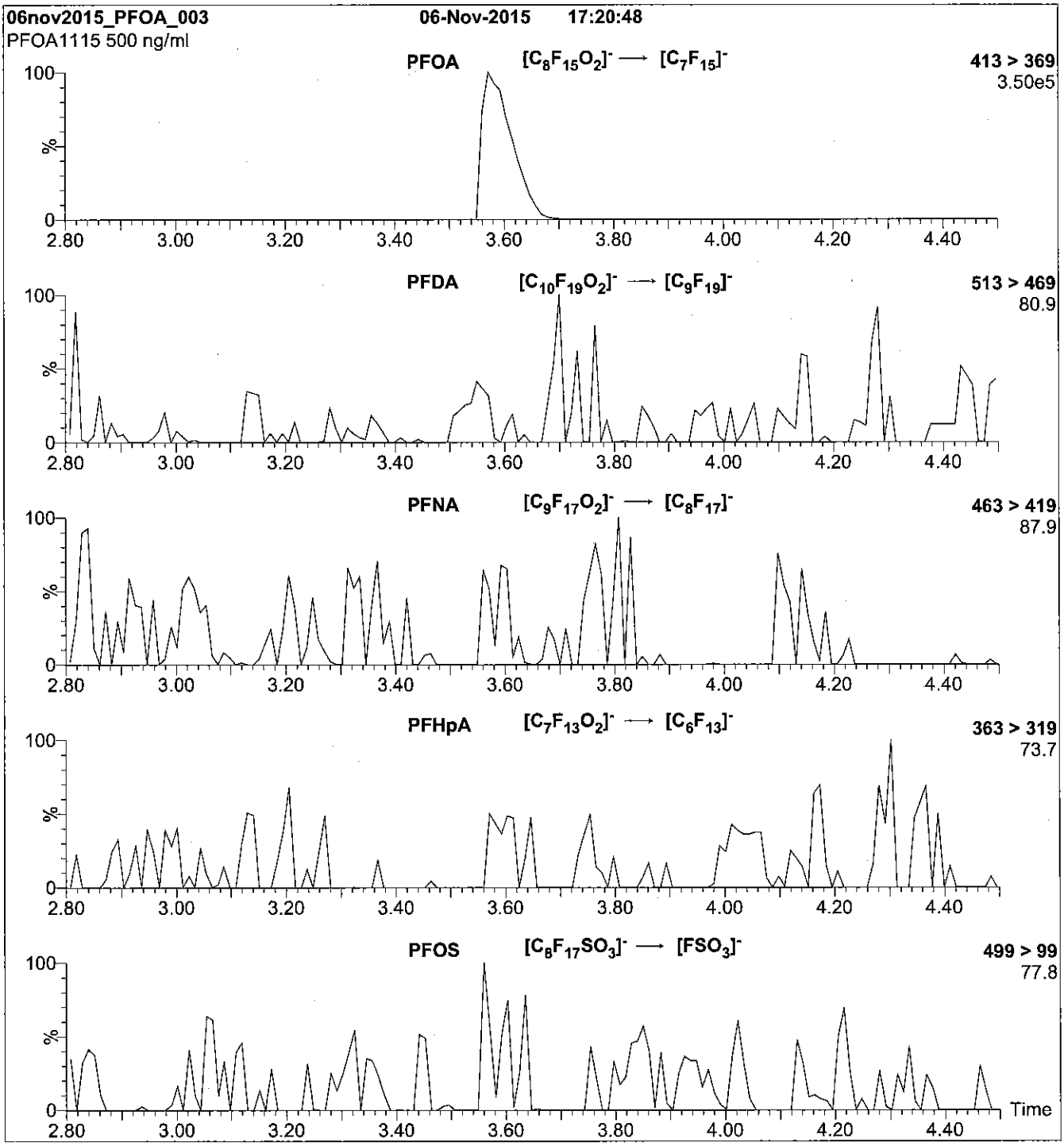
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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 µl (500 ng/ml PFOA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

Collision Gas (mbar) = 3.17e-3
Collision Energy (eV) = 10

Reagent

LCPFODA_00005

Rec. 3/29/16 JRB

WELLINGTON LABORATORIES

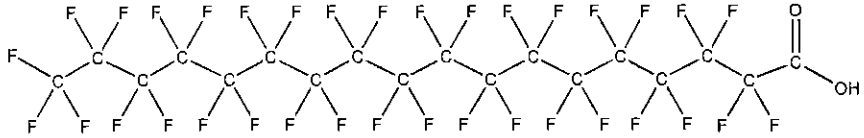
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFODA
COMPOUND: Perfluoro-n-octadecanoic acid

LOT NUMBER: PFODA0115

STRUCTURE:

CAS #: 16517-11-6



MOLECULAR FORMULA: $C_{18}HF_{35}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 914.14
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/30/2015
EXPIRY DATE: (mm/dd/yyyy) 01/30/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/25/2015 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED Reference Material Producer

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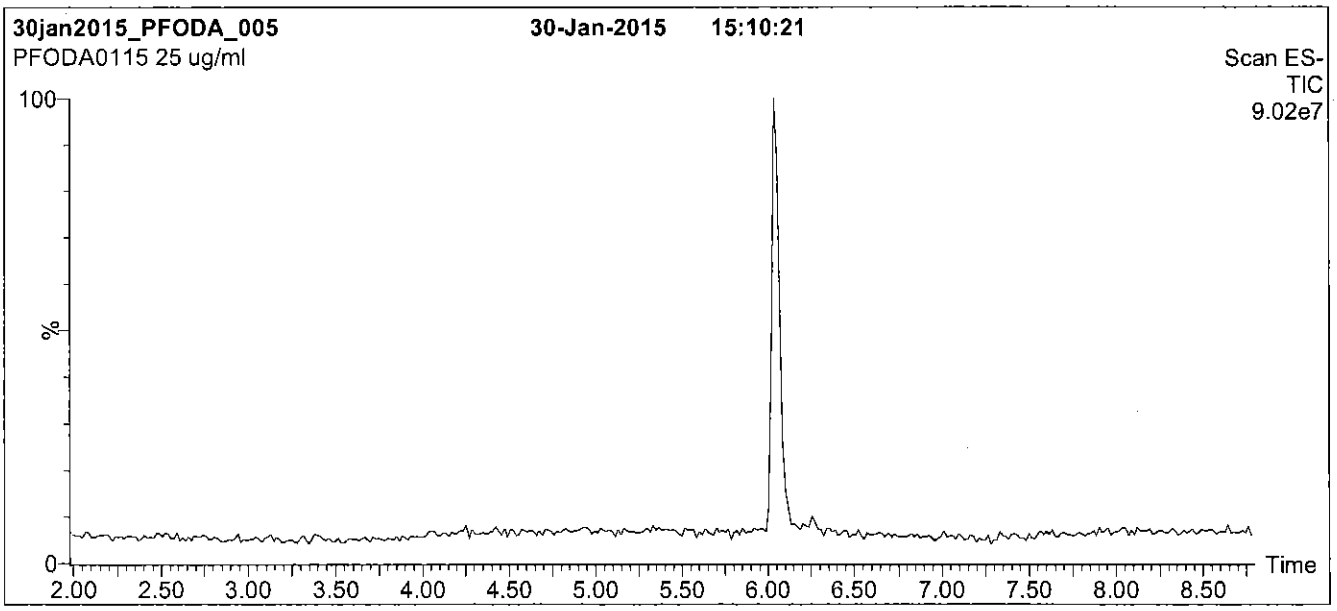
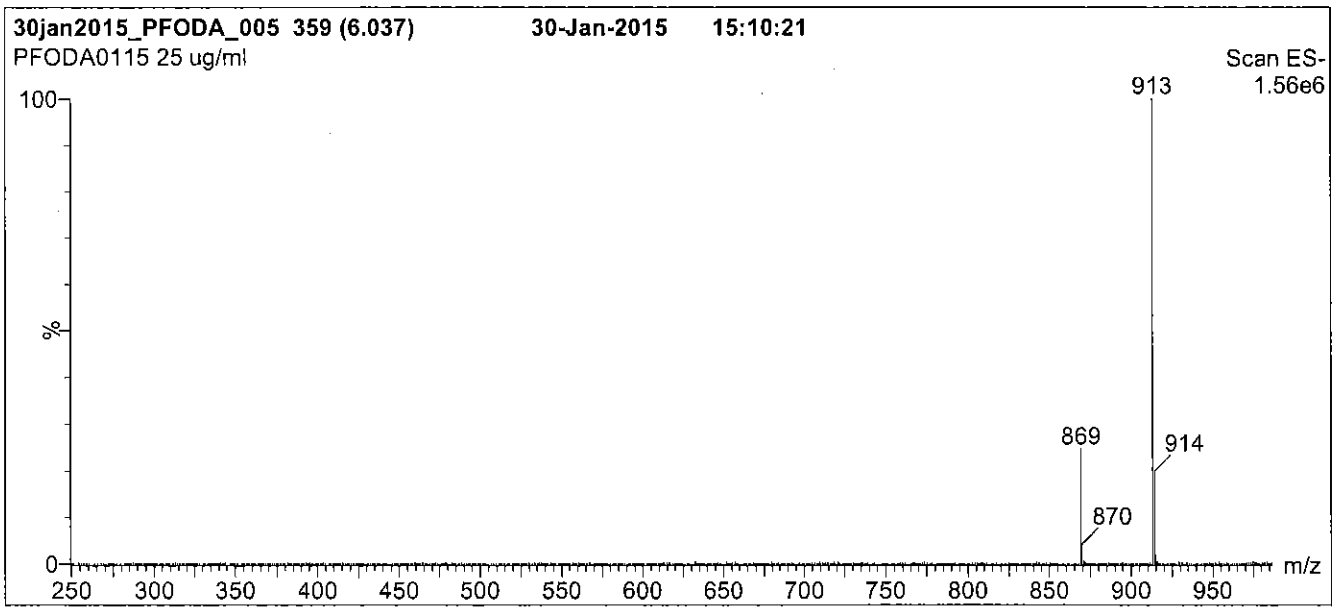
Figure 1: **PFODA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc 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

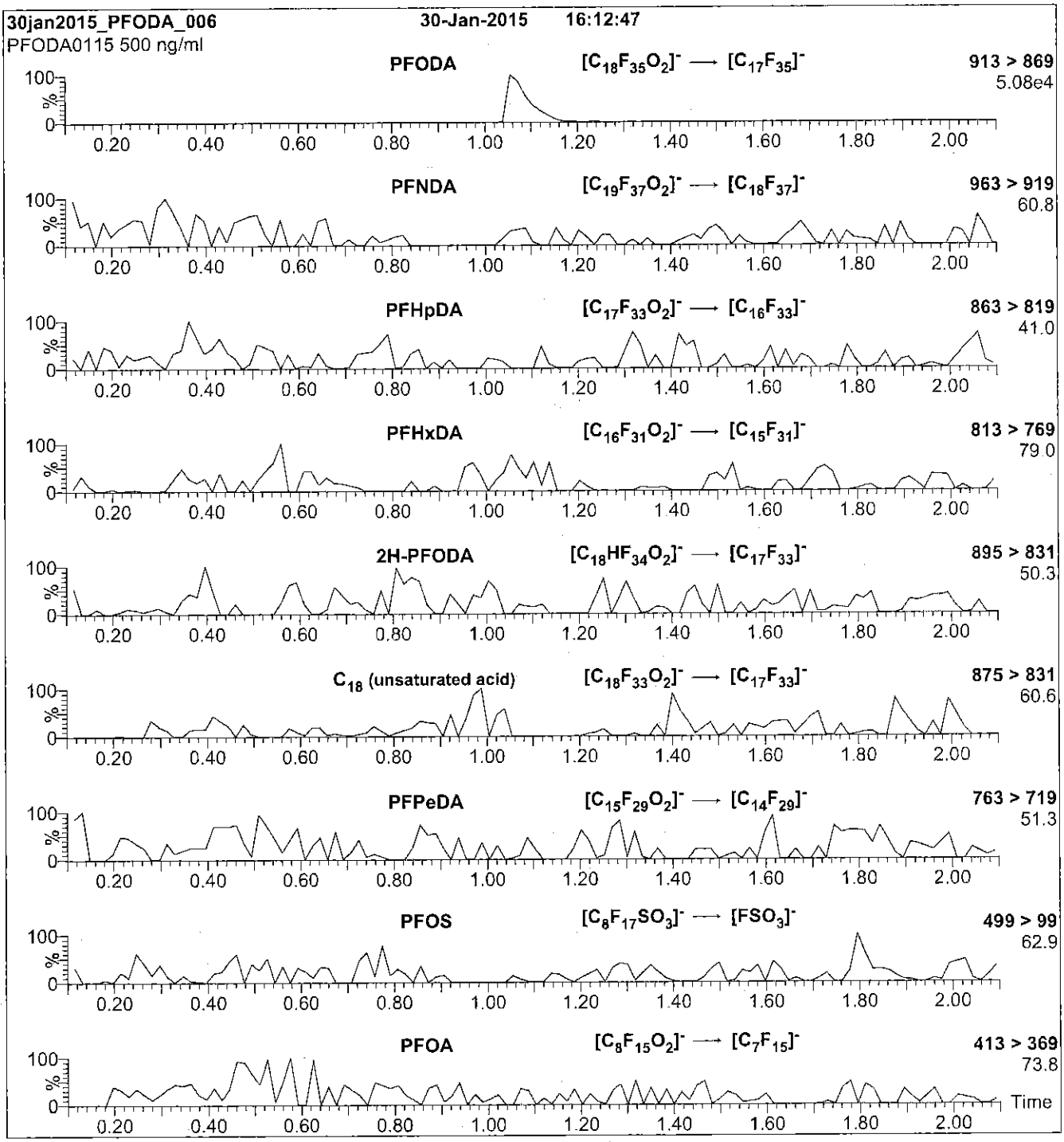
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1000 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.31e-3
Collision Energy (eV) = 15

Reagent

LCPFOS-br_00001

566008
ID: LCPFOS-br_00001
Exp: 10/14/20 Pipd: CBW
Potassium Perfluorooctane

P: 12/9/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

br-PFOSK

Potassium Perfluorooctanesulfonate
Solution/Mixture of Linear and
Branched Isomers

PRODUCT CODE:	br-PFOSK
LOT NUMBER:	brPFOSK1015
CONCENTRATION:	50 ± 2.5 µg/ml (total potassium salt)
	46.4 ± 2.3 µg/ml (total PFOS anion)
SOLVENT(S):	Methanol
DATE PREPARED: (mm/dd/yyyy)	10/13/2015
LAST TESTED: (mm/dd/yyyy)	10/14/2015
EXPIRY DATE: (mm/dd/yyyy)	10/14/2020
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place

DESCRIPTION:

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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

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

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED Reference Material Producer

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

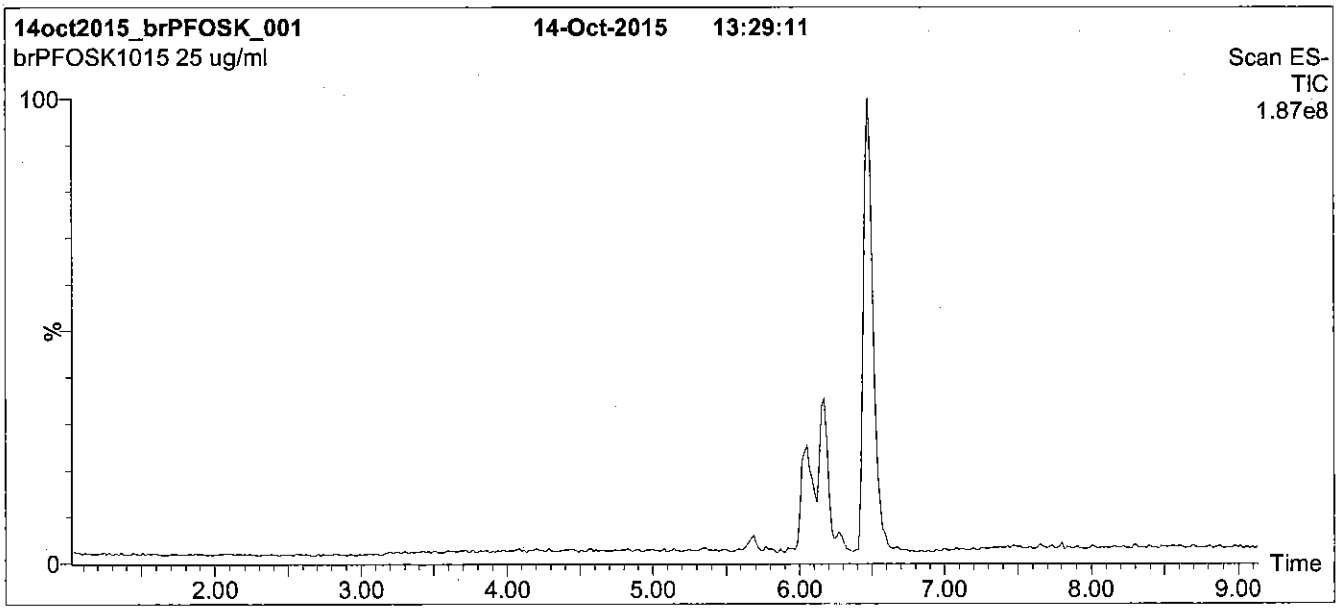
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

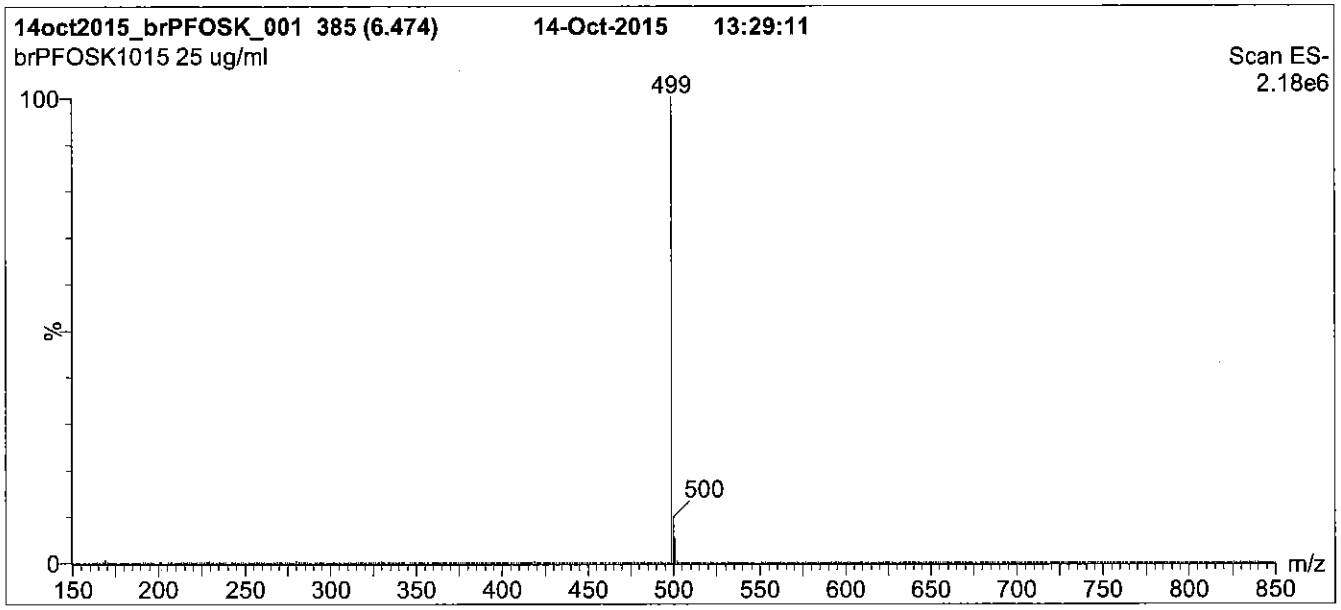
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	0.6
4	Potassium 3-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.9
5	Potassium 4-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	2.2
6	Potassium 5-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	4.5
7	Potassium 6-trifluoromethylperfluoroheptanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	10.0
8	Potassium 5,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-C(CF_3)_2CF_2CF_2CF_2SO_3^-K^+$	0.2
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2-C(CF_3)_2-CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF_2-CF(CF_3)-CF_2CF_2SO_3^-K^+$	0.07

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

Certified By: _____ **Date:** 10/15/2015
(mm/dd/yyyy)
B.G. Chittim

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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 45% (80:20 MeOH:ACN) / 55% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 12 min and hold for 2 min.
Return to initial conditions over 0.5 min.
Time: 16 min

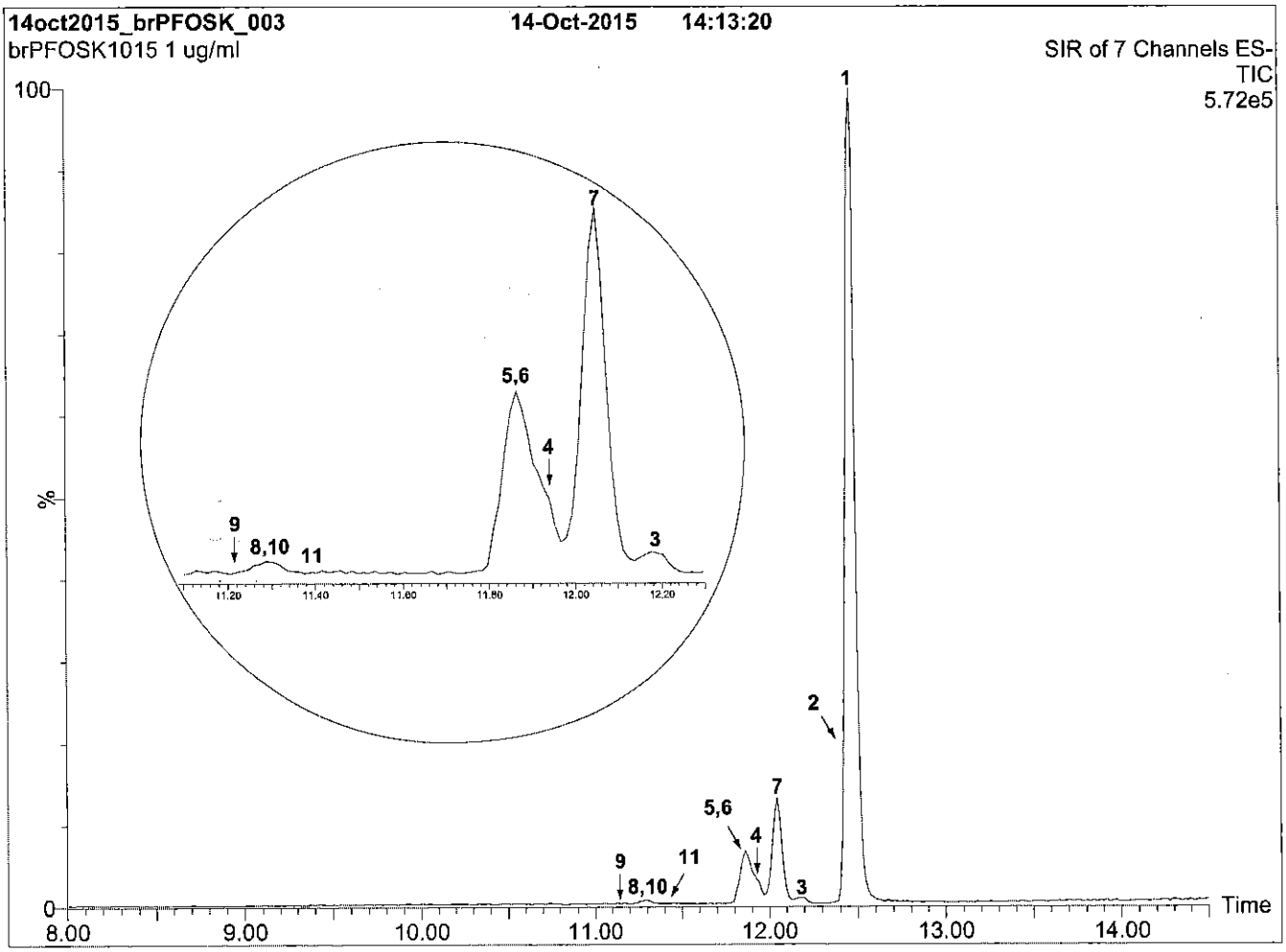
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 60.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

Figure 2: **br-PFOSK; LC/MS Data (SIR)**



Conditions for Figure 2:

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

Chromatographic Conditions:

Column: Acquity UPLC BEH Shield RP_{18} (1.7 µm, 2.1 x 100 mm)

Injection: 1.0 µg/ml of br-PFOSK

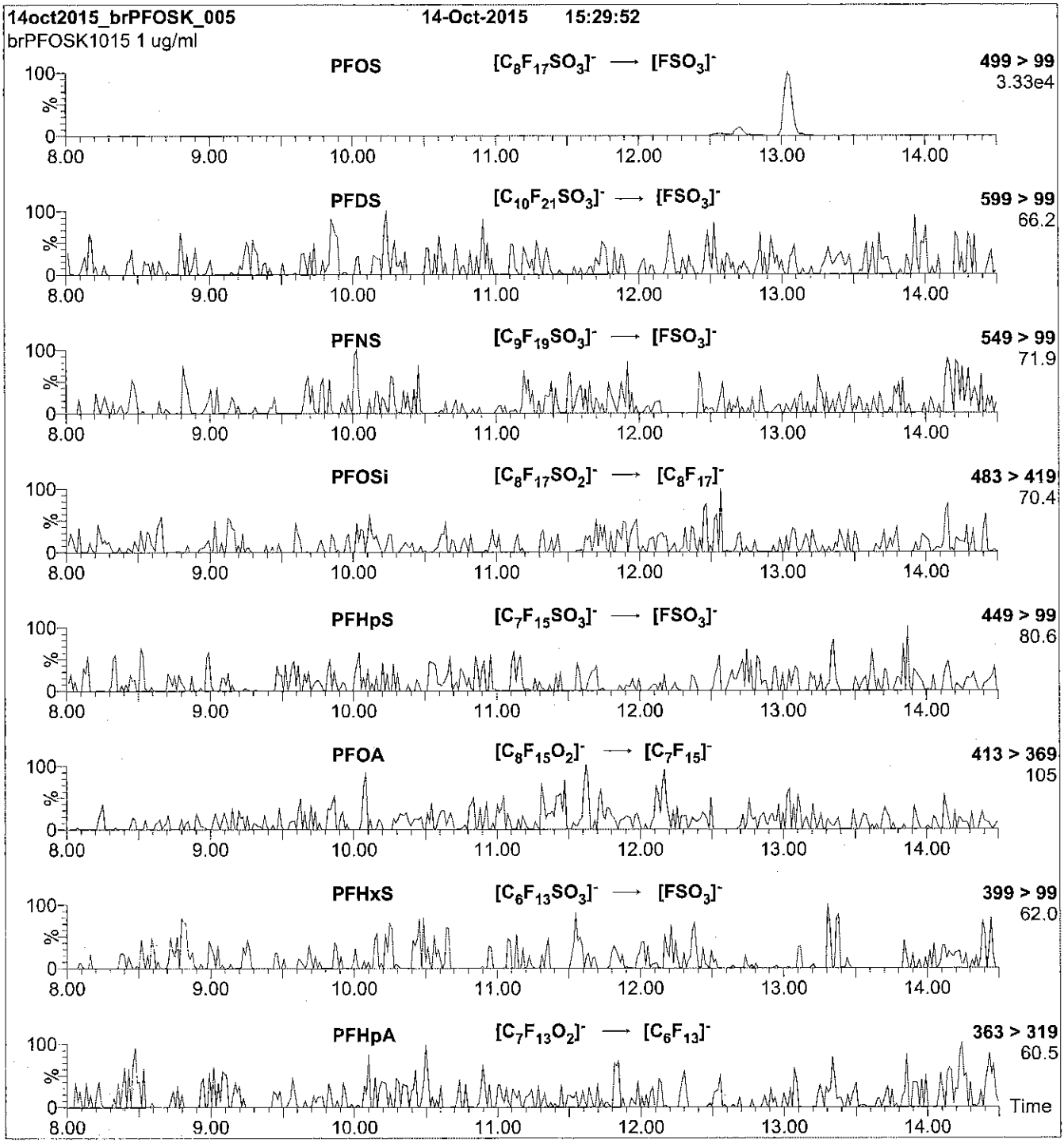
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

Flow: 300 µl/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 µl/min

MS Parameters

Collision Gas (mbar) = 3.06e-3
Collision Energy (eV) = 11-50 (variable)

Reagent

LCPFOSA_00006

Rec 12/30/15 CW

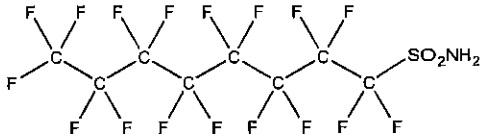
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: FOSA-I
COMPOUND: Perfluoro-1-octanesulfonamide
LOT NUMBER: FOSA0815I

STRUCTURE:

CAS #: 754-91-6



MOLECULAR FORMULA:	$C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	499.14
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	09/02/2015		
EXPIRY DATE: (mm/dd/yyyy)	09/02/2017		
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:** 09/11/2015 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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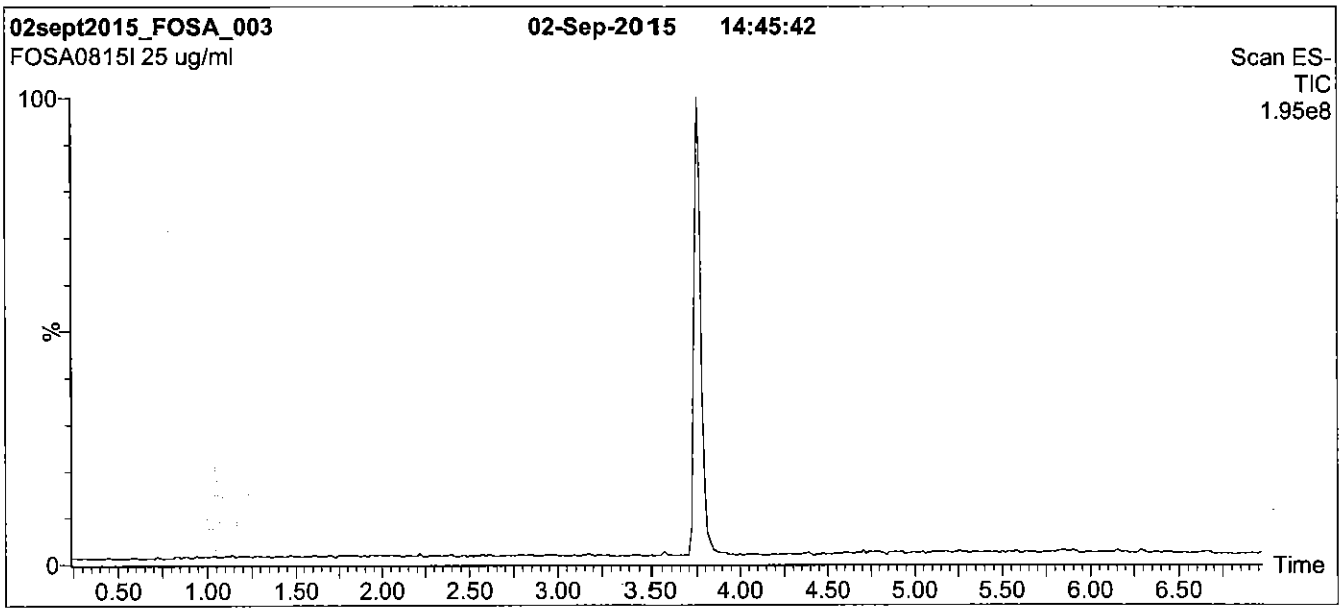
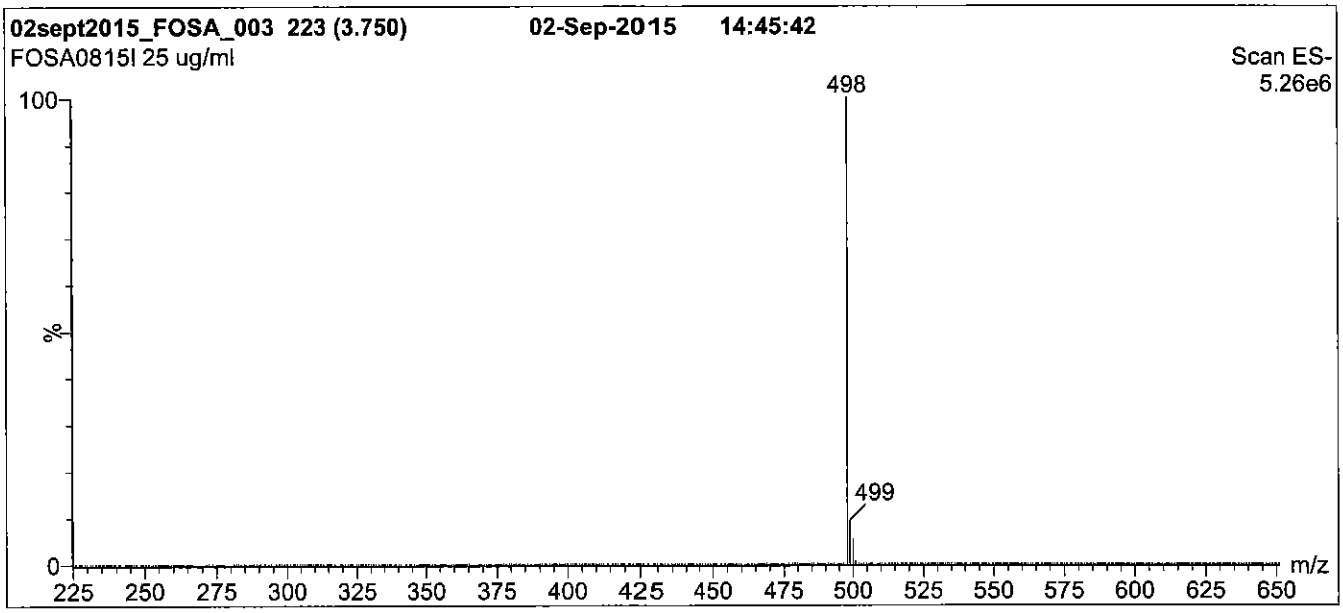
Figure 1: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc 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

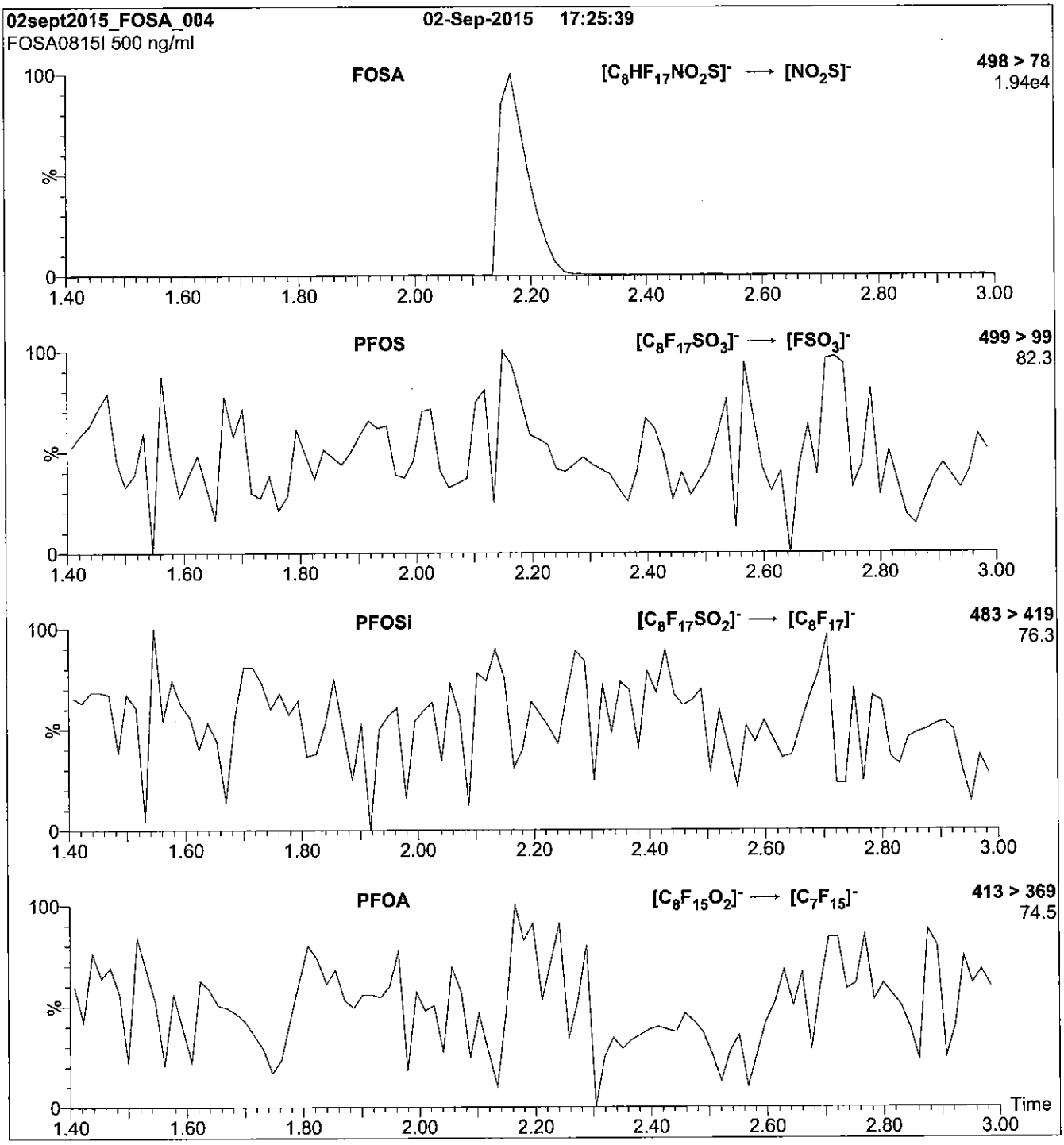
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFPeA_00004

Rec: 12/30/15 aw

WELLINGTON LABORATORIES

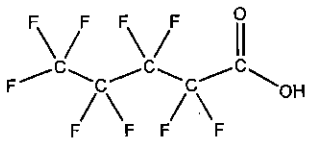
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFPeA
COMPOUND: Perfluoro-n-pentanoic acid

LOT NUMBER: PFPeA0115

STRUCTURE:

CAS #: 2706-90-3



MOLECULAR FORMULA: $C_5HF_9O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 264.05
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 01/30/2015
EXPIRY DATE: (mm/dd/yyyy) 01/30/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.3% 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 **Date:** 03/26/2015 (mm/dd/yyyy)

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

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CALA Testing Accreditation No. 1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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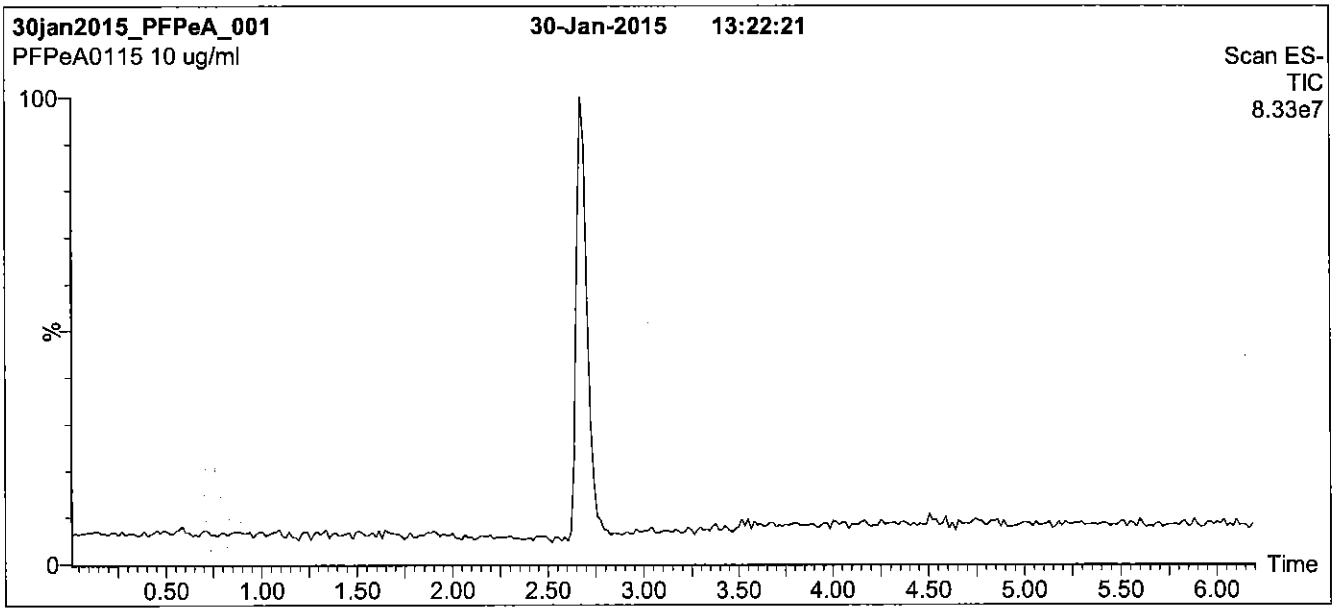
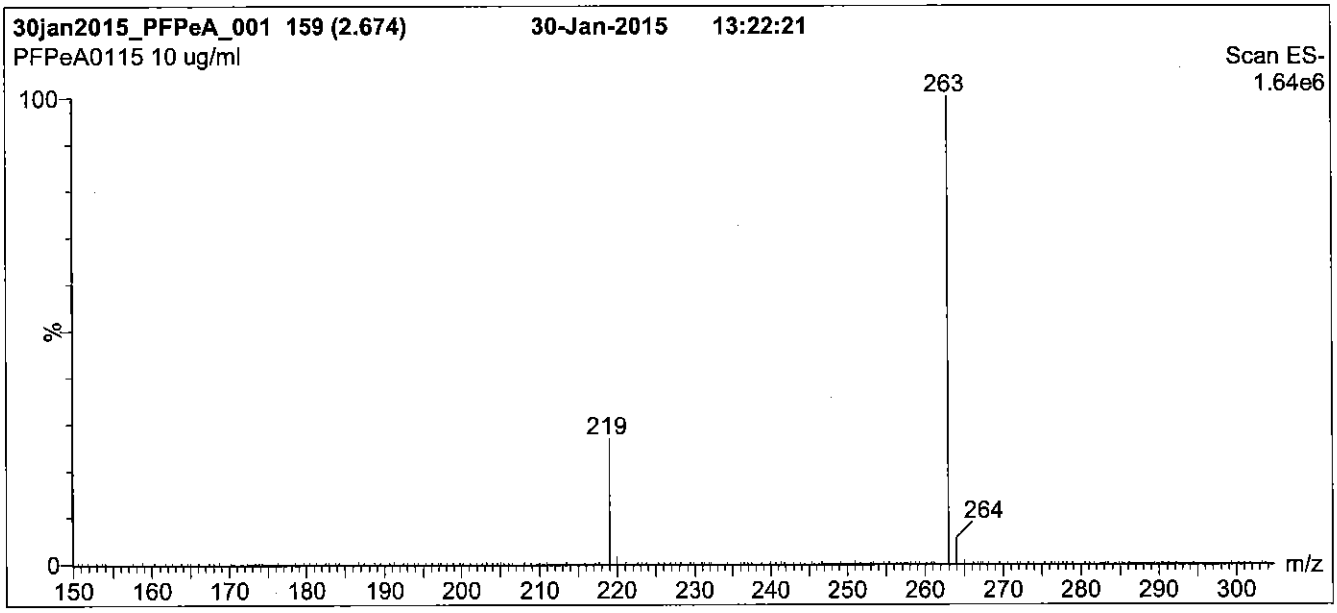
Figure 1: **PFPeA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 30% (80:20 MeOH:ACN) / 70% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7.5 min and hold for 1 min before returning to initial conditions in 0.5 min.
Time: 10 min

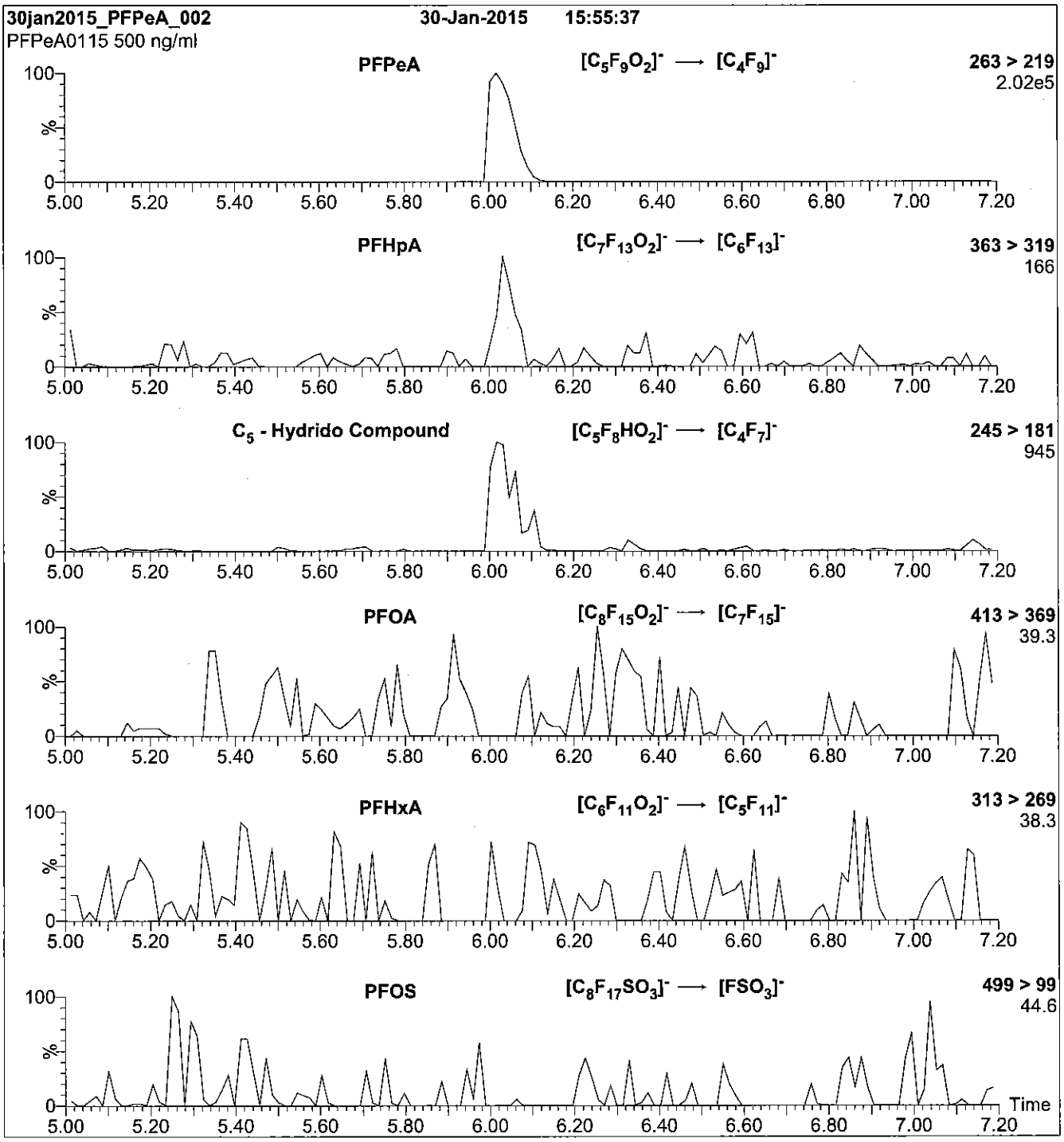
Flow: 300 µl/min

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) = 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% H_2O
(both with 10 mM NH_4OAc buffer)

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 9

Reagent

LCPFPeS_00002

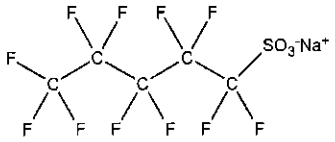
R 2415 W

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFPeS
LOT NUMBER: LPFPeS0712
COMPOUND: Sodium perfluoro-1-pentanesulfonate

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$C_5F_{11}SO_3Na$	**MOLECULAR WEIGHT:**	372.09
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 46.9 ± 2.3 µg/ml (PFPeS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	07/04/2012		
EXPIRY DATE: (mm/dd/yyyy)	07/04/2017		
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:

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Certified By: _____ **Date:** 01/15/2013 (mm/dd/yyyy)
B.G. Chittim

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. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

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. Material Safety Data Sheets (MSDSs) 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, 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 and/or LC/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,...x_n on which it depends is:

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

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 ±5% (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all 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 17025:2005 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AR-1523).

CALA Testing Accreditation No. A 1226

ACLASS ACCREDITED REFERENCE MATERIAL PRODUCER

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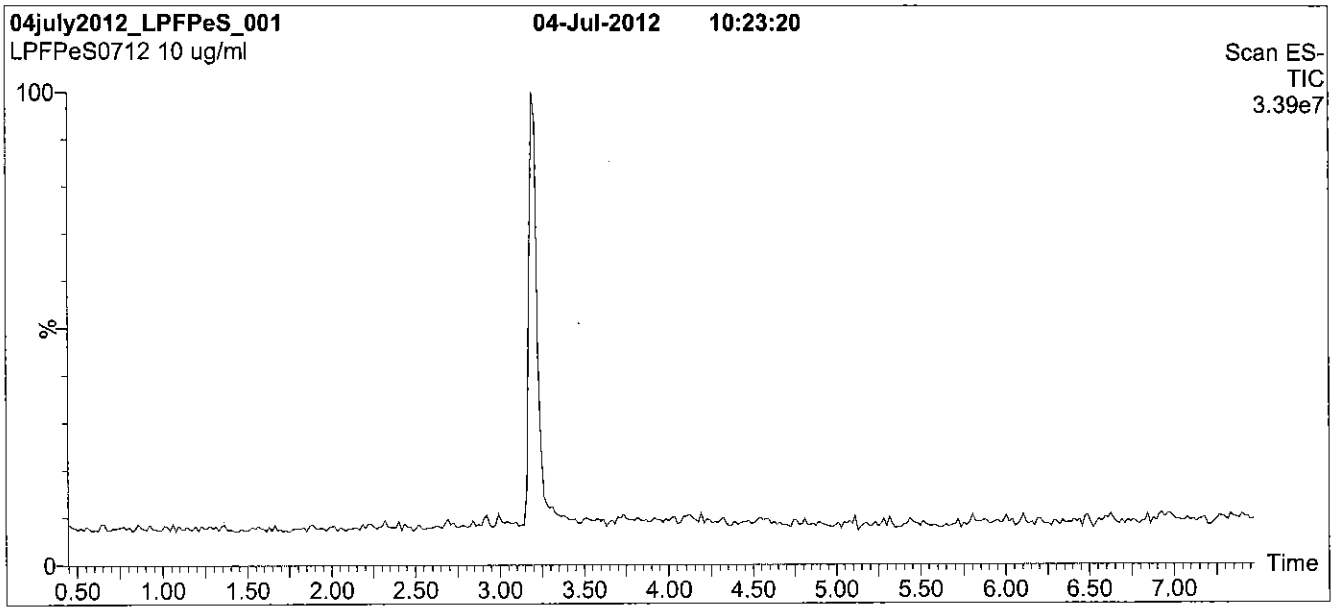
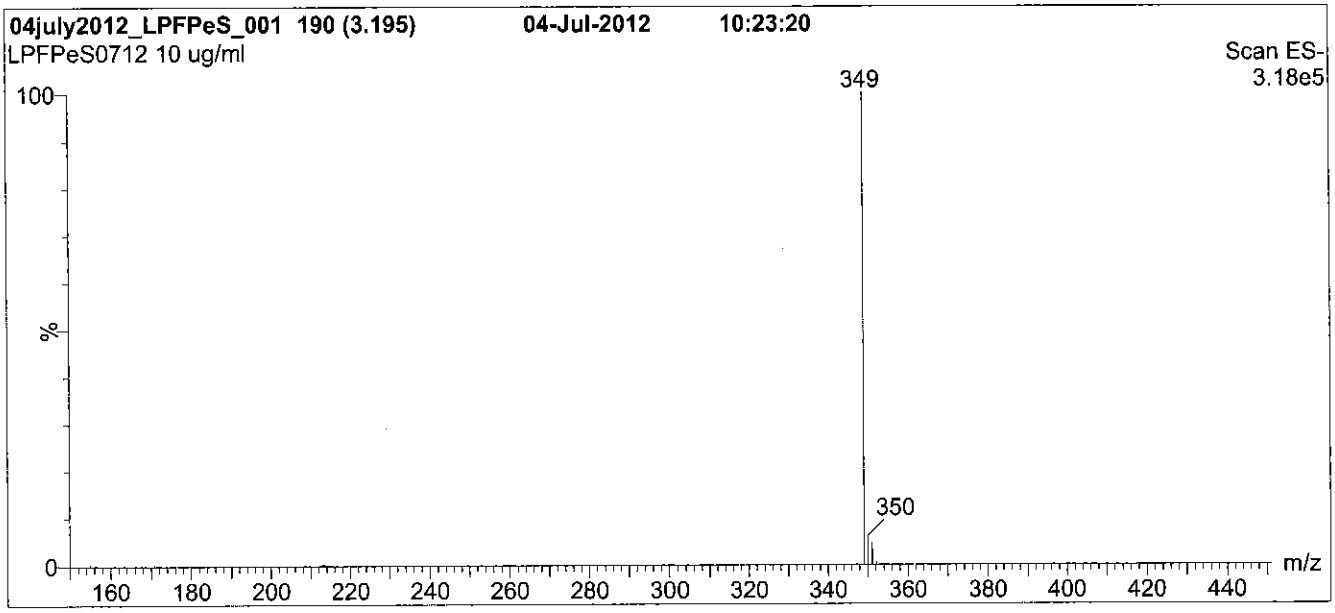
Figure 1: **L-PFPeS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 40% (80:20 MeOH:ACN) / 60% H_2O
(both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 7 min and hold for 1.5 min
before returning to initial conditions over 0.5 min.
Time: 10 min

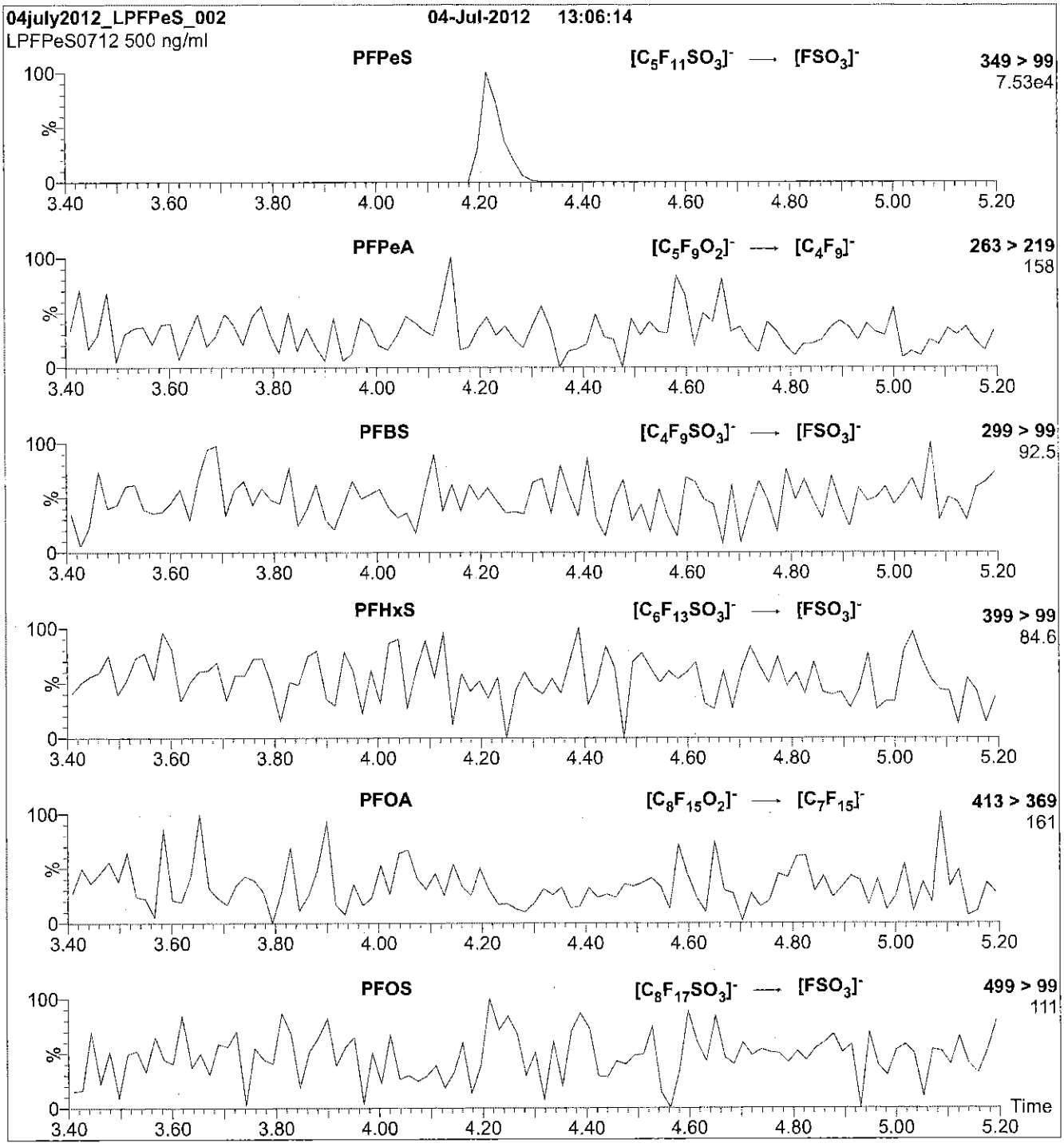
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.66e-3
Collision Energy (eV) = 30

Reagent

LCPFTeDA_00004

609696
ID: LCPFTeDA_00004
Exp: 12/09/20 Prpd: CBW
PF-n-tetradecanoic acid

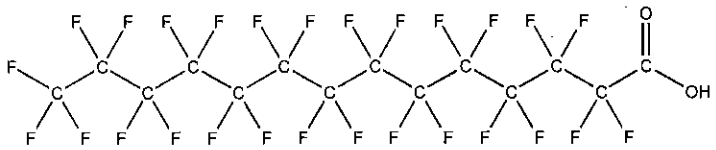
R: 4/7/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFTeDA
LOT NUMBER: PFTeDA1215
COMPOUND: Perfluoro-n-tetradecanoic acid

STRUCTURE:
CAS #: 376-06-7



MOLECULAR FORMULA: $C_{14}HF_{27}O_2$
MOLECULAR WEIGHT: 714.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/09/2015
EXPIRY DATE: (mm/dd/yyyy) 12/09/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFDoA ($C_{12}HF_{23}O_2$) and ~ 0.2% of PFPeDA ($C_{15}HF_{29}O_2$).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 12/09/2015 (mm/dd/yyyy)

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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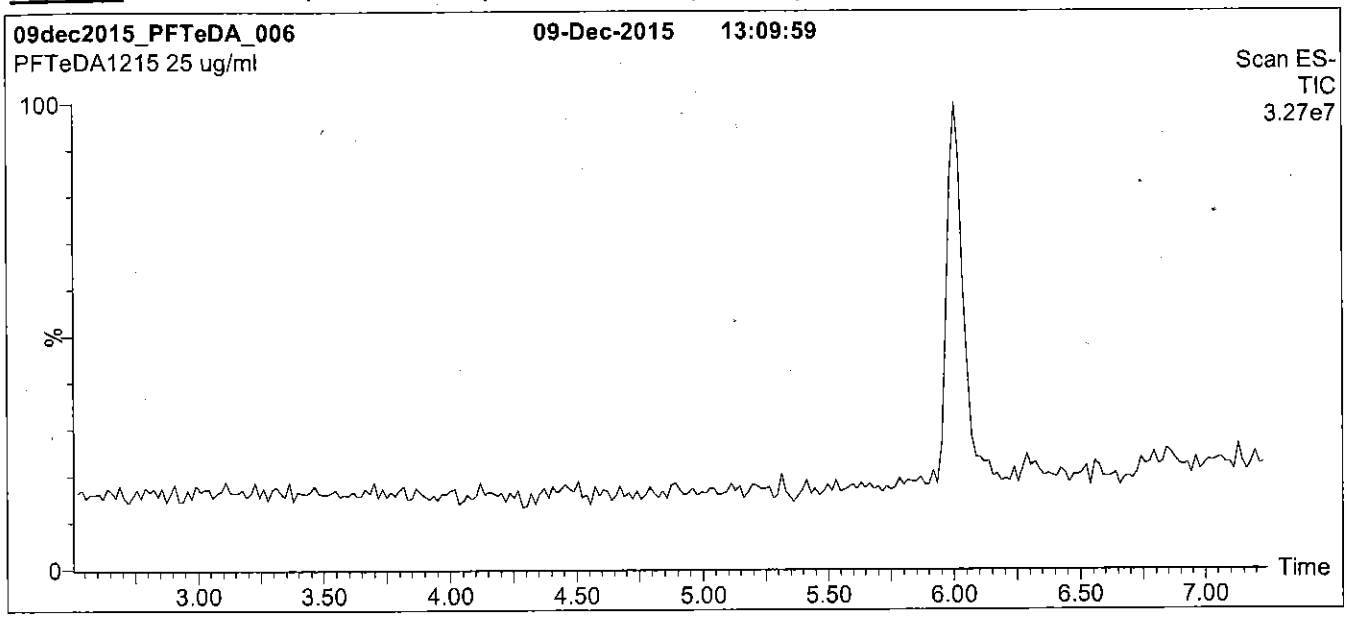
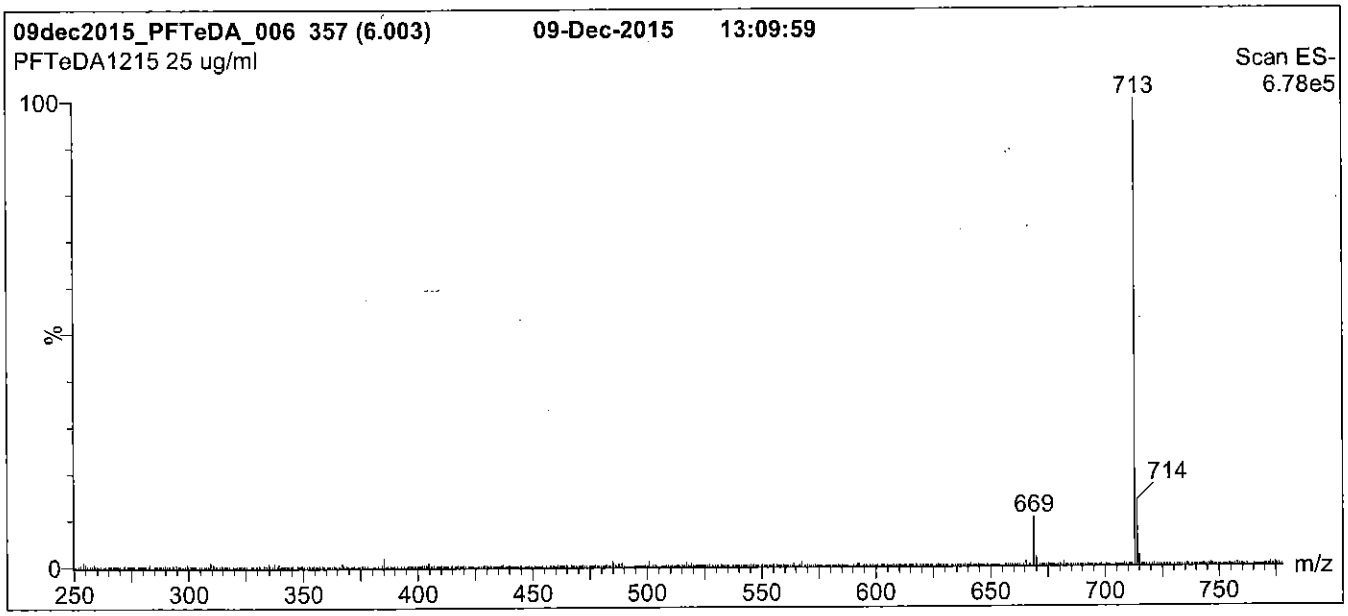
Figure 1: **PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 65% (80:20 MeOH:ACN) / 35% H_2O
(both with 10 mM NH_4OAc 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

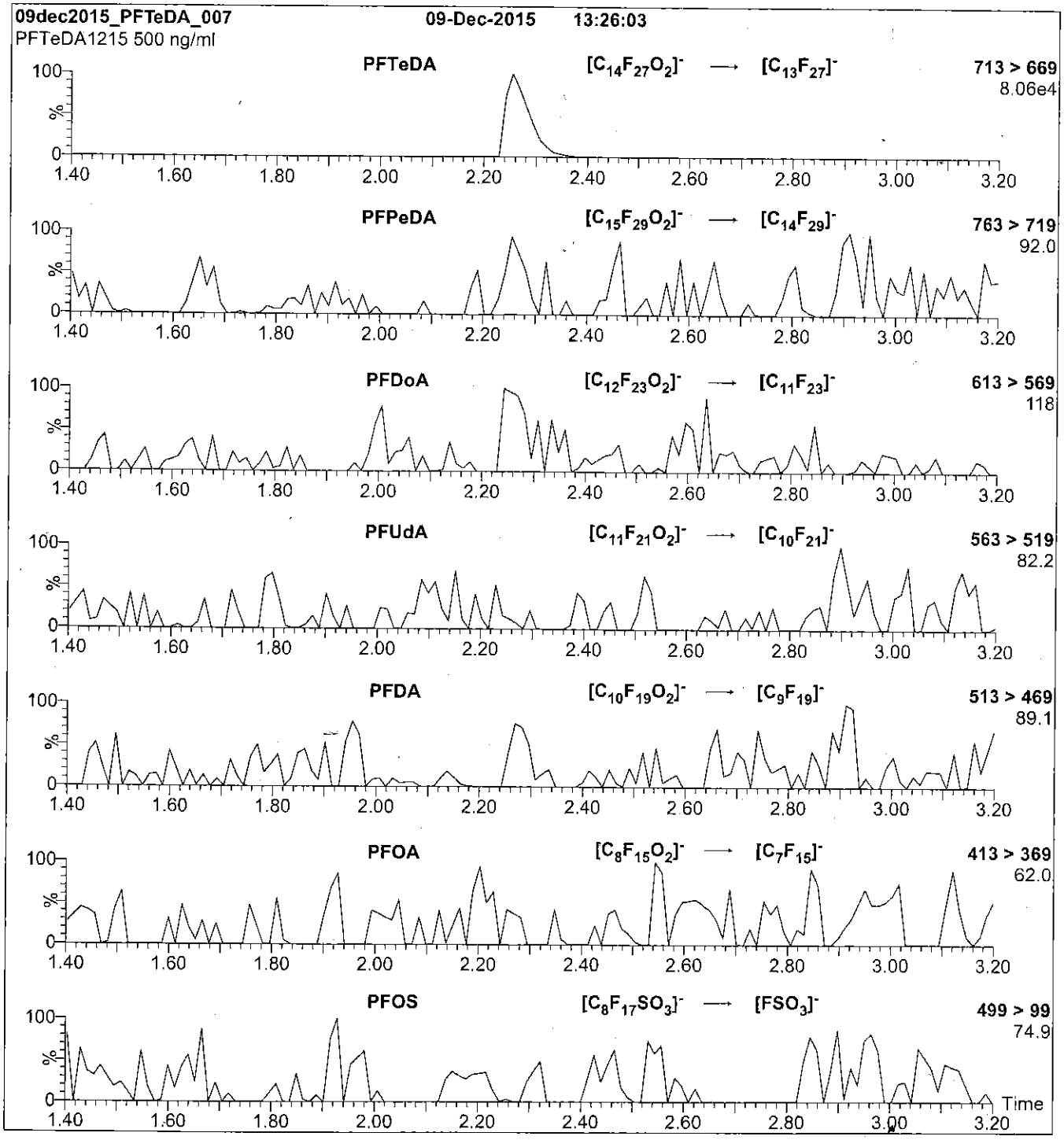
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 1250 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.43e-3
Collision Energy (eV) = 14

Reagent

LCPFTrDA_00004

609697
ID: LCPFTrDA_00004
Exp: 12/10/18 Prpd: CBW
PF-n-tridecanoic acid

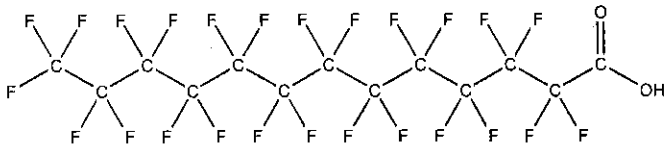
R: 4/7/16 CBW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA
LOT NUMBER: PFTrDA1213
COMPOUND: Perfluoro-n-tridecanoic acid

STRUCTURE:
CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
MOLECULAR WEIGHT: 664.11
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 12/10/2013
EXPIRY DATE: (mm/dd/yyyy) 12/10/2018
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- 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 **Date:** 03/25/2015 (mm/dd/yyyy)

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CALA Member Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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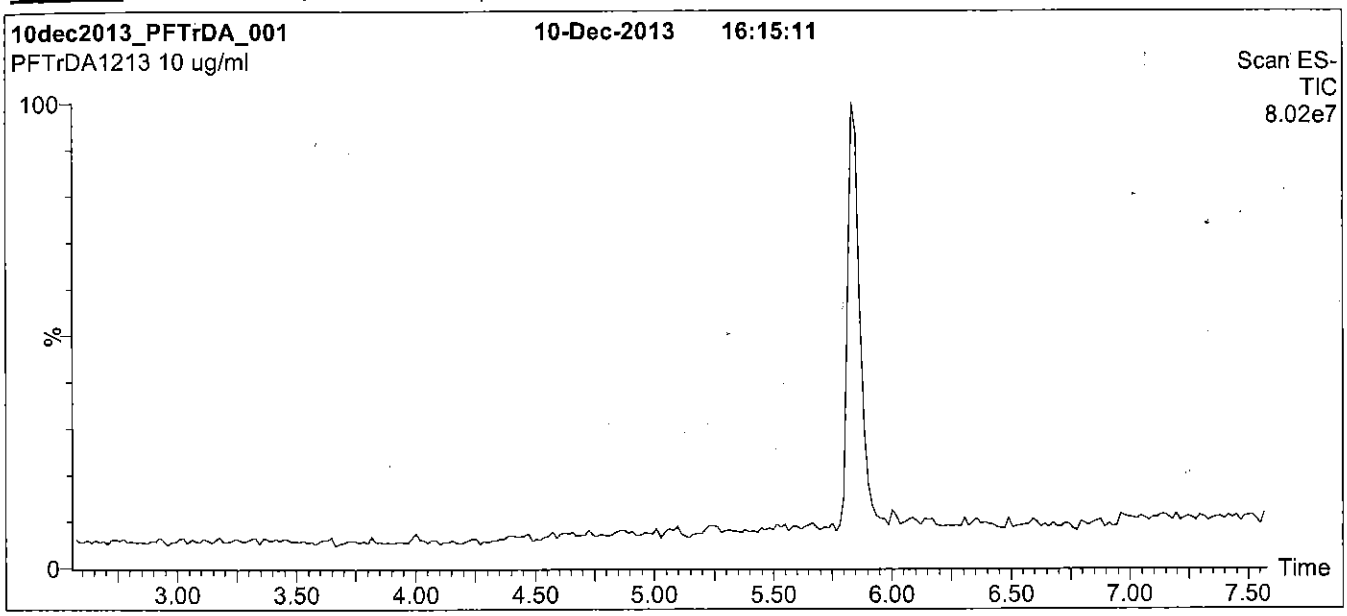
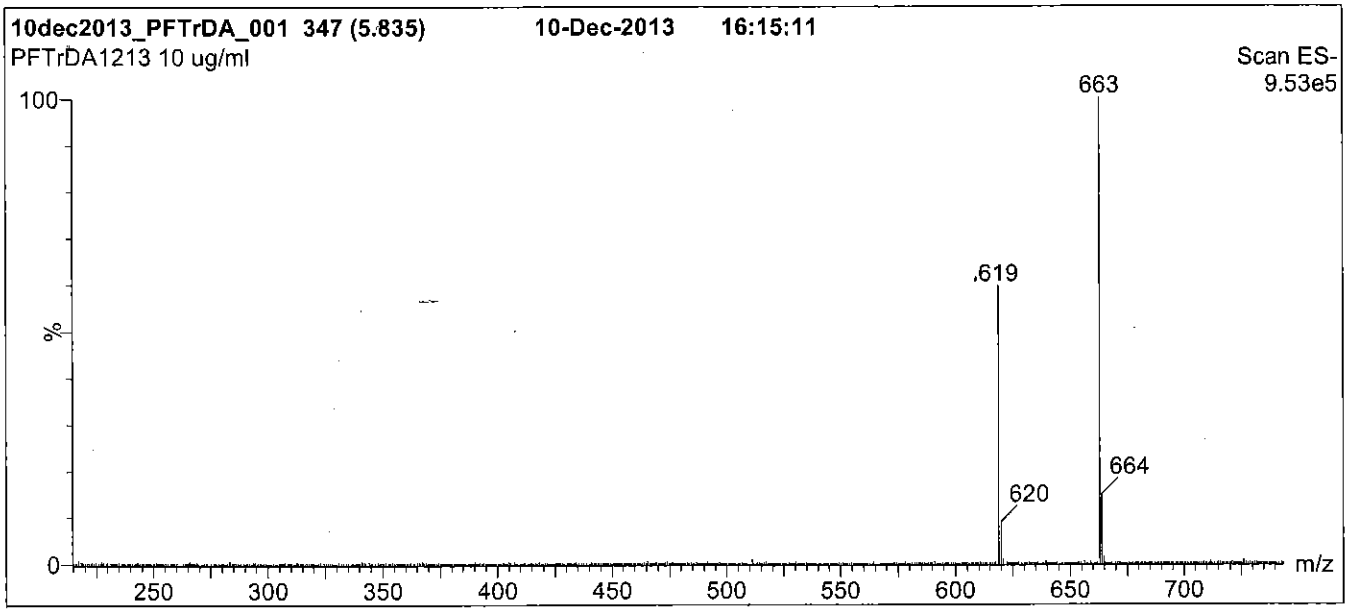
Figure 1: **PFTrDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 60% (80:20 MeOH:ACN) / 40% H_2O
(both with 10 mM NH_4OAc 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

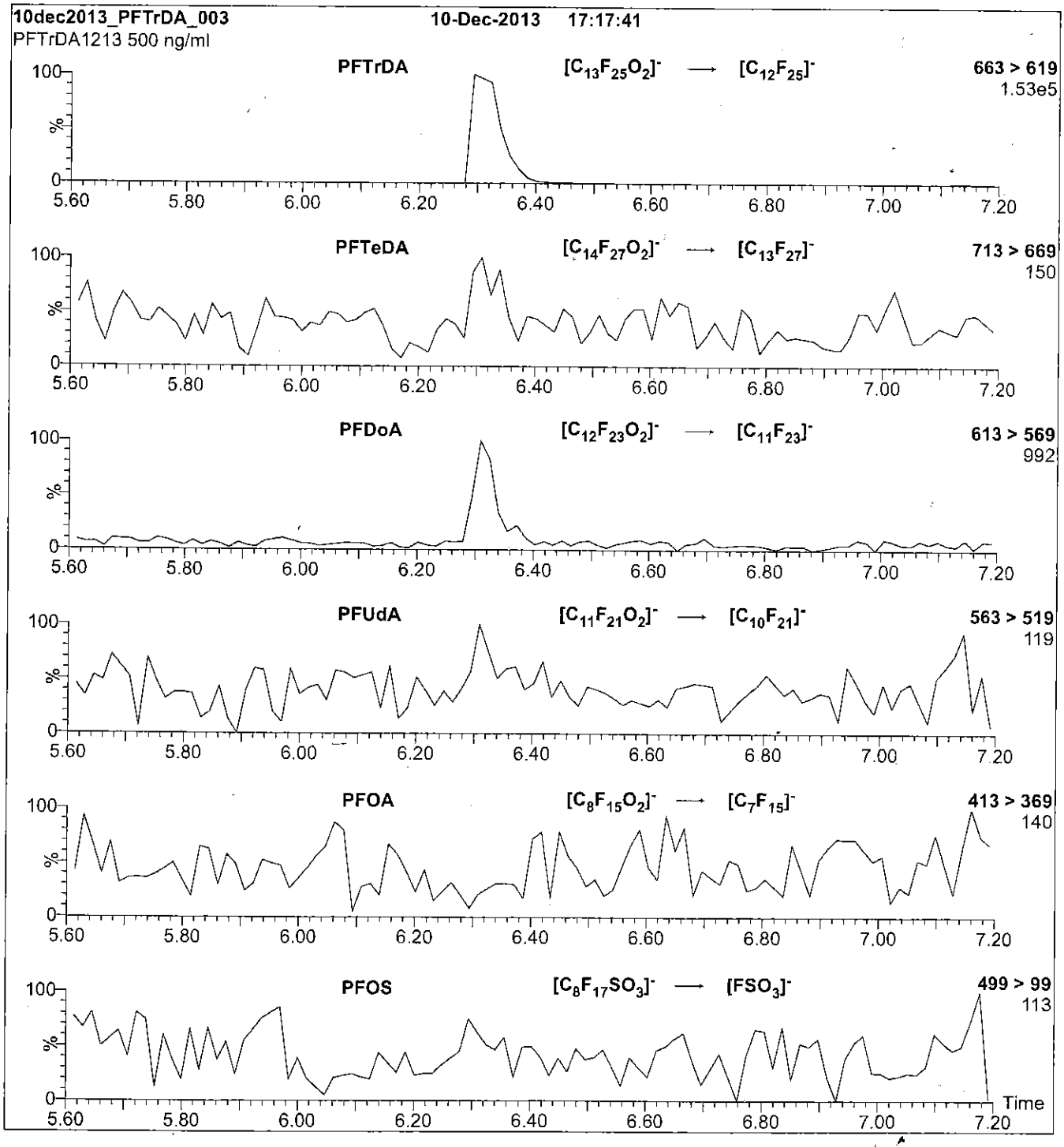
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (215 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 22.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 650

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCPFUdA_00004

Rec. 3/29/16 JRB ✓

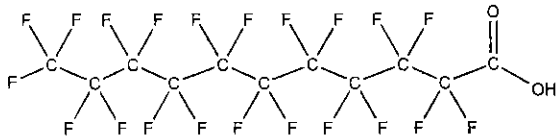
605242
ID: LCPFUdA_00004
Exp: 08/19/20 Prpd: CBW
PF-n-undecanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFUdA
LOT NUMBER: PFUdA0815
COMPOUND: Perfluoro-n-undecanoic acid

STRUCTURE:
CAS #: 2058-94-8



MOLECULAR FORMULA: $C_{11}HF_{21}O_2$
MOLECULAR WEIGHT: 564.09
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 08/19/2015
EXPIRY DATE: (mm/dd/yyyy) 08/19/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

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

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

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Certified By: B.G. Chittim **Date:** 08/21/2015 (mm/dd/yyyy)

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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 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:

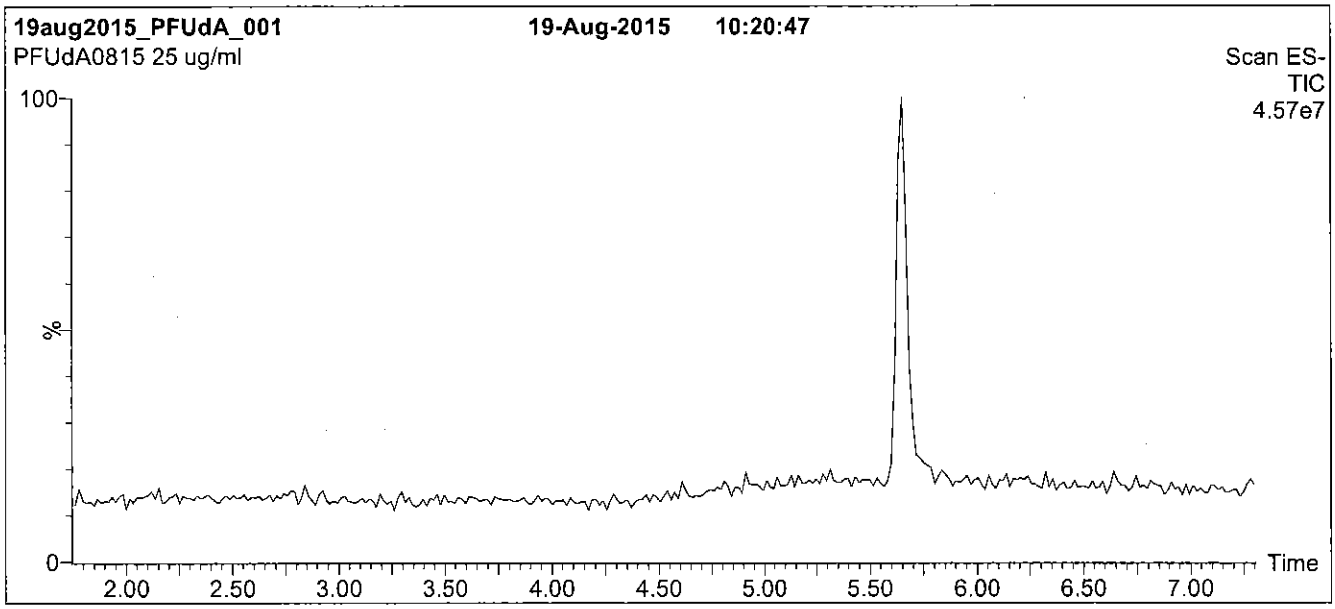
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

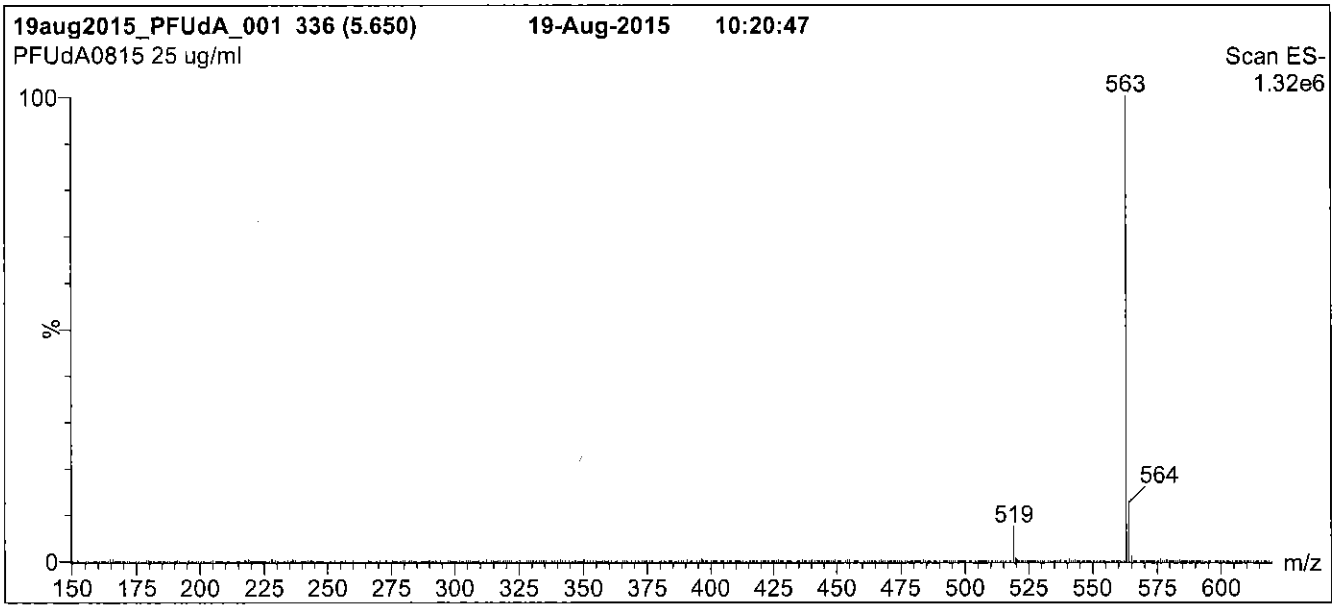
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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 RP_{18}
1.7 µm, 2.1 x 100 mm

Mobile phase: Gradient
Start: 50% (80:20 MeOH:ACN) / 50% H_2O
(both with 10 mM NH_4OAc 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

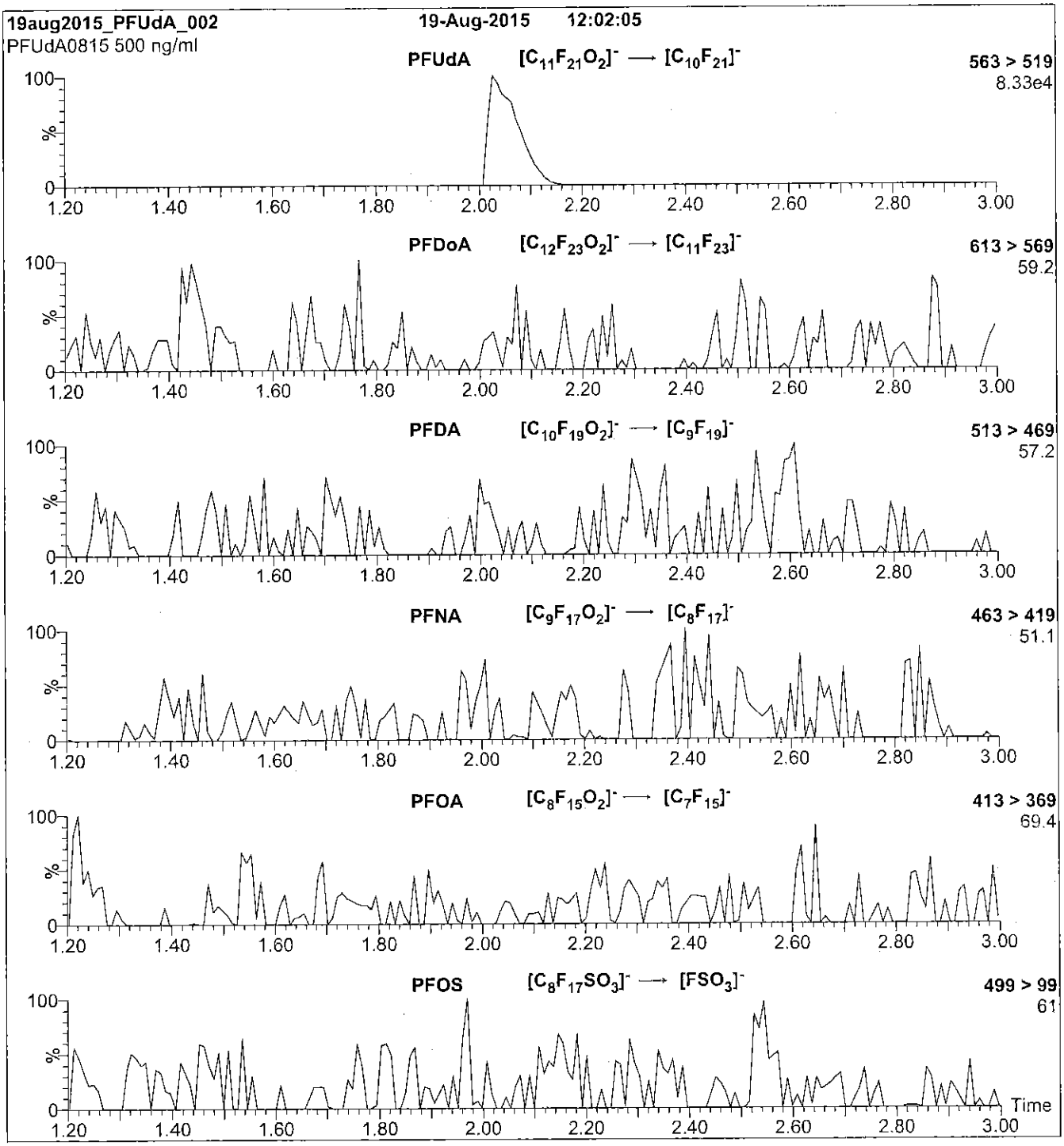
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Method PFC DOD

Perfluronated Hydrocarbons (LC/MS) by Method PFC_DOD

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFHxA #	13CHpA #	PFHxS #	PFOA #	PFOS #	PFNA #
PWSB2_0816	320-21080-1	68	76	121	66	119	62
POSTTB2_0816	320-21080-2	92	95	121	85	121	68
PWSF1_0816	320-21080-3	94	103	116	97	115	91
POSTTF1_0816	320-21080-4	90	98	118	88	114	88
	MB 320-123937/1-A	131	145	132	138	133	134
	LCS 320-123937/2-A	123	131 M	122	123	122	118

	QC LIMITS
PFHxA = 13C2 PFHxA	25-150
13CHpA = 13C4-PFHpA	25-150
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150
PFNA = 13C5 PFNA	25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 03SEP2016D_022_p1_e1.d

Lab ID: LCS 320-123937/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
13C2 PFHxA	100	123	123	25-150	
13C4 PFOA	100	123	123	25-150	
13C4 PFOS	95.6	117	122	25-150	
13C4-PFHpA	100	131	131	25-150	M
13C5 PFNA	100	118	118	25-150	
18O2 PFHxS	94.6	116	122	25-150	
Perfluorobutanesulfonic acid (PFBS)	35.4	52.3	148	50-150	
Perfluoroheptanoic acid (PFHpA)	40.0	50.5	126	60-140	
Perfluorohexanesulfonic acid (PFHxS)	36.4	47.2	130	60-140	
Perfluorononanoic acid (PFNA)	40.0	51.4	129	60-140	
Perfluorooctanesulfonic acid (PFOS)	37.1	43.6	117	60-140	
Perfluorooctanoic acid (PFOA)	40.0	52.4	131	60-140	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Lab File ID: 03SEP2016D_021_p1_e1.d Lab Sample ID: MB 320-123937/1-A

Matrix: Water Date Extracted: 08/24/2016 14:17

Instrument ID: A8 Date Analyzed: 09/04/2016 15:09

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-123937/2-A	03SEP2016D_022_p1_e1.d	09/04/2016 15:16
PWSB2_0816	320-21080-1	03SEP2016D_023_p1_e1.d	09/04/2016 15:24
POSTTB2_0816	320-21080-2	03SEP2016D_024_p1_e1.d	09/04/2016 15:31
PWSF1_0816	320-21080-3	03SEP2016D_025_p1_e1.d	09/04/2016 15:39
POSTTF1_0816	320-21080-4	03SEP2016D_026_p1_e1.d	09/04/2016 15:46

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-21080-1

SDG No.:

Client Sample ID: PWSB2_0816 | Lab Sample ID: 320-21080-1

Matrix: Water | Lab File ID: 03SEP2016D_023_p1_e1.d

Analysis Method: 537 (Modified) | Date Collected: 08/18/2016 08:41

Extraction Method: 3535 | Date Extracted: 08/24/2016 14:17

Sample wt/vol: 508.1(mL) | Date Analyzed: 09/04/2016 15:24

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 126120 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.90
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.79
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.64
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U	3.9	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U M	2.5	2.0	0.74

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	68		25-150
STL00990	13C4 PFOA	66		25-150
STL00991	13C4 PFOS	119		25-150
STL01892	13C4-PFHpA	76		25-150
STL00995	13C5 PFNA	62		25-150
STL00994	18O2 PFHxS	121		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_023_p1_e1.d
Lims ID: 320-21080-A-1-A
Client ID: PWSB2_0816
Sample Type: Client
Inject. Date: 04-Sep-2016 15:24:00 ALS Bottle#: 0 Worklist Smp#: 23
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8

Method: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 17-Sep-2016 12:48:40 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 17-Sep-2016 12:36:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.951	1.944	0.007	1.000	29485	0.0887				
298.9 > 99.0	1.951	1.944	0.007	1.000	10892		2.71(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.209	2.213	-0.004		4926042	34.1		68.3	358670	
D 11 13C4-PFHpA										
367 > 322.0	2.559	2.556	0.003		4943719	37.8		75.6	294481	
12 Perfluoroheptanoic acid										
363 > 319.0	2.559	2.556	0.003	1.000	21433	0.2083			212	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.582	2.571	0.011	1.000	71004	0.3026				
D 10 18O2 PFHxS										
403 > 84.0	2.574	2.571	0.003		10334798	57.2		121	503591	
15 Perfluorooctanoic acid										M
413 > 369.0	2.937	2.919	0.018	1.000	34786	0.3488			568	M
413 > 169.0	2.929	2.919	0.010	0.997	21066		1.65(0.90-1.10)		1189	M
D 14 13C4 PFOA										
417 > 372.0	2.937	2.928	0.009		4792178	32.9		65.7	256520	
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.290	3.195	0.096	1.000	47446	0.2350			1368	
499 > 99.0	3.306	3.195	0.112	1.005	11680		4.06(0.90-1.10)		609	
D 17 13C4 PFOS										
503 > 80.0	3.306	3.304	0.002		8212400	56.7		119	302445	
D 19 13C5 PFNA										
468 > 423.0	3.315	3.312	0.003		3937150	30.9		61.7	209549	
20 Perfluorononanoic acid										
463 > 419.0	3.306	3.312	-0.006	1.000	13786	0.1727			328	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Sep-2016 12:52:08 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_023_p1_e1.d

Injection Date: 04-Sep-2016 15:24:00 Instrument ID: A8

Lims ID: 320-21080-A-1-A Lab Sample ID: 320-21080-1

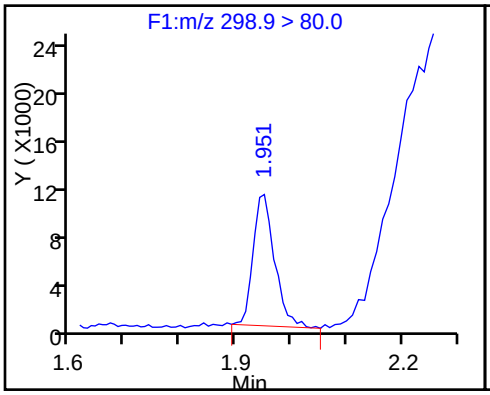
Client ID: PWSB2_0816

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 23

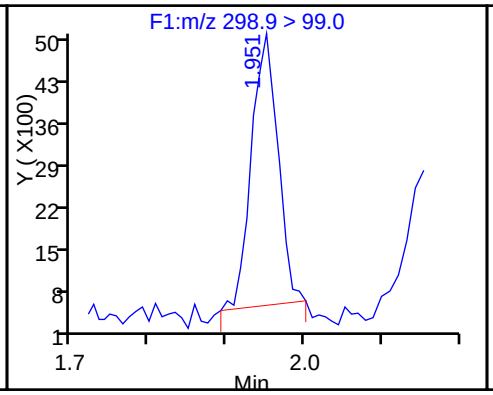
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

