NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Level 2 Laboratory Report, Level 4 Laboratory Report, Electronic Data Deliverable, Data Validation Report, Sample Location Report, SDG J235421

Bay Head Road Annex
NSWC Annapolis
Maryland

December 2020

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

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TestAmerica Job ID: 320-23542-1
Client Project/Site: Former Bay Head Road Annex (RFP JU06-01)
Revision: 1

For:
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Attn: Kurt Vangelder

Authorized for release by:
12/8/2016 2:40:27 PM

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Definitions/Glossary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23542-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Qualifiers

LCMS

Qualifier	Qualifier Description
M	Manual integrated compound.
E	Result exceeded calibration range.
U	Undetected at the Limit of Detection.
D	The reported value is from a dilution.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
Q	One or more quality control criteria failed.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

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)

Job ID: 320-23542-1

Laboratory: TestAmerica Sacramento

Narrative

CASE NARRATIVE

Client: AECOM Technical Services Inc.

Project: Former Bay Head Road Annex (RFP JU06-01)

Report Number: 320-23542-1

Revision - December 8, 2016
Report revised due to incorrectly applied B flags on the water samples.

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.

TestAmerica West Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

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.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 11/15/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.0 C.

Receipt Exceptions

Listed samples do not include a collection date on the chain of custody.

DPT-16-01-GW-17-21 (320-23542-1), DPT-16-05-GW-17-21 (320-23542-2), DPT-16-05-GW-17-21-MS (320-23542-2[MS]), DPT-16-05-GW-17-21-MSD (320-23542-2[MSD]), DPT-16-34-SO-14-15 (320-23542-3) and DPT-16-34-GW-31-35 (320-23542-4)

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

Job ID: 320-23542-1 (Continued)

Laboratory: TestAmerica Sacramento (Continued)

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: DPT-16-01-GW-17-21 (320-23542-1), DPT-16-05-GW-17-21 (320-23542-2), DPT-16-05-GW-17-21-MS (320-23542-2[MS]), DPT-16-05-GW-17-21-MSD (320-23542-2[MSD]), DPT-16-34-GW-31-35 (320-23542-4), (320-23542-A-3-B MS) and (320-23542-A-3-C MSD). These analytes have been qualified; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

The Isotope Dilution Analyte (IDA) recovery for 18O2 PFHxS is above the method recommended limit for the following samples: DPT-16-05-GW-17-21 (320-23542-2) and DPT-16-05-GW-17-21-MS (320-23542-2[MS]). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Due to the high concentration of Perfluorooctanoic acid (PFOA) and Perfluorooctane Sulfonate (PFOS), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-138217 and analytical batch 320-138814 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

The matrix spike (MS) recovery for preparation batch 320-138217 and analytical batch 320-138814 was outside control limits for Perfluorobutanesulfonic acid (PFBS). Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-138291 and analytical batch 320-138814 were outside control limits for Perfluorooctanoic acid (PFOA). Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Due to the high concentration of Perfluorooctane Sulfonate (PFOS), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-138291 and analytical batch 320-138814 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

Due to the excessive amount of sediment in the sample bottles, the aqueous portion of these samples was decanted to new bottles prior to spiking and the extraction. DPT-16-01-GW-17-21 (320-23542-1), DPT-16-05-GW-17-21 (320-23542-2), DPT-16-05-GW-17-21-MS (320-23542-2[MS]), DPT-16-05-GW-17-21-MSD (320-23542-2[MSD]) and DPT-16-34-GW-31-35 (320-23542-4)

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

PERCENT SOLIDS

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

Detection Summary

Client: AECOM Technical Services Inc.
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23542-1

Client Sample ID: DPT-16-01-GW-17-21 — Lab Sample ID: 320-23542-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.062	M	0.0026	0.00078	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.86	E	0.0042	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.011	M	0.0026	0.00095	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.066	D	0.026	0.0078	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.98	D	0.042	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-05-GW-17-21 — Lab Sample ID: 320-23542-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.19	J M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.2	J E	0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.050	J M	0.0024	0.00089	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.21	D J	0.24	0.072	ug/L	100		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.8	J D	0.39	0.12	ug/L	100		537 (Modified)	Total/NA

Client Sample ID: DPT-16-34-SO-14-15 — Lab Sample ID: 320-23542-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.2	M J	0.62	0.13	ug/Kg	1	☼	537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	34	J	0.62	0.16	ug/Kg	1	☼	537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	3.6	J D	6.2	1.3	ug/Kg	10	☼	537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	35	J D	6.2	1.6	ug/Kg	10	☼	537 (Modified)	Total/NA

Client Sample ID: DPT-16-34-GW-31-35 — Lab Sample ID: 320-23542-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.95	E M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.2	E	0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.12	M	0.0025	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.0	D	0.025	0.0074	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	1.4	D	0.039	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.081	D	0.025	0.0090	ug/L	10		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-01-GW-17-21 — Lab Sample ID: 320-23542-1

Date Collected: 11/14/16 10:30 — **Matrix: Water**
Date Received: 11/15/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.062	M	0.0026	0.00078	ug/L		11/17/16 08:49	11/20/16 22:33	1
Perfluorooctane Sulfonate (PFOS)	0.86	E	0.0042	0.0013	ug/L		11/17/16 08:49	11/20/16 22:33	1
Perfluorobutanesulfonic acid (PFBS)	0.011	M	0.0026	0.00095	ug/L		11/17/16 08:49	11/20/16 22:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*95*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:33*	*1*
13C4 PFOS	*86*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:33*	*1*
18O2 PFHxS	*96*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:33*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.066	D	0.026	0.0078	ug/L		11/17/16 08:49	12/02/16 13:22	10
Perfluorooctane Sulfonate (PFOS)	0.98	D	0.042	0.013	ug/L		11/17/16 08:49	12/02/16 13:22	10
Perfluorobutanesulfonic acid (PFBS)	0.021	U	0.026	0.0095	ug/L		11/17/16 08:49	12/02/16 13:22	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*110*		*25 - 150*	*11/17/16 08:49*	*12/02/16 13:22*	*10*
13C4 PFOS	*114*		*25 - 150*	*11/17/16 08:49*	*12/02/16 13:22*	*10*
18O2 PFHxS	*129*		*25 - 150*	*11/17/16 08:49*	*12/02/16 13:22*	*10*

Client Sample ID: DPT-16-05-GW-17-21 — Lab Sample ID: 320-23542-2

Date Collected: 11/14/16 11:45 — **Matrix: Water**
Date Received: 11/15/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.19	J M	0.0024	0.00072	ug/L		11/17/16 08:49	11/20/16 22:40	1
Perfluorooctane Sulfonate (PFOS)	2.2	J E	0.0039	0.0012	ug/L		11/17/16 08:49	11/20/16 22:40	1
Perfluorobutanesulfonic acid (PFBS)	0.050	J M	0.0024	0.00089	ug/L		11/17/16 08:49	11/20/16 22:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*77*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:40*	*1*
13C4 PFOS	*63*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:40*	*1*
18O2 PFHxS	*81*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:40*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.21	D J	0.24	0.072	ug/L		11/17/16 08:49	12/02/16 12:59	100
Perfluorooctane Sulfonate (PFOS)	2.8	J D	0.39	0.12	ug/L		11/17/16 08:49	12/02/16 12:59	100
Perfluorobutanesulfonic acid (PFBS)	0.19	U	0.24	0.089	ug/L		11/17/16 08:49	12/02/16 12:59	100

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*125*		*25 - 150*	*11/17/16 08:49*	*12/02/16 12:59*	*100*
13C4 PFOS	*146*		*25 - 150*	*11/17/16 08:49*	*12/02/16 12:59*	*100*
18O2 PFHxS	*154*	*Q*	*25 - 150*	*11/17/16 08:49*	*12/02/16 12:59*	*100*

Client Sample ID: DPT-16-34-SO-14-15 — Lab Sample ID: 320-23542-3

Date Collected: 11/14/16 13:25 — **Matrix: Solid**
Date Received: 11/15/16 09:30 — **Percent Solids: 79.5**

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.2	M J	0.62	0.13	ug/Kg	☼	11/17/16 12:49	11/20/16 21:25	1
Perfluorooctane Sulfonate (PFOS)	34	J	0.62	0.16	ug/Kg	☼	11/17/16 12:49	11/20/16 21:25	1
Perfluorobutanesulfonic acid (PFBS)	0.37	U	0.50	0.13	ug/Kg	☼	11/17/16 12:49	11/20/16 21:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*91*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:25*	*1*
13C4 PFOS	*58*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:25*	*1*
18O2 PFHxS	*73*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:25*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	3.6	J D	6.2	1.3	ug/Kg	☼	11/17/16 12:49	12/02/16 13:37	10
Perfluorooctane Sulfonate (PFOS)	35	J D	6.2	1.6	ug/Kg	☼	11/17/16 12:49	12/02/16 13:37	10
Perfluorobutanesulfonic acid (PFBS)	3.7	U	5.0	1.3	ug/Kg	☼	11/17/16 12:49	12/02/16 13:37	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*125*		*25 - 150*	*11/17/16 12:49*	*12/02/16 13:37*	*10*
13C4 PFOS	*72*		*25 - 150*	*11/17/16 12:49*	*12/02/16 13:37*	*10*
18O2 PFHxS	*99*		*25 - 150*	*11/17/16 12:49*	*12/02/16 13:37*	*10*

Client Sample ID: DPT-16-34-GW-31-35 — Lab Sample ID: 320-23542-4

Date Collected: 11/14/16 14:30 — **Matrix: Water**
Date Received: 11/15/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.95	E M	0.0025	0.00074	ug/L		11/17/16 08:49	11/20/16 23:03	1
Perfluorooctane Sulfonate (PFOS)	1.2	E	0.0039	0.0013	ug/L		11/17/16 08:49	11/20/16 23:03	1
Perfluorobutanesulfonic acid (PFBS)	0.12	M	0.0025	0.00090	ug/L		11/17/16 08:49	11/20/16 23:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*54*		*25 - 150*	*11/17/16 08:49*	*11/20/16 23:03*	*1*
13C4 PFOS	*74*		*25 - 150*	*11/17/16 08:49*	*11/20/16 23:03*	*1*
18O2 PFHxS	*52*		*25 - 150*	*11/17/16 08:49*	*11/20/16 23:03*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	1.0	D	0.025	0.0074	ug/L		11/17/16 08:49	12/02/16 16:14	10
Perfluorooctane Sulfonate (PFOS)	1.4	D	0.039	0.013	ug/L		11/17/16 08:49	12/02/16 16:14	10
Perfluorobutanesulfonic acid (PFBS)	0.081	D	0.025	0.0090	ug/L		11/17/16 08:49	12/02/16 16:14	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*101*		*25 - 150*	*11/17/16 08:49*	*12/02/16 16:14*	*10*
13C4 PFOS	*125*		*25 - 150*	*11/17/16 08:49*	*12/02/16 16:14*	*10*
18O2 PFHxS	*115*		*25 - 150*	*11/17/16 08:49*	*12/02/16 16:14*	*10*

Isotope Dilution Summary

Client: AECOM Technical Services Inc.
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23542-1

Method: 537 (Modified) - Perfluorinated Hydrocarbons

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

		Percent Isotope Dilution Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	3C4 PFOA (25-150)	3C4 PFOS (25-150)	3O2 PFHx (25-150)						
320-23542-3	DPT-16-34-SO-14-15	91	58	73						
320-23542-3 - DL	DPT-16-34-SO-14-15	125	72	99						
320-23542-3 MS	DPT-16-34-SO-14-15	86	54	72						
320-23542-3 MS - DL	DPT-16-34-SO-14-15	110	63	84						
320-23542-3 MSD	DPT-16-34-SO-14-15	84	60	71						
320-23542-3 MSD - DL	DPT-16-34-SO-14-15	108	67	82						
LCS 320-138291/2-A	Lab Control Sample	107	92	91						
MB 320-138291/1-A	Method Blank	111	89	94						

Surrogate Legend

13C4 PFOA = 13C4 PFOA
13C4 PFOS = 13C4 PFOS
18O2 PFHxS = 18O2 PFHxS

Method: 537 (Modified) - Perfluorinated Hydrocarbons

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

		Percent Isotope Dilution Recovery (Acceptance Limits)								
Lab Sample ID	Client Sample ID	3C4 PFOA (25-150)	3C4 PFOS (25-150)	3O2 PFHx (25-150)						
320-23542-1	DPT-16-01-GW-17-21	95	86	96						
320-23542-1 - DL	DPT-16-01-GW-17-21	110	114	129						
320-23542-2	DPT-16-05-GW-17-21	77	63	81						
320-23542-2 - DL	DPT-16-05-GW-17-21	125	146	154 Q						
320-23542-2 MS	DPT-16-05-GW-17-21-MS	43	59	76						
320-23542-2 MS - DL	DPT-16-05-GW-17-21-MS	78	145	156 Q						
320-23542-2 MSD	DPT-16-05-GW-17-21-MSD	80	65	82						
320-23542-2 MSD - DL	DPT-16-05-GW-17-21-MSD	101	99	116						
320-23542-4	DPT-16-34-GW-31-35	54	74	52						
320-23542-4 - DL	DPT-16-34-GW-31-35	101	125	115						
LCS 320-138217/2-A	Lab Control Sample	78	72	74						
MB 320-138217/1-A	Method Blank	117	105	108						

Surrogate Legend

13C4 PFOA = 13C4 PFOA
13C4 PFOS = 13C4 PFOS
18O2 PFHxS = 18O2 PFHxS

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-138217/1-A
Matrix: Water
Analysis Batch: 138814

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 138217

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		11/17/16 08:49	11/20/16 22:18	1
Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0013	ug/L		11/17/16 08:49	11/20/16 22:18	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		11/17/16 08:49	11/20/16 22:18	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*117*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:18*	*1*
13C4 PFOS	*105*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:18*	*1*
18O2 PFHxS	*108*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:18*	*1*

Lab Sample ID: LCS 320-138217/2-A
Matrix: Water
Analysis Batch: 138814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 138217

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0392		ug/L		98	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0347		ug/L		94	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0365		ug/L		103	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*78*		*25 - 150*
13C4 PFOS	*72*		*25 - 150*
18O2 PFHxS	*74*		*25 - 150*

Lab Sample ID: 320-23542-2 MS
Matrix: Water
Analysis Batch: 138814

Client Sample ID: DPT-16-05-GW-17-21-MS
Prep Type: Total/NA
Prep Batch: 138217

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.19	J M	0.0398	0.244	4	ug/L		145	60 - 140
Perfluorooctane Sulfonate (PFOS)	2.2	J E	0.0369	2.43	E 4	ug/L		610	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.050	J M	0.0352	0.107	J M	ug/L		161	50 - 150

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFOA	*43*		*25 - 150*
13C4 PFOS	*59*		*25 - 150*
18O2 PFHxS	*76*		*25 - 150*

Lab Sample ID: 320-23542-2 MSD
Matrix: Water
Analysis Batch: 138814

Client Sample ID: DPT-16-05-GW-17-21-MSD
Prep Type: Total/NA
Prep Batch: 138217

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.19	J M	0.0404	0.210	4 M	ug/L		59	60 - 140	15	30
Perfluorooctane Sulfonate (PFOS)	2.2	J E	0.0374	2.05	E 4	ug/L		-410	60 - 140	17	30

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

Lab Sample ID: 320-23542-2 MSD
Matrix: Water
Analysis Batch: 138814

Client Sample ID: DPT-16-05-GW-17-21-MSD
Prep Type: Total/NA
Prep Batch: 138217

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	0.050	J M	0.0357	0.0881	M	ug/L		106	50 - 150	19	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFOA	*80*		*25 - 150*
13C4 PFOS	*65*		*25 - 150*
18O2 PFHxS	*82*		*25 - 150*

Lab Sample ID: MB 320-138291/1-A
Matrix: Solid
Analysis Batch: 138814

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 138291

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.30	U	0.50	0.10	ug/Kg		11/17/16 12:49	11/20/16 21:10	1
Perfluorooctane Sulfonate (PFOS)	0.30	U	0.50	0.13	ug/Kg		11/17/16 12:49	11/20/16 21:10	1
Perfluorobutanesulfonic acid (PFBS)	0.30	U	0.40	0.10	ug/Kg		11/17/16 12:49	11/20/16 21:10	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*111*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:10*	*1*
13C4 PFOS	*89*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:10*	*1*
18O2 PFHxS	*94*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:10*	*1*

Lab Sample ID: LCS 320-138291/2-A
Matrix: Solid
Analysis Batch: 138814

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 138291

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	3.98	4.37		ug/Kg		110	60 - 140
Perfluorooctane Sulfonate (PFOS)	3.69	3.90		ug/Kg		106	60 - 140
Perfluorobutanesulfonic acid (PFBS)	3.51	4.70		ug/Kg		134	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*107*		*25 - 150*
13C4 PFOS	*92*		*25 - 150*
18O2 PFHxS	*91*		*25 - 150*

Lab Sample ID: 320-23542-3 MS
Matrix: Solid
Analysis Batch: 138814

Client Sample ID: DPT-16-34-SO-14-15
Prep Type: Total/NA
Prep Batch: 138291

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	3.2	M J	5.04	12.2	M J	ug/Kg	☼	179	60 - 140
Perfluorooctane Sulfonate (PFOS)	34	J	4.68	67.4	E 4	ug/Kg	☼	719	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.37	U	4.46	6.08		ug/Kg	☼	136	50 - 150

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFOA	86		25 - 150
13C4 PFOS	54		25 - 150
18O2 PFHxS	72		25 - 150

Lab Sample ID: 320-23542-3 MSD **Client Sample ID: DPT-16-34-SO-14-15**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 138814 **Prep Batch: 138291**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	3.2	M J	5.00	13.1	M J	ug/Kg	☼	198	60 - 140	7	30
Perfluorooctane Sulfonate (PFOS)	34	J	4.64	59.2	E 4	ug/Kg	☼	549	60 - 140	13	30
Perfluorobutanesulfonic acid (PFBS)	0.37	U	4.42	5.82		ug/Kg	☼	132	50 - 150	4	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C4 PFOA	84		25 - 150
13C4 PFOS	60		25 - 150
18O2 PFHxS	71		25 - 150

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Lab Sample ID: 320-23542-2 MS **Client Sample ID: DPT-16-05-GW-17-21-MS**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 140382 **Prep Batch: 138217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA) - DL	0.21	J D J	0.0398	0.268	4 D	ug/L		140	60 - 140
Perfluorooctane Sulfonate (PFOS) - DL	2.8	J D	0.0369	3.08	4 D	ug/L		749	60 - 140
Perfluorobutanesulfonic acid (PFBS) - DL	0.19	U	0.0352	0.20	U	ug/L		NC	50 - 150

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFOA - DL	78		25 - 150
13C4 PFOS - DL	145		25 - 150
18O2 PFHxS - DL	156	Q	25 - 150

Lab Sample ID: 320-23542-2 MSD **Client Sample ID: DPT-16-05-GW-17-21-MSD**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 140382 **Prep Batch: 138217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA) - DL	0.21	J D J	0.0404	0.214	J 4 D	ug/L		4	60 - 140	22	30
Perfluorooctane Sulfonate (PFOS) - DL	2.8	J D	0.0374	2.79	4 D	ug/L		-24	60 - 140	10	30
Perfluorobutanesulfonic acid (PFBS) - DL	0.19	U	0.0357	0.20	U	ug/L		NC	50 - 150	NC	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C4 PFOA - DL	101		25 - 150
13C4 PFOS - DL	99		25 - 150
18O2 PFHxS - DL	116		25 - 150

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

Lab Sample ID: 320-23542-3 MS
Matrix: Solid
Analysis Batch: 140382

Client Sample ID: DPT-16-34-SO-14-15
Prep Type: Total/NA
Prep Batch: 138291

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA) - DL	3.6	J J D	5.04	12.7	J D	ug/Kg	☼	182	60 - 140
Perfluorooctane Sulfonate (PFOS) - DL	35	J D	4.68	69.2	4 D	ug/Kg	☼	740	60 - 140
Perfluorobutanesulfonic acid (PFBS) - DL	3.7	U	4.46	4.90	J D	ug/Kg	☼	110	50 - 150

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFOA - DL	*110*		*25 - 150*
13C4 PFOS - DL	*63*		*25 - 150*
18O2 PFHxS - DL	*84*		*25 - 150*

Lab Sample ID: 320-23542-3 MSD
Matrix: Solid
Analysis Batch: 140382

Client Sample ID: DPT-16-34-SO-14-15
Prep Type: Total/NA
Prep Batch: 138291

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA) - DL	3.6	J J D	5.00	13.1	J D	ug/Kg	☼	191	60 - 140	3	30
Perfluorooctane Sulfonate (PFOS) - DL	35	J D	4.64	63.2	4 D	ug/Kg	☼	617	60 - 140	9	30
Perfluorobutanesulfonic acid (PFBS) - DL	3.7	U	4.42	4.97	J D	ug/Kg	☼	113	50 - 150	2	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFOA - DL	*108*		*25 - 150*
13C4 PFOS - DL	*67*		*25 - 150*
18O2 PFHxS - DL	*82*		*25 - 150*

LCMS

Prep Batch: 138217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-1 - DL	DPT-16-01-GW-17-21	Total/NA	Water	3535	
320-23542-1	DPT-16-01-GW-17-21	Total/NA	Water	3535	
320-23542-2 - DL	DPT-16-05-GW-17-21	Total/NA	Water	3535	
320-23542-2	DPT-16-05-GW-17-21	Total/NA	Water	3535	
320-23542-4 - DL	DPT-16-34-GW-31-35	Total/NA	Water	3535	
320-23542-4	DPT-16-34-GW-31-35	Total/NA	Water	3535	
MB 320-138217/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-138217/2-A	Lab Control Sample	Total/NA	Water	3535	
320-23542-2 MS	DPT-16-05-GW-17-21-MS	Total/NA	Water	3535	
320-23542-2 MS - DL	DPT-16-05-GW-17-21-MS	Total/NA	Water	3535	
320-23542-2 MSD	DPT-16-05-GW-17-21-MSD	Total/NA	Water	3535	
320-23542-2 MSD - DL	DPT-16-05-GW-17-21-MSD	Total/NA	Water	3535	

Prep Batch: 138291

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-3 - DL	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	
320-23542-3	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	
MB 320-138291/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-138291/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-23542-3 MS	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	
320-23542-3 MS - DL	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	
320-23542-3 MSD - DL	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	
320-23542-3 MSD	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	

Analysis Batch: 138814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-1	DPT-16-01-GW-17-21	Total/NA	Water	537 (Modified)	138217
320-23542-2	DPT-16-05-GW-17-21	Total/NA	Water	537 (Modified)	138217
320-23542-3	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291
320-23542-4	DPT-16-34-GW-31-35	Total/NA	Water	537 (Modified)	138217
MB 320-138217/1-A	Method Blank	Total/NA	Water	537 (Modified)	138217
MB 320-138291/1-A	Method Blank	Total/NA	Solid	537 (Modified)	138291
LCS 320-138217/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	138217
LCS 320-138291/2-A	Lab Control Sample	Total/NA	Solid	537 (Modified)	138291
320-23542-2 MS	DPT-16-05-GW-17-21-MS	Total/NA	Water	537 (Modified)	138217
320-23542-2 MSD	DPT-16-05-GW-17-21-MSD	Total/NA	Water	537 (Modified)	138217
320-23542-3 MS	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291
320-23542-3 MSD	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291

Analysis Batch: 140382

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-1 - DL	DPT-16-01-GW-17-21	Total/NA	Water	537 (Modified)	138217
320-23542-2 - DL	DPT-16-05-GW-17-21	Total/NA	Water	537 (Modified)	138217
320-23542-3 - DL	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291
320-23542-2 MS - DL	DPT-16-05-GW-17-21-MS	Total/NA	Water	537 (Modified)	138217
320-23542-2 MSD - DL	DPT-16-05-GW-17-21-MSD	Total/NA	Water	537 (Modified)	138217
320-23542-3 MS - DL	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291
320-23542-3 MSD - DL	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291

LCMS (Continued)

Analysis Batch: 140429

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-4 - DL	DPT-16-34-GW-31-35	Total/NA	Water	537 (Modified)	138217

General Chemistry

Analysis Batch: 139136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-3	DPT-16-34-SO-14-15	Total/NA	Solid	D 2216	

Lab Chronicle

Client: AECOM Technical Services Inc.
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23542-1

Client Sample ID: DPT-16-01-GW-17-21

Lab Sample ID: 320-23542-1
Date Collected: 11/14/16 10:30
Matrix: Water
Date Received: 11/15/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			240.6 mL	0.5 mL	138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1			138814	11/20/16 22:33	TC1	TAL SAC
Total/NA	Prep	3535	DL		240.6 mL	0.5 mL	138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			140382	12/02/16 13:22	SBC	TAL SAC

Client Sample ID: DPT-16-05-GW-17-21

Lab Sample ID: 320-23542-2
Date Collected: 11/14/16 11:45
Matrix: Water
Date Received: 11/15/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.6 mL	0.5 mL	138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1			138814	11/20/16 22:40	TC1	TAL SAC
Total/NA	Prep	3535	DL		258.6 mL	0.5 mL	138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	100			140382	12/02/16 12:59	SBC	TAL SAC

Client Sample ID: DPT-16-34-SO-14-15

Lab Sample ID: 320-23542-3
Date Collected: 11/14/16 13:25
Matrix: Solid
Date Received: 11/15/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1			139136	11/22/16 13:53	MY1	TAL SAC

Client Sample ID: DPT-16-34-SO-14-15

Lab Sample ID: 320-23542-3
Date Collected: 11/14/16 13:25
Matrix: Solid
Date Received: 11/15/16 09:30
Percent Solids: 79.5

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			5.05 g	1.0 mL	138291	11/17/16 12:49	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1			138814	11/20/16 21:25	TC1	TAL SAC
Total/NA	Prep	SHAKE	DL		5.05 g	1.0 mL	138291	11/17/16 12:49	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			140382	12/02/16 13:37	SBC	TAL SAC