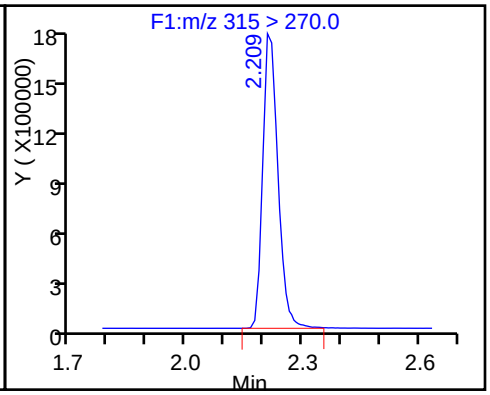
5 Perfluorobutanesulfonic acid



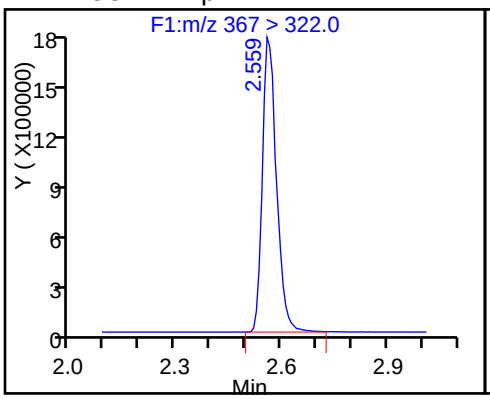
5 Perfluorobutanesulfonic acid



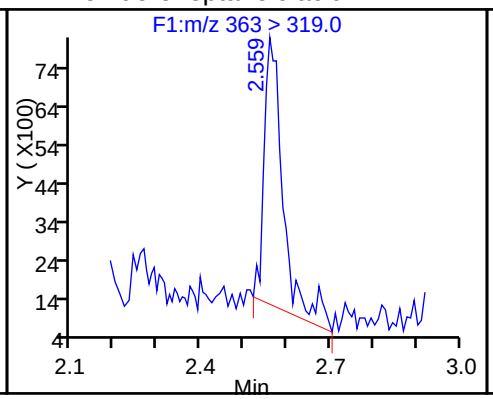
D 6 13C2 PFHxA



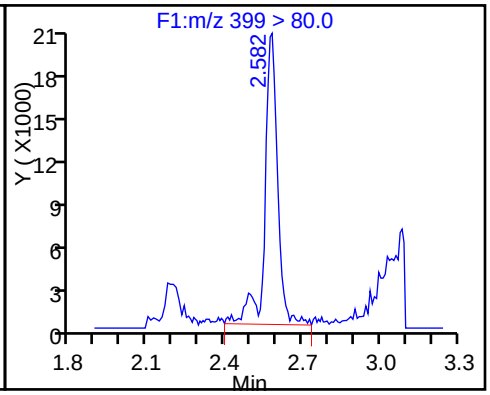
D 11 13C4-PFHpA



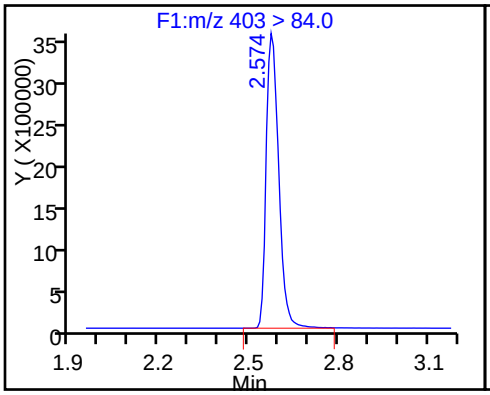
12 Perfluoroheptanoic acid



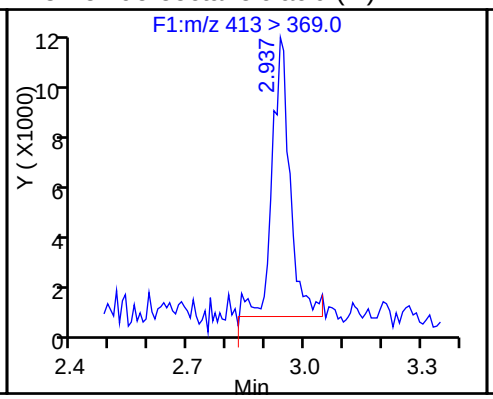
9 Perfluorohexanesulfonic acid



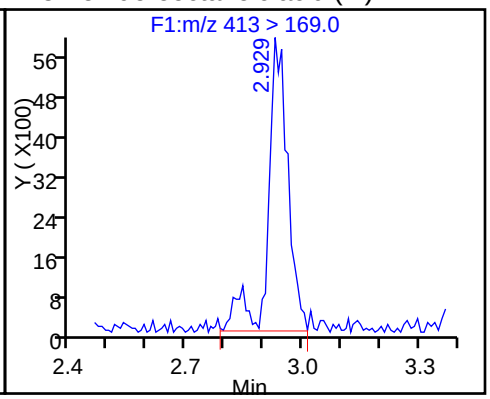
D 10 18O2 PFHxS



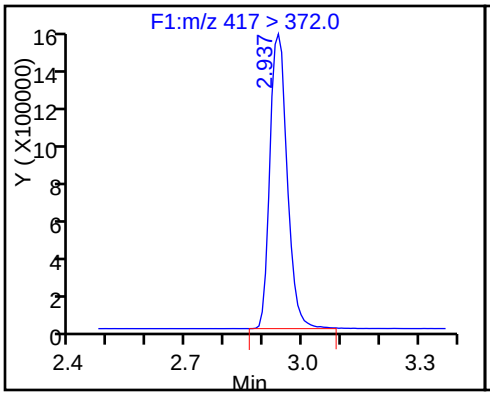
15 Perfluorooctanoic acid (M)



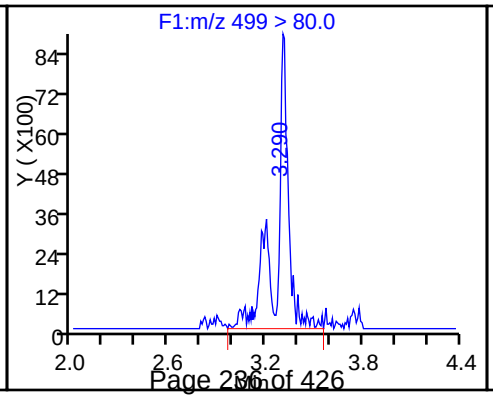
15 Perfluorooctanoic acid (M)



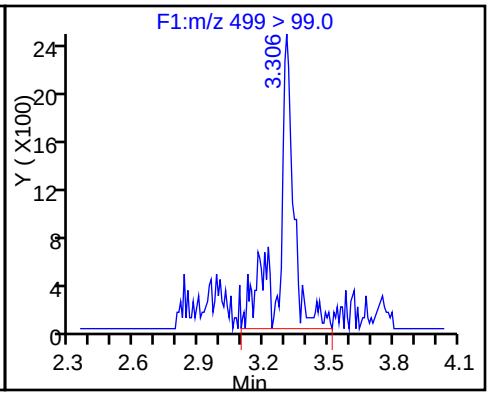
D 14 13C4 PFOA



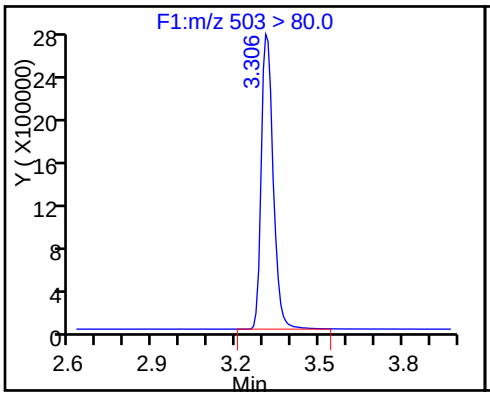
18 Perfluorooctane sulfonic acid



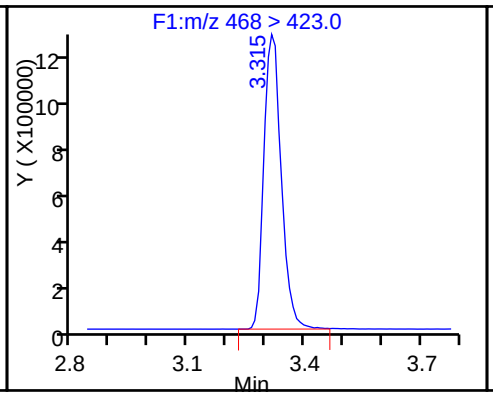
18 Perfluorooctane sulfonic acid



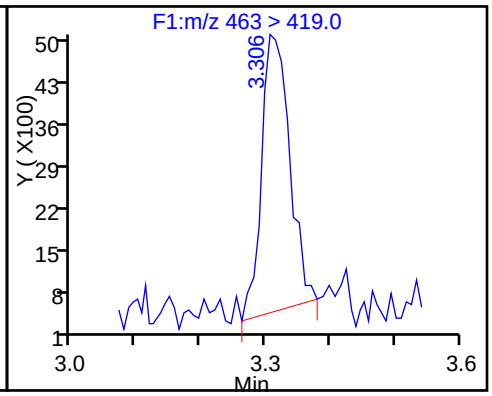
D 17 13C4 PFOS



D 19 13C5 PFNA



20 Perfluorononanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

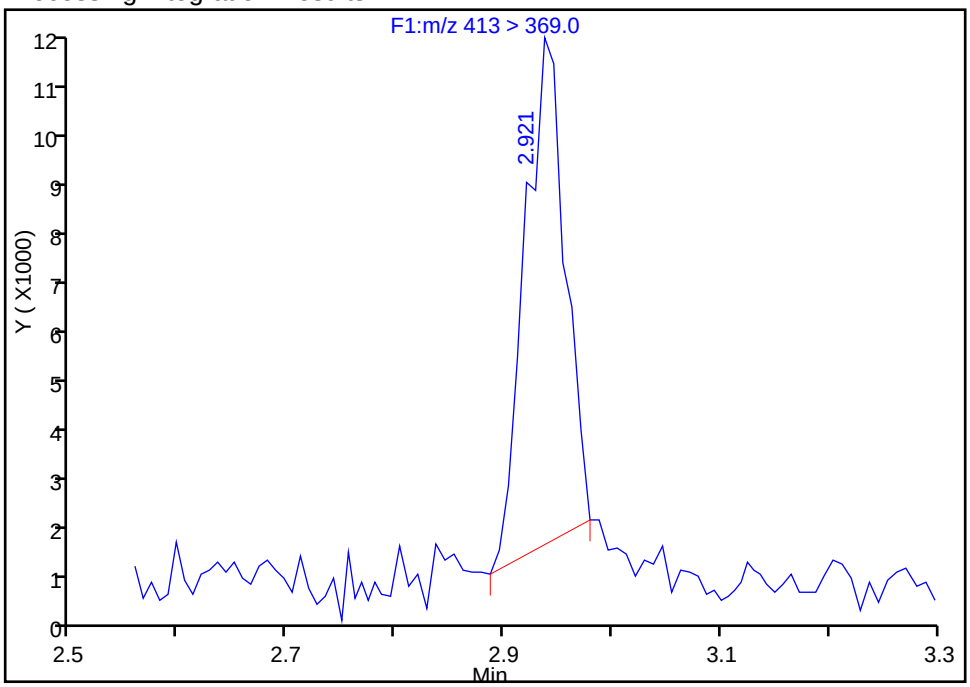
Data File:	\\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_023_p1_e1.d				
Injection Date:	04-Sep-2016 15:24:00	Instrument ID:	A8		
Lims ID:	320-21080-A-1-A	Lab Sample ID:	320-21080-1		
Client ID:	PWSB2_0816				
Operator ID:	A8	ALS Bottle#:	0	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	F1(0.00 :6.60)		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

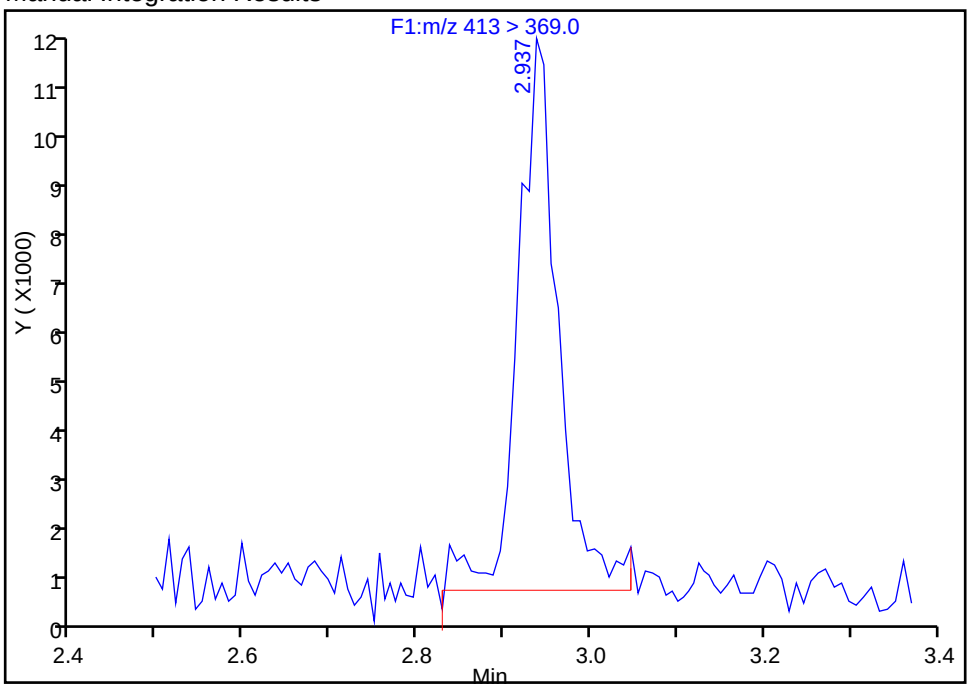
Processing Integration Results

RT: 2.92
Area: 25583
Amount: 0.256550
Amount Units: ng/ml



Manual Integration Results

RT: 2.94
Area: 34786
Amount: 0.348840
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 12:36:29

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

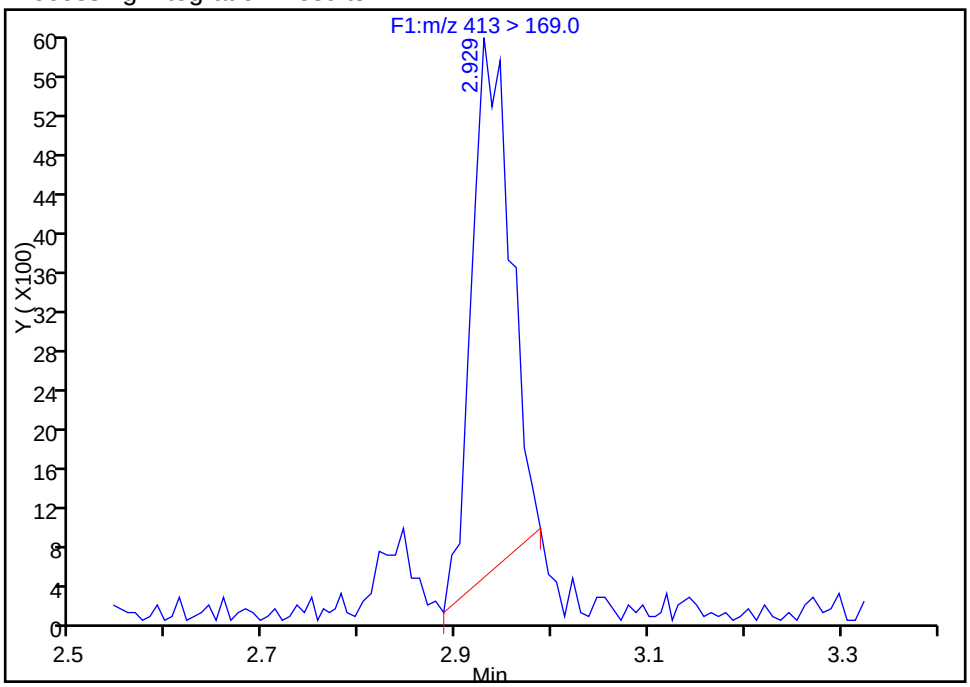
Data File:	\\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_023_p1_e1.d				
Injection Date:	04-Sep-2016 15:24:00	Instrument ID:	A8		
Lims ID:	320-21080-A-1-A	Lab Sample ID:	320-21080-1		
Client ID:	PWSB2_0816				
Operator ID:	A8	ALS Bottle#:	0	Worklist Smp#:	23
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	F1(0.00 :6.60)		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

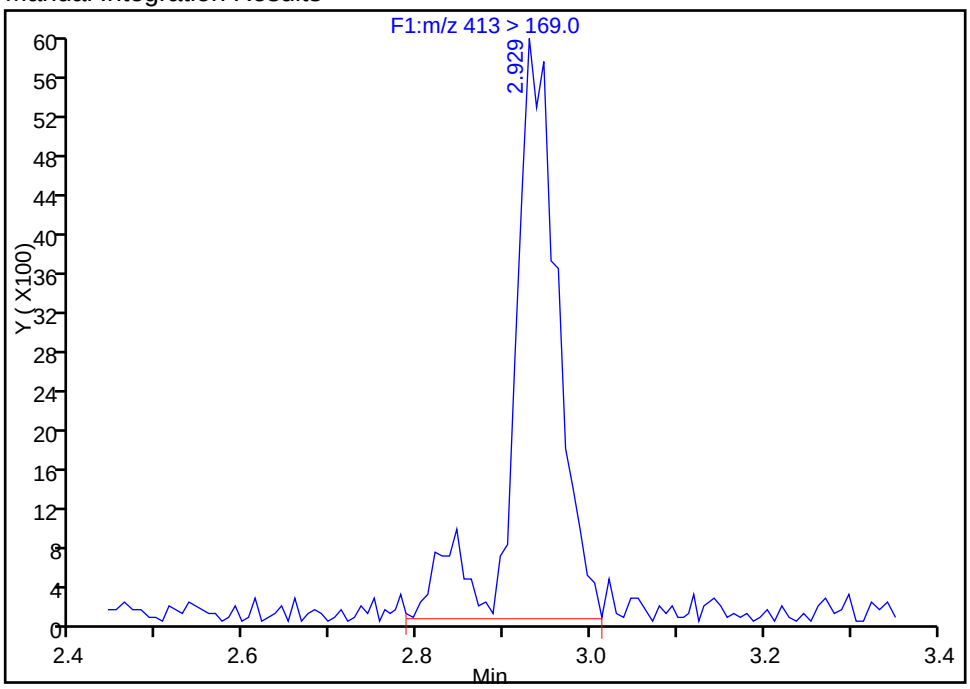
Processing Integration Results

RT: 2.93
Area: 15238
Amount: 0.256550
Amount Units: ng/ml



Manual Integration Results

RT: 2.93
Area: 21066
Amount: 0.348840
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 12:36:29

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-21080-1

SDG No.:

Client Sample ID: POSTTB2_0816 | Lab Sample ID: 320-21080-2

Matrix: Water | Lab File ID: 03SEP2016D_024_p1_e1.d

Analysis Method: 537 (Modified) | Date Collected: 08/18/2016 09:21

Extraction Method: 3535 | Date Extracted: 08/24/2016 14:17

Sample wt/vol: 520.7(mL) | Date Analyzed: 09/04/2016 15:31

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 126120 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	U	2.4	1.9	0.88
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	U	2.4	1.9	0.77
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	U	2.4	1.9	0.84
375-95-1	Perfluorononanoic acid (PFNA)	1.9	U	2.4	1.9	0.63
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	U M	3.8	2.9	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	1.9	U M	2.4	1.9	0.72

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	92		25-150
STL00990	13C4 PFOA	85		25-150
STL00991	13C4 PFOS	121		25-150
STL01892	13C4-PFHpA	95		25-150
STL00995	13C5 PFNA	68		25-150
STL00994	18O2 PFHxS	121		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_024_p1_e1.d
Lims ID: 320-21080-A-2-A
Client ID: POSTTB2_0816
Sample Type: Client
Inject. Date: 04-Sep-2016 15:31:00 ALS Bottle#: 0 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8

Method: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 17-Sep-2016 12:48:40 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 17-Sep-2016 12:37:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.942	1.944	-0.002	1.000	16889	0.0507				
298.9 > 99.0	1.973	1.944	0.029	0.000	0		0.00(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.209	2.213	-0.004		6669392	46.2		92.4	520220	
D 11 13C4-PFHpA										
367 > 322.0	2.559	2.556	0.003		6230393	47.6		95.2	526637	
12 Perfluoroheptanoic acid										
363 > 319.0	2.551	2.556	-0.005	1.000	14896	0.1149			159	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.567	2.571	-0.004	1.000	67931	0.2889				
D 10 18O2 PFHxS										
403 > 84.0	2.574	2.571	0.003		10357322	57.3		121	918081	
15 Perfluorooctanoic acid										M
413 > 369.0	2.938	2.919	0.019	1.000	34450	0.2687			507	M
413 > 169.0	2.921	2.919	0.002	0.994	20653		1.67(0.90-1.10)		896	M
D 14 13C4 PFOA										
417 > 372.0	2.929	2.928	0.001		6162231	42.3		84.5	503389	
18 Perfluorooctane sulfonic acid										M
499 > 80.0	3.195	3.195	0.001	1.000	55594	0.2711			2706	
499 > 99.0	3.304	3.195	0.110	1.034	13662		4.07(0.90-1.10)		717	M
D 17 13C4 PFOS										
503 > 80.0	3.304	3.304	0.0		8341872	57.6		121	262813	
D 19 13C5 PFNA										
468 > 423.0	3.312	3.312	0.0		4309700	33.8		67.6	330327	

QC Flag Legend

Review Flags

M - Manually Integrated

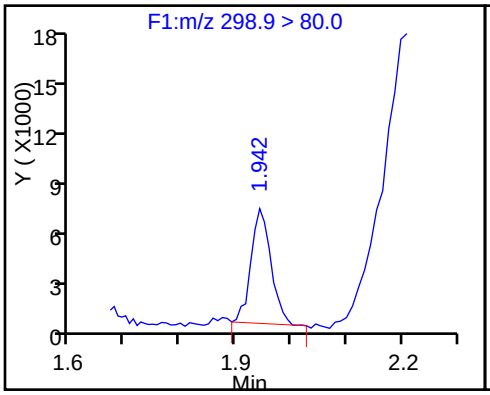
Report Date: 17-Sep-2016 12:52:13 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

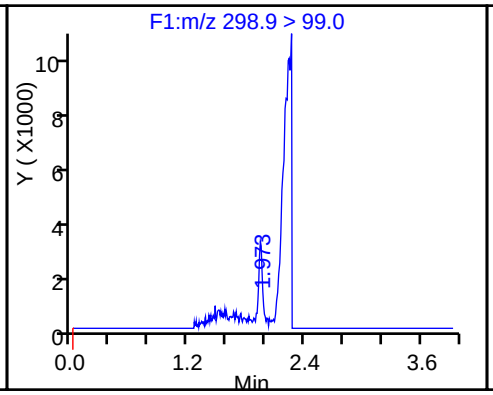
Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_024_p1_e1.d

Injection Date:	04-Sep-2016 15:31:00	Instrument ID:	A8		
Lims ID:	320-21080-A-2-A	Lab Sample ID:	320-21080-2		
Client ID:	POSTTB2_0816				
Operator ID:	A8	ALS Bottle#:	0	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		

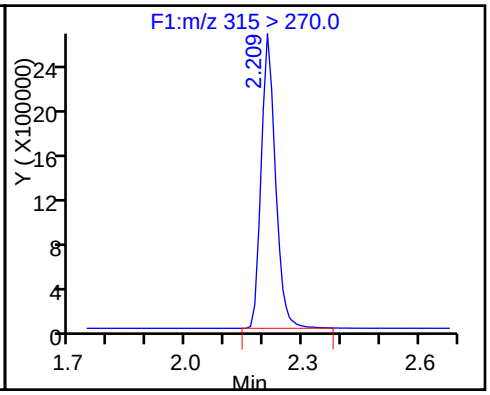
5 Perfluorobutanesulfonic acid



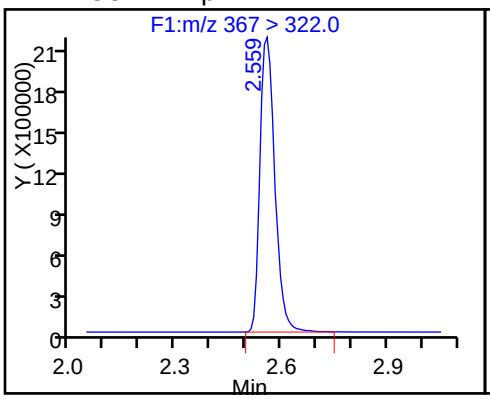
5 Perfluorobutanesulfonic acid



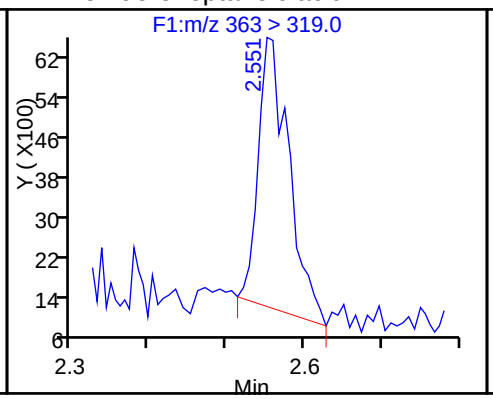
D 6 13C2 PFHxA



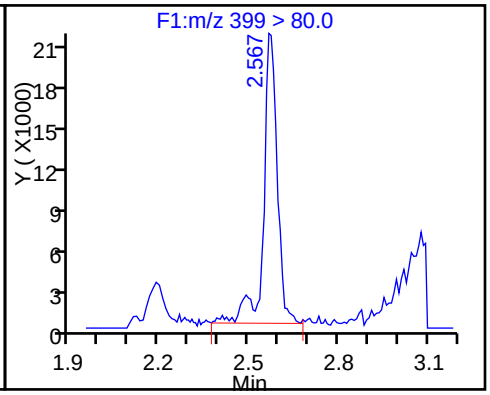
D 11 13C4-PFHpA



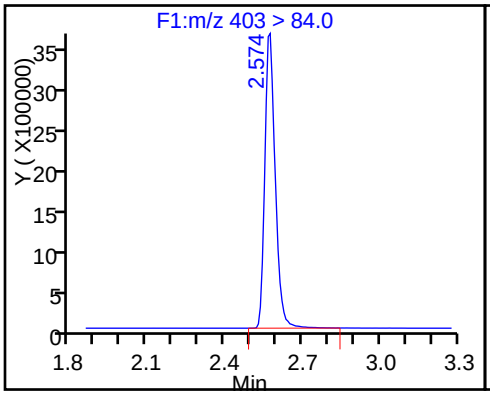
12 Perfluoroheptanoic acid



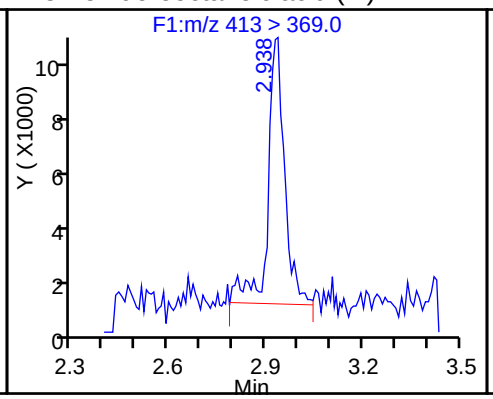
9 Perfluorohexanesulfonic acid



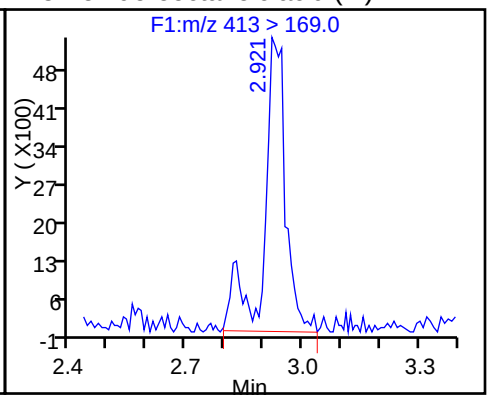
D 10 18O2 PFHxS



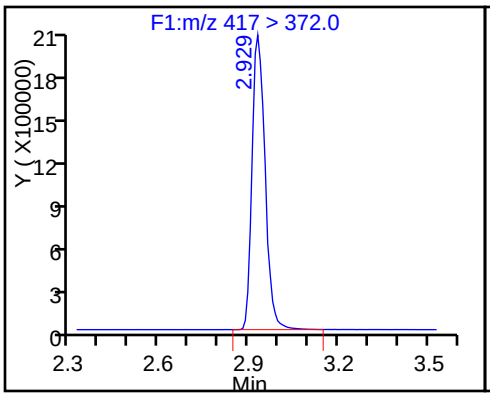
15 Perfluorooctanoic acid (M)



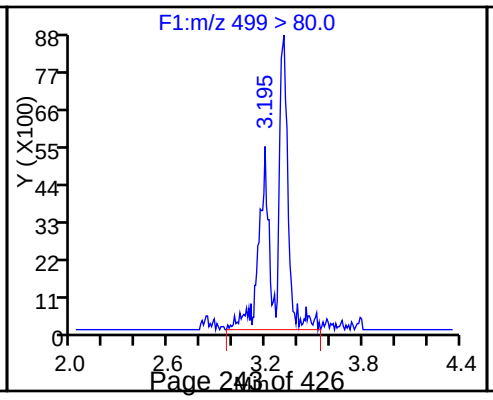
15 Perfluorooctanoic acid (M)



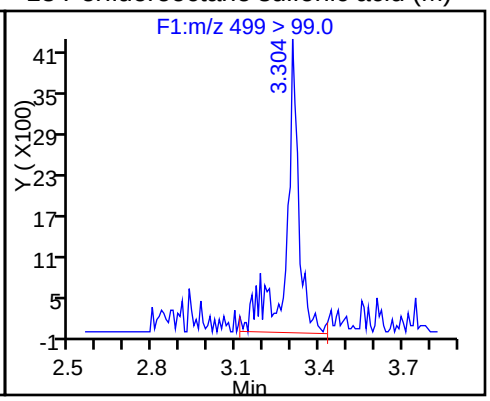
D 14 13C4 PFOA



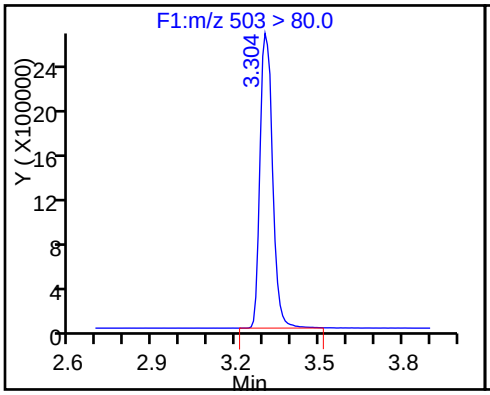
18 Perfluorooctane sulfonic acid



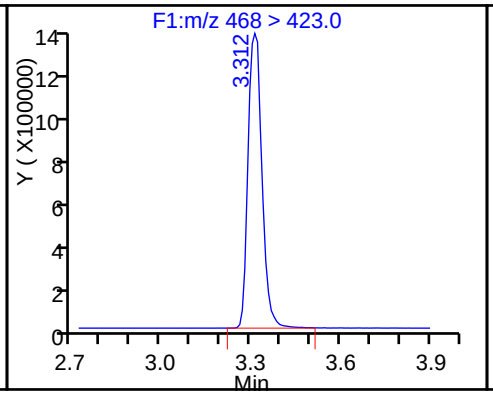
18 Perfluorooctane sulfonic acid (M)



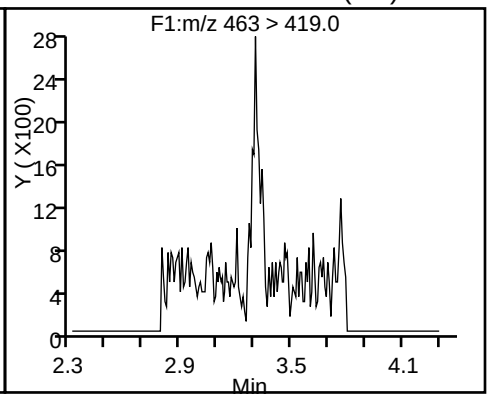
D 17 13C4 PFOS



D 19 13C5 PFNA



20 Perfluorononanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

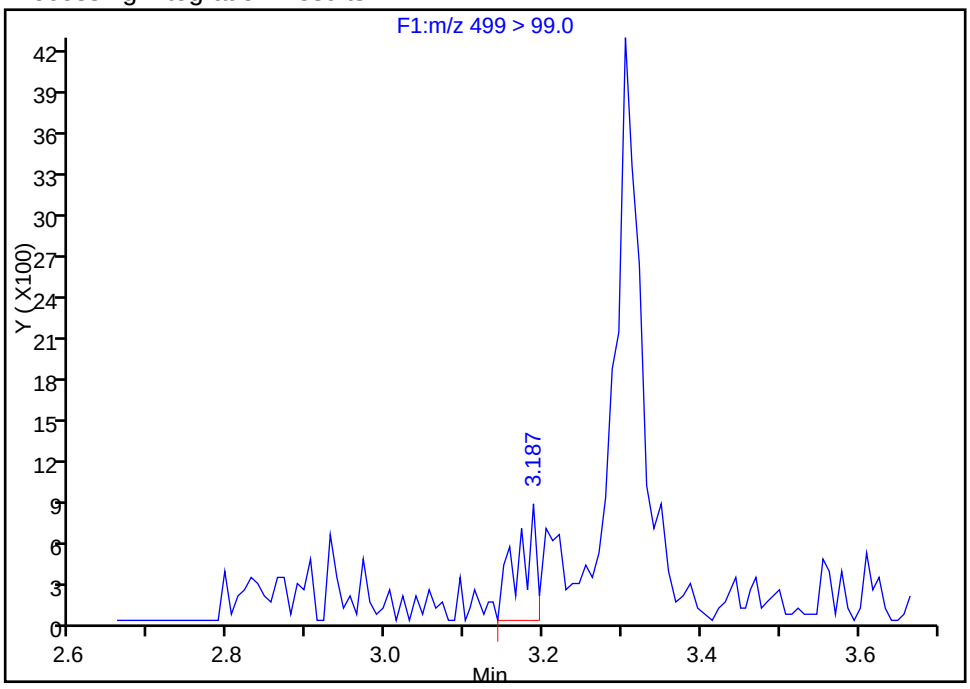
Data File:	\\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_024_p1_e1.d				
Injection Date:	04-Sep-2016 15:31:00	Instrument ID:	A8		
Lims ID:	320-21080-A-2-A	Lab Sample ID:	320-21080-2		
Client ID:	POSTTB2_0816				
Operator ID:	A8	ALS Bottle#:	0	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	F1(0.00 :6.60)		

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

Signal: 2

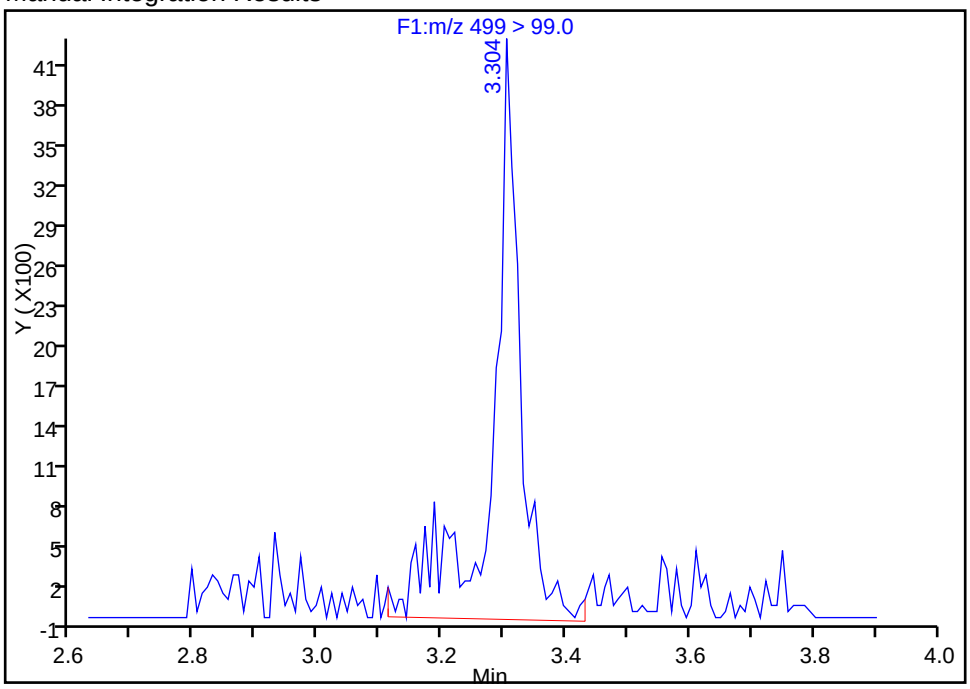
Processing Integration Results

RT: 3.19
Area: 1352
Amount: 0.271071
Amount Units: ng/ml



Manual Integration Results

RT: 3.30
Area: 13662
Amount: 0.271071
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 12:37:52

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

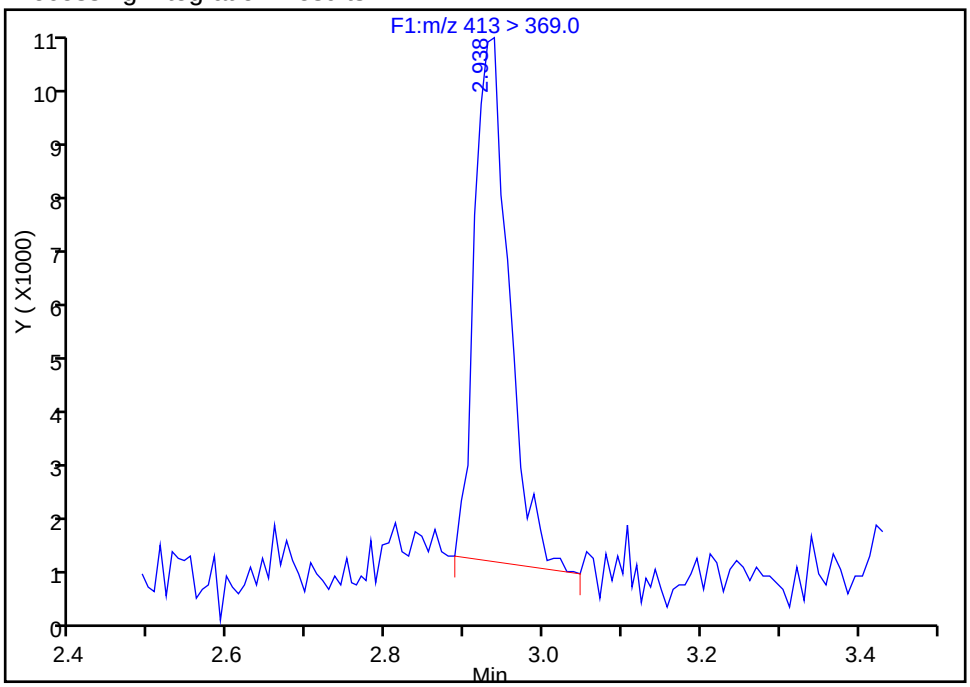
Data File:	\\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_024_p1_e1.d				
Injection Date:	04-Sep-2016 15:31:00	Instrument ID:	A8		
Lims ID:	320-21080-A-2-A	Lab Sample ID:	320-21080-2		
Client ID:	POSTTB2_0816				
Operator ID:	A8	ALS Bottle#:	0	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	F1(0.00 :6.60)		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

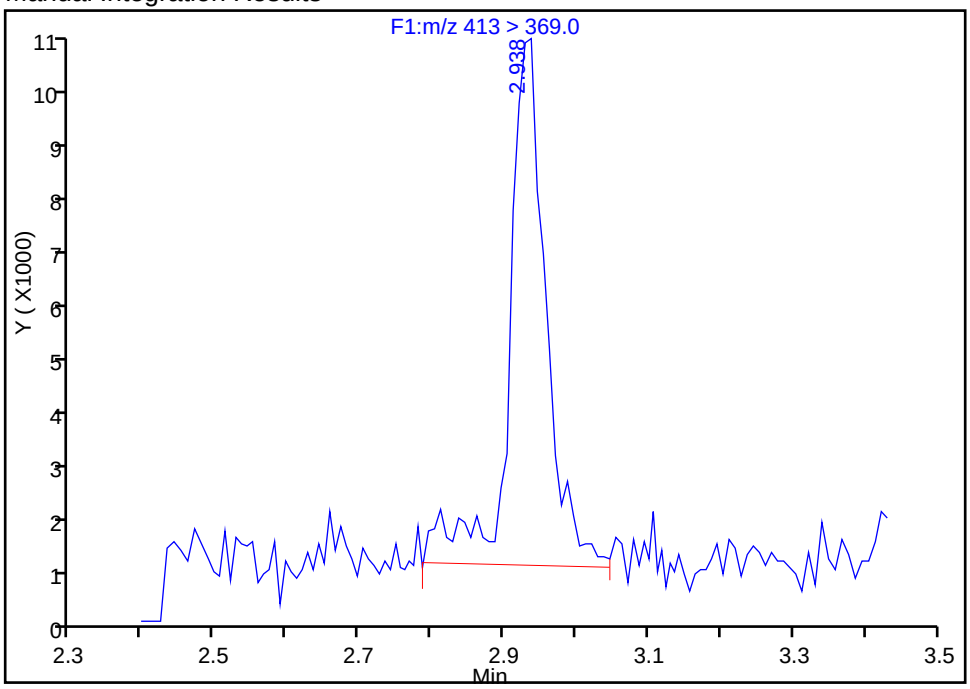
Processing Integration Results

RT: 2.94
Area: 28187
Amount: 0.219819
Amount Units: ng/ml



Manual Integration Results

RT: 2.94
Area: 34450
Amount: 0.268661
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 12:37:52

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

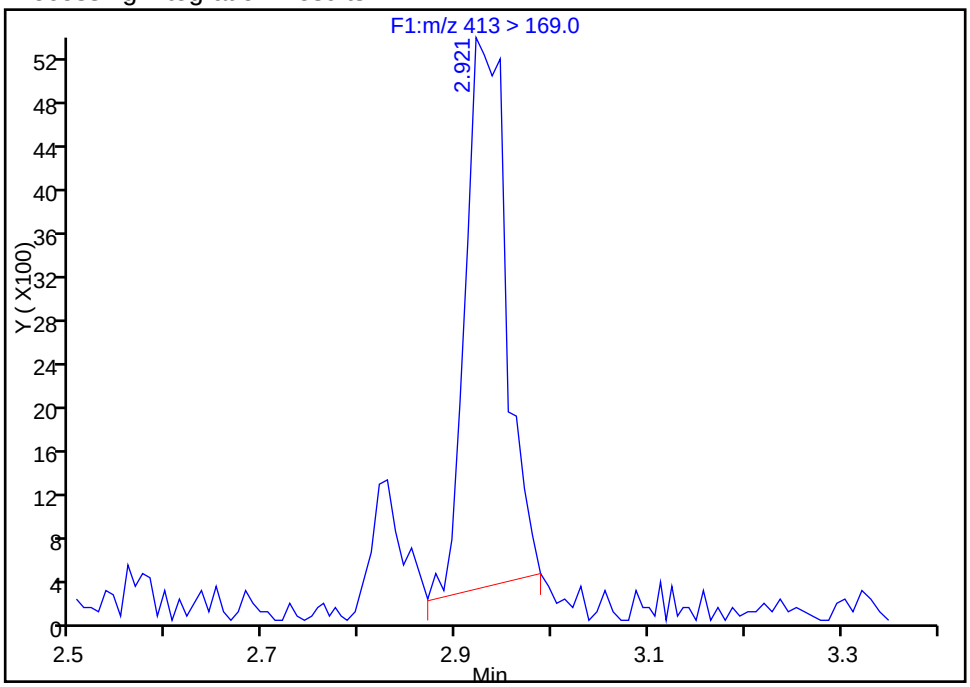
Data File:	\\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_024_p1_e1.d				
Injection Date:	04-Sep-2016 15:31:00	Instrument ID:	A8		
Lims ID:	320-21080-A-2-A	Lab Sample ID:	320-21080-2		
Client ID:	POSTTB2_0816				
Operator ID:	A8	ALS Bottle#:	0	Worklist Smp#:	24
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	F1(0.00 :6.60)		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

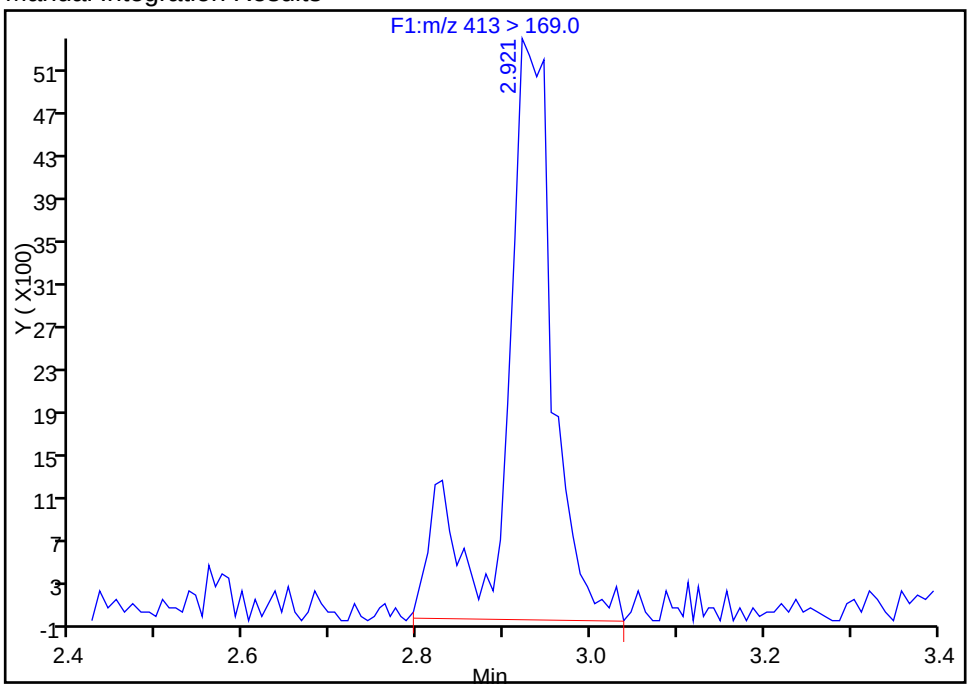
Processing Integration Results

RT: 2.92
Area: 14901
Amount: 0.219819
Amount Units: ng/ml



Manual Integration Results

RT: 2.92
Area: 20653
Amount: 0.268661
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 12:37:52

Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-21080-1

SDG No.:

Client Sample ID: PWSF1_0816 | Lab Sample ID: 320-21080-3

Matrix: Water | Lab File ID: 03SEP2016D_025_p1_e1.d

Analysis Method: 537 (Modified) | Date Collected: 08/18/2016 10:11

Extraction Method: 3535 | Date Extracted: 08/24/2016 14:17

Sample wt/vol: 510.8(mL) | Date Analyzed: 09/04/2016 15:39

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 126120 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.4	2.0	0.90
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.4	2.0	0.79
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.4	2.0	0.85
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.4	2.0	0.64
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	U M	3.9	2.9	1.2
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U M	2.4	2.0	0.73

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	94		25-150
STL00990	13C4 PFOA	97		25-150
STL00991	13C4 PFOS	115		25-150
STL01892	13C4-PFHpA	103		25-150
STL00995	13C5 PFNA	91		25-150
STL00994	18O2 PFHxS	116		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_025_p1_e1.d
Lims ID: 320-21080-A-3-A
Client ID: PWSF1_0816
Sample Type: Client
Inject. Date: 04-Sep-2016 15:39:00 ALS Bottle#: 0 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8

Method: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 17-Sep-2016 12:48:40 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 17-Sep-2016 12:39:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.950	1.944	0.006	1.000	10208	0.0320				
298.9 > 99.0	1.973	1.944	0.029	0.000	0		0.00(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.219	2.213	0.006		6779304	47.0		93.9	607642	
D 11 13C4-PFHpA										
367 > 322.0	2.559	2.556	0.003		6761154	51.7		103	478647	
12 Perfluoroheptanoic acid										
363 > 319.0	2.567	2.556	0.011	1.000	12789	0.0909			112	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.582	2.571	0.011	1.000	54232	0.2412				
D 10 18O2 PFHxS										
403 > 84.0	2.574	2.571	0.003		9904756	54.8		116	840382	
15 Perfluorooctanoic acid										M
413 > 369.0	2.937	2.919	0.018	1.000	31816	0.2166			550	M
413 > 169.0	2.937	2.919	0.018	1.000	15759		2.02(0.90-1.10)		636	M
D 14 13C4 PFOA										
417 > 372.0	2.937	2.928	0.009		7060297	48.4		96.8	390927	
18 Perfluorooctane sulfonic acid										M
499 > 80.0	3.314	3.195	0.120	1.000	19131	0.0982			973	M
499 > 99.0	3.332	3.195	0.138	1.006	5865		3.26(0.90-1.10)		304	M
D 17 13C4 PFOS										
503 > 80.0	3.305	3.304	0.001		7927717	54.8		115	296819	
D 19 13C5 PFNA										
468 > 423.0	3.314	3.312	0.002		5782301	45.3		90.7	271798	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Sep-2016 12:52:19 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_025_p1_e1.d

Injection Date: 04-Sep-2016 15:39:00 Instrument ID: A8

Lims ID: 320-21080-A-3-A Lab Sample ID: 320-21080-3

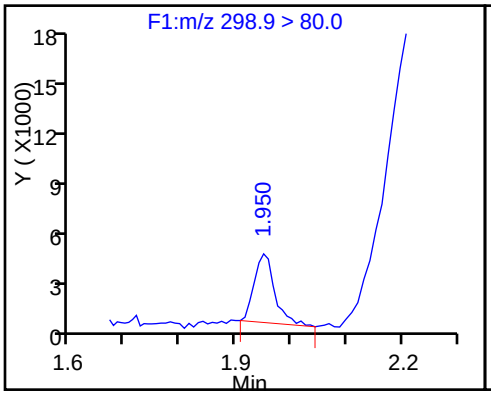
Client ID: PWSF1_0816

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 25

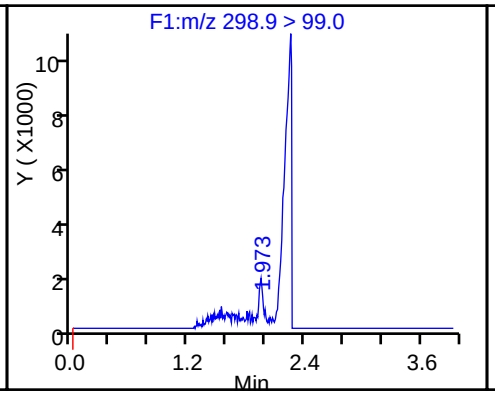
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

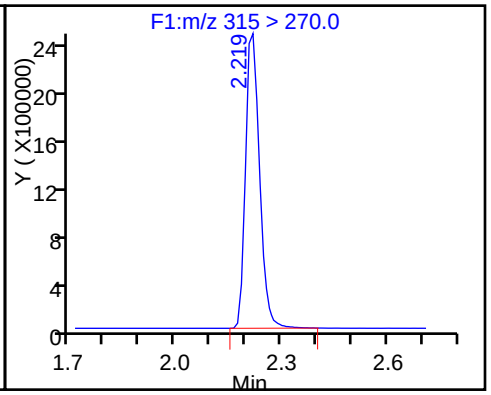
5 Perfluorobutanesulfonic acid



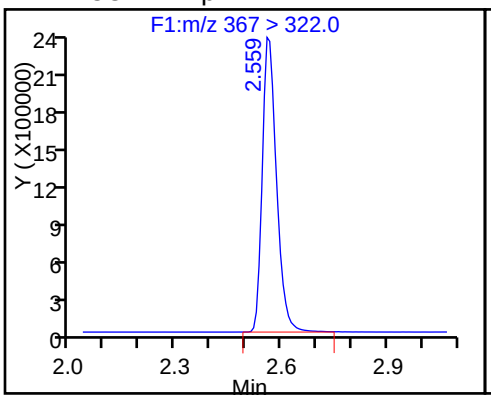
5 Perfluorobutanesulfonic acid



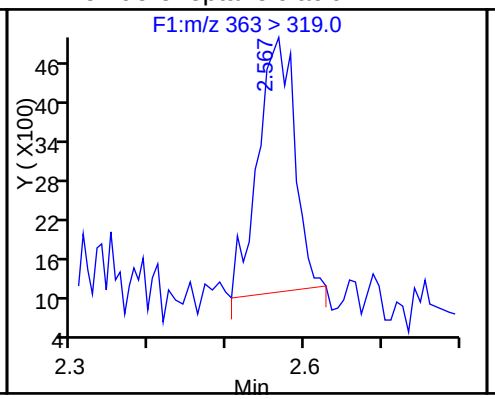
D 6 13C2 PFHxA



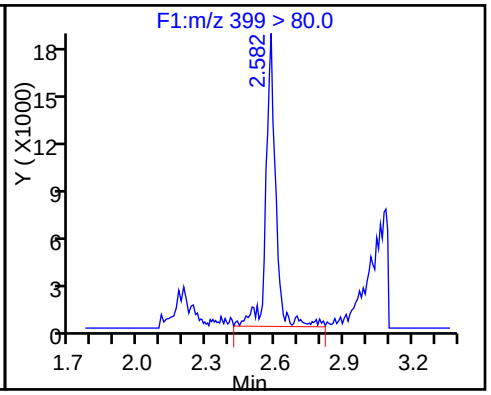
D 11 13C4-PFHpA



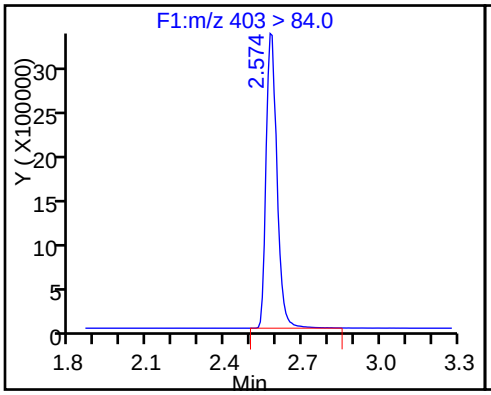
12 Perfluoroheptanoic acid



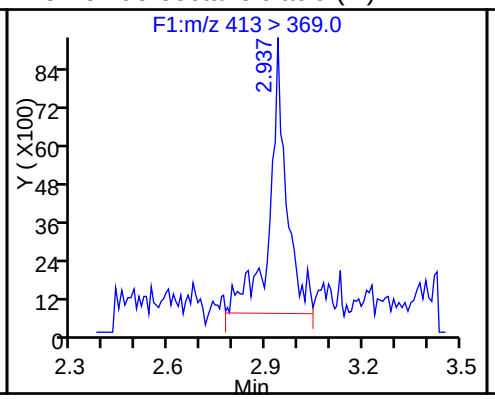
9 Perfluorohexanesulfonic acid



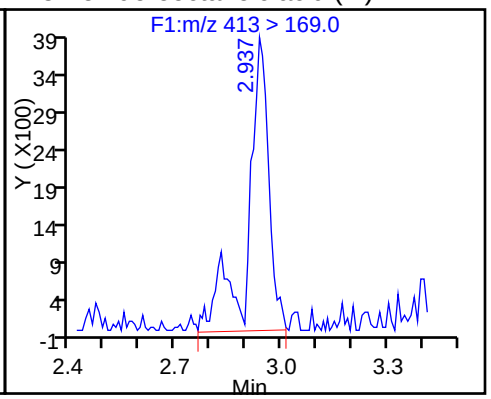
D 10 18O2 PFHxS



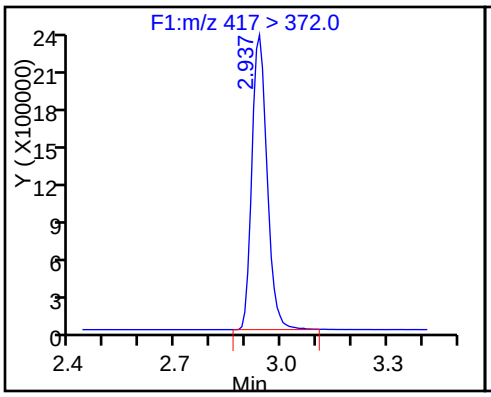
15 Perfluorooctanoic acid (M)



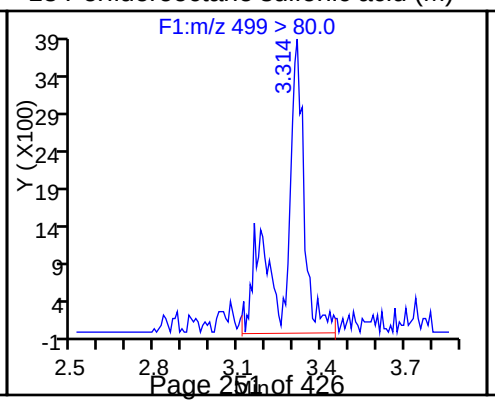
15 Perfluorooctanoic acid (M)



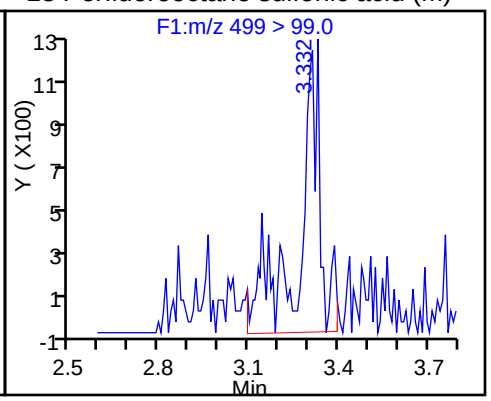
D 14 13C4 PFOA



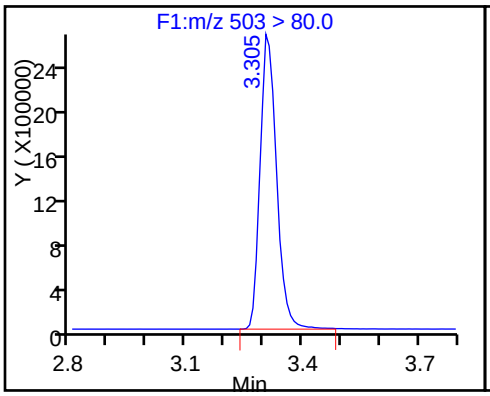
18 Perfluorooctane sulfonic acid (M)



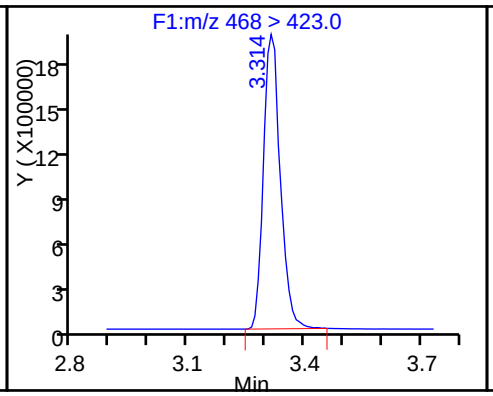
18 Perfluorooctane sulfonic acid (M)



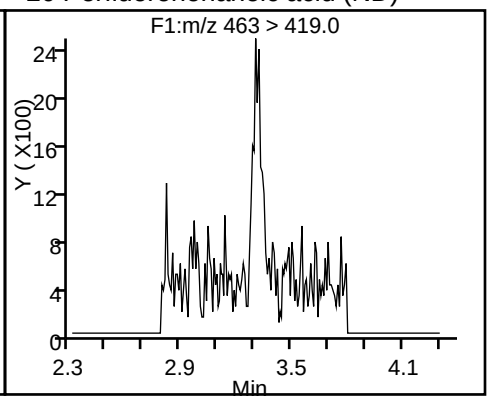
D 17 13C4 PFOS



D 19 13C5 PFNA



20 Perfluorononanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

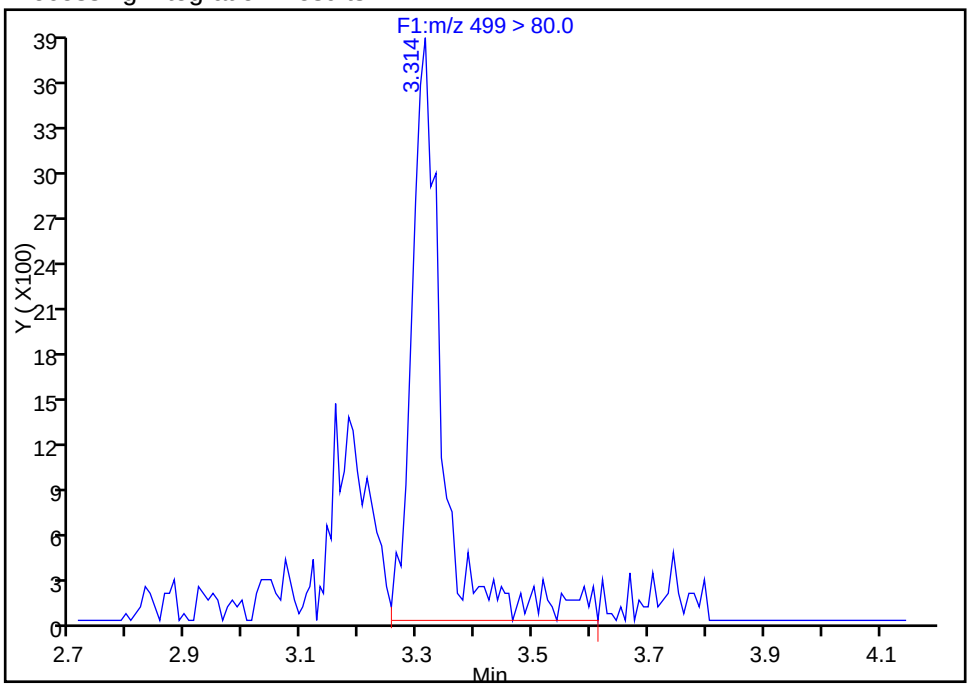
Data File:	\\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_025_p1_e1.d				
Injection Date:	04-Sep-2016 15:39:00	Instrument ID:	A8		
Lims ID:	320-21080-A-3-A	Lab Sample ID:	320-21080-3		
Client ID:	PWSF1_0816				
Operator ID:	A8	ALS Bottle#:	0	Worklist Smp#:	25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	F1(0.00 :6.60)		

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

Signal: 1

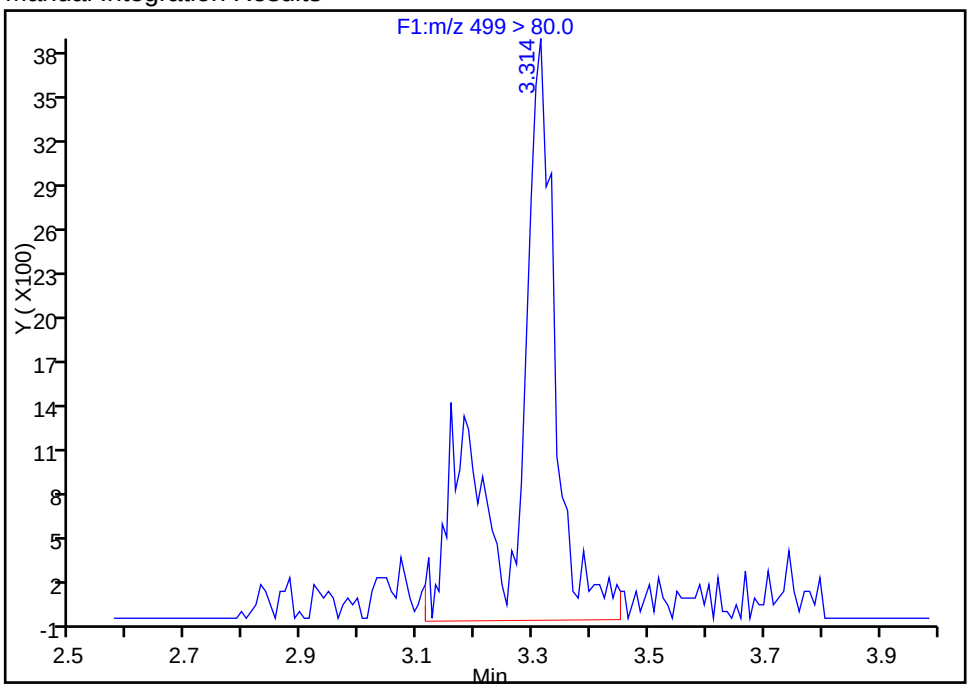
Processing Integration Results

RT: 3.31
Area: 14188
Amount: 0.072793
Amount Units: ng/ml



Manual Integration Results

RT: 3.31
Area: 19131
Amount: 0.098154
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 12:39:36

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

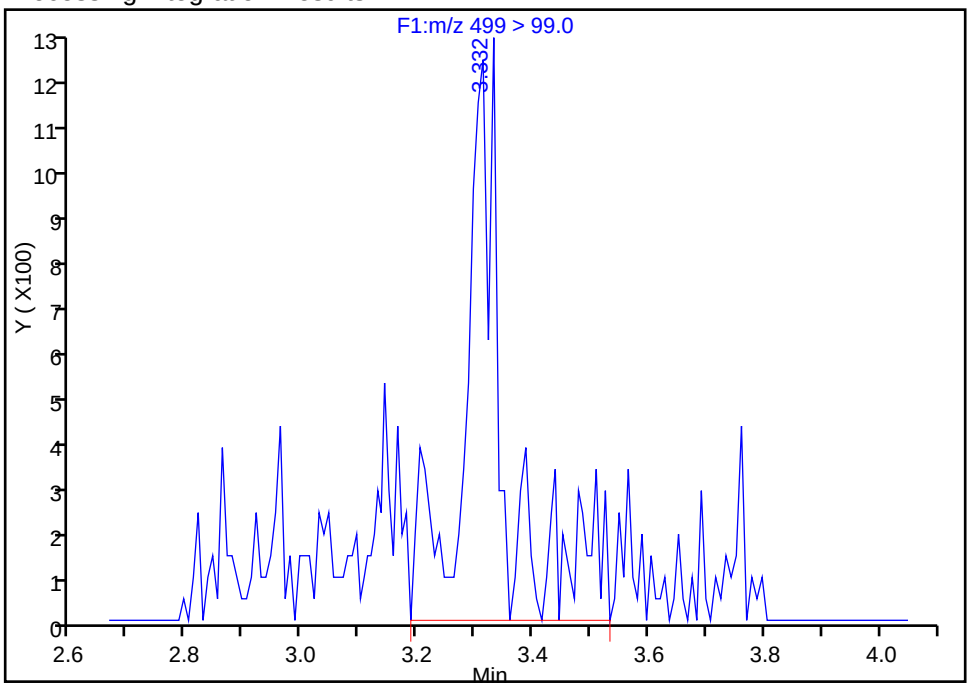
Data File:	\\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_025_p1_e1.d				
Injection Date:	04-Sep-2016 15:39:00	Instrument ID:	A8		
Lims ID:	320-21080-A-3-A	Lab Sample ID:	320-21080-3		
Client ID:	PWSF1_0816				
Operator ID:	A8	ALS Bottle#:	0	Worklist Smp#:	25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	F1(0.00 :6.60)		

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

Signal: 2

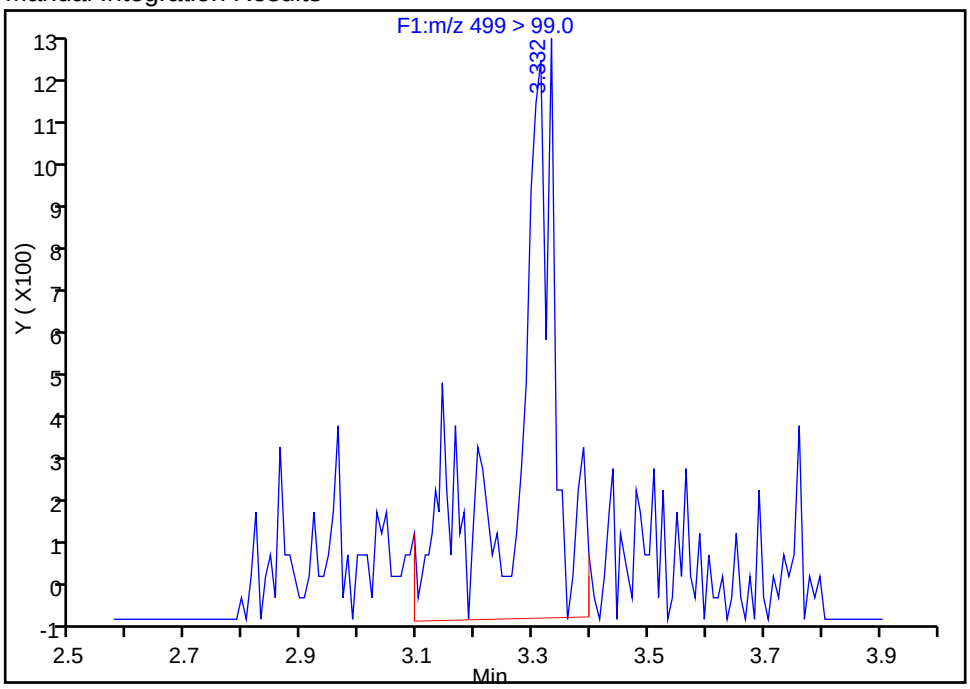
Processing Integration Results

RT: 3.33
Area: 5855
Amount: 0.072793
Amount Units: ng/ml



Manual Integration Results

RT: 3.33
Area: 5865
Amount: 0.098154
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 12:39:36

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

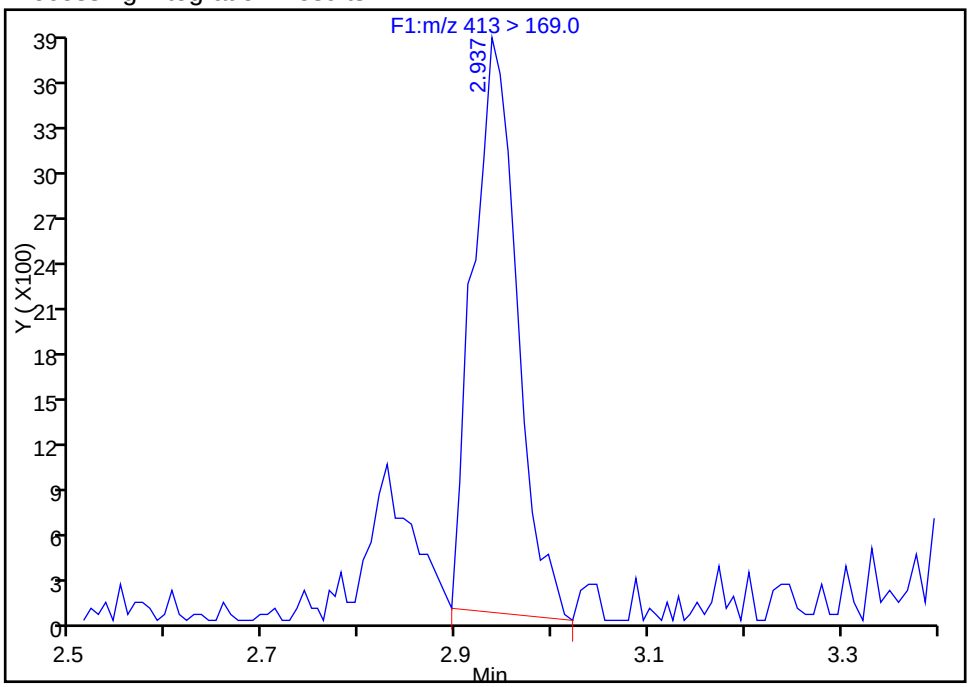
Data File:	\\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_025_p1_e1.d				
Injection Date:	04-Sep-2016 15:39:00	Instrument ID:	A8		
Lims ID:	320-21080-A-3-A	Lab Sample ID:	320-21080-3		
Client ID:	PWSF1_0816				
Operator ID:	A8	ALS Bottle#:	0	Worklist Smp#:	25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	F1(0.00 :6.60)		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 2

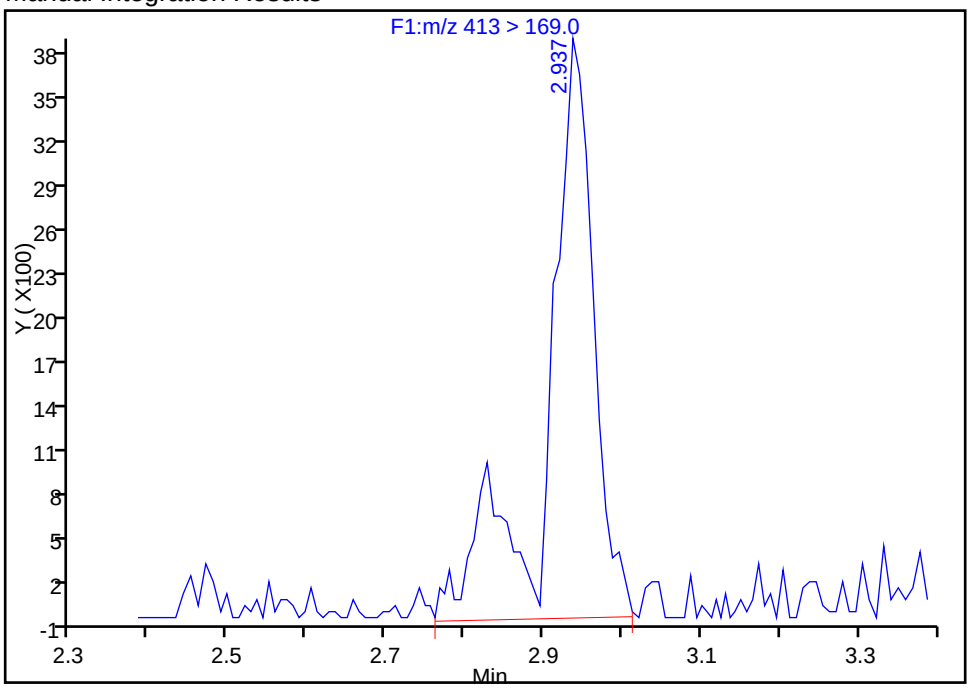
Processing Integration Results

RT: 2.94
Area: 11901
Amount: 0.144178
Amount Units: ng/ml



Manual Integration Results

RT: 2.94
Area: 15759
Amount: 0.216559
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 12:39:36

Audit Action: Manually Integrated Audit Reason: Isomers

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

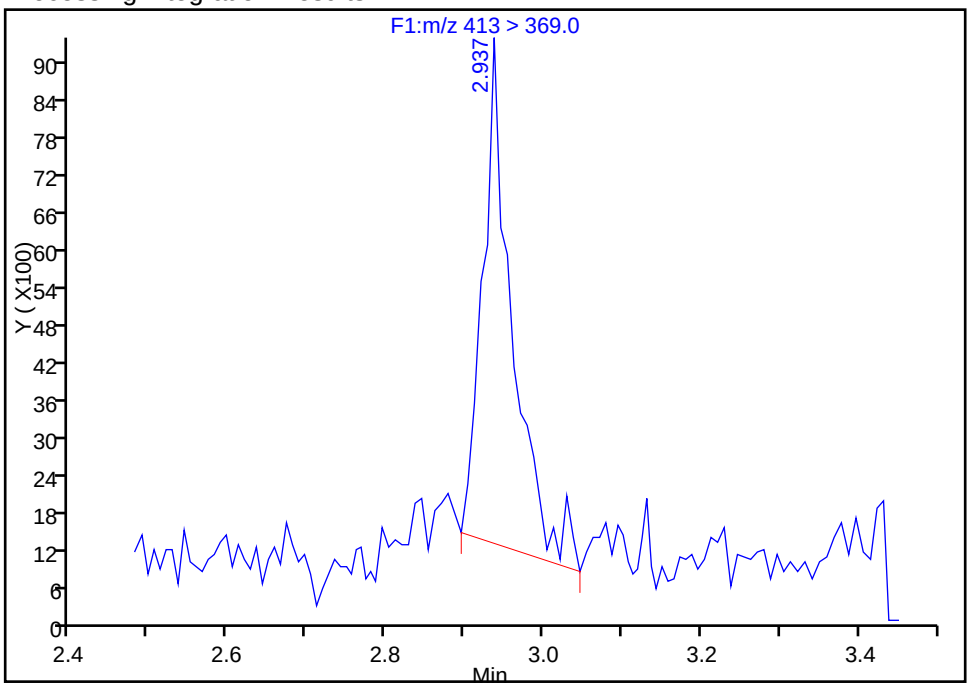
Data File:	\\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_025_p1_e1.d				
Injection Date:	04-Sep-2016 15:39:00	Instrument ID:	A8		
Lims ID:	320-21080-A-3-A	Lab Sample ID:	320-21080-3		
Client ID:	PWSF1_0816				
Operator ID:	A8	ALS Bottle#:	0	Worklist Smp#:	25
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	F1(0.00 :6.60)		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

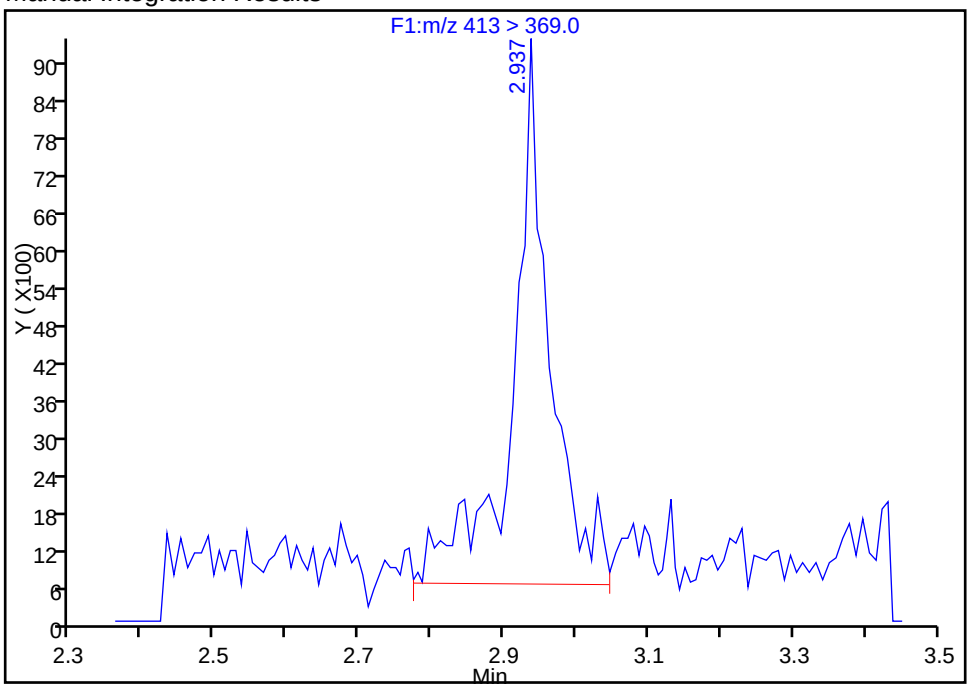
Processing Integration Results

RT: 2.94
Area: 21182
Amount: 0.144178
Amount Units: ng/ml



Manual Integration Results

RT: 2.94
Area: 31816
Amount: 0.216559
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 12:39:36
Audit Action: Manually Integrated Audit Reason: Isomers

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-21080-1

SDG No.:

Client Sample ID: POSTTF1_0816 | Lab Sample ID: 320-21080-4

Matrix: Water | Lab File ID: 03SEP2016D_026_p1_e1.d

Analysis Method: 537 (Modified) | Date Collected: 08/18/2016 10:41

Extraction Method: 3535 | Date Extracted: 08/24/2016 14:17

Sample wt/vol: 505.8(mL) | Date Analyzed: 09/04/2016 15:46

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 126120 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.91
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.79
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.86
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U M	4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.74

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	90		25-150
STL00990	13C4 PFOA	88		25-150
STL00991	13C4 PFOS	114		25-150
STL01892	13C4-PFHpA	98		25-150
STL00995	13C5 PFNA	88		25-150
STL00994	18O2 PFHxS	118		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_026_p1_e1.d
Lims ID: 320-21080-A-4-A
Client ID: POSTTF1_0816
Sample Type: Client
Inject. Date: 04-Sep-2016 15:46:00 ALS Bottle#: 0 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8

Method: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 17-Sep-2016 13:04:34 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 17-Sep-2016 12:42:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.950	1.944	0.006	1.000	9848	0.0304				
298.9 > 99.0	1.973	1.944	0.029	0.000	0		0.00(0.00-0.00)			
D 6 13C2 PFHxA										
315 > 270.0	2.219	2.213	0.006		6471712	44.8		89.7	570891	
D 11 13C4-PFHpA										
367 > 322.0	2.559	2.556	0.003		6429274	49.1		98.3	562334	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.582	2.571	0.011	1.000	53287	0.2329				
D 10 18O2 PFHxS										
403 > 84.0	2.582	2.571	0.011		10075497	55.8		118	389382	
15 Perfluorooctanoic acid										
413 > 369.0	2.923	2.919	0.004	1.000	16987	0.1267			265	
413 > 169.0	2.948	2.919	0.029	1.009	12197		1.39(0.90-1.10)		979	
D 14 13C4 PFOA										
417 > 372.0	2.940	2.928	0.012		6441904	44.2		88.4	538657	
18 Perfluorooctane sulfonic acid										M
499 > 80.0	3.309	3.195	0.115	1.000	21929	0.1126			1646	M
D 17 13C4 PFOS										
503 > 80.0	3.318	3.304	0.014		7917917	54.7		114	431558	
D 19 13C5 PFNA										
468 > 423.0	3.318	3.312	0.006		5617590	44.1		88.1	190839	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Sep-2016 13:04:59 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_026_p1_e1.d

Injection Date: 04-Sep-2016 15:46:00 Instrument ID: A8

Lims ID: 320-21080-A-4-A Lab Sample ID: 320-21080-4

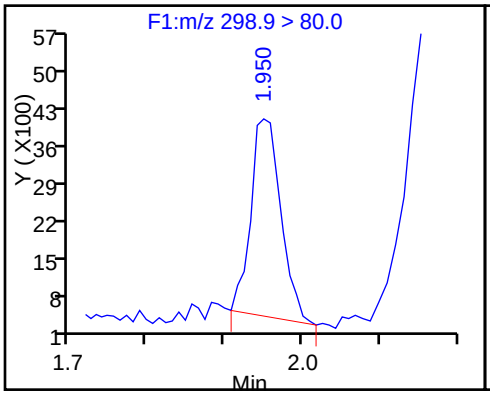
Client ID: POSTTF1_0816

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 26

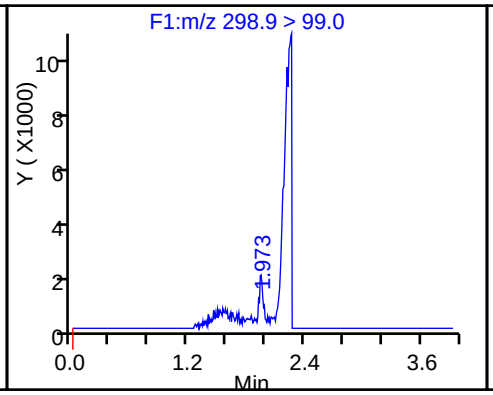
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

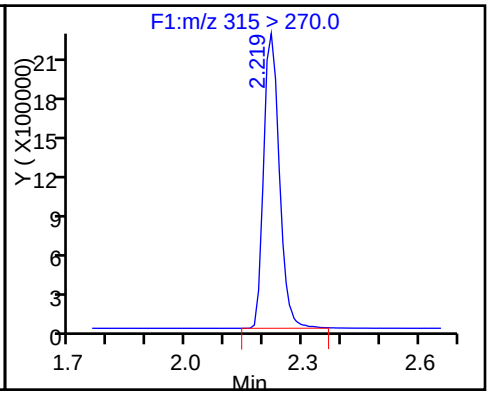
5 Perfluorobutanesulfonic acid



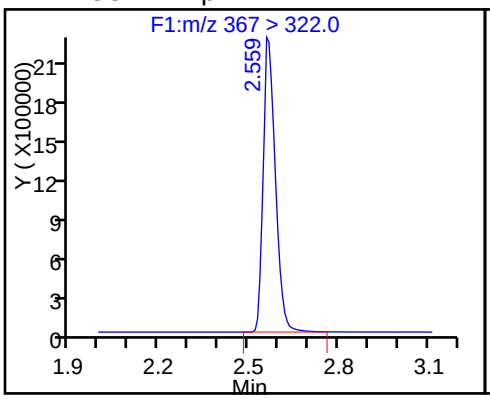
5 Perfluorobutanesulfonic acid



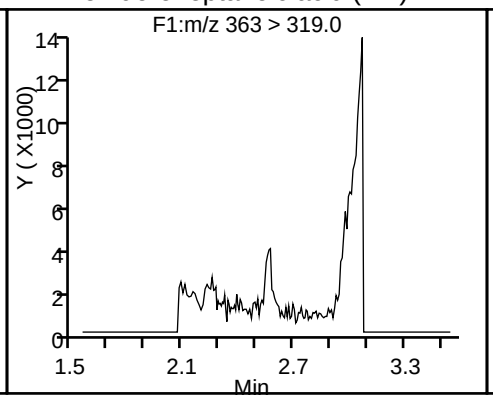
D 6 13C2 PFHxA



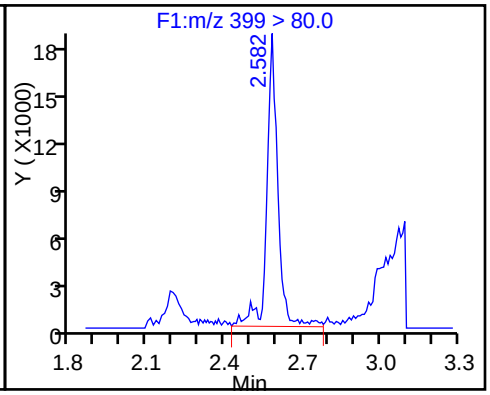
D 11 13C4-PFHpA



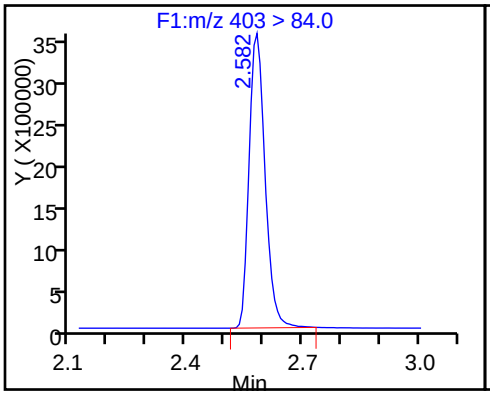
12 Perfluoroheptanoic acid (ND)



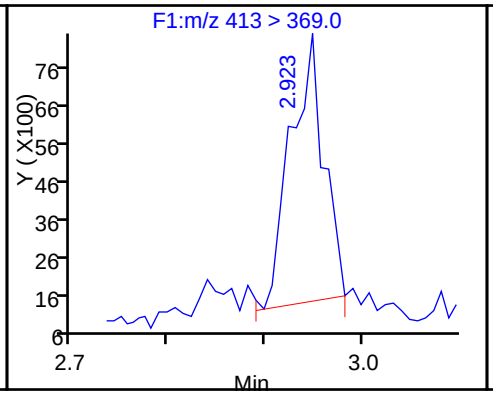
9 Perfluorohexanesulfonic acid



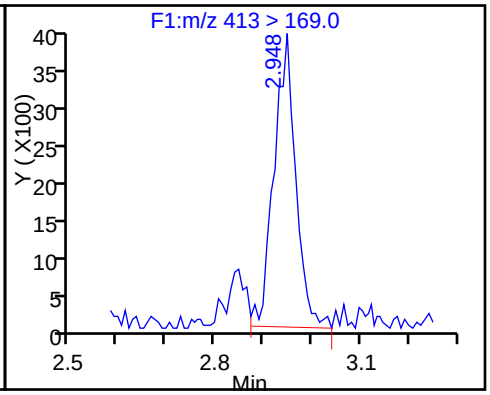
D 10 18O2 PFHxS



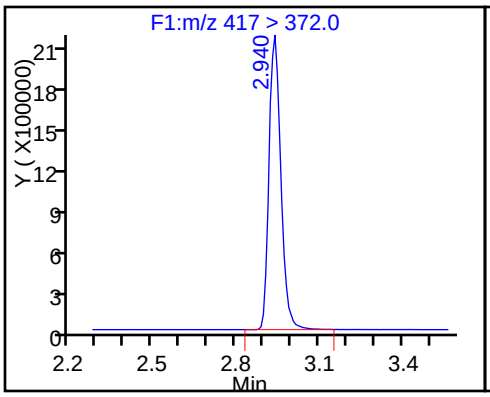
15 Perfluorooctanoic acid



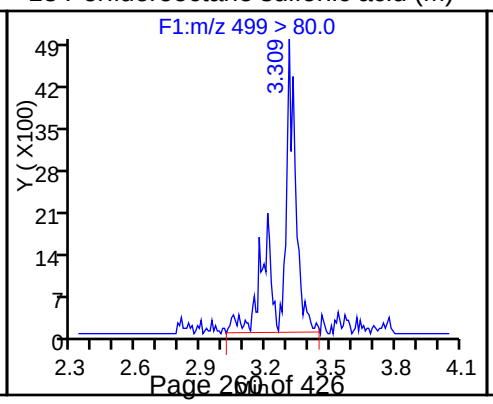
15 Perfluorooctanoic acid



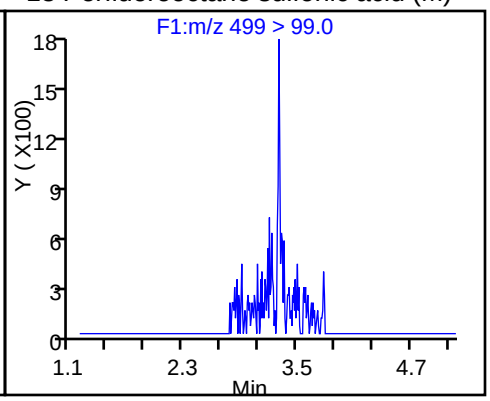
D 14 13C4 PFOA



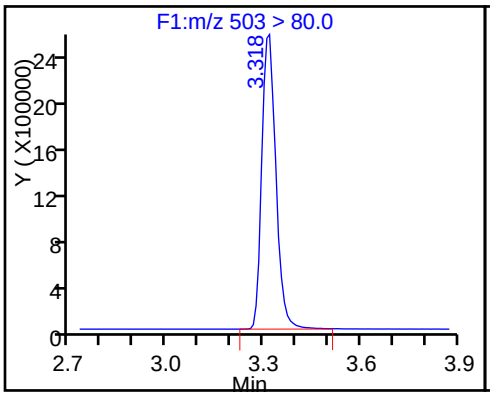
18 Perfluorooctane sulfonic acid (M)



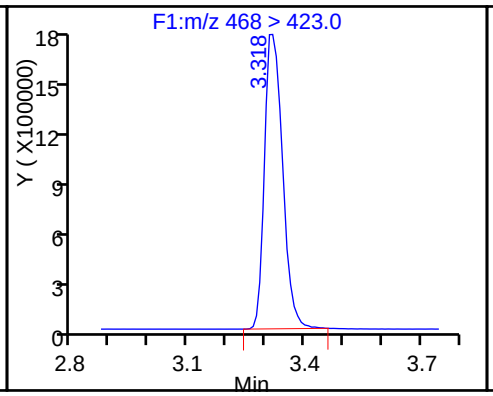
18 Perfluorooctane sulfonic acid (M)



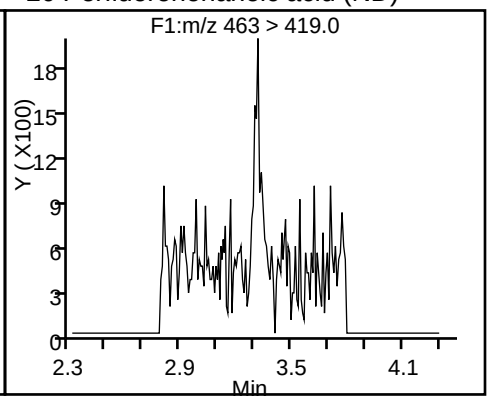
D 17 13C4 PFOS



D 19 13C5 PFNA



20 Perfluorononanoic acid (ND)



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

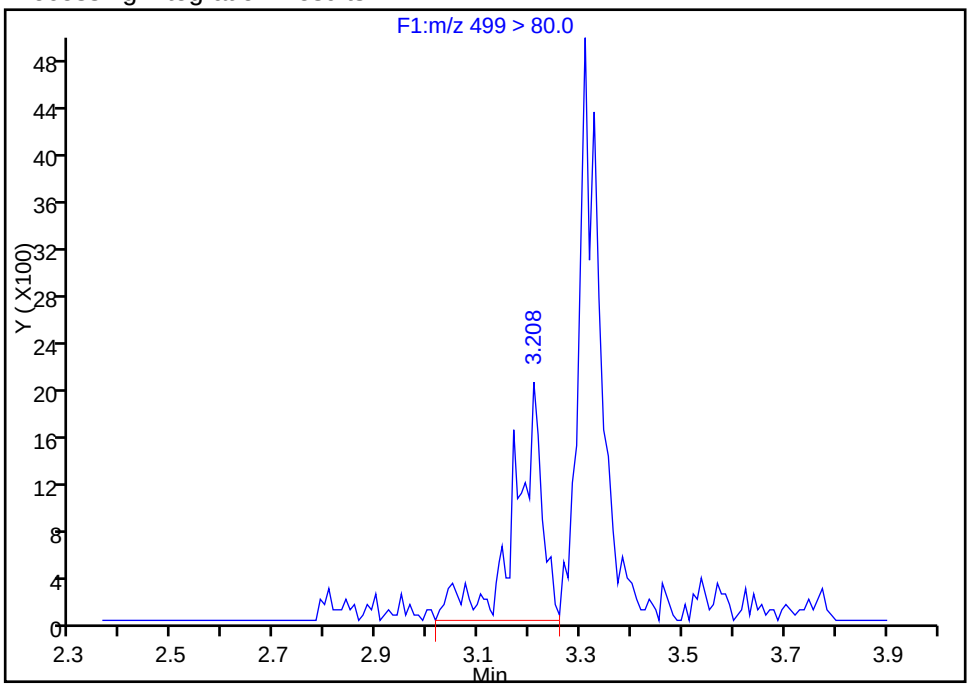
Data File:	\\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_026_p1_e1.d				
Injection Date:	04-Sep-2016 15:46:00	Instrument ID:	A8		
Lims ID:	320-21080-A-4-A	Lab Sample ID:	320-21080-4		
Client ID:	POSTTF1_0816				
Operator ID:	A8	ALS Bottle#:	0	Worklist Smp#:	26
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	PFC_A8_Full	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	F1(0.00 :6.60)		

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

Signal: 1

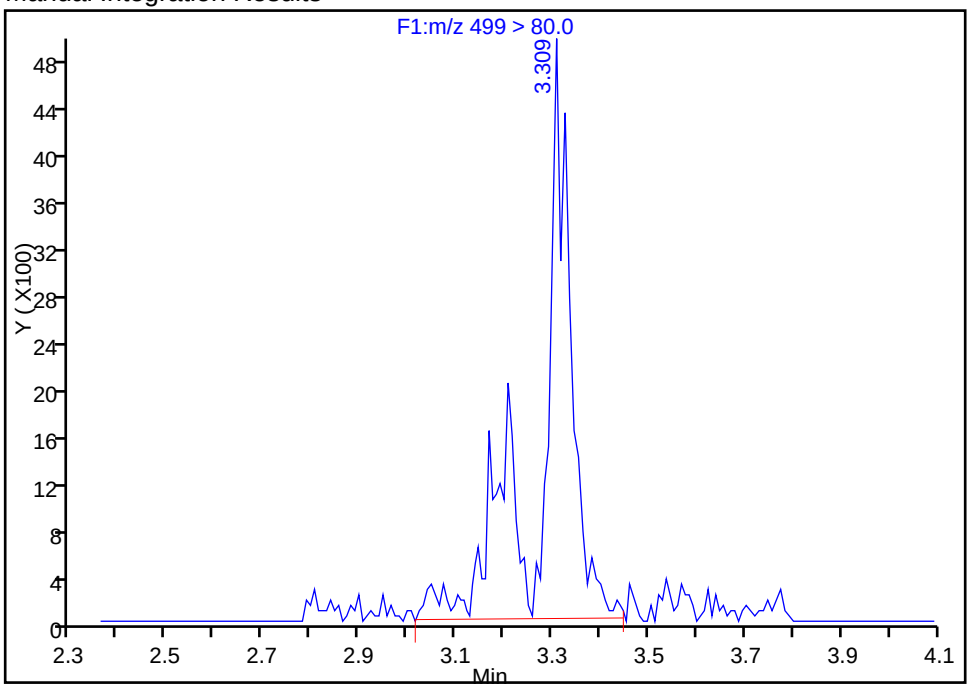
Processing Integration Results

RT: 3.21
Area: 7702
Amount: 0.039565
Amount Units: ng/ml



Manual Integration Results

RT: 3.31
Area: 21929
Amount: 0.112649
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 12:42:37

Audit Action: Manually Integrated Audit Reason: Isomers

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

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-125915/4	03SEP2016A_004_p1_e1.d
Level 2	IC 320-125915/14	03SEP2016A_014_p1_e1.d
Level 3	IC 320-125915/5	03SEP2016A_005_p1_e1.d
Level 4	IC 320-125915/15	03SEP2016A_015_p1_e1.d
Level 5	IC 320-125915/6	03SEP2016A_006_p1_e1.d
Level 6	IC 320-125915/16	03SEP2016A_016_p1_e1.d
Level 7	IC 320-125915/7	03SEP2016A_007_p1_e1.d
Level 8	IC 320-125915/17	03SEP2016A_017_p1_e1.d
Level 9	IC 320-125915/8	03SEP2016A_008_p1_e1.d
Level 10	IC 320-125915/18	03SEP2016A_018_p1_e1.d
Level 11	IC 320-125915/9	03SEP2016A_009_p1_e1.d
Level 12	IC 320-125915/19	03SEP2016A_019_p1_e1.d
Level 13	IC 320-125915/10	03SEP2016A_010_p1_e1.d
Level 14	IC 320-125915/20	03SEP2016A_020_p1_e1.d

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3 LVL 13	LVL 4 LVL 14	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	1.657 1.643		1.651 +++++		1.623		1.658		1.650		1.395 - 1.895	1.647
Perfluoropentanoic acid (PFPeA)	1.955 1.933		1.936 +++++		1.927		1.953		1.950		1.690 - 2.190	1.942
Perfluorobutanesulfonic acid (PFBS)	1.998 1.967		1.970 +++++		1.961		1.986		1.983		1.796 - 2.156	1.978
Perfluorohexanoic acid (PFHxA)	2.282 2.240		2.245 +++++		2.245		2.262		2.257		2.003 - 2.503	2.255
Perfluorohexanesulfonic acid (PFHxS)	+++++ 2.617		2.525 2.614		2.539		2.558		2.623		2.341 - 2.841	2.579
Perfluoroheptanoic acid (PFHpA)	2.643 2.602		2.602 +++++		2.616		2.627		2.615		2.364 - 2.864	2.618
6:2FTS		+++++ 2.933		2.941 +++++		2.933		2.933		2.933	2.685 - 3.185	2.935
Perfluorooctanoic acid (PFOA)	+++++ 2.977		2.974 2.973		3.004		3.013		2.991		2.746 - 3.246	2.989
Perfluoroheptanesulfonic Acid (PFHpS)	3.038 2.985		2.974 +++++		3.012		3.013		2.991		2.749 - 3.249	3.002
Perfluorooctanesulfonic acid (PFOS)	+++++ 3.239		3.233 3.327		3.275		3.273		3.264		3.021 - 3.521	3.269
Perfluorononanoic acid (PFNA)	3.416 3.361		3.363 +++++		3.400		3.398		3.370		3.131 - 3.631	3.385
Perfluorooctane Sulfonamide (FOSA)	3.706 3.665		3.643 +++++		3.684		3.692		3.671		3.424 - 3.924	3.677
8:2FTS		3.699 3.688		3.699 +++++		3.708		3.700		3.692	3.447 - 3.947	3.698