Client Sample ID: DPT-16-34-GW-31-35

Lab Sample ID: 320-23542-4
Date Collected: 11/14/16 14:30
Matrix: Water
Date Received: 11/15/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			254.2 mL	0.5 mL	138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1			138814	11/20/16 23:03	TC1	TAL SAC
Total/NA	Prep	3535	DL		254.2 mL	0.5 mL	138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10			140429	12/02/16 16:14	SBC	TAL SAC

Lab Chronicle

Client: AECOM Technical Services Inc.
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23542-1

Laboratory References:

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

Certification Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23542-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17

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

Analysis Method	Prep Method	Matrix	Analyte
537 (Modified)	SHAKE	Solid	Perfluorooctane Sulfonate (PFOS)
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids

Method Summary

Client: AECOM Technical Services Inc.
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23542-1

Method	Method Description	Protocol	Laboratory
537 (Modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC

Protocol References:

ASTM = ASTM International

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: AECOM Technical Services Inc.
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

TestAmerica Job ID: 320-23542-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23542-1	DPT-16-01-GW-17-21	Water	11/14/16 10:30	11/15/16 09:30
320-23542-2	DPT-16-05-GW-17-21	Water	11/14/16 11:45	11/15/16 09:30
320-23542-3	DPT-16-34-SO-14-15	Solid	11/14/16 13:25	11/15/16 09:30
320-23542-4	DPT-16-34-GW-31-35	Water	11/14/16 14:30	11/15/16 09:30

Chain of Custody Record

Temperature on Receipt 2.0°C

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM	Kurt Vanbelder	11/14/16	299016
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page 1 of 1**
3101 WILSON BLVD	(703) 549-8728		
City / State / Zip Code	**Site Contact / Lab Contact**	**Analysis (Attach list if more space is needed)**	
ARLINGTON / VA / 22201	MIKE GLINSKI / JILL KELLMANN		
Project Name and Location (State)	**Carrier/Waybill Number**		
Former Bayhead Rd Annex			
Contract/Purchase Order/Quote No.			
32007449 / 60444465			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H_2SO_4	HNO_3	HCl	NaOH	ZnAc/NaOH	PFOA	PFOS	PFBS	Special Instructions/ Conditions of Receipt
DPT-16-01-GW-17-21	11/14/16	1030		√			2						√	√	√	
DPT-16-05-GW-17-21		1145		√			2						√	√	√	
DPT-16-05-GW-17-21-MS		1145		√			2						√	√	√	
DPT-16-05-GW-17-21-MSD		1145		√			2						√	√	√	
DPT-16-34-SO-14-15		1325				√	1						√	√	√	
DPT-16-34-GW-31-35		1430		√			2						√	√	√	

320-23542 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☑ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: AECOM	11/14/16	1700	1. Received By: TRANSFER TO FEDEX		
2. Relinquished By			2. Received By	11/15/16	0930
3. Relinquished By			3. Received By		

Comments: 2.0°C

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc. Job Number: 320-23542-1

Login Number: 23542 **List Source: TestAmerica Sacramento**
List Number: 1
Creator: Nelson, Kym D

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.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to Job Narrative for details.
Is the Field Sampler's name present on COC?	N/A	
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.	False	Refer to Job Narrative for details.
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	

ANALYTICAL REPORT

Job Number: 320-23542-1

Job Description: Former Bay Head Road Annex (RFP JU06-01)

For:
AECOM Technical Services Inc.
3101 Wilson Blvd.
Suite 900
Arlington, VA 22201

Attention: Kurt Vangelder

Approved for release.
Jill Kellmann
Manager of Project Management
12/8/2016 2:42 PM

Jill Kellmann, Manager of Project Management
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4402
jill.kellmann@testamericainc.com
12/08/2016
Revision: 1

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Qualifiers

LCMS

Qualifier	Qualifier Description
M	Manual integrated compound.
E	Result exceeded calibration range.
U	Undetected at the Limit of Detection.
D	The reported value is from a dilution.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
Q	One or more quality control criteria failed.
J	Estimated: The analyte was positively identified; the quantitation is an estimation
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

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: AECOM Technical Services Inc.

Project: Former Bay Head Road Annex (RFP JU06-01)

Report Number: 320-23542-1

Revision - December 8, 2016
Report revised due to incorrectly applied B flags on the water samples.

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.

TestAmerica West Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the application methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

The test results in this report meet all NELAP requirements for parameters for which accreditation is required or available. Any exceptions to NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory.

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.

All solid sample results are reported on an "as received" basis unless otherwise indicated by the presence of a % solids value in the method header.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT
The samples were received on 11/15/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 2.0 C.

Receipt Exceptions

Listed samples do not include a collection date on the chain of custody.

DPT-16-01-GW-17-21 (320-23542-1), DPT-16-05-GW-17-21 (320-23542-2), DPT-16-05-GW-17-21-MS (320-23542-2[MS]), DPT-16-05-GW-17-21-MSD (320-23542-2[MSD]), DPT-16-34-SO-14-15 (320-23542-3) and DPT-16-34-GW-31-35 (320-23542-4)

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

The concentration of one or more analytes associated with the following samples exceeded the instrument calibration range: DPT-16-01-GW-17-21 (320-23542-1), DPT-16-05-GW-17-21 (320-23542-2), DPT-16-05-GW-17-21-MS (320-23542-2[MS]), DPT-16-05-GW-17-21-MSD (320-23542-2[MSD]), DPT-16-34-GW-31-35 (320-23542-4), (320-23542-A-3-B MS) and (320-23542-A-3-C MSD). These analytes have been qualified; however, the peaks did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

The Isotope Dilution Analyte (IDA) recovery for 18O2 PFHxS is above the method recommended limit for the following samples: DPT-16-05-GW-17-21 (320-23542-2) and DPT-16-05-GW-17-21-MS (320-23542-2[MS]). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

Due to the high concentration of Perfluorooctanoic acid (PFOA) and Perfluorooctane Sulfonate (PFOS), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-138217 and analytical batch 320-138814 could not be evaluated for accuracy and

precision. The associated laboratory control sample (LCS) met acceptance criteria.

The matrix spike (MS) recovery for preparation batch 320-138217 and analytical batch 320-138814 was outside control limits for Perfluorobutanesulfonic acid (PFBS). Sample matrix interference is suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

The matrix spike / matrix spike duplicate (MS/MSD) recoveries for preparation batch 320-138291 and analytical batch 320-138814 were outside control limits for Perfluorooctanoic acid (PFOA). Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

Due to the high concentration of Perfluorooctane Sulfonate (PFOS), the matrix spike / matrix spike duplicate (MS/MSD) for preparation batch 320-138291 and analytical batch 320-138814 could not be evaluated for accuracy and precision. The associated laboratory control sample (LCS) met acceptance criteria.

Due to the excessive amount of sediment in the sample bottles, the aqueous portion of these samples was decanted to new bottles prior to spiking and the extraction. DPT-16-01-GW-17-21 (320-23542-1), DPT-16-05-GW-17-21 (320-23542-2), DPT-16-05-GW-17-21-MS (320-23542-2[MS]), DPT-16-05-GW-17-21-MSD (320-23542-2[MSD]) and DPT-16-34-GW-31-35 (320-23542-4)

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

PERCENT SOLIDS

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

Detection Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23542-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Client Sample ID: DPT-16-01-GW-17-21 Lab Sample ID: 320-23542-1

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.062	M	0.0026	0.00078	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	0.86	E	0.0042	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.011	M	0.0026	0.00095	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.066	D	0.026	0.0078	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	0.98	D	0.042	0.013	ug/L	10		537 (Modified)	Total/NA

Client Sample ID: DPT-16-05-GW-17-21 Lab Sample ID: 320-23542-2

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.19	J M	0.0024	0.00072	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	2.2	J E	0.0039	0.0012	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.050	J M	0.0024	0.00089	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	0.21	D J	0.24	0.072	ug/L	100		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	2.8	J D	0.39	0.12	ug/L	100		537 (Modified)	Total/NA

Client Sample ID: DPT-16-34-SO-14-15 Lab Sample ID: 320-23542-3

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3.2	M J	0.62	0.13	ug/Kg	1	☼	537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	34	J	0.62	0.16	ug/Kg	1	☼	537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	3.6	J D	6.2	1.3	ug/Kg	10	☼	537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	35	J D	6.2	1.6	ug/Kg	10	☼	537 (Modified)	Total/NA

Client Sample ID: DPT-16-34-GW-31-35 Lab Sample ID: 320-23542-4

Analyte	Result	Qualifier	LOQ	DL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.95	E M	0.0025	0.00074	ug/L	1		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS)	1.2	E	0.0039	0.0013	ug/L	1		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.12	M	0.0025	0.00090	ug/L	1		537 (Modified)	Total/NA
Perfluorooctanoic acid (PFOA) - DL	1.0	D	0.025	0.0074	ug/L	10		537 (Modified)	Total/NA
Perfluorooctane Sulfonate (PFOS) - DL	1.4	D	0.039	0.013	ug/L	10		537 (Modified)	Total/NA
Perfluorobutanesulfonic acid (PFBS) - DL	0.081	D	0.025	0.0090	ug/L	10		537 (Modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: DPT-16-01-GW-17-21 — Lab Sample ID: 320-23542-1

Date Collected: 11/14/16 10:30 **Matrix: Water**
Date Received: 11/15/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.062	M	0.0026	0.00078	ug/L		11/17/16 08:49	11/20/16 22:33	1
Perfluorooctane Sulfonate (PFOS)	0.86	E	0.0042	0.0013	ug/L		11/17/16 08:49	11/20/16 22:33	1
Perfluorobutanesulfonic acid (PFBS)	0.011	M	0.0026	0.00095	ug/L		11/17/16 08:49	11/20/16 22:33	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*95*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:33*	*1*
13C4 PFOS	*86*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:33*	*1*
18O2 PFHxS	*96*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:33*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.066	D	0.026	0.0078	ug/L		11/17/16 08:49	12/02/16 13:22	10
Perfluorooctane Sulfonate (PFOS)	0.98	D	0.042	0.013	ug/L		11/17/16 08:49	12/02/16 13:22	10
Perfluorobutanesulfonic acid (PFBS)	0.021	U	0.026	0.0095	ug/L		11/17/16 08:49	12/02/16 13:22	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*110*		*25 - 150*	*11/17/16 08:49*	*12/02/16 13:22*	*10*
13C4 PFOS	*114*		*25 - 150*	*11/17/16 08:49*	*12/02/16 13:22*	*10*
18O2 PFHxS	*129*		*25 - 150*	*11/17/16 08:49*	*12/02/16 13:22*	*10*

Client Sample ID: DPT-16-05-GW-17-21 — Lab Sample ID: 320-23542-2

Date Collected: 11/14/16 11:45 **Matrix: Water**
Date Received: 11/15/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.19	J M	0.0024	0.00072	ug/L		11/17/16 08:49	11/20/16 22:40	1
Perfluorooctane Sulfonate (PFOS)	2.2	J E	0.0039	0.0012	ug/L		11/17/16 08:49	11/20/16 22:40	1
Perfluorobutanesulfonic acid (PFBS)	0.050	J M	0.0024	0.00089	ug/L		11/17/16 08:49	11/20/16 22:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*77*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:40*	*1*
13C4 PFOS	*63*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:40*	*1*
18O2 PFHxS	*81*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:40*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.21	D J	0.24	0.072	ug/L		11/17/16 08:49	12/02/16 12:59	100
Perfluorooctane Sulfonate (PFOS)	2.8	J D	0.39	0.12	ug/L		11/17/16 08:49	12/02/16 12:59	100
Perfluorobutanesulfonic acid (PFBS)	0.19	U	0.24	0.089	ug/L		11/17/16 08:49	12/02/16 12:59	100

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*125*		*25 - 150*	*11/17/16 08:49*	*12/02/16 12:59*	*100*
13C4 PFOS	*146*		*25 - 150*	*11/17/16 08:49*	*12/02/16 12:59*	*100*
18O2 PFHxS	*154*	Q	*25 - 150*	*11/17/16 08:49*	*12/02/16 12:59*	*100*

Client Sample ID: DPT-16-34-SO-14-15 — Lab Sample ID: 320-23542-3

Date Collected: 11/14/16 13:25 — **Matrix: Solid**
Date Received: 11/15/16 09:30 — **Percent Solids: 79.5**