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

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3 LVL 13	LVL 4 LVL 14	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
Perfluorodecanoic acid (PFDA)	3.787 3.722		3.724 +++++		3.762		3.753		3.739		3.494 - 3.994	3.748
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		3.874 3.864		3.867 3.865		3.875		3.867		3.867	3.619 - 4.119	3.868
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		4.053 4.031		4.045 4.032		4.045		4.036		4.036	3.789 - 4.289	4.040
Perfluorodecanesulfonic acid (PFDS)	4.100 4.031		4.035 4.033		4.069		4.069		4.052		3.805 - 4.305	4.056
Perfluoroundecanoic acid (PFUnA)	4.129 4.058		4.053 +++++		4.088		4.099		4.071		3.828 - 4.328	4.083
MeFOSA		4.141 4.146		4.142 4.137		4.152		4.152		4.142	3.895 - 4.395	4.145
N-EtFOSA-M		4.331 4.332		4.332 4.324		4.342		4.332		4.334	4.083 - 4.583	4.332
Perfluorododecanoic acid (PFDoA)	4.421 4.354		4.352 +++++		4.390		4.382		4.369		4.124 - 4.624	4.378
Perfluorotridecanoic Acid (PFTriA)	4.689 4.619		4.619 +++++		4.650		4.651		4.637		4.389 - 4.889	4.644
Perfluorotetradecanoic acid (PFTeA)	4.924 4.860		4.866 4.860		4.899		4.899		4.876		4.633 - 5.133	4.883
Perfluoro-n-hexadecanoic acid (PFHxDA)	5.367 5.289		5.288 +++++		5.324		5.318		5.297		5.059 - 5.559	5.314
Perfluoro-n-octadecanoic acid (PFODA)	5.746 5.663		5.678 +++++		5.711		5.707		5.680		5.442 - 5.942	5.698
13C4 PFBA	1.657 1.643		1.644 1.636		1.623		1.651		1.643		1.392 - 1.892	1.642
13C5-PFPeA	1.955 1.933		1.936 +++++		1.927		1.953		1.941		1.688 - 2.188	1.941
13C2 PFHxA	2.282 2.240		2.245 +++++		2.245		2.270		2.257		2.004 - 2.504	2.257
13C4-PFHpA	2.643 2.602		2.594 2.587		2.616		2.627		2.608		2.361 - 2.861	2.611
18O2 PFHxS	2.659 2.610		2.609 2.614		2.623		2.642		2.623		2.376 - 2.876	2.626
M2-6:2FTS		2.933 2.925		2.941 2.933		2.941		2.933		2.933	2.683 - 3.183	2.934
13C4 PFOA	3.038 2.977		2.974 2.973		3.004		3.013		2.983		2.744 - 3.244	2.995
13C4 PFOS	3.416 3.352		3.354 3.355		3.391		3.389		3.370		3.125 - 3.625	3.375
13C5 PFNA	3.424 3.361		3.354 +++++		3.391		3.398		3.370		3.130 - 3.630	3.383
13C8 FOSA	3.706 3.665		3.643 +++++		3.684		3.692		3.671		3.424 - 3.924	3.677

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

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3 LVL 13	LVL 4 LVL 14	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
M2-8:2FTS		3.699 3.688		3.699 3.689		3.708		3.700		3.700	3.447 - 3.947	3.698
13C2 PFDA	3.787 3.722		3.724 +++++		3.762		3.753		3.739		3.494 - 3.994	3.748
d3-NMeFOSAA		3.866 3.864		3.867 3.857		3.875		3.867		3.860	3.616 - 4.116	3.865
d5-NEtFOSAA		4.035 4.031		4.036 4.023		4.036		4.036		4.027	3.782 - 4.282	4.032
13C2 PFUnA	4.119 4.067		4.053 +++++		4.098		4.099		4.071		3.831 - 4.331	4.085
d-N-MeFOSA-M		4.141 4.146		4.142 4.137		4.152		4.142		4.142	3.893 - 4.393	4.143
d-N-EtFOSA-M		4.322 4.322		4.323 4.324		4.333		4.323		4.325	4.076 - 4.576	4.325
13C2 PFDoA	4.421 4.354		4.352 4.351		4.390		4.382		4.369		4.124 - 4.624	4.374
13C2-PFTeDA	4.924 4.860		4.866 4.860		4.899		4.890		4.876		4.632 - 5.132	4.882
13C2-PFHxDA	5.359 5.289		5.288 5.280		5.315		5.318		5.286		5.055 - 5.555	5.305

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

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-125915/4	03SEP2016A_004_p1_e1.d
Level 2	IC 320-125915/14	03SEP2016A_014_p1_e1.d
Level 3	IC 320-125915/5	03SEP2016A_005_p1_e1.d
Level 4	IC 320-125915/15	03SEP2016A_015_p1_e1.d
Level 5	IC 320-125915/6	03SEP2016A_006_p1_e1.d
Level 6	IC 320-125915/16	03SEP2016A_016_p1_e1.d
Level 7	IC 320-125915/7	03SEP2016A_007_p1_e1.d
Level 8	IC 320-125915/17	03SEP2016A_017_p1_e1.d
Level 9	IC 320-125915/8	03SEP2016A_008_p1_e1.d
Level 10	IC 320-125915/18	03SEP2016A_018_p1_e1.d
Level 11	IC 320-125915/9	03SEP2016A_009_p1_e1.d
Level 12	IC 320-125915/19	03SEP2016A_019_p1_e1.d
Level 13	IC 320-125915/10	03SEP2016A_010_p1_e1.d
Level 14	IC 320-125915/20	03SEP2016A_020_p1_e1.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5 LVL 9 LVL 13	LVL 2 LVL 6 LVL 10 LVL 14	LVL 3 LVL 7 LVL 11	LVL 4 LVL 8 LVL 12		B	M1	M2								
13C4 PFBA	211295 204300 201200 170299		225399 211953 188965		Ave		201915.589				8.8		50.0			
13C5-PFPeA	160652 160448 156240 +++++		173028 159250 140737		Ave		158392.537				6.6		50.0			
13C2 PFHxA	150556 146735 138294 +++++		157806 144007 128542		Ave		144323.430				7.0		50.0			
13C4-PFHpA	148554 140445 129583 96280		148443 138648 114088		Ave		130862.771				14.8		50.0			
18O2 PFHxS	189759 187052 185699 145005		198692 188286 170555		Ave		180721.000				9.9		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

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

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5 LVL 9 LVL 13	LVL 2 LVL 6 LVL 10 LVL 14	LVL 3 LVL 7 LVL 11	LVL 4 LVL 8 LVL 12		B	M1	M2								
M2-6:2FTS		72766 73283 79957 90861		73794 75796 81120	Ave		78225.0376				8.3		50.0			
13C4 PFOA	162075 159189 151003 99070		170947 153998 124500		Ave		145825.911				17.3		50.0			
13C4 PFOS	149748 151776 146442 119599		155018 151243 139253		Ave		144725.502				8.4		50.0			
13C5 PFNA	131896 133731 124284 +++++		140104 131280 103865		Ave		127526.510				9.9		50.0			
13C8 FOSA	273826 265940 267370 +++++		277180 270954 242855		Ave		266354.170				4.6		50.0			
M2-8:2FTS		75421 79820 86552 102328		77363 81004 86722	Ave		84172.8691				10.8		50.0			
13C2 PFDA	122847 122015 121540 +++++		128108 123055 107791		Ave		120892.677				5.7		50.0			
d3-NMeFOSAA		46907 49442 53799 47819		49495 52324 51177	Ave		50137.6771				4.9		50.0			
d5-NEtFOSAA		52236 56910 58822 53492		54797 61257 54955	Ave		56066.9000				5.6		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

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

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5 LVL 9 LVL 13	LVL 2 LVL 6 LVL 10 LVL 14	LVL 3 LVL 7 LVL 11	LVL 4 LVL 8 LVL 12		B	M1	M2								
13C2 PFUnA	98422 98434 93655 +++++		104877 95702 80733		Ave		95303.5367				8.5		50.0			
d-N-MeFOSA-M		63922 68789 73116 68877		66917 70563 70686	Ave		68981.6000				4.3		50.0			
d-N-EtFOSA-M		59535 61473 66510 65671		61271 64899 67446	Ave		63829.1686				4.8		50.0			
13C2 PFDoA	92380 92712 88665 72830		96800 93486 82434		Ave		88472.4429				9.3		50.0			
13C2-PFTeDA	173412 180160 176961 141281		182677 179502 159128		Ave		170445.737				8.8		50.0			
13C2-PFHxDA	110511 112997 112089 94266		111953 114879 105293		Ave		108855.329				6.5		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10		B	M1	M2								
Perfluorobutanoic acid (PFBA)	189608 153057	190304	194481 +++++	182152	181106	AveID		0.8766				4.1		35.0			
Perfluoropentanoic acid (PFPeA)	197376 128014	165007	183410 +++++	160367	166298	AveID		1.0495				9.8		35.0			
Perfluorobutanesulfonic acid (PFBS)	297590 221686	305066	302923 +++++	295194	285731	AveID		1.5217				7.5		50.0			
Perfluorohexanoic acid (PFHxA)	176430 117858	147103	152002 +++++	136737	144205	AveID		1.0075				8.7		35.0			
Perfluorohexanesulfonic acid (PFHxS)	+++++ 170423	201040	250612 141053	191855	207534	AveID		1.0739				9.7		35.0			
Perfluoroheptanoic acid (PFHpA)	164102 113457	143669	156657 +++++	133596	143729	AveID		1.0408				3.6		35.0			
6:2FTS	53198	+++++ 61356	69837	64806 +++++	64528	AveID		0.8178				10.0		35.0			
Perfluorooctanoic acid (PFOA)	+++++ 122937	164695	184391 94266	156413	178248	AveID		1.0404				6.0		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	180994 150604	177488	176887 +++++	172118	171130	AveID		1.1513				3.9		50.0			
Perfluorooctanesulfonic acid (PFOS)	+++++ 152281	172358	193734 132900	157929	209236	AveID		1.1752				9.9		35.0			
Perfluorononanoic acid (PFNA)	139592 105975	132578	137373 +++++	129679	129600	AveID		1.0136				3.4		35.0			
Perfluorooctane Sulfonamide (FOSA)	258092 192093	261535	255689 +++++	253085	257884	AveID		0.9229				7.2		35.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10		B	M1	M2								
8:2FTS	58268	65056 67490	73509	63287 +++++	67244	AveID		0.8122				7.9		35.0			
Perfluorodecanoic acid (PFDA)	127214 103096	119168	124232 +++++	116998	119580	AveID		0.9788				3.0		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	36294	42964 45656	46298	39036 48299	44756	AveID		0.8654				10.4		35.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	35956	39230 44889	47734	39793 46341	44143	AveID		0.7603				9.7		35.0			
Perfluorodecanesulfonic acid (PFDS)	96680 91645	99386	92147 76451	97497	93235	AveID		0.6392				4.1		50.0			
Perfluoroundecanoic acid (PFUnA)	126954 80582	99698	115201 +++++	95786	99241	AveID		1.0765				10.3		35.0			
MeFOSA	45926	50876 61334	59628	52546 61671	59310	AveID		0.8097				9.1		35.0			
N-EtFOSA-M	45233	47796 61001	57713	49985 61285	56105	AveID		0.8464				8.0		35.0			
Perfluorododecanoic acid (PFDoA)	92986 79487	90063	90993 +++++	87038	89030	AveID		0.9694				2.3		35.0			
Perfluorotridecanoic Acid (PFTriA)	99930 80952	92692	91651 +++++	91352	90417	AveID		1.0013				4.8		50.0			
Perfluorotetradecanoic acid (PFTeA)	195730 140124	170126	172556 107863	164765	166022	AveID		1.7930				10.6		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	207536 93077	107463	151618 +++++	105000	110651	L1ID	0.5079	1.1343							1.0000		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	92614 84358	90372	87858 +++++	89966	89652	AveID		0.9803				4.4		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

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

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-125915/4	03SEP2016A_004_p1_e1.d
Level 2	IC 320-125915/14	03SEP2016A_014_p1_e1.d
Level 3	IC 320-125915/5	03SEP2016A_005_p1_e1.d
Level 4	IC 320-125915/15	03SEP2016A_015_p1_e1.d
Level 5	IC 320-125915/6	03SEP2016A_006_p1_e1.d
Level 6	IC 320-125915/16	03SEP2016A_016_p1_e1.d
Level 7	IC 320-125915/7	03SEP2016A_007_p1_e1.d
Level 8	IC 320-125915/17	03SEP2016A_017_p1_e1.d
Level 9	IC 320-125915/8	03SEP2016A_008_p1_e1.d
Level 10	IC 320-125915/18	03SEP2016A_018_p1_e1.d
Level 11	IC 320-125915/9	03SEP2016A_009_p1_e1.d
Level 12	IC 320-125915/19	03SEP2016A_019_p1_e1.d
Level 13	IC 320-125915/10	03SEP2016A_010_p1_e1.d
Level 14	IC 320-125915/20	03SEP2016A_020_p1_e1.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10
13C4 PFBA	Ave	10564753 9448230	10597639	11269933 8514926	10059992	10214983	50.0 50.0	50.0	50.0 50.0	50.0	50.0
13C5-PFPeA	Ave	8032597 7036843	7962509	8651414 +++++	7811976	8022422	50.0 50.0	50.0	50.0 +++++	50.0	50.0
13C2 PFHxA	Ave	7527780 6427112	7200359	7890315 +++++	6914706	7336757	50.0 50.0	50.0	50.0 +++++	50.0	50.0
13C4-PFHpA	Ave	7427688 5704395	6932384	7422156 4813978	6479138	7022231	50.0 50.0	50.0	50.0 50.0	50.0	50.0
18O2 PFHxS	Ave	8975602 8067246	8905918	9398124 6858717	8783547	8847569	47.3 47.3	47.3	47.3 47.3	47.3	47.3
M2-6:2FTS	Ave	3480930	3456373 3853202	3600290	3505211 4315874	3797945	47.5	47.5 47.5	47.5	47.5 47.5	47.5
13C4 PFOA	Ave	8103757 6224994	7699889	8547338 4953489	7550162	7959440	50.0 50.0	50.0	50.0 50.0	50.0	50.0

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

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10
13C4 PFOS	Ave	7157954 6656316	7229395	7409872 5716815	6999925	7254876	47.8 47.8	47.8	47.8 47.8	47.8	47.8
13C5 PFNA	Ave	6594775 5193244	6564022	7005194 +++++	6214189	6686529	50.0 50.0	50.0	50.0 +++++	50.0	50.0
13C8 FOSA	Ave	13691300 12142761	13547695	13858976 +++++	13368523	13296996	50.0 50.0	50.0	50.0 +++++	50.0	50.0
M2-8:2FTS	Ave	3823389	3612646 4153988	3880074	3705704 4901505	4145857	47.9	47.9 47.9	47.9	47.9 47.9	47.9
13C2 PFDA	Ave	6142366 5389574	6152729	6405384 +++++	6077012	6100738	50.0 50.0	50.0	50.0 +++++	50.0	50.0
d3-NMeFOSAA	Ave	2472121	2345360 2558846	2616200	2474737 2390955	2689968	50.0	50.0 50.0	50.0	50.0 50.0	50.0
d5-NEtFOSAA	Ave	2845482	2611814 2747749	3062834	2739854 2674584	2941098	50.0	50.0 50.0	50.0	50.0 50.0	50.0
13C2 PFUnA	Ave	4921076 4036632	4785082	5243840 +++++	4682751	4921680	50.0 50.0	50.0	50.0 +++++	50.0	50.0
d-N-MeFOSA-M	Ave	3439446	3196091 3534315	3528172	3345874 3443873	3655789	50.0	50.0 50.0	50.0	50.0 50.0	50.0
d-N-EtFOSA-M	Ave	3073658	2976733 3372284	3244967	3063548 3283532	3325487	50.0	50.0 50.0	50.0	50.0 50.0	50.0
13C2 PFDoA	Ave	4619008 4121681	4674298	4839992 3641523	4433243	4635610	50.0 50.0	50.0	50.0 50.0	50.0	50.0
13C2-PFTeDA	Ave	8670614 7956388	8975109	9133846 7064036	8848037	9007978	50.0 50.0	50.0	50.0 50.0	50.0	50.0
13C2-PFHxDA	Ave	5525528 5264655	5743935	5597674 4713289	5604455	5649829	50.0 50.0	50.0	50.0 50.0	50.0	50.0

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

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

Curve Type Legend:
Ave = Average

FORM VI

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-125915/4	03SEP2016A_004_p1_e1.d
Level 2	IC 320-125915/14	03SEP2016A_014_p1_e1.d
Level 3	IC 320-125915/5	03SEP2016A_005_p1_e1.d
Level 4	IC 320-125915/15	03SEP2016A_015_p1_e1.d
Level 5	IC 320-125915/6	03SEP2016A_006_p1_e1.d
Level 6	IC 320-125915/16	03SEP2016A_016_p1_e1.d
Level 7	IC 320-125915/7	03SEP2016A_007_p1_e1.d
Level 8	IC 320-125915/17	03SEP2016A_017_p1_e1.d
Level 9	IC 320-125915/8	03SEP2016A_008_p1_e1.d
Level 10	IC 320-125915/18	03SEP2016A_018_p1_e1.d
Level 11	IC 320-125915/9	03SEP2016A_009_p1_e1.d
Level 12	IC 320-125915/19	03SEP2016A_019_p1_e1.d
Level 13	IC 320-125915/10	03SEP2016A_010_p1_e1.d
Level 14	IC 320-125915/20	03SEP2016A_020_p1_e1.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10
Perfluorobutanoic acid (PFBA)		AveID	94804 30611454	3806071	194481 +++++	9107590	905532	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluoropentanoic acid (PFPeA)		AveID	98688 25602733	3300147	183410 +++++	8018325	831490	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluorobutanesulfonic acid (PFBS)		AveID	131535 39194012	5393562	267784 +++++	13047591	1262929	0.442 177	17.7	0.884 +++++	44.2	4.42
Perfluorohexanoic acid (PFHxA)		AveID	88215 23571653	2942051	152002 +++++	6836853	721026	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 31017014	3658925	228057 51343246	8729401	944278	+++++ 182	18.2	0.910 364	45.5	4.55
Perfluoroheptanoic acid (PFHpA)		AveID	82051 22691495	2873384	156657 +++++	6679813	718644	0.500 200	20.0	1.00 +++++	50.0	5.00
6:2FTS		AveID	252159	+++++ 11633026	1324103	61436 +++++	3058623	4.74	+++++ 190	19.0	0.948 +++++	47.4

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10
Perfluorooctanoic acid (PFOA)		AveID	+++++	3293903	184391	7820671	891238	+++++	20.0	1.00	50.0	5.00
			24587367		37706543			200		400		
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	86153	3379364	168396	8192805	814579	0.476	19.0	0.952	47.6	4.76
			28674968		+++++			190		+++++		
Perfluorooctanesulfonic acid (PFOS)		AveID	+++++	3198967	179785	7327912	970855	+++++	18.6	0.928	46.4	4.64
			28263326		49332494			186		371		
Perfluorononanoic acid (PFNA)		AveID	69796	2651561	137373	6483970	648001	0.500	20.0	1.00	50.0	5.00
			21195062		+++++			200		+++++		
Perfluorooctane Sulfonamide (FOSA)		AveID	129046	5230694	255689	12654264	1289420	0.500	20.0	1.00	50.0	5.00
			38418532		+++++			200		+++++		
8:2FTS		AveID	279103	31162	1408431	60629	3220979	4.79	0.479	19.2	0.958	47.9
				12931010		+++++			192		+++++	
Perfluorodecanoic acid (PFDA)		AveID	63607	2383354	124232	5849904	597900	0.500	20.0	1.00	50.0	5.00
			20619156		+++++			200		+++++		
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	181469	21482	925966	39036	2237819	5.00	0.500	20.0	1.00	50.0
				9131219		19319449			200		400	
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	179781	19615	954675	39793	2207162	5.00	0.500	20.0	1.00	50.0
				8977868		18536217			200		400	
Perfluorodecanesulfonic acid (PFDS)		AveID	46600	1916161	88830	4699344	449395	0.482	19.3	0.964	48.2	4.82
			17669187		29479384			193		386		
Perfluoroundecanoic acid (PFUnA)		AveID	63477	1993953	115201	4789301	496205	0.500	20.0	1.00	50.0	5.00
			16116354		+++++			200		+++++		
MeFOSA		AveID	229630	25438	1192551	52546	2965510	5.00	0.500	20.0	1.00	50.0
				12266767		24668475			200		400	
N-EtFOSA-M		AveID	226164	23898	1154250	49985	2805243	5.00	0.500	20.0	1.00	50.0
				12200197		24514043			200		400	

FORM VI

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1 Analy Batch No.: 125915

SDG No.:

Instrument ID: A8 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 09/03/2016 15:38 Calibration End Date: 09/03/2016 17:38 Calibration ID: 24991

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
			LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8 LVL 13	LVL 4 LVL 9 LVL 14	LVL 5 LVL 10
Perfluorododecanoic acid (PFDoA)		AveID	46493 15897471	1801266	90993 +++++	4351878	445151	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluorotridecanoic Acid (PFTriA)		AveID	49965 16190491	1853833	91651 +++++	4567596	452087	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluorotetradecanoic acid (PFTeA)		AveID	97865 28024778	3402523	172556 43145369	8238270	830110	0.500 200	20.0	1.00 400	50.0	5.00
Perfluoro-n-hexadecanoic acid (PFHxDA)		L1ID	103768 18615408	2149259	151618 +++++	5250014	553254	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluoro-n-octadecanoic acid (PFODA)		AveID	46307 16871624	1807447	87858 +++++	4498275	448259	0.500 200	20.0	1.00 +++++	50.0	5.00

Curve Type Legend:

AveID = Average isotope dilution
L1ID = Linear 1/conc IsoDil

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_004_p1_e1.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 03-Sep-2016 15:38:00 ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Sep-2016 14:35:33 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK025

First Level Reviewer: phomsophat Date: 06-Sep-2016 16:13:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.657	1.642	0.015		10564753	52.3		105	755106	
1 Perfluorobutyric acid										
212.9 > 169.0	1.657	1.645	0.012	1.000	94804	0.5118		102	841	
D 4 13C5-PFPeA										
267.9 > 223.0	1.955	1.938	0.017		8032597	50.7		101	951175	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.955	1.940	0.015	1.000	98688	0.5853		117	1461	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.998	1.976	0.022	1.000	131535	0.4555		103		
298.9 > 99.0	2.006	1.976	0.030	1.004	56032		2.35(0.00-0.00)	103		
7 Perfluorohexanoic acid										
313 > 269.0	2.282	2.253	0.029	1.000	88215	0.5816		116	4263	
D 6 13C2 PFHxA										
315 > 270.0	2.282	2.254	0.028		7527780	52.2		104	1315566	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.659	2.591	0.068	1.000	149977	0.7359		162		
D 11 13C4-PFHpA										
367 > 322.0	2.643	2.611	0.032		7427688	56.8		114	638731	
12 Perfluoroheptanoic acid										
363 > 319.0	2.643	2.614	0.029	1.000	82051	0.5307		106	2280	
D 10 18O2 PFHxS										
403 > 84.0	2.659	2.626	0.033		8975602	49.7		105	597345	
D 14 13C4 PFOA										
417 > 372.0	3.038	2.994	0.044		8103757	55.6		111	673403	
15 Perfluorooctanoic acid										
413 > 369.0	3.038	2.996	0.042	1.000	123622	0.7331		147	2707	
413 > 169.0	3.038	2.996	0.042	1.000	67771		1.82(0.90-1.10)	147	4644	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	3.038	2.999	0.039	1.000	86153	0.4997		105		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.289	3.271	0.018	1.000	145964	0.8294		179	3773	
499 > 99.0	3.388	3.271	0.117	1.030	36715		3.98(0.90-1.10)	179	917	
D 17 13C4 PFOS										
503 > 80.0	3.416	3.375	0.041		7157954	49.5		103	499990	
D 19 13C5 PFNA										
468 > 423.0	3.424	3.380	0.044		6594775	51.7		103	528837	
20 Perfluorononanoic acid										
463 > 419.0	3.416	3.381	0.035	1.000	69796	0.5221		104	2383	
D 21 13C8 FOSA										
506 > 78.0	3.706	3.674	0.032		13691300	51.4		103	738021	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.706	3.674	0.032	1.000	129046	0.5106		102	9376	
24 Perfluorodecanoic acid										
513 > 469.0	3.787	3.744	0.043	1.000	63607	0.5290		106	4354	
D 23 13C2 PFDA										
515 > 470.0	3.787	3.744	0.043		6142366	50.8		102	321387	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	4.100	4.055	0.045	1.000	46600	0.4868		101		
28 Perfluoroundecanoic acid										
563 > 519.0	4.129	4.078	0.051	1.000	63477	0.5991		120	2348	
D 27 13C2 PFUnA										
565 > 520.0	4.119	4.081	0.038		4921076	51.6		103	333267	
29 Perfluorododecanoic acid										
613 > 569.0	4.421	4.374	0.047	1.000	46493	0.5192		104	208	
D 30 13C2 PFDoA										
615 > 570.0	4.421	4.374	0.047		4619008	52.2		104	261249	
31 Perfluorotridecanoic acid										
633 > 619.0	4.689	4.639	0.050	1.000	49965	0.5402		108	171	
D 32 13C2-PFTeDA										
715 > 670.0	4.924	4.882	0.042		8670614	50.9		102	998500	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.924	4.883	0.041	1.000	97865	0.5908		118	164	
713 > 169.0	4.924	4.883	0.041	1.000	16095		6.08(0.00-0.00)	118	5760	
D 34 13C2-PFHxDA										
815 > 770.0	5.359	5.305	0.054		5525528	50.8		102	464148	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.367	5.309	0.058	1.000	103768	0.5425		109	301	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.746	5.692	0.054	1.000	46307	0.5113		102	207	

Reagents:

LCPFC-L1_00021 Amount Added: 1.00 Units: mL

Report Date: 14-Sep-2016 14:35:35 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_004_p1_e1.d

Injection Date: 03-Sep-2016 15:38:00 Instrument ID: A8

Lims ID: IC L1

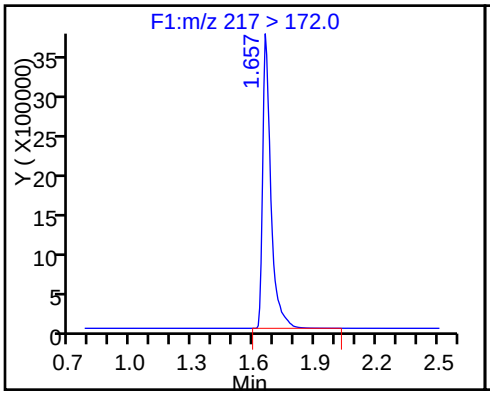
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 4

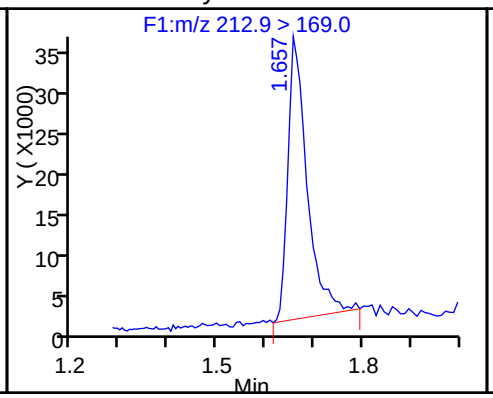
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

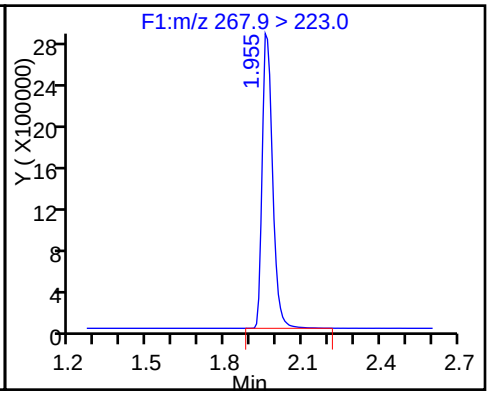
D 2 13C4 PFBA



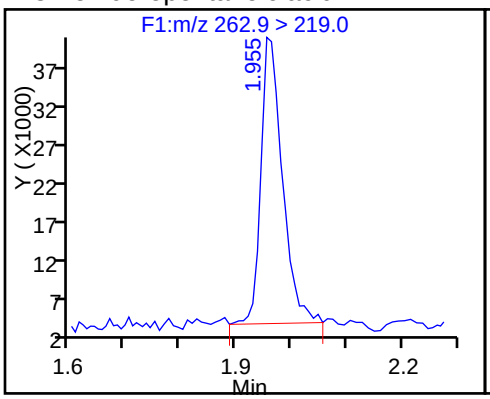
1 Perfluorobutyric acid



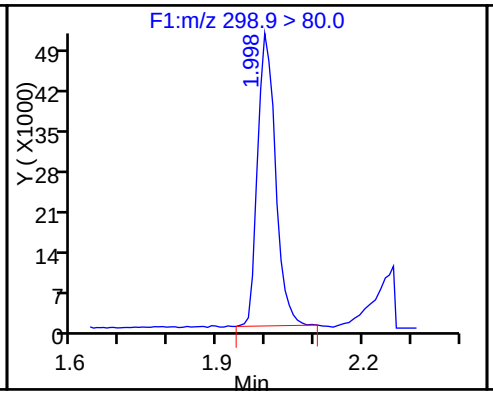
D 4 13C5-PFPeA



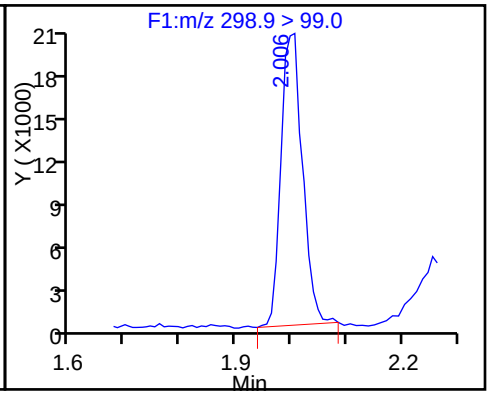
3 Perfluoropentanoic acid



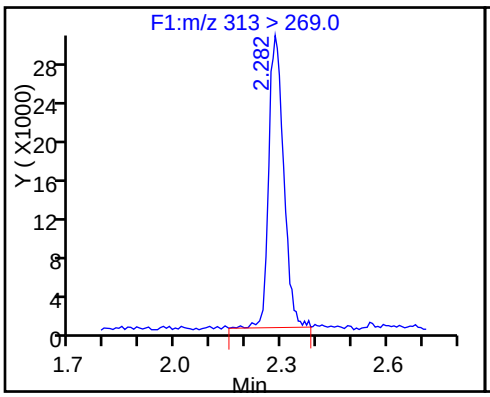
5 Perfluorobutanesulfonic acid



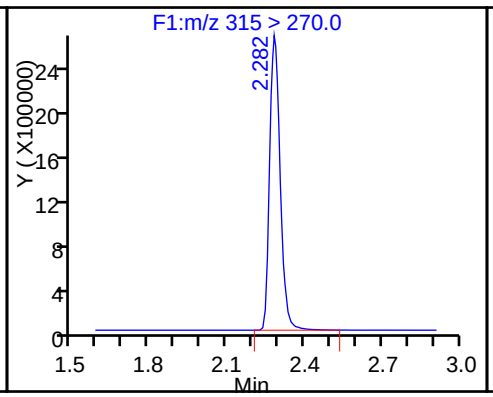
5 Perfluorobutanesulfonic acid



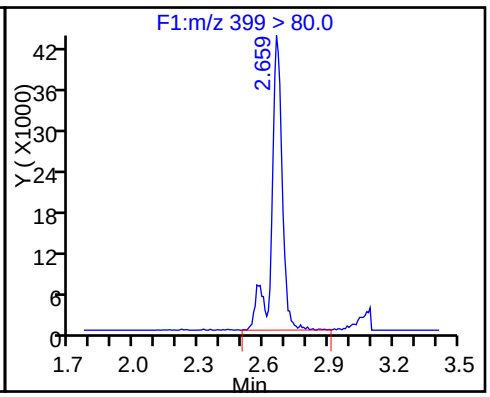
7 Perfluorohexanoic acid



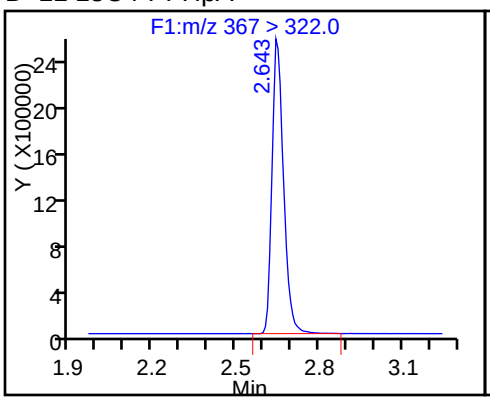
D 6 13C2 PFHxA



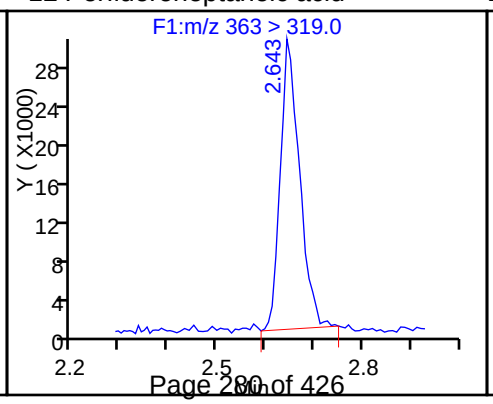
9 Perfluorohexanesulfonic acid



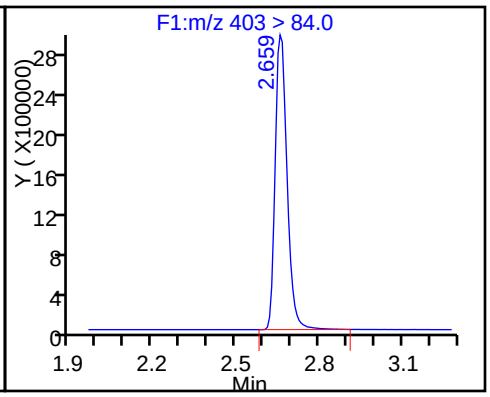
D 11 13C4-PFHpA



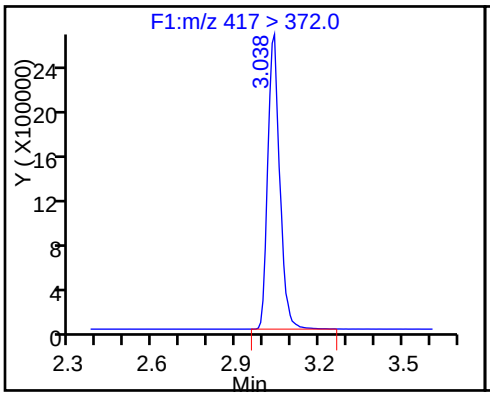
12 Perfluoroheptanoic acid



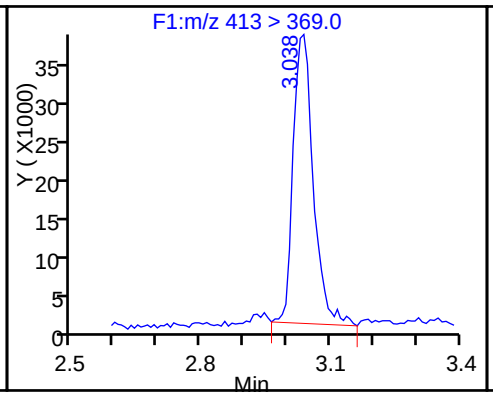
D 10 18O2 PFHxS



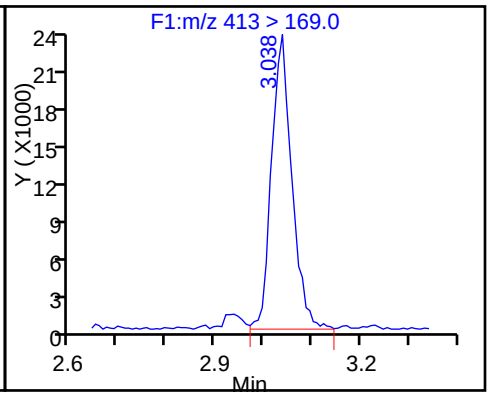
D 14 13C4 PFOA



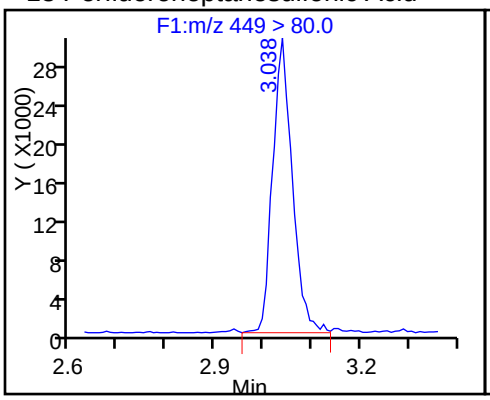
15 Perfluorooctanoic acid



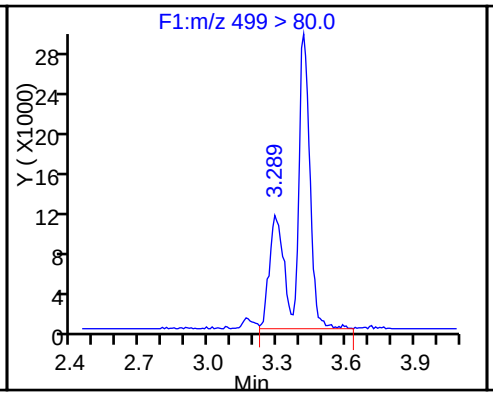
15 Perfluorooctanoic acid



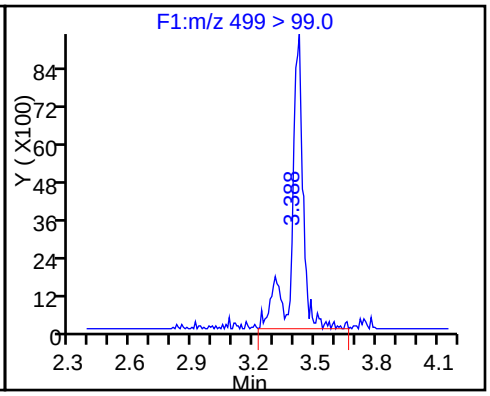
13 Perfluoroheptanesulfonic Acid



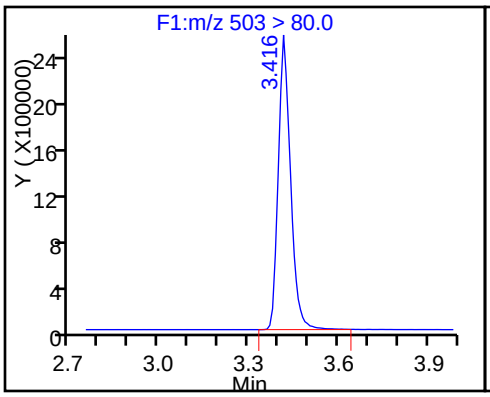
18 Perfluorooctane sulfonic acid



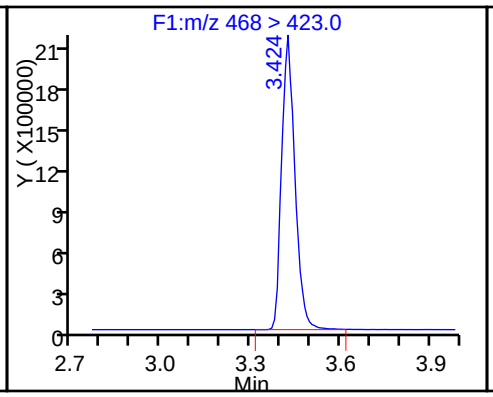
18 Perfluorooctane sulfonic acid



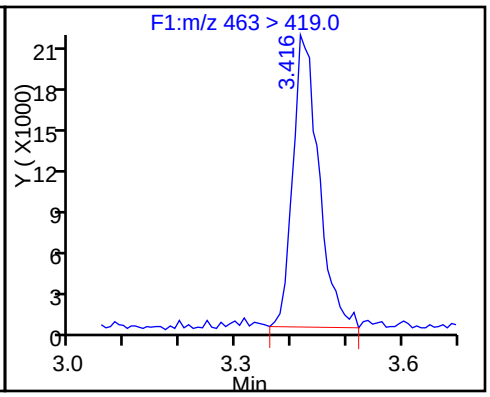
D 17 13C4 PFOS



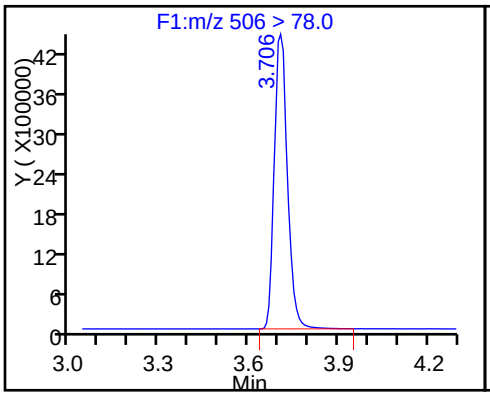
D 19 13C5 PFNA



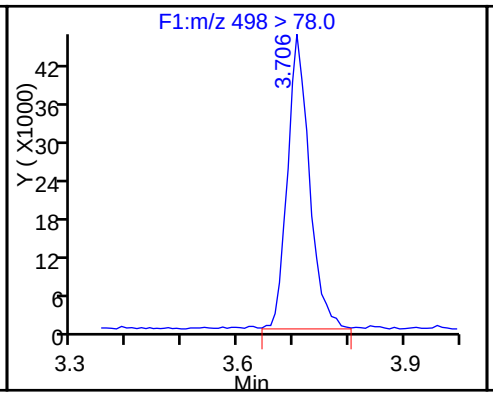
20 Perfluorononanoic acid



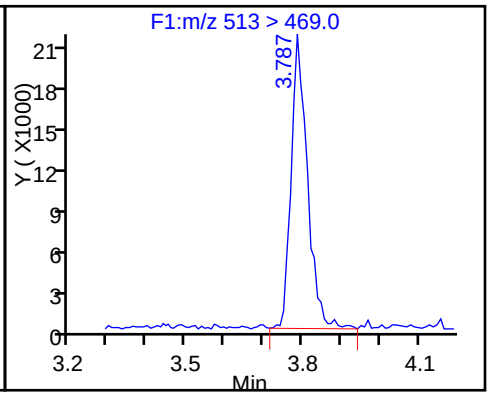
D 21 13C8 FOSA



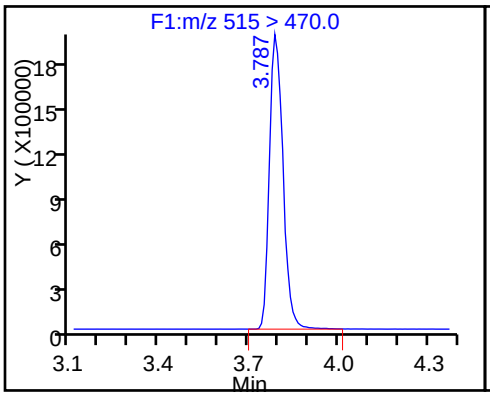
22 Perfluorooctane Sulfonamide



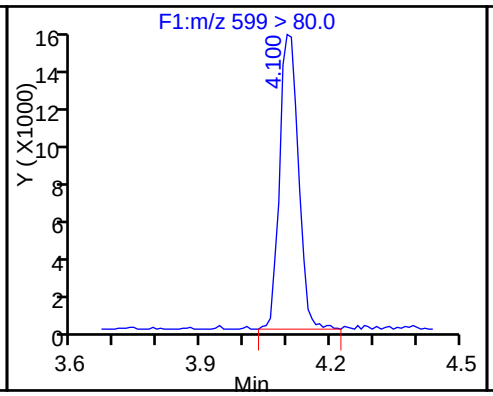
24 Perfluorodecanoic acid



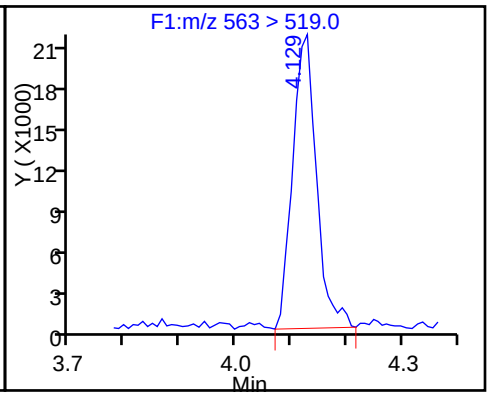
D 23 13C2 PFDA



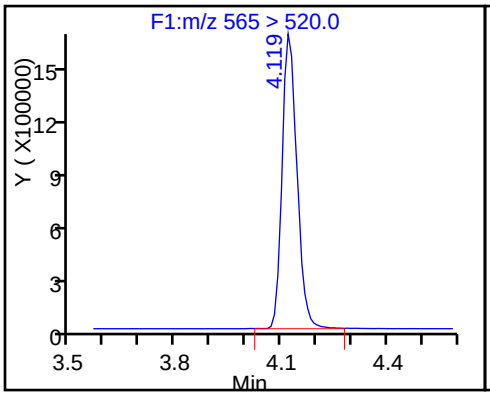
26 Perfluorodecane Sulfonic acid



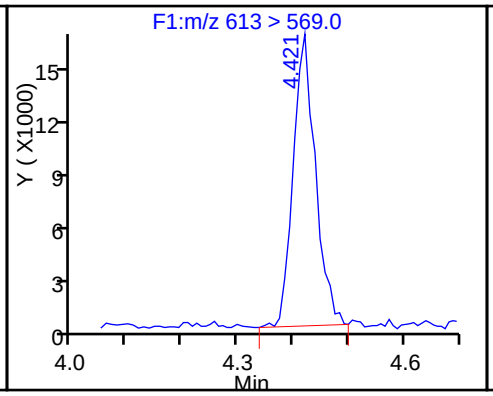
28 Perfluoroundecanoic acid



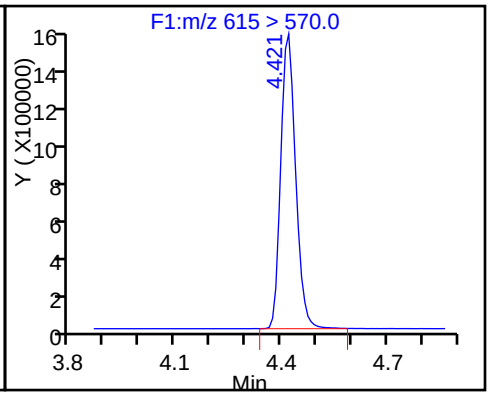
D 27 13C2 PFUnA



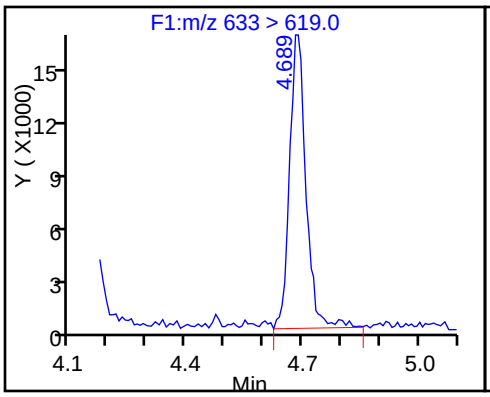
29 Perfluorododecanoic acid



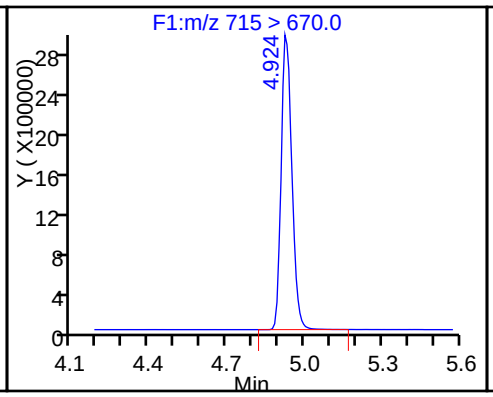
D 30 13C2 PFDoA



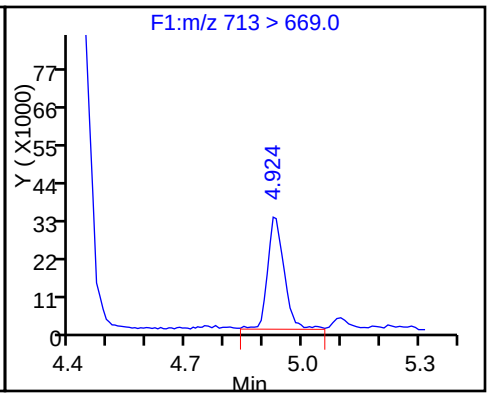
31 Perfluorotridecanoic acid



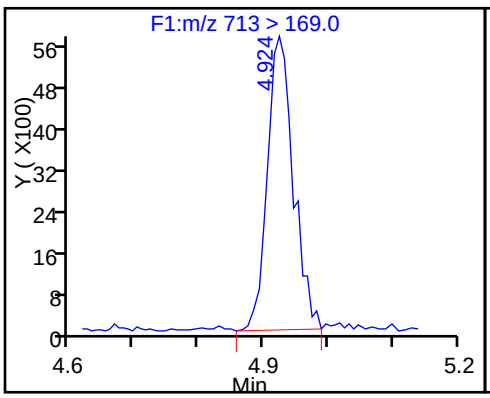
D 32 13C2-PFTeDA



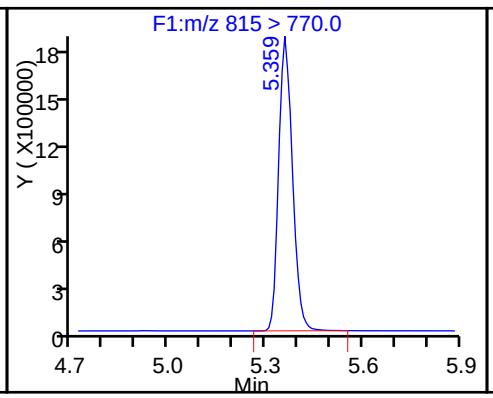
33 Perfluorotetradecanoic acid



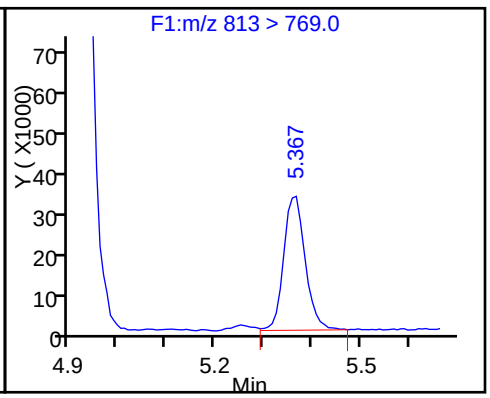
33 Perfluorotetradecanoic acid



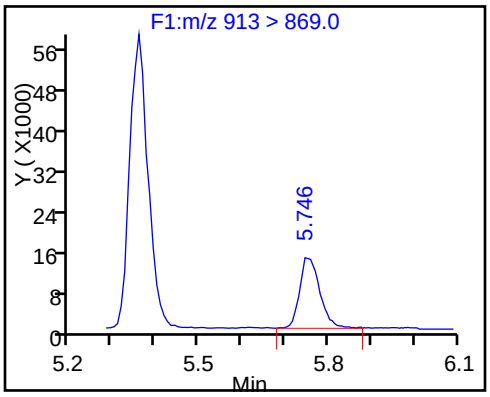
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_005_p1_e1.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 03-Sep-2016 15:46:00 ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Sep-2016 14:35:46 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK025

First Level Reviewer: phomsophat Date: 06-Sep-2016 16:16:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.644	1.642	0.002		11269933	55.8		112	513997	
1 Perfluorobutyric acid										
212.9 > 169.0	1.651	1.645	0.006	1.000	194481	0.9842		98.4	1646	
D 4 13C5-PFPeA										
267.9 > 223.0	1.936	1.938	-0.002		8651414	54.6		109	1601274	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.936	1.940	-0.004	1.000	183410	1.01		101	2511	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.970	1.976	-0.006	1.000	267784	0.8857		100		
298.9 > 99.0	1.970	1.976	-0.006	1.000	111087		2.41(0.00-0.00)	100		
7 Perfluorohexanoic acid										
313 > 269.0	2.245	2.253	-0.008	1.000	152002	0.9561		95.6	7599	
D 6 13C2 PFHxA										
315 > 270.0	2.245	2.254	-0.009		7890315	54.7		109	1496076	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.525	2.591	-0.066	1.000	228057	1.07		117		
D 11 13C4-PFHpA										
367 > 322.0	2.594	2.611	-0.017		7422156	56.7		113	656737	
12 Perfluoroheptanoic acid										
363 > 319.0	2.602	2.614	-0.012	1.000	156657	1.01		101	2660	
D 10 18O2 PFHxS										
403 > 84.0	2.609	2.626	-0.017		9398124	52.0		110	656196	
D 14 13C4 PFOA										
417 > 372.0	2.974	2.994	-0.020		8547338	58.6		117	740847	
15 Perfluorooctanoic acid										
413 > 369.0	2.974	2.996	-0.022	1.000	184391	1.04		104	3847	
413 > 169.0	2.974	2.996	-0.022	1.000	117624		1.57(0.90-1.10)	104	8392	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.974	2.999	-0.025	1.000	168396	0.9436		99.1		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.233	3.271	-0.038	1.000	179785	0.9869		106	6111	
499 > 99.0	3.241	3.271	-0.030	1.003	44054		4.08(0.90-1.10)	106	812	
D 17 13C4 PFOS										
503 > 80.0	3.354	3.375	-0.021		7409872	51.2		107	486011	
D 19 13C5 PFNA										
468 > 423.0	3.354	3.380	-0.026		7005194	54.9		110	543316	
20 Perfluorononanoic acid										
463 > 419.0	3.363	3.381	-0.018	1.000	137373	0.9674		96.7	5657	
D 21 13C8 FOSA										
506 > 78.0	3.643	3.674	-0.031		13858976	52.0		104	388250	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.643	3.674	-0.031	1.000	255689	1.00		100.0	17223	
24 Perfluorodecanoic acid										
513 > 469.0	3.724	3.744	-0.020	1.000	124232	0.99		99.1	6201	
D 23 13C2 PFDA										
515 > 470.0	3.724	3.744	-0.020		6405384	53.0		106	349701	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	4.035	4.055	-0.020	1.000	88830	0.8964		93.0		
28 Perfluoroundecanoic acid										
563 > 519.0	4.053	4.078	-0.025	1.000	115201	1.02		102	6102	
D 27 13C2 PFUnA										
565 > 520.0	4.053	4.081	-0.028		5243840	55.0		110	458105	
29 Perfluorododecanoic acid										
613 > 569.0	4.352	4.374	-0.022	1.000	90993	0.9697		97.0	2084	
D 30 13C2 PFDoA										
615 > 570.0	4.352	4.374	-0.022		4839992	54.7		109	340385	
31 Perfluorotridecanoic acid										
633 > 619.0	4.619	4.639	-0.020	1.000	91651	0.9456		94.6	372	
D 32 13C2-PFTeDA										
715 > 670.0	4.866	4.882	-0.016		9133846	53.6		107	450425	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.866	4.883	-0.017	1.000	172556	0.99		99.4	243	
713 > 169.0	4.857	4.883	-0.026	0.998	27478		6.28(0.00-0.00)	99.4	5031	
D 34 13C2-PFHxDA										
815 > 770.0	5.288	5.305	-0.017		5597674	51.4		103	378152	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.288	5.309	-0.021	1.000	151618	0.9331		93.3	467	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.678	5.692	-0.014	1.000	87858	0.9259		92.6	404	

Reagents:

LCPFC-L2_00022 Amount Added: 1.00 Units: mL

Report Date: 14-Sep-2016 14:35:49 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_005_p1_e1.d

Injection Date: 03-Sep-2016 15:46:00 Instrument ID: A8

Lims ID: IC L2

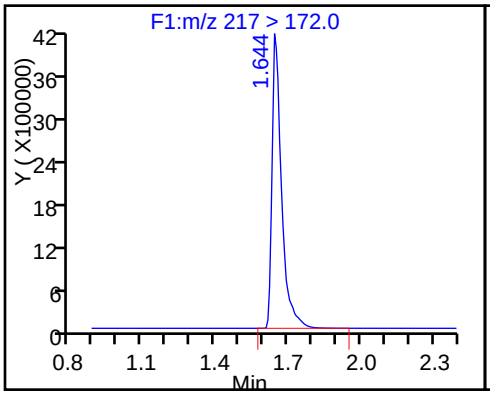
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 5

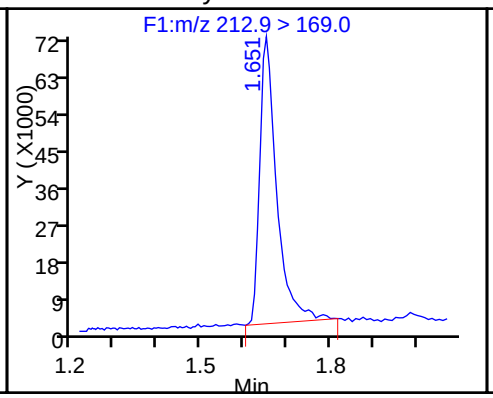
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

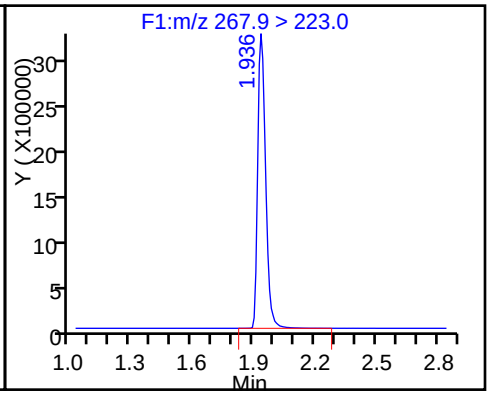
D 2 13C4 PFBA



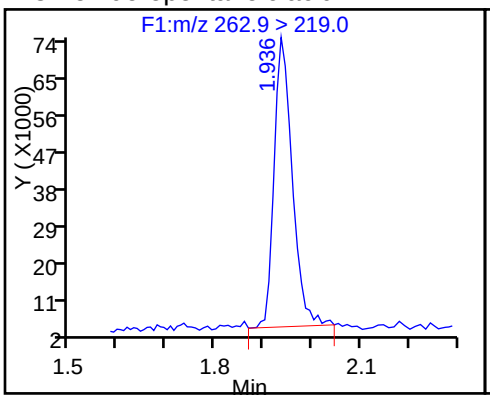
1 Perfluorobutyric acid



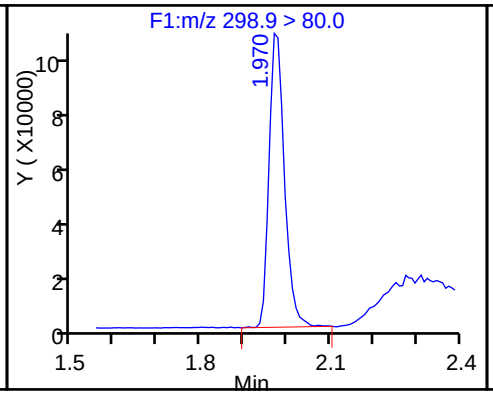
D 4 13C5-PFPeA



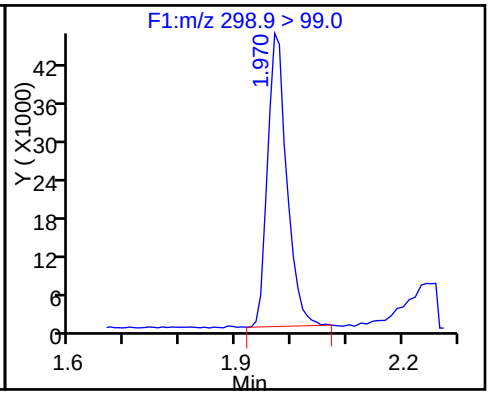
3 Perfluoropentanoic acid



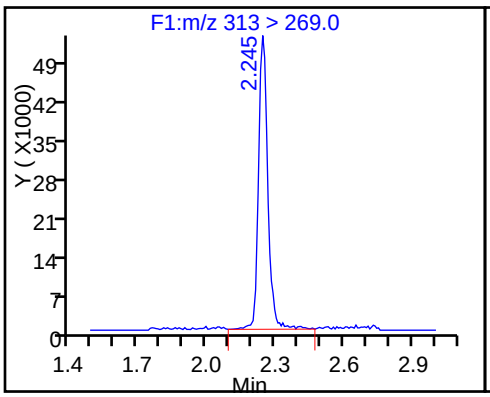
5 Perfluorobutanesulfonic acid



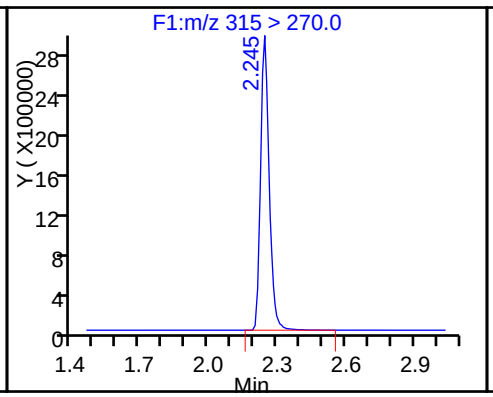
5 Perfluorobutanesulfonic acid



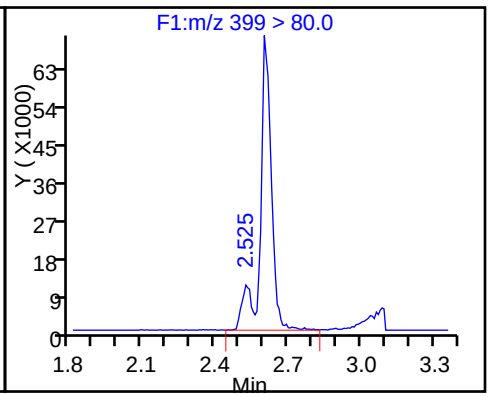
7 Perfluorohexanoic acid



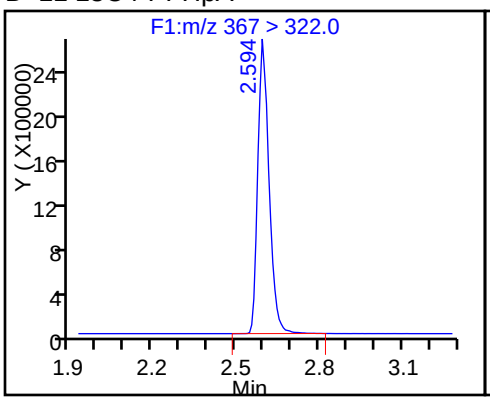
D 6 13C2 PFHxA



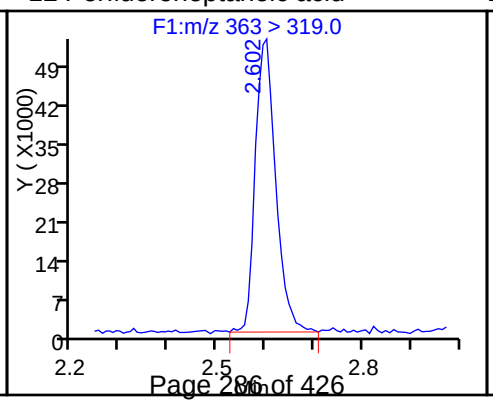
9 Perfluorohexanesulfonic acid



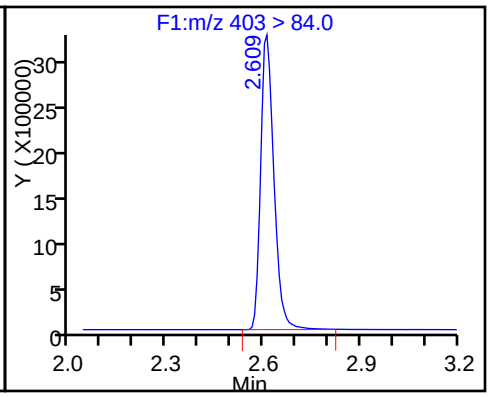
D 11 13C4-PFHpA



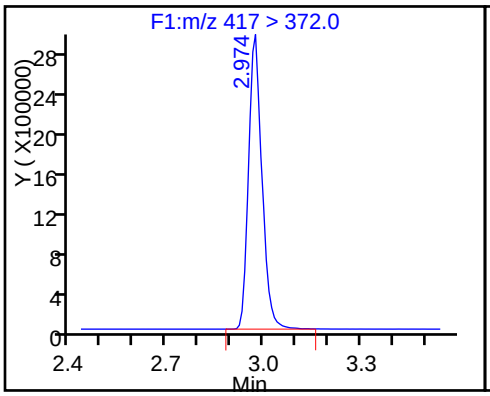
12 Perfluoroheptanoic acid



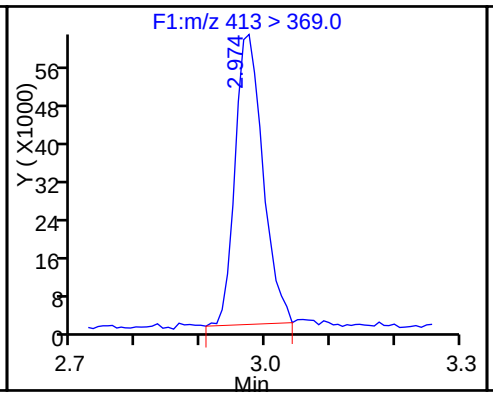
D 10 18O2 PFHxS



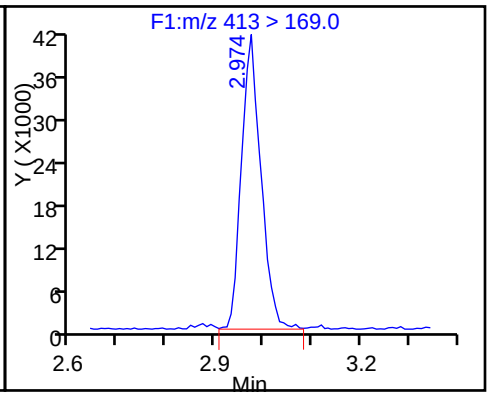
D 14 13C4 PFOA



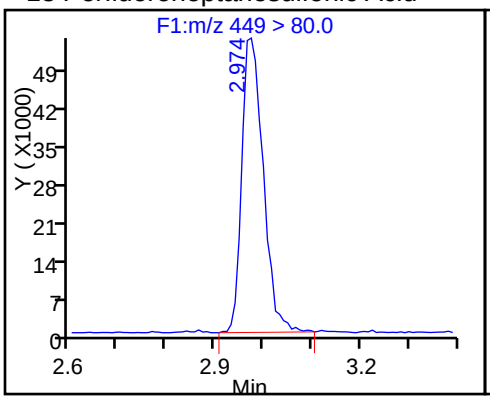
15 Perfluorooctanoic acid



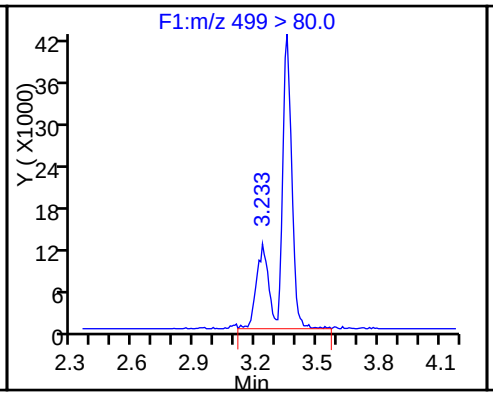
15 Perfluorooctanoic acid



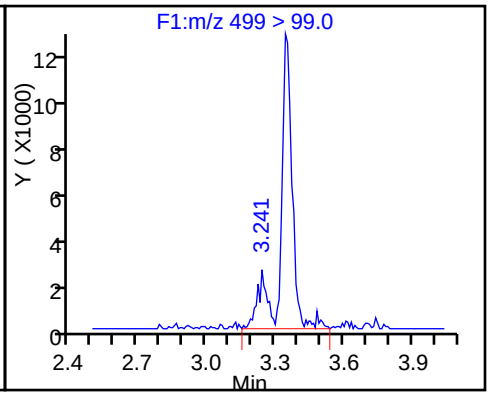
13 Perfluoroheptanesulfonic Acid



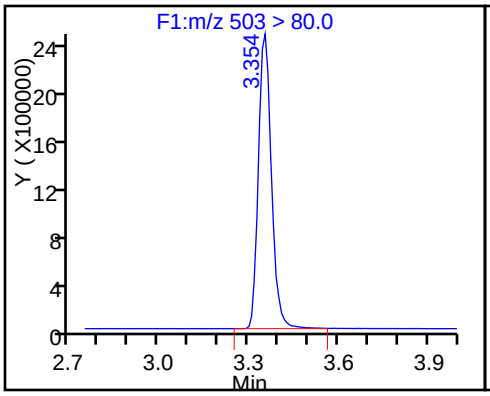
18 Perfluorooctane sulfonic acid



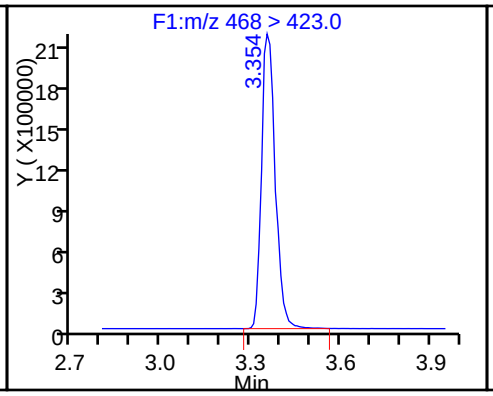
18 Perfluorooctane sulfonic acid



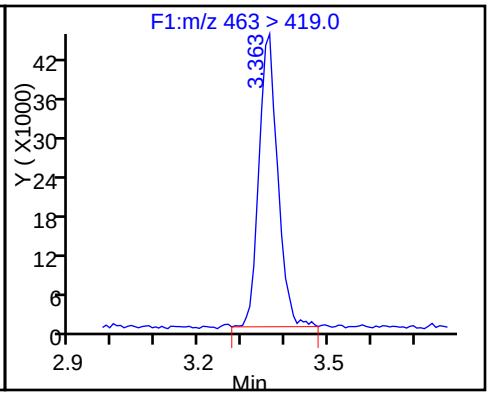
D 17 13C4 PFOS



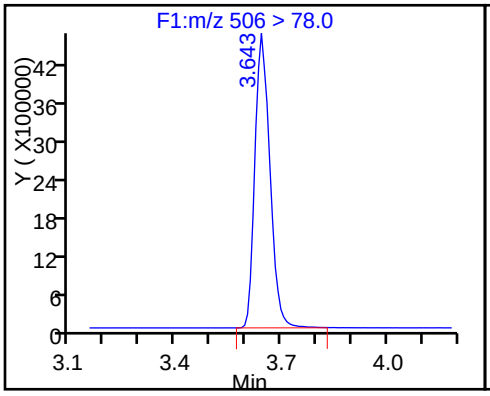
D 19 13C5 PFNA



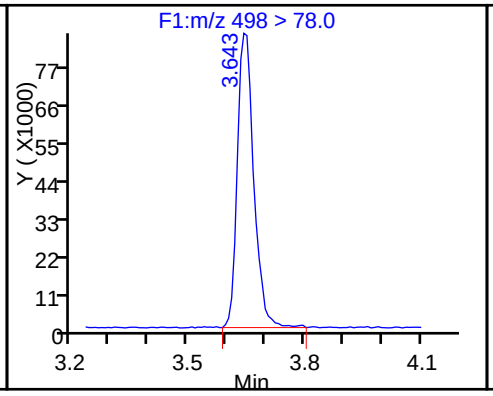
20 Perfluorononanoic acid



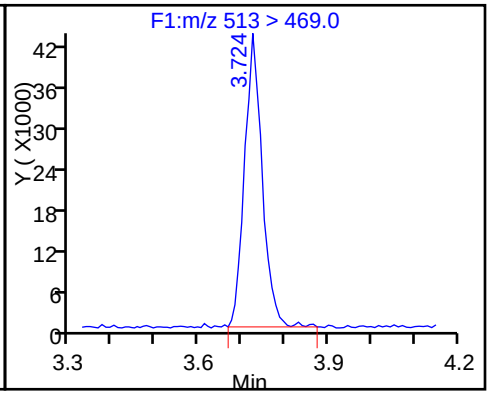
D 21 13C8 FOSA



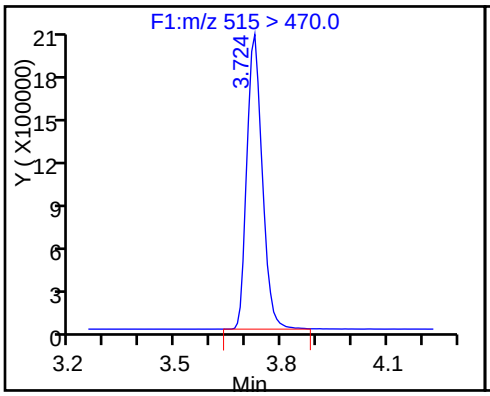
22 Perfluorooctane Sulfonamide



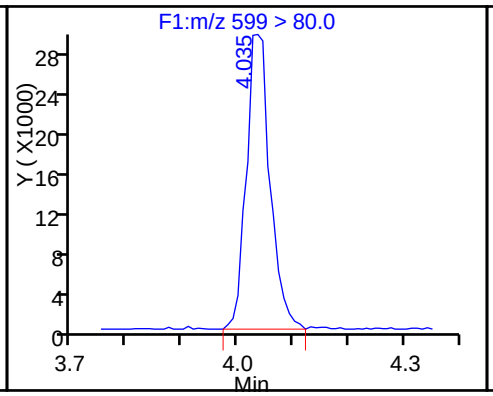
24 Perfluorodecanoic acid



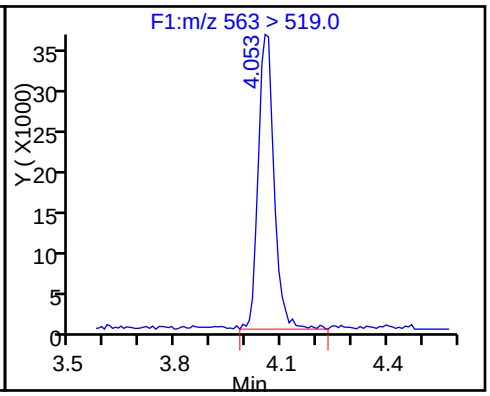
D 23 13C2 PFDA



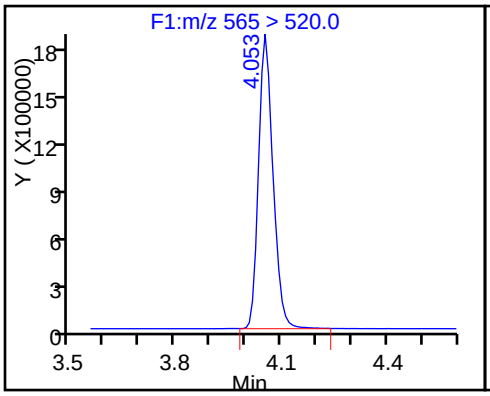
26 Perfluorodecane Sulfonic acid



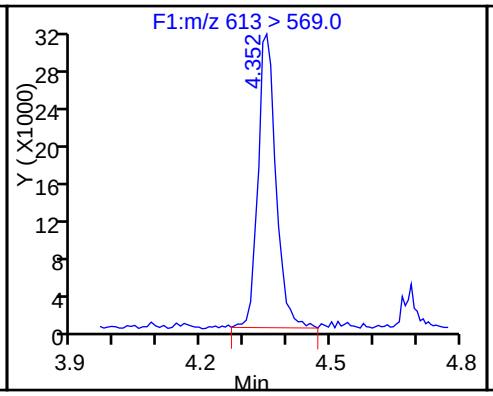
28 Perfluoroundecanoic acid



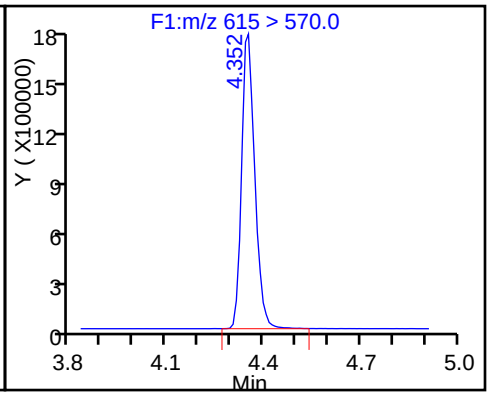
D 27 13C2 PFUnA



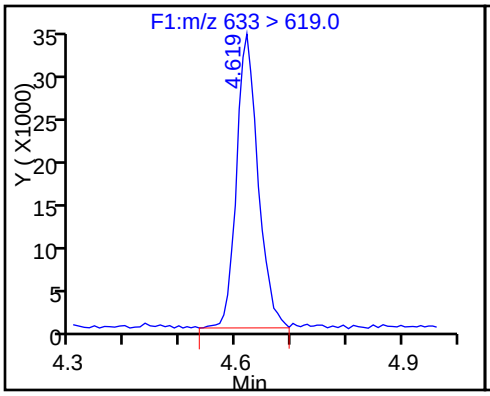
29 Perfluorododecanoic acid



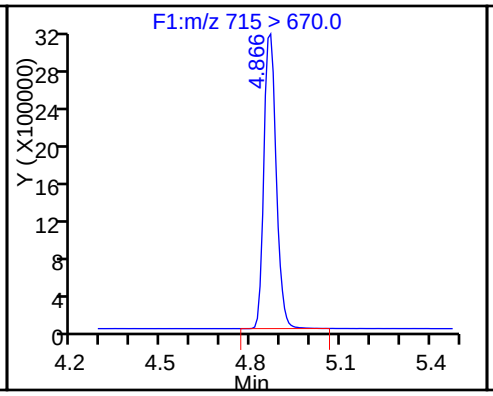
D 30 13C2 PFDoA



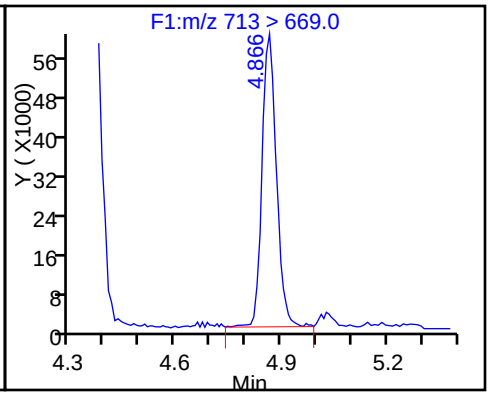
31 Perfluorotridecanoic acid



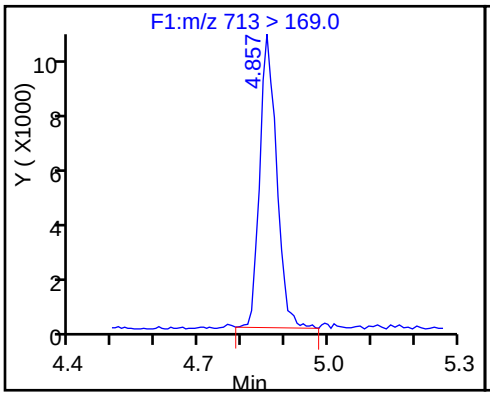
D 32 13C2-PFTeDA



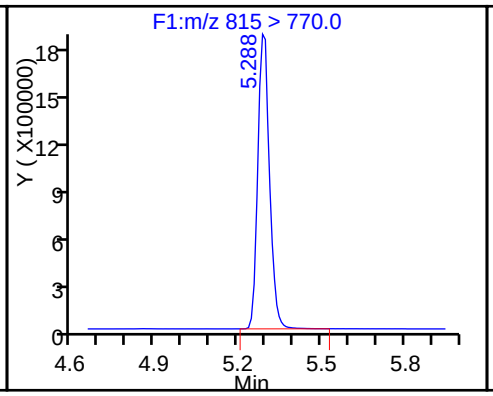
33 Perfluorotetradecanoic acid



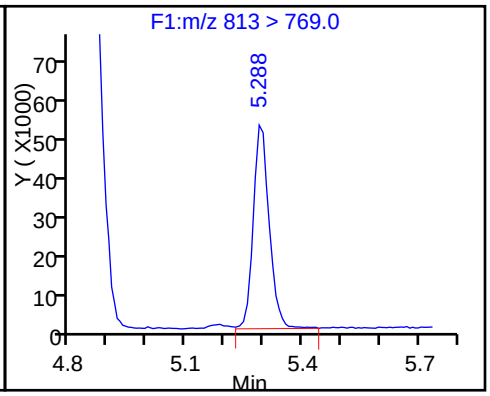
33 Perfluorotetradecanoic acid



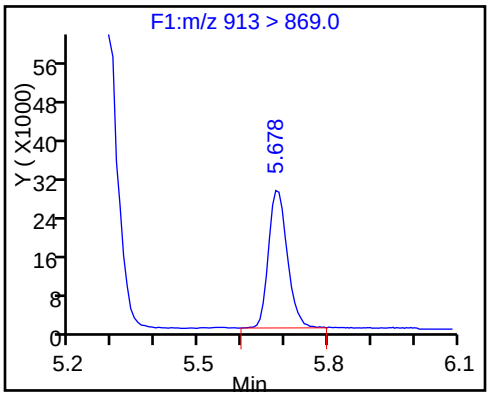
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_006_p1_e1.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 03-Sep-2016 15:53:00 ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Sep-2016 14:35:59 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK025

First Level Reviewer: phomsophat Date: 06-Sep-2016 16:18:01

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.623	1.642	-0.019		10214983	50.6		101	396575	
1 Perfluorobutyric acid										
212.9 > 169.0	1.623	1.645	-0.022	1.000	905532	5.06		101	7160	
D 4 13C5-PFPeA										
267.9 > 223.0	1.927	1.938	-0.011		8022422	50.6		101	1413839	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.927	1.940	-0.013	1.000	831490	4.94		98.8	17018	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.961	1.976	-0.015	1.000	1262929	4.44		100		
298.9 > 99.0	1.961	1.976	-0.015	1.000	520180		2.43(0.00-0.00)	100		
7 Perfluorohexanoic acid										
313 > 269.0	2.245	2.253	-0.008	1.000	721026	4.88		97.5	35118	
D 6 13C2 PFHxA										
315 > 270.0	2.245	2.254	-0.009		7336757	50.8		102	684201	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.539	2.591	-0.052	1.000	944278	4.70		103		
D 11 13C4-PFHpA										
367 > 322.0	2.616	2.611	0.005		7022231	53.7		107	463404	
12 Perfluoroheptanoic acid										
363 > 319.0	2.616	2.614	0.002	1.000	718644	4.92		98.3	18708	
D 10 18O2 PFHxS										
403 > 84.0	2.623	2.626	-0.003		8847569	49.0		104	589088	
D 14 13C4 PFOA										
417 > 372.0	3.004	2.994	0.010		7959440	54.6		109	416822	
15 Perfluorooctanoic acid										
413 > 369.0	3.004	2.996	0.008	1.000	891238	5.38		108	16677	
413 > 169.0	3.004	2.996	0.008	1.000	526454		1.69(0.90-1.10)	108	34110	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	3.012	2.999	0.013	1.000	814579	4.66		97.9		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.275	3.271	0.004	1.000	970855	5.44		117	13141	
499 > 99.0	3.283	3.271	0.012	1.003	236652		4.10(0.90-1.10)	117	4465	
D 17 13C4 PFOS										
503 > 80.0	3.391	3.375	0.016		7254876	50.1		105	341175	
D 19 13C5 PFNA										
468 > 423.0	3.391	3.380	0.011		6686529	52.4		105	421064	
20 Perfluorononanoic acid										
463 > 419.0	3.400	3.381	0.019	1.000	648001	4.78		95.6	19601	
D 21 13C8 FOSA										
506 > 78.0	3.684	3.674	0.010		13296996	49.9		99.8	485188	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.684	3.674	0.010	1.000	1289420	5.25		105	107284	
24 Perfluorodecanoic acid										
513 > 469.0	3.762	3.744	0.018	1.000	597900	5.01		100	33429	
D 23 13C2 PFDA										
515 > 470.0	3.762	3.744	0.018		6100738	50.5		101	331578	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	4.069	4.055	0.014	1.000	449395	4.63		96.1		
28 Perfluoroundecanoic acid										
563 > 519.0	4.088	4.078	0.010	1.000	496205	4.68		93.7	22894	
D 27 13C2 PFUnA										
565 > 520.0	4.098	4.081	0.017		4921680	51.6		103	269103	
29 Perfluorododecanoic acid										
613 > 569.0	4.390	4.374	0.016	1.000	445151	4.95		99.1	6421	
D 30 13C2 PFDoA										
615 > 570.0	4.390	4.374	0.016		4635610	52.4		105	252415	
31 Perfluorotridecanoic acid										
633 > 619.0	4.650	4.639	0.011	1.000	452087	4.87		97.4	1462	
D 32 13C2-PFTeDA										
715 > 670.0	4.899	4.882	0.017		9007978	52.8		106	629709	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.899	4.883	0.016	1.000	830110	4.99		99.9	1360	
713 > 169.0	4.890	4.883	0.007	0.998	133267		6.23(0.00-0.00)	99.9	22527	
D 34 13C2-PFHxDA										
815 > 770.0	5.315	5.305	0.010		5649829	51.9		104	378287	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.324	5.309	0.015	1.000	553254	4.81		96.3	1686	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.711	5.692	0.019	1.000	448259	4.93		98.6	2053	

Reagents:

LCPFC-L3_00019 Amount Added: 1.00 Units: mL

Report Date: 14-Sep-2016 14:36:02 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_006_p1_e1.d

Injection Date: 03-Sep-2016 15:53:00 Instrument ID: A8

Lims ID: IC L3

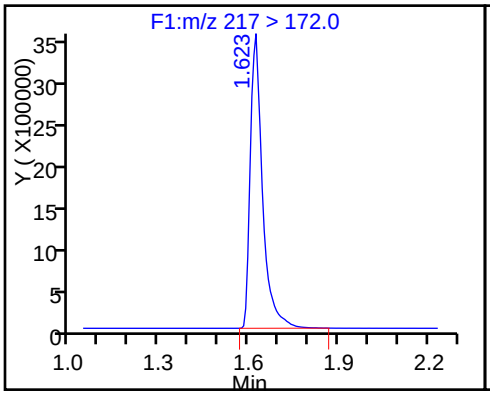
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 6

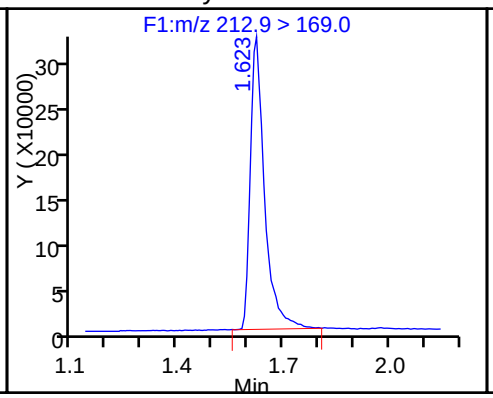
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

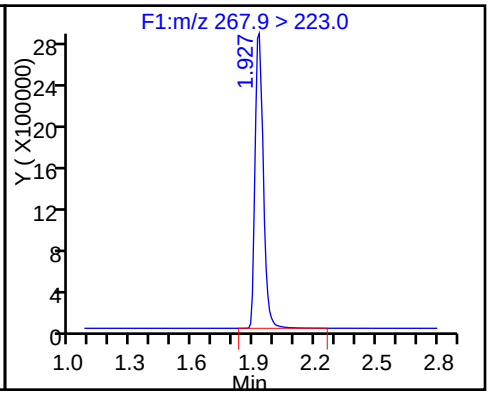
D 2 13C4 PFBA



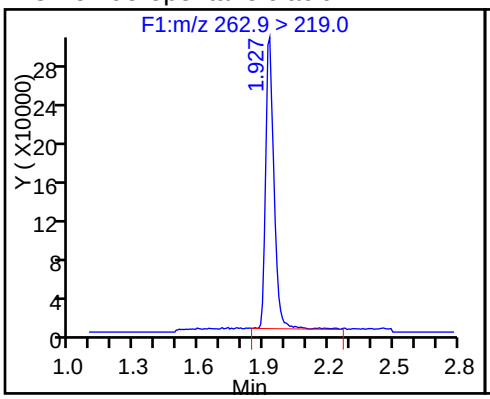
1 Perfluorobutyric acid



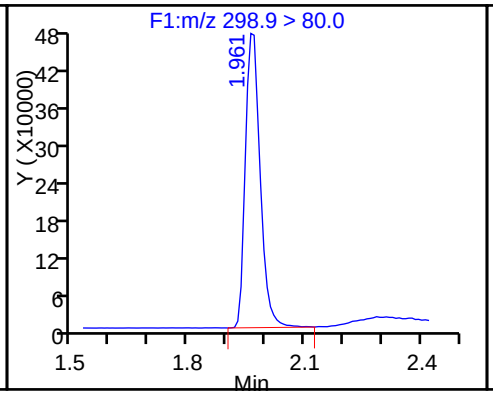
D 4 13C5-PFPeA



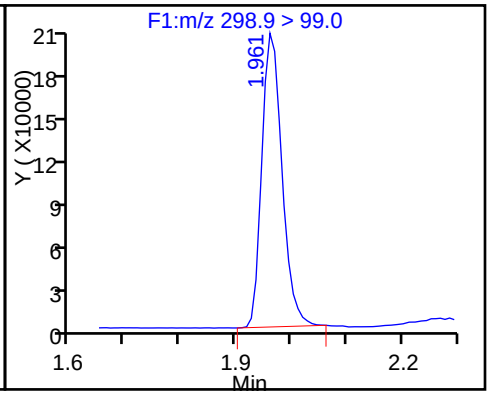
3 Perfluoropentanoic acid



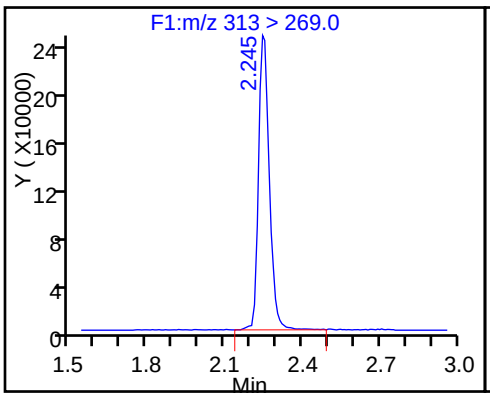
5 Perfluorobutanesulfonic acid



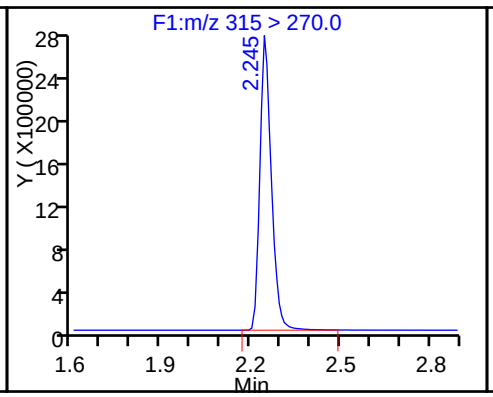
5 Perfluorobutanesulfonic acid



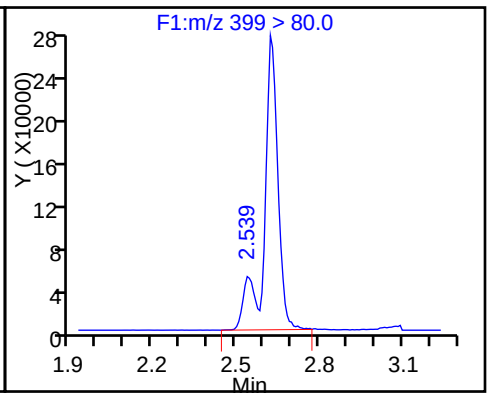
7 Perfluorohexanoic acid



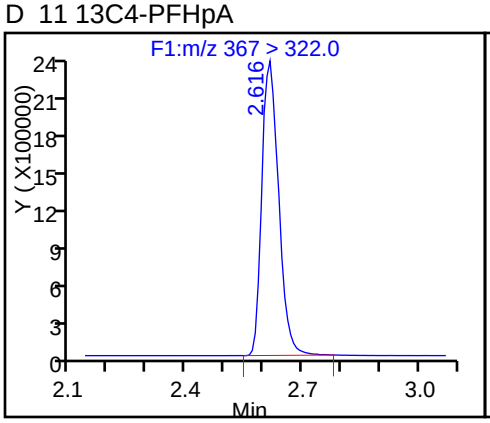
D 6 13C2 PFHxA



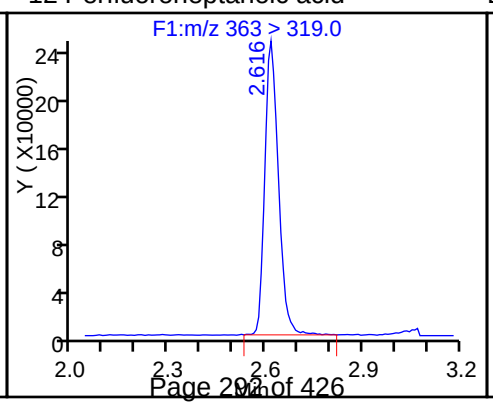
9 Perfluorohexanesulfonic acid



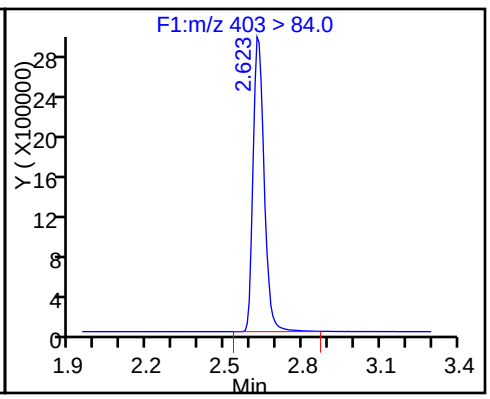
D 11 13C4-PFHpA



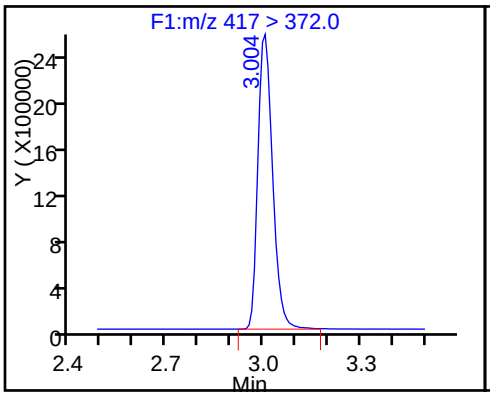
12 Perfluoroheptanoic acid



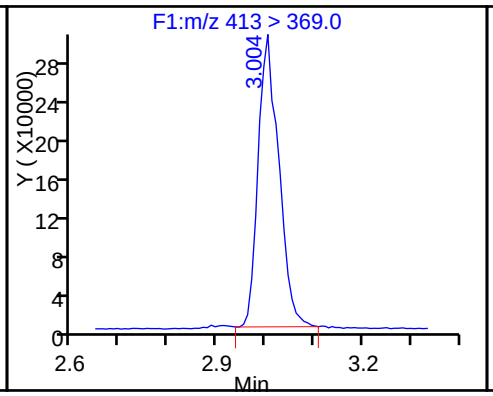
D 10 18O2 PFHxS



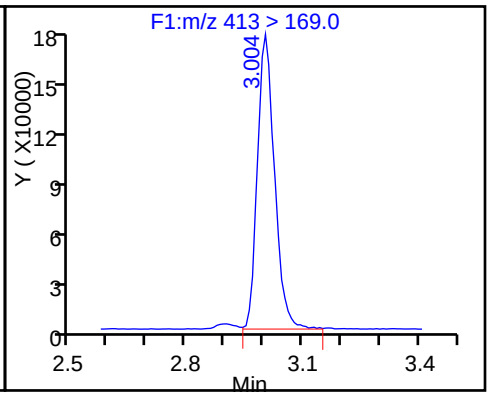
D 14 13C4 PFOA



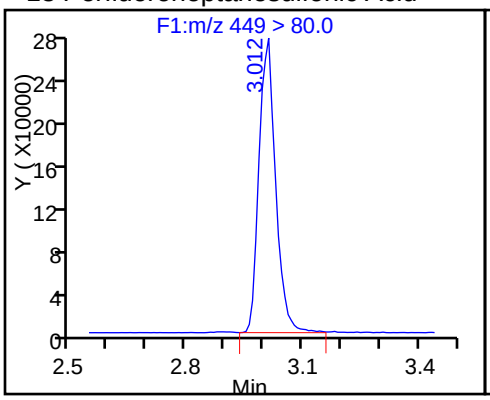
15 Perfluorooctanoic acid



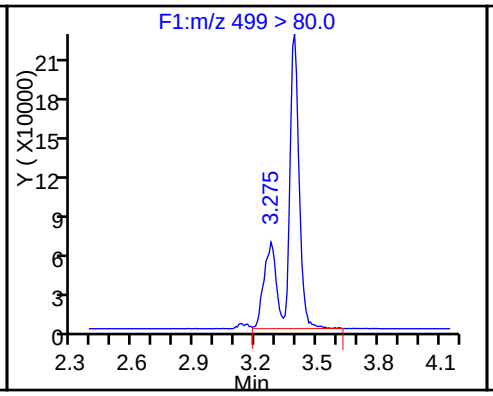
15 Perfluorooctanoic acid



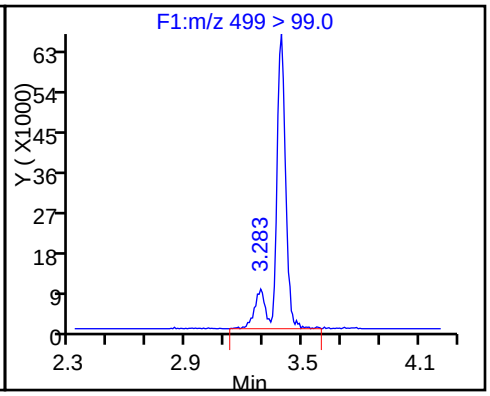
13 Perfluoroheptanesulfonic Acid



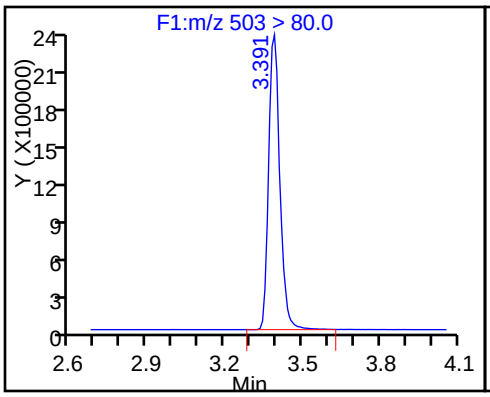
18 Perfluorooctane sulfonic acid



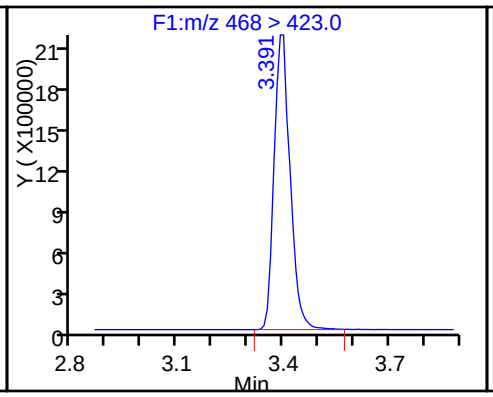
18 Perfluorooctane sulfonic acid



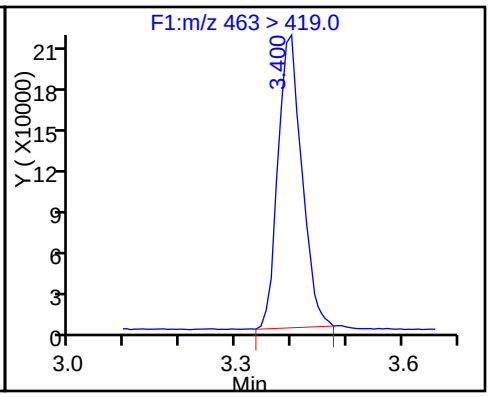
D 17 13C4 PFOS



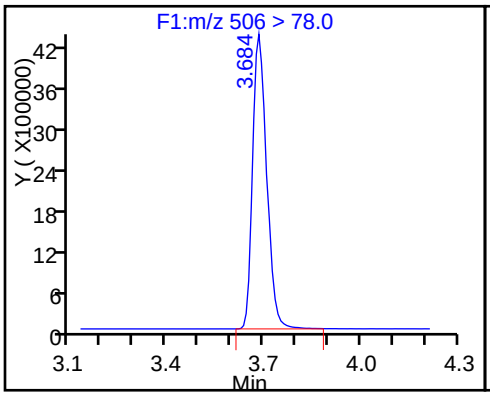
D 19 13C5 PFNA



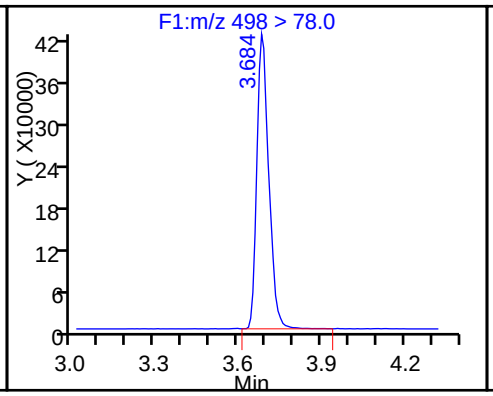
20 Perfluorononanoic acid



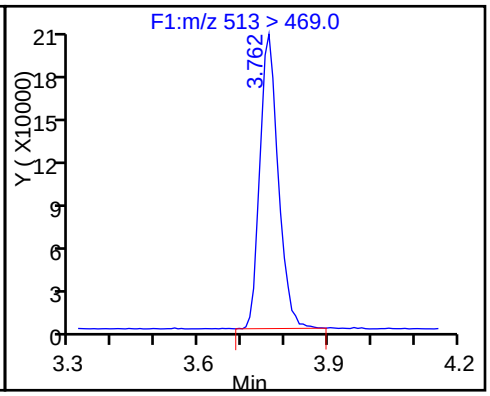
D 21 13C8 FOSA



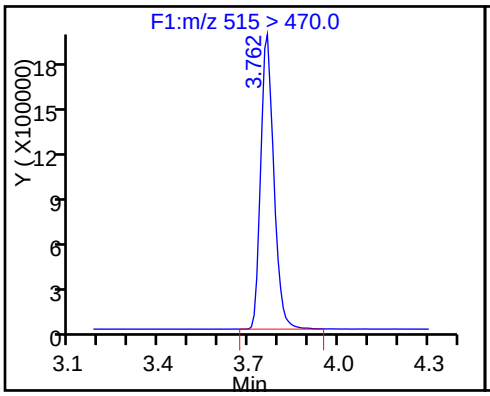
22 Perfluorooctane Sulfonamide



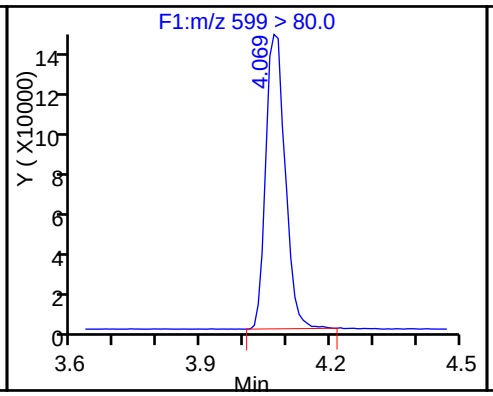
24 Perfluorodecanoic acid



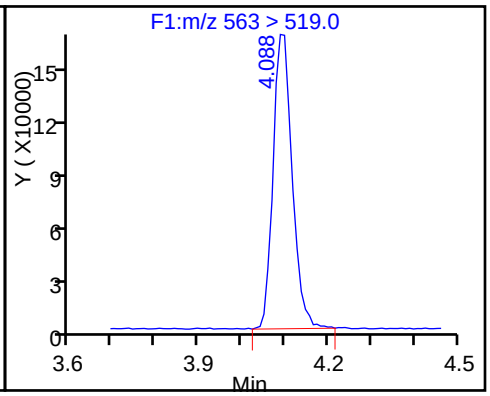
D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid



28 Perfluoroundecanoic acid



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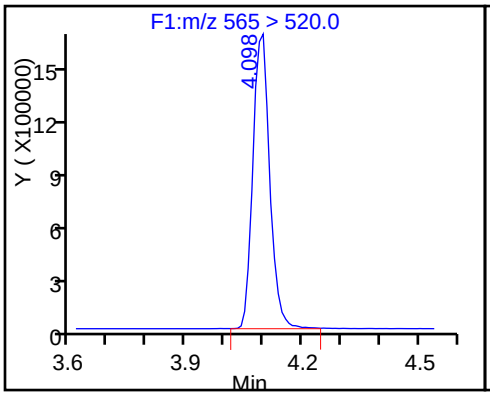
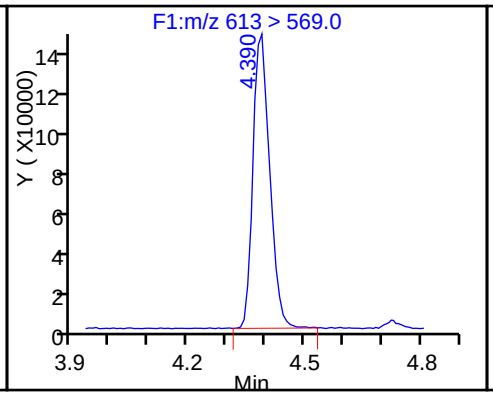
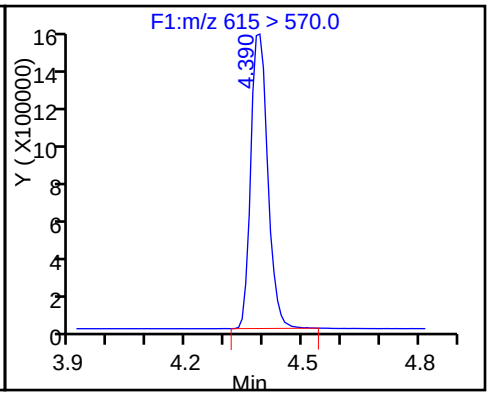


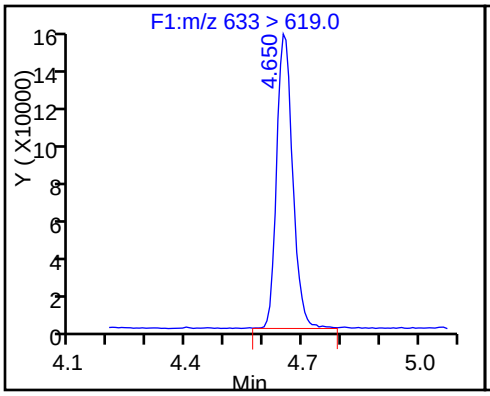
29 Perfluorododecanoic acid



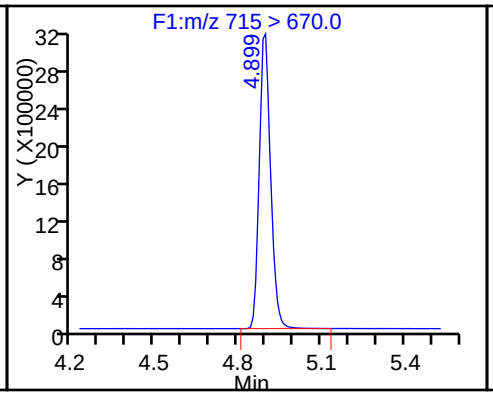
D 30 13C2 PFDoA



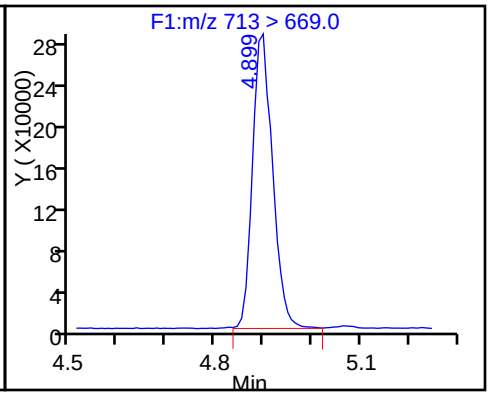
31 Perfluorotridecanoic acid



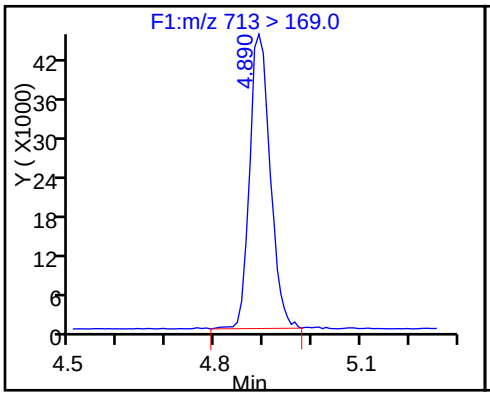
D 32 13C2-PFTeDA



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



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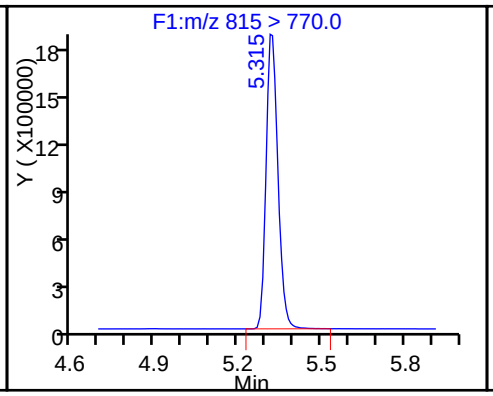
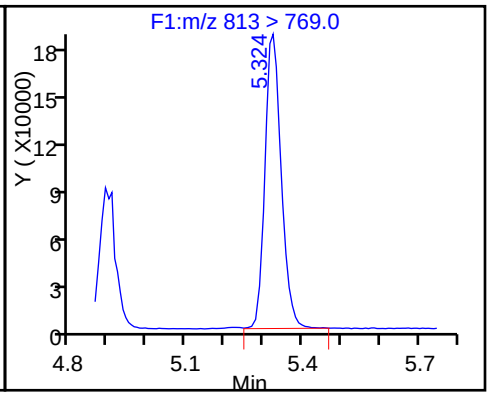
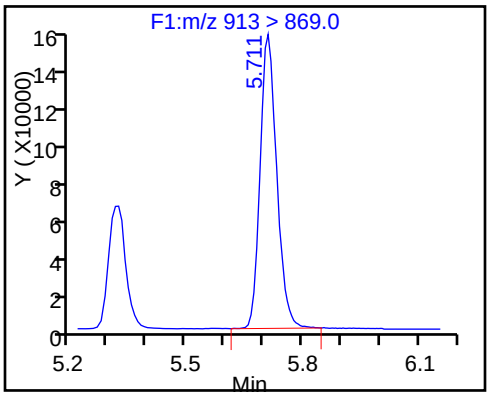


35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_007_p1_e1.d
Lims ID: IC L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 03-Sep-2016 16:01:00 ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Sep-2016 14:36:11 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK025

First Level Reviewer: phomsophat Date: 06-Sep-2016 16:06:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.651	1.642	0.009		10597639	52.5		105	448370	
1 Perfluorobutyric acid										
212.9 > 169.0	1.658	1.645	0.013	1.000	3806071	20.5		102	32137	
D 4 13C5-PFPeA										
267.9 > 223.0	1.953	1.938	0.015		7962509	50.3		101	1429016	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.953	1.940	0.013	1.000	3300147	19.7		98.7	55522	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.986	1.976	0.010	1.000	5393562	18.8		106		
298.9 > 99.0	1.986	1.976	0.010	1.000	2262406		2.38(0.00-0.00)	106		
7 Perfluorohexanoic acid										
313 > 269.0	2.262	2.253	0.009	1.000	2942051	20.3		101	168535	
D 6 13C2 PFHxA										
315 > 270.0	2.270	2.254	0.016		7200359	49.9		99.8	608998	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.558	2.591	-0.033	1.000	3658925	18.1		99.4		
D 11 13C4-PFHpA										
367 > 322.0	2.627	2.611	0.016		6932384	53.0		106	800643	
12 Perfluoroheptanoic acid										
363 > 319.0	2.627	2.614	0.013	1.000	2873384	19.9		99.6	64184	
D 10 18O2 PFHxS										
403 > 84.0	2.642	2.626	0.016		8905918	49.3		104	585765	
D 14 13C4 PFOA										
417 > 372.0	3.013	2.994	0.019		7699889	52.8		106	597811	
15 Perfluorooctanoic acid										
413 > 369.0	3.013	2.996	0.017	1.000	3293903	20.6		103	61137	
413 > 169.0	3.013	2.996	0.017	1.000	2005923		1.64(0.90-1.10)	103	131910	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	3.013	2.999	0.014	1.000	3379364	19.4		102		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.273	3.271	0.002	1.000	3198967	18.0		97.0	18551	
499 > 99.0	3.361	3.271	0.090	1.027	737316		4.34(0.90-1.10)	97.0	24771	
D 17 13C4 PFOS										
503 > 80.0	3.389	3.375	0.014		7229395	50.0		105	240866	
D 19 13C5 PFNA										
468 > 423.0	3.398	3.380	0.018		6564022	51.5		103	557162	
20 Perfluorononanoic acid										
463 > 419.0	3.398	3.381	0.017	1.000	2651561	19.9		99.6	92965	
D 21 13C8 FOSA										
506 > 78.0	3.692	3.674	0.018		13547695	50.9		102	485893	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.692	3.674	0.018	1.000	5230694	20.9		105	294740	
24 Perfluorodecanoic acid										
513 > 469.0	3.753	3.744	0.009	1.000	2383354	19.8		98.9	111989	
D 23 13C2 PFDA										
515 > 470.0	3.753	3.744	0.009		6152729	50.9		102	289949	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	4.069	4.055	0.014	1.000	1916161	19.8		103		
28 Perfluoroundecanoic acid										
563 > 519.0	4.099	4.078	0.021	1.000	1993953	19.4		96.8	134409	
D 27 13C2 PFUnA										
565 > 520.0	4.099	4.081	0.018		4785082	50.2		100	250296	
29 Perfluorododecanoic acid										
613 > 569.0	4.382	4.374	0.008	1.000	1801266	19.9		99.4	32804	
D 30 13C2 PFDoA										
615 > 570.0	4.382	4.374	0.008		4674298	52.8		106	265342	
31 Perfluorotridecanoic acid										
633 > 619.0	4.651	4.639	0.012	1.000	1853833	19.8		99.0	6131	
D 32 13C2-PFTeDA										
715 > 670.0	4.890	4.882	0.008		8975109	52.7		105	625660	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.899	4.883	0.016	1.000	3402523	20.3		101	4711	
713 > 169.0	4.890	4.883	0.007	0.998	538546		6.32(0.00-0.00)	101	47433	
D 34 13C2-PFHxDA										
815 > 770.0	5.318	5.305	0.013		5743935	52.8		106	397836	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.318	5.309	0.009	1.000	2149259	19.8		99.1	6665	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.707	5.692	0.015	1.000	1807447	19.7		98.6	6895	

Reagents:

LCPFC-L4_00022 Amount Added: 1.00 Units: mL

Report Date: 14-Sep-2016 14:36:13 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_007_p1_e1.d

Injection Date: 03-Sep-2016 16:01:00 Instrument ID: A8

Lims ID: IC L4

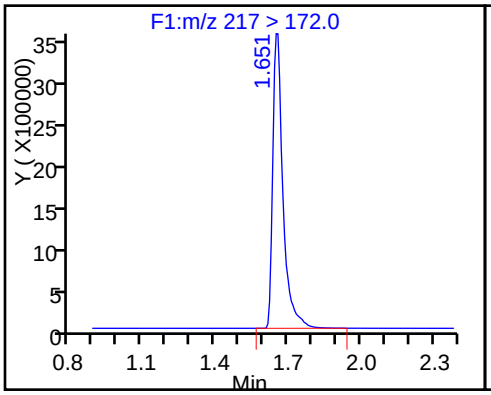
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 7

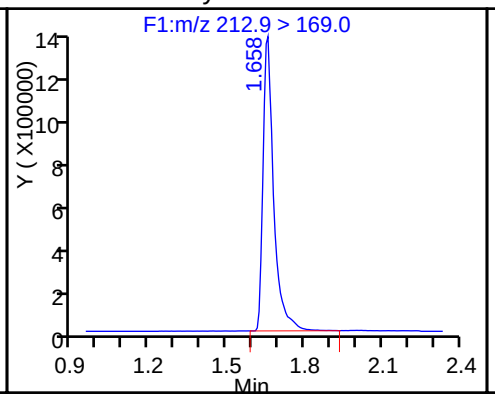
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

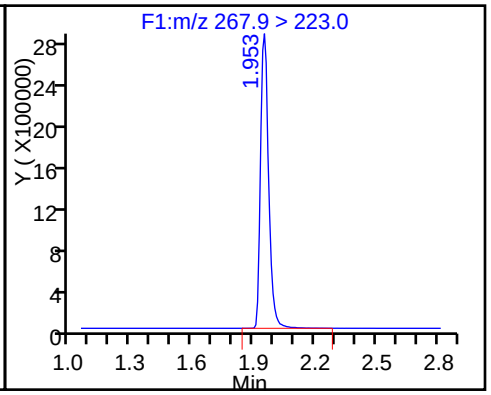
D 2 13C4 PFBA



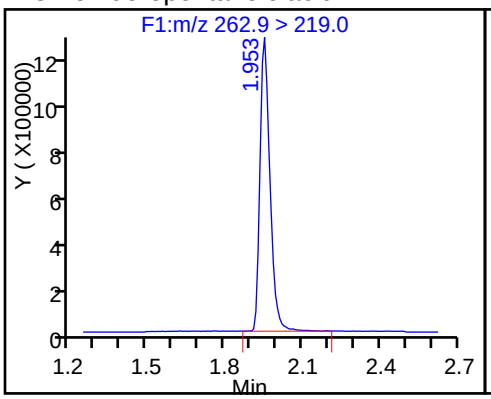
1 Perfluorobutyric acid



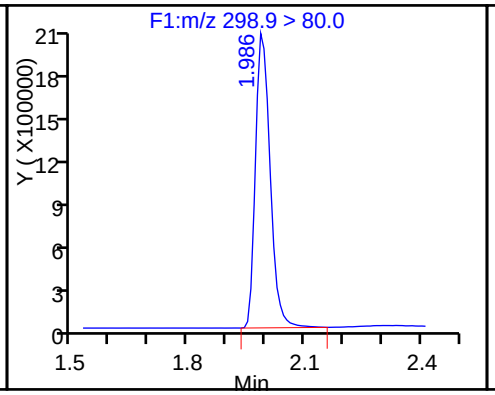
D 4 13C5-PFPeA



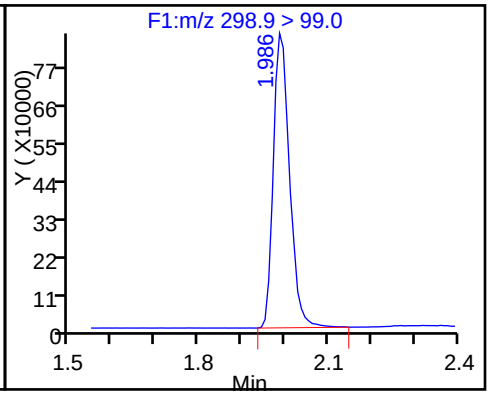
3 Perfluoropentanoic acid



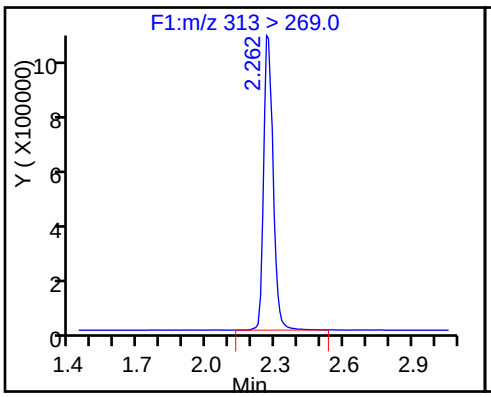
5 Perfluorobutanesulfonic acid



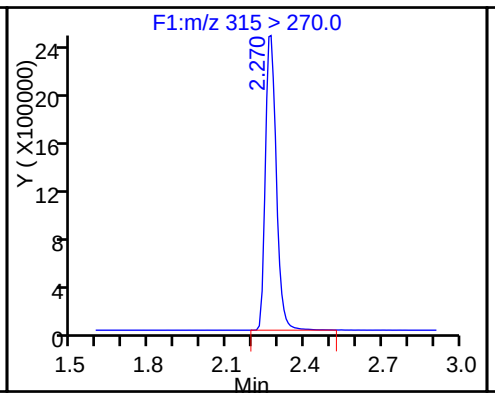
5 Perfluorobutanesulfonic acid



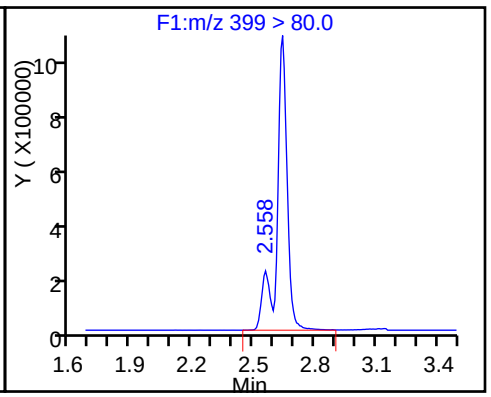
7 Perfluorohexanoic acid



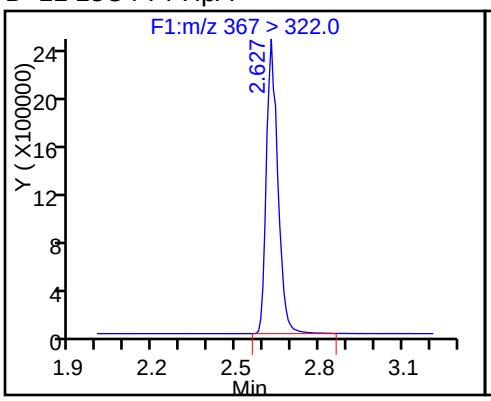
D 6 13C2 PFHxA



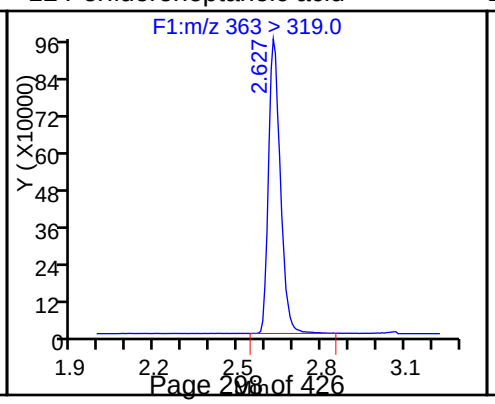
9 Perfluorohexanesulfonic acid



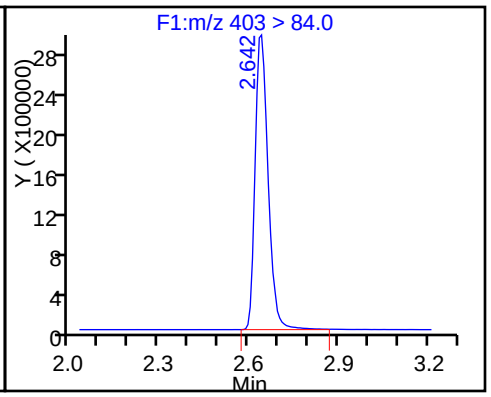
D 11 13C4-PFHpA



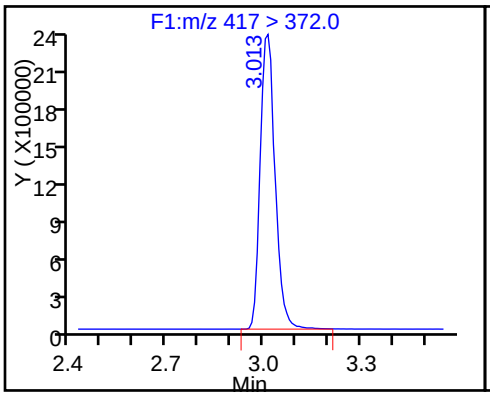
12 Perfluoroheptanoic acid



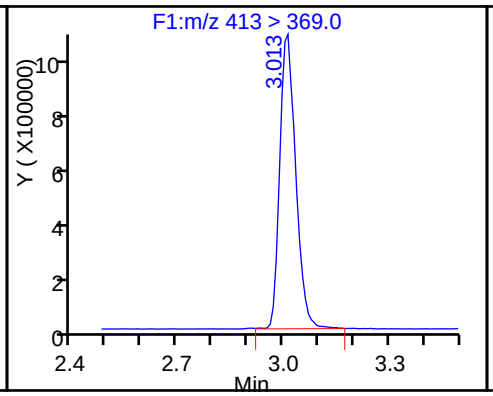
D 10 18O2 PFHxS



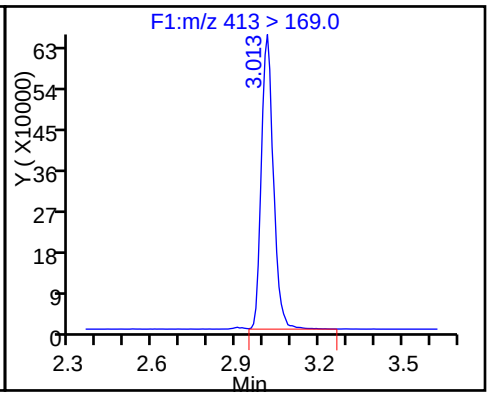
D 14 13C4 PFOA



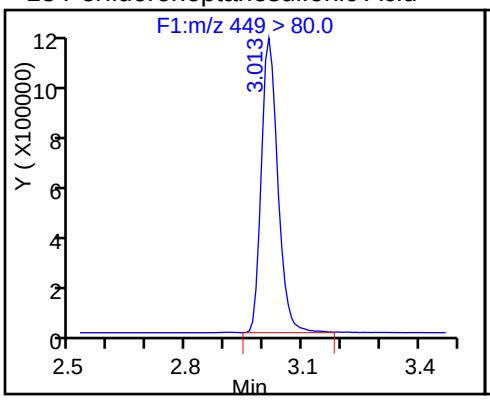
15 Perfluorooctanoic acid



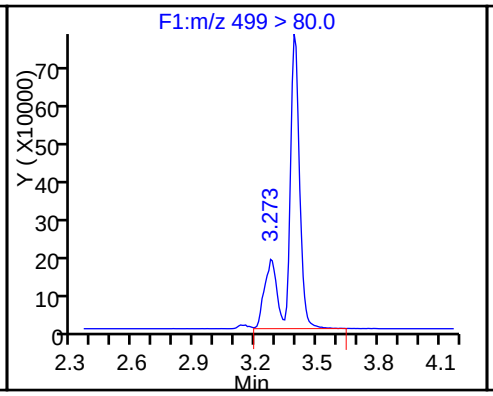
15 Perfluorooctanoic acid



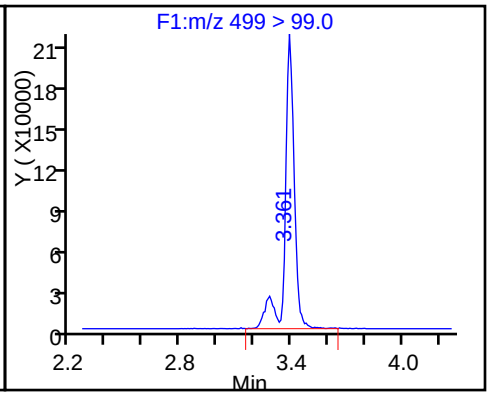
13 Perfluoroheptanesulfonic Acid



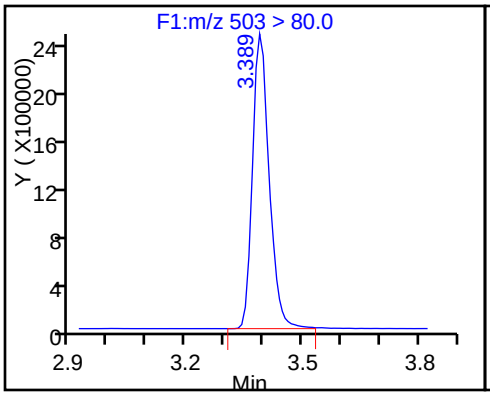
18 Perfluorooctane sulfonic acid



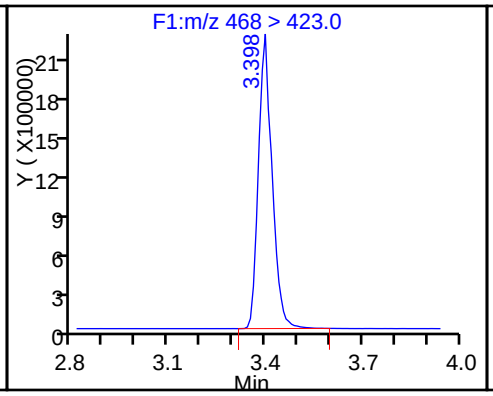
18 Perfluorooctane sulfonic acid



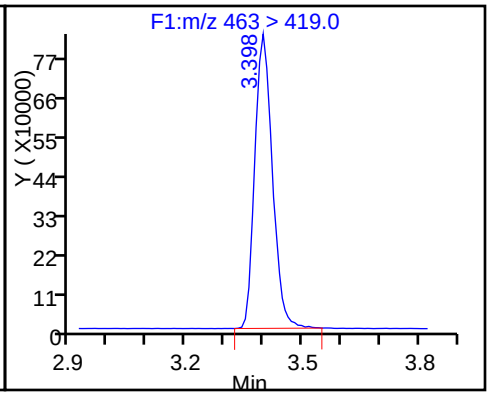
D 17 13C4 PFOS



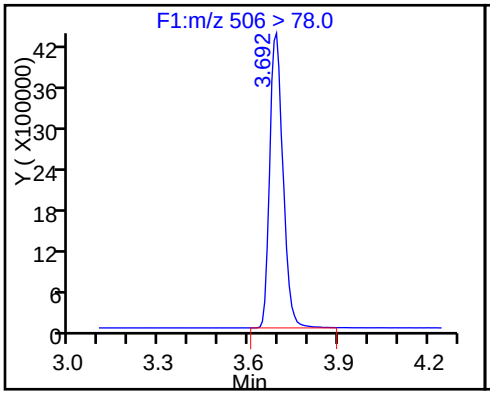
D 19 13C5 PFNA



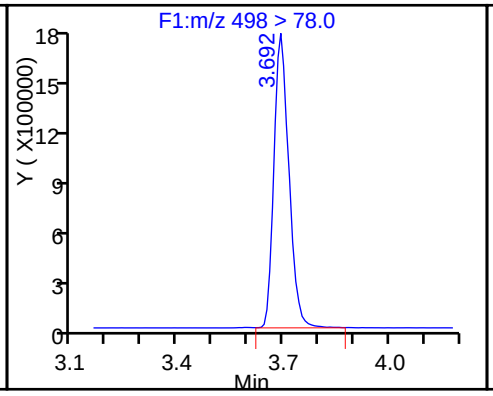
20 Perfluorononanoic acid



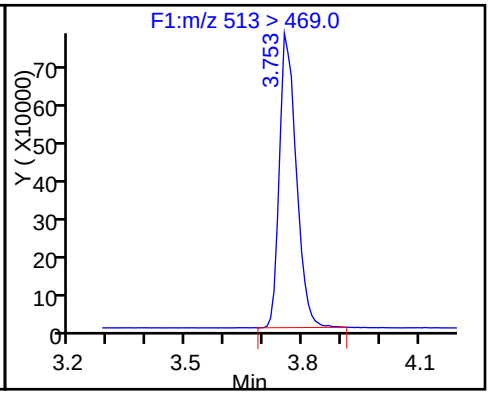
D 21 13C8 FOSA



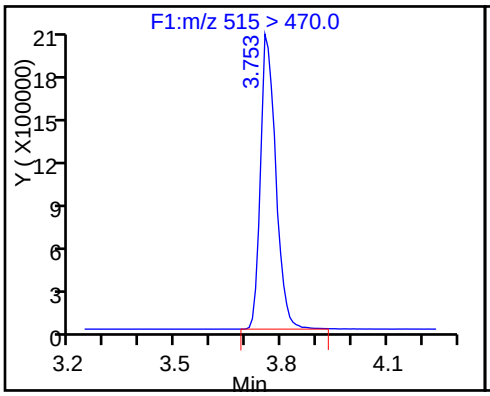
22 Perfluorooctane Sulfonamide



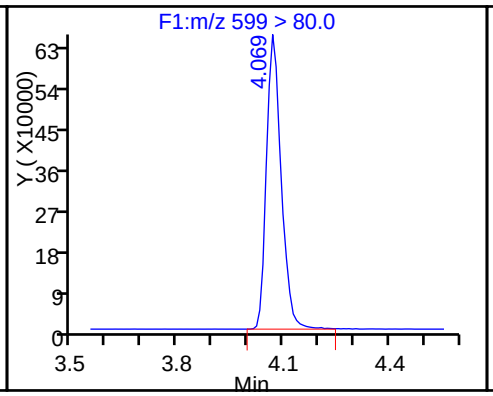
24 Perfluorodecanoic acid



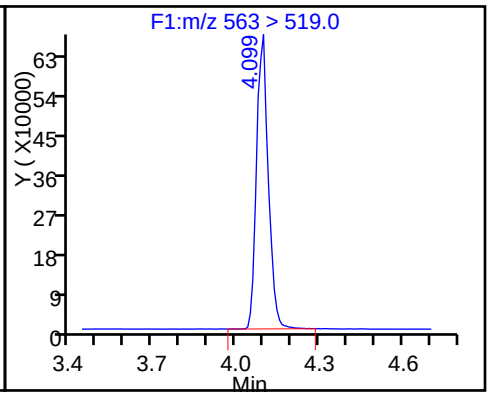
D 23 13C2 PFDA



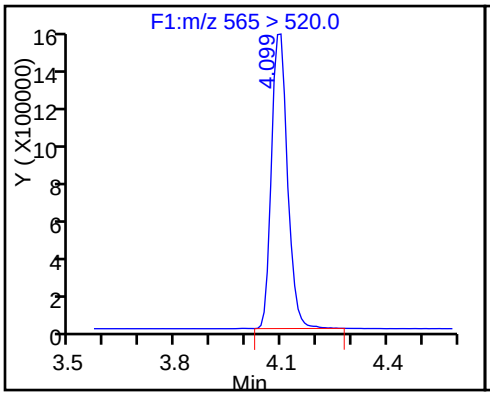
26 Perfluorodecane Sulfonic acid



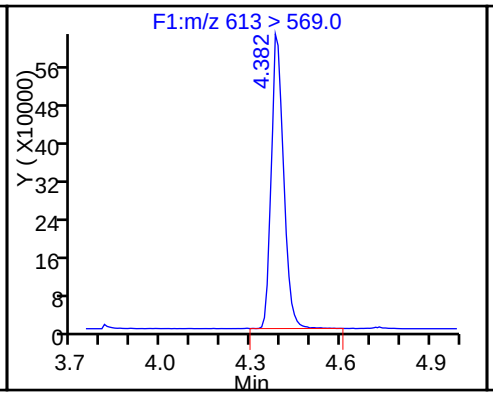
28 Perfluoroundecanoic acid



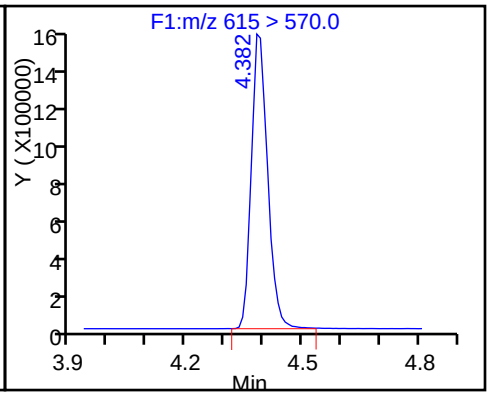
D 27 13C2 PFUnA



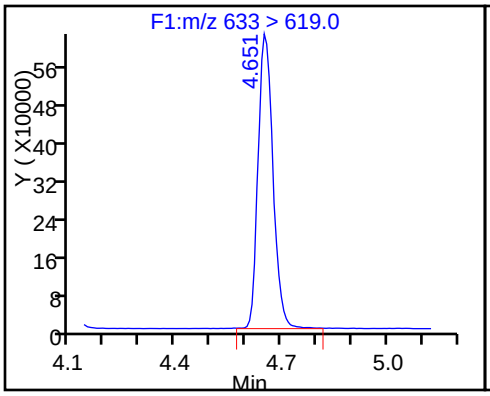
29 Perfluorododecanoic acid



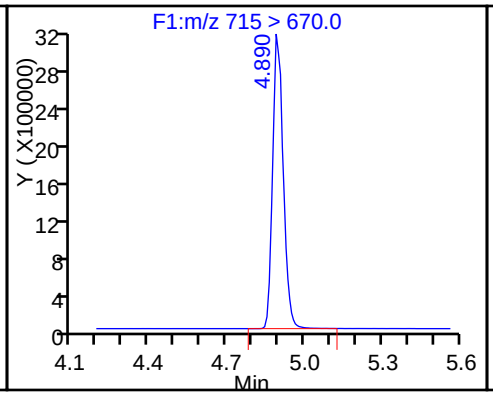
D 30 13C2 PFDoA



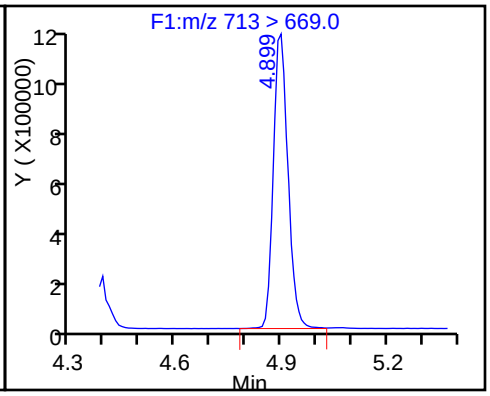
31 Perfluorotridecanoic acid



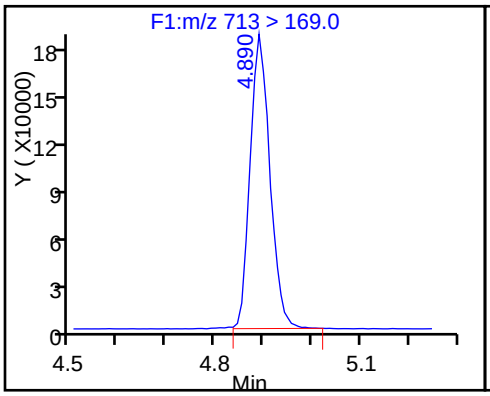
D 32 13C2-PFTeDA



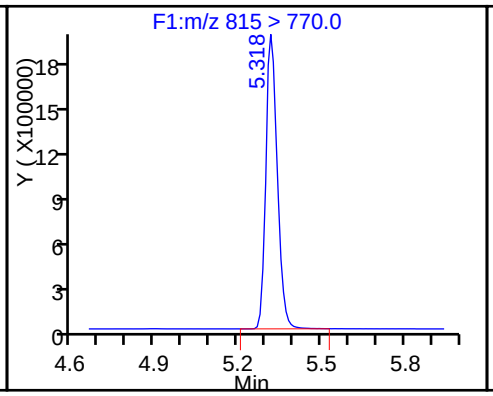
33 Perfluorotetradecanoic acid



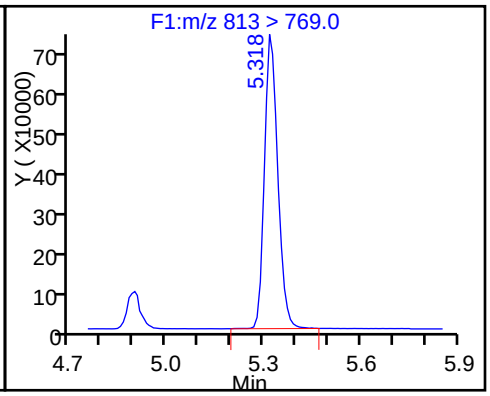
33 Perfluorotetradecanoic acid



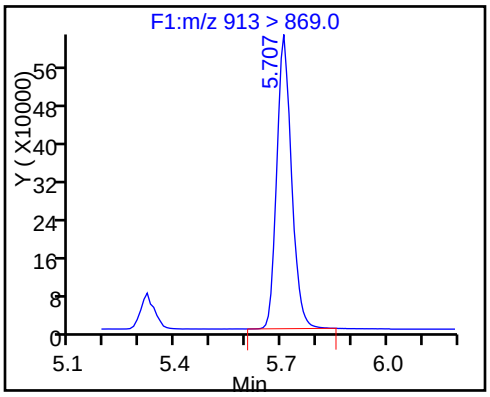
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_008_p1_e1.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Sep-2016 16:08:00 ALS Bottle#: 0 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Sep-2016 14:36:22 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK025

First Level Reviewer: westendorfc Date: 14-Sep-2016 14:34:00

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.643	1.642	0.001		10059992	49.8		99.6	359378	
1 Perfluorobutyric acid										
212.9 > 169.0	1.650	1.645	0.005	1.000	9107590	51.6		103	150252	
D 4 13C5-PFPeA										
267.9 > 223.0	1.941	1.938	0.003		7811976	49.3		98.6	586647	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.950	1.940	0.010	1.000	8018325	48.9		97.8	130209	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.983	1.976	0.007	1.000	13047591	46.2		104		
298.9 > 99.0	1.983	1.976	0.007	1.000	5710230		2.28(0.00-0.00)	104		
7 Perfluorohexanoic acid										
313 > 269.0	2.257	2.253	0.004	1.000	6836853	49.1		98.1	382919	
D 6 13C2 PFHxA										
315 > 270.0	2.257	2.254	0.003		6914706	47.9		95.8	622070	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.623	2.591	0.032	1.000	8729401	43.8		96.2		
D 11 13C4-PFHpA										
367 > 322.0	2.608	2.611	-0.003		6479138	49.5		99.0	692456	
12 Perfluoroheptanoic acid										
363 > 319.0	2.615	2.614	0.001	1.000	6679813	49.5		99.1	80918	
D 10 18O2 PFHxS										
403 > 84.0	2.623	2.626	-0.003		8783547	48.6		103	511047	
D 14 13C4 PFOA										
417 > 372.0	2.983	2.994	-0.011		7550162	51.8		104	574715	
15 Perfluorooctanoic acid										
413 > 369.0	2.991	2.996	-0.005	1.000	7820671	49.8		99.6	144542	
413 > 169.0	2.991	2.996	-0.005	1.000	4776836		1.64(0.90-1.10)	99.6	192842	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.991	2.999	-0.008	1.000	8192805	48.6		102		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.264	3.271	-0.007	1.000	7327912	42.6		91.8	16729	
499 > 99.0	3.255	3.271	-0.016	0.997	1735978		4.22(0.90-1.10)	91.8	28626	
D 17 13C4 PFOS										
503 > 80.0	3.370	3.375	-0.005		6999925	48.4		101	183016	
D 19 13C5 PFNA										
468 > 423.0	3.370	3.380	-0.010		6214189	48.7		97.5	309473	
20 Perfluorononanoic acid										
463 > 419.0	3.370	3.381	-0.011	1.000	6483970	51.5		103	149680	
D 21 13C8 FOSA										
506 > 78.0	3.671	3.674	-0.003		13368523	50.2		100	456851	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.671	3.674	-0.003	1.000	12654264	51.3		103	423760	
24 Perfluorodecanoic acid										
513 > 469.0	3.739	3.744	-0.005	1.000	5849904	49.2		98.3	208835	
D 23 13C2 PFDA										
515 > 470.0	3.739	3.744	-0.005		6077012	50.3		101	376560	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	4.052	4.055	-0.003	1.000	4699344	50.2		104		
28 Perfluoroundecanoic acid										
563 > 519.0	4.071	4.078	-0.007	1.000	4789301	47.5		95.0	214887	
D 27 13C2 PFUnA										
565 > 520.0	4.071	4.081	-0.010		4682751	49.1		98.3	258038	
29 Perfluorododecanoic acid										
613 > 569.0	4.369	4.374	-0.005	1.000	4351878	50.6		101	92211	
D 30 13C2 PFDoA										
615 > 570.0	4.369	4.374	-0.005		4433243	50.1		100	239298	
31 Perfluorotridecanoic acid										
633 > 619.0	4.637	4.639	-0.002	1.000	4567596	51.4		103	15297	
D 32 13C2-PFTeDA										
715 > 670.0	4.876	4.882	-0.006		8848037	51.9		104	505407	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.876	4.883	-0.007	1.000	8238270	51.8		104	12561	
713 > 169.0	4.867	4.883	-0.016	0.998	1326537		6.21(0.00-0.00)	104	150655	
D 34 13C2-PFHxDA										
815 > 770.0	5.286	5.305	-0.019		5604455	51.5		103	299088	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.297	5.309	-0.012	1.000	5250014	51.8		104	14052	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.680	5.692	-0.012	1.000	4498275	51.8		104	16439	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 14-Sep-2016 14:36:24 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_008_p1_e1.d

Injection Date: 03-Sep-2016 16:08:00 Instrument ID: A8

Lims ID: IC L5

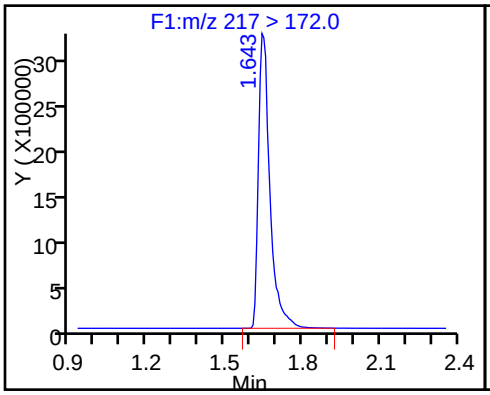
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 8

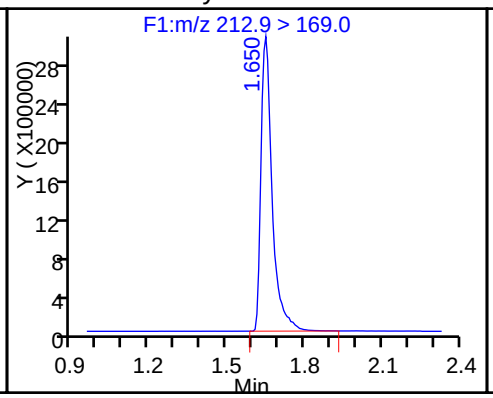
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

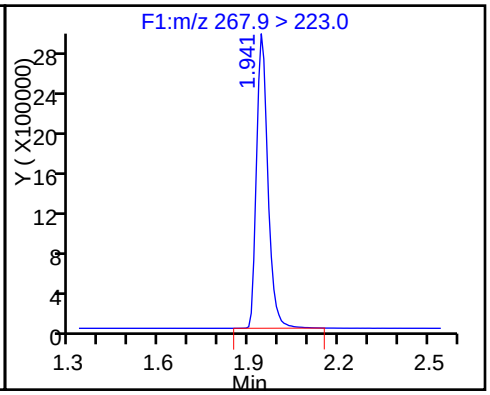
D 2 13C4 PFBA



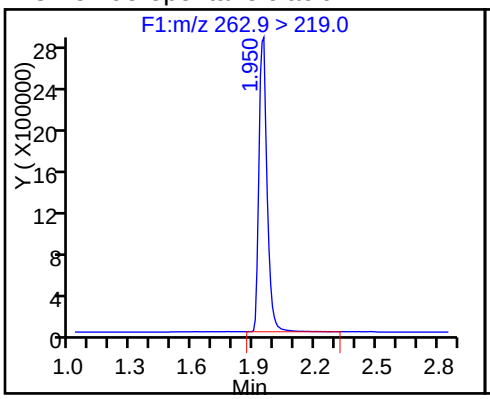
1 Perfluorobutyric acid



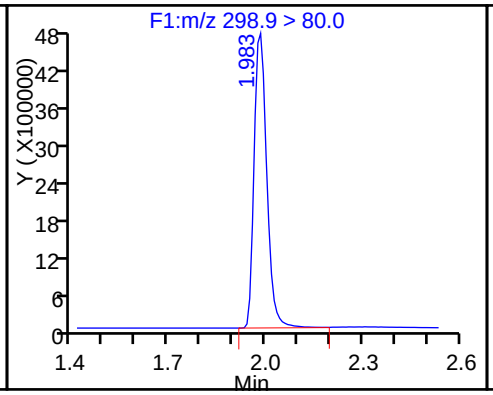
D 4 13C5-PFPeA



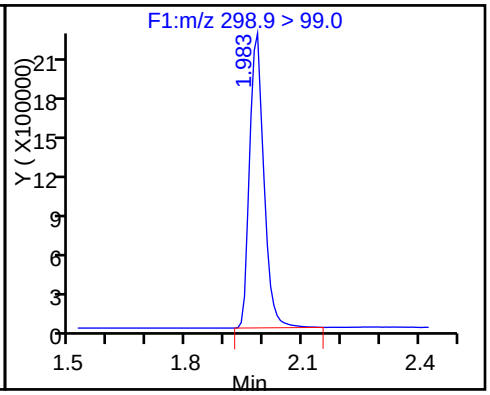
3 Perfluoropentanoic acid



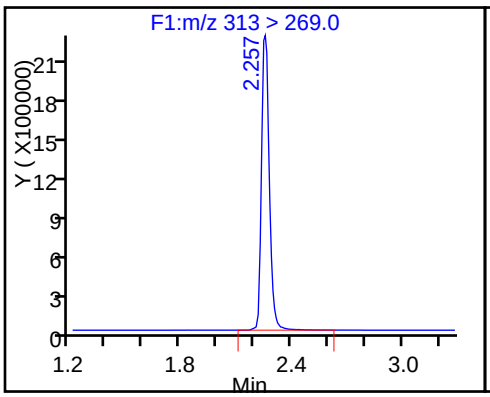
5 Perfluorobutanesulfonic acid



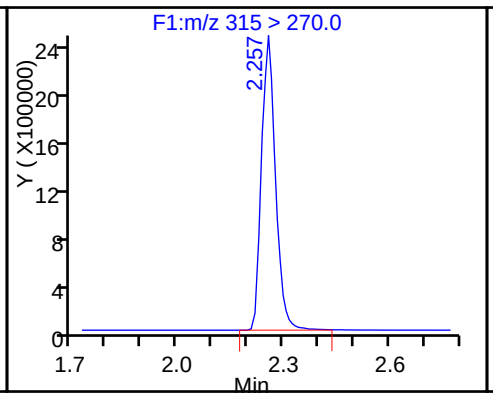
5 Perfluorobutanesulfonic acid



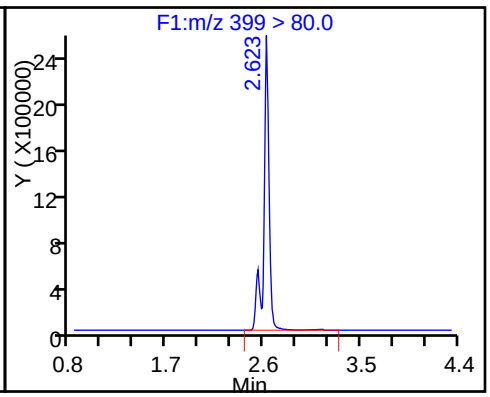
7 Perfluorohexanoic acid



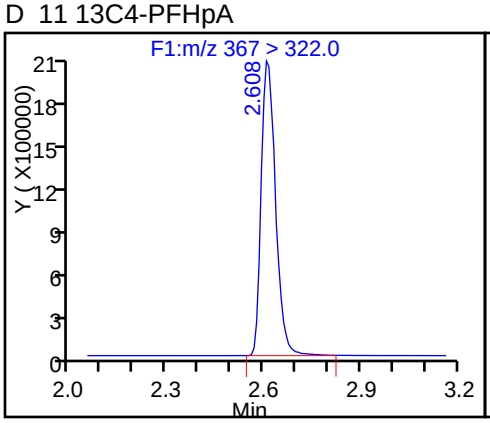
D 6 13C2 PFHxA



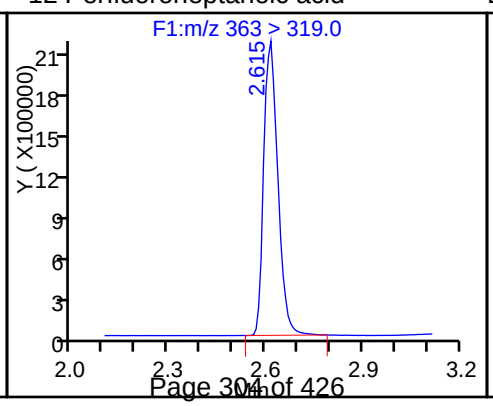
9 Perfluorohexanesulfonic acid



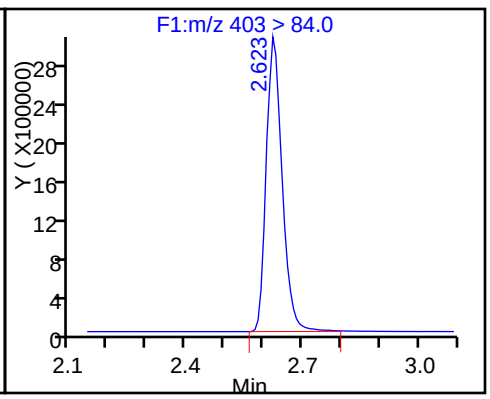
D 11 13C4-PFHpA



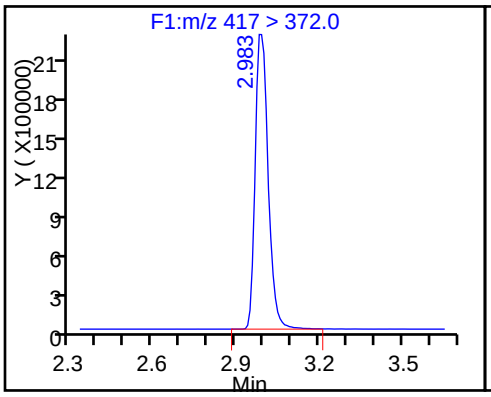
12 Perfluoroheptanoic acid



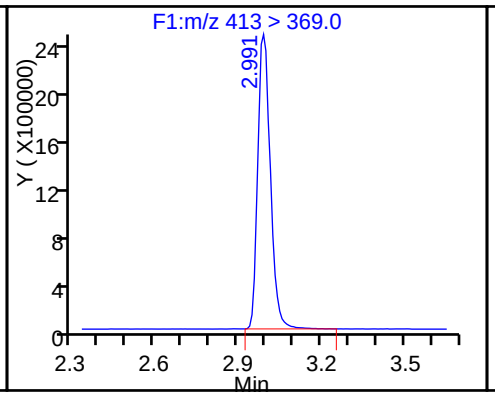
D 10 18O2 PFHxS



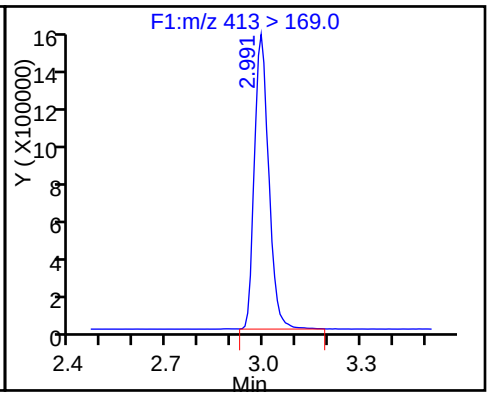
D 14 13C4 PFOA



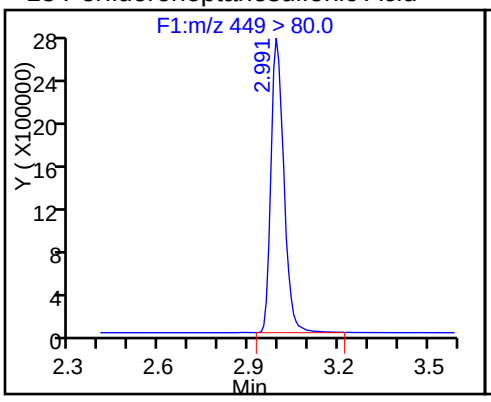
15 Perfluorooctanoic acid



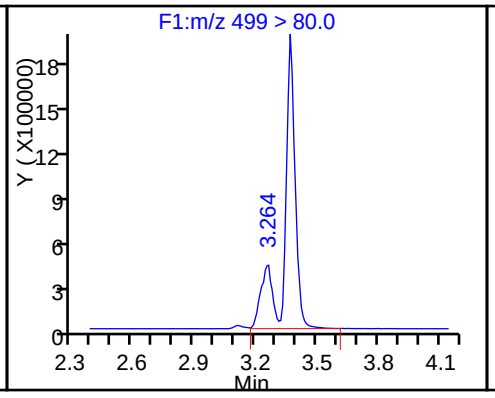
15 Perfluorooctanoic acid



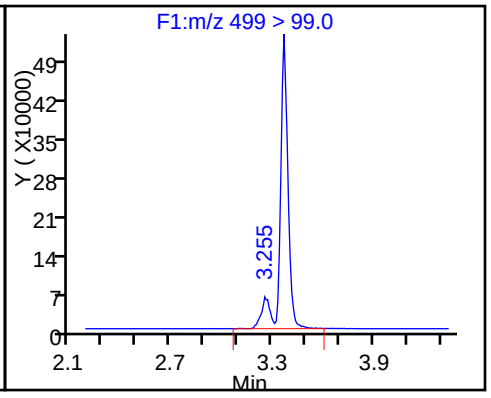
13 Perfluoroheptanesulfonic Acid



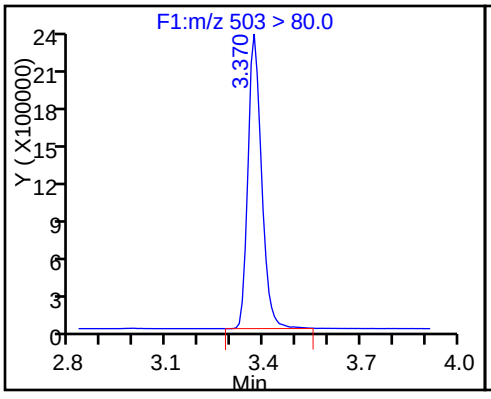
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



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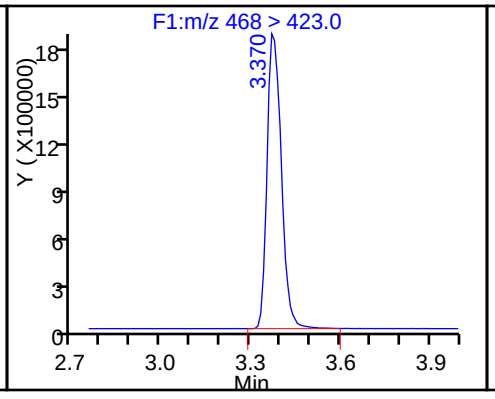
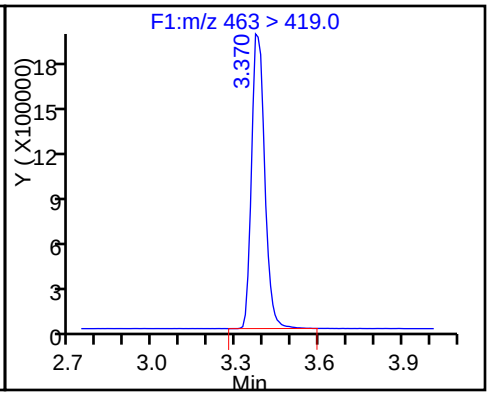
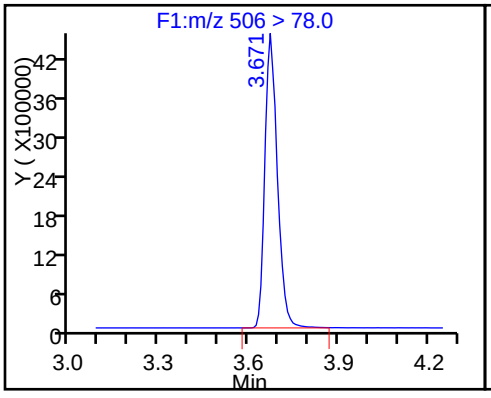


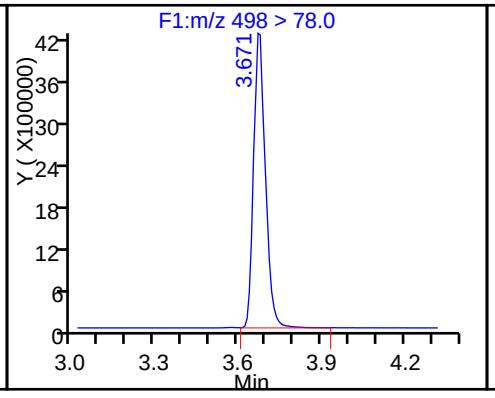
20 Perfluorononanoic acid



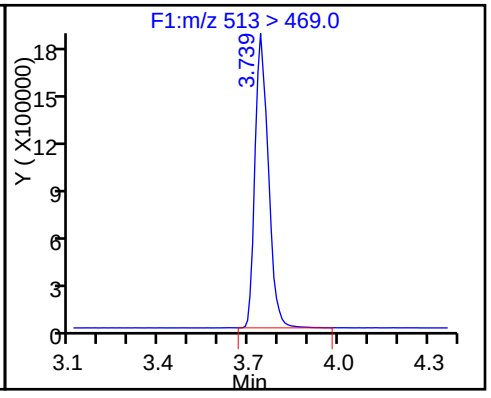
D 21 13C8 FOSA



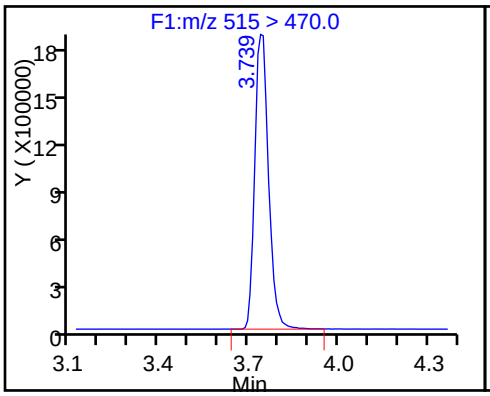
22 Perfluorooctane Sulfonamide



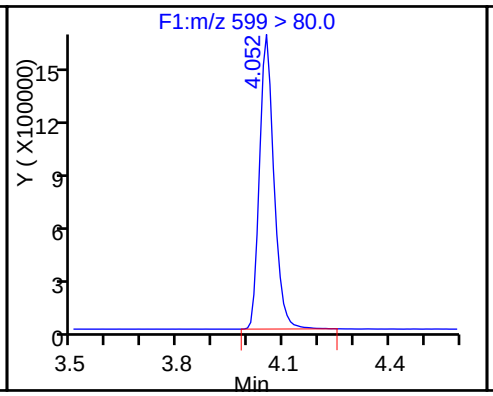
24 Perfluorodecanoic acid



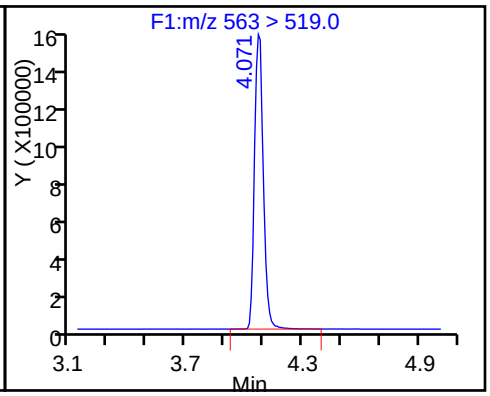
D 23 13C2 PFDA



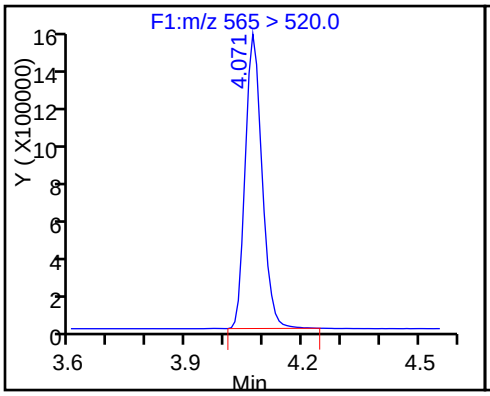
26 Perfluorodecane Sulfonic acid



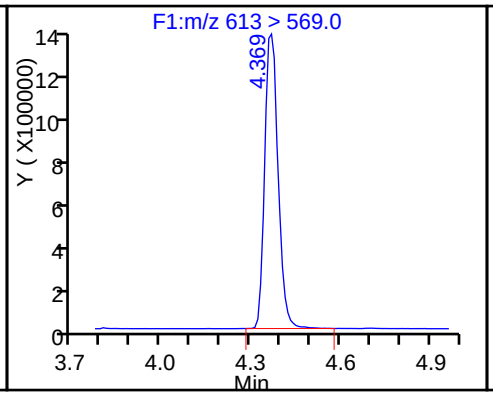
28 Perfluoroundecanoic acid



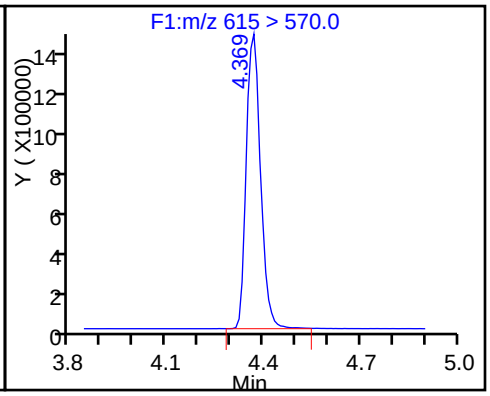
D 27 13C2 PFUnA



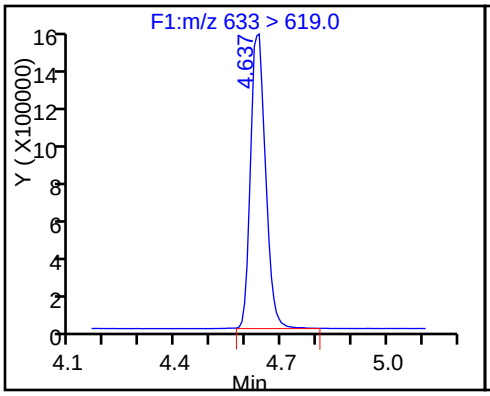
29 Perfluorododecanoic acid



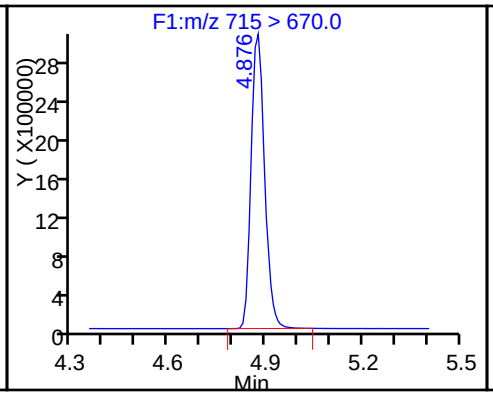
D 30 13C2 PFDoA



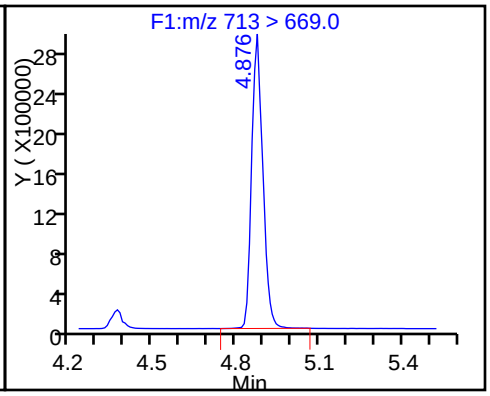
31 Perfluorotridecanoic acid



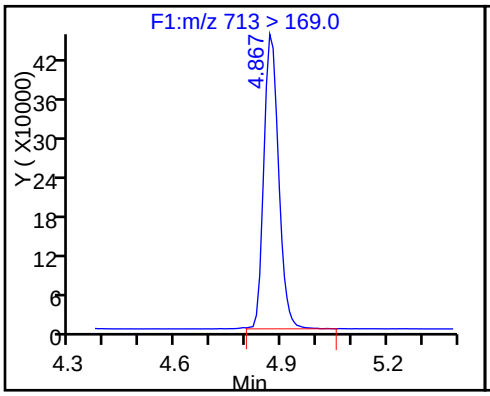
D 32 13C2-PFTeDA



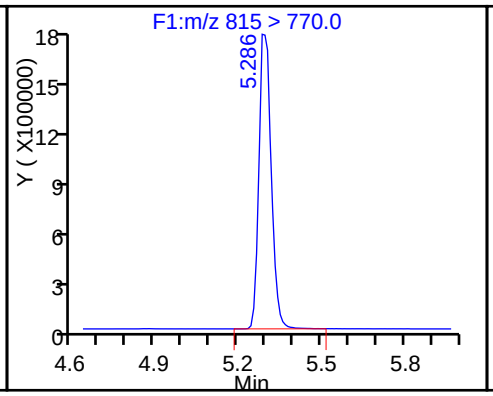
33 Perfluorotetradecanoic acid



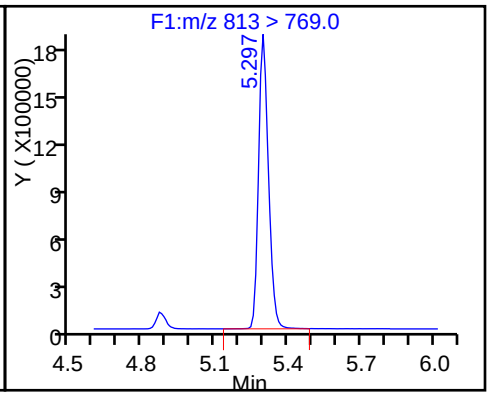
33 Perfluorotetradecanoic acid



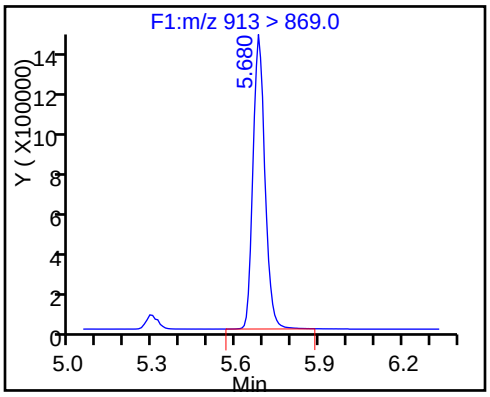
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_009_p1_e1.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 03-Sep-2016 16:16:00 ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Sep-2016 14:36:34 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK025

First Level Reviewer: phomsophat Date: 06-Sep-2016 16:20:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.643	1.642	0.001		9448230	46.8		93.6	348463	
1 Perfluorobutyric acid										
212.9 > 169.0	1.643	1.645	-0.002	1.000	30611454	184.8		92.4	556886	
D 4 13C5-PFPeA										
267.9 > 223.0	1.933	1.938	-0.005		7036843	44.4		88.9	851046	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.933	1.940	-0.007	1.000	25602733	173.3		86.7	415320	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.967	1.976	-0.009	1.000	39194012	151.0		85.4		
298.9 > 99.0	1.967	1.976	-0.009	1.000	19923484		1.97(0.00-0.00)	85.4		
7 Perfluorohexanoic acid										
313 > 269.0	2.240	2.253	-0.013	1.000	23571653	182.0		91.0	1435579	
D 6 13C2 PFHxA										
315 > 270.0	2.240	2.254	-0.014		6427112	44.5		89.1	1054215	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.617	2.591	0.026	1.000	31017014	169.3		93.0		
D 11 13C4-PFHpA										
367 > 322.0	2.602	2.611	-0.009		5704395	43.6		87.2	352134	
12 Perfluoroheptanoic acid										
363 > 319.0	2.602	2.614	-0.012	1.000	22691495	191.1		95.5	229921	
D 10 18O2 PFHxS										
403 > 84.0	2.610	2.626	-0.016		8067246	44.6		94.4	647495	
D 14 13C4 PFOA										
417 > 372.0	2.977	2.994	-0.017		6224994	42.7		85.4	387595	
15 Perfluorooctanoic acid										
413 > 369.0	2.977	2.996	-0.019	1.000	24587367	189.8		94.9	415376	
413 > 169.0	2.977	2.996	-0.019	1.000	15473682		1.59(0.90-1.10)	94.9	347888	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.985	2.999	-0.014	1.000	28674968	178.9		93.9		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.239	3.271	-0.032	1.000	28263326	172.7		93.1	20229	
499 > 99.0	3.324	3.271	0.053	1.026	6580583		4.29(0.90-1.10)	93.1	69228	
D 17 13C4 PFOS										
503 > 80.0	3.352	3.375	-0.023		6656316	46.0		96.2	101191	
D 19 13C5 PFNA										
468 > 423.0	3.361	3.380	-0.019		5193244	40.7		81.4	302908	
20 Perfluorononanoic acid										
463 > 419.0	3.361	3.381	-0.020	1.000	21195062	201.3		101	362600	
D 21 13C8 FOSA										
506 > 78.0	3.665	3.674	-0.009		12142761	45.6		91.2	345820	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.665	3.674	-0.009	1.000	38418532	171.4		85.7	347877	
24 Perfluorodecanoic acid										
513 > 469.0	3.722	3.744	-0.022	1.000	20619156	195.4		97.7	691485	
D 23 13C2 PFDA										
515 > 470.0	3.722	3.744	-0.022		5389574	44.6		89.2	338063	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	4.031	4.055	-0.024	1.000	17669187	198.5		103		
28 Perfluoroundecanoic acid										
563 > 519.0	4.058	4.078	-0.020	1.000	16116354	185.4		92.7	805986	
D 27 13C2 PFUnA										
565 > 520.0	4.067	4.081	-0.014		4036632	42.4		84.7	242552	
29 Perfluorododecanoic acid										
613 > 569.0	4.354	4.374	-0.020	1.000	15897471	198.9		99.5	323061	
D 30 13C2 PFDoA										
615 > 570.0	4.354	4.374	-0.020		4121681	46.6		93.2	274091	
31 Perfluorotridecanoic acid										
633 > 619.0	4.619	4.639	-0.020	1.000	16190491	196.2		98.1	70297	
D 32 13C2-PFTeDA										
715 > 670.0	4.860	4.882	-0.022		7956388	46.7		93.4	443905	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.860	4.883	-0.023	1.000	28024778	189.6		94.8	43942	
713 > 169.0	4.860	4.883	-0.023	1.000	4962959		5.65(0.00-0.00)	94.8	276244	
D 34 13C2-PFHxDA										
815 > 770.0	5.289	5.305	-0.016		5264655	48.4		96.7	277715	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.289	5.309	-0.020	1.000	18615408	198.6		99.3	43107	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.663	5.692	-0.029	1.000	16871624	208.8		104	57601	

Reagents:

LCPFC-L6_00019 Amount Added: 1.00 Units: mL

Report Date: 14-Sep-2016 14:36:37 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_009_p1_e1.d

Injection Date: 03-Sep-2016 16:16:00 Instrument ID: A8

Lims ID: IC L6

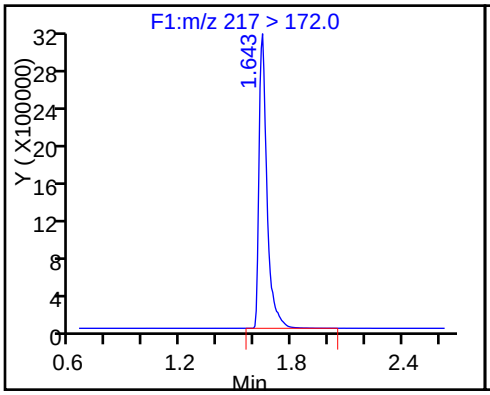
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 9

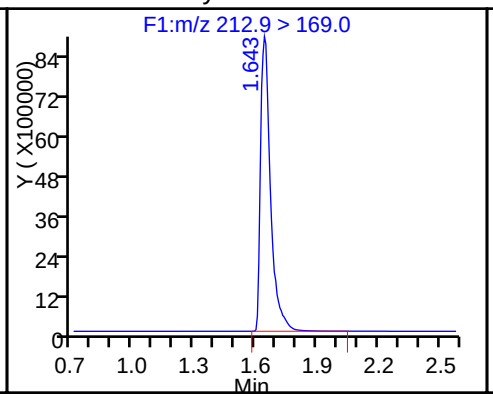
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

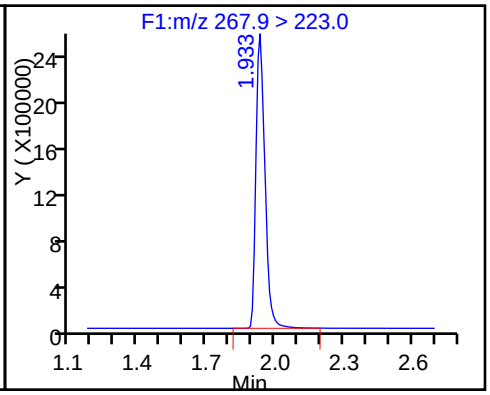
D 2 13C4 PFBA



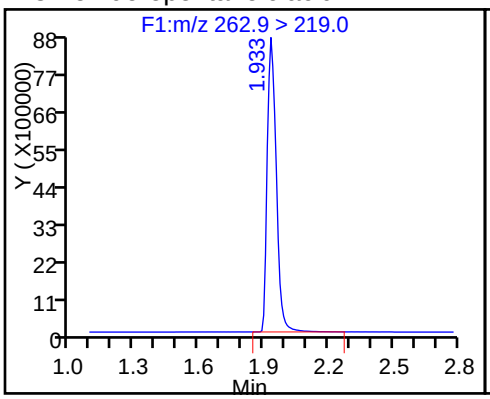
1 Perfluorobutyric acid



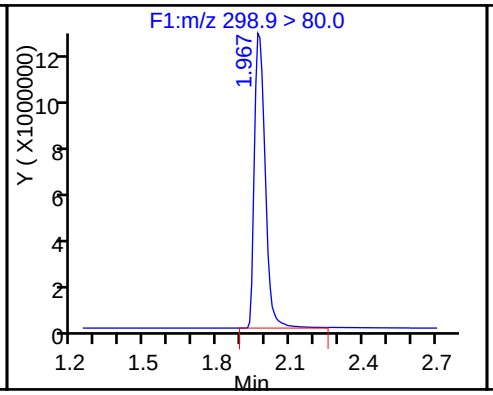
D 4 13C5-PFPeA



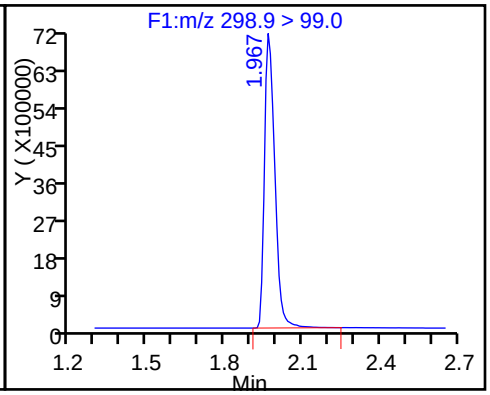
3 Perfluoropentanoic acid



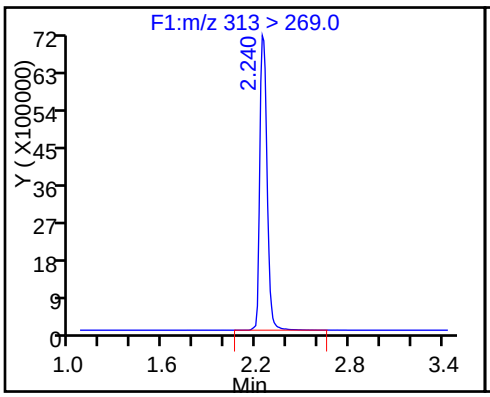
5 Perfluorobutanesulfonic acid



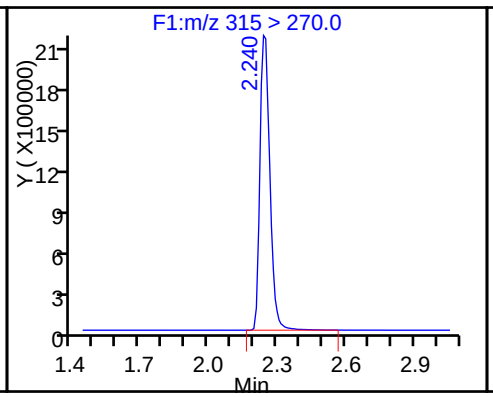
5 Perfluorobutanesulfonic acid



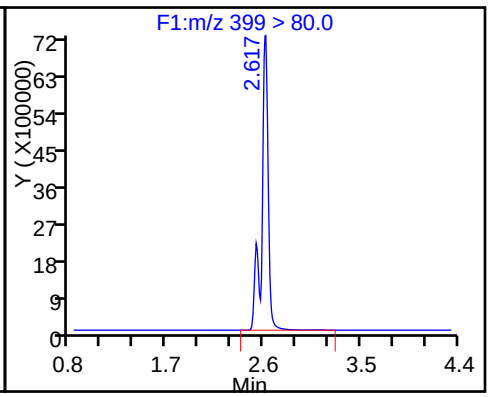
7 Perfluorohexanoic acid



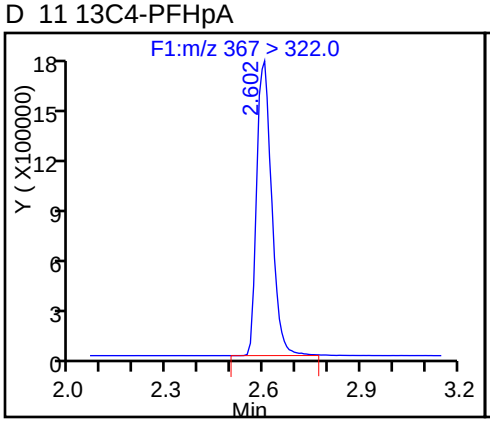
D 6 13C2 PFHxA



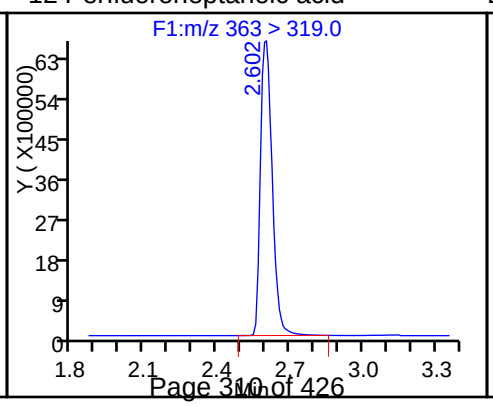
9 Perfluorohexanesulfonic acid



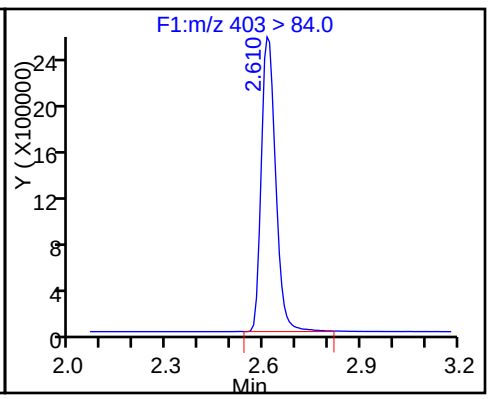
D 11 13C4-PFHpA



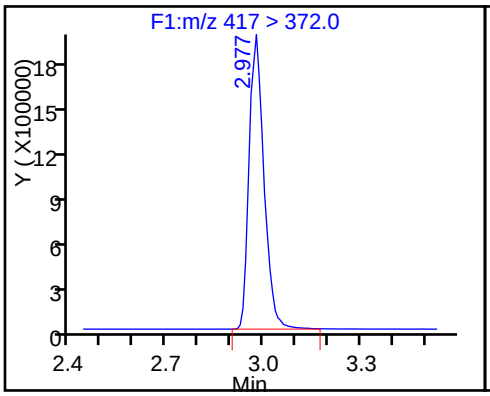
12 Perfluoroheptanoic acid



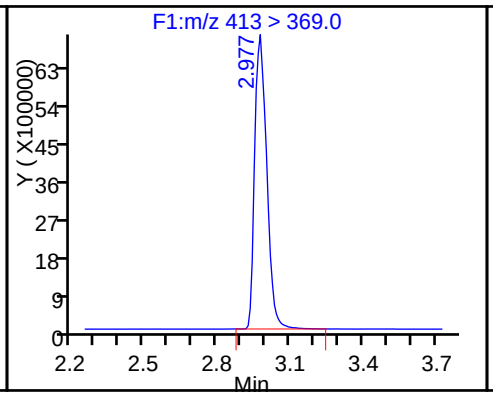
D 10 18O2 PFHxS



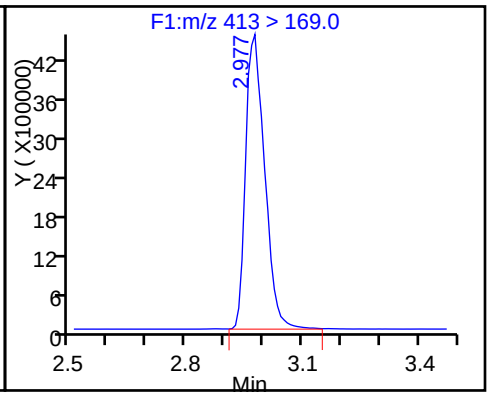
D 14 13C4 PFOA



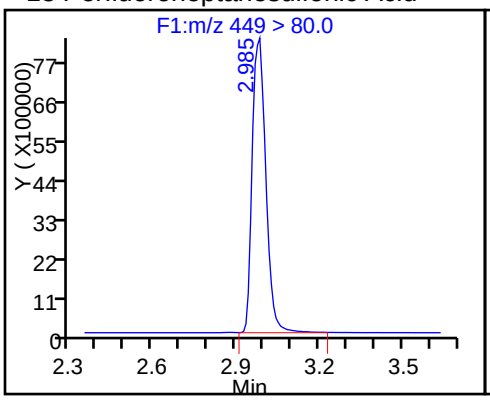
15 Perfluorooctanoic acid



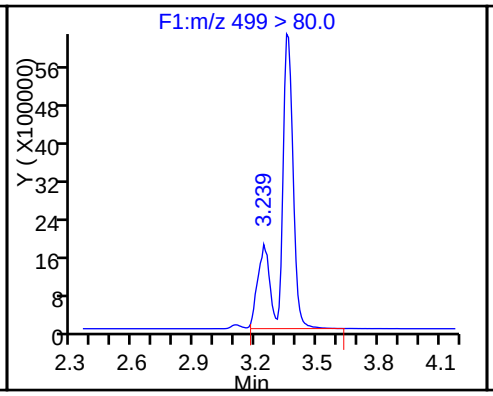
15 Perfluorooctanoic acid



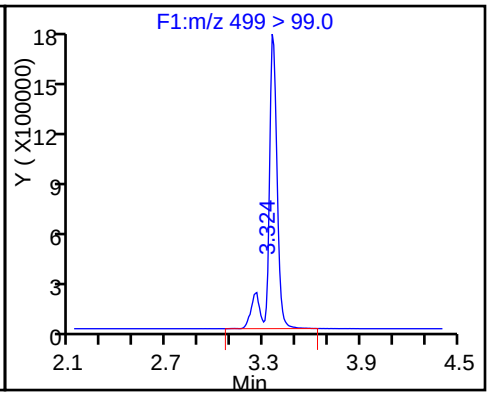
13 Perfluoroheptanesulfonic Acid



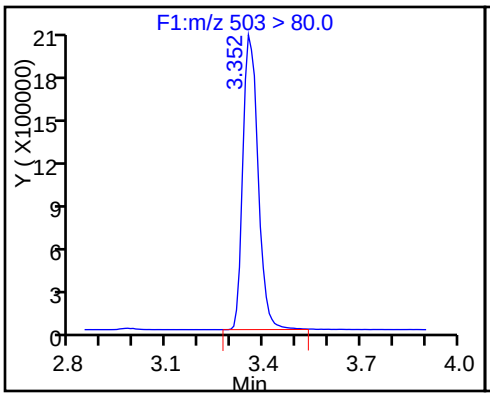
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



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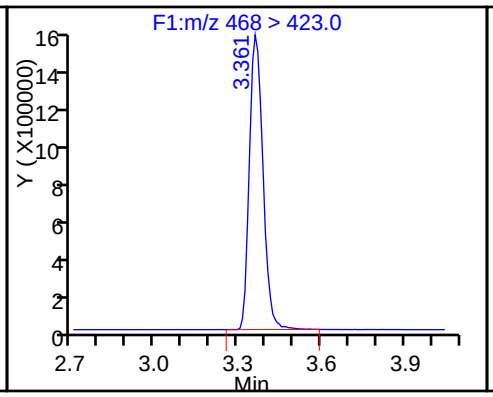
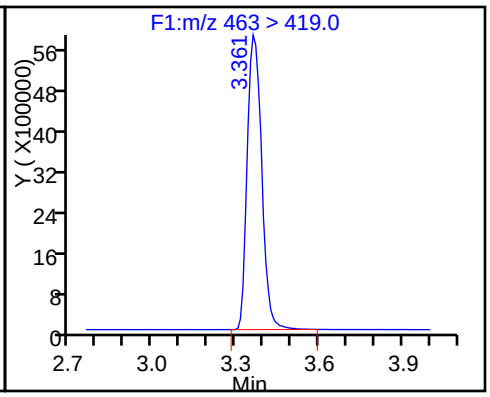
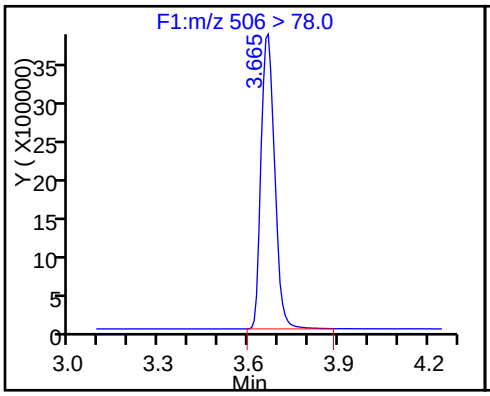


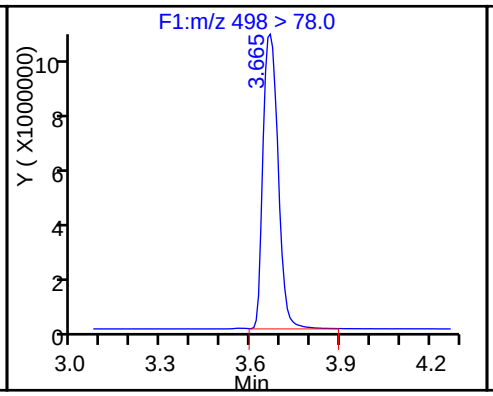
20 Perfluorononanoic acid



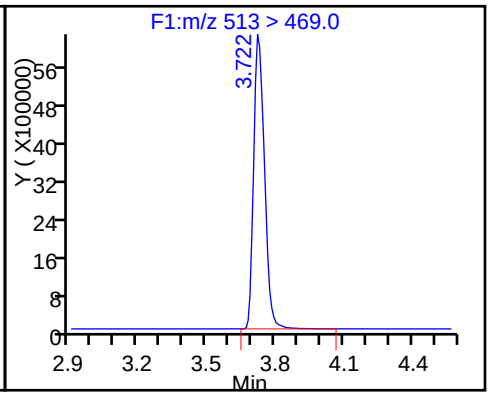
D 21 13C8 FOSA



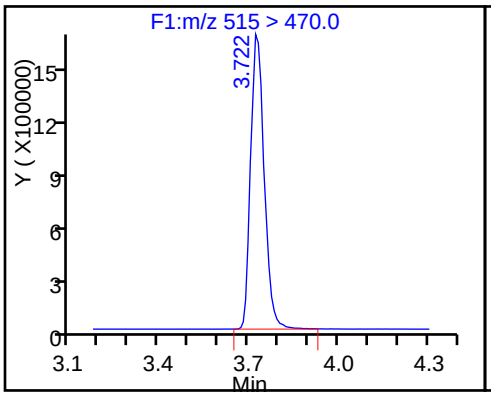
22 Perfluorooctane Sulfonamide



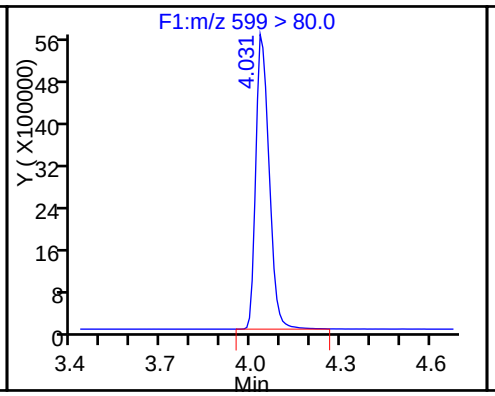
24 Perfluorodecanoic acid



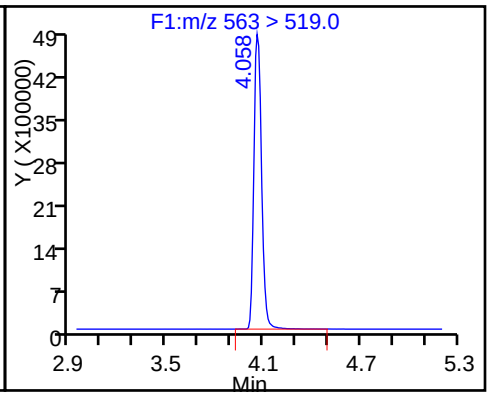
D 23 13C2 PFDA



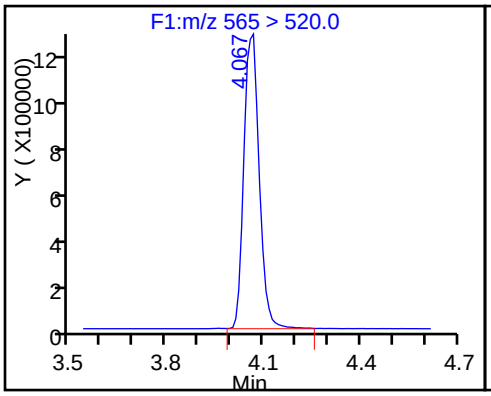
26 Perfluorodecane Sulfonic acid



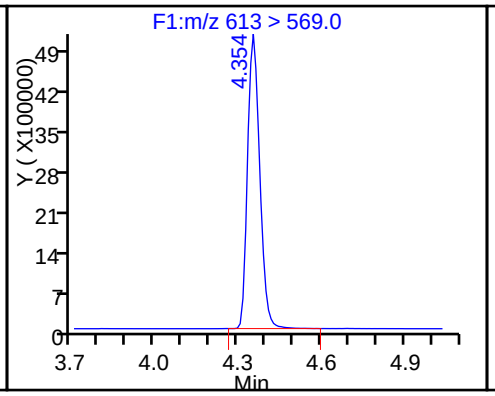
28 Perfluoroundecanoic acid



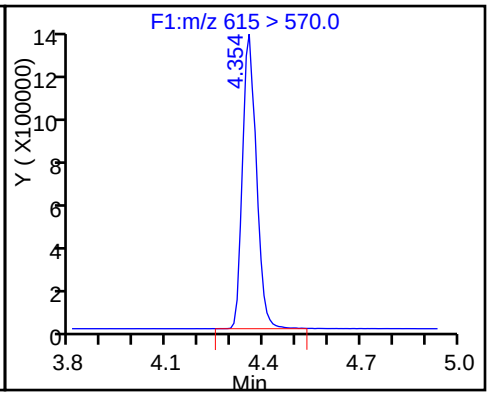
D 27 13C2 PFUnA



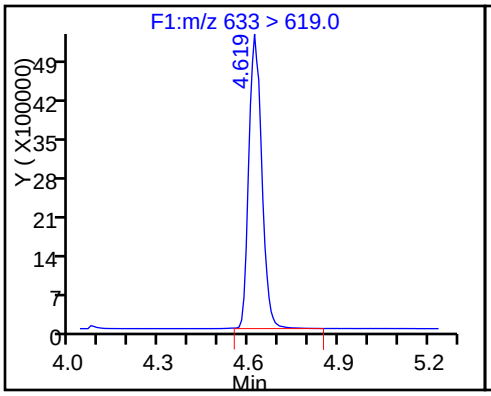
29 Perfluorododecanoic acid



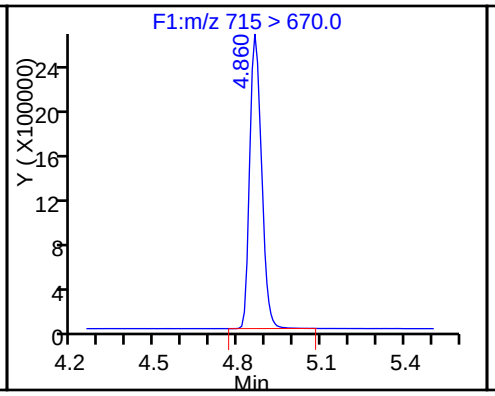
D 30 13C2 PFDoA



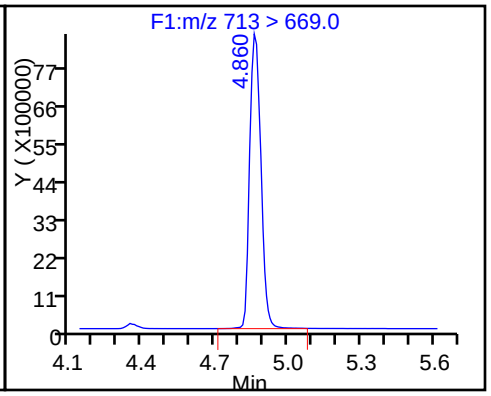
31 Perfluorotridecanoic acid



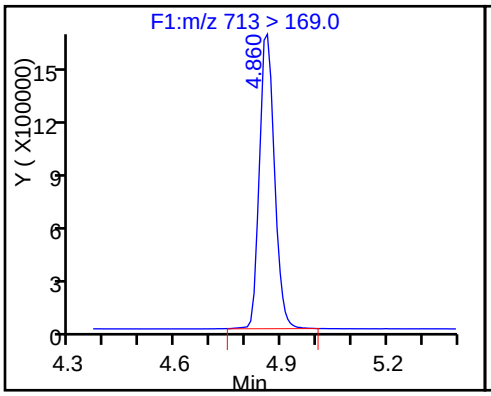
D 32 13C2-PFTeDA



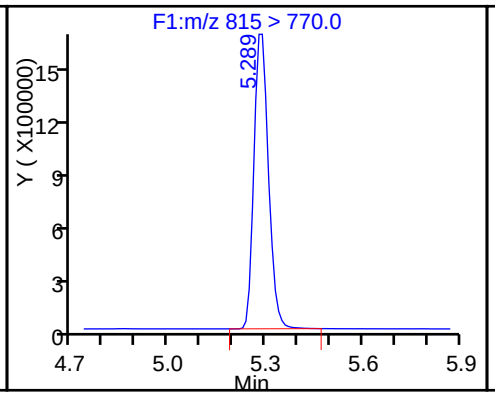
33 Perfluorotetradecanoic acid



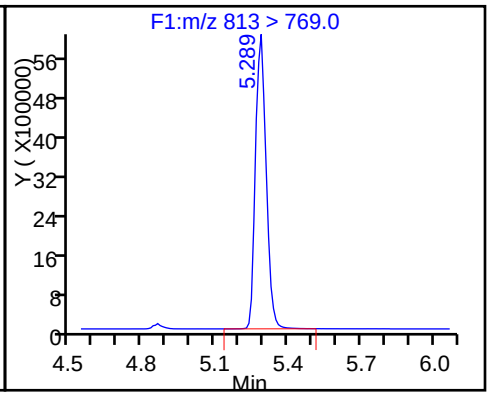
33 Perfluorotetradecanoic acid



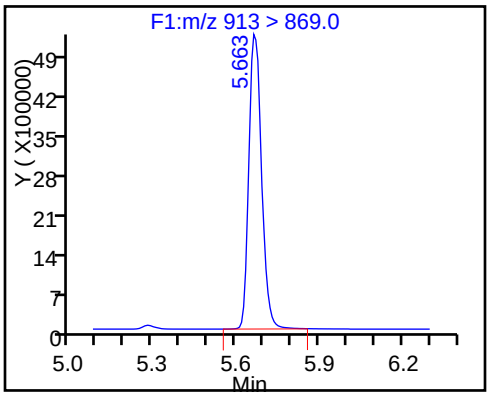
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_010_p1_e1.d
Lims ID: IC L7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 03-Sep-2016 16:23:00 ALS Bottle#: 0 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Sep-2016 14:36:46 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK025

First Level Reviewer: phomsophat Date: 06-Sep-2016 16:15:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.636	1.642	-0.006		8514926	42.2		84.3	332263	
1 Perfluorobutyric acid										
212.9 > 169.0	1.636	1.645	-0.009	1.000	48100959	322.2		80.5	714747	
D 4 13C5-PFPeA										
267.9 > 223.0	1.925	1.938	-0.013		6176138	39.0		78.0	723286	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.925	1.940	-0.015	1.000	39246308	302.7		75.7	485041	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.967	1.976	-0.009	1.000	56709993	257.0		72.7		
298.9 > 99.0	1.958	1.976	-0.018	0.996	31464803		1.80(0.00-0.00)	72.7		
7 Perfluorohexanoic acid										
313 > 269.0	2.240	2.253	-0.013	1.000	37700276	328.1		82.0	1326471	
D 6 13C2 PFHxA										
315 > 270.0	2.240	2.254	-0.014		5702806	39.5		79.0	978368	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.614	2.591	0.023	1.000	51343246	329.7		90.6		
D 11 13C4-PFHpA										
367 > 322.0	2.587	2.611	-0.024		4813978	36.8		73.6	501564	
12 Perfluoroheptanoic acid										
363 > 319.0	2.596	2.614	-0.018	1.000	35354804	352.8		88.2	298532	
D 10 18O2 PFHxS										
403 > 84.0	2.614	2.626	-0.012		6858717	38.0		80.2	510523	
D 14 13C4 PFOA										
417 > 372.0	2.973	2.994	-0.022		4953489	34.0		67.9	286821	
15 Perfluorooctanoic acid										
413 > 369.0	2.973	2.996	-0.024	1.000	37706543	365.8		91.5	330394	
413 > 169.0	2.973	2.996	-0.024	1.000	25189316		1.50(0.90-1.10)	91.5	425412	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.981	2.999	-0.018	1.000	44304186	321.8		84.5		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.327	3.271	0.056	1.000	49332494	351.0		94.6	20949	
499 > 99.0	3.355	3.271	0.084	1.008	12208132		4.04(0.90-1.10)	94.6	24370	
D 17 13C4 PFOS										
503 > 80.0	3.355	3.375	-0.020		5716815	39.5		82.6	74434	
D 19 13C5 PFNA										
468 > 423.0	3.364	3.380	-0.016		4390174	34.4		68.9	304247	
20 Perfluorononanoic acid										
463 > 419.0	3.355	3.381	-0.026	1.000	33608056	377.6		94.4	659447	
D 21 13C8 FOSA										
506 > 78.0	3.659	3.674	-0.015		10560337	39.6		79.3	408115	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.659	3.674	-0.015	1.000	59003099	302.7		75.7	295288	
24 Perfluorodecanoic acid										
513 > 469.0	3.724	3.744	-0.020	1.000	34564419	366.9		91.7	643165	
D 23 13C2 PFDA										
515 > 470.0	3.724	3.744	-0.020		4812836	39.8		79.6	305723	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	4.033	4.055	-0.022	1.000	29479384	385.6		100		
28 Perfluoroundecanoic acid										
563 > 519.0	4.051	4.078	-0.027	1.000	25948930	372.0		93.0	910425	
D 27 13C2 PFUnA										
565 > 520.0	4.061	4.081	-0.020		3240195	34.0		68.0	240903	
29 Perfluorododecanoic acid										
613 > 569.0	4.351	4.374	-0.024	1.000	26539024	375.9		94.0	402618	
D 30 13C2 PFDoA										
615 > 570.0	4.351	4.374	-0.024		3641523	41.2		82.3	186531	
31 Perfluorotridecanoic acid										
633 > 619.0	4.612	4.639	-0.027	1.000	27198410	373.0		93.2	145301	
D 32 13C2-PFTeDA										
715 > 670.0	4.860	4.882	-0.022		7064036	41.4		82.9	328927	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.860	4.883	-0.023	1.000	43145369	330.4		82.6	64128	
713 > 169.0	4.851	4.883	-0.032	0.998	9060987		4.76(0.00-0.00)	82.6	419036	
D 34 13C2-PFHxDA										
815 > 770.0	5.280	5.305	-0.025		4713289	43.3		86.6	385251	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.280	5.309	-0.029	1.000	31893590	385.6		96.4	90889	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.658	5.692	-0.034	1.000	30512560	427.4		107	95225	

Reagents:

LCPFC-L7_00019 Amount Added: 1.00 Units: mL

Report Date: 14-Sep-2016 14:36:48 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_010_p1_e1.d

Injection Date: 03-Sep-2016 16:23:00 Instrument ID: A8

Lims ID: IC L7

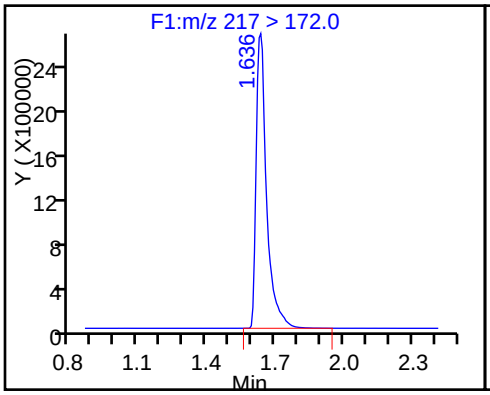
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 10

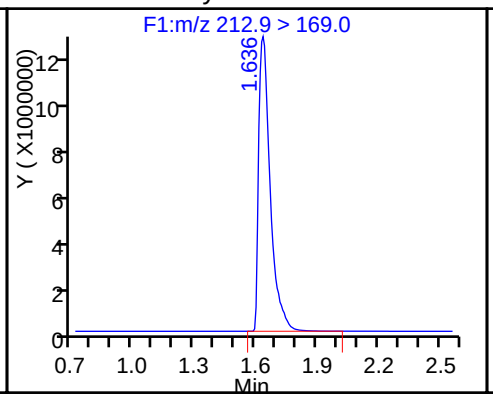
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

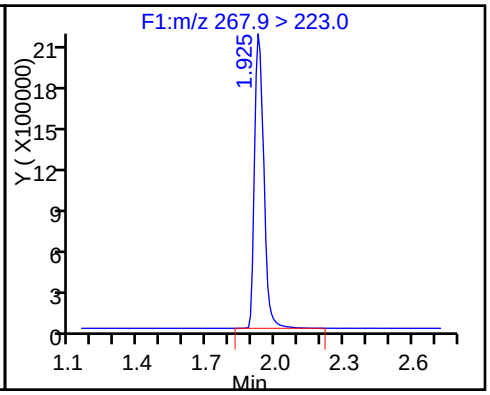
D 2 13C4 PFBA



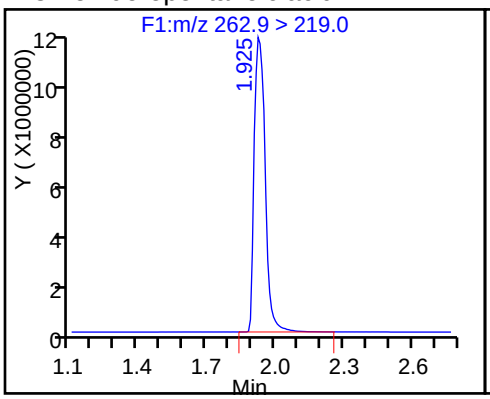
1 Perfluorobutyric acid



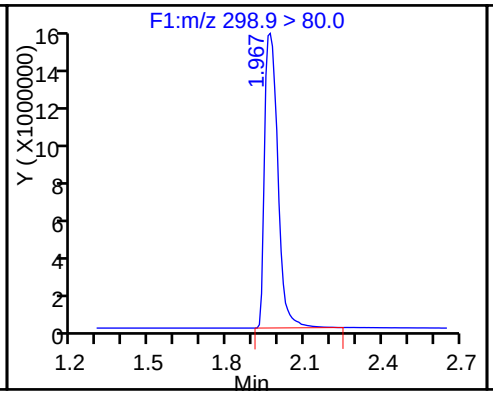
D 4 13C5-PFPeA



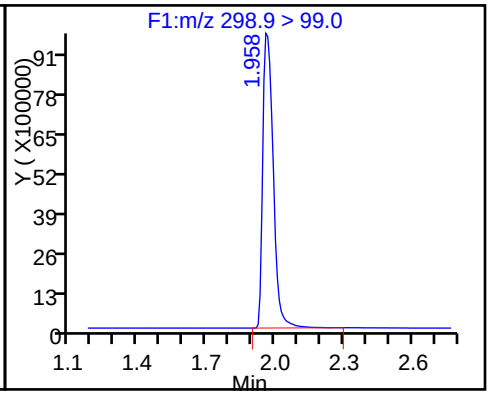
3 Perfluoropentanoic acid



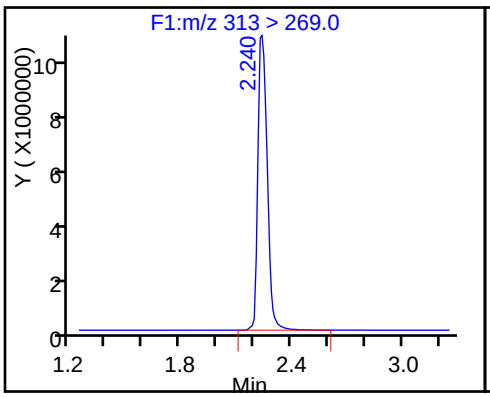
5 Perfluorobutanesulfonic acid



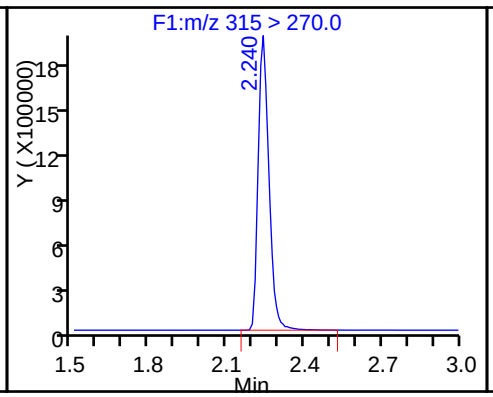
5 Perfluorobutanesulfonic acid



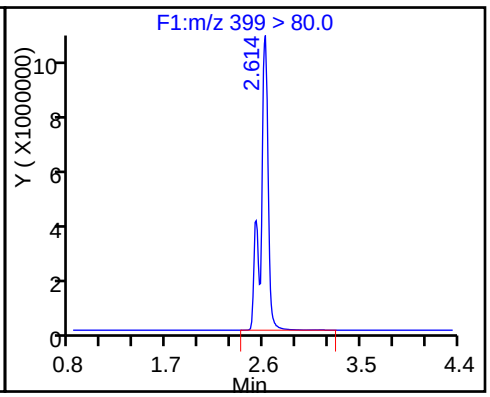
7 Perfluorohexanoic acid



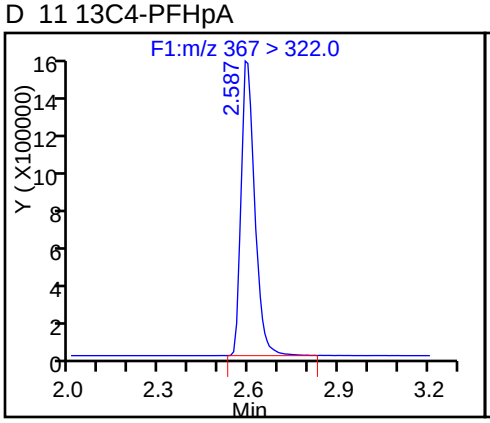
D 6 13C2 PFHxA



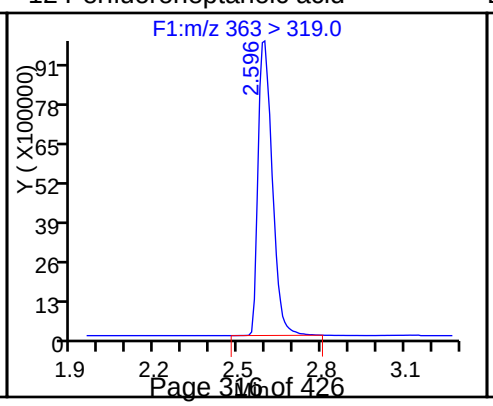
9 Perfluorohexanesulfonic acid



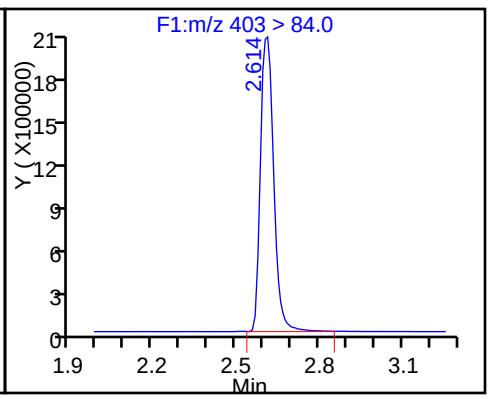
D 11 13C4-PFHpA



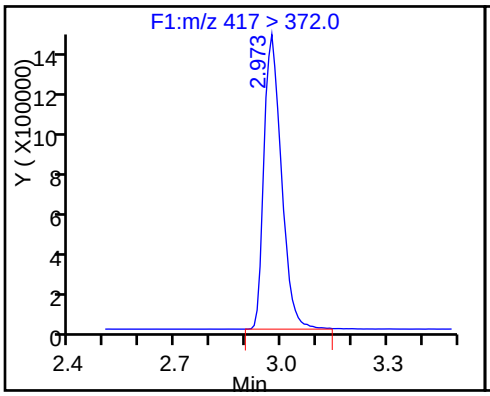
12 Perfluoroheptanoic acid



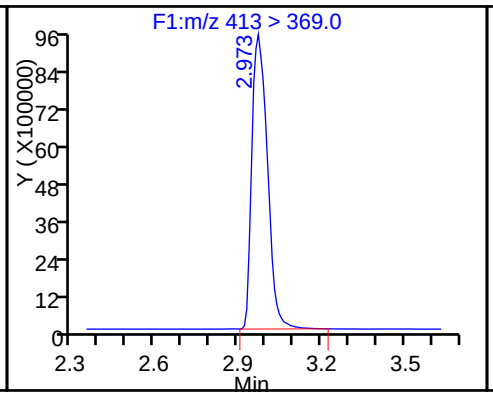
D 10 18O2 PFHxS



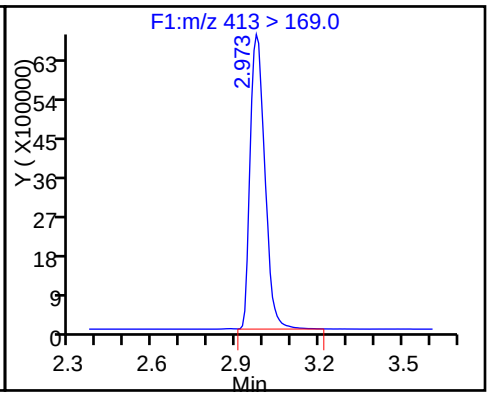
D 14 13C4 PFOA



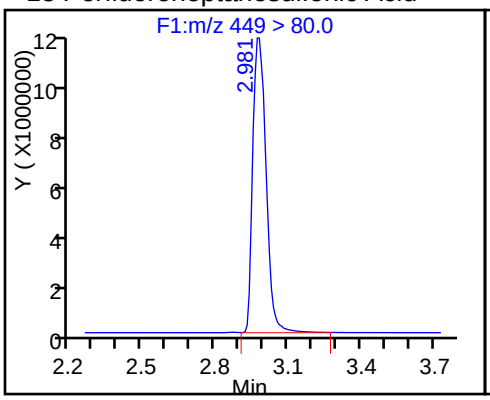
15 Perfluorooctanoic acid



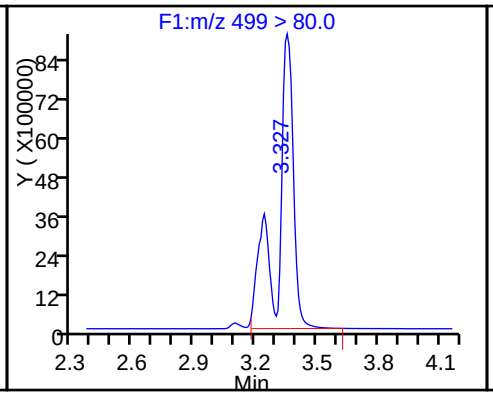
15 Perfluorooctanoic acid



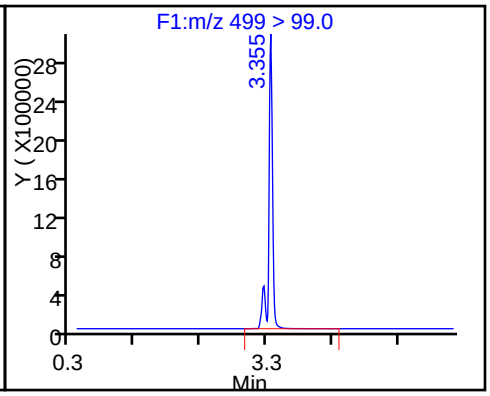
13 Perfluoroheptanesulfonic Acid



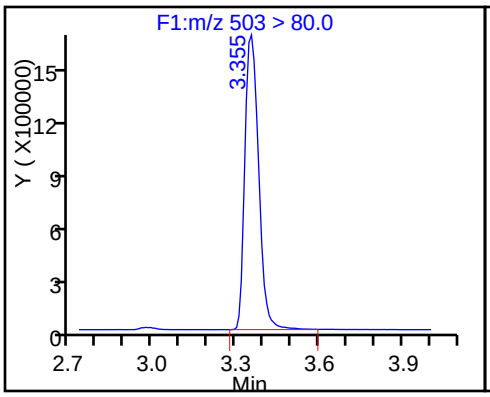
18 Perfluorooctane sulfonic acid



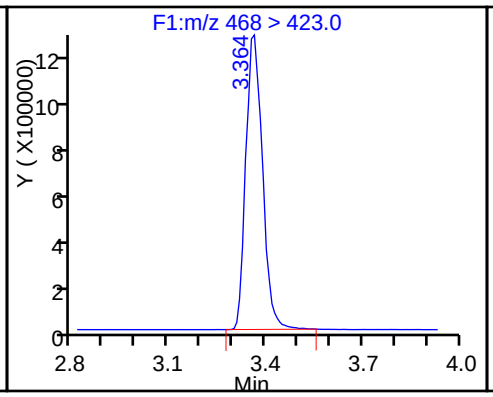
18 Perfluorooctane sulfonic acid



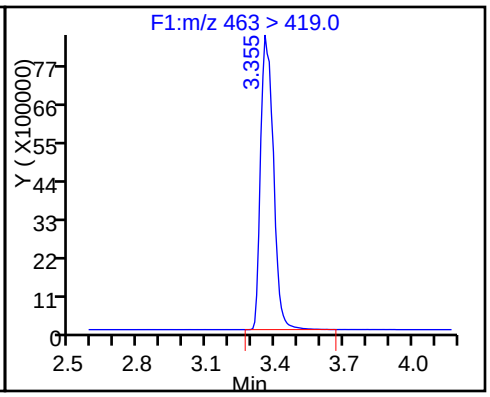
D 17 13C4 PFOS



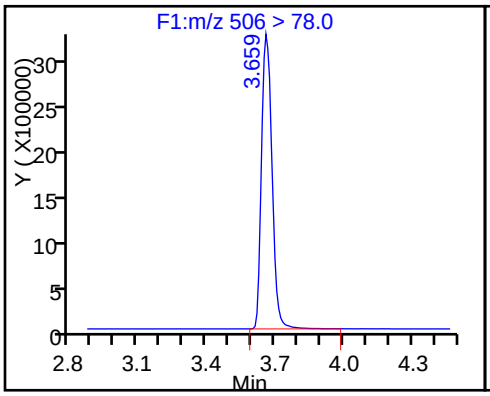
D 19 13C5 PFNA



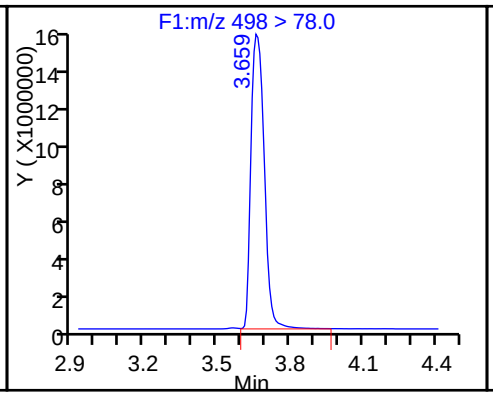
20 Perfluorononanoic acid



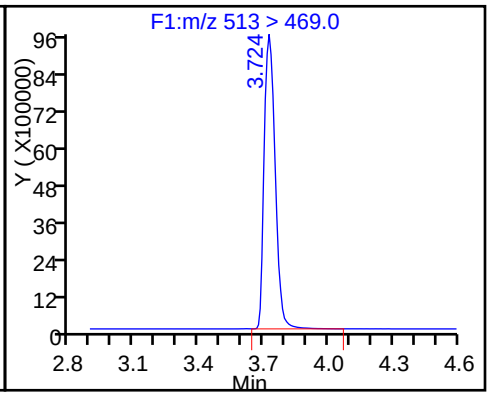
D 21 13C8 FOSA



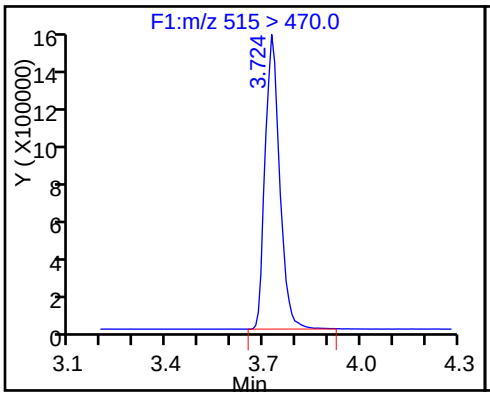
22 Perfluorooctane Sulfonamide



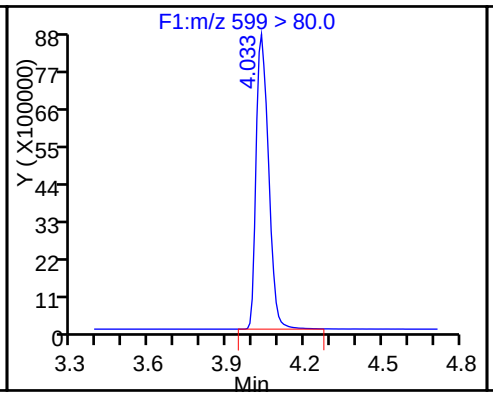
24 Perfluorodecanoic acid



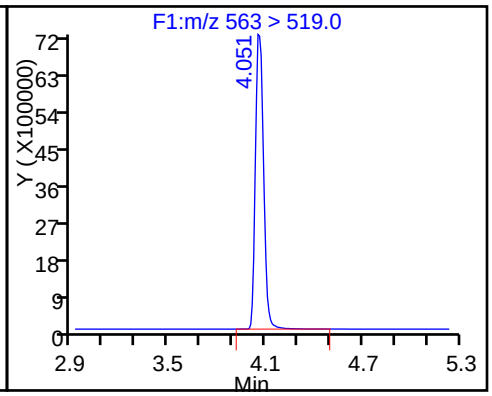
D 23 13C2 PFDA



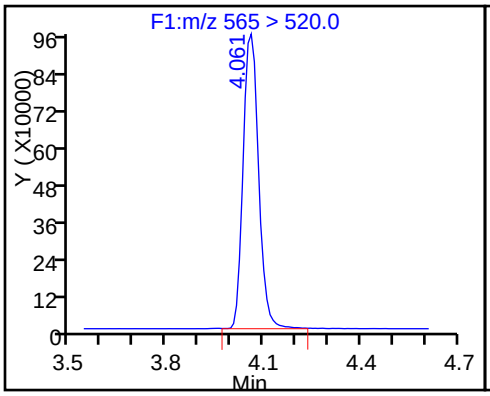
26 Perfluorodecane Sulfonic acid



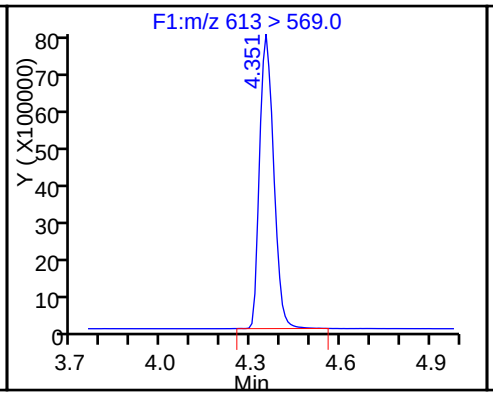
28 Perfluoroundecanoic acid



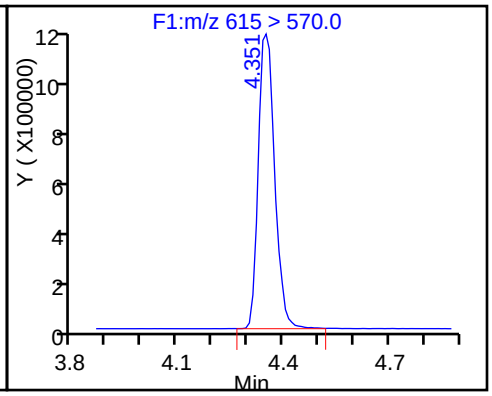
D 27 13C2 PFUnA



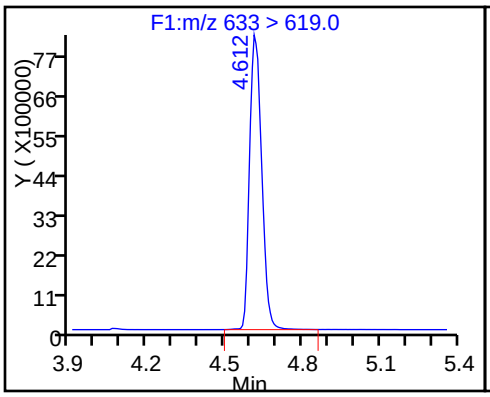
29 Perfluorododecanoic acid



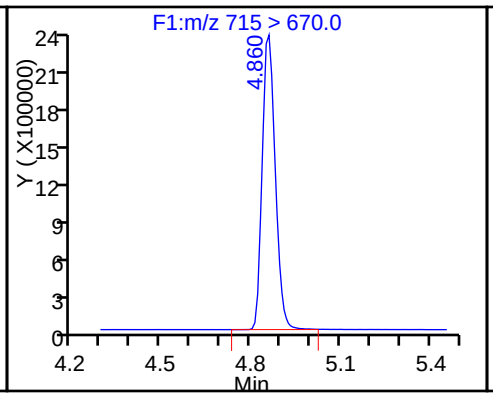
D 30 13C2 PFDoA



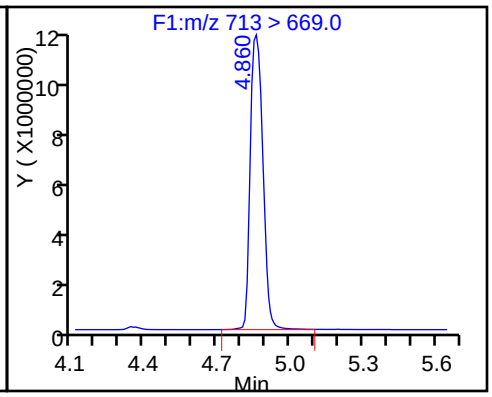
31 Perfluorotridecanoic acid



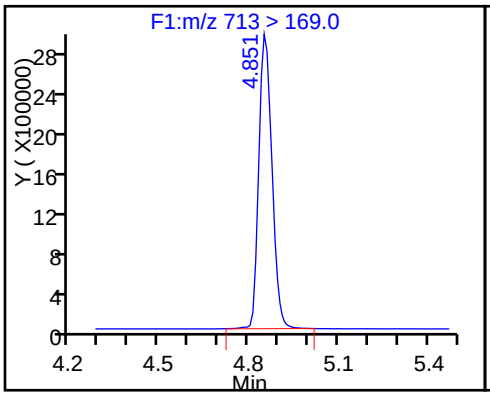
D 32 13C2-PFTeDA



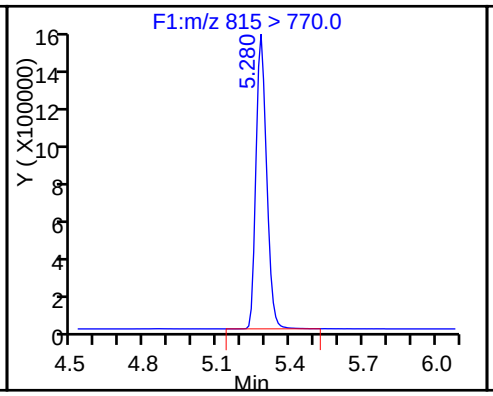
33 Perfluorotetradecanoic acid



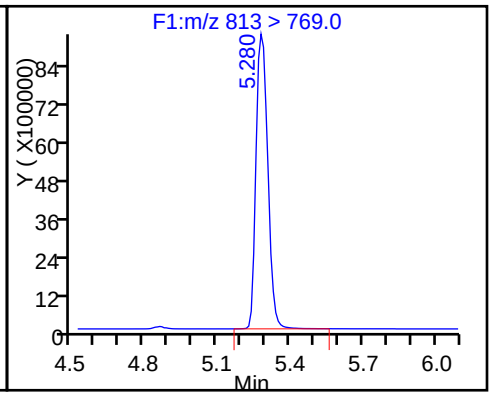
33 Perfluorotetradecanoic acid



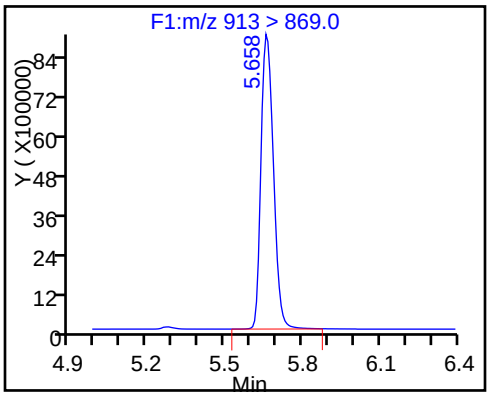
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_014_p1_e1.d
Lims ID: IC L1 Add-on
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 03-Sep-2016 16:53:00 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 10-Sep-2016 12:38:28 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK053

First Level Reviewer: phomsophat Date: 07-Sep-2016 14:40:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.933	2.933	0.0		3456373	44.2		93.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.942	2.935	0.007	1.000	38598	0.6486		137		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.699	3.697	0.002	1.000	31162	0.5087		106		
D 42 M2-8:2FTS										
529 > 509.0	3.699	3.697	0.002		3612646	42.9		89.6		
D 45 d3-NMeFOSAA										
573 > 419.0	3.866	3.866	0.0		2345360	46.8		93.6		
44 N-methyl perfluorooctane sulfonami										M
570 > 419.0	3.874	3.869	0.005	1.002	21482	0.5292		106		M
D 46 d5-NEtFOSAA										
589 > 419.0	4.035	4.032	0.003		2611814	46.6		93.2		
49 N-ethyl perfluorooctane sulfonamid										M
584 > 419.0	4.053	4.039	0.014	1.004	19615	0.4939		98.8		M
D 52 d-N-MeFOSA-M										
515 > 169.0	4.141	4.143	-0.002		3196091	46.3		92.7		
54 MeFOSA										
512 > 169.0	4.141	4.145	-0.004	1.000	25438	0.4915		98.3		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.322	4.326	-0.004		2976733	46.6		93.3		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.331	4.333	-0.002	1.000	23898	0.4742		94.8		

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC2-L1_00002 Amount Added: 1.00 Units: mL

Report Date: 10-Sep-2016 12:38:29 Chrom Revision: 2.2 17-Aug-2016 13:17:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_014_p1_e1.d

Injection Date: 03-Sep-2016 16:53:00 Instrument ID: A8

Lims ID: IC L1 Add-on

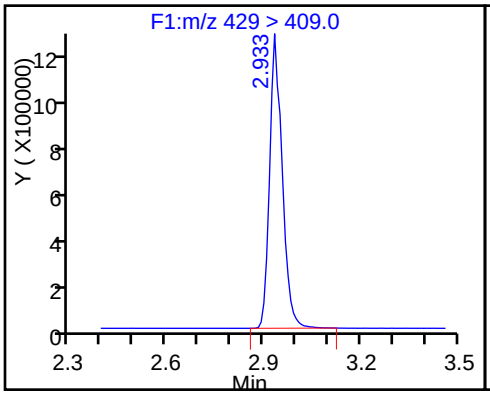
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 14

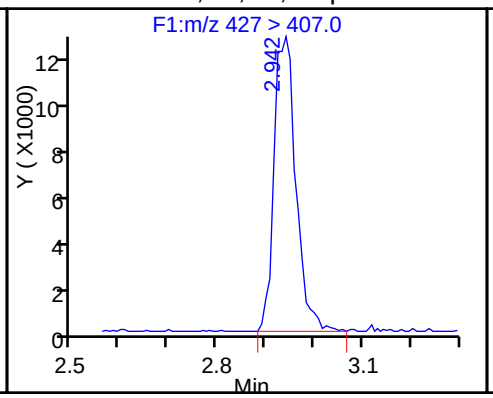
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

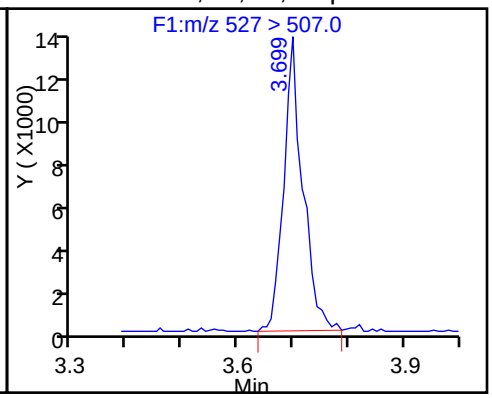
D 47 M2-6:2FTS



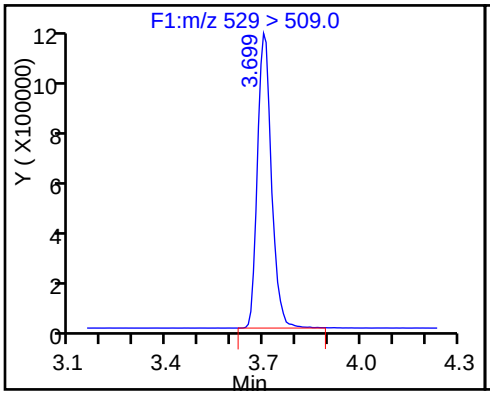
48 Sodium 1H,1H,2H,2H-perfluorooctane



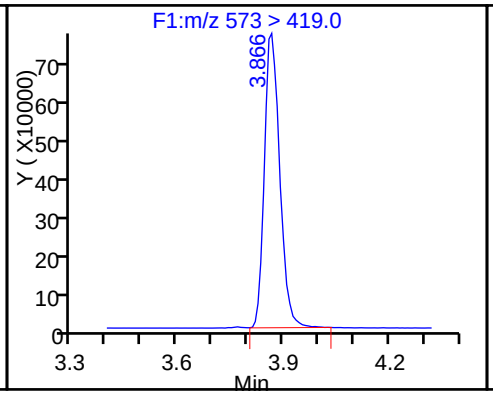
43 Sodium 1H,1H,2H,2H-perfluorooctane



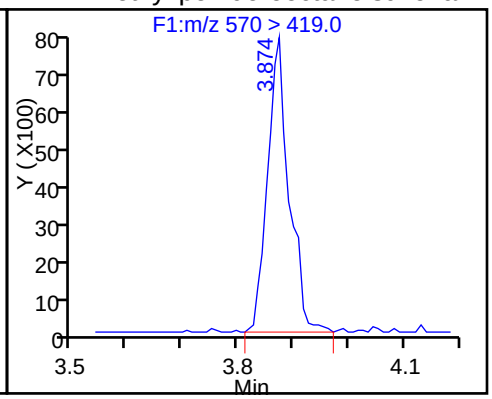
D 42 M2-8:2FTS



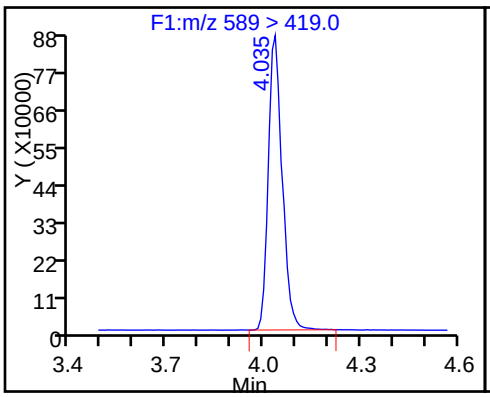
D 45 d3-NMeFOSAA



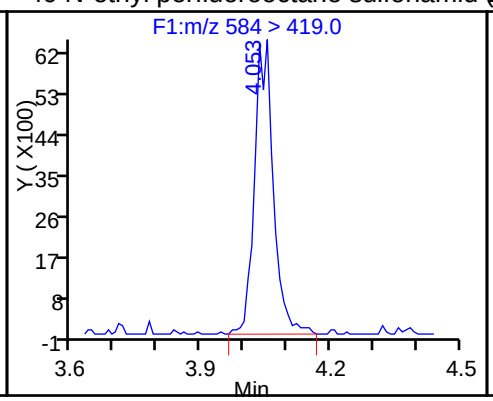
44 N-methyl perfluorooctane sulfonami (M)



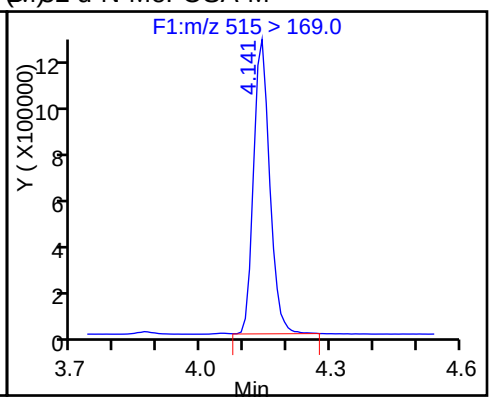
D 46 d5-NEtFOSAA



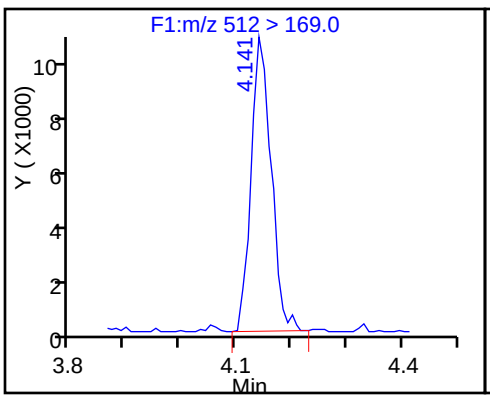
49 N-ethyl perfluorooctane sulfonamid (M)



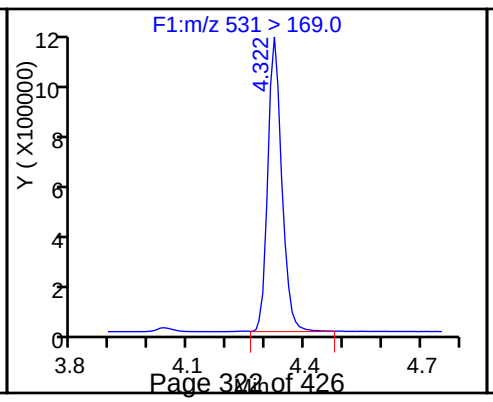
D 52 d-N-MeFOSA-M



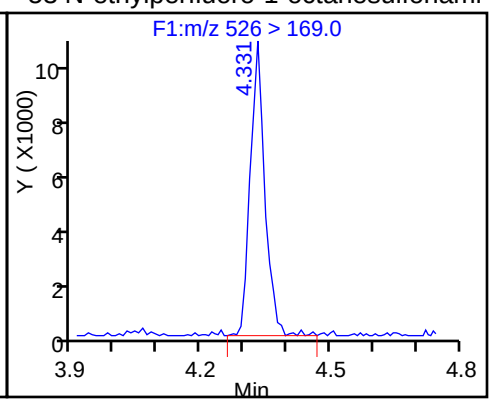
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento

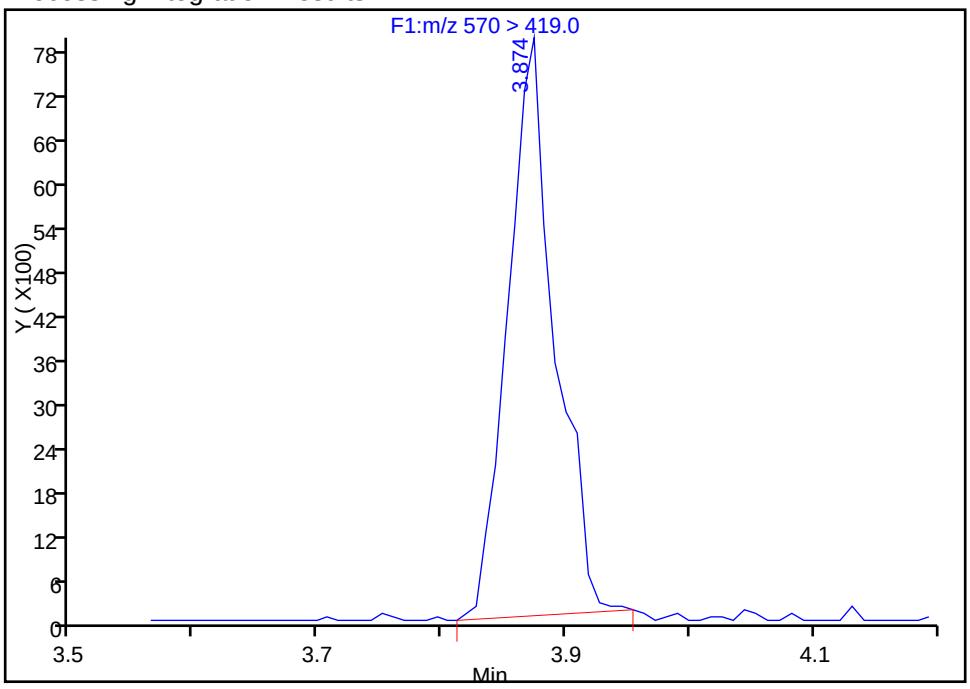
Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_014_p1_e1.d
Injection Date: 03-Sep-2016 16:53:00 Instrument ID: A8
Lims ID: IC L1 Add-on
Client ID:
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

44 N-methyl perfluorooctane sulfonamidoacetic a, CAS: 2355-31-9

Signal: 1

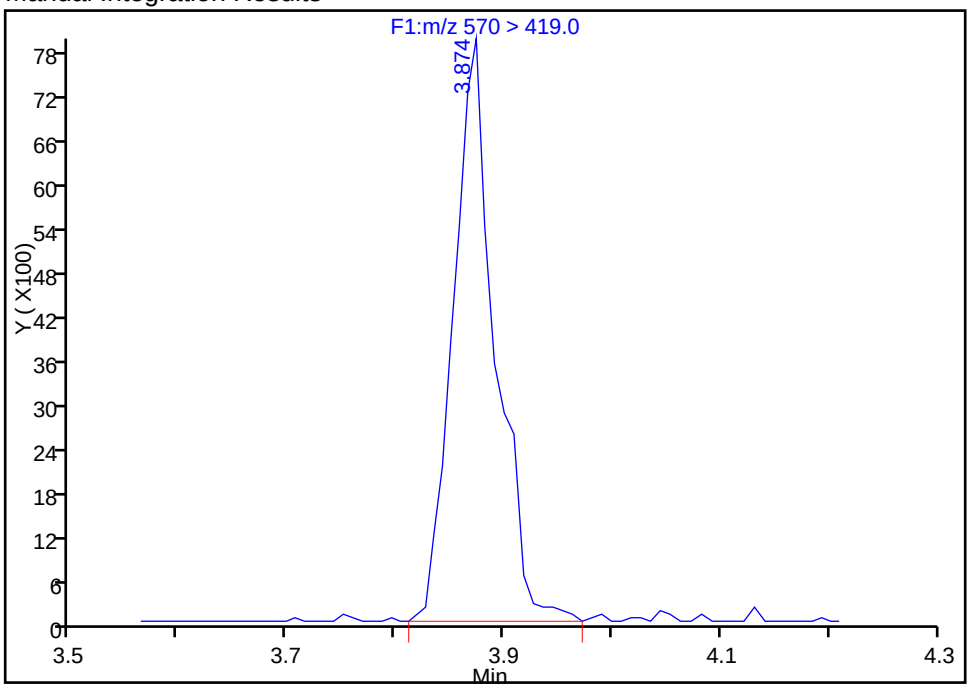
Processing Integration Results

RT: 3.87
Area: 20772
Amount: 2.360546
Amount Units: ng/ml



Manual Integration Results

RT: 3.87
Area: 21482
Amount: 0.529216
Amount Units: ng/ml



Reviewer: phomsophat, 07-Sep-2016 14:50:04
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento

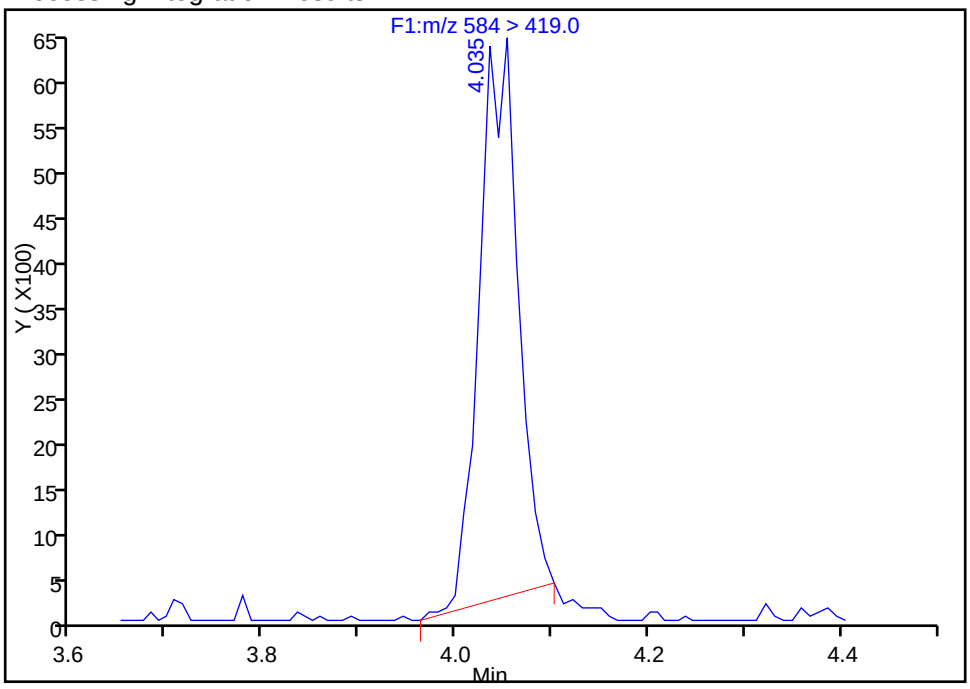
Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_014_p1_e1.d
Injection Date: 03-Sep-2016 16:53:00 Instrument ID: A8
Lims ID: IC L1 Add-on
Client ID:
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

49 N-ethyl perfluorooctane sulfonamidoacetic ac, CAS: 2991-50-6

Signal: 1

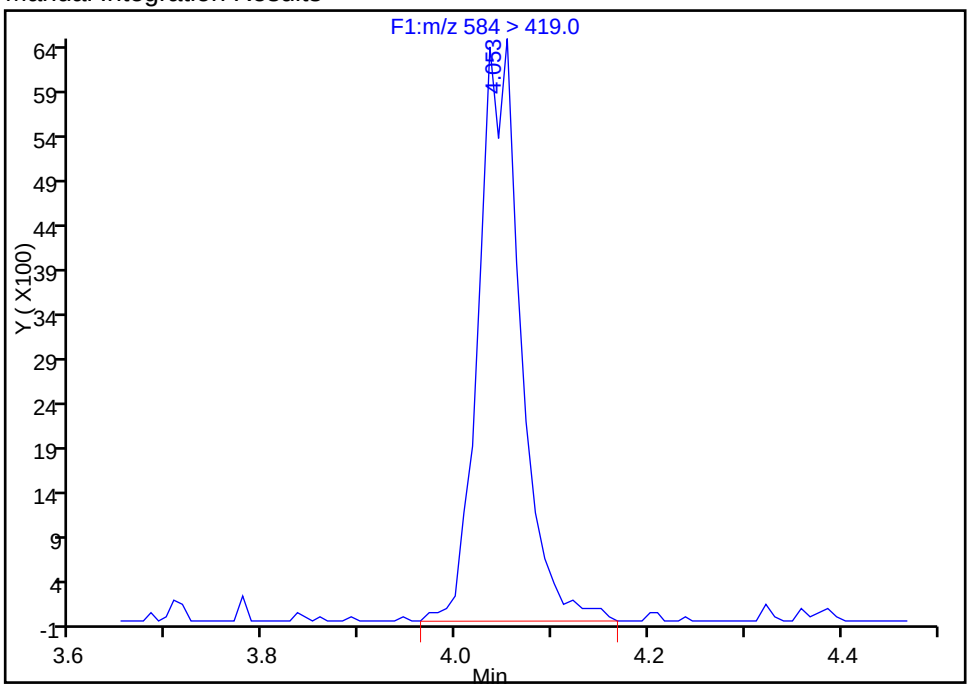
Processing Integration Results

RT: 4.04
Area: 17248
Amount: 0.362080
Amount Units: ng/ml



Manual Integration Results

RT: 4.05
Area: 19615
Amount: 0.493913
Amount Units: ng/ml



Reviewer: phomsophat, 07-Sep-2016 14:50:04
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_015_p1_e1.d
Lims ID: IC L2 Add-on
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 03-Sep-2016 17:01:00 ALS Bottle#: 0 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 10-Sep-2016 12:38:32 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK053

First Level Reviewer: phomsophat Date: 07-Sep-2016 14:57:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.941	2.934	0.007		3505211	44.8		94.3		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.941	2.936	0.005	1.000	61436	1.02		107		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.699	3.698	0.001	1.000	60629	0.9649		101		
D 42 M2-8:2FTS										
529 > 509.0	3.699	3.699	0.0		3705704	44.0		91.9		
D 45 d3-NMeFOSAA										
573 > 419.0	3.867	3.870	-0.003		2474737	49.4		98.7		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.867	3.869	-0.002	1.000	39036	0.9114		91.1		
D 46 d5-NEtFOSAA										
589 > 419.0	4.036	4.036	0.0		2739854	48.9		97.7		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	4.045	4.041	0.004	1.002	39793	0.9552		95.5		
D 52 d-N-MeFOSA-M										
515 > 169.0	4.142	4.145	-0.003		3345874	48.5		97.0		
54 MeFOSA										
512 > 169.0	4.142	4.146	-0.004	1.000	52546	0.9698		97.0		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.323	4.326	-0.003		3063548	48.0		96.0		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.332	4.334	-0.002	1.000	49985	0.9638		96.4		

Reagents:

LCPFC2-L2_00002 Amount Added: 1.00 Units: mL

Report Date: 10-Sep-2016 12:38:33 Chrom Revision: 2.2 17-Aug-2016 13:17:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_015_p1_e1.d

Injection Date: 03-Sep-2016 17:01:00 Instrument ID: A8

Lims ID: IC L2 Add-on

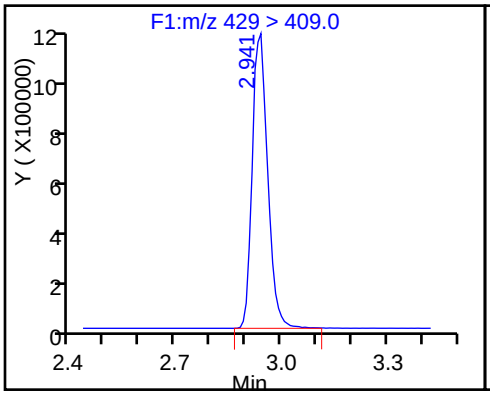
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 15

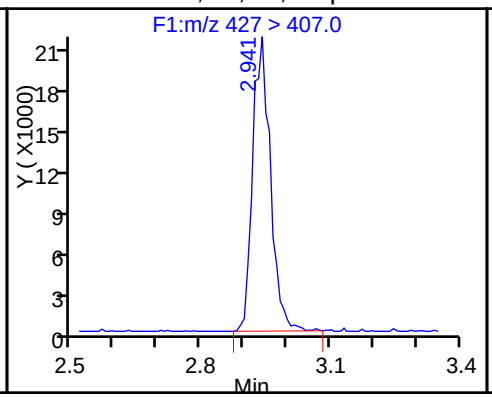
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

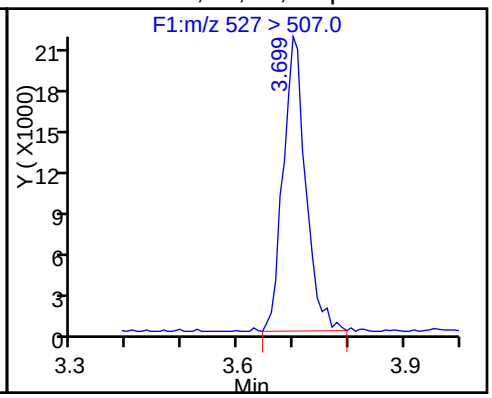
D 47 M2-6:2FTS



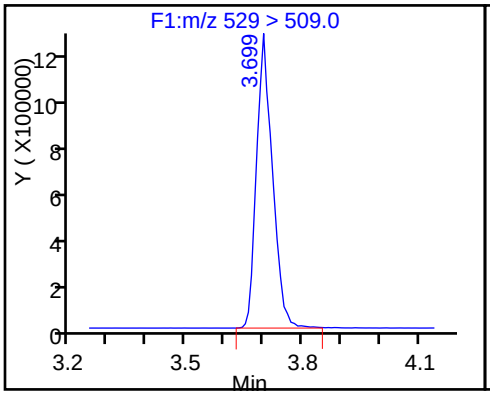
48 Sodium 1H,1H,2H,2H-perfluorooctane



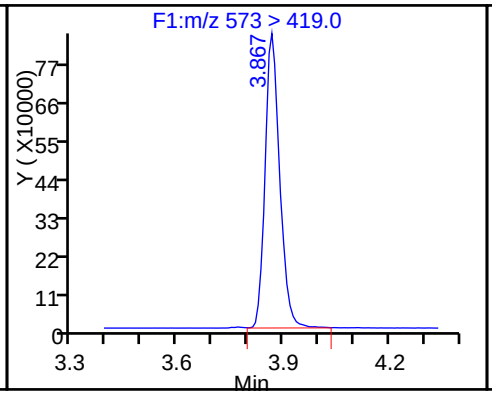
43 Sodium 1H,1H,2H,2H-perfluorooctane



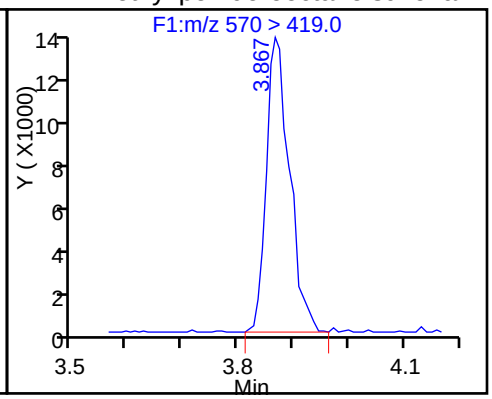
D 42 M2-8:2FTS



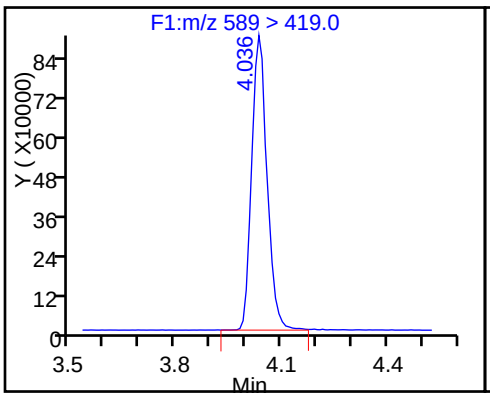
D 45 d3-NMeFOSAA



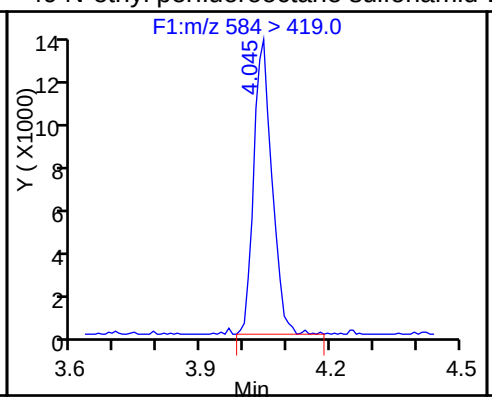
44 N-methyl perfluorooctane sulfonami



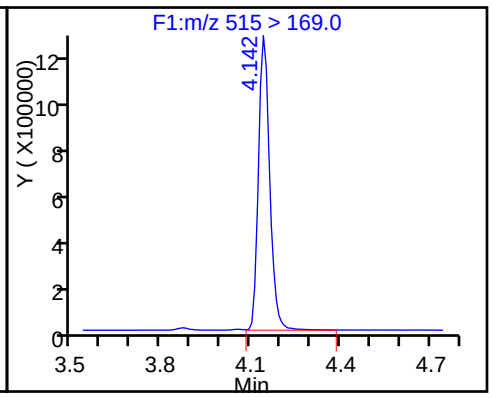
D 46 d5-NEtFOSAA



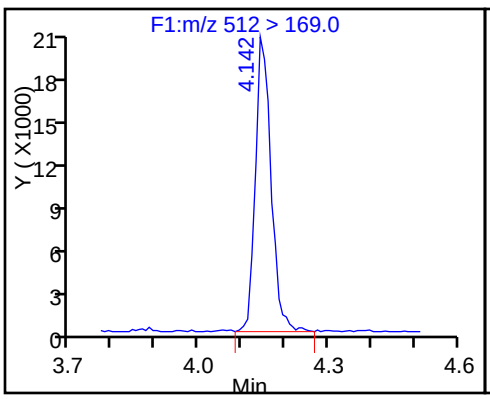
49 N-ethyl perfluorooctane sulfonamid



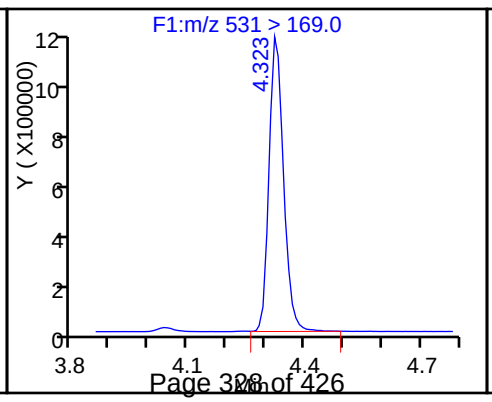
D 52 d-N-MeFOSA-M



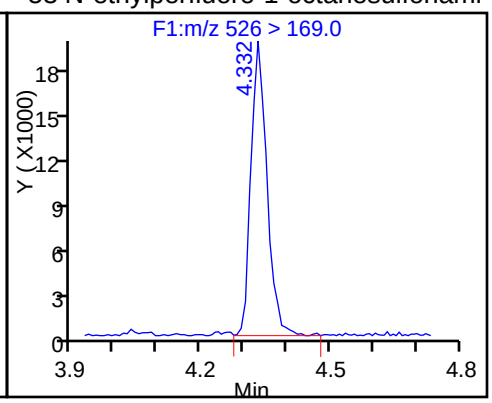
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_016_p1_e1.d
Lims ID: IC L3 Add-on
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 03-Sep-2016 17:08:00 ALS Bottle#: 0 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 10-Sep-2016 12:38:37 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK053

First Level Reviewer: phomsophat Date: 07-Sep-2016 14:58:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.941	2.934	0.007		3480930	44.5		93.7		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.933	2.936	-0.003	1.000	252159	4.21		88.8		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.708	3.698	0.010	1.000	279103	4.31		89.9		
D 42 M2-8:2FTS										
529 > 509.0	3.708	3.698	0.010		3823389	45.4		94.8		
D 45 d3-NMeFOSAA										
573 > 419.0	3.875	3.866	0.009		2472121	49.3		98.6		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.875	3.869	0.006	1.000	181469	4.24		84.8		
D 46 d5-NEtFOSAA										
589 > 419.0	4.036	4.033	0.003		2845482	50.8		102		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	4.045	4.040	0.005	1.002	179781	4.16		83.1		
D 52 d-N-MeFOSA-M										
515 > 169.0	4.152	4.143	0.009		3439446	49.9		99.7		
54 MeFOSA										
512 > 169.0	4.152	4.144	0.008	1.000	229630	4.12		82.5		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.333	4.325	0.008		3073658	48.2		96.3		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.342	4.333	0.009	1.000	226164	4.35		86.9		

Reagents:

LCPFC2-L3_00002 Amount Added: 1.00 Units: mL

Report Date: 10-Sep-2016 12:38:38 Chrom Revision: 2.2 17-Aug-2016 13:17:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_016_p1_e1.d

Injection Date: 03-Sep-2016 17:08:00 Instrument ID: A8

Lims ID: IC L3 Add-on

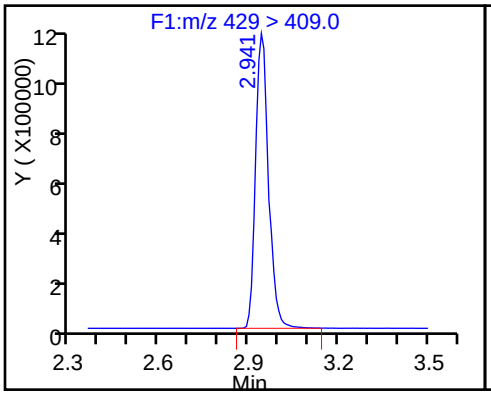
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 16

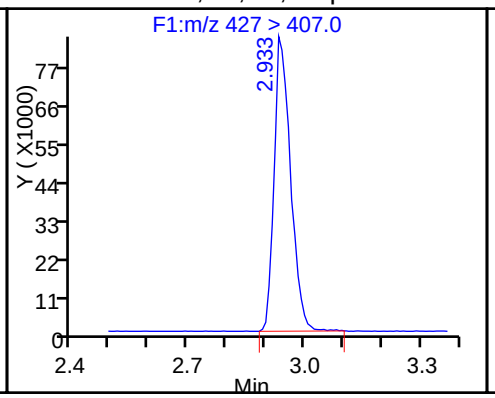
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

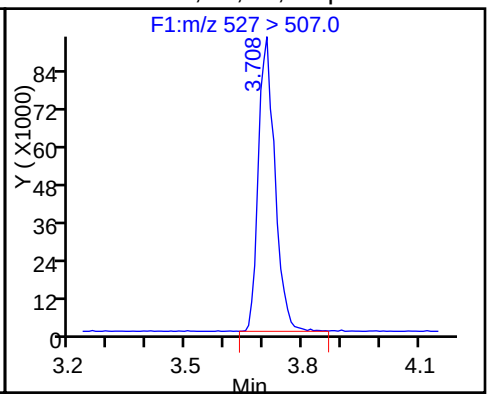
D 47 M2-6:2FTS



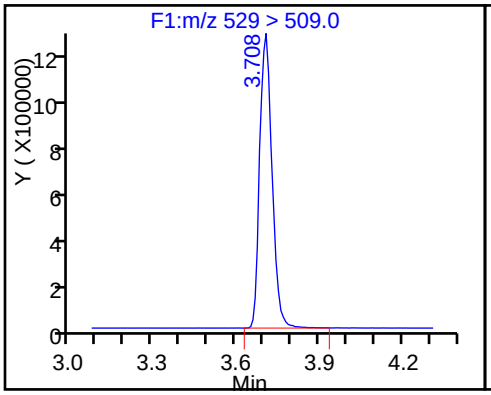
48 Sodium 1H,1H,2H,2H-perfluorooctane



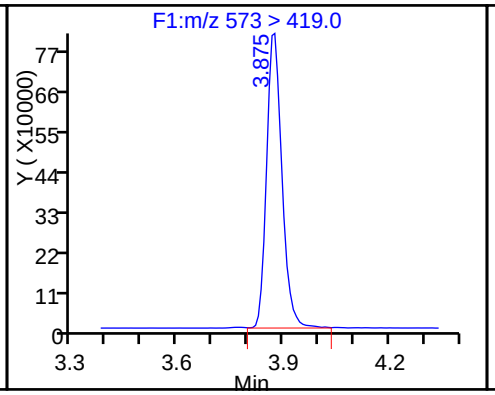
43 Sodium 1H,1H,2H,2H-perfluorooctane



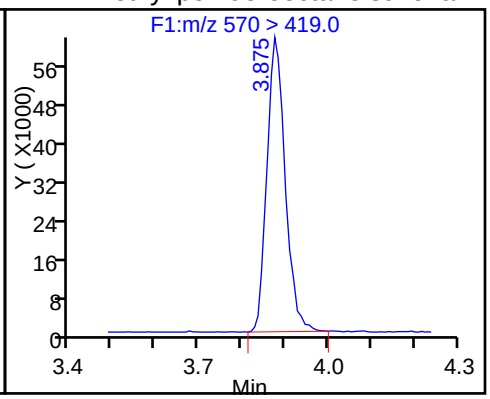
D 42 M2-8:2FTS



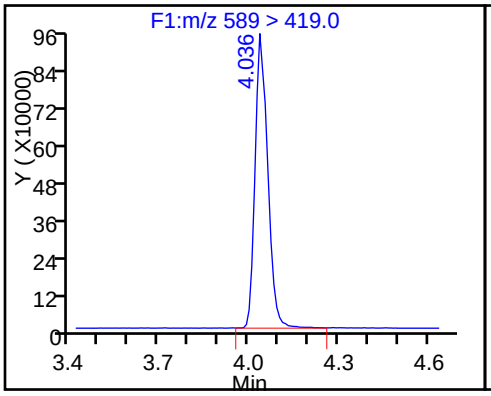
D 45 d3-NMeFOSAA



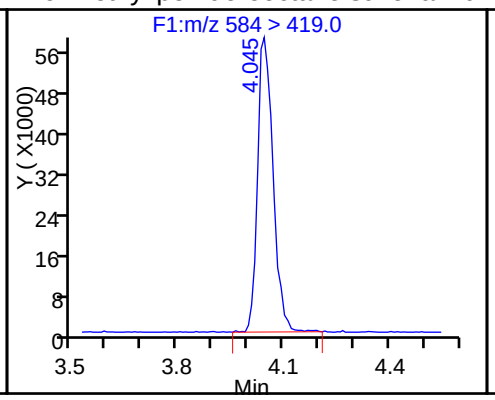
44 N-methyl perfluorooctane sulfonami



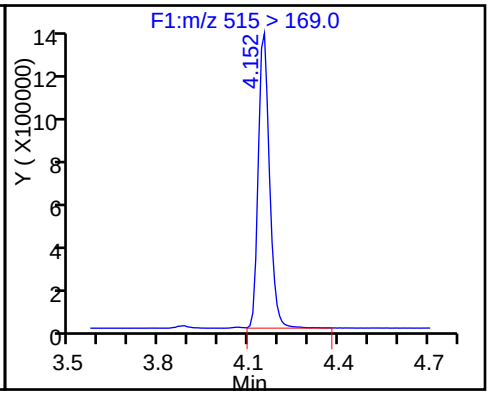
D 46 d5-NEtFOSAA



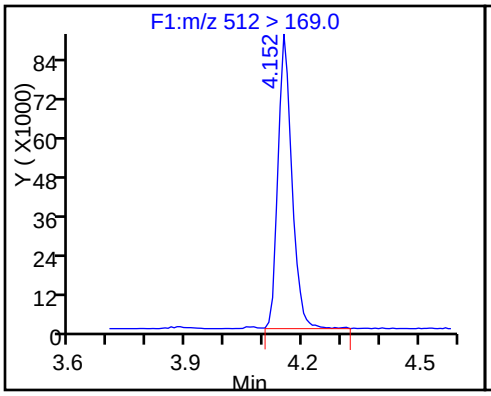
49 N-ethyl perfluorooctane sulfonamid



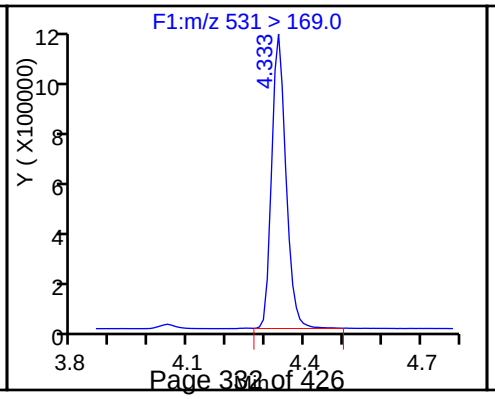
D 52 d-N-MeFOSA-M



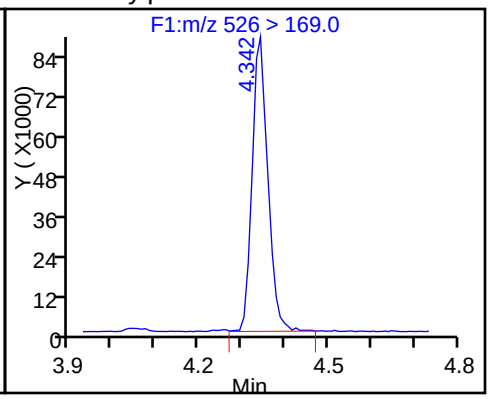
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_017_p1_e1.d
Lims ID: IC L4 Add-on
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 03-Sep-2016 17:16:00 ALS Bottle#: 0 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 10-Sep-2016 12:38:42 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK053

First Level Reviewer: phomsophat Date: 07-Sep-2016 14:40:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.933	2.934	-0.001		3600290	46.0		96.9		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.933	2.936	-0.003	1.000	1324103	21.4		113		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.700	3.698	0.002	1.000	1408431	21.4		112		
D 42 M2-8:2FTS										
529 > 509.0	3.700	3.698	0.002		3880074	46.1		96.2		
D 45 d3-NMeFOSAA										
573 > 419.0	3.867	3.869	-0.002		2616200	52.2		104		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.867	3.869	-0.002	1.000	925966	20.4		102		
D 46 d5-NEtFOSAA										
589 > 419.0	4.036	4.036	0.0		3062834	54.6		109		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	4.036	4.040	-0.004	1.000	954675	20.5		102		
D 52 d-N-MeFOSA-M										
515 > 169.0	4.142	4.144	-0.002		3528172	51.1		102		
54 MeFOSA										
512 > 169.0	4.152	4.144	0.008	1.000	1192551	20.9		104		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.323	4.325	-0.002		3244967	50.8		102		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.332	4.333	-0.001	1.000	1154250	21.0		105		

Reagents:

LCPFC2-L4_00002 Amount Added: 1.00 Units: mL

Report Date: 10-Sep-2016 12:38:43 Chrom Revision: 2.2 17-Aug-2016 13:17:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_017_p1_e1.d

Injection Date: 03-Sep-2016 17:16:00 Instrument ID: A8

Lims ID: IC L4 Add-on

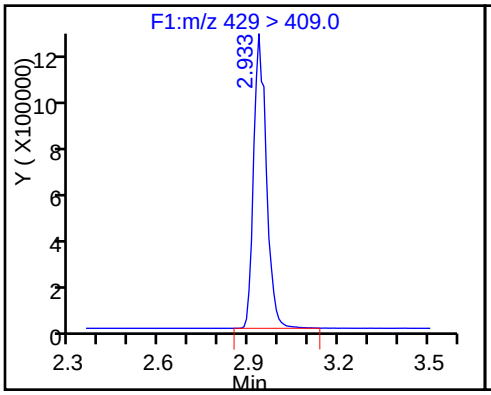
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 17

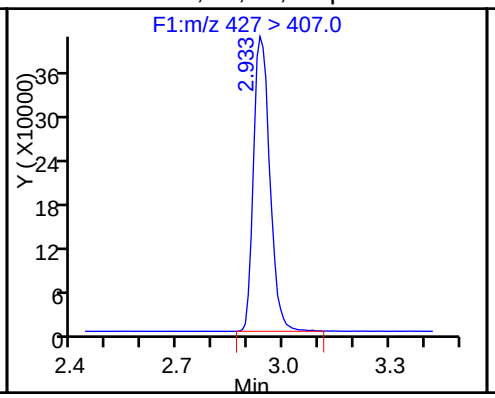
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

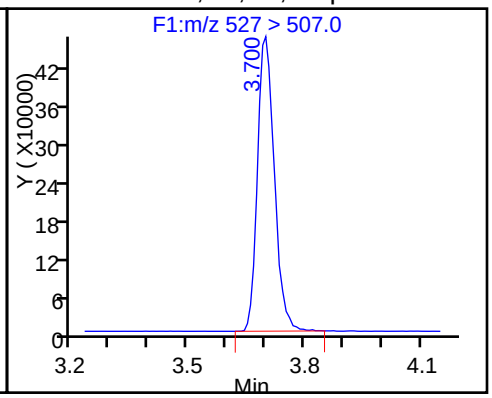
D 47 M2-6:2FTS



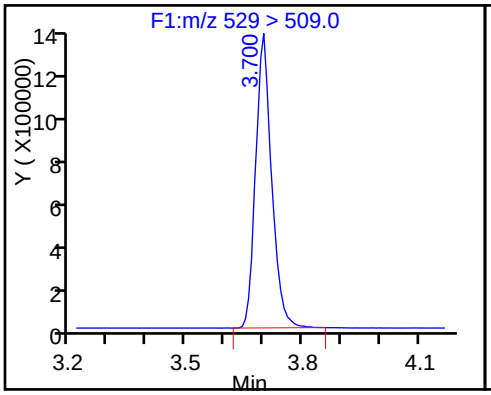
48 Sodium 1H,1H,2H,2H-perfluorooctane



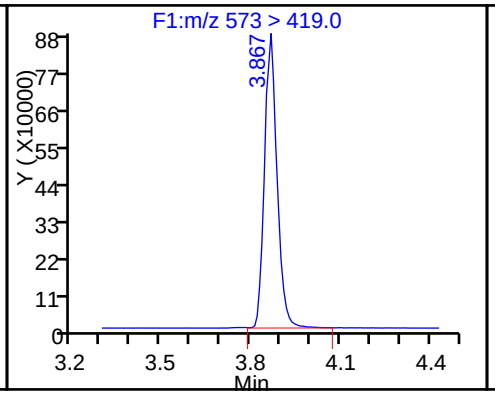
43 Sodium 1H,1H,2H,2H-perfluorooctane



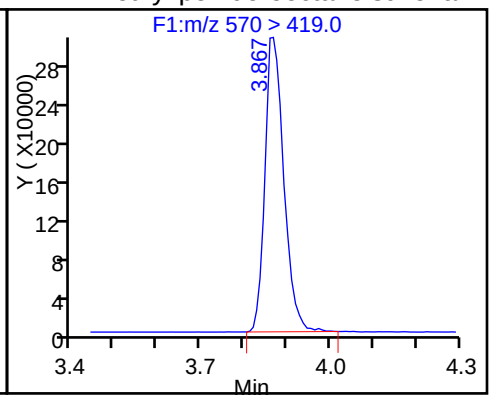
D 42 M2-8:2FTS



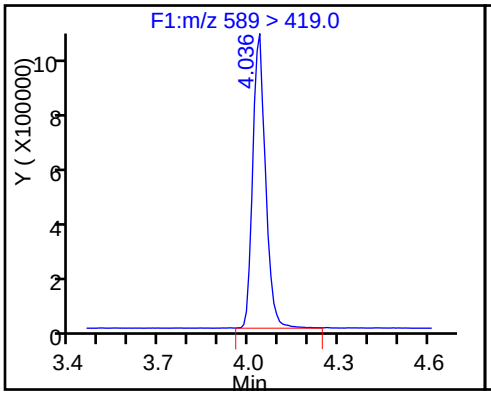
D 45 d3-NMeFOSAA



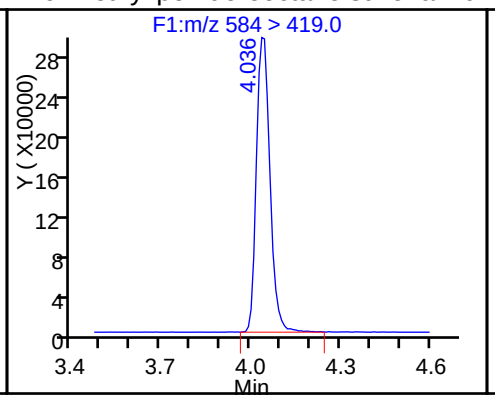
44 N-methyl perfluorooctane sulfonami



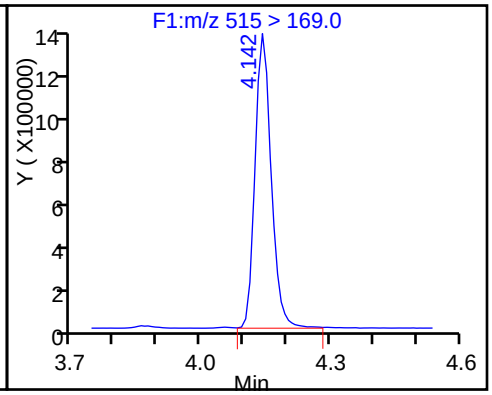
D 46 d5-NEtFOSAA



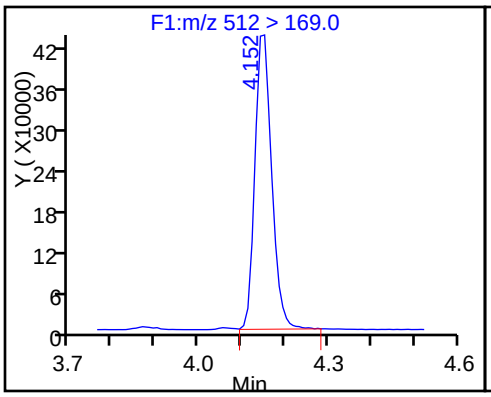
49 N-ethyl perfluorooctane sulfonamid



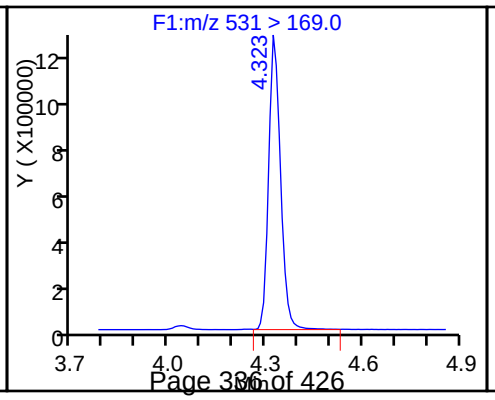
D 52 d-N-MeFOSA-M



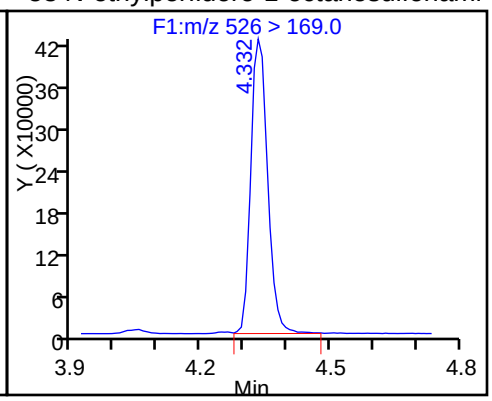
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_018_p1_e1.d
Lims ID: IC L5 Add-on
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 03-Sep-2016 17:23:00 ALS Bottle#: 0 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 10-Sep-2016 12:38:47 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK053

First Level Reviewer: phomsophat Date: 07-Sep-2016 14:52:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.933	2.934	-0.001		3797945	48.6		102		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.933	2.936	-0.003	1.000	3058623	46.8		98.7		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.692	3.698	-0.006	0.998	3220979	45.8		95.7		
D 42 M2-8:2FTS										
529 > 509.0	3.700	3.698	0.002		4145857	49.3		103		
D 45 d3-NMeFOSAA										
573 > 419.0	3.860	3.867	-0.007		2689968	53.7		107		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.867	3.869	-0.002	1.002	2237819	48.1		96.1		
D 46 d5-NEtFOSAA										
589 > 419.0	4.027	4.034	-0.007		2941098	52.5		105		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	4.036	4.040	-0.004	1.002	2207162	49.4		98.7		
D 52 d-N-MeFOSA-M										
515 > 169.0	4.142	4.144	-0.002		3655789	53.0		106		
54 MeFOSA										
512 > 169.0	4.142	4.144	-0.002	1.000	2965510	50.1		100		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.325	4.325	0.0		3325487	52.1		104		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.334	4.333	0.001	1.000	2805243	49.8		99.7		

Reagents:

LCPFC2-L5_00002 Amount Added: 1.00 Units: mL

Report Date: 10-Sep-2016 12:38:48 Chrom Revision: 2.2 17-Aug-2016 13:17:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_018_p1_e1.d

Injection Date: 03-Sep-2016 17:23:00 Instrument ID: A8

Lims ID: IC L5 Add-on

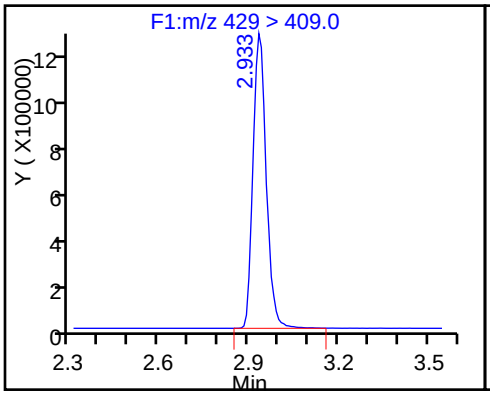
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 18

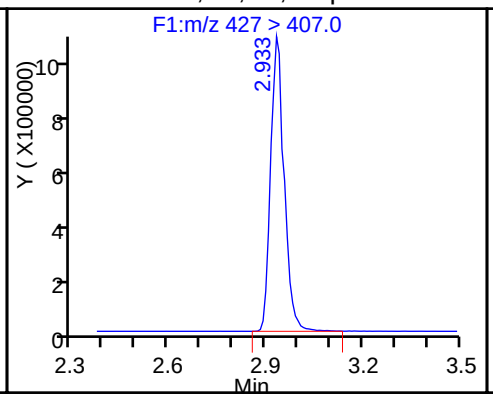
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

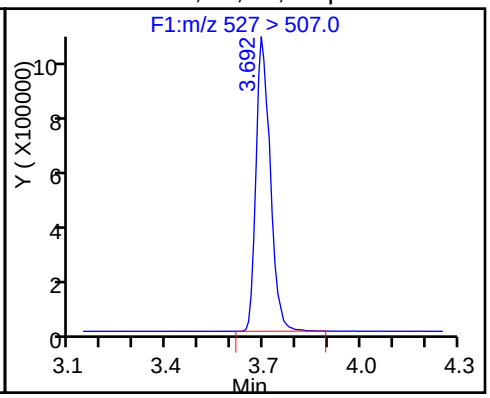
D 47 M2-6:2FTS



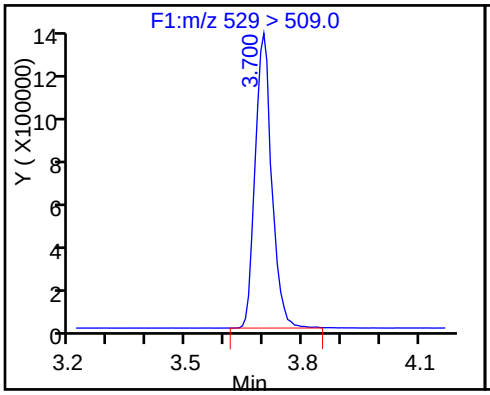
48 Sodium 1H,1H,2H,2H-perfluorooctane



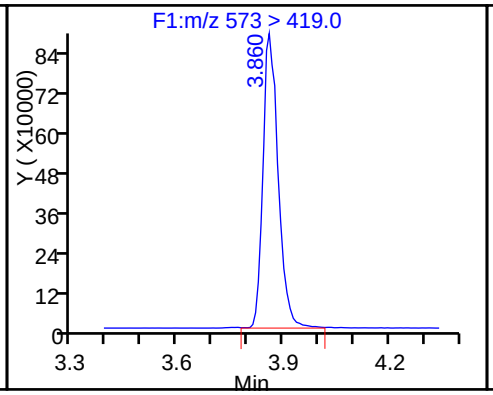
43 Sodium 1H,1H,2H,2H-perfluorooctane



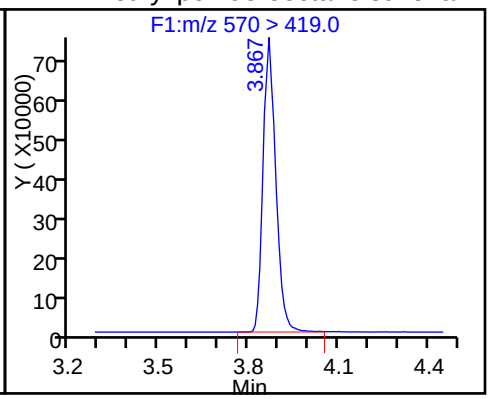
D 42 M2-8:2FTS



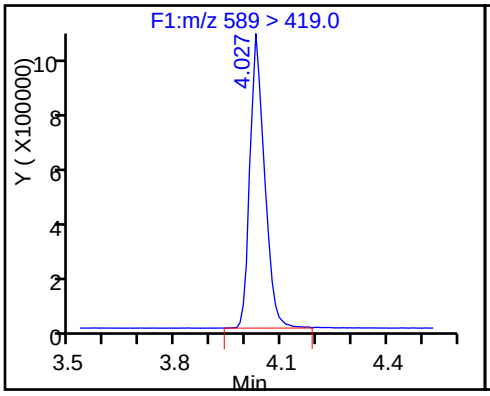
D 45 d3-NMeFOSAA



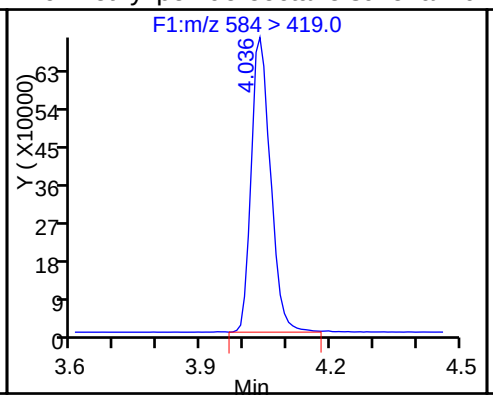
44 N-methyl perfluorooctane sulfonami



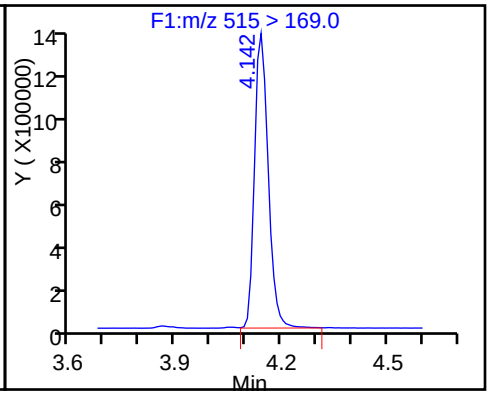
D 46 d5-NEtFOSAA



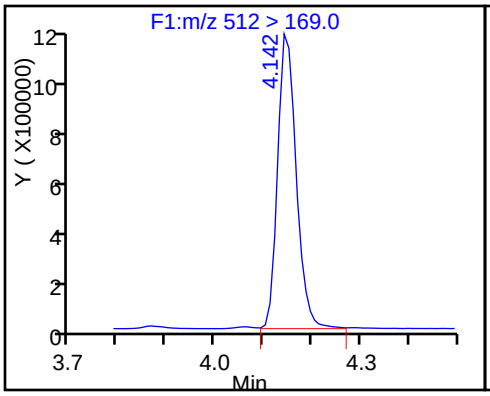
49 N-ethyl perfluorooctane sulfonamid



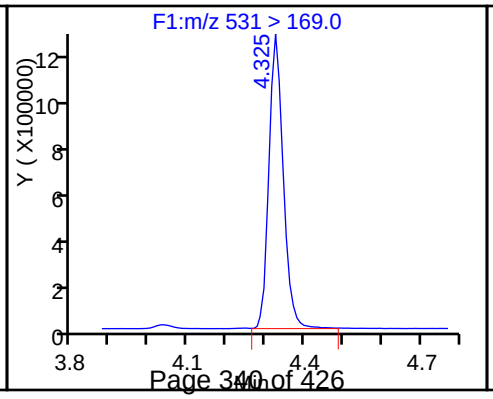
D 52 d-N-MeFOSA-M



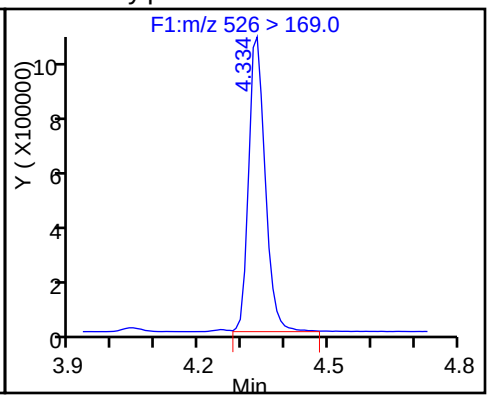
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_019_p1_e1.d
Lims ID: IC L6 Add-on
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 03-Sep-2016 17:31:00 ALS Bottle#: 0 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 10-Sep-2016 12:38:52 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK053

First Level Reviewer: phomsophat Date: 07-Sep-2016 15:01:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.925	2.934	-0.009		3853202	49.3		104		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.933	2.936	-0.003	1.000	11633026	175.4		92.5		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.688	3.698	-0.010	1.000	12931010	183.6		95.8		
D 42 M2-8:2FTS										
529 > 509.0	3.688	3.698	-0.010		4153988	49.4		103		
D 45 d3-NMeFOSAA										
573 > 419.0	3.864	3.867	-0.003		2558846	51.0		102		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.864	3.869	-0.005	1.000	9131219	206.2		103		
D 46 d5-NEtFOSAA										
589 > 419.0	4.031	4.034	-0.003		2747749	49.0		98.0		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	4.031	4.040	-0.009	1.000	8977868	214.9		107		
D 52 d-N-MeFOSA-M										
515 > 169.0	4.146	4.144	0.002		3534315	51.2		102		
54 MeFOSA										
512 > 169.0	4.146	4.144	0.002	1.000	12266767	214.3		107		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.322	4.325	-0.003		3372284	52.8		106		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.332	4.333	-0.001	1.000	12200197	213.7		107		