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**3.2**	**M J**	0.62	0.13	ug/Kg	☼	11/17/16 12:49	11/20/16 21:25	1
Perfluorooctane Sulfonate (PFOS)	**34**	**J**	0.62	0.16	ug/Kg	☼	11/17/16 12:49	11/20/16 21:25	1
Perfluorobutanesulfonic acid (PFBS)	0.37	U	0.50	0.13	ug/Kg	☼	11/17/16 12:49	11/20/16 21:25	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*91*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:25*	*1*
13C4 PFOS	*58*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:25*	*1*
18O2 PFHxS	*73*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:25*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**3.6**	**J D**	6.2	1.3	ug/Kg	☼	11/17/16 12:49	12/02/16 13:37	10
Perfluorooctane Sulfonate (PFOS)	**35**	**J D**	6.2	1.6	ug/Kg	☼	11/17/16 12:49	12/02/16 13:37	10
Perfluorobutanesulfonic acid (PFBS)	3.7	U	5.0	1.3	ug/Kg	☼	11/17/16 12:49	12/02/16 13:37	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*125*		*25 - 150*	*11/17/16 12:49*	*12/02/16 13:37*	*10*
13C4 PFOS	*72*		*25 - 150*	*11/17/16 12:49*	*12/02/16 13:37*	*10*
18O2 PFHxS	*99*		*25 - 150*	*11/17/16 12:49*	*12/02/16 13:37*	*10*

Client Sample ID: DPT-16-34-GW-31-35 — Lab Sample ID: 320-23542-4

Date Collected: 11/14/16 14:30 — **Matrix: Water**
Date Received: 11/15/16 09:30

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**0.95**	**E M**	0.0025	0.00074	ug/L		11/17/16 08:49	11/20/16 23:03	1
Perfluorooctane Sulfonate (PFOS)	**1.2**	**E**	0.0039	0.0013	ug/L		11/17/16 08:49	11/20/16 23:03	1
Perfluorobutanesulfonic acid (PFBS)	**0.12**	**M**	0.0025	0.00090	ug/L		11/17/16 08:49	11/20/16 23:03	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*54*		*25 - 150*	*11/17/16 08:49*	*11/20/16 23:03*	*1*
13C4 PFOS	*74*		*25 - 150*	*11/17/16 08:49*	*11/20/16 23:03*	*1*
18O2 PFHxS	*52*		*25 - 150*	*11/17/16 08:49*	*11/20/16 23:03*	*1*

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	**1.0**	**D**	0.025	0.0074	ug/L		11/17/16 08:49	12/02/16 16:14	10
Perfluorooctane Sulfonate (PFOS)	**1.4**	**D**	0.039	0.013	ug/L		11/17/16 08:49	12/02/16 16:14	10
Perfluorobutanesulfonic acid (PFBS)	**0.081**	**D**	0.025	0.0090	ug/L		11/17/16 08:49	12/02/16 16:14	10

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*101*		*25 - 150*	*11/17/16 08:49*	*12/02/16 16:14*	*10*
13C4 PFOS	*125*		*25 - 150*	*11/17/16 08:49*	*12/02/16 16:14*	*10*
18O2 PFHxS	*115*		*25 - 150*	*11/17/16 08:49*	*12/02/16 16:14*	*10*

Default Detection Limits

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23542-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Prep: 3535

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	0.0025	0.00092	ug/L	537 (Modified)
Perfluorooctane Sulfonate (PFOS)	0.0040	0.0013	ug/L	537 (Modified)
Perfluorooctanoic acid (PFOA)	0.0025	0.00075	ug/L	537 (Modified)

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Prep: SHAKE

Analyte	LOQ	DL	Units	Method
Perfluorobutanesulfonic acid (PFBS)	0.40	0.10	ug/Kg	537 (Modified)
Perfluorooctane Sulfonate (PFOS)	0.50	0.13	ug/Kg	537 (Modified)
Perfluorooctanoic acid (PFOA)	0.50	0.10	ug/Kg	537 (Modified)

Isotope Dilution Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23542-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Method: 537 (Modified) - Perfluorinated Hydrocarbons

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

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	3C4 PFOA (25-150)	3C4 PFOS (25-150)	18O2 PFHxS (25-150)
320-23542-3	DPT-16-34-SO-14-15	91	58	73
320-23542-3 - DL	DPT-16-34-SO-14-15	125	72	99
320-23542-3 MS	DPT-16-34-SO-14-15	86	54	72
320-23542-3 MS - DL	DPT-16-34-SO-14-15	110	63	84
320-23542-3 MSD	DPT-16-34-SO-14-15	84	60	71
320-23542-3 MSD - DL	DPT-16-34-SO-14-15	108	67	82
LCS 320-138291/2-A	Lab Control Sample	107	92	91
MB 320-138291/1-A	Method Blank	111	89	94

Surrogate Legend

13C4 PFOA = 13C4 PFOA
13C4 PFOS = 13C4 PFOS
18O2 PFHxS = 18O2 PFHxS

Method: 537 (Modified) - Perfluorinated Hydrocarbons

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

		Percent Isotope Dilution Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	3C4 PFOA (25-150)	3C4 PFOS (25-150)	18O2 PFHxS (25-150)
320-23542-1	DPT-16-01-GW-17-21	95	86	96
320-23542-1 - DL	DPT-16-01-GW-17-21	110	114	129
320-23542-2	DPT-16-05-GW-17-21	77	63	81
320-23542-2 - DL	DPT-16-05-GW-17-21	125	146	154 Q
320-23542-2 MS	DPT-16-05-GW-17-21-MS	43	59	76
320-23542-2 MS - DL	DPT-16-05-GW-17-21-MS	78	145	156 Q
320-23542-2 MSD	DPT-16-05-GW-17-21-MSD	80	65	82
320-23542-2 MSD - DL	DPT-16-05-GW-17-21-MSD	101	99	116
320-23542-4	DPT-16-34-GW-31-35	54	74	52
320-23542-4 - DL	DPT-16-34-GW-31-35	101	125	115
LCS 320-138217/2-A	Lab Control Sample	78	72	74
MB 320-138217/1-A	Method Blank	117	105	108

Surrogate Legend

13C4 PFOA = 13C4 PFOA
13C4 PFOS = 13C4 PFOS
18O2 PFHxS = 18O2 PFHxS

Method: 537 (Modified) - Perfluorinated Hydrocarbons

Lab Sample ID: MB 320-138217/1-A **Client Sample ID: Method Blank**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 138814 **Prep Batch: 138217**

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.00075	ug/L		11/17/16 08:49	11/20/16 22:18	1
Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0013	ug/L		11/17/16 08:49	11/20/16 22:18	1
Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.00092	ug/L		11/17/16 08:49	11/20/16 22:18	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*117*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:18*	*1*
13C4 PFOS	*105*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:18*	*1*
18O2 PFHxS	*108*		*25 - 150*	*11/17/16 08:49*	*11/20/16 22:18*	*1*

Lab Sample ID: LCS 320-138217/2-A **Client Sample ID: Lab Control Sample**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 138814 **Prep Batch: 138217**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.0400	0.0392		ug/L		98	60 - 140
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0347		ug/L		94	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0365		ug/L		103	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*78*		*25 - 150*
13C4 PFOS	*72*		*25 - 150*
18O2 PFHxS	*74*		*25 - 150*

Lab Sample ID: 320-23542-2 MS **Client Sample ID: DPT-16-05-GW-17-21-MS**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 138814 **Prep Batch: 138217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	0.19	J M	0.0398	0.244	4	ug/L		145	60 - 140
Perfluorooctane Sulfonate (PFOS)	2.2	J E	0.0369	2.43	E 4	ug/L		610	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.050	J M	0.0352	0.107	J M	ug/L		161	50 - 150

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFOA	*43*		*25 - 150*
13C4 PFOS	*59*		*25 - 150*
18O2 PFHxS	*76*		*25 - 150*

Lab Sample ID: 320-23542-2 MSD **Client Sample ID: DPT-16-05-GW-17-21-MSD**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 138814 **Prep Batch: 138217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	0.19	J M	0.0404	0.210	4 M	ug/L		59	60 - 140	15	30
Perfluorooctane Sulfonate (PFOS)	2.2	J E	0.0374	2.05	E 4	ug/L		-410	60 - 140	17	30

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

Lab Sample ID: 320-23542-2 MSD **Client Sample ID: DPT-16-05-GW-17-21-MSD**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 138814 **Prep Batch: 138217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	0.050	J M	0.0357	0.0881	M	ug/L		106	50 - 150	19	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFOA	*80*		*25 - 150*
13C4 PFOS	*65*		*25 - 150*
18O2 PFHxS	*82*		*25 - 150*

Lab Sample ID: MB 320-138291/1-A **Client Sample ID: Method Blank**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 138814 **Prep Batch: 138291**

Analyte	MB Result	MB Qualifier	LOQ	DL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.30	U	0.50	0.10	ug/Kg		11/17/16 12:49	11/20/16 21:10	1
Perfluorooctane Sulfonate (PFOS)	0.30	U	0.50	0.13	ug/Kg		11/17/16 12:49	11/20/16 21:10	1
Perfluorobutanesulfonic acid (PFBS)	0.30	U	0.40	0.10	ug/Kg		11/17/16 12:49	11/20/16 21:10	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFOA	*111*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:10*	*1*
13C4 PFOS	*89*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:10*	*1*
18O2 PFHxS	*94*		*25 - 150*	*11/17/16 12:49*	*11/20/16 21:10*	*1*

Lab Sample ID: LCS 320-138291/2-A **Client Sample ID: Lab Control Sample**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 138814 **Prep Batch: 138291**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	3.98	4.37		ug/Kg		110	60 - 140
Perfluorooctane Sulfonate (PFOS)	3.69	3.90		ug/Kg		106	60 - 140
Perfluorobutanesulfonic acid (PFBS)	3.51	4.70		ug/Kg		134	50 - 150

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFOA	*107*		*25 - 150*
13C4 PFOS	*92*		*25 - 150*
18O2 PFHxS	*91*		*25 - 150*

Lab Sample ID: 320-23542-3 MS **Client Sample ID: DPT-16-34-SO-14-15**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 138814 **Prep Batch: 138291**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA)	3.2	M J	5.04	12.2	M J	ug/Kg	☼	179	60 - 140
Perfluorooctane Sulfonate (PFOS)	34	J	4.68	67.4	E 4	ug/Kg	☼	719	60 - 140
Perfluorobutanesulfonic acid (PFBS)	0.37	U	4.46	6.08		ug/Kg	☼	136	50 - 150

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFOA	86		25 - 150
13C4 PFOS	54		25 - 150
18O2 PFHxS	72		25 - 150

Lab Sample ID: 320-23542-3 MSD **Client Sample ID: DPT-16-34-SO-14-15**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 138814 **Prep Batch: 138291**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA)	3.2	M J	5.00	13.1	M J	ug/Kg	☼	198	60 - 140	7	30
Perfluorooctane Sulfonate (PFOS)	34	J	4.64	59.2	E 4	ug/Kg	☼	549	60 - 140	13	30
Perfluorobutanesulfonic acid (PFBS)	0.37	U	4.42	5.82		ug/Kg	☼	132	50 - 150	4	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C4 PFOA	84		25 - 150
13C4 PFOS	60		25 - 150
18O2 PFHxS	71		25 - 150

Method: 537 (Modified) - Perfluorinated Hydrocarbons - DL

Lab Sample ID: 320-23542-2 MS **Client Sample ID: DPT-16-05-GW-17-21-MS**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 140382 **Prep Batch: 138217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanoic acid (PFOA) - DL	0.21	J D J	0.0398	0.268	4 D	ug/L		140	60 - 140
Perfluorooctane Sulfonate (PFOS) - DL	2.8	J D	0.0369	3.08	4 D	ug/L		749	60 - 140
Perfluorobutanesulfonic acid (PFBS) - DL	0.19	U	0.0352	0.20	U	ug/L		NC	50 - 150

Isotope Dilution	MS %Recovery	MS Qualifier	Limits
13C4 PFOA - DL	78		25 - 150
13C4 PFOS - DL	145		25 - 150
18O2 PFHxS - DL	156	Q	25 - 150

Lab Sample ID: 320-23542-2 MSD **Client Sample ID: DPT-16-05-GW-17-21-MSD**
Matrix: Water **Prep Type: Total/NA**
Analysis Batch: 140382 **Prep Batch: 138217**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA) - DL	0.21	J D J	0.0404	0.214	J 4 D	ug/L		4	60 - 140	22	30
Perfluorooctane Sulfonate (PFOS) - DL	2.8	J D	0.0374	2.79	4 D	ug/L		-24	60 - 140	10	30
Perfluorobutanesulfonic acid (PFBS) - DL	0.19	U	0.0357	0.20	U	ug/L		NC	50 - 150	NC	30

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C4 PFOA - DL	101		25 - 150
13C4 PFOS - DL	99		25 - 150
18O2 PFHxS - DL	116		25 - 150

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

Lab Sample ID: 320-23542-3 MS **Client Sample ID: DPT-16-34-SO-14-15**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 140382 **Prep Batch: 138291**

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorooctanoic acid (PFOA) - DL	3.6	J J D	5.04	12.7	J D	ug/Kg	☼	182	60 - 140		
Perfluorooctane Sulfonate (PFOS) - DL	35	J D	4.68	69.2	4 D	ug/Kg	☼	740	60 - 140		
Perfluorobutanesulfonic acid (PFBS) - DL	3.7	U	4.46	4.90	J D	ug/Kg	☼	110	50 - 150		

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFOA - DL	*110*		*25 - 150*
13C4 PFOS - DL	*63*		*25 - 150*
18O2 PFHxS - DL	*84*		*25 - 150*

Lab Sample ID: 320-23542-3 MSD **Client Sample ID: DPT-16-34-SO-14-15**
Matrix: Solid **Prep Type: Total/NA**
Analysis Batch: 140382 **Prep Batch: 138291**

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanoic acid (PFOA) - DL	3.6	J J D	5.00	13.1	J D	ug/Kg	☼	191	60 - 140	3	30
Perfluorooctane Sulfonate (PFOS) - DL	35	J D	4.64	63.2	4 D	ug/Kg	☼	617	60 - 140	9	30
Perfluorobutanesulfonic acid (PFBS) - DL	3.7	U	4.42	4.97	J D	ug/Kg	☼	113	50 - 150	2	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFOA - DL	*108*		*25 - 150*
13C4 PFOS - DL	*67*		*25 - 150*
18O2 PFHxS - DL	*82*		*25 - 150*

LCMS

Prep Batch: 138217

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-1	DPT-16-01-GW-17-21	Total/NA	Water	3535	
320-23542-1 - DL	DPT-16-01-GW-17-21	Total/NA	Water	3535	
320-23542-2 - DL	DPT-16-05-GW-17-21	Total/NA	Water	3535	
320-23542-2	DPT-16-05-GW-17-21	Total/NA	Water	3535	
320-23542-4 - DL	DPT-16-34-GW-31-35	Total/NA	Water	3535	
320-23542-4	DPT-16-34-GW-31-35	Total/NA	Water	3535	
MB 320-138217/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-138217/2-A	Lab Control Sample	Total/NA	Water	3535	
320-23542-2 MS	DPT-16-05-GW-17-21-MS	Total/NA	Water	3535	
320-23542-2 MS - DL	DPT-16-05-GW-17-21-MS	Total/NA	Water	3535	
320-23542-2 MSD	DPT-16-05-GW-17-21-MSD	Total/NA	Water	3535	
320-23542-2 MSD - DL	DPT-16-05-GW-17-21-MSD	Total/NA	Water	3535	

Prep Batch: 138291

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-3	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	
320-23542-3 - DL	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	
MB 320-138291/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-138291/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
320-23542-3 MS	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	
320-23542-3 MS - DL	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	
320-23542-3 MSD	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	
320-23542-3 MSD - DL	DPT-16-34-SO-14-15	Total/NA	Solid	SHAKE	

Analysis Batch: 138814

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-1	DPT-16-01-GW-17-21	Total/NA	Water	537 (Modified)	138217
320-23542-2	DPT-16-05-GW-17-21	Total/NA	Water	537 (Modified)	138217
320-23542-3	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291
320-23542-4	DPT-16-34-GW-31-35	Total/NA	Water	537 (Modified)	138217
MB 320-138217/1-A	Method Blank	Total/NA	Water	537 (Modified)	138217
MB 320-138291/1-A	Method Blank	Total/NA	Solid	537 (Modified)	138291
LCS 320-138217/2-A	Lab Control Sample	Total/NA	Water	537 (Modified)	138217
LCS 320-138291/2-A	Lab Control Sample	Total/NA	Solid	537 (Modified)	138291
320-23542-2 MS	DPT-16-05-GW-17-21-MS	Total/NA	Water	537 (Modified)	138217
320-23542-2 MSD	DPT-16-05-GW-17-21-MSD	Total/NA	Water	537 (Modified)	138217
320-23542-3 MS	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291
320-23542-3 MSD	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291

Analysis Batch: 140382

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-1 - DL	DPT-16-01-GW-17-21	Total/NA	Water	537 (Modified)	138217
320-23542-2 - DL	DPT-16-05-GW-17-21	Total/NA	Water	537 (Modified)	138217
320-23542-3 - DL	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291
320-23542-2 MS - DL	DPT-16-05-GW-17-21-MS	Total/NA	Water	537 (Modified)	138217
320-23542-2 MSD - DL	DPT-16-05-GW-17-21-MSD	Total/NA	Water	537 (Modified)	138217
320-23542-3 MS - DL	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291
320-23542-3 MSD - DL	DPT-16-34-SO-14-15	Total/NA	Solid	537 (Modified)	138291

LCMS (Continued)

Analysis Batch: 140429

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-4 - DL	DPT-16-34-GW-31-35	Total/NA	Water	537 (Modified)	138217

General Chemistry

Analysis Batch: 139136

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-23542-3	DPT-16-34-SO-14-15	Total/NA	Solid	D 2216	

Client Sample ID: DPT-16-01-GW-17-21 — Lab Sample ID: 320-23542-1

Date Collected: 11/14/16 10:30 — **Matrix: Water**
Date Received: 11/15/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1	138814	11/20/16 22:33	TC1	TAL SAC
Total/NA	Prep	3535	DL		138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	140382	12/02/16 13:22	SBC	TAL SAC

Client Sample ID: DPT-16-05-GW-17-21 — Lab Sample ID: 320-23542-2

Date Collected: 11/14/16 11:45 — **Matrix: Water**
Date Received: 11/15/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1	138814	11/20/16 22:40	TC1	TAL SAC
Total/NA	Prep	3535	DL		138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	100	140382	12/02/16 12:59	SBC	TAL SAC

Client Sample ID: DPT-16-34-SO-14-15 — Lab Sample ID: 320-23542-3

Date Collected: 11/14/16 13:25 — **Matrix: Solid**
Date Received: 11/15/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	139136	11/22/16 13:53	MY1	TAL SAC

Client Sample ID: DPT-16-34-SO-14-15 — Lab Sample ID: 320-23542-3

Date Collected: 11/14/16 13:25 — **Matrix: Solid**
Date Received: 11/15/16 09:30 — **Percent Solids: 79.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			138291	11/17/16 12:49	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)		1	138814	11/20/16 21:25	TC1	TAL SAC
Total/NA	Prep	SHAKE	DL		138291	11/17/16 12:49	NS1	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	140382	12/02/16 13:37	SBC	TAL SAC

Client Sample ID: DPT-16-34-GW-31-35 — Lab Sample ID: 320-23542-4

Date Collected: 11/14/16 14:30 — **Matrix: Water**
Date Received: 11/15/16 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)		1	138814	11/20/16 23:03	TC1	TAL SAC
Total/NA	Prep	3535	DL		138217	11/17/16 08:49	HJA	TAL SAC
Total/NA	Analysis	537 (Modified)	DL	10	140429	12/02/16 16:14	SBC	TAL SAC

Laboratory References:

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

Certification Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23542-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17

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

Analysis Method	Prep Method	Matrix	Analyte
537 (Modified)	SHAKE	Solid	Perfluorooctane Sulfonate (PFOS)
D 2216		Solid	Percent Moisture
D 2216		Solid	Percent Solids

Method Summary

Client: AECOM Technical Services Inc. TestAmerica Job ID: 320-23542-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Method	Method Description	Protocol	Laboratory
537 (Modified)	Perfluorinated Hydrocarbons	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC

Protocol References:

ASTM = ASTM International

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: AECOM Technical Services Inc. TestAmerica Job ID: 320-23542-1
Project/Site: Former Bay Head Road Annex (RFP JU06-01)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-23542-1	DPT-16-01-GW-17-21	Water	11/14/16 10:30	11/15/16 09:30
320-23542-2	DPT-16-05-GW-17-21	Water	11/14/16 11:45	11/15/16 09:30
320-23542-3	DPT-16-34-SO-14-15	Solid	11/14/16 13:25	11/15/16 09:30
320-23542-4	DPT-16-34-GW-31-35	Water	11/14/16 14:30	11/15/16 09:30

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 137684

Lab Sample ID: IC 320-137684/5 Client Sample ID:

Date Analyzed: 11/14/16 11:49 Lab File ID: 14NOV2016A_005.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluoro-n-hexadecanoic acid (PFHxDA)	5.17	Baseline	chandrasenas	11/14/16 16:05

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 138814

Lab Sample ID: 320-23542-3 Client Sample ID: DPT-16-34-SO-14-15

Date Analyzed: 11/20/16 21:25 Lab File ID: 20NOV2016D_007.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.73	Baseline	changnoit	11/23/16 15:14

Lab Sample ID: 320-23542-3 MS Client Sample ID: DPT-16-34-SO-14-15 MS

Date Analyzed: 11/20/16 21:33 Lab File ID: 20NOV2016D_008.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.73	Baseline	changnoit	11/23/16 15:37

Lab Sample ID: 320-23542-3 MSD Client Sample ID: DPT-16-34-SO-14-15 MSD

Date Analyzed: 11/20/16 21:40 Lab File ID: 20NOV2016D_009.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctanoic acid (PFOA)	2.73	Baseline	westendorfc	11/28/16 16:10

Lab Sample ID: 320-23542-1 Client Sample ID: DPT-16-01-GW-17-21

Date Analyzed: 11/20/16 22:33 Lab File ID: 20NOV2016D_016.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.79	Baseline	changnoit	11/23/16 15:49
Perfluorooctanoic acid (PFOA)	2.73	Baseline	changnoit	11/23/16 15:49

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 138814

Lab Sample ID: 320-23542-2 Client Sample ID: DPT-16-05-GW-17-21

Date Analyzed: 11/20/16 22:40 Lab File ID: 20NOV2016D_017.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.80	Baseline	changnoit	11/23/16 15:55
Perfluorooctanoic acid (PFOA)	2.74	Baseline	changnoit	11/23/16 15:55

Lab Sample ID: 320-23542-2 MS Client Sample ID: DPT-16-05-GW-17-21-MS MS

Date Analyzed: 11/20/16 22:48 Lab File ID: 20NOV2016D_018.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.80	Baseline	changnoit	11/23/16 15:59

Lab Sample ID: 320-23542-2 MSD Client Sample ID: DPT-16-05-GW-17-21-MSD MSD

Date Analyzed: 11/20/16 22:55 Lab File ID: 20NOV2016D_019.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.80	Baseline	changnoit	11/23/16 16:15
Perfluorooctanoic acid (PFOA)	2.73	Baseline	changnoit	11/23/16 16:15

Lab Sample ID: 320-23542-4 Client Sample ID: DPT-16-34-GW-31-35

Date Analyzed: 11/20/16 23:03 Lab File ID: 20NOV2016D_020.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorobutanesulfonic acid (PFBS)	1.80	Baseline	changnoit	11/23/16 16:22
Perfluorooctanoic acid (PFOA)	2.73	Baseline	changnoit	11/23/16 16:22

537 (Modified)

LCMS MANUAL INTEGRATION SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Instrument ID: A8_N Analysis Batch Number: 140382

Lab Sample ID: IC 320-140382/4 Client Sample ID:

Date Analyzed: 12/02/16 10:29 Lab File ID: 02DEC2016A_004.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorotetradecanoic acid (PFTeA)	4.94	Incomplete Integration	chandrasenas	12/02/16 13:37

Lab Sample ID: IC 320-140382/5 Client Sample ID:

Date Analyzed: 12/02/16 10:37 Lab File ID: 02DEC2016A_005.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorooctane Sulfonate (PFOS)	3.38	Isomers	chandrasenas	12/02/16 13:38

Lab Sample ID: IC 320-140382/10 Client Sample ID:

Date Analyzed: 12/02/16 11:14 Lab File ID: 02DEC2016A_010.d GC Column: Acquity ID: 2.1(mm)

COMPOUND NAME	RETENTION TIME	MANUAL INTEGRATION		
		REASON	ANALYST	DATE
Perfluorotridecanoic Acid (PFTriA)	4.61	Incomplete Integration	chandrasenas	12/02/16 13:42

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
LCMPFCSU_00046	03/01/17	11/03/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
.LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
.LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
.LCM4PFHPA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpA0516			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
.LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
.LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
.LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
.LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
.LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
.LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
.LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
.LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
.LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
.LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
.LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