Reagents:

LCPFC2-L6_00002 Amount Added: 1.00 Units: mL

Report Date: 10-Sep-2016 12:38:53 Chrom Revision: 2.2 17-Aug-2016 13:17:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_019_p1_e1.d

Injection Date: 03-Sep-2016 17:31:00 Instrument ID: A8

Lims ID: IC L6 Add-on

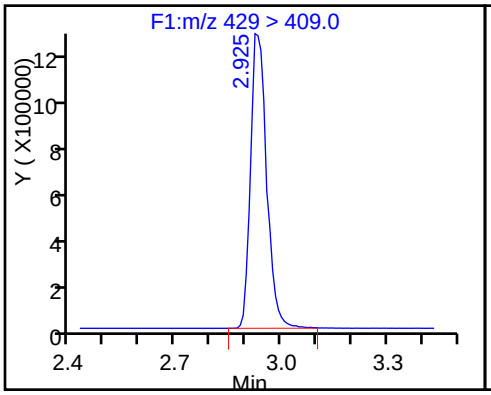
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 19

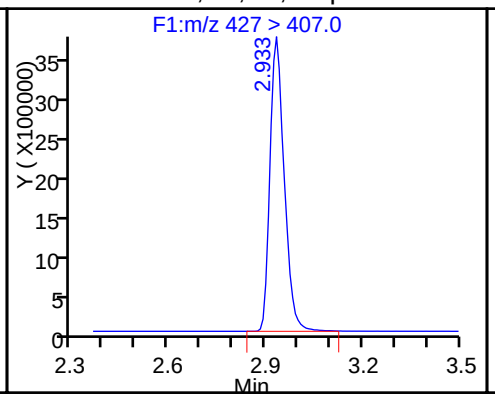
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

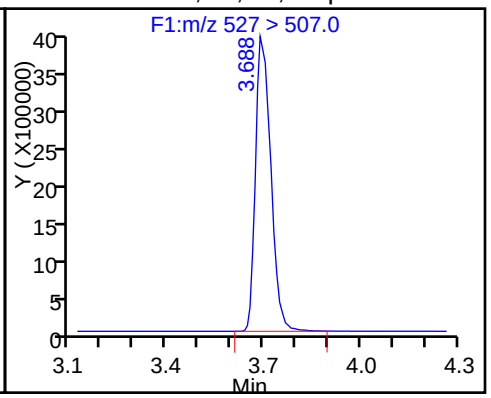
D 47 M2-6:2FTS



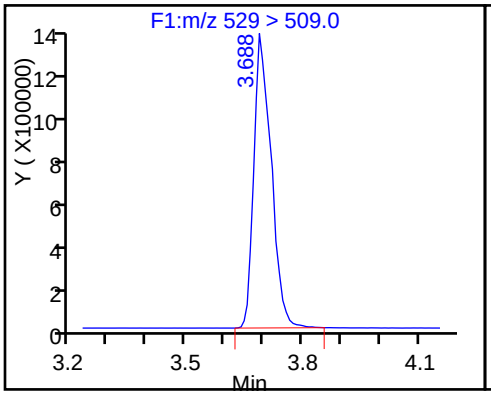
48 Sodium 1H,1H,2H,2H-perfluorooctane



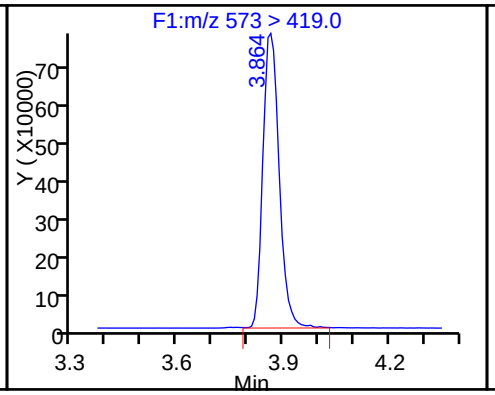
43 Sodium 1H,1H,2H,2H-perfluorooctane



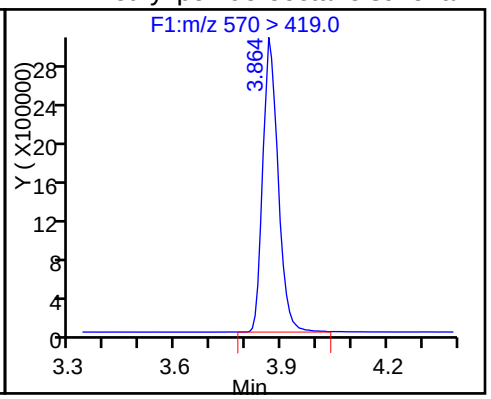
D 42 M2-8:2FTS



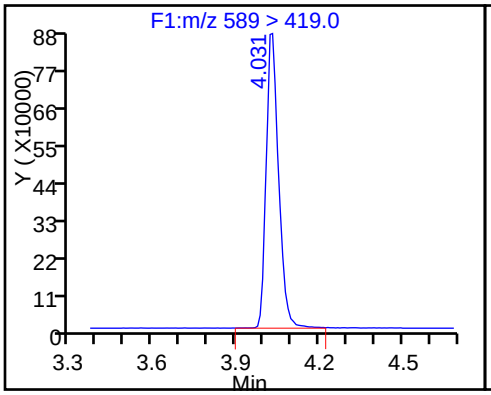
D 45 d3-NMeFOSAA



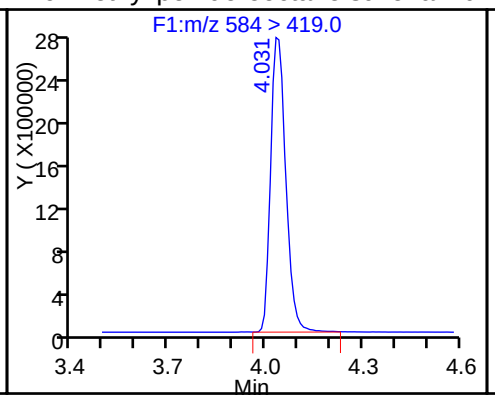
44 N-methyl perfluorooctane sulfonami



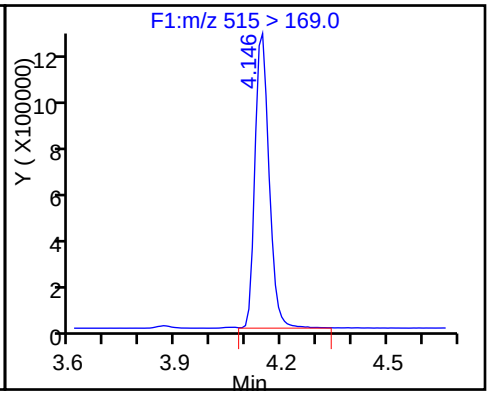
D 46 d5-NEtFOSAA



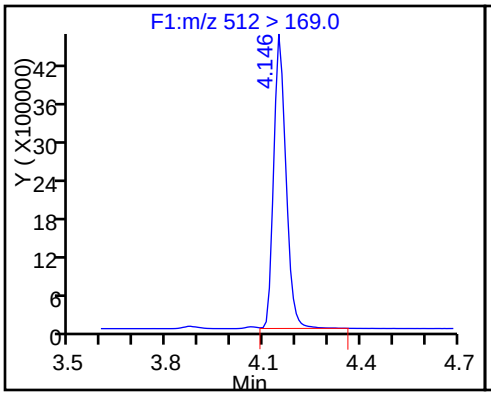
49 N-ethyl perfluorooctane sulfonamid



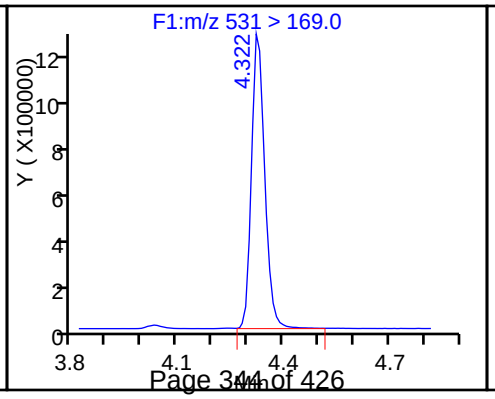
D 52 d-N-MeFOSA-M



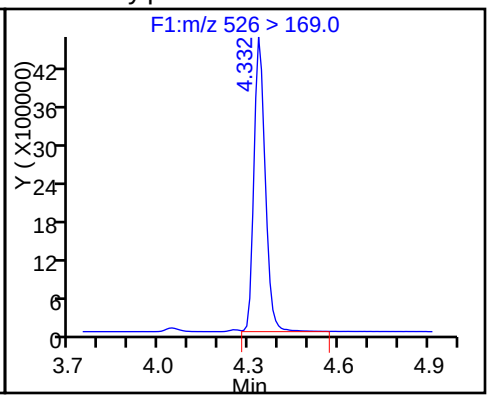
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d
Lims ID: IC L7 Add-on
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 03-Sep-2016 17:38:00 ALS Bottle#: 0 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub4

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 10-Sep-2016 12:38:56 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK053

First Level Reviewer: phomsophat Date: 07-Sep-2016 15:02:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.933	2.934	-0.001		4315874	55.2		116		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.933	2.936	-0.003	1.000	23130125	311.3		82.1		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.697	3.698	-0.001	1.002	25721082	309.5		80.8		
D 42 M2-8:2FTS										
529 > 509.0	3.689	3.698	-0.009		4901505	58.2		122		
D 45 d3-NMeFOSAA										
573 > 419.0	3.857	3.865	-0.008		2390955	47.7		95.4		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.865	3.869	-0.004	1.002	19319449	466.9		117		
D 46 d5-NEtFOSAA										
589 > 419.0	4.023	4.032	-0.009		2674584	47.7		95.4		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	4.032	4.040	-0.008	1.002	18536217	455.8		114		
D 52 d-N-MeFOSA-M										
515 > 169.0	4.137	4.143	-0.006		3443873	49.9		99.8		
54 MeFOSA										
512 > 169.0	4.137	4.144	-0.007	1.000	24668475	442.3		111		
D 51 d-N-EtFOSA-M										
531 > 169.0	4.324	4.325	-0.001		3283532	51.4		103		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.324	4.333	-0.009	1.000	24514043	441.0		110		

Reagents:

LCPFC2-L7_00002 Amount Added: 1.00 Units: mL

Report Date: 10-Sep-2016 12:38:57 Chrom Revision: 2.2 17-Aug-2016 13:17:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Injection Date: 03-Sep-2016 17:38:00 Instrument ID: A8

Lims ID: IC L7 Add-on

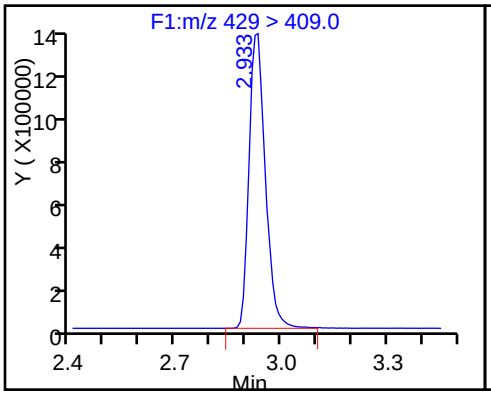
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 20

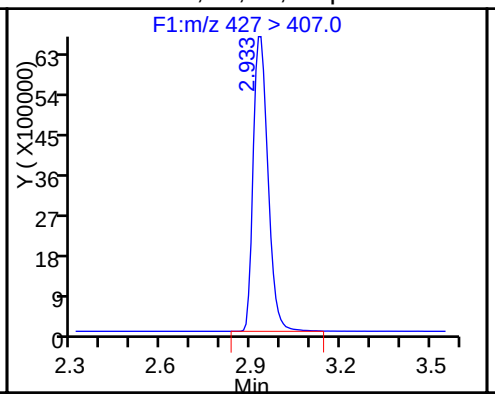
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

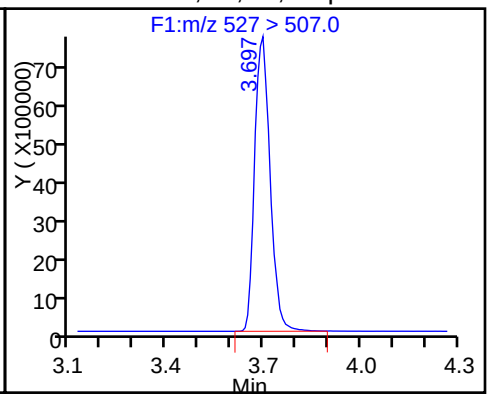
D 47 M2-6:2FTS



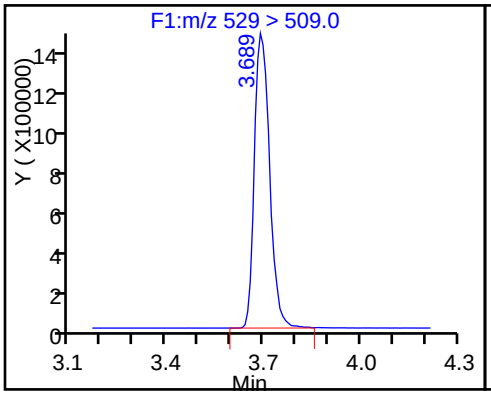
48 Sodium 1H,1H,2H,2H-perfluorooctane



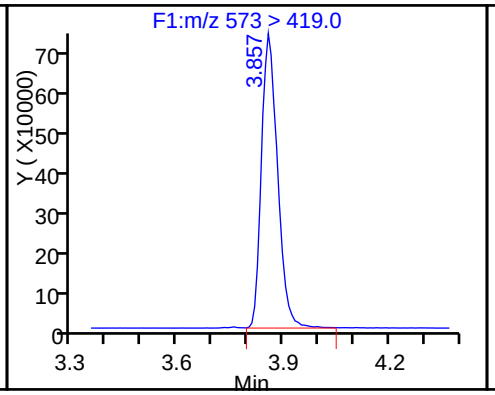
43 Sodium 1H,1H,2H,2H-perfluorooctane



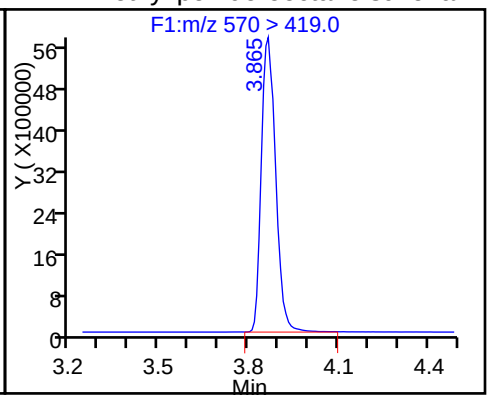
D 42 M2-8:2FTS



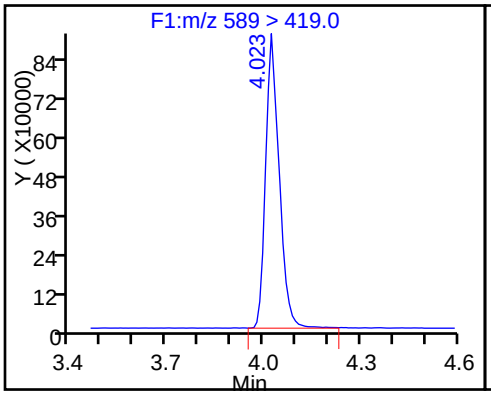
D 45 d3-NMeFOSAA



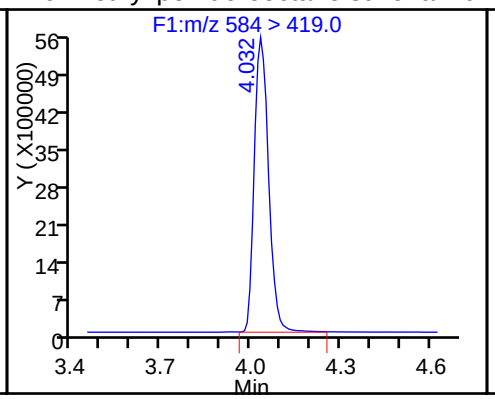
44 N-methyl perfluorooctane sulfonami



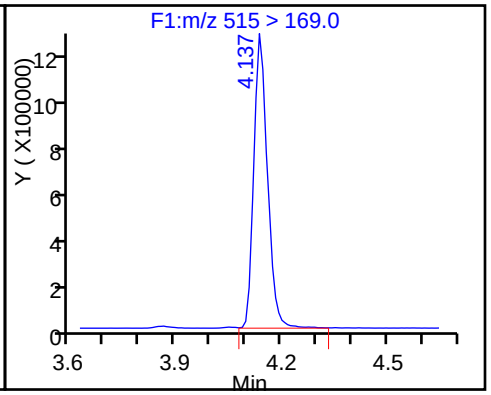
D 46 d5-NEtFOSAA



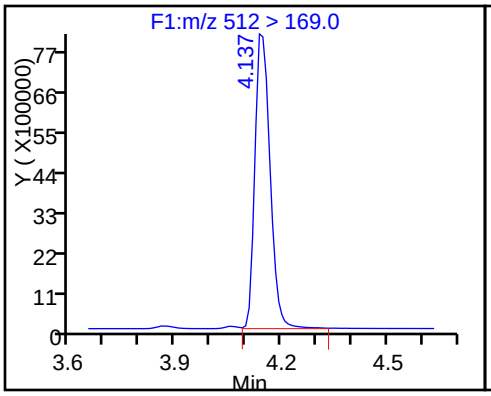
49 N-ethyl perfluorooctane sulfonamid



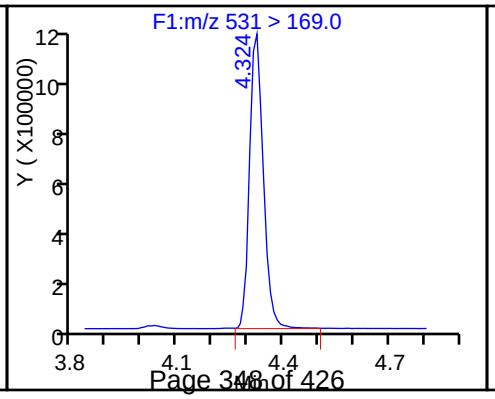
D 52 d-N-MeFOSA-M



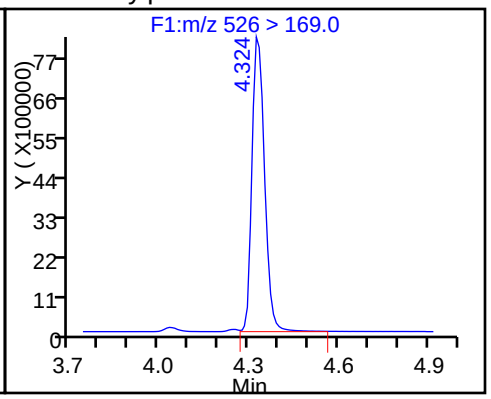
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Lab Sample ID: ICV 320-125915/12 Calibration Date: 09/03/2016 16:38

Instrument ID: A8 Calib Start Date: 09/03/2016 15:38

GC Column: Acquity ID: 2.10(mm) Calib End Date: 09/03/2016 17:38

Lab File ID: 03SEP2016A_012_p1_e1.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8766	0.9430		53.8	50.0	7.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.050	1.068		50.9	50.0	1.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.522	1.704		49.6	44.3	12.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.007	1.060		52.6	50.0	5.2	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.041	1.168		56.1	50.0	12.2	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.074	1.097		48.3	47.3	2.2	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.151	1.141		47.2	47.6	-0.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.040	1.127		54.2	50.0	8.3	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.175	1.023		41.6	47.8	-13.0	25.0
Perfluorononanoic acid (PFNA)	AveID	1.014	1.112		54.8	50.0	9.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9229	0.9540		51.7	50.0	3.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9788	1.045		53.4	50.0	6.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6392	0.7003		52.9	48.3	9.6	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.077	1.107		51.4	50.0	2.8	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9694	1.044		53.9	50.0	7.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.001	1.065		53.2	50.0	6.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.793	1.942		52.6	50.0	8.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.217		53.2	50.0	6.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9803	1.097		55.9	50.0	11.9	25.0
13C4 PFBA	Ave	201916	223812		55.4	50.0	10.8	50.0
13C5-PFPeA	Ave	158393	174165		55.0	50.0	10.0	50.0
13C2 PFHxA	Ave	144323	146013		50.6	50.0	1.2	50.0
13C4-PFHpA	Ave	130863	142966		54.6	50.0	9.2	50.0
18O2 PFHxS	Ave	180721	202692		53.1	47.3	12.2	50.0
13C4 PFOA	Ave	145826	165163		56.6	50.0	13.3	50.0
13C5 PFNA	Ave	127527	134128		52.6	50.0	5.2	50.0
13C4 PFOS	Ave	144726	164071		54.2	47.8	13.4	50.0
13C8 FOSA	Ave	266354	284999		53.5	50.0	7.0	50.0
13C2 PFDA	Ave	120893	126524		52.3	50.0	4.7	50.0
13C2 PFUnA	Ave	95304	101082		53.0	50.0	6.1	50.0
13C2 PFDoA	Ave	88472	98930		54.3	50.0	11.8	50.0
13C2-PFTeDA	Ave	170446	192241		56.4	50.0	12.8	50.0
13C2-PFHxDA	Ave	108855	124044		57.0	50.0	14.0	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_012_p1_e1.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 03-Sep-2016 16:38:00 ALS Bottle#: 0 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist:

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 10-Sep-2016 12:39:46 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK053

First Level Reviewer: phomsophat Date: 06-Sep-2016 18:50:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.629	1.642	-0.013		11190605	55.4		111	559736	
1 Perfluorobutyric acid										
212.9 > 169.0	1.629	1.645	-0.016	1.000	10553144	53.8			134166	
D 4 13C5-PFPeA										
267.9 > 223.0	1.916	1.938	-0.022		8708233	55.0		110	1080893	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.925	1.940	-0.015	1.000	9303863	50.9			167186	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.959	1.976	-0.017	1.000	15285576	49.6				
298.9 > 99.0	1.959	1.976	-0.017	1.000	6667554		2.29(0.00-0.00)			
7 Perfluorohexanoic acid										
313 > 269.0	2.230	2.253	-0.023	1.000	7737198	52.6			550398	
D 6 13C2 PFHxA										
315 > 270.0	2.230	2.254	-0.024		7300662	50.6		101	877293	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.604	2.591	0.013	1.000	10510022	48.3				
D 11 13C4-PFHpA										
367 > 322.0	2.581	2.611	-0.030		7148288	54.6		109	405415	
12 Perfluoroheptanoic acid										
363 > 319.0	2.588	2.614	-0.026	1.000	8351650	56.1			137150	
D 10 18O2 PFHxS										
403 > 84.0	2.604	2.626	-0.022		9587353	53.1		112	371076	
D 14 13C4 PFOA										
417 > 372.0	2.966	2.994	-0.028		8258153	56.6		113	527810	
15 Perfluorooctanoic acid										
413 > 369.0	2.966	2.996	-0.030	1.000	9309204	54.2			161347	
413 > 169.0	2.966	2.996	-0.030	1.000	5601607		1.66(0.90-1.10)		300737	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.966	2.999	-0.033	1.000	8912687	47.2				
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.297	3.271	0.026	1.000	8012068	41.6			2493	
499 > 99.0	3.342	3.271	0.071	1.014	2020374		3.97(0.90-1.10)		666291	
D 17 13C4 PFOS										
503 > 80.0	3.351	3.375	-0.024		7842577	54.2		113	266469	
D 19 13C5 PFNA										
468 > 423.0	3.342	3.380	-0.038		6706416	52.6		105	486614	
20 Perfluorononanoic acid										
463 > 419.0	3.351	3.381	-0.030	1.000	7454639	54.8			253208	
D 21 13C8 FOSA										
506 > 78.0	3.659	3.674	-0.015		14249937	53.5		107	478679	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.659	3.674	-0.015	1.000	13594915	51.7			294321	
24 Perfluorodecanoic acid										
513 > 469.0	3.715	3.744	-0.029	1.000	6612687	53.4			294074	
D 23 13C2 PFDA										
515 > 470.0	3.715	3.744	-0.029		6326200	52.3		105	330472	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	4.025	4.055	-0.030	1.000	5544026	52.9				
28 Perfluoroundecanoic acid										
563 > 519.0	4.052	4.078	-0.026	1.000	5594798	51.4			231716	
D 27 13C2 PFUnA										
565 > 520.0	4.043	4.081	-0.038		5054079	53.0		106	408709	
29 Perfluorododecanoic acid										
613 > 569.0	4.339	4.374	-0.035	1.000	5164698	53.9			139291	
D 30 13C2 PFDoA										
615 > 570.0	4.339	4.374	-0.035		4946516	54.3		109	284893	
31 Perfluorotridecanoic acid										
633 > 619.0	4.604	4.639	-0.035	1.000	5267977	53.2			25998	
D 32 13C2-PFTeDA										
715 > 670.0	4.850	4.882	-0.032		9612062	56.4		113	819755	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.850	4.883	-0.033	1.000	9605671	52.6			13108	
713 > 169.0	4.840	4.883	-0.043	0.998	1570961		6.11(0.00-0.00)		112366	
D 34 13C2-PFHxDA										
815 > 770.0	5.263	5.305	-0.042		6202197	57.0		114	418136	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.263	5.309	-0.046	1.000	6021769	53.2			16081	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.642	5.692	-0.050	1.000	5425943	55.9			18401	

Reagents:

LCPFCIC_00019 Amount Added: 1.00 Units: mL

Report Date: 10-Sep-2016 12:39:48 Chrom Revision: 2.2 17-Aug-2016 13:17:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_012_p1_e1.d

Injection Date: 03-Sep-2016 16:38:00 Instrument ID: A8

Lims ID: ICV

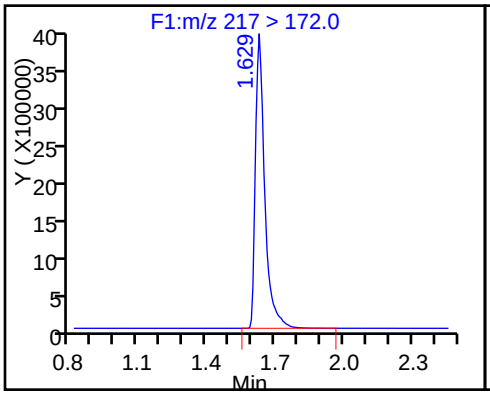
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 12

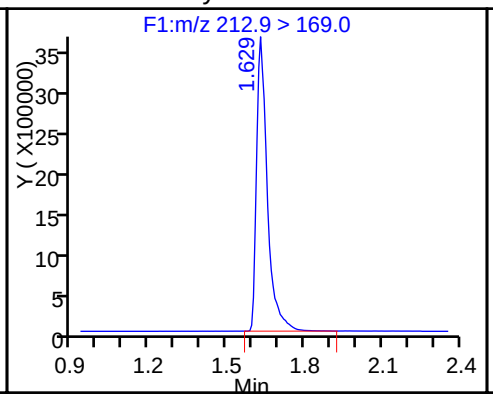
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

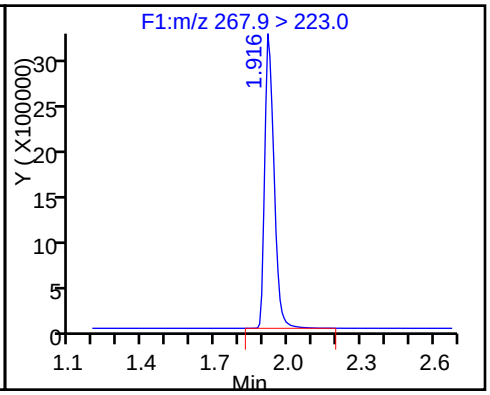
D 2 13C4 PFBA



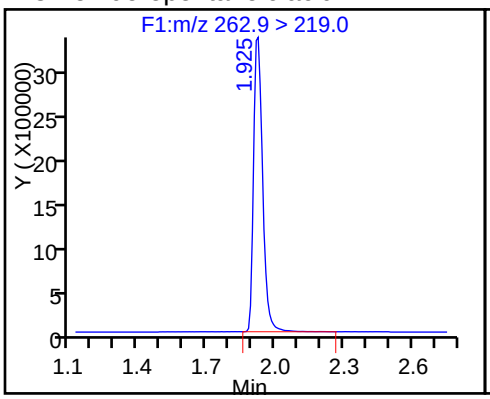
1 Perfluorobutyric acid



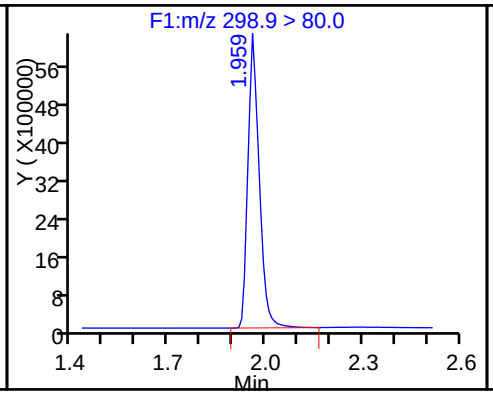
D 4 13C5-PFPeA



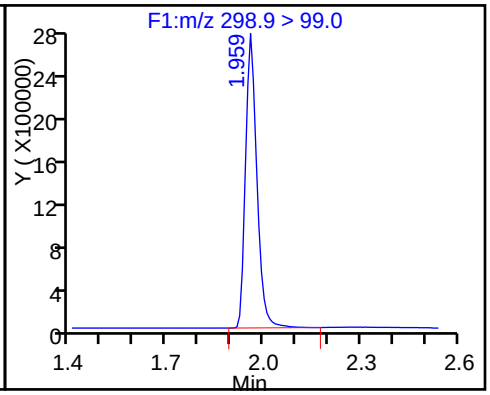
3 Perfluoropentanoic acid



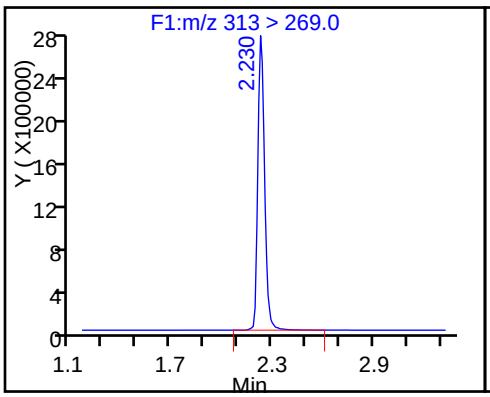
5 Perfluorobutanesulfonic acid



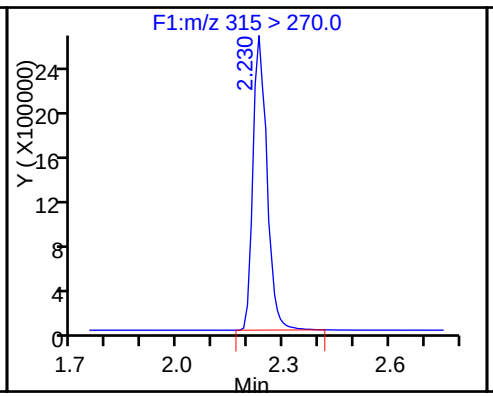
5 Perfluorobutanesulfonic acid



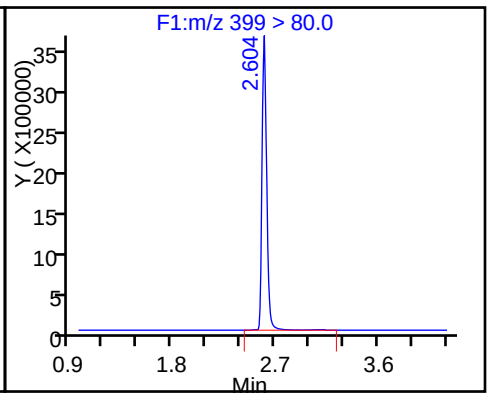
7 Perfluorohexanoic acid



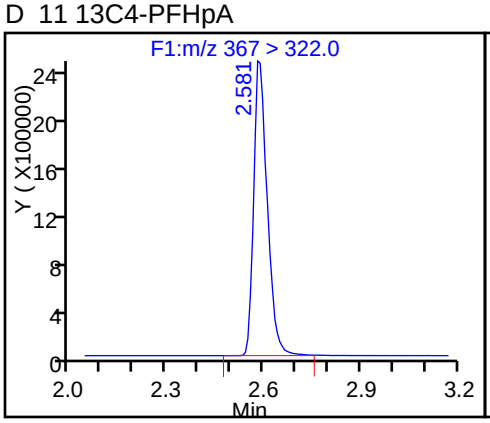
D 6 13C2 PFHxA



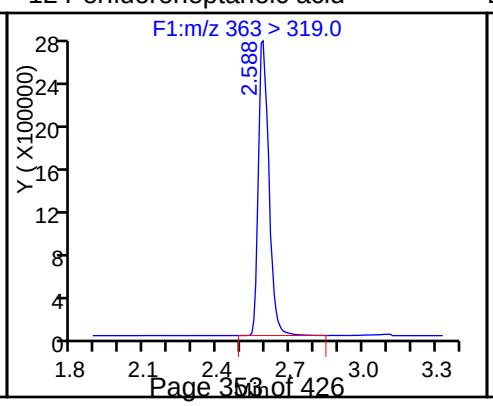
9 Perfluorohexanesulfonic acid



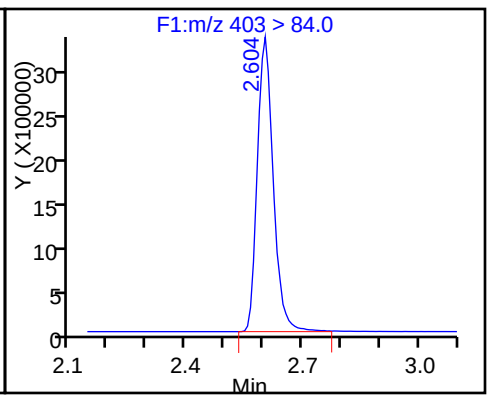
D 11 13C4-PFHpA



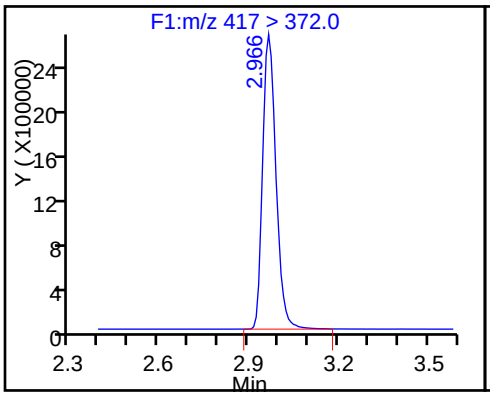
12 Perfluoroheptanoic acid



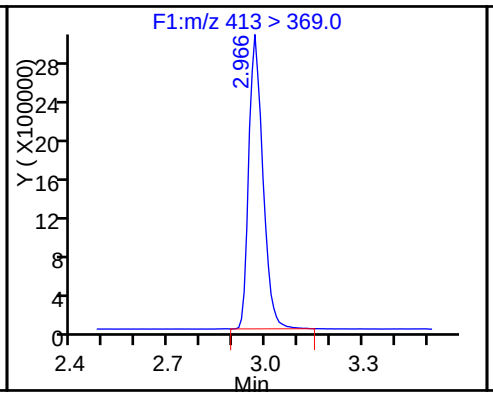
D 10 18O2 PFHxS



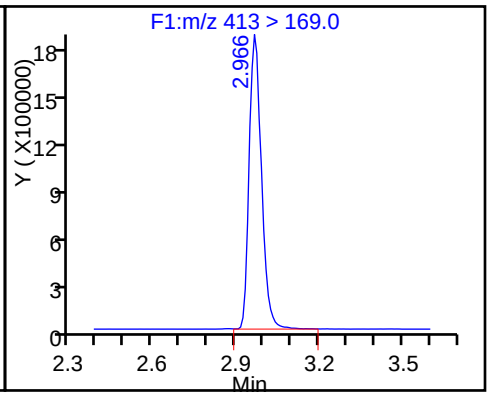
D 14 13C4 PFOA



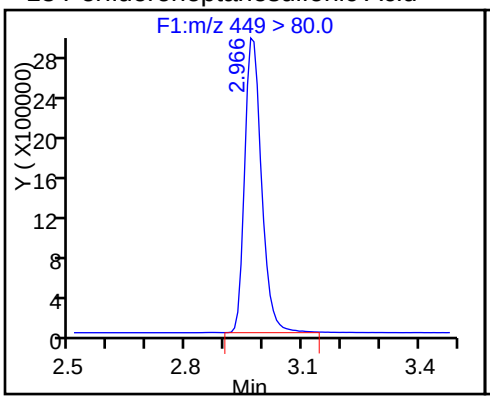
15 Perfluorooctanoic acid



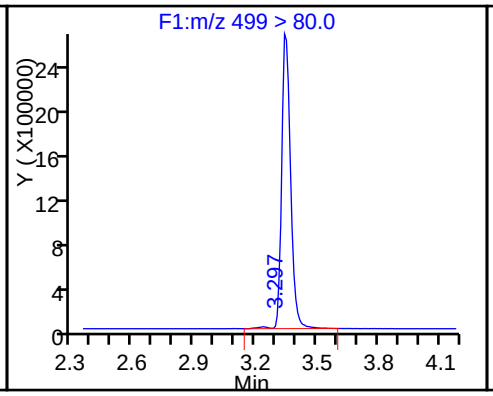
15 Perfluorooctanoic acid



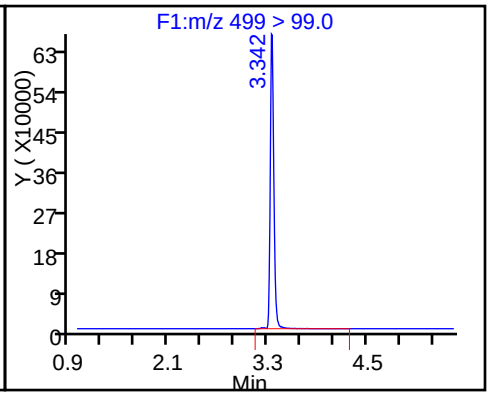
13 Perfluoroheptanesulfonic Acid



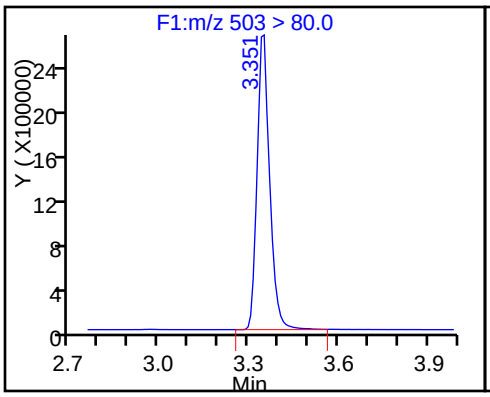
18 Perfluorooctane sulfonic acid



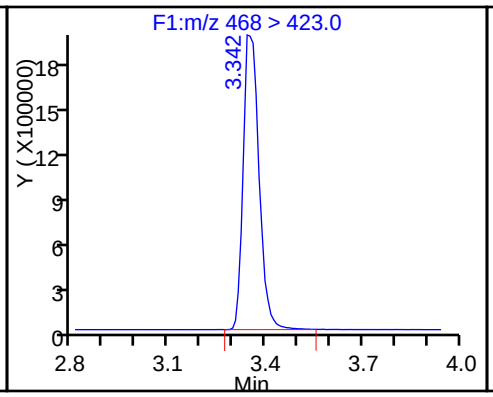
18 Perfluorooctane sulfonic acid



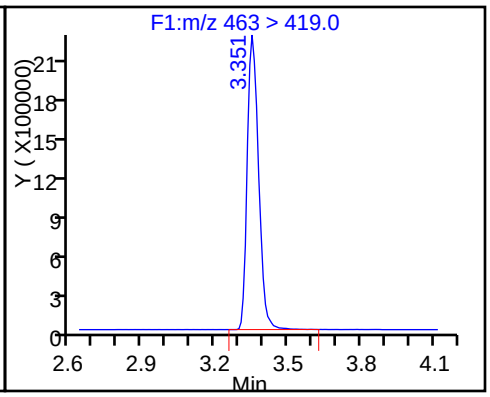
D 17 13C4 PFOS



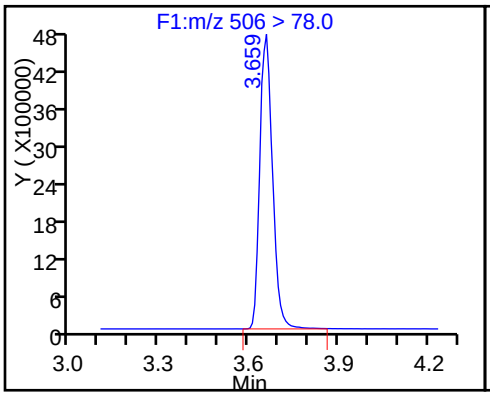
D 19 13C5 PFNA



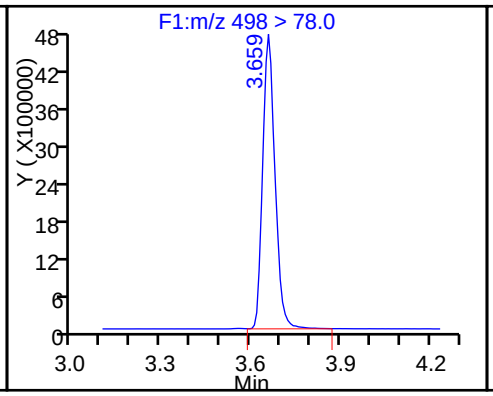
20 Perfluorononanoic acid



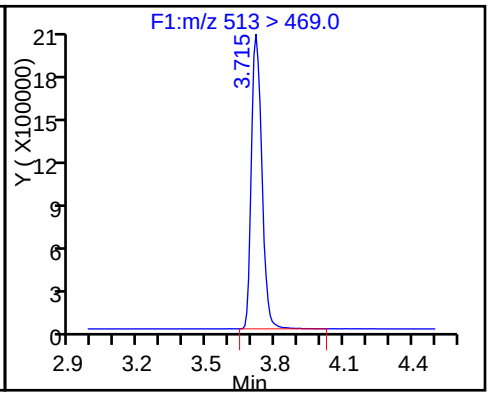
D 21 13C8 FOSA



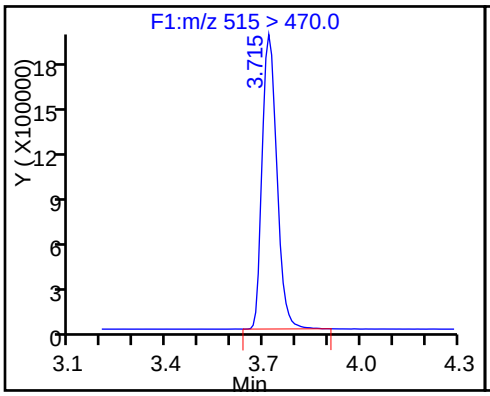
22 Perfluorooctane Sulfonamide



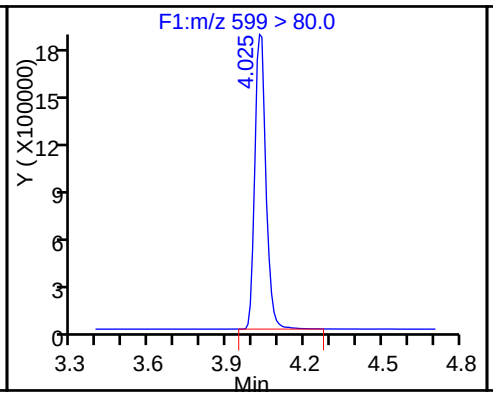
24 Perfluorodecanoic acid



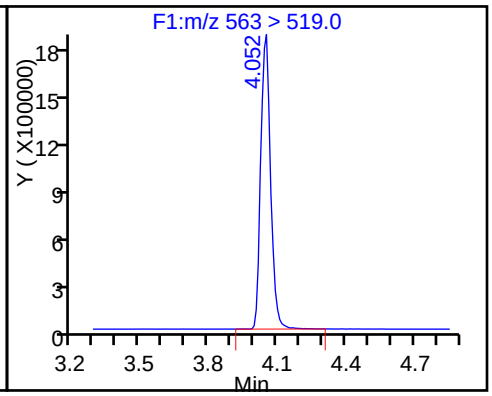
D 23 13C2 PFDA



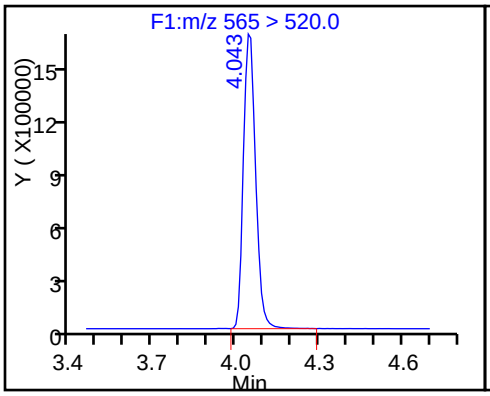
26 Perfluorodecane Sulfonic acid



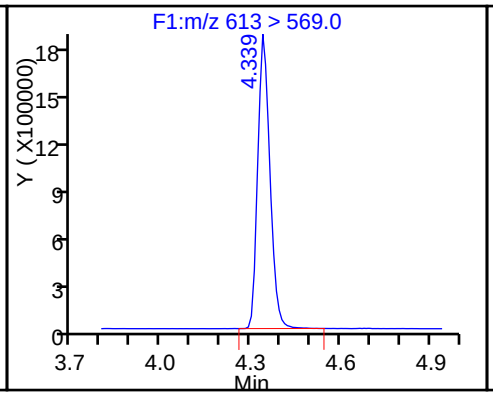
28 Perfluoroundecanoic acid



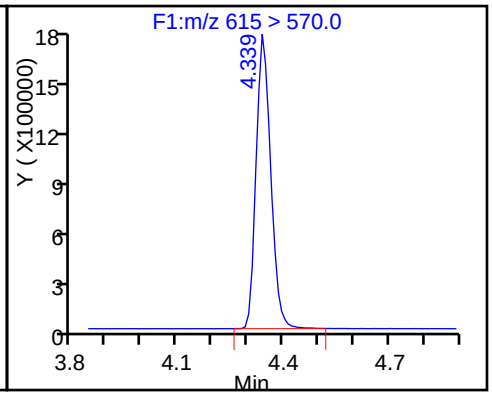
D 27 13C2 PFUnA



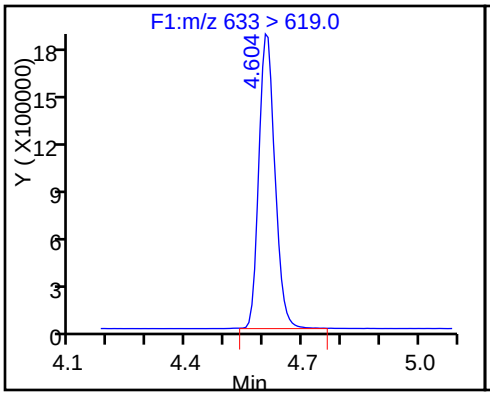
29 Perfluorododecanoic acid



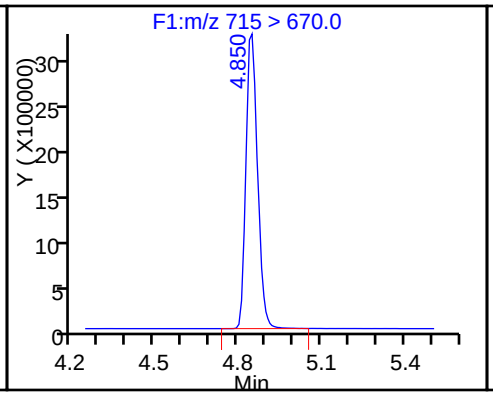
D 30 13C2 PFDoA



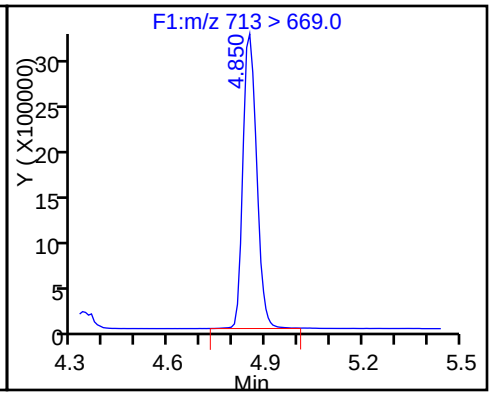
31 Perfluorotridecanoic acid



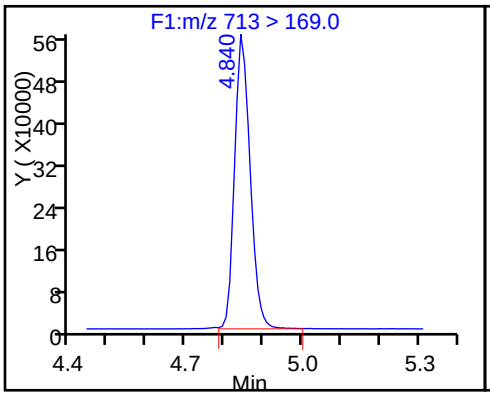
D 32 13C2-PFTeDA



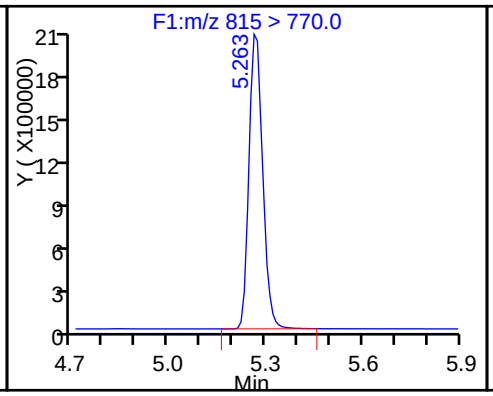
33 Perfluorotetradecanoic acid



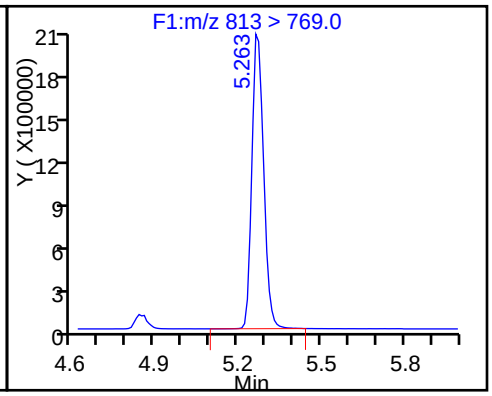
33 Perfluorotetradecanoic acid



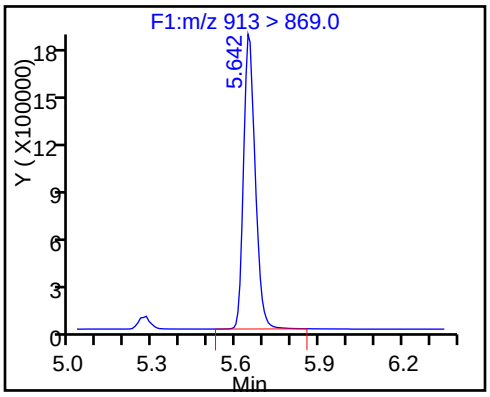
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Lab Sample ID: ICV 320-125915/22 Calibration Date: 09/03/2016 17:53

Instrument ID: A8 Calib Start Date: 09/03/2016 15:38

GC Column: Acquity ID: 2.10(mm) Calib End Date: 09/03/2016 17:38

Lab File ID: 03SEP2016A_022_p1_e1.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
6:2FTS	AveID	0.8178	0.7355		17.1	19.0	-10.1	25.0
8:2FTS	AveID	0.8122	0.8026		18.9	19.2	-1.2	25.0
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	AveID	0.8654	0.8588		19.8	20.0	-0.8	25.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	AveID	0.7603	0.7772		20.4	20.0	2.2	25.0
MeFOSA	AveID	0.8097	0.8264		20.4	20.0	2.1	25.0
N-EtFOSA-M	AveID	0.8464	0.8543		20.2	20.0	0.9	25.0
M2-6:2FTS	Ave	78225	95627		58.1	47.5	22.2	50.0
M2-8:2FTS	Ave	84173	101793		57.9	47.9	20.9	50.0
d3-NMeFOSAA	Ave	50138	62348		62.2	50.0	24.4	50.0
d5-NEtFOSAA	Ave	56067	69208		61.7	50.0	23.4	50.0
d-N-MeFOSA-M	Ave	68982	79053		57.3	50.0	14.6	50.0
d-N-EtFOSA-M	Ave	63829	74380		58.3	50.0	16.5	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_022_p1_e1.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 03-Sep-2016 17:53:00 ALS Bottle#: 0 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist:

Method: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 10-Sep-2016 12:39:25 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK053

First Level Reviewer: phomsophat Date: 07-Sep-2016 15:06:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429 > 409.0	2.937	2.934	0.003		4542300	58.1		122		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.929	2.936	-0.007	1.000	1333496	17.1				
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527 > 507.0	3.696	3.698	-0.002	1.000	1565406	18.9				
D 42 M2-8:2FTS										
529 > 509.0	3.696	3.698	-0.002		4875866	57.9		121		
D 45 d3-NMeFOSAA										
573 > 419.0	3.863	3.865	-0.002		3117385	62.2		124		
44 N-methyl perfluorooctane sulfonami										
570 > 419.0	3.871	3.869	0.002	1.002	1070876	19.8				
D 46 d5-NEtFOSAA										
589 > 419.0	4.031	4.032	-0.001		3460388	61.7		123		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	4.031	4.040	-0.009	1.000	1075737	20.4				
D 52 d-N-MeFOSA-M										
515 > 169.0	4.145	4.143	0.002		3952666	57.3		115		
54 MeFOSA										
512 > 169.0	4.145	4.144	0.001	1.000	1306604	20.4				
D 51 d-N-EtFOSA-M										
531 > 169.0	4.326	4.325	0.001		3718982	58.3		117		
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.336	4.333	0.003	1.000	1270846	20.2				

Reagents:

LCPFC2-IC_00003 Amount Added: 1.00 Units: mL

Report Date: 10-Sep-2016 12:39:26 Chrom Revision: 2.2 17-Aug-2016 13:17:46

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_022_p1_e1.d

Injection Date: 03-Sep-2016 17:53:00 Instrument ID: A8

Lims ID: ICV

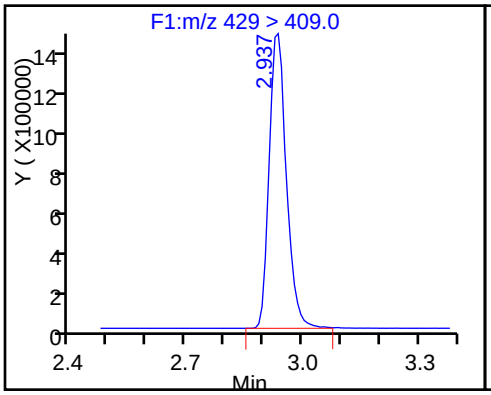
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 22

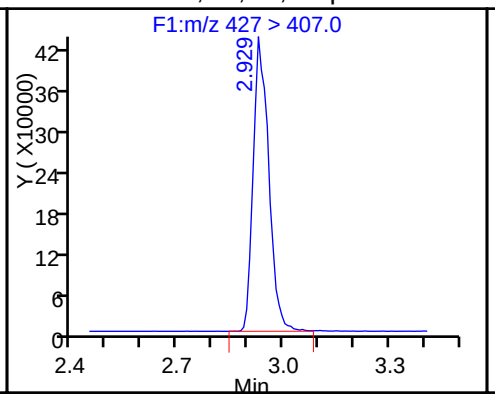
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

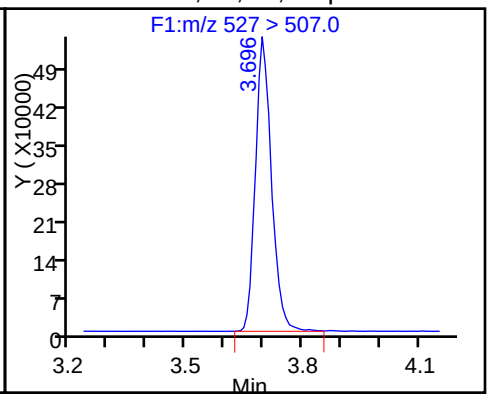
D 47 M2-6:2FTS



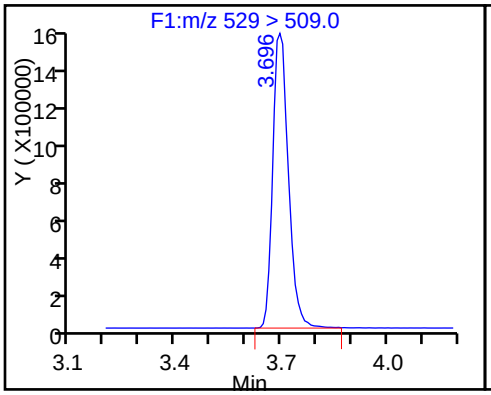
48 Sodium 1H,1H,2H,2H-perfluorooctane



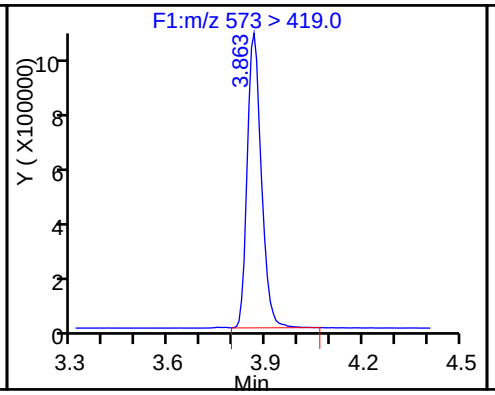
43 Sodium 1H,1H,2H,2H-perfluorooctane



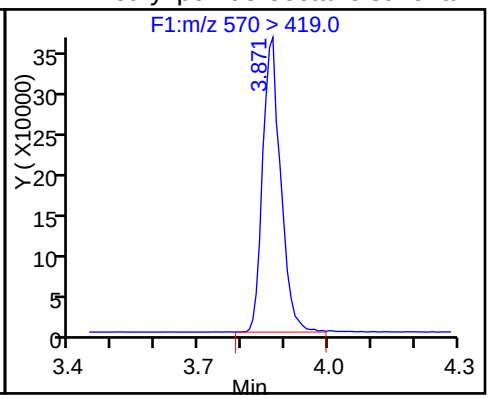
D 42 M2-8:2FTS



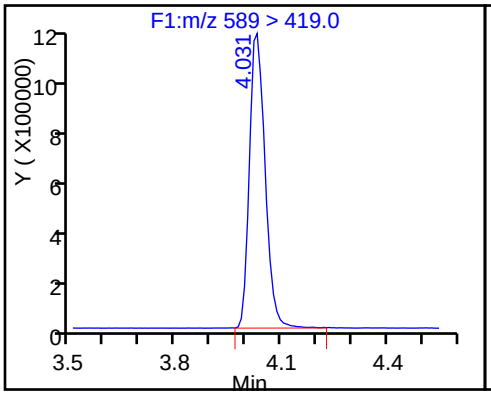
D 45 d3-NMeFOSAA



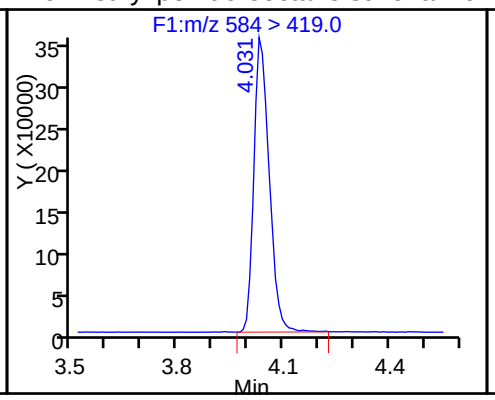
44 N-methyl perfluorooctane sulfonami



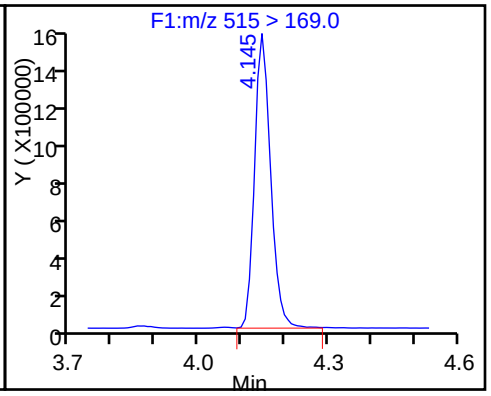
D 46 d5-NEtFOSAA



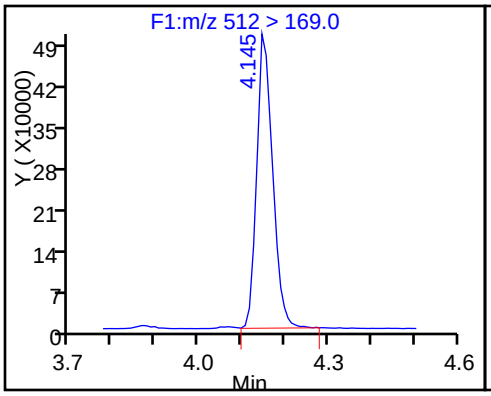
49 N-ethyl perfluorooctane sulfonamid



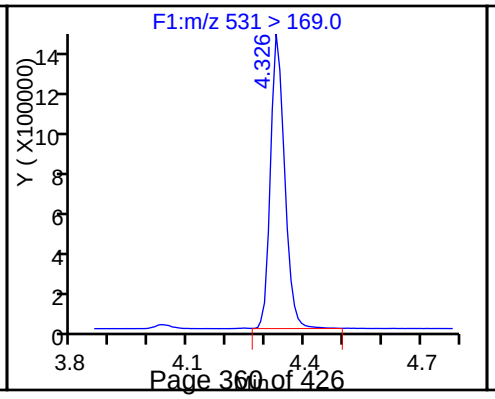
D 52 d-N-MeFOSA-M



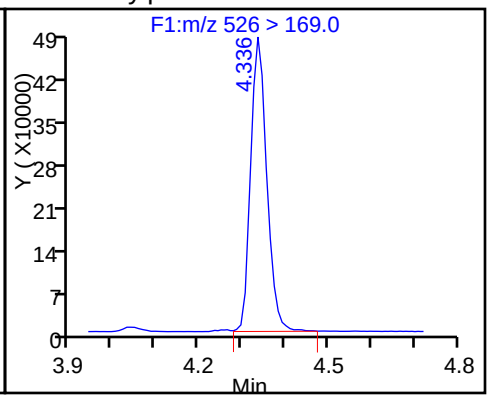
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Lab Sample ID: CCV 320-126120/16 Calibration Date: 09/04/2016 14:31

Instrument ID: A8 Calib Start Date: 09/03/2016 15:38

GC Column: Acquity ID: 2.10(mm) Calib End Date: 09/03/2016 17:38

Lab File ID: 03SEP2016D_016_p1_e1.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8766	0.9109		52.0	50.0	3.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.050	1.030		49.1	50.0	-1.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.522	1.664		48.3	44.2	9.4	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.007	0.9329		46.3	50.0	-7.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.041	1.033		49.6	50.0	-0.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.074	1.050		44.5	45.5	-2.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.151	1.150		47.6	47.6	-0.0	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.040	1.017		48.9	50.0	-2.3	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.175	1.064		42.0	46.4	-9.5	25.0
Perfluorononanoic acid (PFNA)	AveID	1.014	1.044		51.5	50.0	3.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9229	0.9552		51.7	50.0	3.5	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9788	0.9837		50.3	50.0	0.5	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6392	0.6277		47.3	48.2	-1.8	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.077	1.007		46.8	50.0	-6.4	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9694	0.9824		50.7	50.0	1.3	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.001	0.9775		48.8	50.0	-2.4	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.793	1.788		49.9	50.0	-0.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.141		49.8	50.0	-0.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9803	1.102		56.2	50.0	12.5	25.0
13C4 PFBA	Ave	201916	212435		52.6	50.0	5.2	50.0
13C5-PFPeA	Ave	158393	169542		53.5	50.0	7.0	50.0
13C2 PFHxA	Ave	144323	156308		54.2	50.0	8.3	50.0
13C4-PFHpA	Ave	130863	145918		55.8	50.0	11.5	50.0
18O2 PFHxS	Ave	180721	197633		51.7	47.3	9.4	50.0
13C4 PFOA	Ave	145826	159675		54.7	50.0	9.5	50.0
13C4 PFOS	Ave	144726	161265		53.3	47.8	11.4	50.0
13C5 PFNA	Ave	127527	132088		51.8	50.0	3.6	50.0
13C8 FOSA	Ave	266354	265841		49.9	50.0	-0.2	50.0
13C2 PFDA	Ave	120893	117554		48.6	50.0	-2.8	50.0
13C2 PFUnA	Ave	95304	93169		48.9	50.0	-2.2	50.0
13C2 PFDoA	Ave	88472	96108		54.3	50.0	8.6	50.0
13C2-PFTeDA	Ave	170446	184209		54.0	50.0	8.1	50.0
13C2-PFHxDA	Ave	108855	120637		55.4	50.0	10.8	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_016_p1_e1.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 04-Sep-2016 14:31:00 ALS Bottle#: 0 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub2

Method: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 17-Sep-2016 13:26:45 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 17-Sep-2016 13:26:45

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.616	1.623	-0.007		10621749	52.6		105	452542	
1 Perfluorobutyric acid										
212.9 > 169.0	1.616	1.623	-0.007	1.000	9675635	52.0		104	94472	
D 4 13C5-PFPeA										
267.9 > 223.0	1.904	1.910	-0.006		8477077	53.5		107	1555173	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.904	1.910	-0.006	1.000	8730221	49.1		98.1	169701	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.947	1.944	0.003	1.000	14537419	48.3		109		
298.9 > 99.0	1.947	1.944	0.003	1.000	6413096		2.27(0.00-0.00)			
7 Perfluorohexanoic acid										
313 > 269.0	2.205	2.213	-0.008	1.000	7291135	46.3		92.6	427823	
D 6 13C2 PFHxA										
315 > 270.0	2.205	2.213	-0.008		7815381	54.2		108	917107	
D 11 13C4-PFHpA										
367 > 322.0	2.553	2.556	-0.003		7295901	55.8		112	612707	
12 Perfluoroheptanoic acid										
363 > 319.0	2.553	2.556	-0.003	1.000	7537422	49.6		99.3	102723	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.569	2.571	-0.002	1.000	9439142	44.5		97.7		
D 10 18O2 PFHxS										
403 > 84.0	2.569	2.571	-0.002		9348018	51.7		109	526395	
15 Perfluorooctanoic acid										
413 > 369.0	2.933	2.919	0.014	1.000	8116010	48.9		97.7	169668	
413 > 169.0	2.925	2.919	0.006	0.997	4982130		1.63(0.90-1.10)		237925	
D 14 13C4 PFOA										
417 > 372.0	2.925	2.928	-0.003		7983750	54.7		109	447858	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.933	2.936	-0.003	1.000	8829612	47.6		99.9		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.275	3.195	0.081	1.000	7961568	42.0		90.5	176220	
499 > 99.0	3.301	3.195	0.107	1.008	1851120		4.30(0.90-1.10)		527176	
D 17 13C4 PFOS										
503 > 80.0	3.292	3.304	-0.012		7708464	53.3		111	316117	
D 19 13C5 PFNA										
468 > 423.0	3.301	3.312	-0.011		6604382	51.8		104	399134	
20 Perfluorononanoic acid										
463 > 419.0	3.301	3.312	-0.011	1.000	6895449	51.5		103	267942	
D 21 13C8 FOSA										
506 > 78.0	3.635	3.634	0.001		13292027	49.9		99.8	769327	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.643	3.642	0.001	1.000	12696418	51.7		103	328492	
D 23 13C2 PFDA										
515 > 470.0	3.659	3.658	0.001		5877718	48.6		97.2	391643	
24 Perfluorodecanoic acid										
513 > 469.0	3.667	3.666	0.001	1.000	5782126	50.3		101	319404	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.978	3.975	0.003	1.000	4879331	47.3		98.2		
28 Perfluoroundecanoic acid										
563 > 519.0	3.987	3.993	-0.006	1.000	4692859	46.8		93.6	257692	
D 27 13C2 PFUnA										
565 > 520.0	3.987	3.993	-0.006		4658457	48.9		97.8	524408	
D 30 13C2 PFDoA										
615 > 570.0	4.280	4.284	-0.004		4805388	54.3		109	269523	
29 Perfluorododecanoic acid										
613 > 569.0	4.280	4.284	-0.004	1.000	4720850	50.7		101	172378	
31 Perfluorotridecanoic acid										
633 > 619.0	4.544	4.546	-0.002	1.000	4697199	48.8		97.6	215833	
D 32 13C2-PFTeDA										
715 > 670.0	4.784	4.781	0.003		9210469	54.0		108	529403	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.784	4.790	-0.006	1.000	8591046	49.9		99.7	18538	
713 > 169.0	4.775	4.790	-0.015	0.998	1358811		6.32(0.00-0.00)		122593	
D 34 13C2-PFHxDA										
815 > 770.0	5.191	5.188	0.003		6031856	55.4		111	417730	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.191	5.188	0.003	1.000	5480930	49.8		99.7	16808	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.547	5.545	0.002	1.000	5297270	56.2		112	21537	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 17-Sep-2016 13:26:47 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_016_p1_e1.d

Injection Date: 04-Sep-2016 14:31:00 Instrument ID: A8

Lims ID: CCV L5

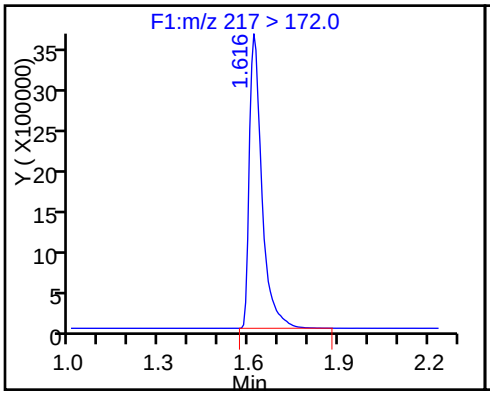
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 16

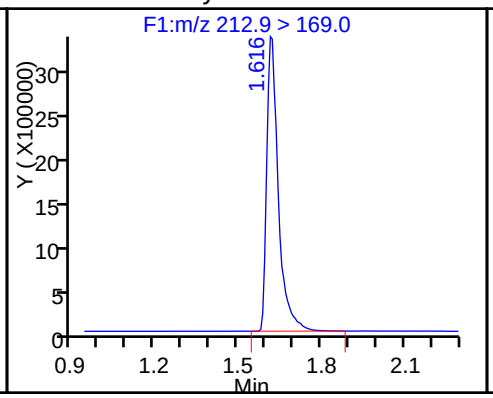
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

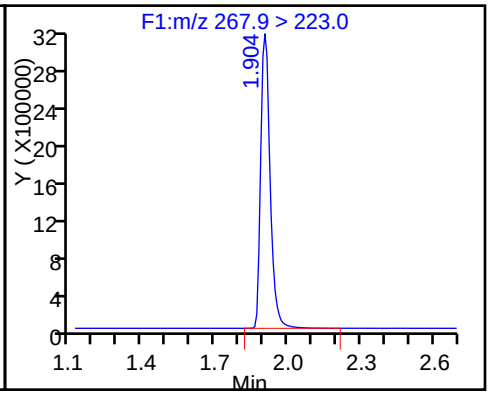
D 2 13C4 PFBA



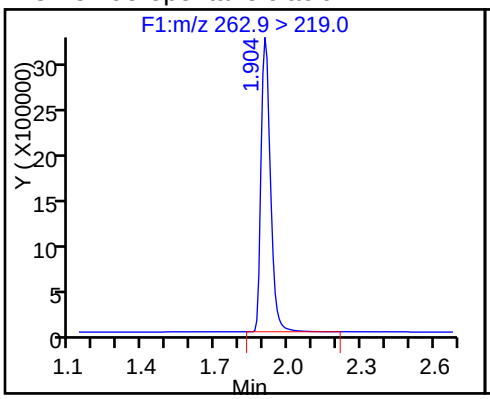
1 Perfluorobutyric acid



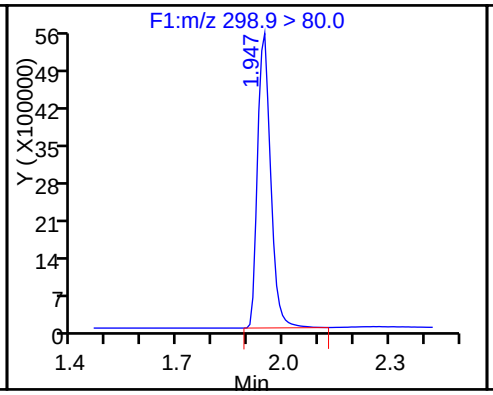
D 4 13C5-PFPeA



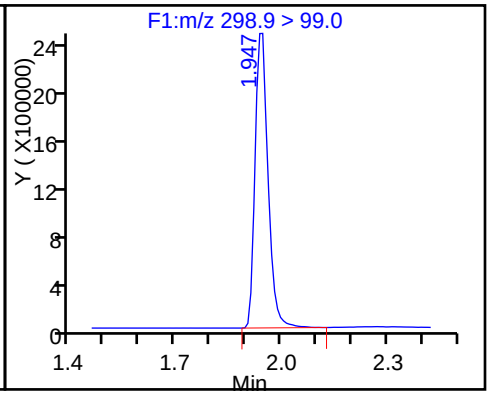
3 Perfluoropentanoic acid



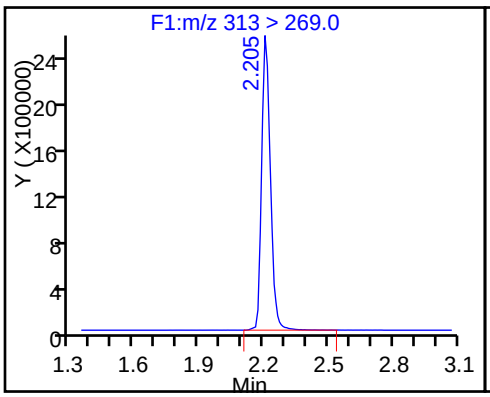
5 Perfluorobutanesulfonic acid



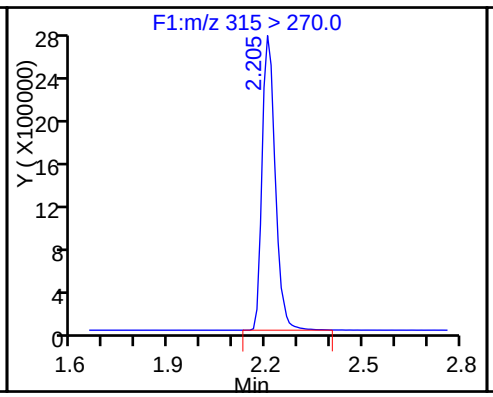
5 Perfluorobutanesulfonic acid



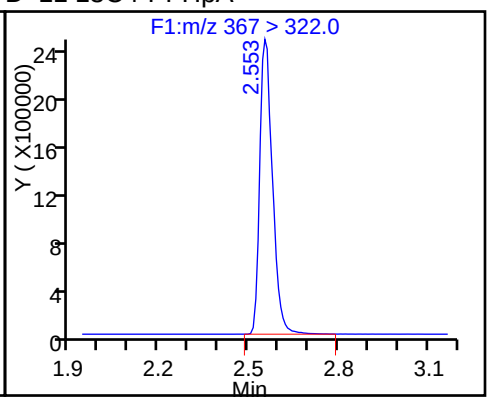
7 Perfluorohexanoic acid



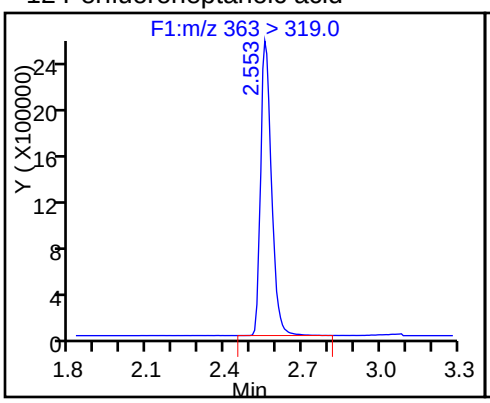
D 6 13C2 PFHxA



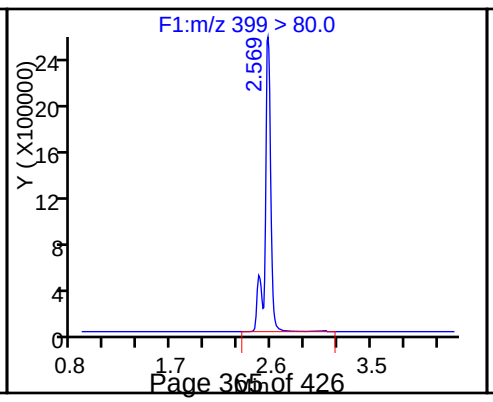
D 11 13C4-PFHpA



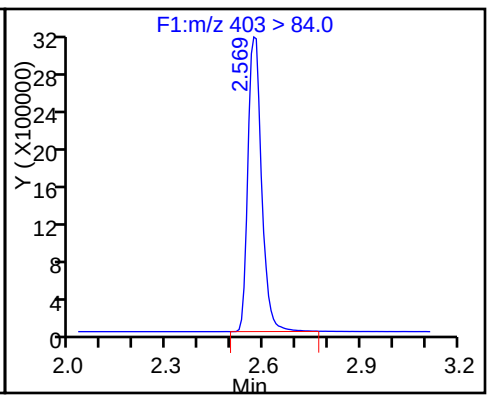
12 Perfluoroheptanoic acid



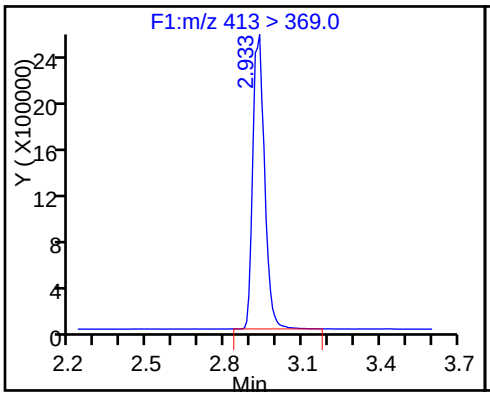
9 Perfluorohexanesulfonic acid



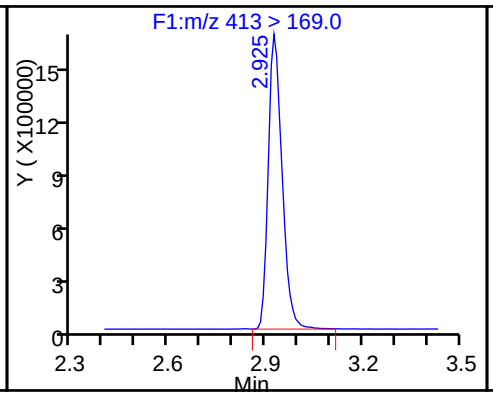
D 10 18O2 PFHxS



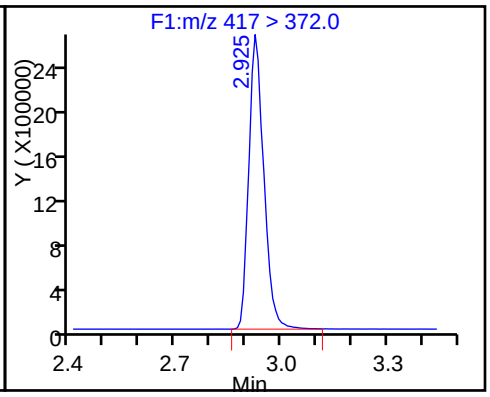
15 Perfluorooctanoic acid



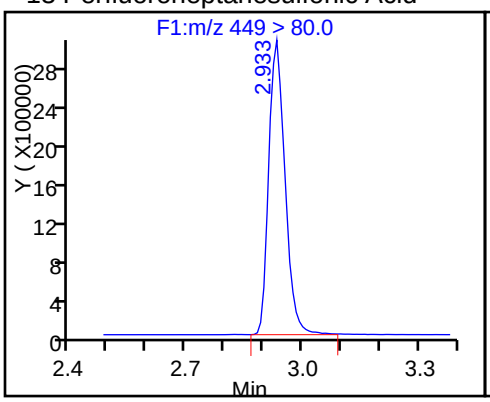
15 Perfluorooctanoic acid



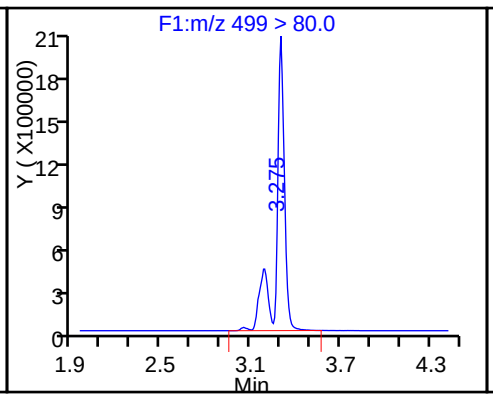
D 14 13C4 PFOA



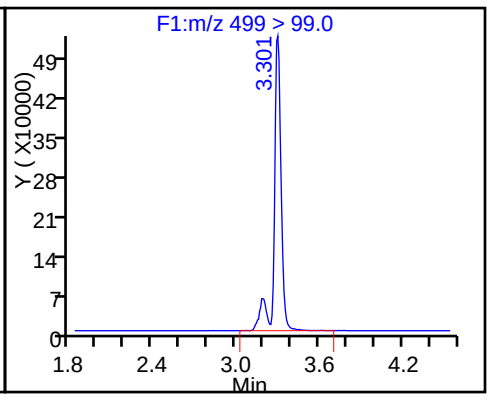
13 Perfluoroheptanesulfonic Acid



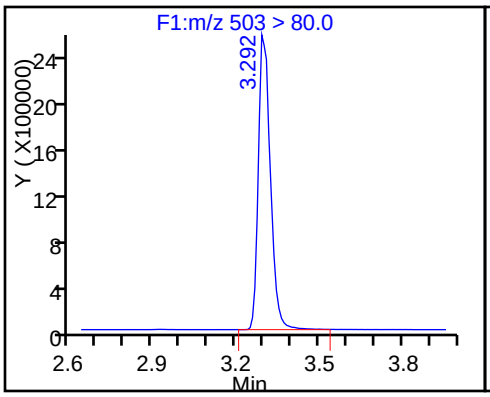
18 Perfluorooctane sulfonic acid



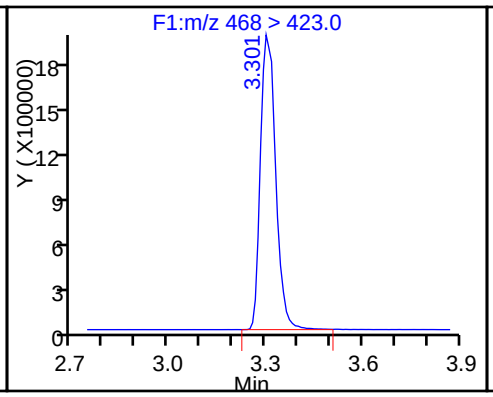
18 Perfluorooctane sulfonic acid



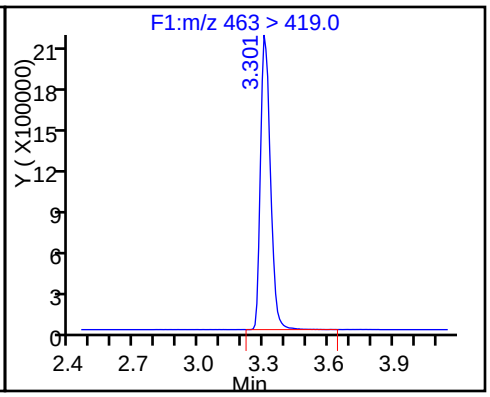
D 17 13C4 PFOS



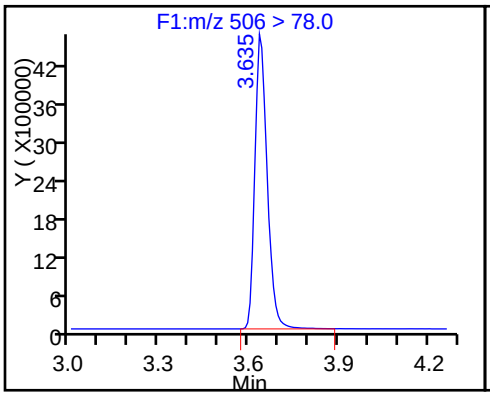
D 19 13C5 PFNA



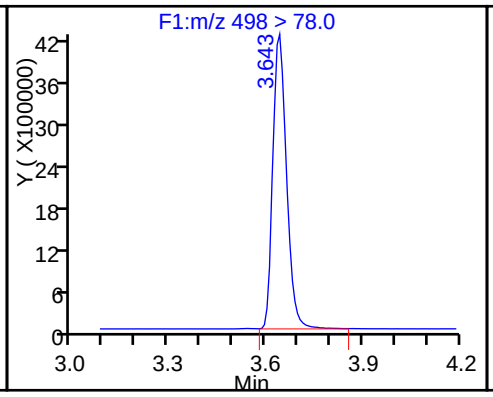
20 Perfluorononanoic acid



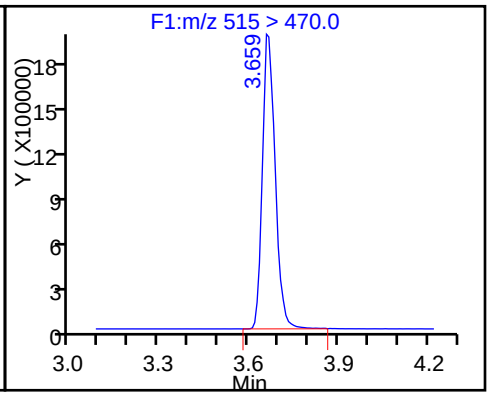
D 21 13C8 FOSA



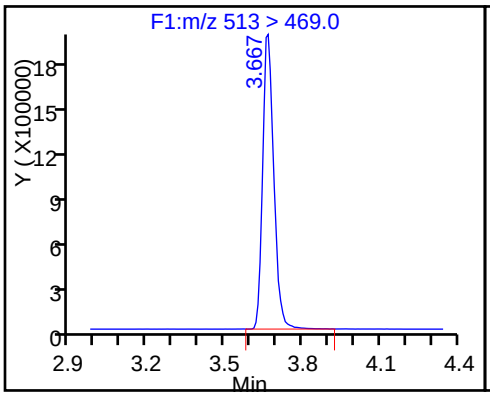
22 Perfluorooctane Sulfonamide



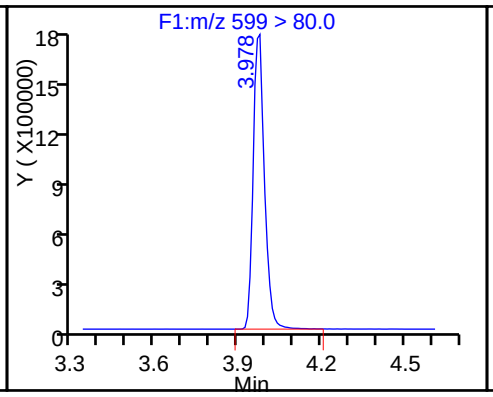
D 23 13C2 PFDA



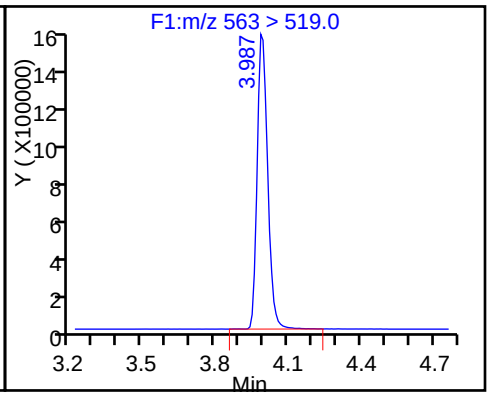
24 Perfluorodecanoic acid



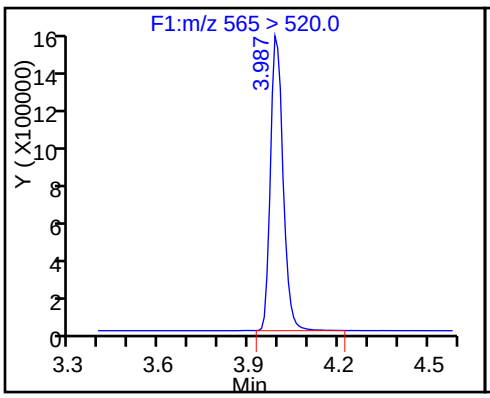
26 Perfluorodecane Sulfonic acid



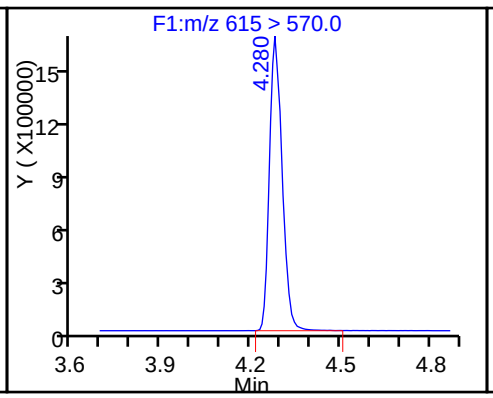
28 Perfluoroundecanoic acid



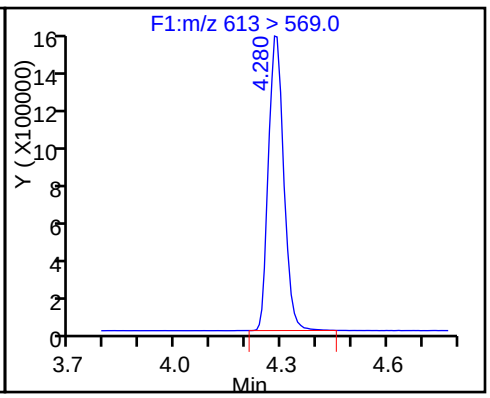
D 27 13C2 PFUnA



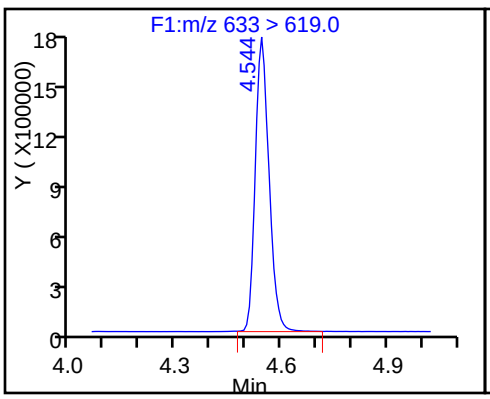
D 30 13C2 PFDoA



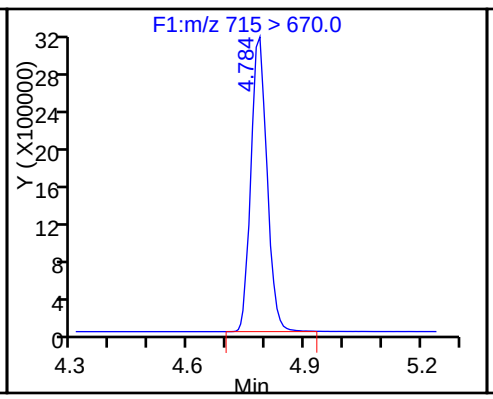
29 Perfluorododecanoic acid



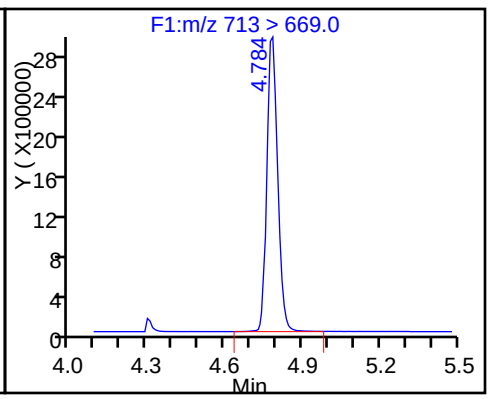
31 Perfluorotridecanoic acid



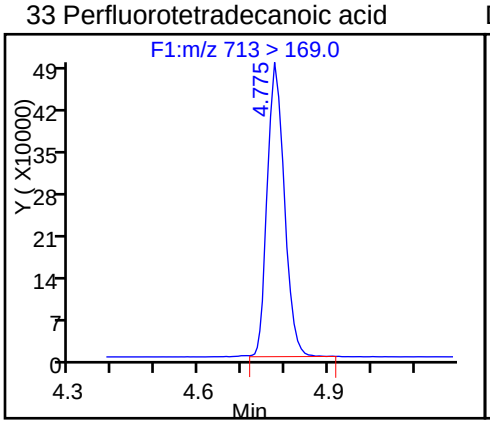
D 32 13C2-PFTeDA



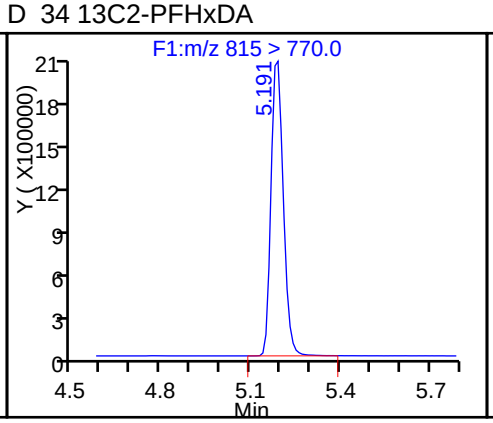
33 Perfluorotetradecanoic acid



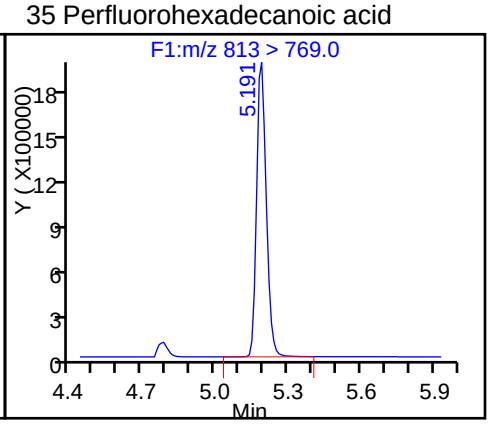
33 Perfluorotetradecanoic acid



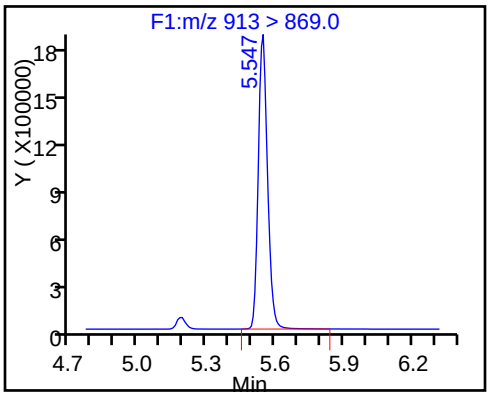
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Lab Sample ID: CCV 320-126120/30 Calibration Date: 09/04/2016 16:16

Instrument ID: A8 Calib Start Date: 09/03/2016 15:38

GC Column: Acquity ID: 2.10(mm) Calib End Date: 09/03/2016 17:38

Lab File ID: 03SEP2016D_030_p1_e1.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8766	0.9138		20.8	20.0	4.2	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.050	1.035		19.7	20.0	-1.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.522	1.629		18.9	17.7	7.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.007	0.9630		19.1	20.0	-4.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.041	1.047		20.1	20.0	0.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.074	1.065		18.0	18.2	-0.8	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.040	1.075		20.7	20.0	3.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.151	1.177		19.5	19.0	2.2	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.175	1.077		17.0	18.6	-8.3	25.0
Perfluorononanoic acid (PFNA)	AveID	1.014	1.023		20.2	20.0	0.9	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9229	0.9823		21.3	20.0	6.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9788	0.8151		16.7	20.0	-16.7	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6392	0.6203		18.7	19.3	-3.0	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.077	1.013		18.8	20.0	-5.9	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9694	0.9773		20.2	20.0	0.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.001	0.9737		19.5	20.0	-2.7	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.793	1.751		19.5	20.0	-2.3	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.130		19.5	20.0	-2.6	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9803	1.105		22.6	20.0	12.8	25.0
13C4 PFBA	Ave	201916	215516		53.4	50.0	6.7	50.0
13C5-PFPeA	Ave	158393	170073		53.7	50.0	7.4	50.0
13C2 PFHxA	Ave	144323	160954		55.8	50.0	11.5	50.0
13C4-PFHpA	Ave	130863	154056		58.9	50.0	17.7	50.0
18O2 PFHxS	Ave	180721	195950		51.3	47.3	8.4	50.0
13C4 PFOA	Ave	145826	165115		56.6	50.0	13.2	50.0
13C4 PFOS	Ave	144726	155174		51.3	47.8	7.2	50.0
13C5 PFNA	Ave	127527	140512		55.1	50.0	10.2	50.0
13C8 FOSA	Ave	266354	268272		50.4	50.0	0.7	50.0
13C2 PFDA	Ave	120893	124190		51.4	50.0	2.7	50.0
13C2 PFUnA	Ave	95304	100529		52.7	50.0	5.5	50.0
13C2 PFDoA	Ave	88472	101415		57.3	50.0	14.6	50.0
13C2-PFTeDA	Ave	170446	185442		54.4	50.0	8.8	50.0
13C2-PFHxDA	Ave	108855	124025		57.0	50.0	13.9	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_030_p1_e1.d
Lims ID: CCV L4
Client ID:
Sample Type: CCV
Inject. Date: 04-Sep-2016 16:16:00 ALS Bottle#: 0 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub2