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	0.5 ng/mL
							Perfluoroheptanesulfonic Acid	0.476 ng/mL
							Perfluorohexanoic acid	0.5 ng/mL
							Perfluorohexadecanoic acid	0.5 ng/mL
							Perfluorohexanesulfonic acid	0.455 ng/mL
							Perfluorononanoic acid	0.5 ng/mL
							Perfluorooctanoic acid (PFOA)	0.5 ng/mL
							Perfluorooctadecanoic acid	0.5 ng/mL
							Perfluorooctane Sulfonate (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
.LCPFCSP_00057	02/01/17	08/03/16	Methanol, Lot 090285	10000 uL	LCPFCSP_00056	1000 uL	Perfluorobutyric acid	0.1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid	0.091 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctane Sulfonate (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	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	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	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	Perfluorooctane Sulfonate (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	50 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
...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	45.5 ug/mL
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	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)		Perfluorooctane Sulfonate (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	1 ng/mL
							Perfluoroheptanesulfonic Acid	0.952 ng/mL
							Perfluorohexanoic acid	1 ng/mL
							Perfluorohexadecanoic acid	1 ng/mL
							Perfluorohexanesulfonic acid	0.91 ng/mL
							Perfluorononanoic acid	1 ng/mL
							Perfluorooctanoic acid (PFOA)	1 ng/mL
							Perfluorooctadecanoic acid	1 ng/mL
							Perfluorooctane Sulfonate (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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid	0.091 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctane Sulfonate (PFOS)	0.0928 ug/mL
							Perfluorooctane Sulfonamide	0.1 ug/mL
							Perfluoropentanoic acid	0.1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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	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	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	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	Perfluorooctane Sulfonate (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	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	45.5 ug/mL
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	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)		Perfluorooctane Sulfonate (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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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	5 ng/mL
							Perfluoroheptanesulfonic Acid	4.76 ng/mL
							Perfluorohexanoic acid	5 ng/mL
							Perfluorohexadecanoic acid	5 ng/mL
							Perfluorohexanesulfonic acid	4.55 ng/mL
							Perfluorononanoic acid	5 ng/mL
							Perfluorooctanoic acid (PFOA)	5 ng/mL
							Perfluorooctadecanoic acid	5 ng/mL
							Perfluorooctane Sulfonate (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
.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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..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	0.1 ug/mL
							Perfluoroheptanesulfonic Acid	0.0952 ug/mL
							Perfluorohexanoic acid	0.1 ug/mL
							Perfluorohexadecanoic acid	0.1 ug/mL
							Perfluorohexanesulfonic acid	0.091 ug/mL
							Perfluorononanoic acid	0.1 ug/mL
							Perfluorooctanoic acid (PFOA)	0.1 ug/mL
							Perfluorooctadecanoic acid	0.1 ug/mL
							Perfluorooctane Sulfonate (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	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	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	1 ug/mL
					LCPFOA_00006	200 uL	Perfluorooctanoic acid (PFOA)	1 ug/mL
					LCPFODA_00005	200 uL	Perfluorooctadecanoic acid	1 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOS-br_00001	200 uL	Perfluorooctane Sulfonate (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	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	45.5 ug/mL
...LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	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)		Perfluorooctane Sulfonate (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-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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Perfluoroheptanoic acid	20 ng/mL
							Perfluoroheptanesulfonic Acid	19.04 ng/mL
							Perfluorohexanoic acid	20 ng/mL
							Perfluorohexadecanoic acid	20 ng/mL
							Perfluorohexanesulfonic acid	18.2 ng/mL
							Perfluorononanoic acid	20 ng/mL
							Perfluorooctanoic acid (PFOA)	20 ng/mL
							Perfluorooctadecanoic acid	20 ng/mL
							Perfluorooctane Sulfonate (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
					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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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	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	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	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	Perfluorooctane Sulfonate (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	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	45.5 ug/mL
..LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	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)		Perfluorooctane Sulfonate (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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							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	50 ng/mL
							Perfluoroheptanesulfonic Acid	47.6 ng/mL
							Perfluorohexanoic acid	50 ng/mL
							Perfluorohexadecanoic acid	50 ng/mL
							Perfluorohexanesulfonic acid	45.5 ng/mL
							Perfluorononanoic acid	50 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
							Perfluorooctadecanoic acid	50 ng/mL
							Perfluorooctane Sulfonate (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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..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	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	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	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	Perfluorooctane Sulfonate (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	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	45.5 ug/mL
..LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	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)		Perfluorooctane Sulfonate (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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
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
							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	200 ng/mL
							Perfluoroheptanesulfonic Acid	190.4 ng/mL
							Perfluorohexanoic acid	200 ng/mL
							Perfluorohexadecanoic acid	200 ng/mL
							Perfluorohexanesulfonic acid	182 ng/mL
							Perfluorononanoic acid	200 ng/mL
							Perfluorooctanoic acid (PFOA)	200 ng/mL
							Perfluorooctadecanoic acid	200 ng/mL
							Perfluorooctane Sulfonate (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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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	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	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	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	Perfluorooctane Sulfonate (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	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	45.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

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	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)		Perfluorooctane Sulfonate (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-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	400 ng/mL
							Perfluoroheptanesulfonic Acid	380.8 ng/mL
							Perfluorohexanoic acid	400 ng/mL
							Perfluorohexadecanoic acid	400 ng/mL
							Perfluorohexanesulfonic acid	364 ng/mL
							Perfluorononanoic acid	400 ng/mL
							Perfluorooctanoic acid (PFOA)	400 ng/mL
							Perfluorooctadecanoic acid	400 ng/mL
							Perfluorooctane Sulfonate (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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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	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	0.91 ug/mL
					LCPFNA_00005	200 uL	Perfluorononanoic acid	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	Perfluorooctane Sulfonate (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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..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	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	45.5 ug/mL
..LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	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)		Perfluorooctane Sulfonate (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-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
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..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
...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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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
							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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCN-MeFOSAA_00001	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
.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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
							Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (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
...LCN-MeFOSAA_00001	12/09/19		WELLINGTON, Lot NMeFOSAA1214		(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
LCPFC2-L4_00003	02/26/17	09/22/16	MeOH/H2O, Lot 104453	5 mL	LCMPFC2SU_00008	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_00017	200 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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

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	20 ng/mL
							MeFOSA	20 ng/mL
							N-methyl perfluorooctane sulfonamidoacetic acid	20 ng/mL
.LCMPFC2SU_00008	02/26/17	08/26/16	Methanol, Lot 104453	10000 uL	LCd-NEtFOSA-M_00002	200 uL	d-N-EtFOSA-M	1 ug/mL
					LCd-NMeFOSA-M_00002	200 uL	d-N-MeFOSA-M	1 ug/mL
					LCd3-NMeFOSAA_00002	200 uL	d3-NMeFOSAA	1 ug/mL
					LCd5-NEtFOSAA_00002	200 uL	d5-NEtFOSAA	1 ug/mL
					LCM2-6:FTS_00002	200 uL	M2-6:2FTS	0.95 ug/mL
					LCM2-8:2FTS_00002	200 uL	M2-8:2FTS	0.958 ug/mL
..LCd-NEtFOSA-M_00002	03/10/19	WELLINGTON, Lot dNEtFOSA0314M			(Purchased Reagent)		d-N-EtFOSA-M	50 ug/mL
..LCd-NMeFOSA-M_00002	06/10/21	WELLINGTON, Lot dNMeFOSA0616M			(Purchased Reagent)		d-N-MeFOSA-M	50 ug/mL
..LCd3-NMeFOSAA_00002	01/20/21	WELLINGTON, Lot d3NMeFOSAA0116			(Purchased Reagent)		d3-NMeFOSAA	50 ug/mL
..LCd5-NEtFOSAA_00002	12/07/20	WELLINGTON, Lot d5NEtFOSAA1115			(Purchased Reagent)		d5-NEtFOSAA	50 ug/mL
..LCM2-6:FTS_00002	01/08/21	WELLINGTON, Lot M262FTS0116			(Purchased Reagent)		M2-6:2FTS	47.5 ug/mL
..LCM2-8:2FTS_00002	01/08/21	WELLINGTON, Lot M282FTS0116			(Purchased Reagent)		M2-8:2FTS	47.9 ug/mL
.LCPFC2SP_00017	03/02/17	09/02/16	Methanol, Lot 104453	10000 uL	LC6:2FTS_00002	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	0.474 ug/mL
					LC8:2FTS_00002	100 uL	Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	0.479 ug/mL
					LCN-EtFOSA-M_00003	100 uL	N-ethylperfluoro-1-octanesulfonamide	0.5 ug/mL
					LCN-EtFOSAA_00002	100 uL	N-ethyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
					LCN-MeFOSA-M_00002	100 uL	MeFOSA	0.5 ug/mL
					LCN-MeFOSAA_00003	100 uL	N-methyl perfluorooctane sulfonamidoacetic acid	0.5 ug/mL
..LC6:2FTS_00002	06/25/21	WELLINGTON, Lot 62FTS0616			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (6:2)	47.4 ug/mL
..LC8:2FTS_00002	10/23/20	WELLINGTON, Lot 82FTS1015			(Purchased Reagent)		Sodium 1H,1H,2H,2H-perfluorooctane sulfonate (8:2)	47.9 ug/mL
..LCN-EtFOSA-M_00003	05/24/21	WELLINGTON, Lot NEtFOSA0516M			(Purchased Reagent)		N-ethylperfluoro-1-octanesulfonamide	50 ug/mL
..LCN-EtFOSAA_00002	01/20/21	WELLINGTON, Lot NEtFOSAA0116			(Purchased Reagent)		N-ethyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
..LCN-MeFOSA-M_00002	05/24/21	WELLINGTON, Lot NMeFOSA0714M			(Purchased Reagent)		MeFOSA	50 ug/mL
..LCN-MeFOSAA_00003	01/20/21	WELLINGTON, Lot NMeFOSAA0116			(Purchased Reagent)		N-methyl perfluorooctane sulfonamidoacetic acid	50 ug/mL
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

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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
					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.: 320-23542-1

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-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
.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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

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-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
					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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

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
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
					LCPFACMXB_00007	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluorooctane Sulfonate (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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					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
							Perfluorooctane Sulfonate (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCIC_00020	03/01/17	12/01/16	MeOH/H2O, Lot 09285	5 mL	LCMPFCSU_00046	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
					LCPFACMXB_00007	125 uL	Perfluorobutanesulfonic acid (PFBS)	44.25 ng/mL
							Perfluorooctane Sulfonate (PFOS)	47.75 ng/mL
							Perfluorooctanoic acid (PFOA)	50 ng/mL
.LCMPFCSU_00046	03/01/17	11/03/16	Methanol, Lot Baker 144541	50000 uL	LCM2PFHxDA_00008	1000 uL	13C2-PFHxDA	1 ug/mL
					LCM2PFTeDA_00007	1000 uL	13C2-PFTeDA	1 ug/mL
					LCM4PFHPA_00007	1000 uL	13C4-PFHpA	1 ug/mL
					LCM5PFPEA_00008	1000 uL	13C5-PFPeA	1 ug/mL
					LCM8FOSA_00011	1000 uL	13C8 FOSA	1 ug/mL
					LCMPFBA_00008	1000 uL	13C4 PFBA	1 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCMPFDA_00011	1000 uL	13C2 PFDA	1 ug/mL
					LCMPFDoA_00008	1000 uL	13C2 PFDoA	1 ug/mL
					LCMPFHxA_00012	1000 uL	13C2 PFHxA	1 ug/mL
					LCMPFHxS_00008	1000 uL	18O2 PFHxS	0.946 ug/mL
					LCMPFNA_00008	1000 uL	13C5 PFNA	1 ug/mL
					LCMPFOA_00012	1000 uL	13C4 PFOA	1 ug/mL
					LCMPFOS_00017	1000 uL	13C4 PFOS	0.956 ug/mL
					LCMPFUdA_00009	1000 uL	13C2 PFUnA	1 ug/mL
..LCM2PFHxDA_00008	01/07/21	Wellington Laboratories, Lot M2PFHxDA1112			(Purchased Reagent)		13C2-PFHxDA	50 ug/mL
..LCM2PFTeDA_00007	12/07/20	Wellington Laboratories, Lot M2PFTeDA1115			(Purchased Reagent)		13C2-PFTeDA	50 ug/mL
..LCM4PFHPA_00007	05/27/21	Wellington Laboratories, Lot M4PFHpA0516			(Purchased Reagent)		13C4-PFHpA	50 ug/mL
..LCM5PFPEA_00008	05/22/20	Wellington Laboratories, Lot M5PFPeA0515			(Purchased Reagent)		13C5-PFPeA	50 ug/mL
..LCM8FOSA_00011	12/22/17	Wellington Laboratories, Lot M8FOSA1215I			(Purchased Reagent)		13C8 FOSA	50 ug/mL
..LCMPFBA_00008	05/24/21	Wellington Laboratories, Lot MPFBA0516			(Purchased Reagent)		13C4 PFBA	50 ug/mL
..LCMPFDA_00011	08/19/20	Wellington Laboratories, Lot MPFDA0815			(Purchased Reagent)		13C2 PFDA	50 ug/mL
..LCMPFDoA_00008	04/08/21	Wellington Laboratories, Lot MPFDoA0416			(Purchased Reagent)		13C2 PFDoA	50 ug/mL
..LCMPFHxA_00012	04/08/21	Wellington Laboratories, Lot MPFHxA0416			(Purchased Reagent)		13C2 PFHxA	50 ug/mL
..LCMPFHxS_00008	10/23/20	Wellington Laboratories, Lot MPFHxS1015			(Purchased Reagent)		18O2 PFHxS	47.3 ug/mL
..LCMPFNA_00008	04/13/19	Wellington Laboratories, Lot MPFNA0414			(Purchased Reagent)		13C5 PFNA	50 ug/mL
..LCMPFOA_00012	01/22/21	Wellington Laboratories, Lot MPFOA0116			(Purchased Reagent)		13C4 PFOA	50 ug/mL
..LCMPFOS_00017	08/03/21	Wellington Laboratories, Lot MPFOS0816			(Purchased Reagent)		13C4 PFOS	47.8 ug/mL
..LCMPFUdA_00009	02/12/21	Wellington Laboratories, Lot MPFUdA0216			(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
							Perfluorooctane Sulfonate (PFOS)	1.91 ug/mL
							Perfluorooctanoic acid (PFOA)	2 ug/mL
LCPFCSP_00064	09/02/17	10/07/16	Methanol, Lot 090285	10000 uL	LCPFBA_00004	100 uL	Perfluorobutyric acid	0.5 ug/mL
					LCPFBS_00005	100 uL	Perfluorobutane Sulfonate	0.442 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00005	100 uL	Perfluorodecanoic acid	0.5 ug/mL
					LCPFDoA_00005	100 uL	Perfluorododecanoic acid	0.5 ug/mL
					LCPFDS_00006	100 uL	Perfluorodecane Sulfonate	0.482 ug/mL
							Perfluorodecane Sulfonic acid	0.482 ug/mL
					LCPFHpA_00005	100 uL	Perfluoroheptanoic acid	0.5 ug/mL
					LCPFHpS_00008	100 uL	Perfluoroheptane Sulfonate	0.476 ug/mL
							Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHxA_00004	100 uL	Perfluorohexanoic acid	0.5 ug/mL
					LCPFHxDA_00005	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00001	100 uL	Perfluorohexane Sulfonate	0.455 ug/mL
							Perfluorohexanesulfonic acid	0.455 ug/mL
					LCPFNA_00005	100 uL	Perfluorononanoic acid	0.5 ug/mL
					LCPFOA_00006	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA_00005	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL
					LCPFOS-br_00001	100 uL	Perfluorooctane Sulfonate (PFOS)	0.464 ug/mL
					LCPFOSA_00006	100 uL	Perfluorooctane Sulfonamide	0.5 ug/mL

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid	0.5 ug/mL
					LCPFTeDA_00004	100 uL	Perfluorotetradecanoic acid	0.5 ug/mL
					LCPFTrDA_00004	100 uL	Perfluorotridecanoic acid	0.5 ug/mL
					LCPFUdA_00004	100 uL	Perfluoroundecanoic acid	0.5 ug/mL
.LCPFBA_00004	01/30/20	Wellington Laboratories, Lot PFBA0115			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
.LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
							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_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(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	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_00005	06/20/19	Wellington Laboratories, Lot PFHxDA0614			(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	45.5 ug/mL
.LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	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)		Perfluorooctane Sulfonate (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
LCPFCSP_00066	09/02/17	10/28/16	Methanol, Lot 090285	10000 uL	LCPFBA_00005	100 uL	Perfluorobutyric acid	0.5 ug/mL
					LCPFBS_00005	100 uL	Perfluorobutane Sulfonate	0.442 ug/mL
							Perfluorobutanesulfonic acid (PFBS)	0.442 ug/mL
					LCPFDA_00005	100 uL	Perfluorodecanoic acid	0.5 ug/mL
					LCPFDoA_00005	100 uL	Perfluorododecanoic acid	0.5 ug/mL
					LCPFDS_00006	100 uL	Perfluorodecane Sulfonate	0.482 ug/mL
							Perfluorodecane Sulfonic acid	0.482 ug/mL
					LCPFHpA_00005	100 uL	Perfluoroheptanoic acid	0.5 ug/mL
					LCPFHpS_00008	100 uL	Perfluoroheptane Sulfonate	0.476 ug/mL
							Perfluoroheptanesulfonic Acid	0.476 ug/mL
					LCPFHxA_00004	100 uL	Perfluorohexanoic acid	0.5 ug/mL
					LCPFHxDA_00005	100 uL	Perfluorohexadecanoic acid	0.5 ug/mL
					LCPFHxS-br_00002	100 uL	Perfluorohexane Sulfonate	0.455 ug/mL
							Perfluorohexanesulfonic acid	0.455 ug/mL
					LCPFNA_00005	100 uL	Perfluorononanoic acid	0.5 ug/mL
					LCPFOA_00006	100 uL	Perfluorooctanoic acid (PFOA)	0.5 ug/mL
					LCPFODA_00005	100 uL	Perfluorooctadecanoic acid	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
					LCPFOS-br_00002	100 uL	Perfluorooctane Sulfonate (PFOS)	0.464 ug/mL
					LCPFOSA_00006	100 uL	Perfluorooctane Sulfonamide	0.5 ug/mL
					LCPFPeA_00005	100 uL	Perfluoropentanoic acid	0.5 ug/mL
					LCPFTeDA_00004	100 uL	Perfluorotetradecanoic acid	0.5 ug/mL
					LCPFTrDA_00004	100 uL	Perfluorotridecanoic acid	0.5 ug/mL
					LCPFUdA_00004	100 uL	Perfluoroundecanoic acid	0.5 ug/mL
.LCPFBA_00005	05/27/21	Wellington Laboratories, Lot PFBA0516			(Purchased Reagent)		Perfluorobutyric acid	50 ug/mL
.LCPFBS_00005	03/15/21	Wellington Laboratories, Lot LPFBS0316			(Purchased Reagent)		Perfluorobutane Sulfonate	44.2 ug/mL
							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_00006	05/24/21	Wellington Laboratories, Lot LPFDS0516			(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	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_00005	06/20/19	Wellington Laboratories, Lot PFHxDA0614			(Purchased Reagent)		Perfluorohexadecanoic acid	50 ug/mL
.LCPFHxS-br_00002	07/03/20	Wellington Laboratories, Lot brPFHxSK0615			(Purchased Reagent)		Perfluorohexane Sulfonate	45.5 ug/mL
							Perfluorohexanesulfonic acid	45.5 ug/mL
.LCPFNA_00005	10/23/20	Wellington Laboratories, Lot PFNA1015			(Purchased Reagent)		Perfluorononanoic acid	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_00002	10/14/20	Wellington Laboratories, Lot brPFOSK1015			(Purchased Reagent)		Perfluorooctane Sulfonate (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

Reagent

LC6:2FTS_00001

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

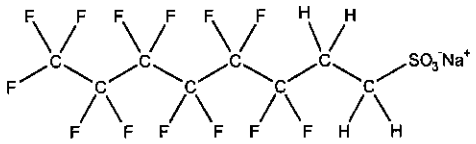
WELLINGTON LABORATORIES

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:

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HAZARDS:

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UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2,...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.

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QUALITY MANAGEMENT:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO Guide 34 REFERENCE MATERIAL PRODUCER

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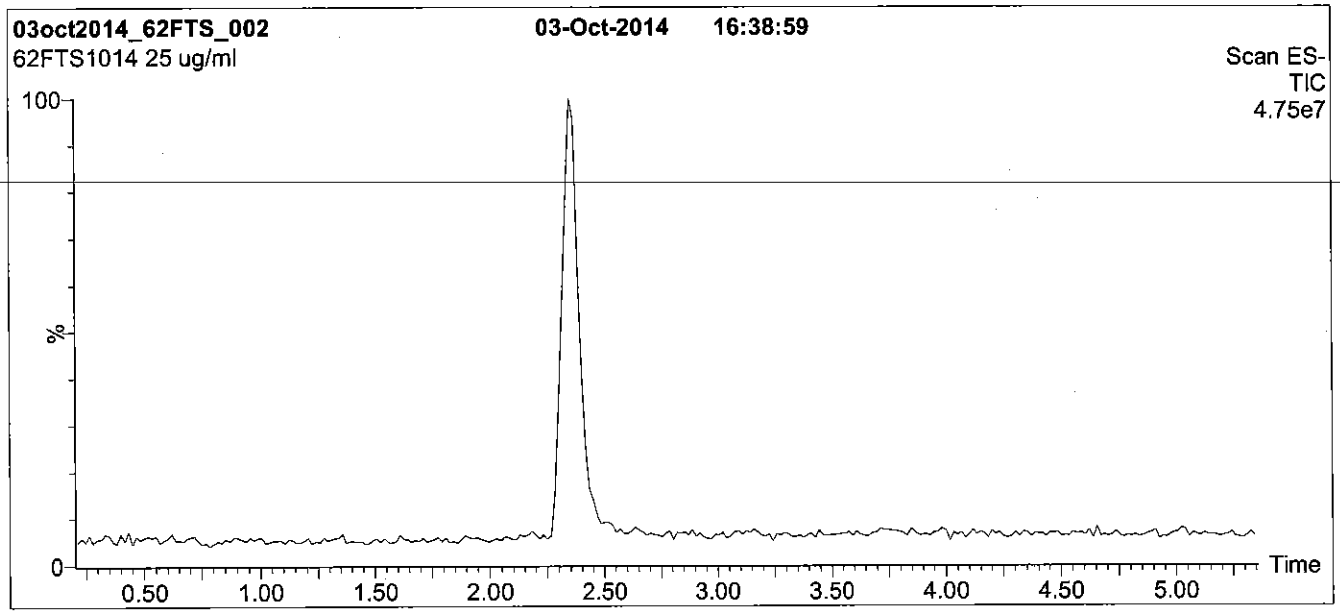
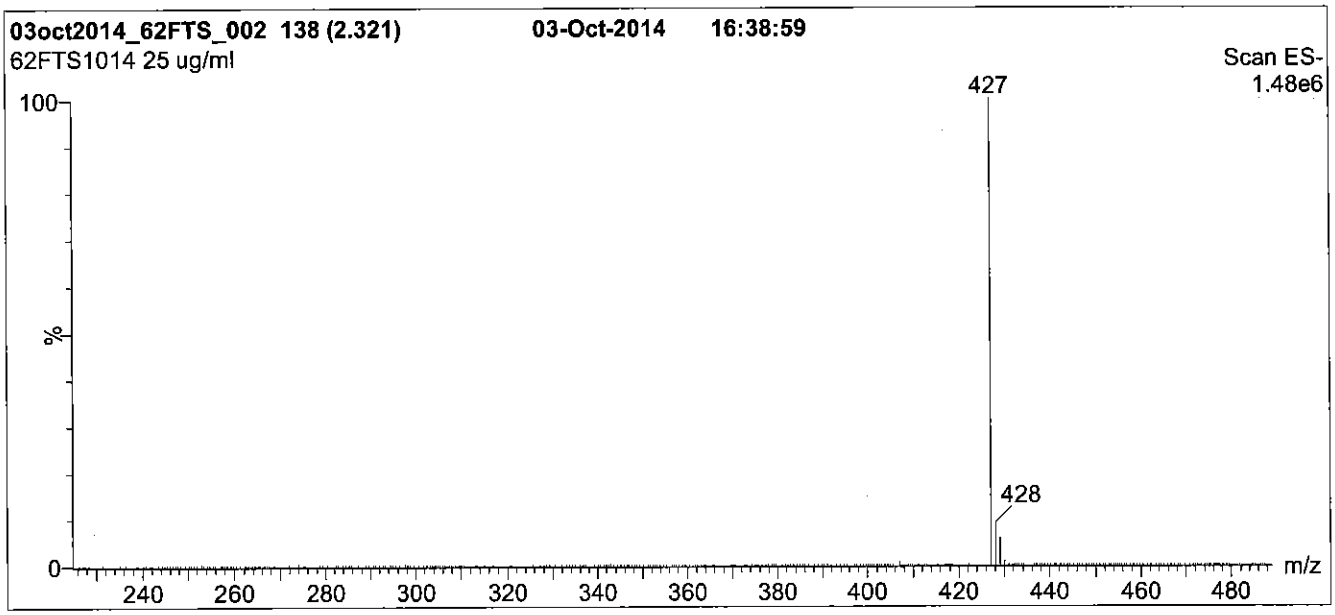
Figure 1: **6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