Method: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 17-Sep-2016 12:52:51 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 17-Sep-2016 12:48:40

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.617	1.623	-0.007		10775777	53.4		107	498752	
1 Perfluorobutyric acid										
212.9 > 169.0	1.623	1.623	0.0	1.000	3938585	20.8		104	34359	
D 4 13C5-PFPeA										
267.9 > 223.0	1.902	1.910	-0.008		8503643	53.7		107	1054704	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.902	1.910	-0.008	1.000	3521520	19.7		98.6	62419	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.944	1.944	0.0	1.000	5642886	18.9		107		
298.9 > 99.0	1.944	1.944	0.0	1.000	2365871		2.39(0.00-0.00)			
7 Perfluorohexanoic acid										
313 > 269.0	2.203	2.213	-0.010	1.000	3099947	19.1		95.6	216538	
D 6 13C2 PFHxA										
315 > 270.0	2.213	2.213	0.0		8047705	55.8		112	688865	
D 11 13C4-PFHpA										
367 > 322.0	2.555	2.556	-0.001		7702796	58.9		118	642392	
12 Perfluoroheptanoic acid										
363 > 319.0	2.555	2.556	-0.001	1.000	3226382	20.1		101	44563	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.570	2.571	-0.001	1.000	3797478	18.0		99.2		
D 10 18O2 PFHxS										
403 > 84.0	2.578	2.571	0.007		9268458	51.3		108	500005	
15 Perfluorooctanoic acid										
413 > 369.0	2.926	2.919	0.007	1.000	3550476	20.7		103	77520	
413 > 169.0	2.918	2.919	-0.001	0.997	2084806		1.70(0.90-1.10)		108914	
D 14 13C4 PFOA										
417 > 372.0	2.926	2.928	-0.002		8255759	56.6		113	534037	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.935	2.936	-0.001	1.000	3476010	19.5		102		
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.185	3.195	-0.009	1.000	3102533	17.0		91.7	56959	
499 > 99.0	3.209	3.195	0.015	1.008	687902		4.51(0.90-1.10)		7260	
D 17 13C4 PFOS										
503 > 80.0	3.302	3.304	-0.002		7417304	51.3		107	280349	
D 19 13C5 PFNA										
468 > 423.0	3.302	3.312	-0.010		7025604	55.1		110	317249	
20 Perfluorononanoic acid										
463 > 419.0	3.310	3.312	-0.002	1.000	2874129	20.2		101	97892	
D 21 13C8 FOSA										
506 > 78.0	3.648	3.634	0.014		13413613	50.4		101	485926	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.641	3.642	-0.001	1.000	5270234	21.3		106	302106	
D 23 13C2 PFDA										
515 > 470.0	3.664	3.658	0.006		6209492	51.4		103	291035	
24 Perfluorodecanoic acid										
513 > 469.0	3.656	3.666	-0.010	1.000	2024459	16.7		83.3	56973	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.973	3.975	-0.002	1.000	1855902	18.7		97.0		
28 Perfluoroundecanoic acid										
563 > 519.0	4.000	3.993	0.007	1.000	2037593	18.8		94.1	99044	
D 27 13C2 PFUnA										
565 > 520.0	3.991	3.993	-0.002		5026468	52.7		105	344509	
D 30 13C2 PFDoA										
615 > 570.0	4.282	4.284	-0.002		5070736	57.3		115	327957	
29 Perfluorododecanoic acid										
613 > 569.0	4.282	4.284	-0.002	1.000	1982149	20.2		101	95201	
31 Perfluorotridecanoic acid										
633 > 619.0	4.544	4.546	-0.002	1.000	1975030	19.5		97.3	92912	
D 32 13C2-PFTeDA										
715 > 670.0	4.785	4.781	0.004		9272086	54.4		109	532710	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.785	4.790	-0.005	1.000	3551850	19.5		97.7	6926	
713 > 169.0	4.775	4.790	-0.015	0.998	557920		6.37(0.00-0.00)		100589	
D 34 13C2-PFHxDA										
815 > 770.0	5.191	5.188	0.003		6201266	57.0		114	440648	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.191	5.188	0.003	1.000	2291545	19.5		97.4	7141	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.547	5.545	0.002	1.000	2242039	22.6		113	8479	

Reagents:

LCPFC-L4_00022 Amount Added: 1.00 Units: mL

Report Date: 17-Sep-2016 12:52:52 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_030_p1_e1.d

Injection Date: 04-Sep-2016 16:16:00 Instrument ID: A8

Lims ID: CCV L4

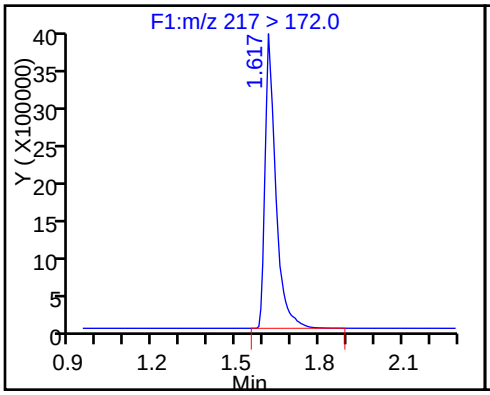
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 30

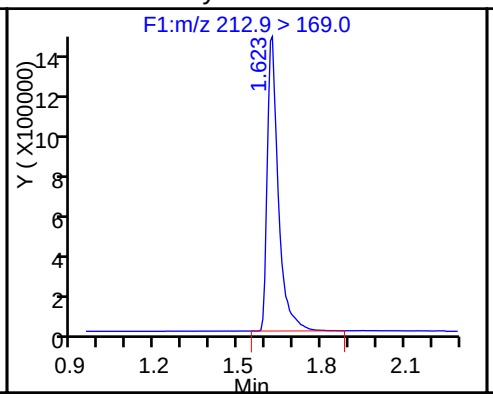
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

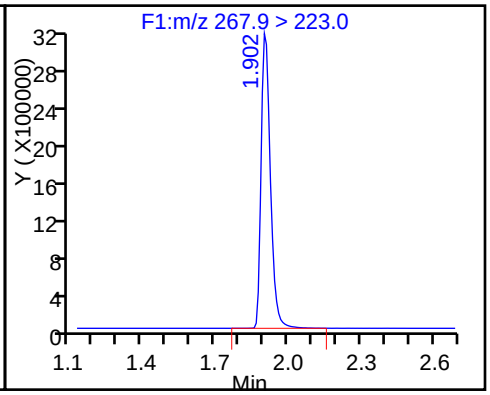
D 2 13C4 PFBA



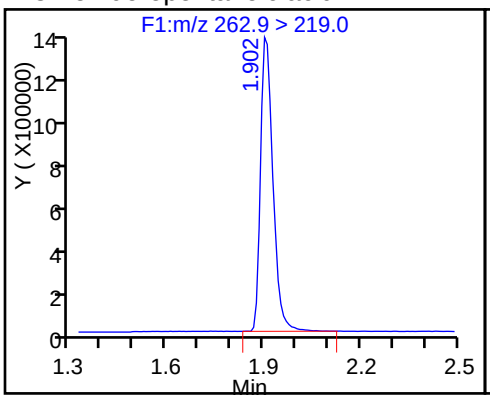
1 Perfluorobutyric acid



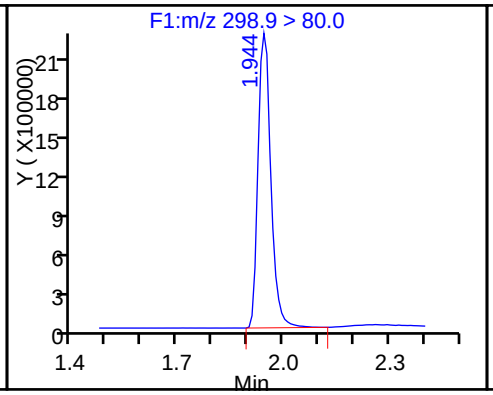
D 4 13C5-PFPeA



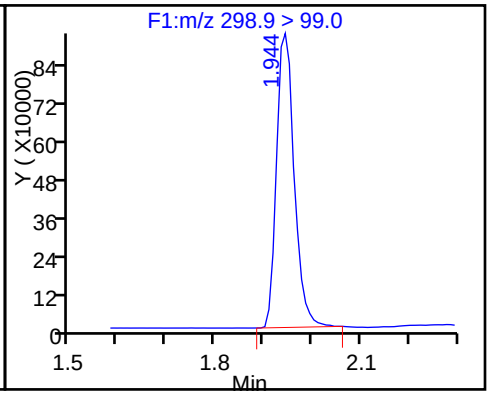
3 Perfluoropentanoic acid



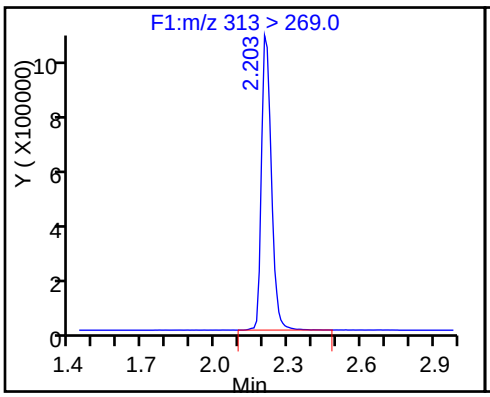
5 Perfluorobutanesulfonic acid



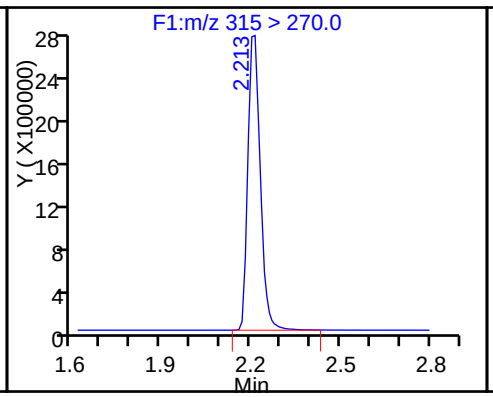
5 Perfluorobutanesulfonic acid



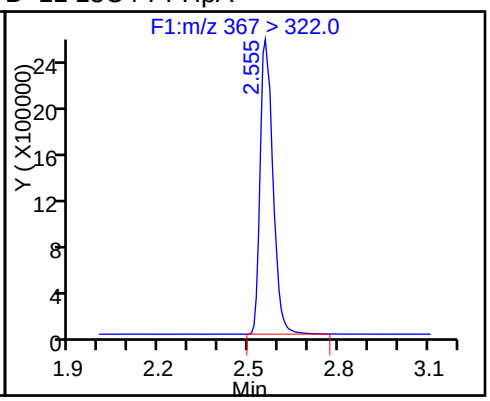
7 Perfluorohexanoic acid



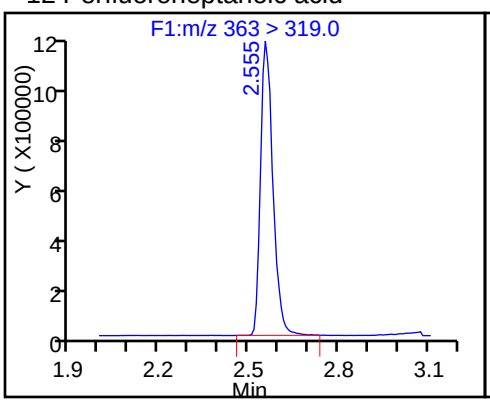
D 6 13C2 PFHxA



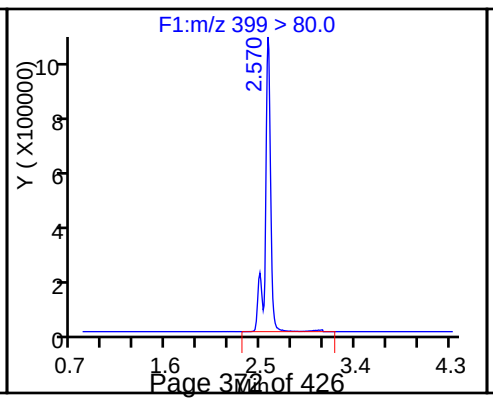
D 11 13C4-PFHpA



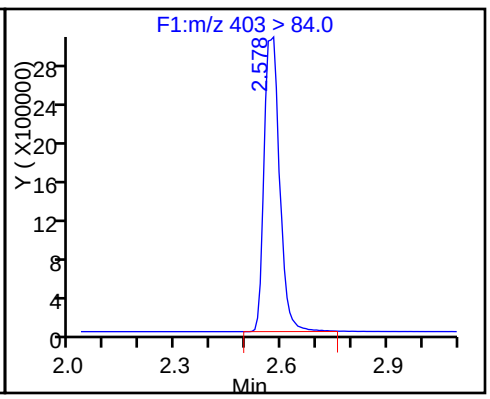
12 Perfluoroheptanoic acid



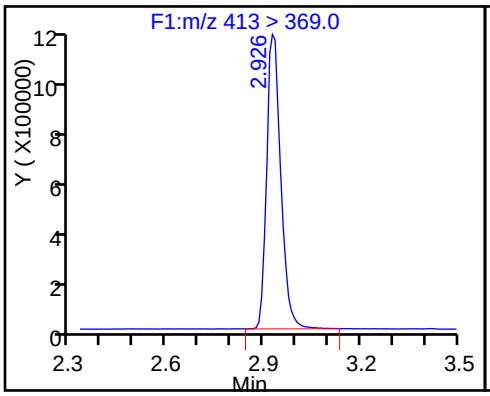
9 Perfluorohexanesulfonic acid



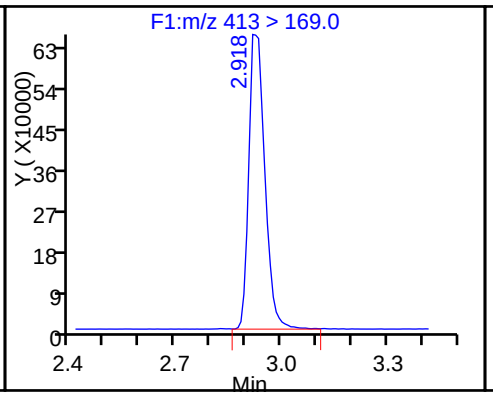
D 10 18O2 PFHxS



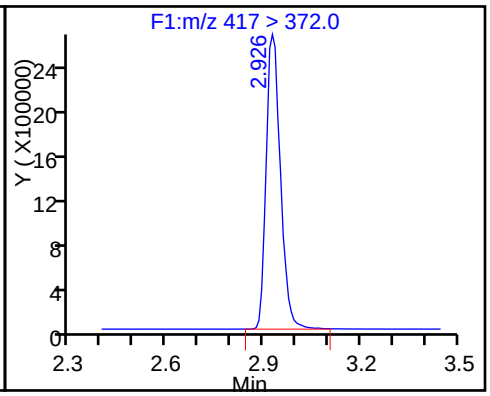
15 Perfluorooctanoic acid



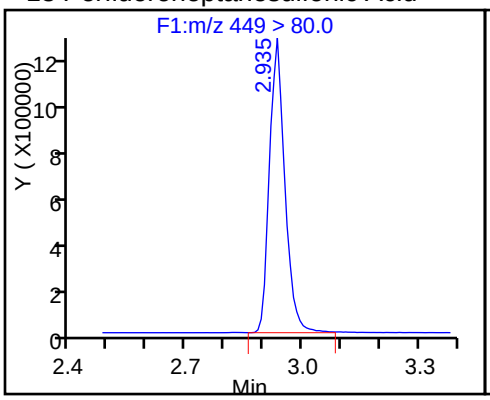
15 Perfluorooctanoic acid



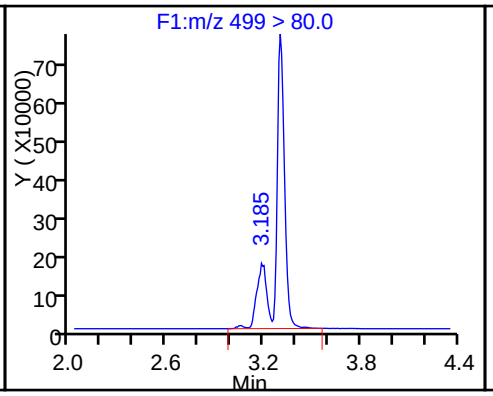
D 14 13C4 PFOA



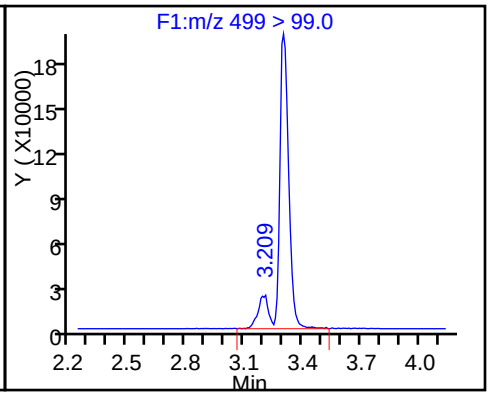
13 Perfluoroheptanesulfonic Acid



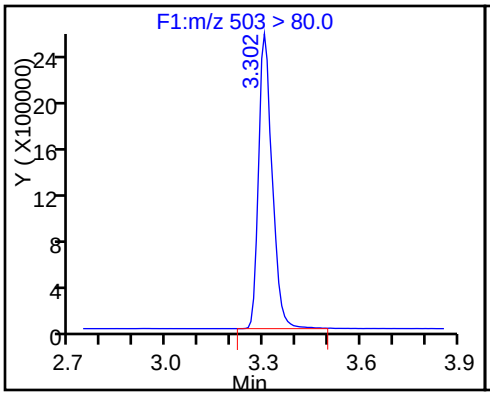
18 Perfluorooctane sulfonic acid



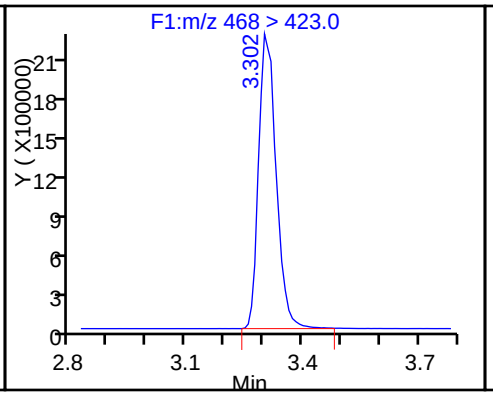
18 Perfluorooctane sulfonic acid



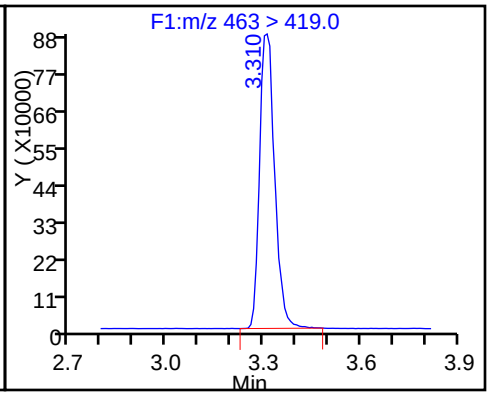
D 17 13C4 PFOS



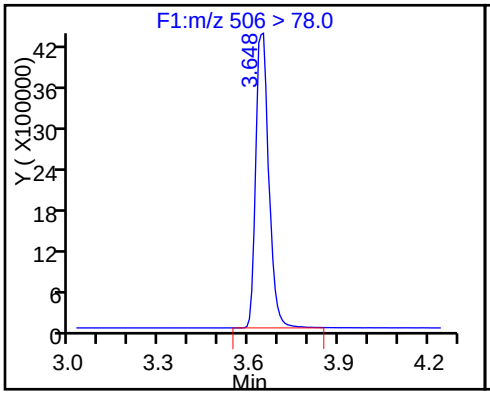
D 19 13C5 PFNA



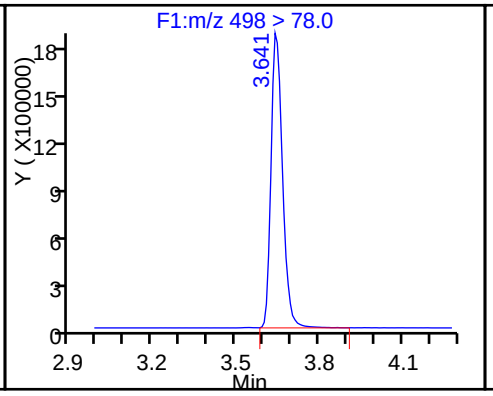
20 Perfluorononanoic acid



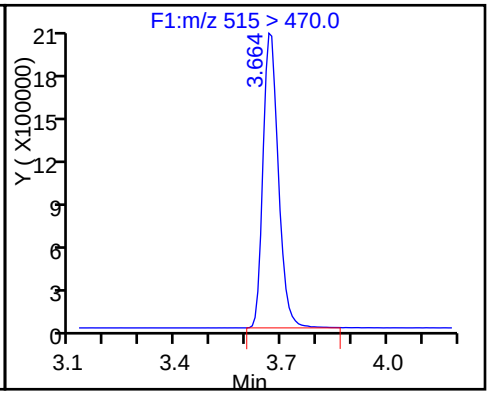
D 21 13C8 FOSA



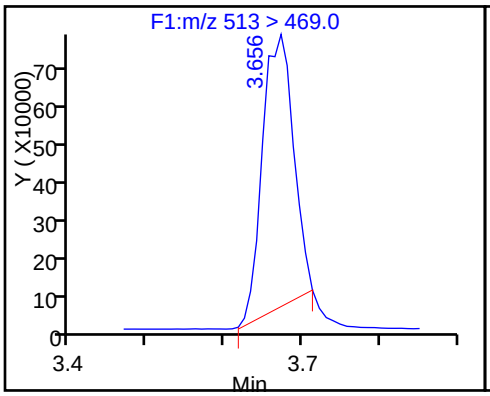
22 Perfluorooctane Sulfonamide



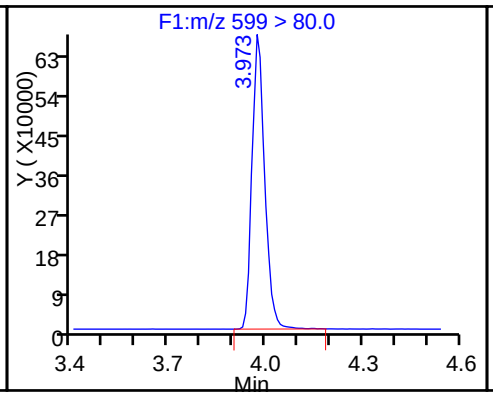
D 23 13C2 PFDA



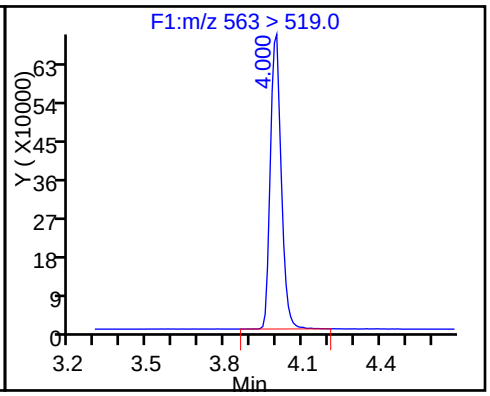
24 Perfluorodecanoic acid



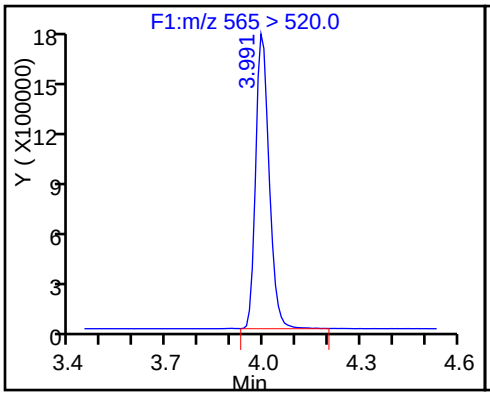
26 Perfluorodecane Sulfonic acid



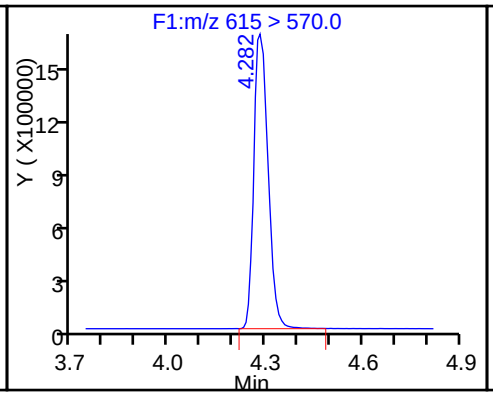
28 Perfluoroundecanoic acid



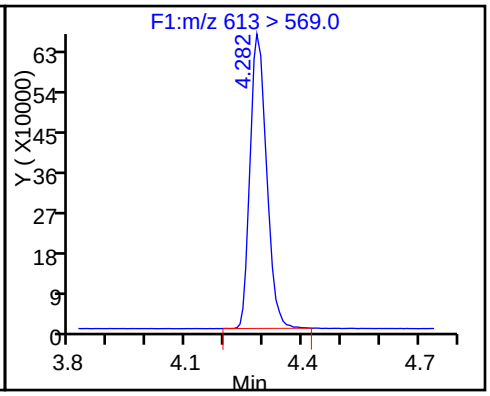
D 27 13C2 PFUnA



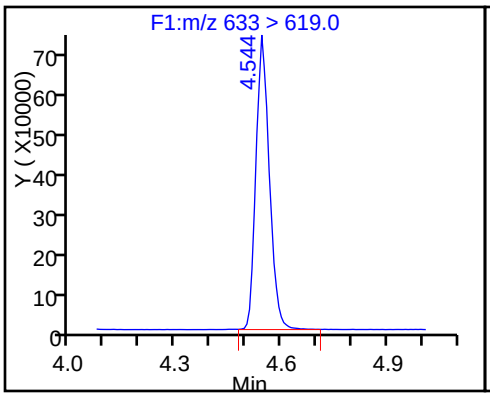
D 30 13C2 PFDoA



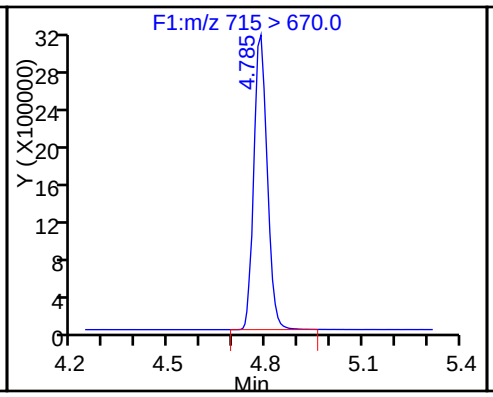
29 Perfluorododecanoic acid



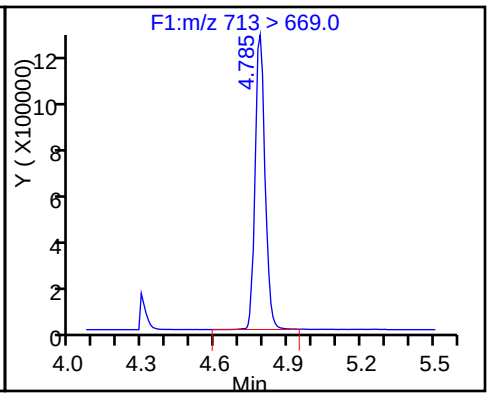
31 Perfluorotridecanoic acid



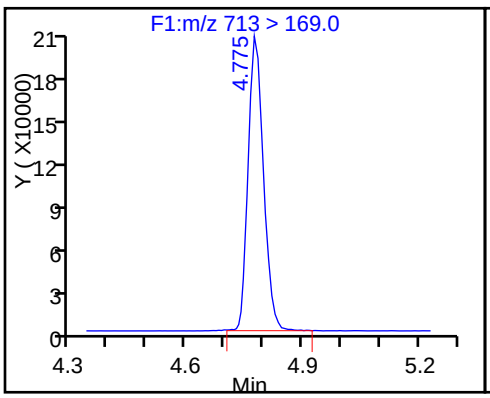
D 32 13C2-PFTeDA



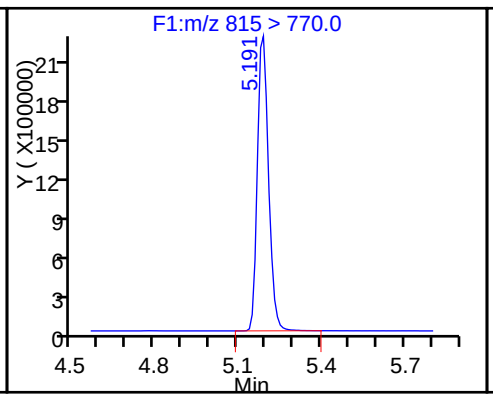
33 Perfluorotetradecanoic acid



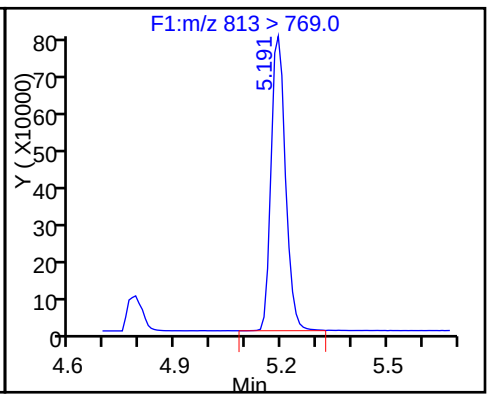
33 Perfluorotetradecanoic acid



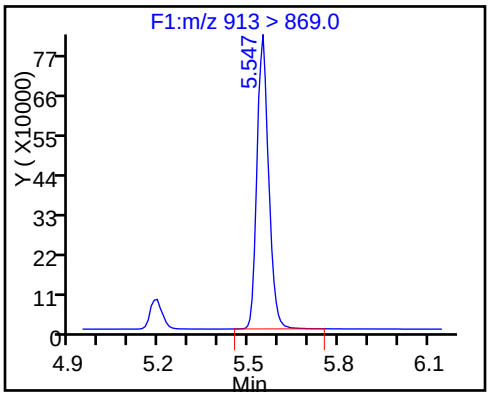
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Lab Sample ID: CCV 320-126120/42 Calibration Date: 09/04/2016 17:46

Instrument ID: A8 Calib Start Date: 09/03/2016 15:38

GC Column: Acquity ID: 2.10(mm) Calib End Date: 09/03/2016 17:38

Lab File ID: 03SEP2016D_042_p1_e1.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8766	0.9063		51.7	50.0	3.4	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.050	1.015		48.4	50.0	-3.3	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.522	1.620		47.1	44.2	6.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	1.007	0.9667		48.0	50.0	-4.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.041	1.042		50.1	50.0	0.1	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.074	1.036		43.9	45.5	-3.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.040	1.019		48.9	50.0	-2.1	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.151	1.175		48.6	47.6	2.1	25.0
Perfluorooctanesulfonic acid (PFOS)	AveID	1.175	1.098		43.3	46.4	-6.6	25.0
Perfluorononanoic acid (PFNA)	AveID	1.014	1.006		49.6	50.0	-0.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9229	0.9800		53.1	50.0	6.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9788	1.000		51.1	50.0	2.1	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6392	0.6206		46.8	48.2	-2.9	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.077	0.9882		45.9	50.0	-8.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9694	420.5		21700	50.0	43275.*0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.001	0.1392		6.95	50.0	-86.1*	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.793	749.5		20900	50.0	41703.*7	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		472.7		20800	50.0	41575.*2	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.9803	0.0254		1.30	50.0	-97.4*	25.0
13C4 PFBA	Ave	201916	218585		54.1	50.0	8.3	50.0
13C5-PFPeA	Ave	158393	173638		54.8	50.0	9.6	50.0
13C2 PFHxA	Ave	144323	155882		54.0	50.0	8.0	50.0
13C4-PFHpA	Ave	130863	146478		56.0	50.0	11.9	50.0
18O2 PFHxS	Ave	180721	200158		52.4	47.3	10.8	50.0
13C4 PFOA	Ave	145826	160507		55.0	50.0	10.1	50.0
13C4 PFOS	Ave	144726	156069		51.5	47.8	7.8	50.0
13C5 PFNA	Ave	127527	135668		53.2	50.0	6.4	50.0
13C8 FOSA	Ave	266354	261155		49.0	50.0	-2.0	50.0
13C2 PFDA	Ave	120893	120692		49.9	50.0	-0.2	50.0
13C2 PFUnA	Ave	95304	96921		50.8	50.0	1.7	50.0
13C2 PFDoA	Ave	88472	231.3		0.131	50.0	-99.7*	50.0
13C2-PFTeDA	Ave	170446	71.78		0.0211	50.0	-100.0*	50.0
13C2-PFHxDA	Ave	108855	119849		55.0	50.0	10.1	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_042_p1_e1.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 04-Sep-2016 17:46:00 ALS Bottle#: 0 Worklist Smp#: 42
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8
Sublist: chrom-PFC_A8_Full*sub2

Method: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 17-Sep-2016 13:20:11 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK003

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.615	1.623	-0.008		10929261	54.1		108	466839	
1 Perfluorobutyric acid										
212.9 > 169.0	1.622	1.623	-0.001	1.000	9904783	51.7		103	94836	
D 4 13C5-PFPeA										
267.9 > 223.0	1.908	1.910	-0.002		8681894	54.8		110	1664209	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.908	1.910	-0.002	1.000	8813173	48.4		96.7	133610	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.941	1.944	-0.003	1.000	14332348	47.1		106		
298.9 > 99.0	1.950	1.944	0.006	1.004	6492731		2.21(0.00-0.00)			
7 Perfluorohexanoic acid										
313 > 269.0	2.208	2.213	-0.005	1.000	7534891	48.0		96.0	364568	
D 6 13C2 PFHxA										
315 > 270.0	2.208	2.213	-0.005		7794118	54.0		108	561943	
D 11 13C4-PFHpA										
367 > 322.0	2.554	2.556	-0.002		7323924	56.0		112	660312	
12 Perfluoroheptanoic acid										
363 > 319.0	2.554	2.556	-0.002	1.000	7631382	50.1		100	98856	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.569	2.571	-0.002	1.000	9437189	43.9		96.5		
D 10 18O2 PFHxS										
403 > 84.0	2.569	2.571	-0.002		9467460	52.4		111	696452	
15 Perfluorooctanoic acid										
413 > 369.0	2.925	2.919	0.006	1.000	8174421	48.9		97.9	177285	
413 > 169.0	2.934	2.919	0.015	1.003	4934672		1.66(0.90-1.10)		229736	
D 14 13C4 PFOA										
417 > 372.0	2.925	2.928	-0.003		8025366	55.0		110	515004	
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.934	2.936	-0.002	1.000	8732096	48.6		102		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.278	3.195	0.084	1.000	7948811	43.3		93.4	103944	
499 > 99.0	3.303	3.195	0.109	1.008	1730701		4.59(0.90-1.10)		4130	
D 17 13C4 PFOS										
503 > 80.0	3.303	3.304	-0.001		7460116	51.5		108	249956	
D 19 13C5 PFNA										
468 > 423.0	3.303	3.312	-0.009		6783418	53.2		106	287214	
20 Perfluorononanoic acid										
463 > 419.0	3.303	3.312	-0.009	1.000	6824752	49.6		99.3	222341	
D 21 13C8 FOSA										
506 > 78.0	3.637	3.634	0.003		13057728	49.0		98.0	359217	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.645	3.642	0.003	1.000	12796725	53.1		106	334940	
D 23 13C2 PFDA										
515 > 470.0	3.669	3.658	0.011		6034608	49.9		99.8	294184	
24 Perfluorodecanoic acid										
513 > 469.0	3.669	3.666	0.003	1.000	6033197	51.1		102	228731	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.974	3.975	-0.001	1.000	4668742	46.8		97.1		
28 Perfluoroundecanoic acid										
563 > 519.0	3.992	3.993	-0.001	1.000	4788825	45.9		91.8	312093	
D 27 13C2 PFUnA										
565 > 520.0	4.001	3.993	0.008		4846052	50.8		102	269878	
D 30 13C2 PFDoA										
615 > 570.0	4.443	4.284	0.159		11567	0.1307		0.3	1.6	
29 Perfluorododecanoic acid										E
613 > 569.0	4.284	4.284	0.0	1.000	4863450	21687		43375	222813	E
31 Perfluorotridecanoic acid										
633 > 619.0	4.722	4.546	0.176	1.000	1610	6.95		13.9	0.6	
D 32 13C2-PFTeDA										
715 > 670.0	4.961	4.781	0.180		3589	0.0211		0.0	0.4	
33 Perfluorotetradecanoic acid										E
713 > 669.0	4.784	4.790	-0.006	1.000	8669962	20902		41804	15876	E
713 > 169.0	4.774	4.790	-0.016	0.998	1375065		6.31(0.00-0.00)		159022	
D 34 13C2-PFHxDA										
815 > 770.0	5.191	5.188	0.003		5992429	55.0		110	537728	
35 Perfluorohexadecanoic acid										E
813 > 769.0	5.191	5.188	0.003	1.000	5468107	20838		41675	12887	E
36 Perfluorooctadecanoic acid										
913 > 869.0	5.782	5.545	0.237	1.000	294	1.30		2.6	0.2	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 17-Sep-2016 13:20:14 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_042_p1_e1.d

Injection Date: 04-Sep-2016 17:46:00 Instrument ID: A8

Lims ID: CCV L5

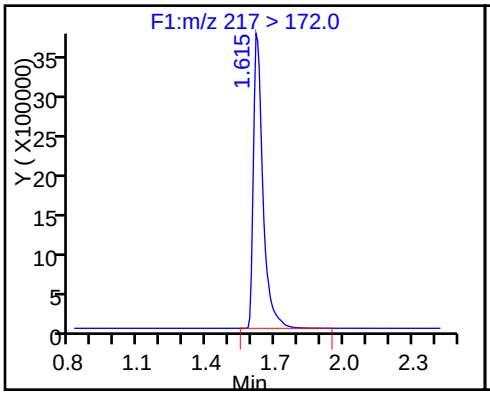
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 42

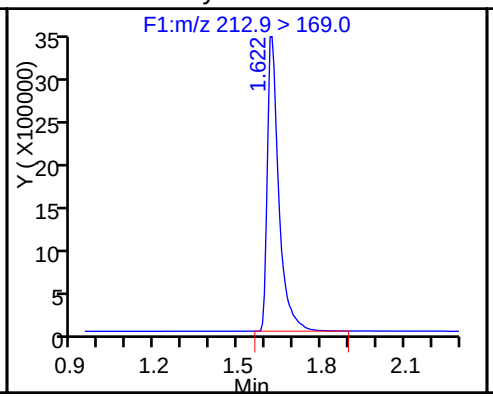
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

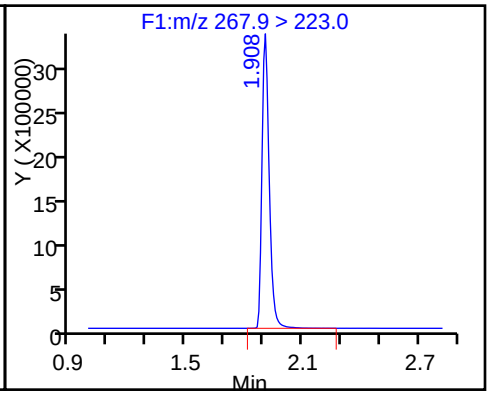
D 2 13C4 PFBA



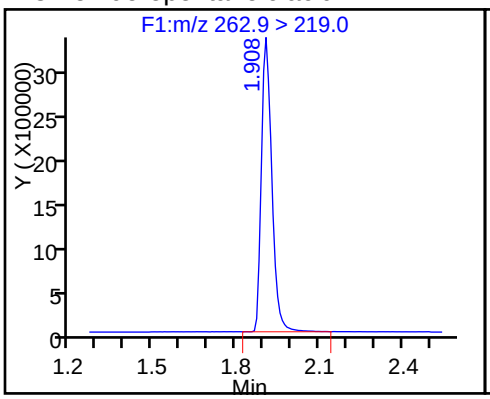
1 Perfluorobutyric acid



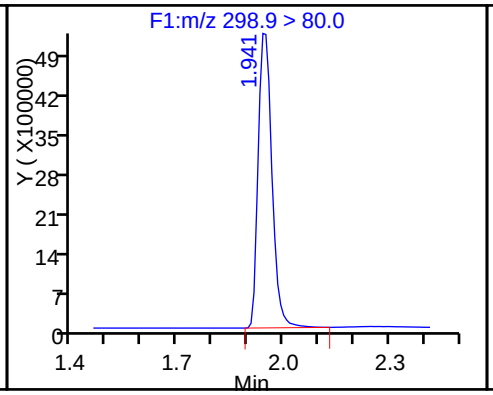
D 4 13C5-PFPeA



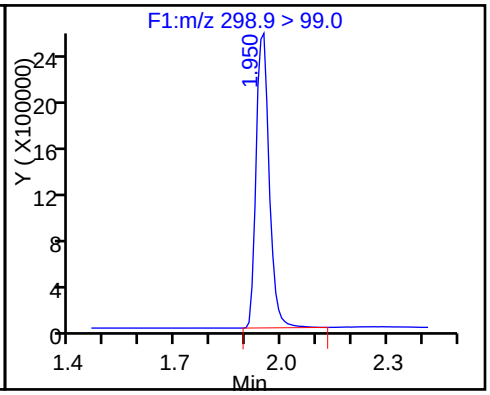
3 Perfluoropentanoic acid



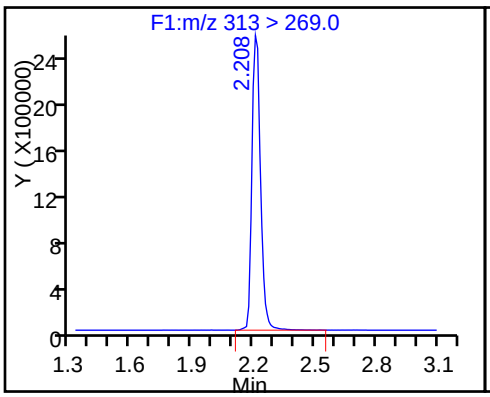
5 Perfluorobutanesulfonic acid



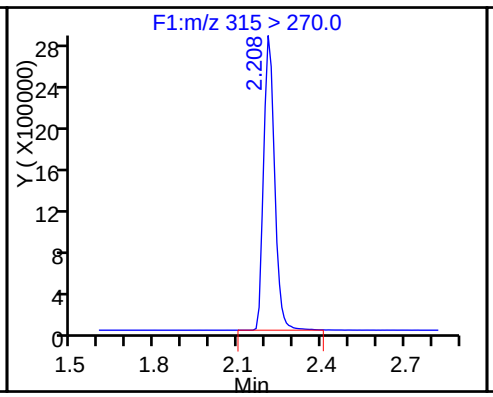
5 Perfluorobutanesulfonic acid



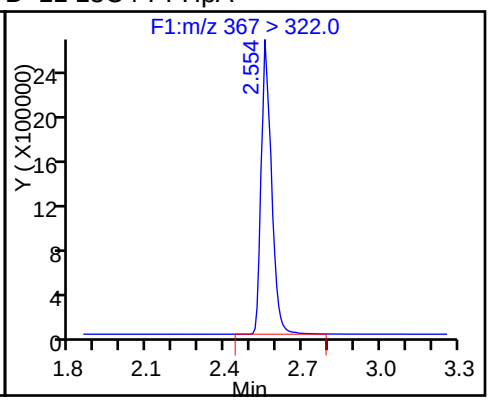
7 Perfluorohexanoic acid



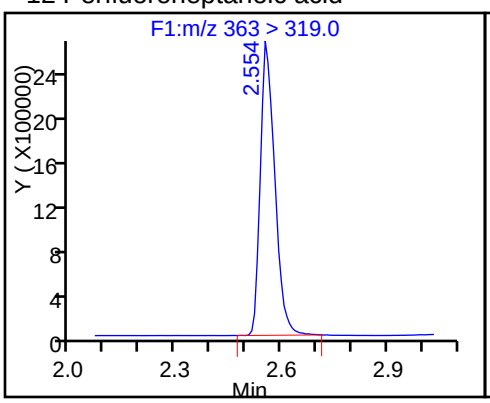
D 6 13C2 PFHxA



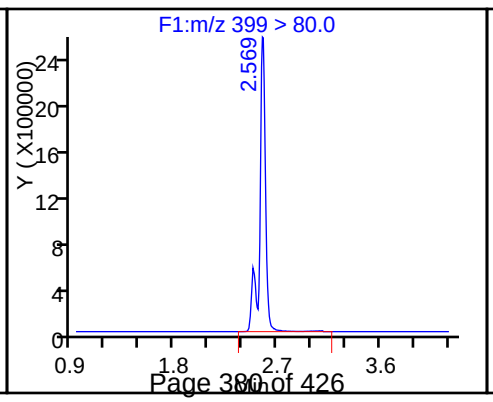
D 11 13C4-PFHpA



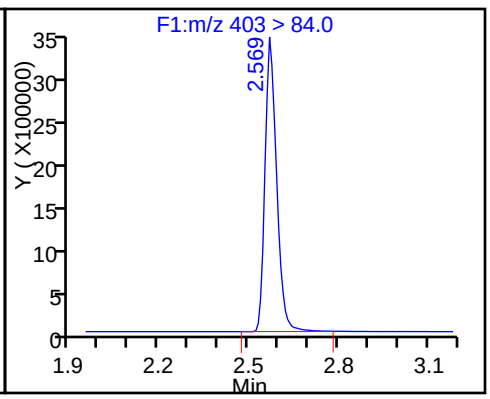
12 Perfluoroheptanoic acid



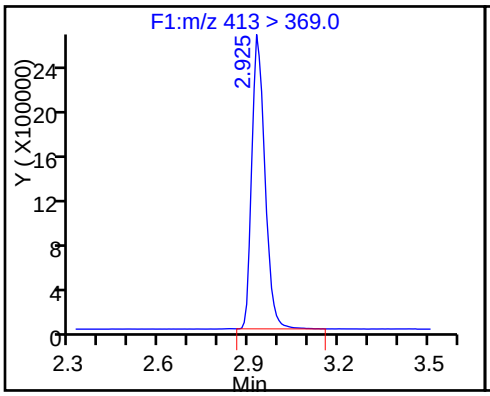
9 Perfluorohexanesulfonic acid



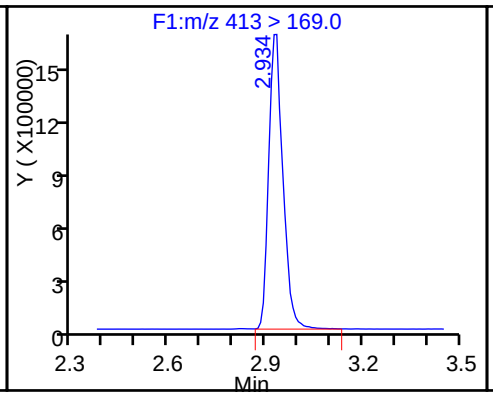
D 10 18O2 PFHxS



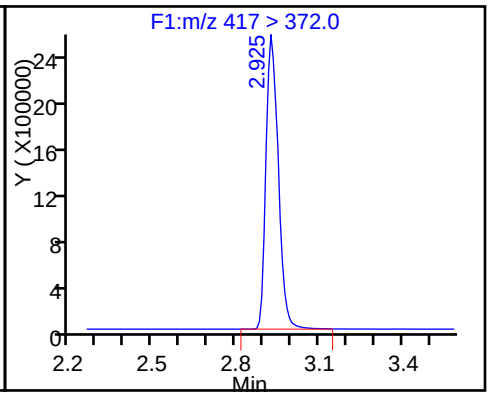
15 Perfluorooctanoic acid



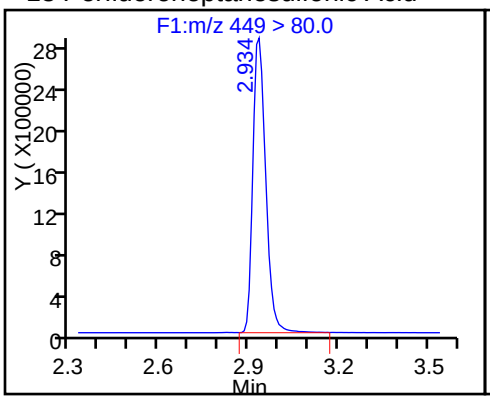
15 Perfluorooctanoic acid



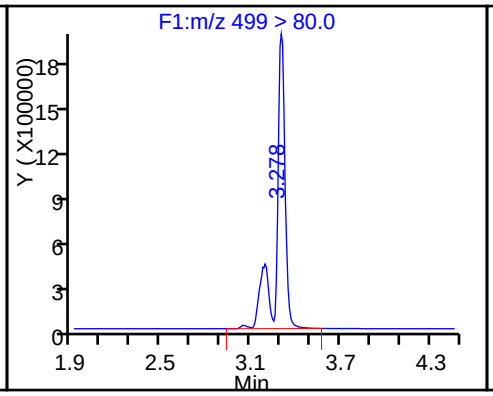
D 14 13C4 PFOA



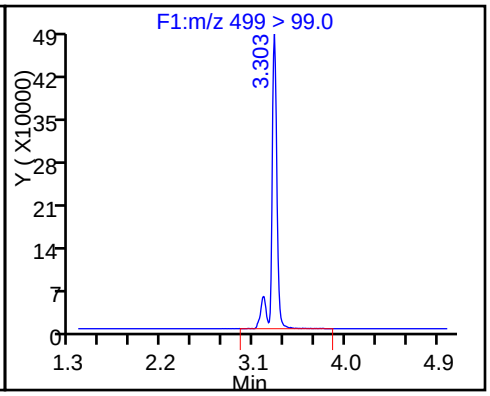
13 Perfluoroheptanesulfonic Acid



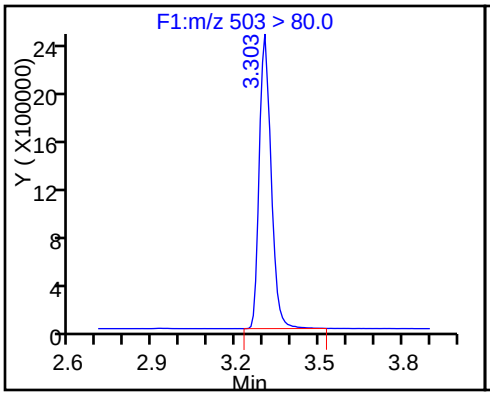
18 Perfluorooctane sulfonic acid



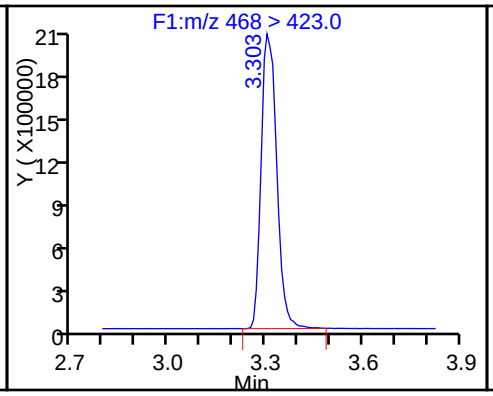
18 Perfluorooctane sulfonic acid



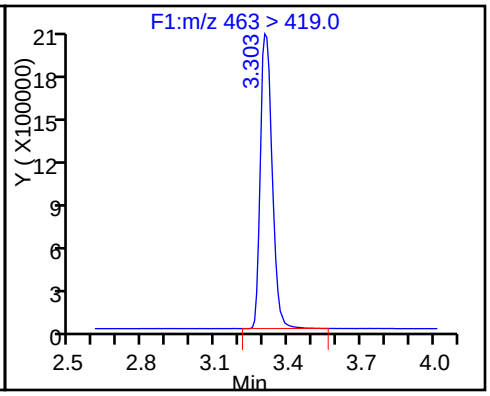
D 17 13C4 PFOS



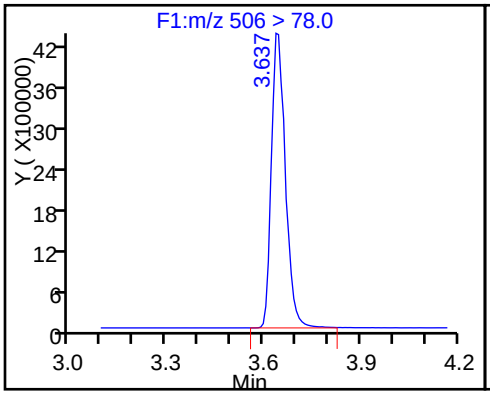
D 19 13C5 PFNA



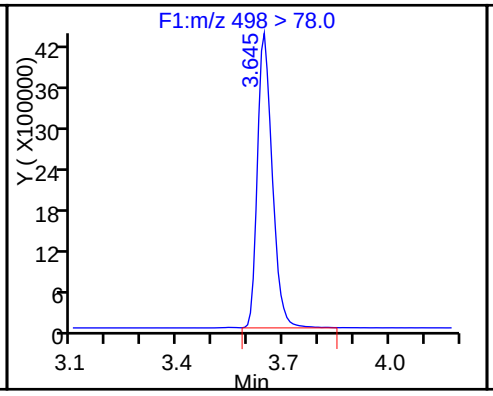
20 Perfluorononanoic acid



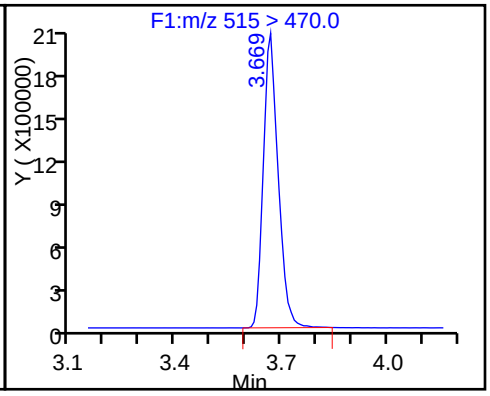
D 21 13C8 FOSA



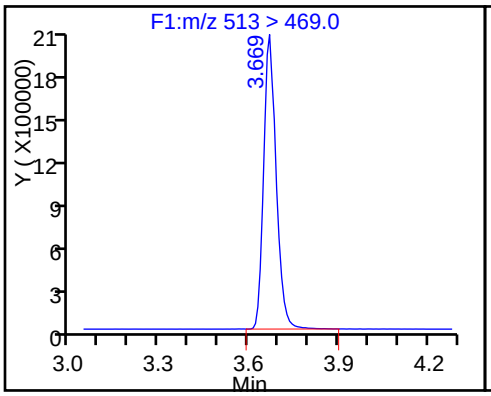
22 Perfluorooctane Sulfonamide



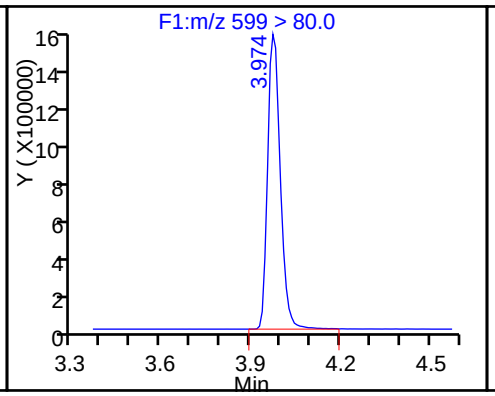
D 23 13C2 PFDA



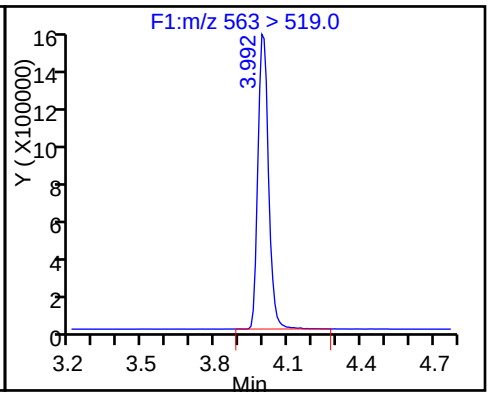
24 Perfluorodecanoic acid



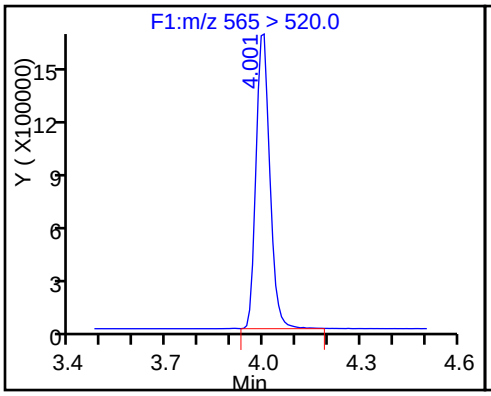
26 Perfluorodecane Sulfonic acid



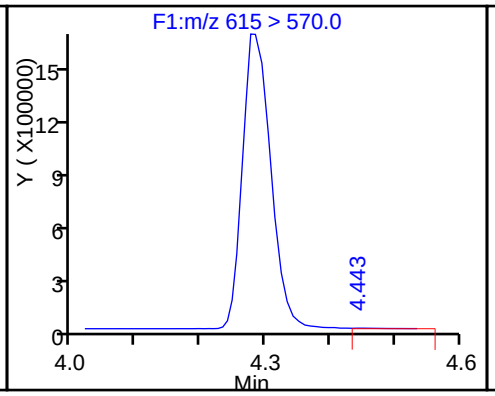
28 Perfluoroundecanoic acid



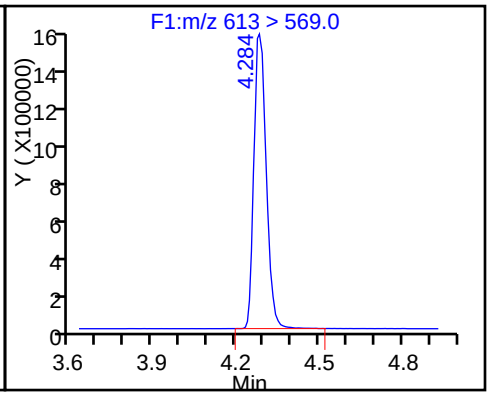
D 27 13C2 PFUnA



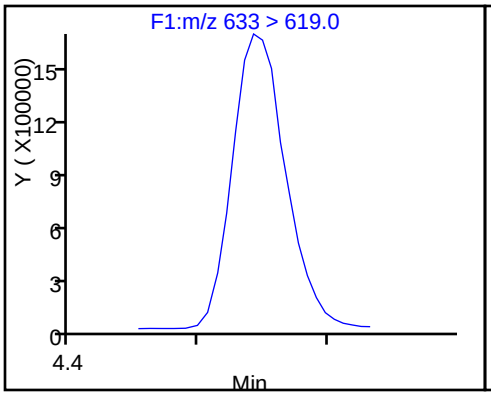
D 30 13C2 PFDoA



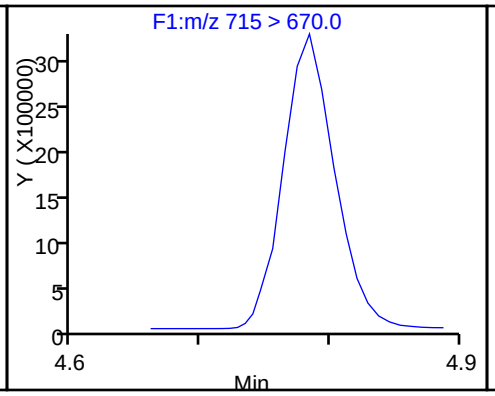
29 Perfluorododecanoic acid



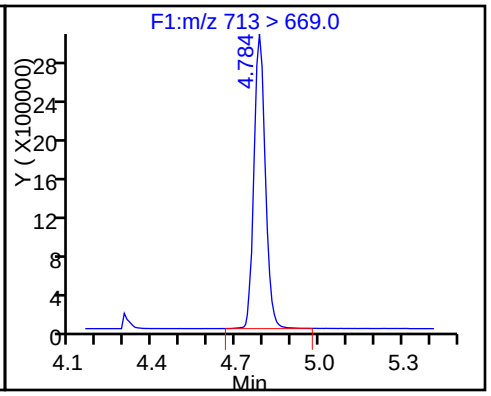
31 Perfluorotridecanoic acid



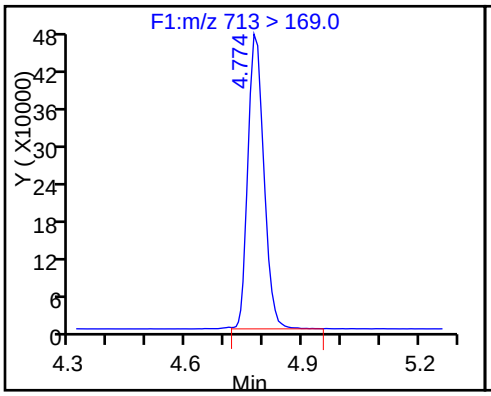
D 32 13C2-PFTeDA



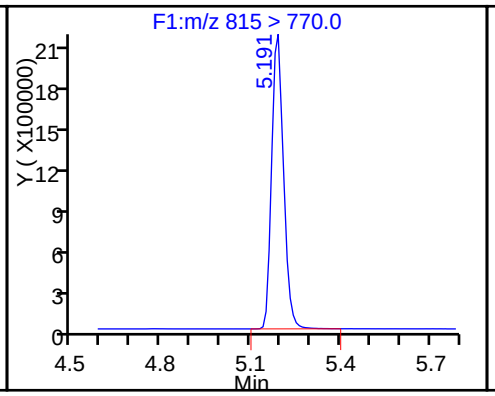
33 Perfluorotetradecanoic acid



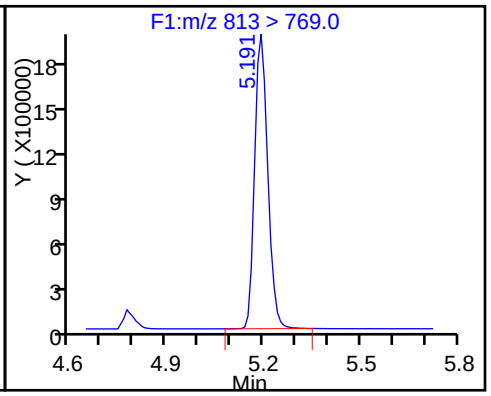
33 Perfluorotetradecanoic acid



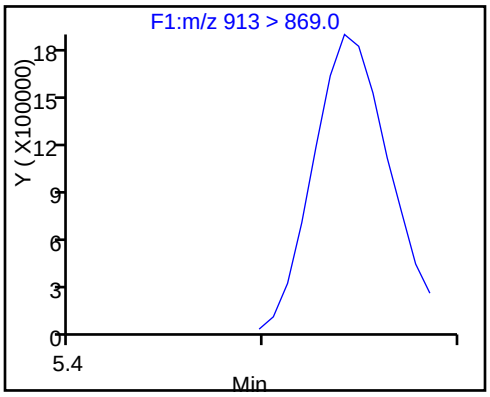
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-21080-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-123937/1-A

Matrix: Water | Lab File ID: 03SEP2016D_021_p1_e1.d

Analysis Method: 537 (Modified) | Date Collected:

Extraction Method: 3535 | Date Extracted: 08/24/2016 14:17

Sample wt/vol: 500(mL) | Date Analyzed: 09/04/2016 15:09

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 126120 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	U	2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	U	2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	U	2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	2.0	U	2.5	2.0	0.65
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	U M	4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	2.0	U	2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	131		25-150
STL00990	13C4 PFOA	138		25-150
STL00991	13C4 PFOS	133		25-150
STL01892	13C4-PFHpA	145		25-150
STL00995	13C5 PFNA	134		25-150
STL00994	18O2 PFHxS	132		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_021_p1_e1.d
Lims ID: MB 320-123937/1-A
Client ID:
Sample Type: MB
Inject. Date: 04-Sep-2016 15:09:00 ALS Bottle#: 0 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8

Method: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 17-Sep-2016 12:48:40 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 17-Sep-2016 12:46:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.616	1.623	-0.007		13058433	64.7		129	497673	
1 Perfluorobutyric acid										
212.9 > 169.0	1.630	1.623	0.007	1.000	15610	0.0682			124	
D 4 13C5-PFPeA										
267.9 > 223.0	1.908	1.910	-0.002		10699187	67.5		135	804098	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.908	1.910	-0.002	1.000	20251	0.0902			246	
7 Perfluorohexanoic acid										
313 > 269.0	2.209	2.213	-0.004	1.000	12697	0.0669			516	
D 6 13C2 PFHxA										
315 > 270.0	2.209	2.213	-0.004		9426003	65.3		131	521299	
D 11 13C4-PFHpA										
367 > 322.0	2.560	2.556	0.004		9462530	72.3		145	561194	
12 Perfluoroheptanoic acid										
363 > 319.0	2.560	2.556	0.004	1.000	9103	0.0462			155	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.568	2.571	-0.003	1.000	51531	0.2010				
D 10 18O2 PFHxS										
403 > 84.0	2.568	2.571	-0.003		11292357	62.5		132	546704	
15 Perfluorooctanoic acid										
413 > 369.0	2.933	2.919	0.014	1.000	23415	0.1119			433	
413 > 169.0	2.916	2.919	-0.003	0.994	9532		2.46(0.90-1.10)		586	
D 14 13C4 PFOA										
417 > 372.0	2.933	2.928	0.005		10054038	68.9		138	701111	
D 47 M2-6:2FTS										
429 > 409.0	2.883	2.934	-0.051		892	0.0114		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427 > 407.0	2.891	2.936	-0.045	1.000	891	NR				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.933	2.936	-0.003	1.000	1281	0.005794				
18 Perfluorooctane sulfonic acid										M
499 > 80.0	3.208	3.195	0.014	1.000	15106	0.0669			248	
499 > 99.0	3.309	3.195	0.115	1.031	3647		4.14(0.90-1.10)		303	M
D 17 13C4 PFOS										
503 > 80.0	3.300	3.304	-0.004		9180069	63.4		133	516200	
D 19 13C5 PFNA										
468 > 423.0	3.309	3.312	-0.003		8547461	67.0		134	451416	
D 21 13C8 FOSA										
506 > 78.0	3.640	3.634	0.006		7790942	29.3		58.5	538535	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.640	3.642	-0.002	1.000	3791	0.0264			546	
D 23 13C2 PFDA										
515 > 470.0	3.672	3.658	0.014		7403149	61.2		122	426209	
D 42 M2-8:2FTS										
529 > 509.0	3.664	3.698	-0.034		831	0.009873		0.0		
D 45 d3-NMeFOSAA										
573 > 419.0	3.819	3.865	-0.046		2432	0.0485		0.0		
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.946	3.975	-0.029	1.000	841	0.006851				
28 Perfluoroundecanoic acid										
563 > 519.0	3.991	3.993	-0.002	1.000	16732	0.1319			966	
D 27 13C2 PFUnA										
565 > 520.0	3.991	3.993	-0.002		5891770	61.8		124	417123	
D 46 d5-NEtFOSAA										
589 > 419.0	4.074	4.032	0.042		1039	0.0185		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584 > 419.0	3.982	4.040	-0.058	0.978	1079	NR				
D 52 d-N-MeFOSA-M										
515 > 169.0	4.231	4.143	0.088		364	0.005277		0.0		
54 MeFOSA										
512 > 169.0	4.132	4.144	-0.012	1.000	857	NR				
D 30 13C2 PFDoA										
615 > 570.0	4.282	4.284	-0.002		5507131	62.2		124	473580	
53 N-ethylperfluoro-1-octanesulfonami										
526 > 169.0	4.312	4.333	-0.021	1.000	1111	NR				
31 Perfluorotridecanoic acid										
633 > 619.0	4.545	4.546	-0.001	1.000	2359	0.0214			120	
D 32 13C2-PFTeDA										
715 > 670.0	4.789	4.781	0.008		10992639	64.5		129	794481	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.789	4.790	-0.001	1.000	72917	0.3692			103	
713 > 169.0	4.789	4.790	-0.001	1.000	3377		21.59(0.00-0.00)		578	
D 34 13C2-PFHxDA										
815 > 770.0	5.187	5.188	-0.001		6236370	57.3		115	472739	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.187	5.188	-0.001	1.000	58689	0.0220			288	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
36 Perfluorooctadecanoic acid										
913 > 869.0	5.544	5.545	-0.001	1.000	3338	0.0309			14.5	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

Report Date: 17-Sep-2016 12:50:55 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_021_p1_e1.d

Injection Date: 04-Sep-2016 15:09:00 Instrument ID: A8

Lims ID: MB 320-123937/1-A

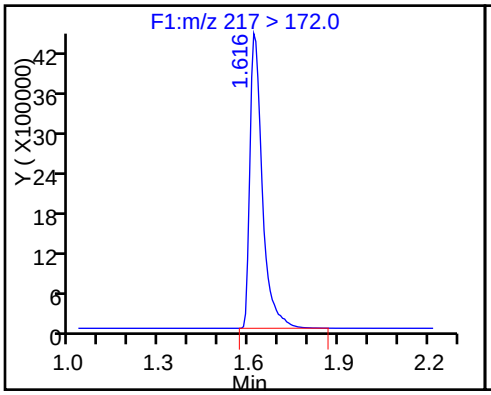
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 21

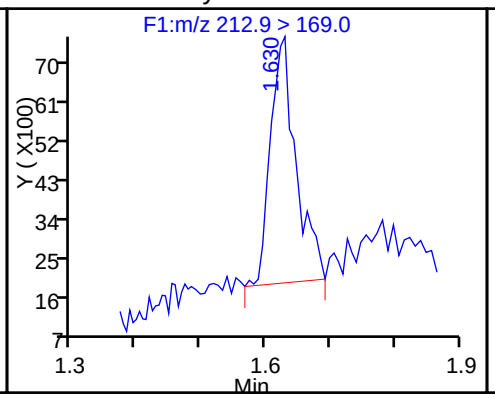
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

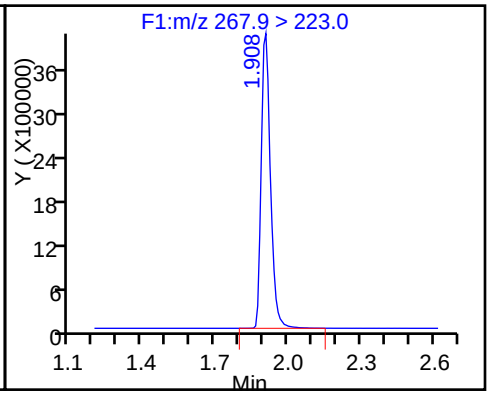
D 2 13C4 PFBA



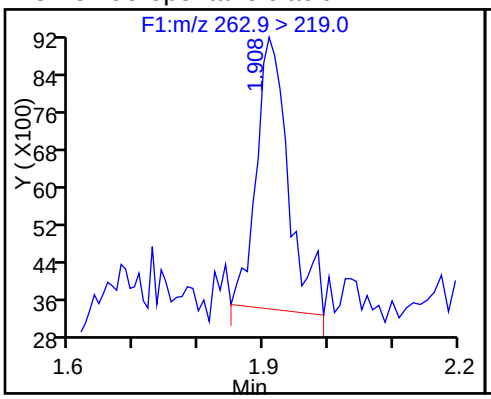
1 Perfluorobutyric acid



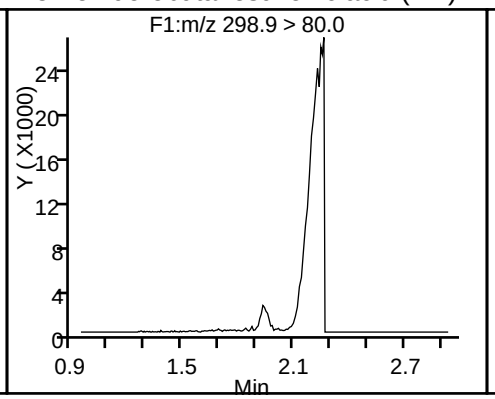
D 4 13C5-PFPeA



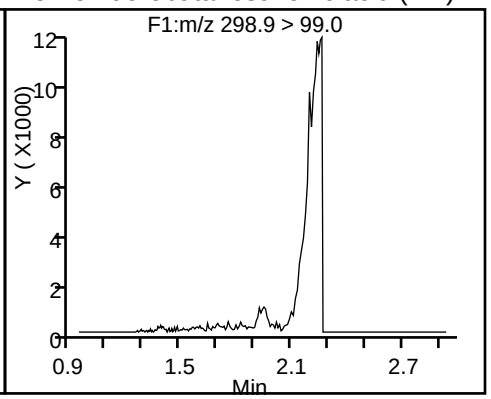
3 Perfluoropentanoic acid



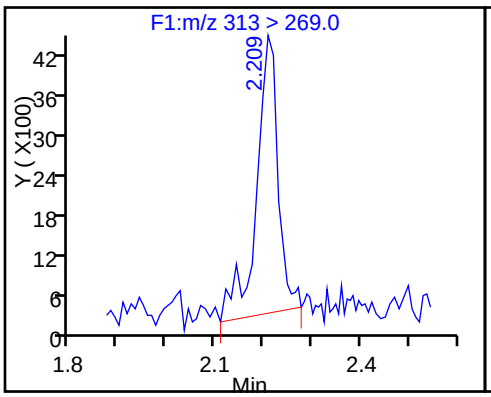
5 Perfluorobutanesulfonic acid (ND)



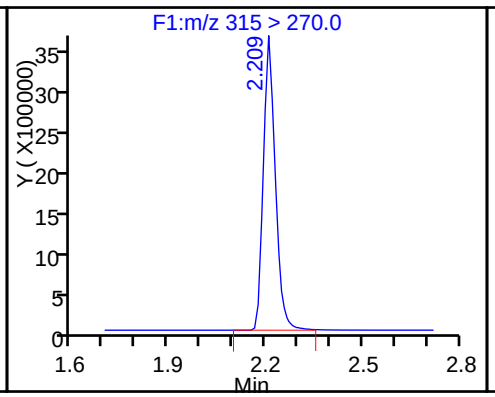
5 Perfluorobutanesulfonic acid (ND)



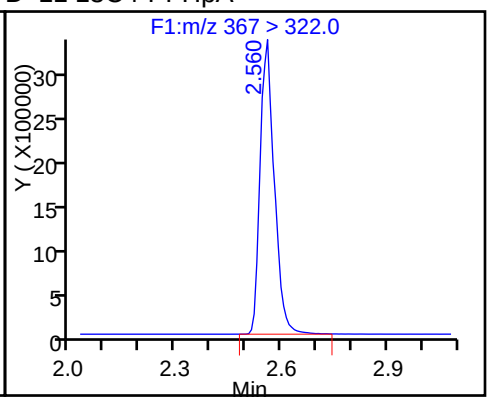
7 Perfluorohexanoic acid



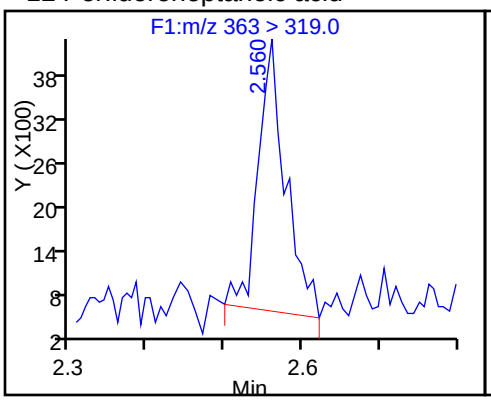
D 6 13C2 PFHxA



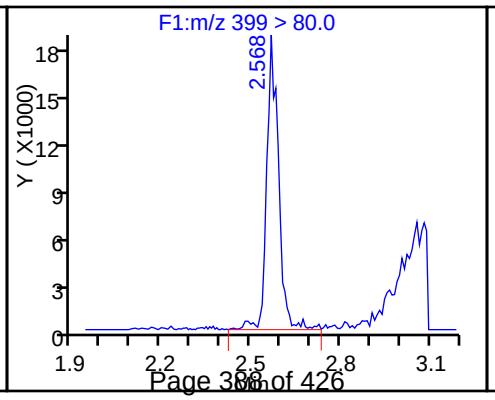
D 11 13C4-PFHpA



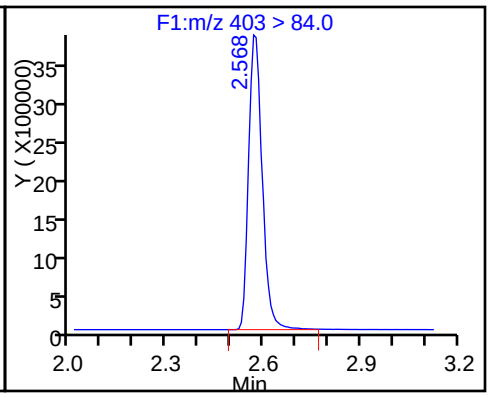
12 Perfluoroheptanoic acid



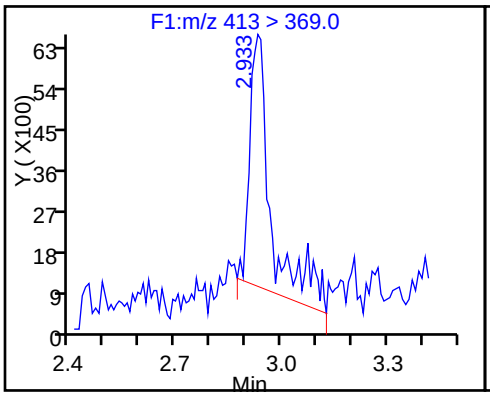
9 Perfluorohexanesulfonic acid



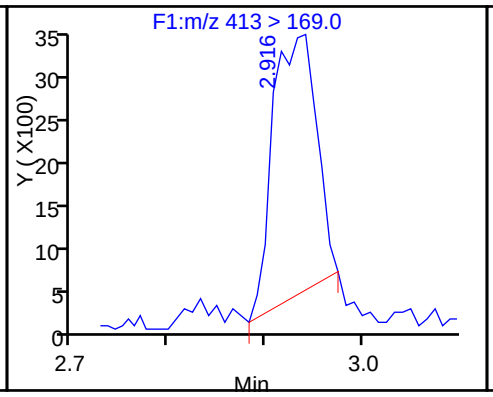
D 10 18O2 PFHxS



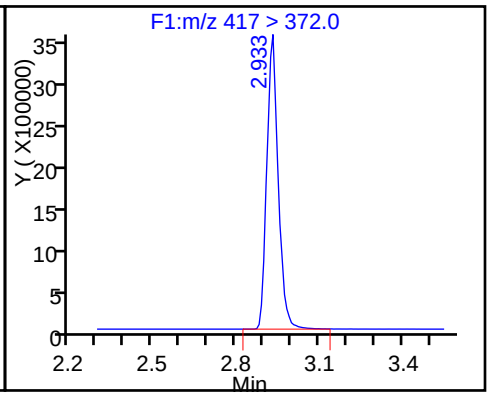
15 Perfluorooctanoic acid



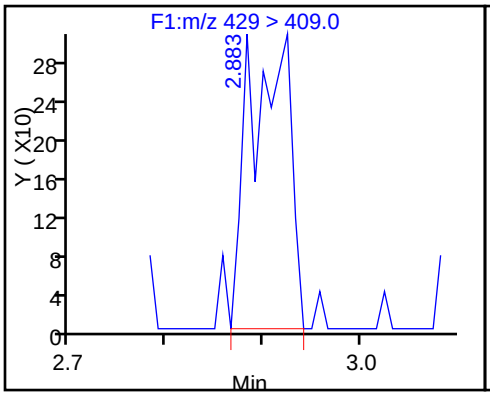
15 Perfluorooctanoic acid



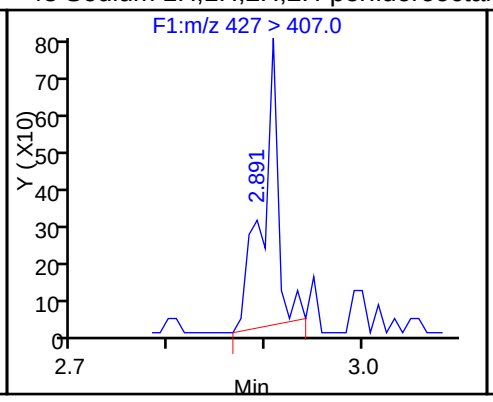
D 14 13C4 PFOA



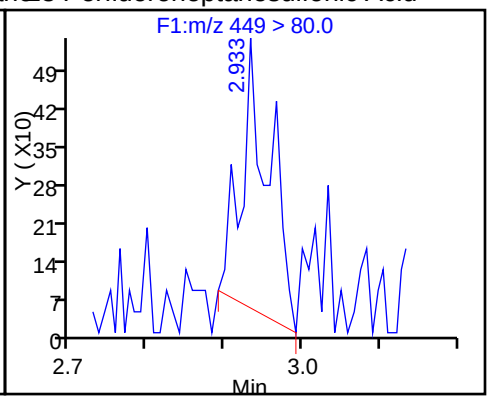
D 47 M2-6:2FTS



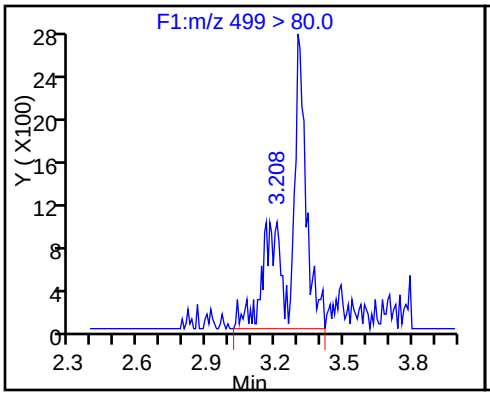
48 Sodium 1H,1H,2H,2H-perfluorooctane



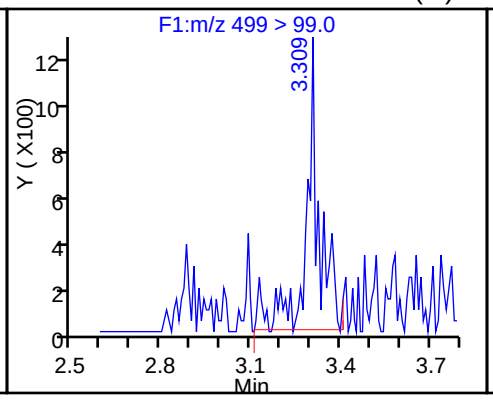
13 Perfluoroheptanesulfonic Acid



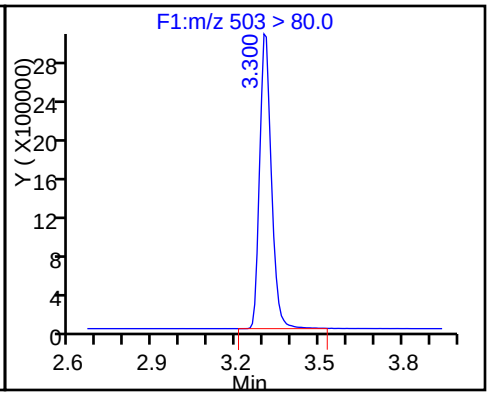
18 Perfluorooctane sulfonic acid



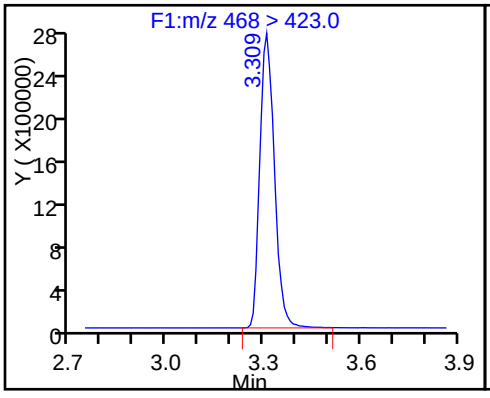
18 Perfluorooctane sulfonic acid (M)



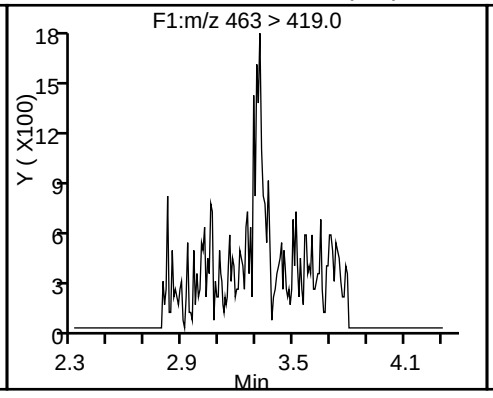
D 17 13C4 PFOS



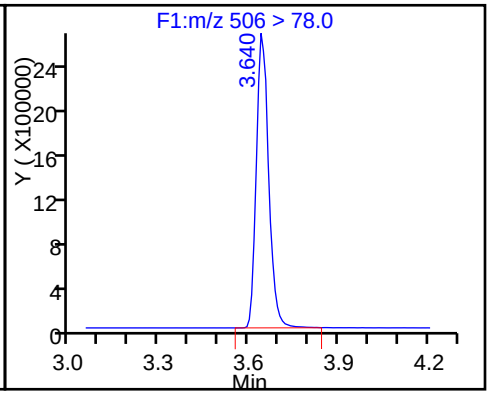
D 19 13C5 PFNA



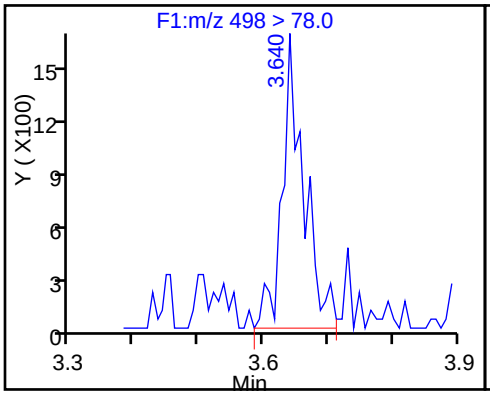
20 Perfluorononanoic acid (ND)



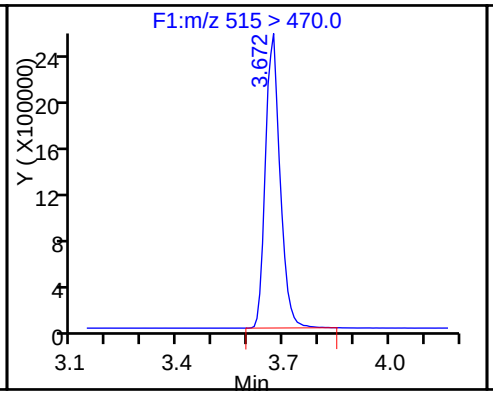
D 21 13C8 FOSA



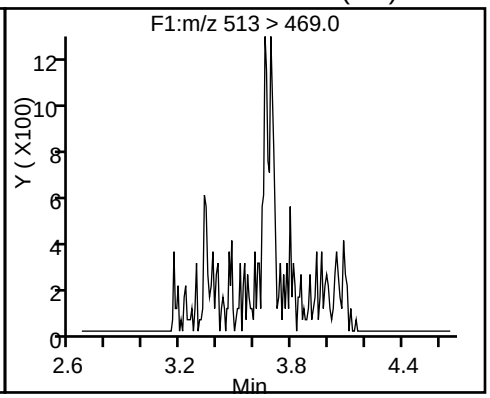
22 Perfluorooctane Sulfonamide



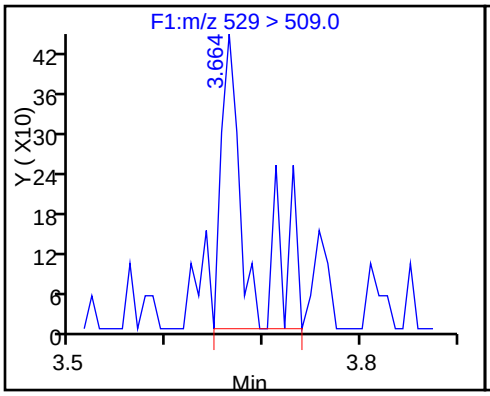
D 23 13C2 PFDA



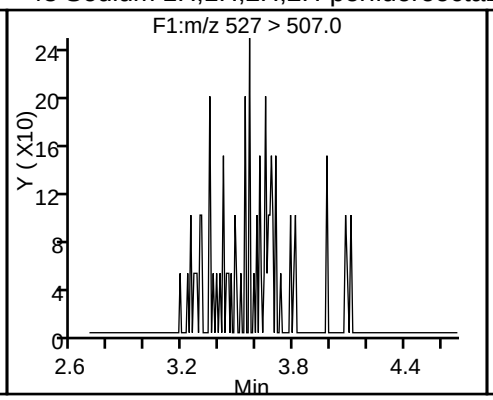
24 Perfluorodecanoic acid (ND)



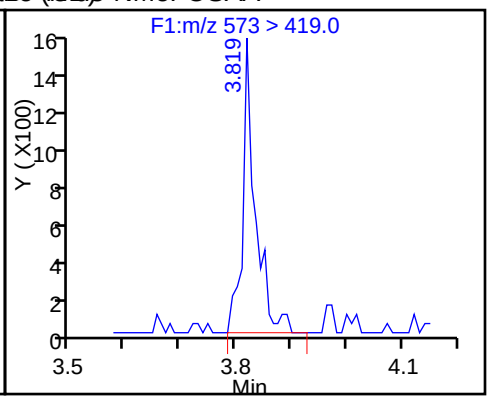
D 42 M2-8:2FTS



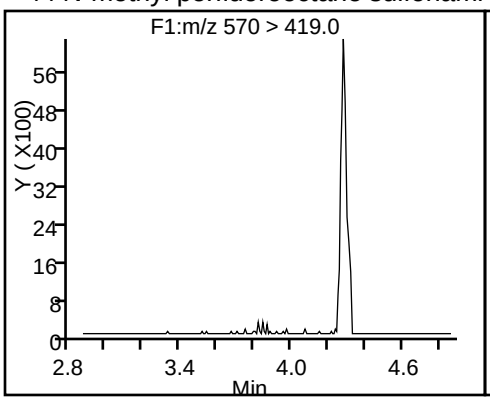
43 Sodium 1H,1H,2H,2H-perfluorooctane (ND)



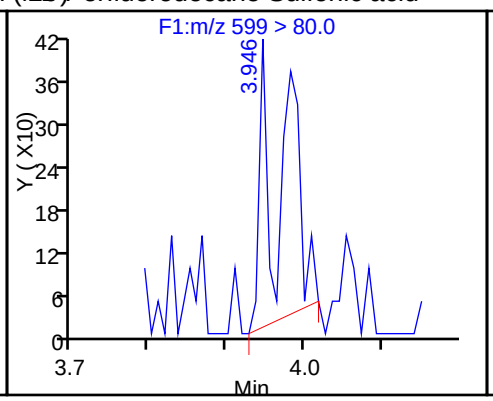
D 45 d3-NMeFOSAA



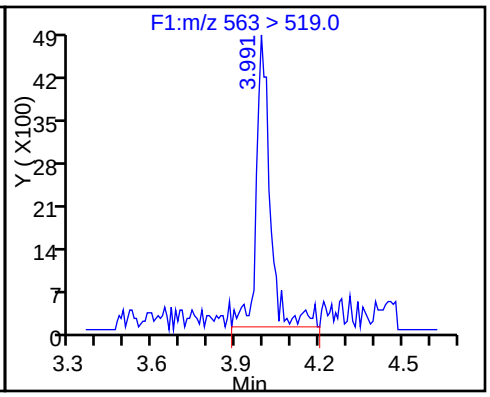
44 N-methyl perfluorooctane sulfonami (ND)



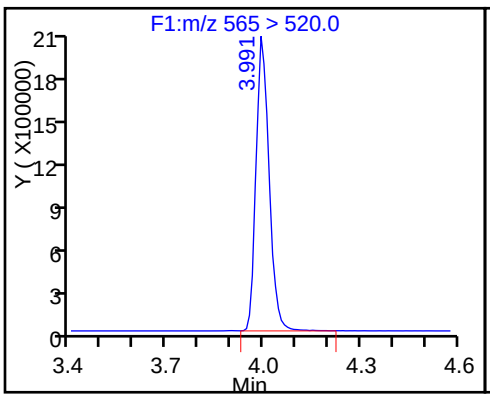
26 Perfluorodecane Sulfonic acid



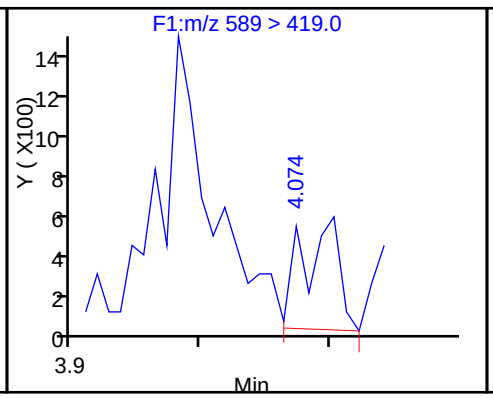
28 Perfluoroundecanoic acid



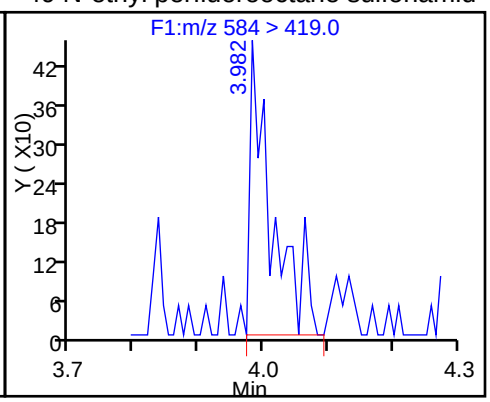
D 27 13C2 PFUnA



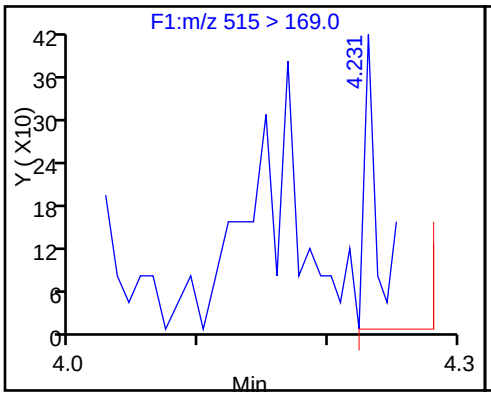
D 46 d5-NEtFOSAA



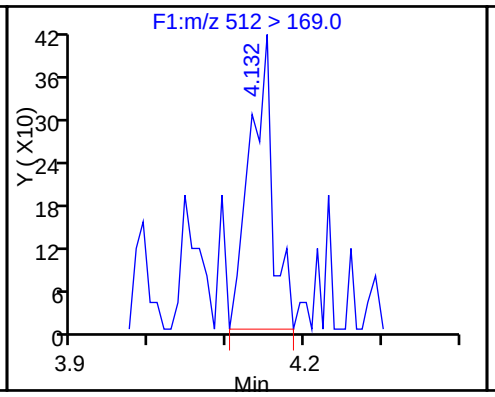
49 N-ethyl perfluorooctane sulfonamid



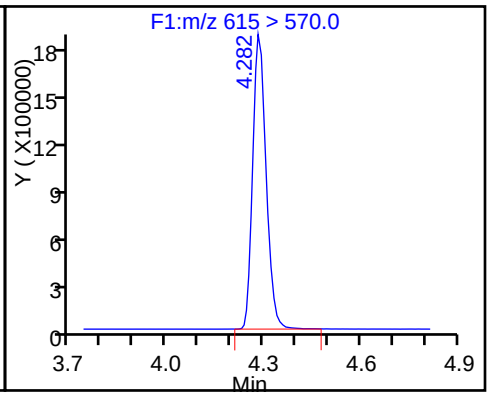
D 52 d-N-MeFOSA-M



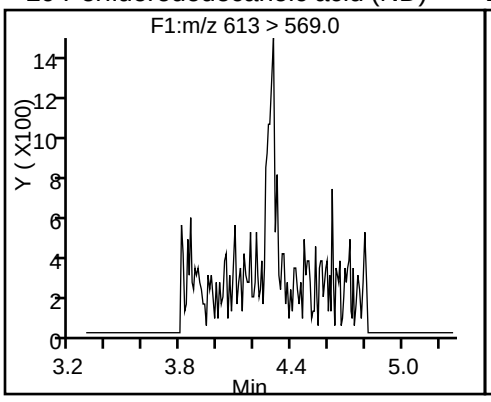
54 MeFOSA



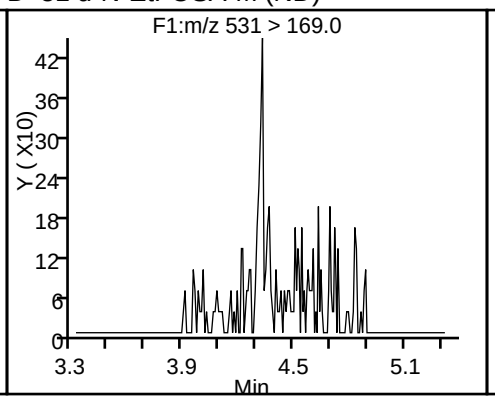
D 30 13C2 PFDoA



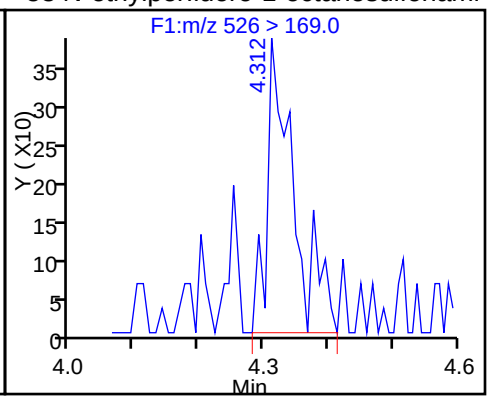
29 Perfluorododecanoic acid (ND)



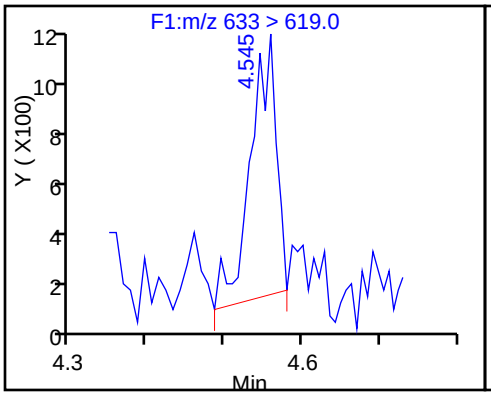
D 51 d-N-EtFOSA-M (ND)



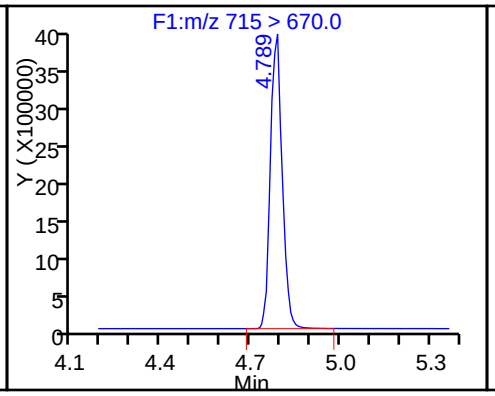
53 N-ethylperfluoro-1-octanesulfonami



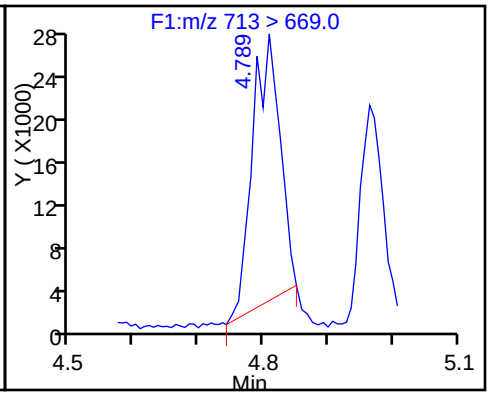
31 Perfluorotridecanoic acid



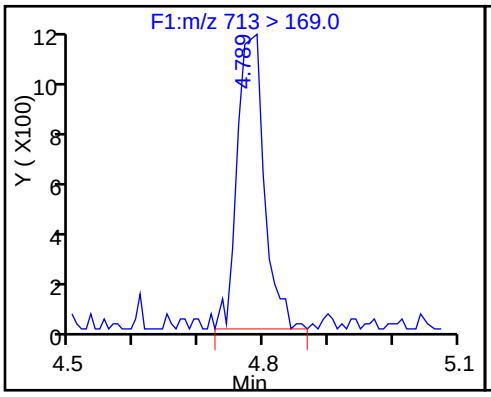
D 32 13C2-PFTeDA



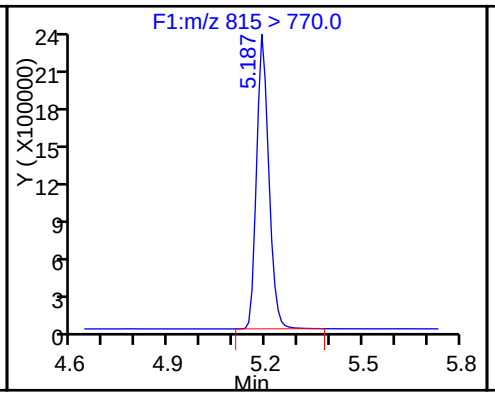
33 Perfluorotetradecanoic acid



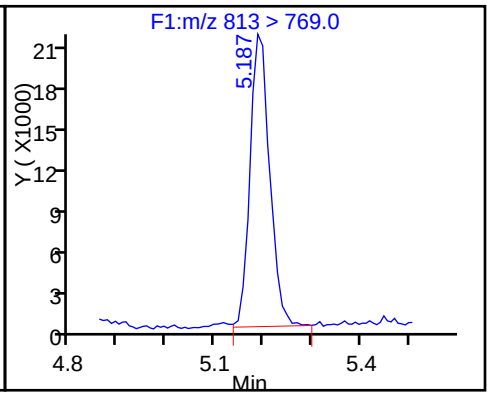
33 Perfluorotetradecanoic acid



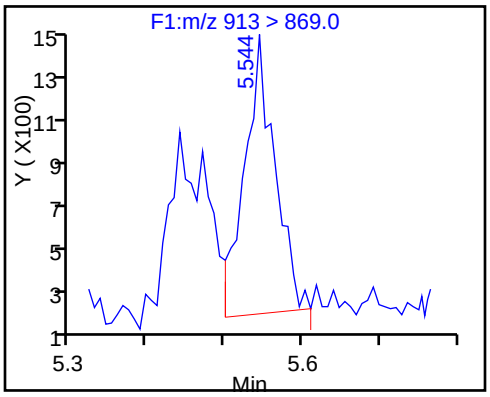
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

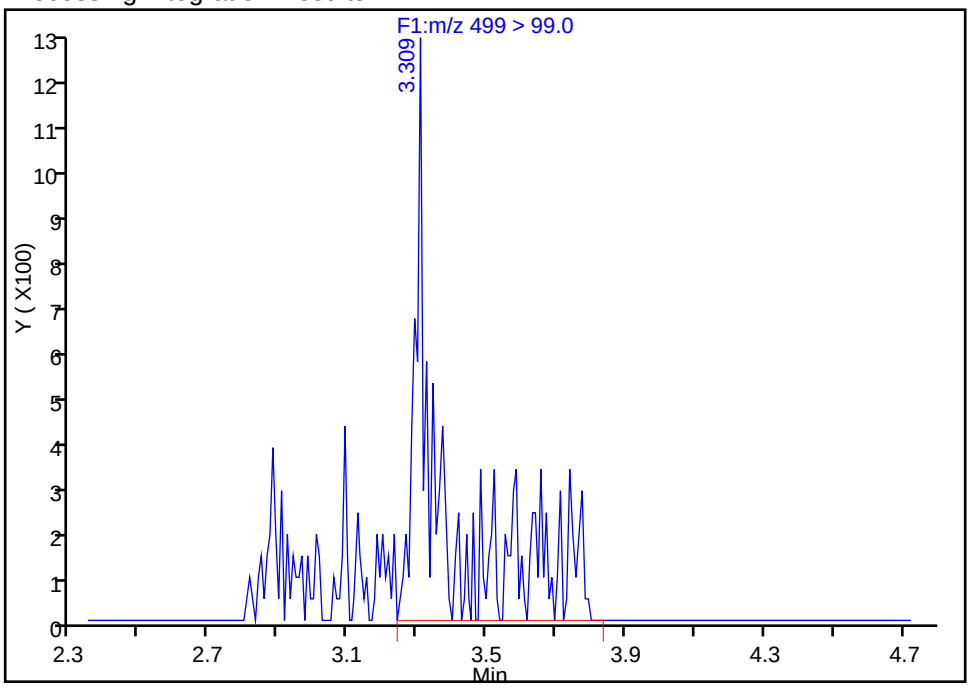
Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_021_p1_e1.d
Injection Date: 04-Sep-2016 15:09:00 Instrument ID: A8
Lims ID: MB 320-123937/1-A
Client ID:
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 21
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

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

Signal: 2

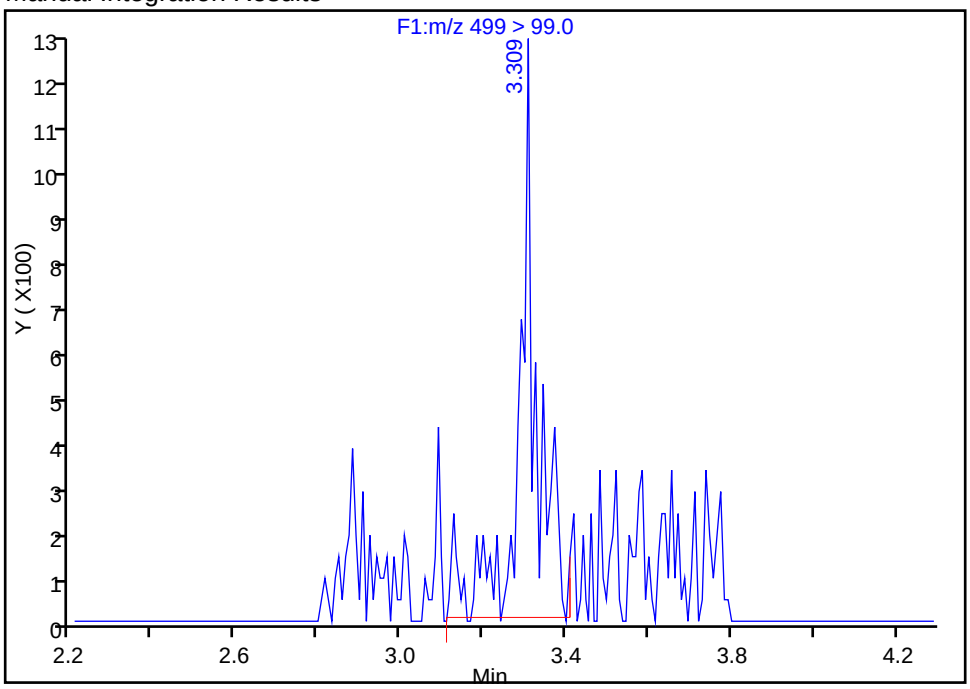
Processing Integration Results

RT: 3.31
Area: 6029
Amount: 0.066930
Amount Units: ng/ml



Manual Integration Results

RT: 3.31
Area: 3647
Amount: 0.066930
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 12:46:52
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-21080-1

SDG No.:

Client Sample ID: | Lab Sample ID: LCS 320-123937/2-A

Matrix: Water | Lab File ID: 03SEP2016D_022_p1_e1.d

Analysis Method: 537 (Modified) | Date Collected:

Extraction Method: 3535 | Date Extracted: 08/24/2016 14:17

Sample wt/vol: 500(mL) | Date Analyzed: 09/04/2016 15:16

Con. Extract Vol.: 1.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: Acquity ID: 2.1(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 126120 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	52.3		2.5	2.0	0.92
375-85-9	Perfluoroheptanoic acid (PFHpA)	50.5		2.5	2.0	0.80
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	47.2		2.5	2.0	0.87
375-95-1	Perfluorononanoic acid (PFNA)	51.4		2.5	2.0	0.65
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	43.6		4.0	3.0	1.3
335-67-1	Perfluorooctanoic acid (PFOA)	52.4		2.5	2.0	0.75

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00993	13C2 PFHxA	123		25-150
STL00990	13C4 PFOA	123		25-150
STL00991	13C4 PFOS	122		25-150
STL01892	13C4-PFHpA	131	M	25-150
STL00995	13C5 PFNA	118		25-150
STL00994	18O2 PFHxS	122		25-150

Report Date: 17-Sep-2016 13:28:13 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_022_p1_e1.d
Lims ID: LCS 320-123937/2-A
Client ID:
Sample Type: LCS
Inject. Date: 04-Sep-2016 15:16:00 ALS Bottle#: 0 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info:
Operator ID: A8 Instrument ID: A8

Method: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\PFC_A8_Full.m
Limit Group: LC PFC_DOD ICAL
Last Update: 17-Sep-2016 13:27:31 Calib Date: 03-Sep-2016 17:38:00
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8\20160906-34220.b\03SEP2016A_020_p1_e1.d

Column 1 : Det: F1(0.00 :6.60)
Process Host: XAWRK003

First Level Reviewer: barnettj Date: 17-Sep-2016 12:47:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217 > 172.0	1.623	1.623	0.0		11970937	59.3		119	410682	
1 Perfluorobutyric acid										
212.9 > 169.0	1.623	1.623	0.0	1.000	5635558	26.9		134	46603	
D 4 13C5-PFPeA										
267.9 > 223.0	1.910	1.910	0.0		10076648	63.6		127	933012	
3 Perfluoropentanoic acid										
262.9 > 219.0	1.910	1.910	0.0	1.000	5451178	25.8		129	77577	
5 Perfluorobutanesulfonic acid										
298.9 > 80.0	1.944	1.944	0.0	1.000	8803380	26.2		148		
298.9 > 99.0	1.944	1.944	0.0	1.000	3728000		2.36(0.00-0.00)			
7 Perfluorohexanoic acid										
313 > 269.0	2.213	2.213	0.0	1.000	4313144	24.1		120	310179	
D 6 13C2 PFHxA										
315 > 270.0	2.213	2.213	0.0		8889682	61.6		123	801203	
D 11 13C4-PFHpA										M
367 > 322.0	2.550	2.556	-0.006		8571451	65.5		131	551757	M
12 Perfluoroheptanoic acid										
363 > 319.0	2.557	2.556	0.001	1.000	4504584	25.2		126	78230	
9 Perfluorohexanesulfonic acid										
399 > 80.0	2.572	2.571	0.001	1.000	5608118	23.6		130		
D 10 18O2 PFHxS										
403 > 84.0	2.572	2.571	0.001		10463646	57.9		122	600580	
15 Perfluorooctanoic acid										
413 > 369.0	2.929	2.919	0.010	1.000	4875709	26.2		131	101019	
413 > 169.0	2.929	2.919	0.010	1.000	3007415		1.62(0.90-1.10)		168974	
D 14 13C4 PFOA										
417 > 372.0	2.929	2.928	0.001		8945487	61.3		123	580825	
13 Perfluoroheptanesulfonic Acid										
449 > 80.0	2.937	2.936	0.001	1.000	5196378	25.5		134		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
18 Perfluorooctane sulfonic acid										
499 > 80.0	3.196	3.195	0.002	1.000	4526796	21.8		117	80195	
499 > 99.0	3.272	3.195	0.078	1.024	1032722		4.38(0.90-1.10)		13267	
D 17 13C4 PFOS										
503 > 80.0	3.306	3.304	0.002		8445169	58.4		122	385863	
D 19 13C5 PFNA										
468 > 423.0	3.306	3.312	-0.006		7532725	59.1		118	399421	
20 Perfluorononanoic acid										
463 > 419.0	3.306	3.312	-0.006	1.000	3924745	25.7		129	111349	
D 21 13C8 FOSA										
506 > 78.0	3.640	3.634	0.006		6293416	23.6		47.3	270265	
22 Perfluorooctane Sulfonamide										
498 > 78.0	3.647	3.642	0.005	1.000	2994177	25.8		129	171506	
D 23 13C2 PFDA										
515 > 470.0	3.671	3.658	0.013		6775927	56.0		112	361620	
24 Perfluorodecanoic acid										
513 > 469.0	3.671	3.666	0.005	1.000	3565675	26.9		134	161407	
26 Perfluorodecane Sulfonic acid										
599 > 80.0	3.985	3.975	0.010	1.000	2714358	24.0		125		
28 Perfluoroundecanoic acid										
563 > 519.0	4.003	3.993	0.010	1.000	2817630	24.3		122	135874	
D 27 13C2 PFUnA										
565 > 520.0	4.003	3.993	0.010		5381506	56.5		113	591728	
D 30 13C2 PFDoA										
615 > 570.0	4.286	4.284	0.002		5201242	58.8		118	281606	
29 Perfluorododecanoic acid										
613 > 569.0	4.279	4.284	-0.005	1.000	2670205	26.5		132	143506	
31 Perfluorotridecanoic acid										
633 > 619.0	4.547	4.546	0.001	1.000	2671231	25.6		128	126271	
D 32 13C2-PFTeDA										
715 > 670.0	4.792	4.781	0.011		10507271	61.6		123	900655	
33 Perfluorotetradecanoic acid										
713 > 669.0	4.792	4.790	0.002	1.000	5422053	29.1		145	9636	
713 > 169.0	4.782	4.790	-0.008	0.998	827519		6.55(0.00-0.00)		94275	
D 34 13C2-PFHxDA										
815 > 770.0	5.189	5.188	0.001		5932365	54.5		109	352574	
35 Perfluorohexadecanoic acid										
813 > 769.0	5.189	5.188	0.001	1.000	2837120	23.6		118	13740	
36 Perfluorooctadecanoic acid										
913 > 869.0	5.546	5.545	0.001	1.000	2665638	26.1		131	11776	

QC Flag Legend

Review Flags

M - Manually Integrated

Report Date: 17-Sep-2016 13:28:13 Chrom Revision: 2.2 08-Sep-2016 14:45:52

TestAmerica Sacramento

Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_022_p1_e1.d

Injection Date: 04-Sep-2016 15:16:00 Instrument ID: A8

Lims ID: LCS 320-123937/2-A

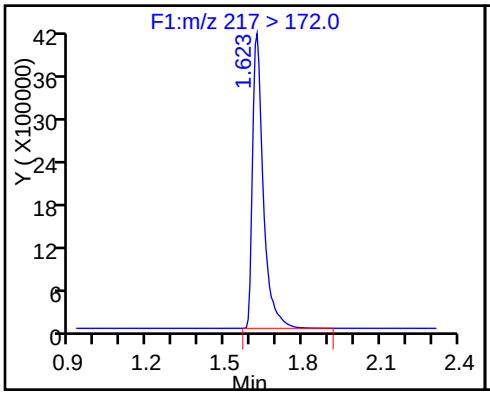
Client ID:

Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 22

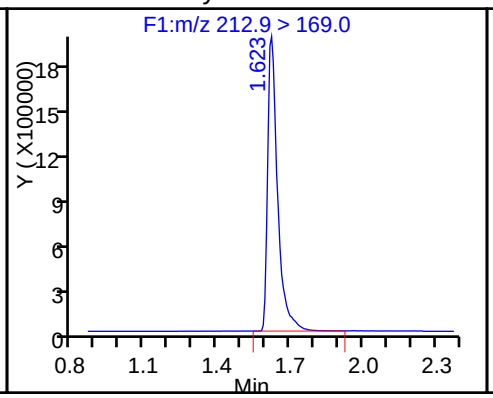
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL

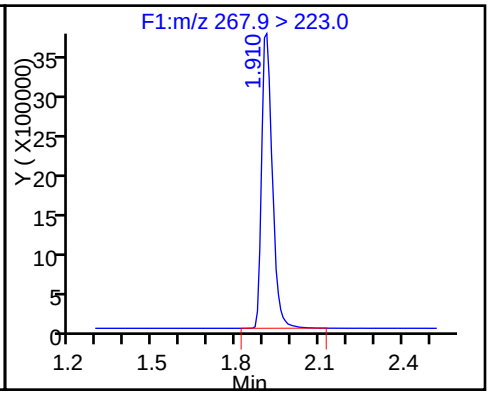
D 2 13C4 PFBA



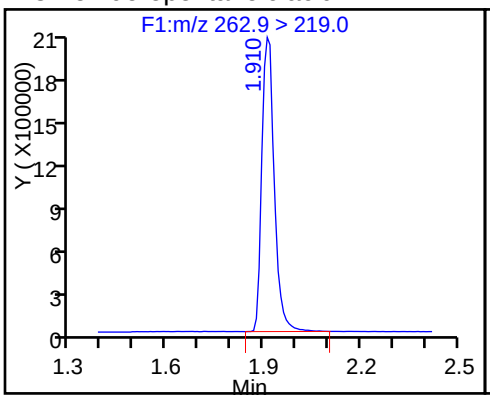
1 Perfluorobutyric acid



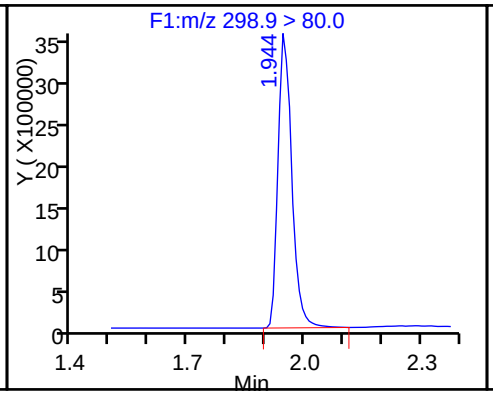
D 4 13C5-PFPeA



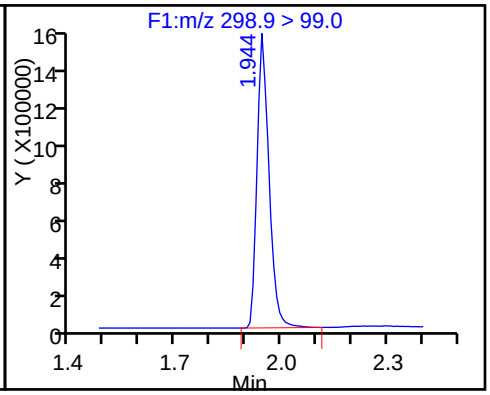
3 Perfluoropentanoic acid



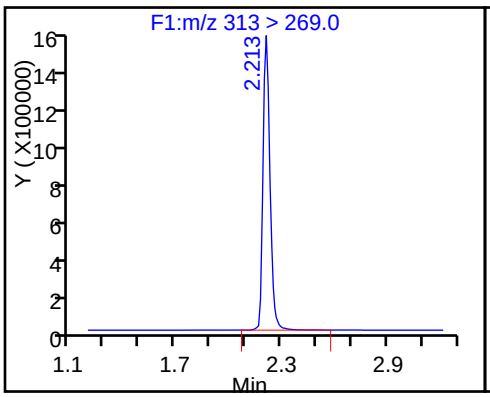
5 Perfluorobutanesulfonic acid



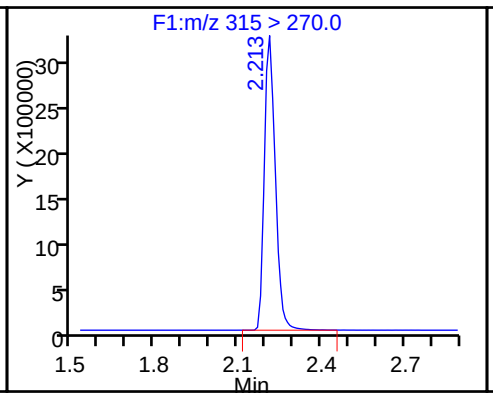
5 Perfluorobutanesulfonic acid



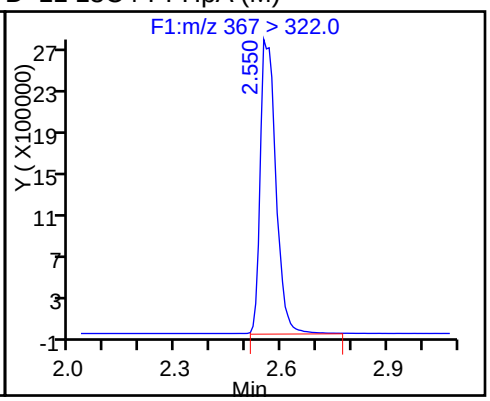
7 Perfluorohexanoic acid



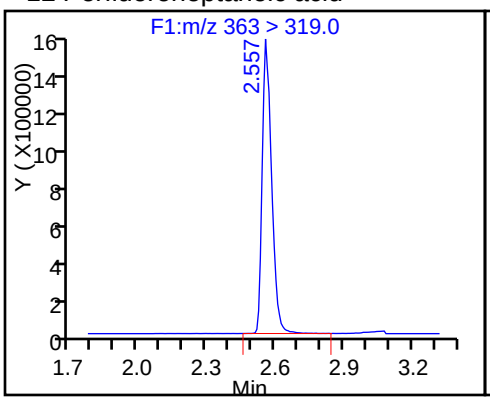
D 6 13C2 PFHxA



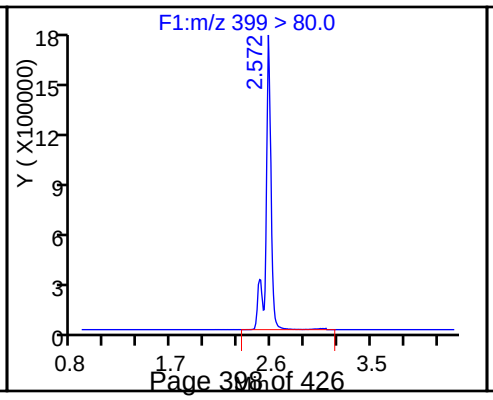
D 11 13C4-PFHpA (M)



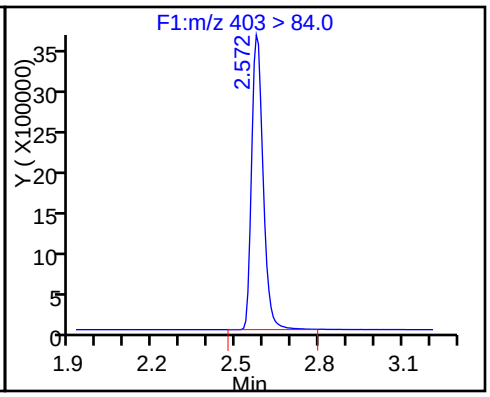
12 Perfluoroheptanoic acid



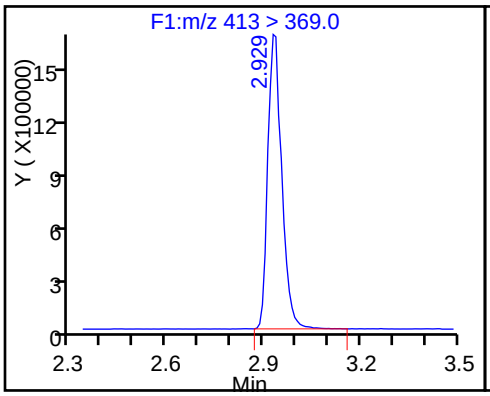
9 Perfluorohexanesulfonic acid



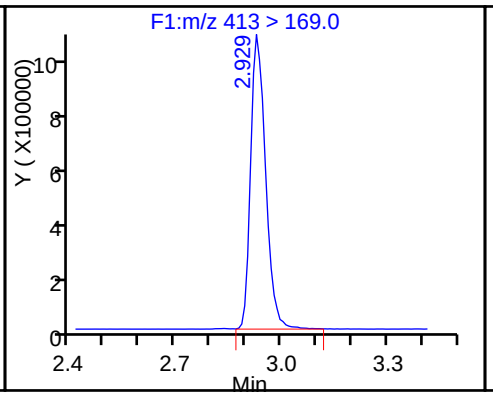
D 10 18O2 PFHxS



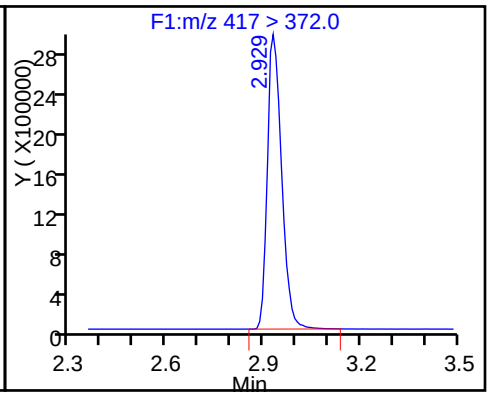
15 Perfluorooctanoic acid



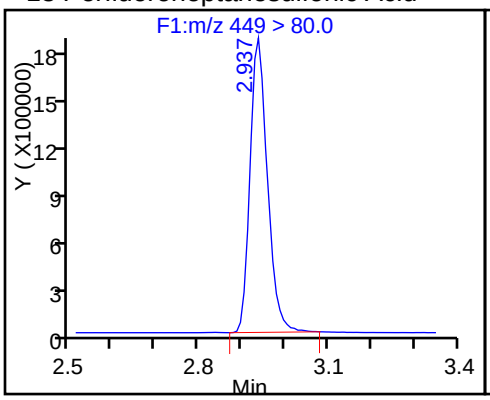
15 Perfluorooctanoic acid



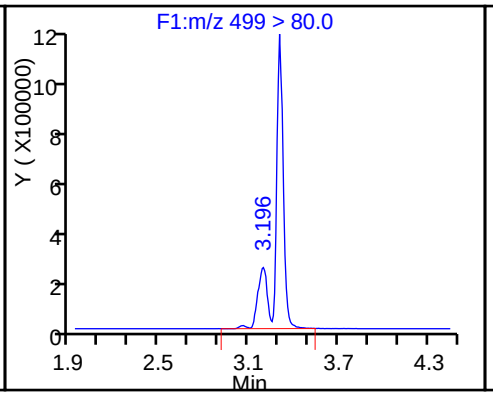
D 14 13C4 PFOA



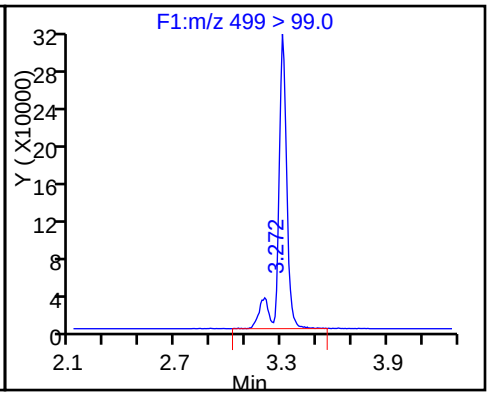
13 Perfluoroheptanesulfonic Acid



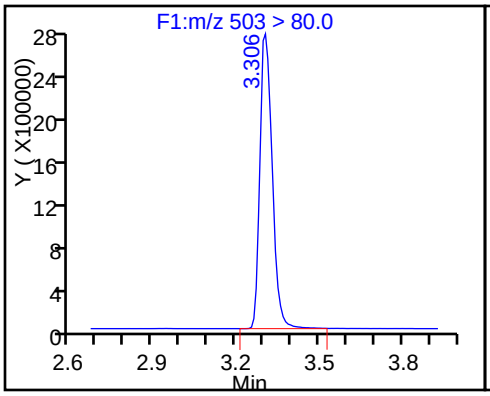
18 Perfluorooctane sulfonic acid



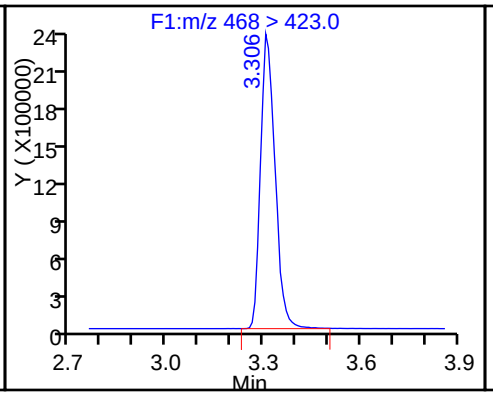
18 Perfluorooctane sulfonic acid



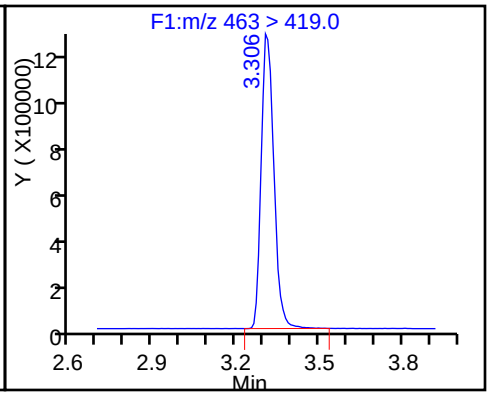
D 17 13C4 PFOS



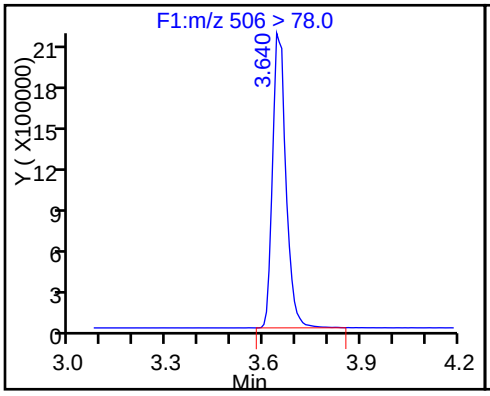
D 19 13C5 PFNA



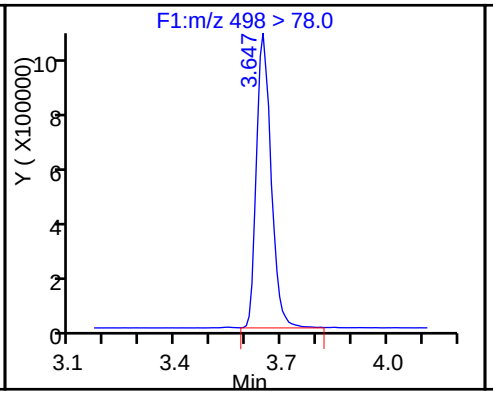
20 Perfluorononanoic acid



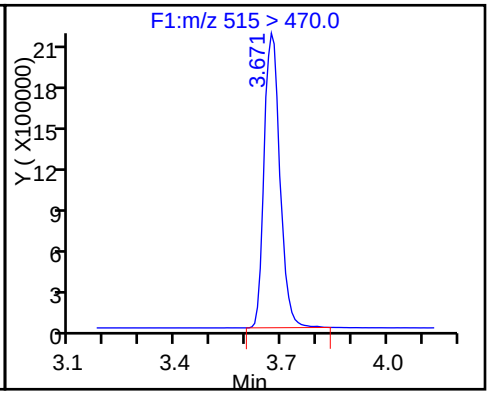
D 21 13C8 FOSA



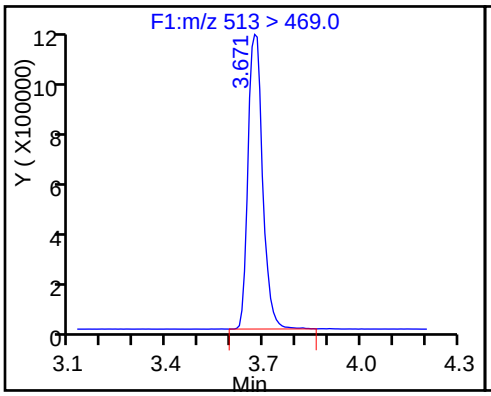
22 Perfluorooctane Sulfonamide



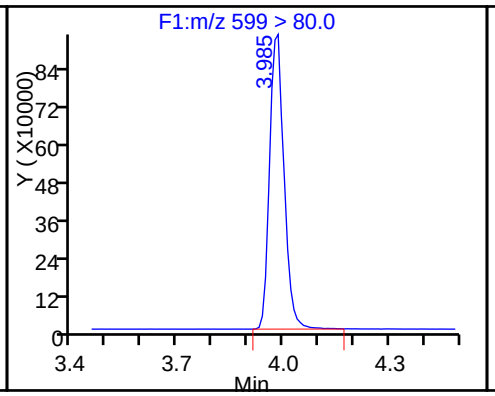
D 23 13C2 PFDA



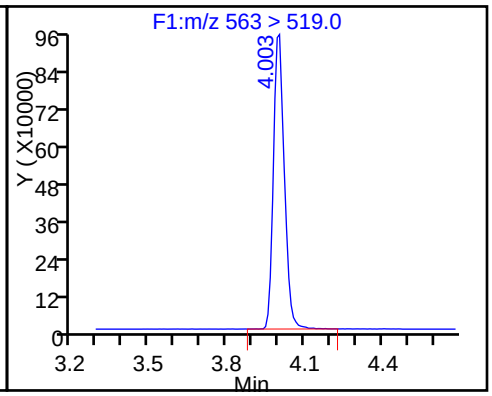
24 Perfluorodecanoic acid



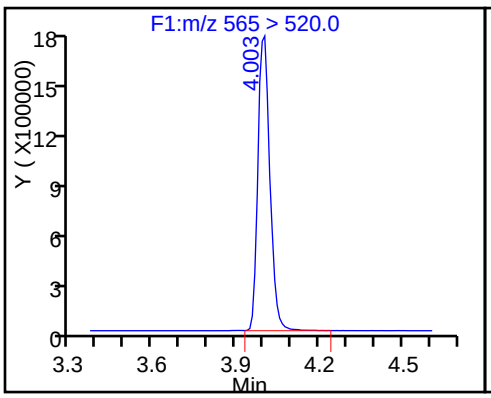
26 Perfluorodecane Sulfonic acid



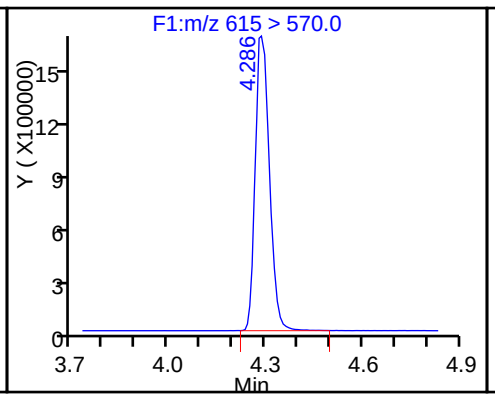
28 Perfluoroundecanoic acid



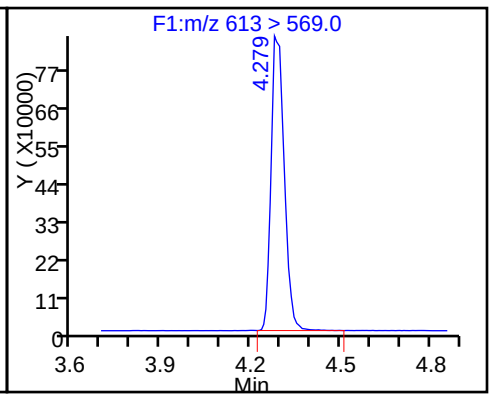
D 27 13C2 PFUnA



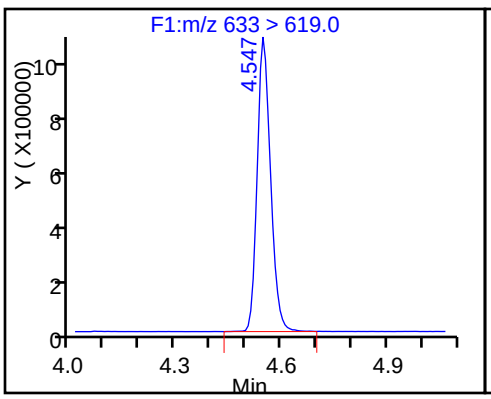
D 30 13C2 PFDoA



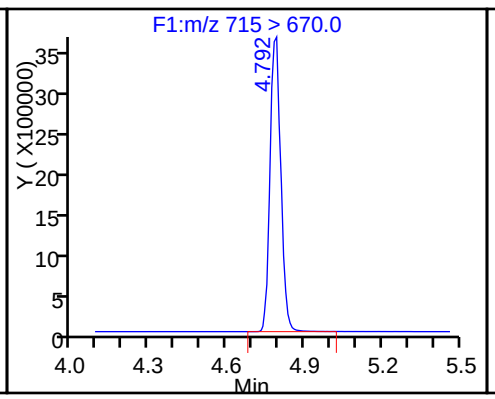
29 Perfluorododecanoic acid



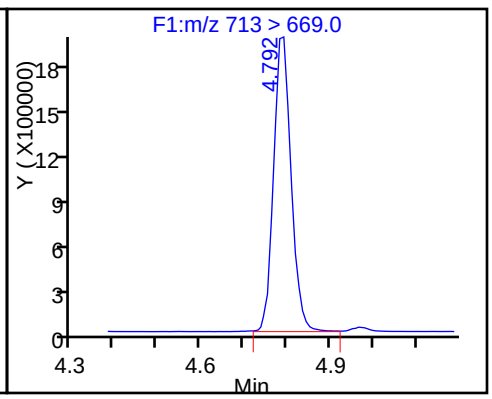
31 Perfluorotridecanoic acid



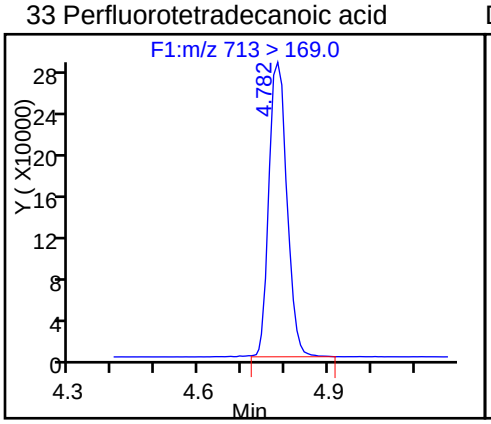
D 32 13C2-PFTeDA



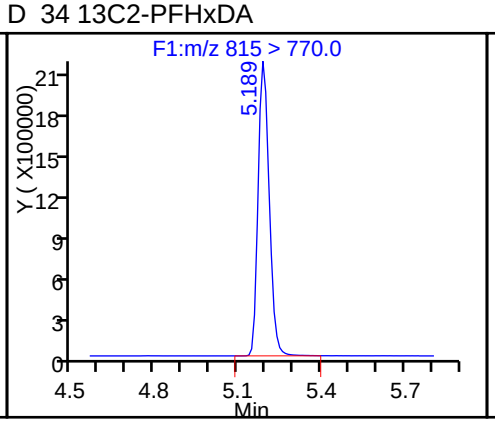
33 Perfluorotetradecanoic acid



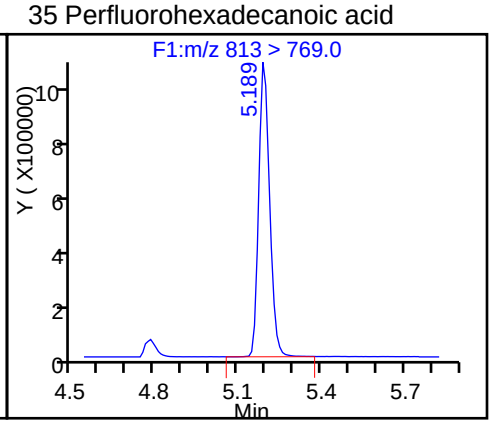
33 Perfluorotetradecanoic acid



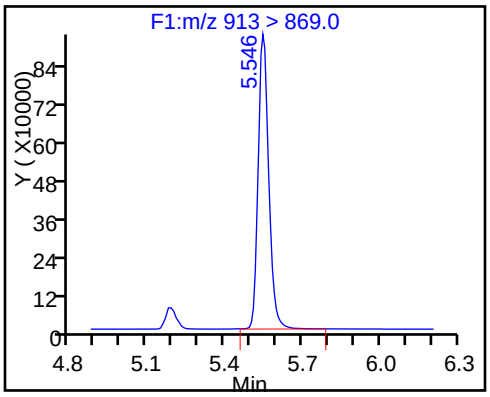
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

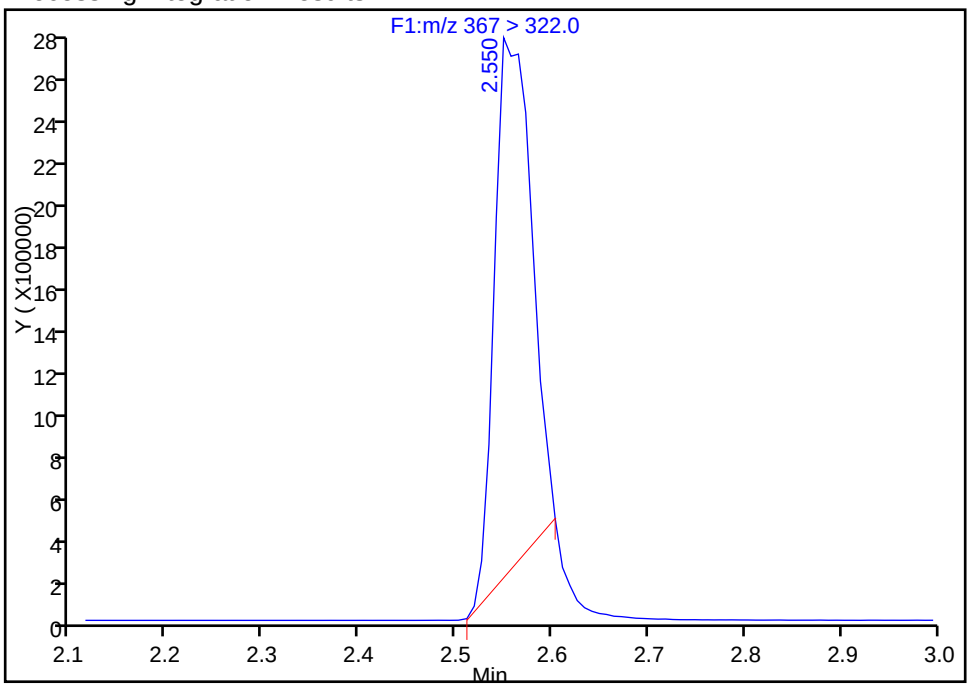
Data File: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b\03SEP2016D_022_p1_e1.d
Injection Date: 04-Sep-2016 15:16:00 Instrument ID: A8
Lims ID: LCS 320-123937/2-A
Client ID:
Operator ID: A8 ALS Bottle#: 0 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: PFC_A8_Full Limit Group: LC PFC_DOD ICAL
Column: Detector F1(0.00 :6.60)

D 11 13C4-PFHpA, CAS: STL01892

Signal: 1

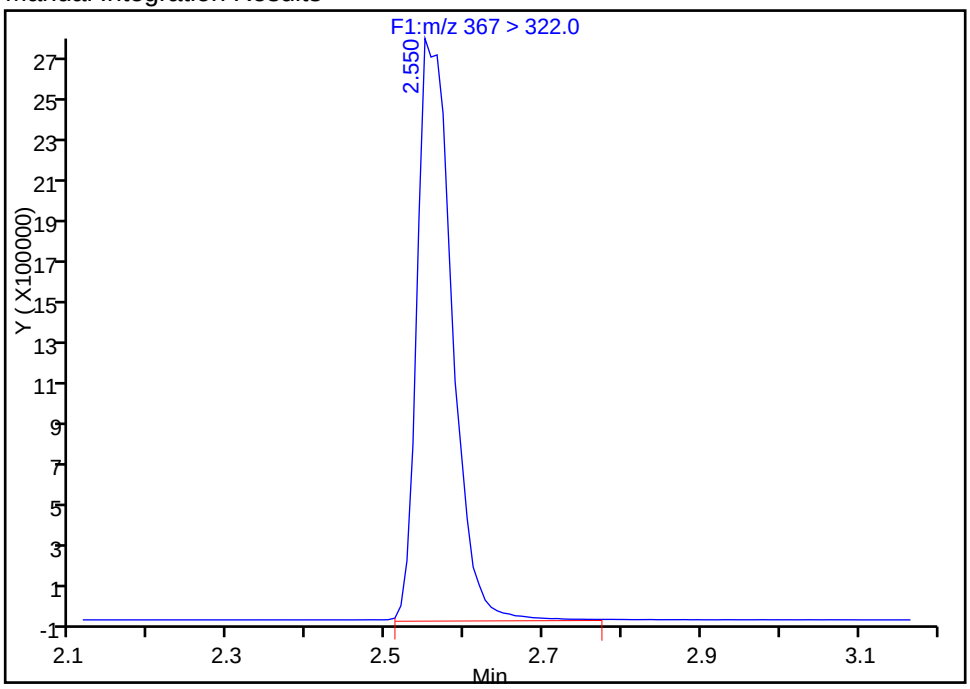
Processing Integration Results

RT: 2.55
Area: 6701587
Amount: 51.210798
Amount Units: ng/ml



Manual Integration Results

RT: 2.55
Area: 8571451
Amount: 65.499537
Amount Units: ng/ml



Reviewer: barnettj, 17-Sep-2016 13:27:31
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Instrument ID: A8 Start Date: 09/03/2016 15:38

Analysis Batch Number: 125915 End Date: 09/03/2016 21:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
IC 320-125915/4		09/03/2016 15:38	1	03SEP2016A_004_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/5		09/03/2016 15:46	1	03SEP2016A_005_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/6		09/03/2016 15:53	1	03SEP2016A_006_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/7		09/03/2016 16:01	1	03SEP2016A_007_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/8		09/03/2016 16:08	1	03SEP2016A_008_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/9		09/03/2016 16:16	1	03SEP2016A_009_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/10		09/03/2016 16:23	1	03SEP2016A_010_p1_e1.d	Acquity 2.1(mm)
ZZZZZ		09/03/2016 16:31	1		Acquity 2.1(mm)
ICV 320-125915/12		09/03/2016 16:38	1	03SEP2016A_012_p1_e1.d	Acquity 2.1(mm)
ZZZZZ		09/03/2016 16:46	1		Acquity 2.1(mm)
IC 320-125915/14		09/03/2016 16:53	1	03SEP2016A_014_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/15		09/03/2016 17:01	1	03SEP2016A_015_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/16		09/03/2016 17:08	1	03SEP2016A_016_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/17		09/03/2016 17:16	1	03SEP2016A_017_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/18		09/03/2016 17:23	1	03SEP2016A_018_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/19		09/03/2016 17:31	1	03SEP2016A_019_p1_e1.d	Acquity 2.1(mm)
IC 320-125915/20		09/03/2016 17:38	1	03SEP2016A_020_p1_e1.d	Acquity 2.1(mm)
ZZZZZ		09/03/2016 17:46	1		Acquity 2.1(mm)
ICV 320-125915/22		09/03/2016 17:53	1	03SEP2016A_022_p1_e1.d	Acquity 2.1(mm)
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ZZZZZ		09/03/2016 18:08	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 18:16	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 18:23	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 18:31	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 18:38	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 18:46	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 18:53	1		Acquity 2.1(mm)
CCV 320-125915/31		09/03/2016 19:01	1		Acquity 2.1(mm)
CCV 320-125915/32		09/03/2016 19:08	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 19:16	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 19:23	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 19:31	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 19:38	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 19:46	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 19:53	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 20:01	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 20:08	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 20:16	10		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Instrument ID: A8 Start Date: 09/03/2016 15:38

Analysis Batch Number: 125915 End Date: 09/03/2016 21:31

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		09/03/2016 20:23	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 20:31	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 20:38	1		Acquity 2.1(mm)
CCV 320-125915/45		09/03/2016 20:46	1		Acquity 2.1(mm)
CCV 320-125915/46		09/03/2016 20:53	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 21:01	1		Acquity 2.1(mm)
ZZZZZ		09/03/2016 21:08	10		Acquity 2.1(mm)
ZZZZZ		09/03/2016 21:16	1		Acquity 2.1(mm)
CCV 320-125915/50		09/03/2016 21:23	1		Acquity 2.1(mm)
CCV 320-125915/51		09/03/2016 21:31	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Instrument ID: A8 Start Date: 09/04/2016 12:38

Analysis Batch Number: 126120 End Date: 09/04/2016 17:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
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CCV 320-126120/2		09/04/2016 12:46	1		Acquity 2.1(mm)
CCV 320-126120/3		09/04/2016 12:53	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 13:01	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 13:08	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 13:16	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 13:23	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 13:31	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 13:38	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 13:46	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 13:54	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 14:01	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 14:08	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 14:16	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 14:24	1		Acquity 2.1(mm)
CCV 320-126120/16		09/04/2016 14:31	1	03SEP2016D_016_p1_e1.d	Acquity 2.1(mm)
CCV 320-126120/17		09/04/2016 14:39	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 14:46	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 14:54	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 15:01	1		Acquity 2.1(mm)
MB 320-123937/1-A		09/04/2016 15:09	1	03SEP2016D_021_p1_e1.d	Acquity 2.1(mm)
LCS 320-123937/2-A		09/04/2016 15:16	1	03SEP2016D_022_p1_e1.d	Acquity 2.1(mm)
320-21080-1		09/04/2016 15:24	1	03SEP2016D_023_p1_e1.d	Acquity 2.1(mm)
320-21080-2		09/04/2016 15:31	1	03SEP2016D_024_p1_e1.d	Acquity 2.1(mm)
320-21080-3		09/04/2016 15:39	1	03SEP2016D_025_p1_e1.d	Acquity 2.1(mm)
320-21080-4		09/04/2016 15:46	1	03SEP2016D_026_p1_e1.d	Acquity 2.1(mm)
ZZZZZ		09/04/2016 15:54	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 16:01	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 16:09	1		Acquity 2.1(mm)
CCV 320-126120/30		09/04/2016 16:16	1	03SEP2016D_030_p1_e1.d	Acquity 2.1(mm)
CCV 320-126120/31		09/04/2016 16:24	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 16:31	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 16:39	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 16:46	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 16:54	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 17:01	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 17:09	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 17:16	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 17:24	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 17:31	1		Acquity 2.1(mm)
ZZZZZ		09/04/2016 17:39	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Instrument ID: A8 Start Date: 09/04/2016 12:38

Analysis Batch Number: 126120 End Date: 09/04/2016 17:54

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 320-126120/42		09/04/2016 17:46	1	03SEP2016D_042_p1 e1.d	Acquity 2.1(mm)
CCV 320-126120/43		09/04/2016 17:54	1		Acquity 2.1(mm)

537 (Modified)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-21080-1

SDG No.:

Batch Number: 123937 Batch Start Date: 08/24/16 14:17 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 08/25/16 12:35

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00044	LCPFCSP 00049
MB 320-123937/1		3535, 537 (Modified)				500 mL	1.00 mL	50 uL	
LCS 320-123937/2		3535, 537 (Modified)				500 mL	1.00 mL	50 uL	20 uL
320-21080-A-1	PWSB2_0816	3535, 537 (Modified)	T	551.80 g	43.71 g	508.1 mL	1.00 mL	50 uL	
320-21080-A-2	POSTTB2_0816	3535, 537 (Modified)	T	564.96 g	44.28 g	520.7 mL	1.00 mL	50 uL	
320-21080-A-3	PWSF1_0816	3535, 537 (Modified)	T	553.70 g	42.94 g	510.8 mL	1.00 mL	50 uL	
320-21080-A-4	POSTTF1_0816	3535, 537 (Modified)	T	548.57 g	42.81 g	505.8 mL	1.00 mL	50 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1N NaOH/H2O: 645197
H2O ID	8/23/16
Hexane ID	0000135581
Manifold ID	1,2
Methanol ID	691859
Pipette ID	MDO5306
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	ERW
Solvent Lot #	710114
Solvent Name	0.3% NH4OH/MeOH
SOP Number	WS-LC-0025
SPE Cartridge Type	WAXC 500mg
Solid Phase Extraction Disk ID	002736075A

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
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West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 21044, 21080, 21084 Work List ID(s): 34269

Extraction Batch: 123451, 123937 Analysis Batch(es): 126120

Delivery Rank 4 Due Date: 9-10-16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 125915	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• $RF_{average}$ criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	✓	✓	
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.	✓	✓	
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits? NCM	✓	NCM	
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?			✓
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM# See below	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?			
5. Was QC Checker run for this job?			

**Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.*

1st Level (Analyst): JRB Date: 9-19-16

2nd Level Reviewer: [signature] Date: 9/23/16

NCMs: 64079, 64080, 64225

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 03SEP2016E_PFC Worklist Number: 34269
Instrument Name: A8 Chrom Method: PFC_A8_Full
Data Directory: \\ChromNA\Sacramento\ChromData\A8\20160907-34269.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 126120	LC PFC ICAL Raw Batch: 126121	LC PFAS ICAL Raw Batch: 126122
# 1 RB	# 1 RB	# 1 RB	
# 2 CCV L4	# 2 CCV L4	# 2 CCV L4	# 2 CCV L4
# 3 CCV L4 Add-on	# 3 CCV L4 Add-on 6:2 FTS	# 3 CCV L4 Add-on	# 3 CCV L4 Add-on
# 4 RB	# 4 RB	# 4 RB	
# 5 MB 320-123451/1-A	# 5 MB 320-123451/1-A		
# 6 LCS 320-123451/2-A	# 6 LCS 320-123451/2-A		
# 7 LCSD 320-123451/3-A	# 7 LCSD 320-123451/3-A		
# 8 320-21044-A-1-A	# 8 320-21044-A-1-A		
# 9 320-21044-A-2-A	# 9 320-21044-A-2-A		
#10 320-21044-A-3-A	#10 320-21044-A-3-A — needs 2X		
#11 320-21044-A-4-A	#11 320-21044-A-4-A — needs 5X		
#12 320-21044-A-5-A	#12 320-21044-A-5-A		
#13 320-21044-A-6-A	#13 320-21044-A-6-A		
#14 320-21044-A-7-A	#14 320-21044-A-7-A		
#15 RB	#15 RB	#15 RB	
#16 CCV L5	#16 CCV L5	#16 CCV L5	#16 CCV L5
#17 CCV L5 Add-on	#17 CCV L5 Add-on	#17 CCV L5 Add-on	#17 CCV L5 Add-on
#18 RB	#18 RB	#18 RB	
#19 320-21044-A-8-A	#19 320-21044-A-8-A		
#20 RB	#20 RB	#20 RB	
#21 MB 320-123937/1-A	#21 MB 320-123937/1-A		
#22 LCS 320-123937/2-A	#22 LCS 320-123937/2-A		
#23 320-21080-A-1-A	#23 320-21080-A-1-A		
#24 320-21080-A-2-A	#24 320-21080-A-2-A		
#25 320-21080-A-3-A	#25 320-21080-A-3-A		
#26 320-21080-A-4-A	#26 320-21080-A-4-A		
#27 320-21084-A-1-A	#27 320-21084-A-1-A — needs 5X		
#28 320-21084-A-2-A	#28 320-21084-A-2-A		
#29 RB	#29 RB	#29 RB	
#30 CCV L4	#30 CCV L4	#30 CCV L4	#30 CCV L4
#31 CCV L4 Add-on	#31 CCV L4 Add-on	#31 CCV L4 Add-on	#31 CCV L4 Add-on
#32 RB	#32 RB	#32 RB	
#33 320-21084-A-3-A	#33 320-21084-A-3-A — needs 10X		
#34 320-21084-A-4-A	#34 320-21084-A-4-A		
#35 320-21084-A-5-A	#35 320-21084-A-5-A		
#36 320-21084-A-6-A	#36 320-21084-A-6-A	need 5X	
#37 320-21084-A-6-B MS	#37 320-21084-A-6-B MS		
#38 320-21084-A-6-C MSD	#38 320-21084-A-6-C MSD		
#39 320-21084-A-7-A	#39 320-21084-A-7-A		
#40 320-21084-A-8-A	#40 320-21084-A-8-A		
#41 RB	#41 RB	#41 RB	
#42 CCV L5	#42 CCV L5	#42 CCV L5	#42 CCV L5
#43 CCV L5 Add-on	#43 CCV L5 Add-on	#43 CCV L5 Add-on	#43 CCV L5 Add-on
#44 RB	#44 RB	#44 RB	

#46

Aqueous Extraction Analysis Sheet

AB 9/4/16

(To Accompany Samples to Instruments)

Batch Number: 320-123937

Analyst: Reed, Jonathan E

Batch Open: 8/24/2016 2:17:53PM

Method Code: 320-3535_IVWT-320

Batch End: 8-25-16 12:35 P.m

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB-320-123937/1 N/A	N/A		500 mL				N/A	N/A	N/A		MB 320-123937/1-A
				1.00 mL								
2	LCS-320-123937/2 N/A	N/A		500 mL				N/A	N/A	N/A		LCS 320-123937/2-A
				1.00 mL								
3	320-21080-A-1 (PFC_IDA_DOD5)	N/A (320-21080-1)	551.80 g	508.1 mL				8/26/16	20_Days	4		320-21080-A-1-A
			43.71 g	1.00 mL								
	320-21080-A-2 (PFC_IDA_DOD5)	N/A (320-21080-1)	564.96 g	520.7 mL				8/26/16	20_Days	4		320-21080-A-2-A
			44.28 g	1.00 mL								
	320-21080-A-3 (PFC_IDA_DOD5)	N/A (320-21080-1)	553.70 g	510.8 mL				8/26/16	20_Days	4		320-21080-A-3-A
			42.94 g	1.00 mL								
6	320-21080-A-4 (PFC_IDA_DOD5)	N/A (320-21080-1)	548.57 g	505.8 mL				8/26/16	20_Days	4		320-21080-A-4-A
			42.81 g	1.00 mL								
7	320-21084-A-1 (PFC_IDA_DOD5)	N/A (320-21084-1)	554.24 g	509.8 mL				8/26/16	20_Days	4		320-21084-A-1-A
			44.44 g	1.00 mL								
8	320-21084-A-2 (PFC_IDA_DOD5)	N/A (320-21084-1)	559.79 g	515.5 mL				8/26/16	20_Days	4		320-21084-A-2-A
			44.34 g	1.00 mL								
9	320-21084-A-3 (PFC_IDA_DOD5)	N/A (320-21084-1)	558.18 g	514.3 mL				8/26/16	20_Days	4		320-21084-A-3-A
			43.93 g	1.00 mL								
10	320-21084-A-4 (PFC_IDA_DOD5)	N/A (320-21084-1)	557.80 g	512.3 mL				8/26/16	20_Days	4		320-21084-A-4-A
			45.53 g	1.00 mL								

2 Columns

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123937 Analyst: Reed, Jonathan E Batch Open: 8/24/2016 2:17:53PM

Method Code: 320-3535_IVWT-320 Batch End:

11	320-21084-A-5 (PFC_IDA_DOD5) 2 Columns	N/A (320-21084-1)	548.27 g 45.05 g	503.2 mL 1.00 mL				8/26/16	20_Days	4	
12	320-21084-A-6 (PFC_IDA_DOD5)	N/A (320-21084-1)	574.15 g 44.29 g	529.9 mL 1.00 mL				8/26/16	20_Days	4	
13	320-21084-A-6~MS (PFC_IDA_DOD5)	N/A (320-21084-1)	552.41 g 44.84 g	507.6 mL 1.00 mL				8/26/16	20_Days	4	
14	320-21084-A-6~MSD (PFC_IDA_DOD5)	N/A (320-21084-1)	546.21 g 44.24 g	502 mL 1.00 mL				8/26/16	20_Days	4	
15	320-21084-A-7 (PFC_IDA_DOD5)	N/A (320-21084-1)	564.44 g 42.88 g	521.6 mL 1.00 mL				8/26/16	20_Days	4	
16	320-21084-A-8 (PFC_IDA_DOD5)	N/A (320-21084-1)	532.33 g 43.91 g	488.4 mL 1.00 mL				8/26/16	20_Days	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123937 Analyst: Reed, Jonathan E Batch Open: 8/24/2016 2:17:53PM

Method Code: 320-3535_IVWT-320 Batch End:

Batch Notes

Manifold ID	1,2
Methanol ID	691859
Hexane ID	0000135581
Sodium Hypochlorite ID	NA
First Start time	NA
First End time	NA
Balance ID	QA-070
SPE Cartridge Type	WAXC 500mg
Solid Phase Extraction Disk ID	002736075A
H2O ID	8/23/16
Pipette ID	MDO5306
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	710114
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	ERW
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl ID	NA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123937 Analyst: Reed, Jonathan E Batch Open: 8/24/2016 2:17:53PM

Method Code: 320-3535_IVWT-320 Batch End:

SOP Number	WS-LC-0025
Batch Comment	0.1N NaOH/H2O: 645197

Comments

320-21080-A-1	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21080-A-2	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21080-A-3	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21080-A-4	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21084-A-1	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21084-A-2	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21084-A-3	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21084-A-4	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21084-A-5	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21084-A-6	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21084-A-6~MS	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21084-A-6~MSD	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21084-A-7	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21084-A-8	Method Comments:	Q5Rev111213_StdVarApp_30day disposal

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123937 Analyst: Reed, Jonathan E Batch Open: 8/24/2016 2:17:53PM

Method Code: 320-3535_IVWT-320 Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-123937/1	LCMPFCSU_00044	50 uL	1.00 mL	8/24/16	ERW 8/24/16
LCS 320-123937/2	LCMPFCSU_00044	50 uL	1.00 mL		
LCS 320-123937/2	LCPFCSP_00049	20 uL	1.00 mL		
320-21080-A-1	LCMPFCSU_00044	50 uL	1.00 mL		
320-21080-A-2	LCMPFCSU_00044	50 uL	1.00 mL		
320-21080-A-3	LCMPFCSU_00044	50 uL	1.00 mL		
320-21080-A-4	LCMPFCSU_00044	50 uL	1.00 mL		
320-21084-A-1	LCMPFCSU_00044	50 uL	1.00 mL		
320-21084-A-2	LCMPFCSU_00044	50 uL	1.00 mL		
320-21084-A-3	LCMPFCSU_00044	50 uL	1.00 mL		
320-21084-A-4	LCMPFCSU_00044	50 uL	1.00 mL		
320-21084-A-5	LCMPFCSU_00044	50 uL	1.00 mL		
320-21084-A-6	LCMPFCSU_00044	50 uL	1.00 mL		
320-21084-A-6 MS	LCMPFCSU_00044	50 uL	1.00 mL		
320-21084-A-6 MS	LCPFCSP_00049	20 uL	1.00 mL		
320-21084-A-6 MSD	LCMPFCSU_00044	50 uL	1.00 mL		
320-21084-A-6 MSD	LCPFCSP_00049	20 uL	1.00 mL		
320-21084-A-7	LCMPFCSU_00044	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123937 Analyst: Reed, Jonathan E Batch Open: 8/24/2016 2:17:53PM

Method Code: 320-3535_IVWT-320 Batch End:

320-21084-A-8	LCMPFCSU_00044	50 uL	1.00 mL	8/24/16	ERW 8/24/16

Other Reagents:

Reagent	Amount/Units	Lot#:

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Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): Test:

Earliest Holding Time: 8/25/16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	NA	NA
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	NA	NA
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	✓	✓
The pH is transcribed correctly in TALS	NA	NA
All additional information transcribed into TALS is correct and raw data is attached	✓	✓
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: NSH Date: 8-25-16

2nd Level Reviewer: EKW Date: 8/25/16

Comments:

44

AS 9/14/16

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123451

Analyst: Reed, Jonathan E

Batch Open: 8/22/2016 1:34:40PM

Method Code: 320-3535_IVWT-320

Batch End: 8/24/16 20:30

Solid-Phase Extraction (SPE)

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	GrossWt TareWt	InitAmnt FinAmnt	PHs Rcvd	PHs Adj1	PHs Adj2	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB-320-123451/1 N/A	N/A		500.00 mL				N/A	N/A	N/A		MB 320-123451/1-A
				1.00 mL								
2	LCS-320-123451/2 N/A	N/A		500.00 mL				N/A	N/A	N/A		LCS 320-123451/2-A
				1.00 mL								
3	LCSD-320-123451/3 N/A	N/A		500.00 mL				N/A	N/A	N/A		LCSD 320-123451/3-A
				1.00 mL								
	320-21044-A-1 (PFC_IDA_DOD5)	N/A (320-21044-1)	595.61 g	551.1 mL				8/25/16	20_Days	4		320-21044-A-1-A
			44.52 g	1.00 mL								
	320-21044-A-2 (PFC_IDA_DOD5)	N/A (320-21044-1)	581.60 g	536.9 mL				8/25/16	20_Days	4		320-21044-A-2-A
			44.75 g	1.00 mL								
6	320-21044-A-3 (PFC_IDA_DOD5)	N/A (320-21044-1)	578.54 g	533.4 mL				8/25/16	20_Days	4		320-21044-A-3-A
			45.12 g	1.00 mL								
7	320-21044-A-4 (PFC_IDA_DOD5)	N/A (320-21044-1)	569.05 g	525.6 mL				8/25/16	20_Days	4		320-21044-A-4-A
			43.45 g	1.00 mL								
8	320-21044-A-5 (PFC_IDA_DOD5)	N/A (320-21044-1)	571.85 g	527.5 mL				8/25/16	20_Days	4		320-21044-A-5-A
			44.39 g	1.00 mL								
9	320-21044-A-6 (PFC_IDA_DOD5)	N/A (320-21044-1)	575.31 g	530.3 mL				8/25/16	20_Days	4		320-21044-A-6-A
			45.06 g	1.00 mL								
10	320-21044-A-7 (PFC_IDA_DOD5)	N/A (320-21044-1)	572.97 g	528.1 mL				8/25/16	20_Days	4		320-21044-A-7-A
			44.83 g	1.00 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123451 Analyst: Reed, Jonathan E Batch Open: 8/22/2016 1:34:40PM

Method Code: 320-3535_IVWT-320 Batch End:

11	320-21044-A-8 (PFC_IDA_DOD5)	N/A (320-21044-1)	579.08 g 45.28 g	533.8 mL 1.00 mL				8/25/16	20_Days	4	

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123451
Analyst: Reed, Jonathan E
Batch Open: 8/22/2016 1:34:40PM

Method Code: 320-3535_IVWT-320
Batch End:

Batch Notes

Manifold ID	3, 4
Methanol ID	691859
Hexane ID	0000135581
Sodium Hypochlorite ID	NA
First Start time	NA
First End time	NA
Balance ID	QA-070
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	002736075A
H2O ID	8/22/16
Pipette ID	MD05306
Solvent Name	0.3% NH4OH/MeOH
Solvent Lot #	710114
Analyst ID - Reagent Drop	JER
Analyst ID - SU Reagent Drop	JER
Analyst ID - SU Reagent Drop Witness	ERW
Acid Name	NA
Acid ID	NA
Reagent ID	NA
Reagent Lot Number	NA
NaCl ID	NA

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123451 Analyst: Reed, Jonathan E Batch Open: 8/22/2016 1:34:40PM

Method Code: 320-3535_IVWT-320 Batch End:

SOP Number	WS-LC-0025
Batch Comment	0.1N NaOH:645197

Comments

320-21044-A-1	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21044-A-2	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21044-A-3	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21044-A-4	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21044-A-5	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21044-A-6	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21044-A-7	Method Comments:	Q5Rev111213_StdVarApp_30day disposal
320-21044-A-8	Method Comments:	Q5Rev111213_StdVarApp_30day disposal

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123451 Analyst: Reed, Jonathan E Batch Open: 8/22/2016 1:34:40PM

Method Code: 320-3535_IVWT-320 Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-123451/1	LCMPFCSU_00043	50 uL	1.00 mL	8/22/16	ERW 8/22/16
LCS 320-123451/2	LCMPFCSU_00043	50 uL	1.00 mL		
LCS 320-123451/2	LCPFCSP_00053	40 uL	1.00 mL		
LCSD 320-123451/3	LCMPFCSU_00043	50 uL	1.00 mL		
LCSD 320-123451/3	LCPFCSP_00053	40 uL	1.00 mL		
320-21044-A-1	LCMPFCSU_00043	50 uL	1.00 mL		
320-21044-A-2	LCMPFCSU_00043	50 uL	1.00 mL		
320-21044-A-3	LCMPFCSU_00043	50 uL	1.00 mL		
320-21044-A-4	LCMPFCSU_00043	50 uL	1.00 mL		
320-21044-A-5	LCMPFCSU_00043	50 uL	1.00 mL		
320-21044-A-6	LCMPFCSU_00043	50 uL	1.00 mL		
320-21044-A-7	LCMPFCSU_00043	50 uL	1.00 mL		
320-21044-A-8	LCMPFCSU_00043	50 uL	1.00 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-123451 Analyst: Reed, Jonathan E Batch Open: 8/22/2016 1:34:40PM

Method Code: 320-3535_IVWT-320 Batch End:

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 320-123451 Test: PFC-L

Earliest Holding Time: 8/24/16

Sample List Tab	1st Level Reviewer	2nd Level Reviewer
Samples identified to the correct method	✓	✓
All necessary NCMs filed (including holding time)	✓	✓
Method/sample/login/QAS checked and correct	✓	✓
Worksheet Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All samples properly preserved	NA ✓	NA ✓
Weights in anticipated range and not targeted		
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and Cl Check)	✓	✓
The pH is transcribed correctly in TALS	NA ✓	NA ✓
All additional information transcribed into TALS is correct and raw data is attached	✓	
Comments are transcribed correctly in TALS	✓	✓
Reagents Tab	**1st Level Reviewer**	**2nd Level Reviewer**
All necessary reagents not expired and entered into TALS	✓	✓
All spike amounts correct and added to necessary samples and QC	✓	✓
Batch Information	**1st Level Reviewer**	**2nd Level Reviewer**
Date and time accurate and entered into TALS correctly	✓	✓
All necessary 'batch information' complete and entered into TALS correctly	✓	✓

1st Level Reviewer: [signature] Date: 8/24/16

2nd Level Reviewer: HJA Date: 8-25-16

Comments:

Shipping and Receiving Documents

TestAmerica Denver
4955 Yarrow Street
Arvada, CO 80002
Phone (303) 736-0100 Fax (303) 431-7171

Chain of Custody Record

Field Services Edison

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Client Information	Sampler: Tom Lesinski	Lab PM: Johnston, Michelle A	Carrier Tracking No(s):	COC No: 280-48902-18075.1
Client Contact: Mike Dryden	Phone:	E-Mail: michelle.johnston@testamericainc.com		Page: Page of
Company: Earth Toxics, Inc				Job #:
Address: PO BOX 3382	Due Date Requested:			
City: Logan	TAT Requested (days): 7 DAY			
State, Zip: UT, 84321				
Phone:	PO #: Purchase Order Requested			
Email: mdryden@earthtoxics.com	WO #:			
Project Name: Ensafe-NWS - Earle, NJ PFCs Potable Water	Project #: 28014493			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2SO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - ph 4-5
Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	537 MOD (PFOS, PFOA, PFNA, PFHxS, PFHpA & PFBS) Ship Direct to TA - Sacramento	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N		
PWSB2_0816	8-18-16	0841	G	W			X	2	
POSTTB2_0816	8-18-16	0924	G	W			X	2	
PWSF1_0816	8-18-16	1011	G	W			X	2	
POSTTF1_0816	8-18-16	1041	G	W			X	2	

320-21080 Chain of Custody

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Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements: SHIP DIRECT TO TA - SACRAMENTO

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	8-18-16 1320	TestAmerica		8/18/16 1320	TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	8/18/16 1800	TAL		8/19/16 0940	TAL
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.3

Login Sample Receipt Checklist

Client: Earth Toxics, Inc

Job Number: 320-21080-1

Login Number: 21080
List Number: 1
Creator: Nelson, Kym D

List Source: TestAmerica Sacramento

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
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 <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Sample	Sample Name	Specific Method	CAS Number	Analyte	Result	Units	Qualifier	Limit	Reports To	Dilution	Result Basis	Batch	Sampled	Prepared	Analyzed	Analysis
320-21080-1	PWSB2_0816	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	ng/L	U	0.90	MDL	1.0	Total	126120	8/18/2016 8:41 AM	8/24/2016 2:17 PM	9/4/2016 3:24 PM	Perfluorinated Hydrocarbons
320-21080-1	PWSB2_0816	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	ng/L	U	0.79	MDL	1.0	Total	126120	8/18/2016 8:41 AM	8/24/2016 2:17 PM	9/4/2016 3:24 PM	Perfluorinated Hydrocarbons
320-21080-1	PWSB2_0816	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	ng/L	U	0.86	MDL	1.0	Total	126120	8/18/2016 8:41 AM	8/24/2016 2:17 PM	9/4/2016 3:24 PM	Perfluorinated Hydrocarbons
320-21080-1	PWSB2_0816	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.0	ng/L	U	0.64	MDL	1.0	Total	126120	8/18/2016 8:41 AM	8/24/2016 2:17 PM	9/4/2016 3:24 PM	Perfluorinated Hydrocarbons
320-21080-1	PWSB2_0816	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	ng/L	U	1.3	MDL	1.0	Total	126120	8/18/2016 8:41 AM	8/24/2016 2:17 PM	9/4/2016 3:24 PM	Perfluorinated Hydrocarbons
320-21080-1	PWSB2_0816	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.0	ng/L	U M	0.74	MDL	1.0	Total	126120	8/18/2016 8:41 AM	8/24/2016 2:17 PM	9/4/2016 3:24 PM	Perfluorinated Hydrocarbons
320-21080-2	POSTTB2_0816	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9	ng/L	U	0.88	MDL	1.0	Total	126120	8/18/2016 9:21 AM	8/24/2016 2:17 PM	9/4/2016 3:31 PM	Perfluorinated Hydrocarbons
320-21080-2	POSTTB2_0816	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	1.9	ng/L	U	0.77	MDL	1.0	Total	126120	8/18/2016 9:21 AM	8/24/2016 2:17 PM	9/4/2016 3:31 PM	Perfluorinated Hydrocarbons
320-21080-2	POSTTB2_0816	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.9	ng/L	U	0.84	MDL	1.0	Total	126120	8/18/2016 9:21 AM	8/24/2016 2:17 PM	9/4/2016 3:31 PM	Perfluorinated Hydrocarbons
320-21080-2	POSTTB2_0816	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	1.9	ng/L	U	0.63	MDL	1.0	Total	126120	8/18/2016 9:21 AM	8/24/2016 2:17 PM	9/4/2016 3:31 PM	Perfluorinated Hydrocarbons
320-21080-2	POSTTB2_0816	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	ng/L	U M	1.2	MDL	1.0	Total	126120	8/18/2016 9:21 AM	8/24/2016 2:17 PM	9/4/2016 3:31 PM	Perfluorinated Hydrocarbons
320-21080-2	POSTTB2_0816	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	1.9	ng/L	U M	0.72	MDL	1.0	Total	126120	8/18/2016 9:21 AM	8/24/2016 2:17 PM	9/4/2016 3:31 PM	Perfluorinated Hydrocarbons
320-21080-3	PWSF1_0816	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	ng/L	U	0.90	MDL	1.0	Total	126120	8/18/2016 10:11 AM	8/24/2016 2:17 PM	9/4/2016 3:39 PM	Perfluorinated Hydrocarbons
320-21080-3	PWSF1_0816	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	ng/L	U	0.79	MDL	1.0	Total	126120	8/18/2016 10:11 AM	8/24/2016 2:17 PM	9/4/2016 3:39 PM	Perfluorinated Hydrocarbons
320-21080-3	PWSF1_0816	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	ng/L	U	0.85	MDL	1.0	Total	126120	8/18/2016 10:11 AM	8/24/2016 2:17 PM	9/4/2016 3:39 PM	Perfluorinated Hydrocarbons
320-21080-3	PWSF1_0816	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.0	ng/L	U	0.64	MDL	1.0	Total	126120	8/18/2016 10:11 AM	8/24/2016 2:17 PM	9/4/2016 3:39 PM	Perfluorinated Hydrocarbons
320-21080-3	PWSF1_0816	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.9	ng/L	U M	1.2	MDL	1.0	Total	126120	8/18/2016 10:11 AM	8/24/2016 2:17 PM	9/4/2016 3:39 PM	Perfluorinated Hydrocarbons
320-21080-3	PWSF1_0816	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.0	ng/L	U M	0.73	MDL	1.0	Total	126120	8/18/2016 10:11 AM	8/24/2016 2:17 PM	9/4/2016 3:39 PM	Perfluorinated Hydrocarbons
320-21080-4	POSTTF1_0816	PFC_IDA_DOD5	375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.0	ng/L	U	0.91	MDL	1.0	Total	126120	8/18/2016 10:41 AM	8/24/2016 2:17 PM	9/4/2016 3:46 PM	Perfluorinated Hydrocarbons
320-21080-4	POSTTF1_0816	PFC_IDA_DOD5	375-85-9	Perfluoroheptanoic acid (PFHpA)	2.0	ng/L	U	0.79	MDL	1.0	Total	126120	8/18/2016 10:41 AM	8/24/2016 2:17 PM	9/4/2016 3:46 PM	Perfluorinated Hydrocarbons
320-21080-4	POSTTF1_0816	PFC_IDA_DOD5	355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.0	ng/L	U	0.86	MDL	1.0	Total	126120	8/18/2016 10:41 AM	8/24/2016 2:17 PM	9/4/2016 3:46 PM	Perfluorinated Hydrocarbons
320-21080-4	POSTTF1_0816	PFC_IDA_DOD5	375-95-1	Perfluorononanoic acid (PFNA)	2.0	ng/L	U	0.65	MDL	1.0	Total	126120	8/18/2016 10:41 AM	8/24/2016 2:17 PM	9/4/2016 3:46 PM	Perfluorinated Hydrocarbons
320-21080-4	POSTTF1_0816	PFC_IDA_DOD5	1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.0	ng/L	U M	1.3	MDL	1.0	Total	126120	8/18/2016 10:41 AM	8/24/2016 2:17 PM	9/4/2016 3:46 PM	Perfluorinated Hydrocarbons
320-21080-4	POSTTF1_0816	PFC_IDA_DOD5	335-67-1	Perfluorooctanoic acid (PFOA)	2.0	ng/L	U	0.74	MDL	1.0	Total	126120	8/18/2016 10:41 AM	8/24/2016 2:17 PM	9/4/2016 3:46 PM	Perfluorinated Hydrocarbons

Naval Installation Restoration Information Solution (NIRIS)
Environmental Restoration Program (ERP) Records
Transmittal Form

Purpose

Complete one copy of this form to accompany the paper and electronic versions of Environmental Restoration Program (ERP) records submitted for inclusion to NIRIS.

Submitted By:

Name: Jennifer O'Keefe

Organization: Resolution Consultants

Email: jokeefe@ensafe.com **Phone:** 609-610-2721

Record Information:

Installation: NWS Earle

Program: (•) ERN ( ) BRAC **Supporting:** [ ] MRP [ ] LUC [ ] RAD [ ] POL

Document Title: Data Validation Report

AOC, SITE, SWMU, UST, UXO: Site 46 Military Sealift Command Fire School

Sample Delivery Groups (SDGs): 320-21044-1, 320-21084-1 and 320-21080-1

Document Date: August 2016 **Number of Pages:** 8

Contract Number: N62470-11-D-8013 **CTO/DO Number:** WE09

Author/Affiliation: Jennifer O'Keefe/Resolution Consultants

Distribution/Availability Statement: [■] A [ ] B [ ] C [ ] D [ ] E [ ] F

Sensitive Content ( ) Yes (•) No **Cite Pages:**

Recommended File Type: ( ) Administrative Record ( ) Post Decision (•) Site File

Notes:

DATA VALIDATION REPORT

Site Name:	Naval Weapons Station Earle, Colts Neck, New Jersey, Site 46 — Military Sealift Command Firefighting School
Sample Date:	17 and 18 August 2016
Laboratory:	Test America, Sacramento, California
Sample Delivery Groups:	320-21044-1, 320-21084-1, and 320-21080-1
Matrix:	Groundwater and Potable Water
Data Quality Level:	Stage 4, Electronic and Manual
Analysis:	Select Perfluorinated Compounds (PFCs) via Method 537 Modified

This report summarizes data review findings for groundwater and potable water samples collected in August 2016 using the following reference documents:

- *Internal Draft Perfluorinated Compound Groundwater Investigation Sampling and Analysis Plan, Site 46 Military Sealift Command, Naval Weapons Station Earle Newport, Colts Neck, New Jersey*, Resolution Consultants. (December 2015).

- Laboratory standard operating procedure (SOP) *Perfluorinated Compounds (PFCs) in Water, Soils, Sediments, and Tissue [Method 37 Modified],* Test America, Sacramento, California, WS-LC-0025, Revision 1.9. (May 2016).

- *Contract Laboratory Program National Functional Guidelines for Chlorinated Dioxin/Furan Data review,* United States Environmental Protection Agency. (September 2011).

- *Department of Defense Quality Systems Manual for Environmental Laboratories*, Version 5.0. (July 2013).

Validation was performed on groundwater and potable water and quality control (QC) samples, summarized in Attachment A, Table A-1. Samples discussed in this validation report were analyzed and reported as definitive data. A full deliverable data packages, QC summaries and raw data, were submitted for data review.

The data were evaluated based on the following review elements:

* Data completeness
* Sample receipt and preservation
* Initial calibration
* Initial calibration verification
* Continuing calibration verification
* Laboratory control sample/laboratory control sample duplicate results
* Holding times
* Isotope dilution recoveries
* Laboratory method blanks
  Blanks (equipment and field)
* Field duplicate precision
  Matrix spike/matrix spike duplicates (MS/MSDs)
* Sample result transcriptions/recalculations

Acceptable data parameters for which all criteria were met or not qualified, as indicated above with an asterisk (*), are not discussed further.

Blanks

Blanks help determine how much, if any, contamination was introduced in the laboratory or the field. All results associated with a particular blank were evaluated to determine whether there was an inherent variability in the data, or if a problem was an isolated occurrence that did not affect the data. For this project, equipment blanks were collected by transferring laboratory-supplied water over a cleaned sampling device to assess potential cross-contamination that could potentially affect the quality of the associated samples. Field blanks were collected to assess potential ambient condition cross-contamination that could potentially affect the quality of the associated samples. The field blanks consisted of laboratory blank water bottles that were opened in the field and transferred into another container at each sampling location.

All laboratory blanks were free from contamination.

Equipment Blanks

EB081716 contained perfluorooctanesulfonic acid (PFOS) at a concentration of 1.3 nanograms per liter (ng/L). PFOS was detected below the limit of quantitation (LOQ) in MCFSMW-14_0816 and was qualified undetected "U" due to potential cross-contamination.

Field Blanks

FB081716 contained perfluorohexanesulfonic acid (PFHxS), PFOS, and perfluorooctanoic acid (PFOA) at concentrations of 2.4 ng/L, 2.9 ng/L, and 2.7 ng/L; respectively. PFOS was detected below the LOQ and were qualified as undetected "U" in groundwater sample MCFSMW-14_0816 due to potential cross-contamination. PFOA was detected below the LOQ and was qualified as undetected "U" in groundwater sample MCFSMW-14_0816 due to potential cross-contamination.

Matrix Spikes/Matrix Spike Duplicates

MS/MSDs are generated to provide information about the effect of each sample matrix on the sample preparation and the measurement methodology. MS/MSD percent recoveries (%Rs) assess the effect of the sample matrix on the accuracy of the analytical results. %Rs above the laboratory control limit could indicate a potential high result bias while %Rs below QC limits could indicate a potential low result bias. The relative percent difference (RPD) between the MS and MSD results is evaluated to assess sample precision. All RPDs were within QC limits.

Groundwater sample MCFSMW-16_0816 was spiked by the laboratory to assess accuracy and precision. PFOA (148%), PFOS (223%), and PFHxS (156%) %Rs was outside the 60-140% QC limit, indicating a potential high result bias. PFOA was qualified estimated "J" in MCFSMW-16_0816. PFOS and PFHxS groundwater sample result was greater than four times the added spike amount; therefore, no qualification was performed. MS/MSD qualifications performed were limited to the native (unspiked) sample and not the entire matrix batch.

Overall Assessment

The data from SDG 320-21044-1, 320-21084-1 and 320-21080-1 were reviewed independently from the laboratory to assess data quality. Results qualified as estimated may be high or low, but the data are usable for their intended purpose. The remaining results were acceptable without qualification; therefore, the data are usable for their intended purpose, according to U.S. Environmental Protection Agency and Department of Defense guidelines. Attachment B provides final results after data review.

Attachment A
Sample and Analysis Summary

Table A-1
Sample Summary

Sample Delivery Group	Lab ID	Sample ID	Location	Sample Date	Matrix
320210441	320-21044-1	FB081716		8/17/2016	Field Blank
320210441	320-21044-2	EB081716		8/17/2016	Equipment Blank
320210441	320-21044-3	MCFSMW-3_0816	MCFSMW03	8/17/2016	Groundwater
320210441	320-21044-4	46MW05_0816	46MW05	8/17/2016	Groundwater
320210441	320-21044-5	46MW03_0816	46MW03	8/17/2016	Groundwater
320210441	320-21044-6	MCFSMW-14_0816	MCFSMW14	8/17/2016	Groundwater
320210441	320-21044-7	MCFSMW-4_0816	MCFSMW04	8/17/2016	Groundwater
320210441	320-21044-8	MCFSMW-5_0816	MCFSMW05	8/17/2016	Groundwater
320210841	320-21084-1	46MW04_0816	46MW04	8/18/2016	Groundwater
320210841	320-21084-2	46MW02_0816	46MW02	8/18/2016	Groundwater
320210841	320-21084-3	46MW01_0816	46MW01	8/18/2016	Groundwater
320210841	320-21084-4	MCFSMW-17_0816	MCFSMW17	8/18/2016	Groundwater
320210841	320-21084-5	MCFSMW-17_0816DUP	MCFSMW17	8/18/2016	Duplicate of MCFSMW-17_0816
320210841	320-21084-6	MCFSMW-16_0816	MCFSMW16	8/18/2016	Groundwater
320210841	320-21084-7	FB081816		8/18/2016	Field Blank
320210841	320-21084-8	EB081816		8/18/2016	Equipment Blank
320210801	320-21080-1	PWSB2_0816	PWSB2	8/18/2016	Potable Water
320210801	320-21080-2	POSTTB2_0816	POSTTB2	8/18/2016	Potable Water
320210801	320-21080-3	PWSF1_0816	PWSF1	8/18/2016	Potable Water
320210801	320-21080-4	POSTTF1_0816	POSTTF1	8/18/2016	Potable Water

Notes:
All samples were analyzed via laboratory standard operating procedure *Perfluorinated Compounds (PFCs) in Water, Soils, Sediments, and Tissue [Method 37 Modified],* Test America, Sacramento, California, WS-LC-0025, Revision 1.9, (May 2016) for the following select list of analytes: Perfluorobutanesulfonic Acid (PFBS), Perfluoroheptanoic Acid (PFHPA), Perfluorohexanesulfonic Acid (PFHXS), Perfluorononanoic Acid (PFNA), Perfluorooctane Sulfonic Acid (PFOS), and Perfluorooctanoic Acid (PFOA).

Attachment B

Final Validated Results after Data Review

Table B-1
Perfluorinated Compound Results: Groundwater – August 2016

				Sample Delivery Group			320210441			320210441			320210441			320210441		
				Lab ID			320-21044-1			320-21044-2			320-21044-3			320-21044-4		
				Sample ID			FB081716			EB081716			MCFSMW-3_0816			46MW05_0816		
				Sample Date			8/17/2016			8/17/2016			8/17/2016			8/17/2016		
				Sample Type			Field Blank			Equipment Blank			Groundwater			Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
TA_WS-LC-0025	PERFLUOROBUTANESULFONIC ACID (PFBS)	375-73-5	NG_L	1.8	U		1.9	U		31			47		
TA_WS-LC-0025	PERFLUOROHEPTANOIC ACID (PFHPA)	375-85-9	NG_L	2.4			1.9	U		26			18		
TA_WS-LC-0025	PERFLUOROHEXANESULFONIC ACID (PFHXS)	355-46-4	NG_L	2.4			1.9	U		790			520		
TA_WS-LC-0025	PERFLUORONONANOIC ACID (PFNA)	375-95-1	NG_L	1.8	U		1.9	U		8.7			1	J	
TA_WS-LC-0025	PERFLUOROOCTANE SULFONIC ACID (PFOS)	1763-23-1	NG_L	2.9	J		1.3	J		650			1300		
TA_WS-LC-0025	PERFLUOROOCTANOIC ACID (PFOA)	335-67-1	NG_L	2.7			1.9	U		100			82		

				Sample Delivery Group			320210441			320210441			320210441			320210441		
				Lab ID			320-21044-5			320-21044-6			320-21044-7			320-21044-8		
				Sample ID			46MW03_0816			MCFSMW-14_0816			MCFSMW-4_0816			MCFSMW-5_0816		
				Sample Date			8/17/2016			8/17/2016			8/17/2016			8/17/2016		
				Sample Type			Groundwater			Groundwater			Groundwater			Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
TA_WS-LC-0025	PERFLUOROBUTANESULFONIC ACID (PFBS)	375-73-5	NG_L	1.9	U		1.9	U		26			12		
TA_WS-LC-0025	PERFLUOROHEPTANOIC ACID (PFHPA)	375-85-9	NG_L	1.9	U		1.9	U		77			13		
TA_WS-LC-0025	PERFLUOROHEXANESULFONIC ACID (PFHXS)	355-46-4	NG_L	3.4			5			200			45		
TA_WS-LC-0025	PERFLUORONONANOIC ACID (PFNA)	375-95-1	NG_L	1.9	U		1.9	U		21			0.92	J	
TA_WS-LC-0025	PERFLUOROOCTANE SULFONIC ACID (PFOS)	1763-23-1	NG_L	6.1			2.8	U	be,bf	69			22		
TA_WS-LC-0025	PERFLUOROOCTANOIC ACID (PFOA)	335-67-1	NG_L	1.9	U		1.9	U	bf	160			27		

				Sample Delivery Group			320210841			320210841			320210841			320210841		
				Lab ID			320-21084-1			320-21084-2			320-21084-3			320-21084-4		
				Sample ID			46MW04_0816			46MW02_0816			46MW01_0816			MCFSMW-17_0816		
				Sample Date			8/18/2016			8/18/2016			8/18/2016			8/18/2016		
				Sample Type			Groundwater			Groundwater			Groundwater			Groundwater		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
TA_WS-LC-0025	PERFLUOROBUTANESULFONIC ACID (PFBS)	375-73-5	NG_L	27			41			6.8			4.1		
TA_WS-LC-0025	PERFLUOROHEPTANOIC ACID (PFHPA)	375-85-9	NG_L	16			22			0.95	J		11		
TA_WS-LC-0025	PERFLUOROHEXANESULFONIC ACID (PFHXS)	355-46-4	NG_L	500			190			110			23		
TA_WS-LC-0025	PERFLUORONONANOIC ACID (PFNA)	375-95-1	NG_L	21			13			3.9			2.2	J	
TA_WS-LC-0025	PERFLUOROOCTANE SULFONIC ACID (PFOS)	1763-23-1	NG_L	1900			300			2900			36		
TA_WS-LC-0025	PERFLUOROOCTANOIC ACID (PFOA)	335-67-1	NG_L	42			47			1.9	J		41		

Table B-1
Perfluorinated Compound Results: Groundwater – August 2016 (continued)

		Sample Delivery Group		320210841			320210841			320210841			320210841		
		Lab ID		320-21084-5			320-21084-6			320-21084-7			320-21084-8		
		Sample ID		MCFSMW-17_0816DUP			MCFSMW-16_0816			FB081816			EB081816		
		Sample Date		8/18/2016			8/18/2016			8/18/2016			8/18/2016		
		Sample Type		Duplicate of MCFSMW-17_0816			Groundwater			Field Blank			Equipment Blank		
Method	**Analyte**	**CAS No**	**Units**	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC	Result	Qual	RC
TA_WS-LC-0025	PERFLUOROBUTANESULFONIC ACID (PFBS)	375-73-5	NG_L	3.9			22			1.9	U		2	U	
TA_WS-LC-0025	PERFLUOROHEPTANOIC ACID (PFHPA)	375-85-9	NG_L	10			22			1.9	U		2	U	
TA_WS-LC-0025	PERFLUOROHEXANESULFONIC ACID (PFHXS)	355-46-4	NG_L	26			190			1.9	U		2	U	
TA_WS-LC-0025	PERFLUORONONANOIC ACID (PFNA)	375-95-1	NG_L	1.9	J		5			1.9	U		2	U	
TA_WS-LC-0025	PERFLUOROOCTANE SULFONIC ACID (PFOS)	1763-23-1	NG_L	32			1700	J		2.8	J		1.6	J	
TA_WS-LC-0025	PERFLUOROOCTANOIC ACID (PFOA)	335-67-1	NG_L	41			110	J	m	1.9	U		2	U	

Notes:
NG_L = Nanograms per liter
Qual = Final qualifier
RC = Data qualification reason code
U = ***Undetected*** — The parameter was analyzed but undetected.
J = ***Estimated Value*** — One or more quality control parameters were outside control limits or the analyte concentration was less than the limit of quantitation.

Qualification Reason Codes
bf = Result qualified as undetected due to field-derived blank results.
be = Results qualified as undetected due to equipment blank results.
m = Results qualified as estimated due to matrix spike/matrix spike duplicate.

Table B-2
Perfluorinated Compound Results: Potable Water – August 2016

			Sample Delivery Group	320210801	320210801	320210801	320210801
			Lab ID	320-21080-1	320-21080-2	320-21080-3	320-21080-4
			Sample ID	PWSB2_0816	POSTTB2_0816	PWSF1_0816	POSTTF1_0816
			Sample Date	8/18/2016	8/18/2016	8/18/2016	8/18/2016
			Sample Type	Potable Water	Potable Water	Potable Water	Potable Water
Method	**Analyte**	**CAS No**	**Units**				
TA_WS-LC-0025	PERFLUOROBUTANESULFONIC ACID (PFBS)	375-73-5	NG_L	2 U	1.9 U	2 U	2 U
TA_WS-LC-0025	PERFLUOROHEPTANOIC ACID (PFHPA)	375-85-9	NG_L	2 U	1.9 U	2 U	2 U
TA_WS-LC-0025	PERFLUOROHEXANESULFONIC ACID (PFHXS)	355-46-4	NG_L	2 U	1.9 U	2 U	2 U
TA_WS-LC-0025	PERFLUORONONANOIC ACID (PFNA)	375-95-1	NG_L	2 U	1.9 U	2 U	2 U
TA_WS-LC-0025	PERFLUOROOCTANE SULFONIC ACID (PFOS)	1763-23-1	NG_L	3 U	2.9 U	2.9 U	3 U
TA_WS-LC-0025	PERFLUOROOCTANOIC ACID (PFOA)	335-67-1	NG_L	2 U	1.9 U	2 U	2 U

Notes:
NG_L = Nanograms per liter
U = ***Undetected*** — The parameter was analyzed but undetected.

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE	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_GRP_DESC
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	POSTTF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	POSTTF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSF1	DW	Domestic well	575667	509028	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSF1_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds
MID_ATLANTIC	EARLE_NWS	320210801	SITE 00046	SITE 00046	PWSB2	DW	Domestic well	575712	509129	N62470-11-D-8013	WE09	RESOLUTION CONSULTANTS	PWSB2_0816	WP	Drinking water	18-Aug-16	Perfluoroalkyl Compounds