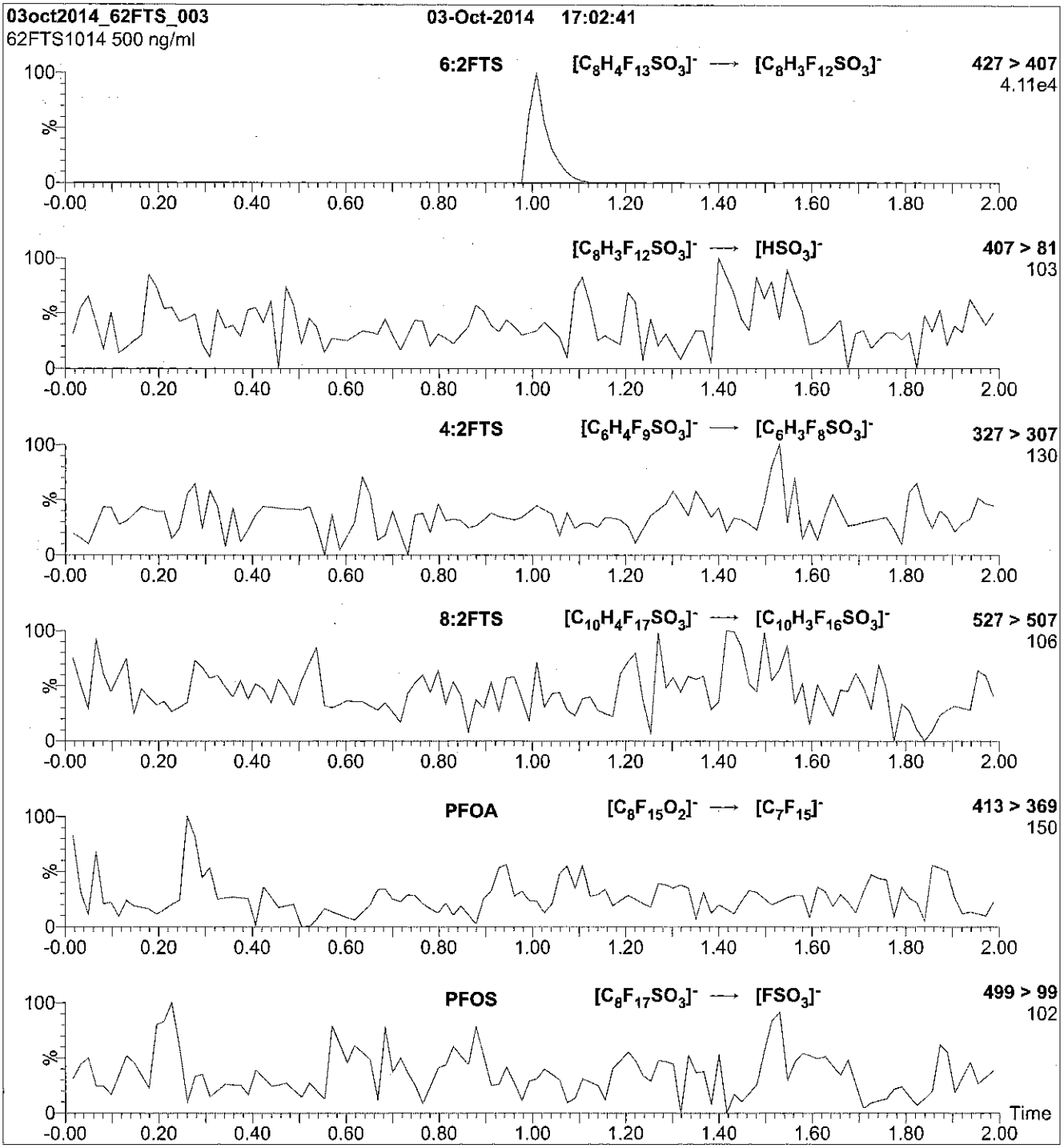
Flow: 300 µl/min

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

LC6:2FTS_00002

R: 8/23/16 SBC

715544
ID: LC6:2FTS_00002
Exp: 06/25/21 Prpd: SBC
6:2FTS

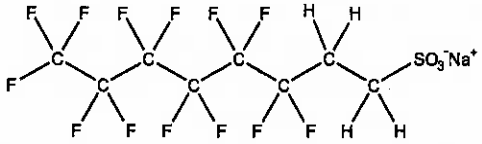
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 6:2FTS **LOT NUMBER:** 62FTS0616

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

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$C_8H_4F_{13}SO_3Na$		**MOLECULAR WEIGHT:**	450.15
CONCENTRATION:	50.0 ± 2.5 µg/ml	(Na salt)	**SOLVENT(S):**	Methanol
	47.4 ± 2.4 µg/ml	(6:2FTS anion)		
CHEMICAL PURITY:	>98%			
LAST TESTED: (mm/dd/yyyy)	06/25/2016			
EXPIRY DATE: (mm/dd/yyyy)	06/25/2021			
RECOMMENDED STORAGE:	Refrigerate ampoule			

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/29/2016 (mm/dd/yyyy)

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

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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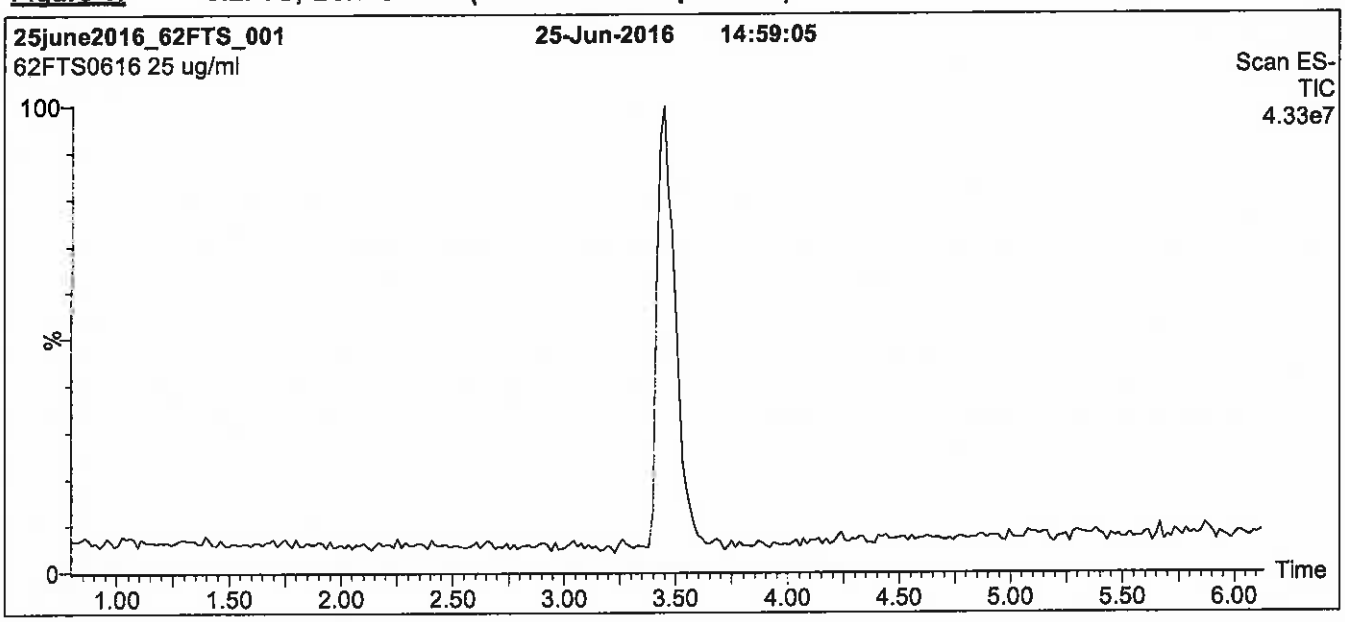
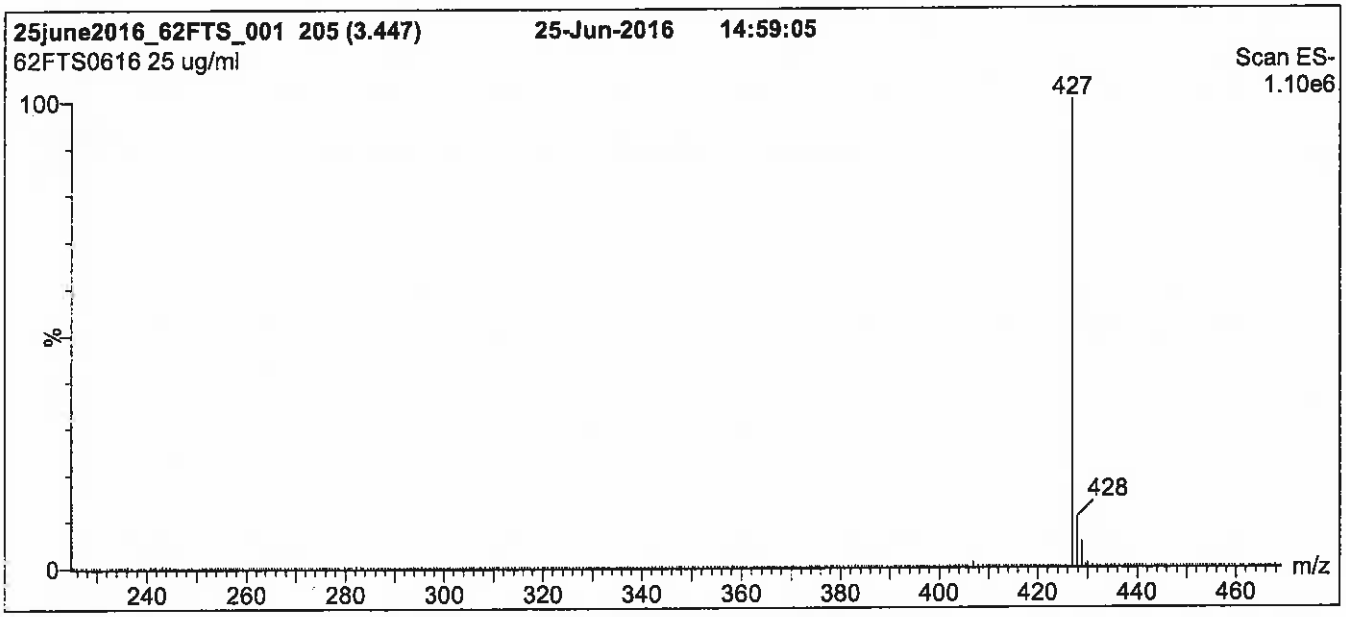
Figure 1: **6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

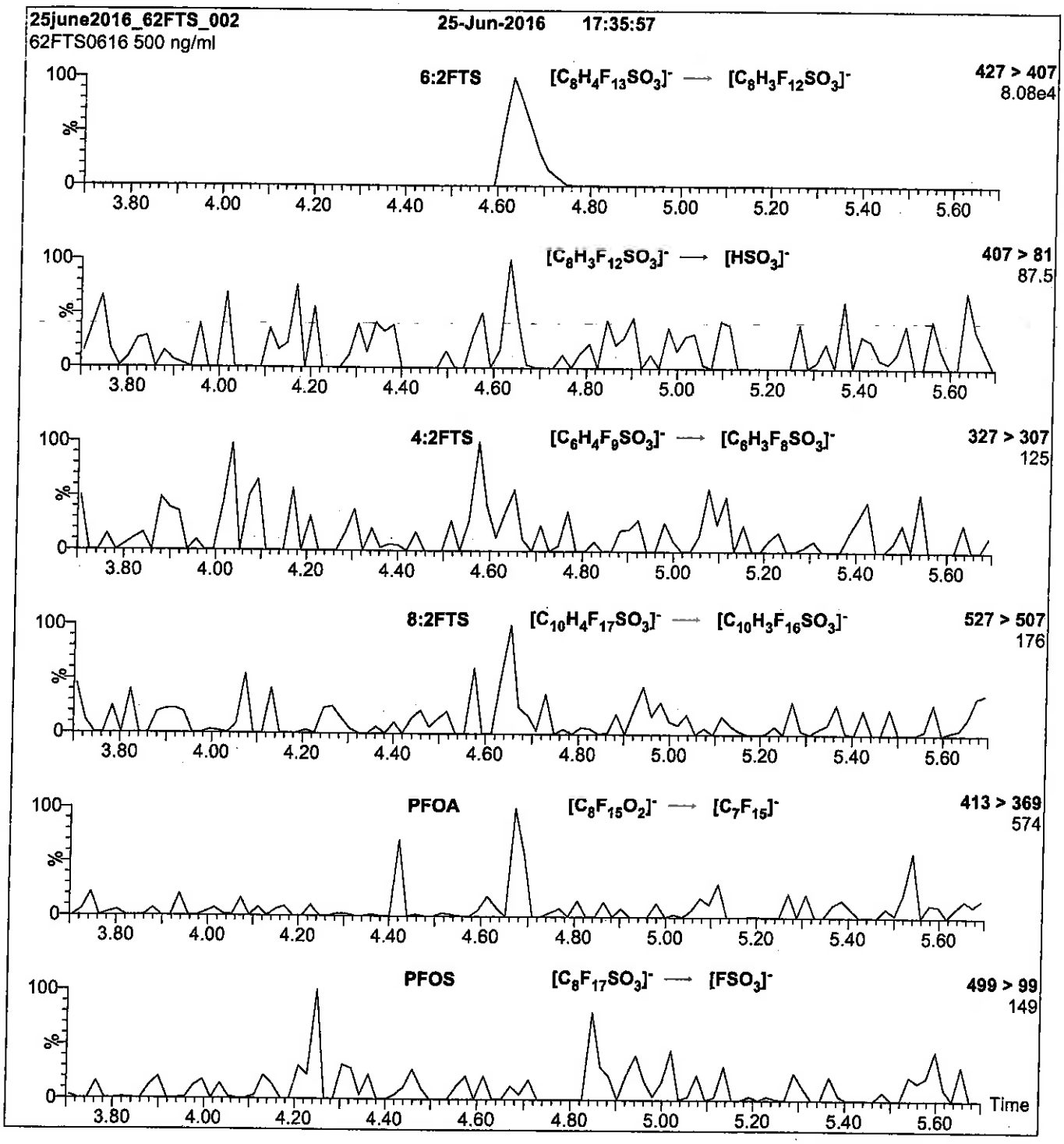
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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) = 3.46e-3
Collision Energy (eV) = 25

Reagent

LC8:2FTS_00001

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

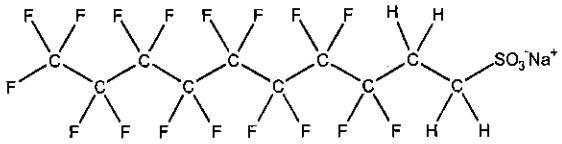
WELLINGTON LABORATORIES

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.

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17025 / ISO 17034 REFERENCE MATERIAL PRODUCER

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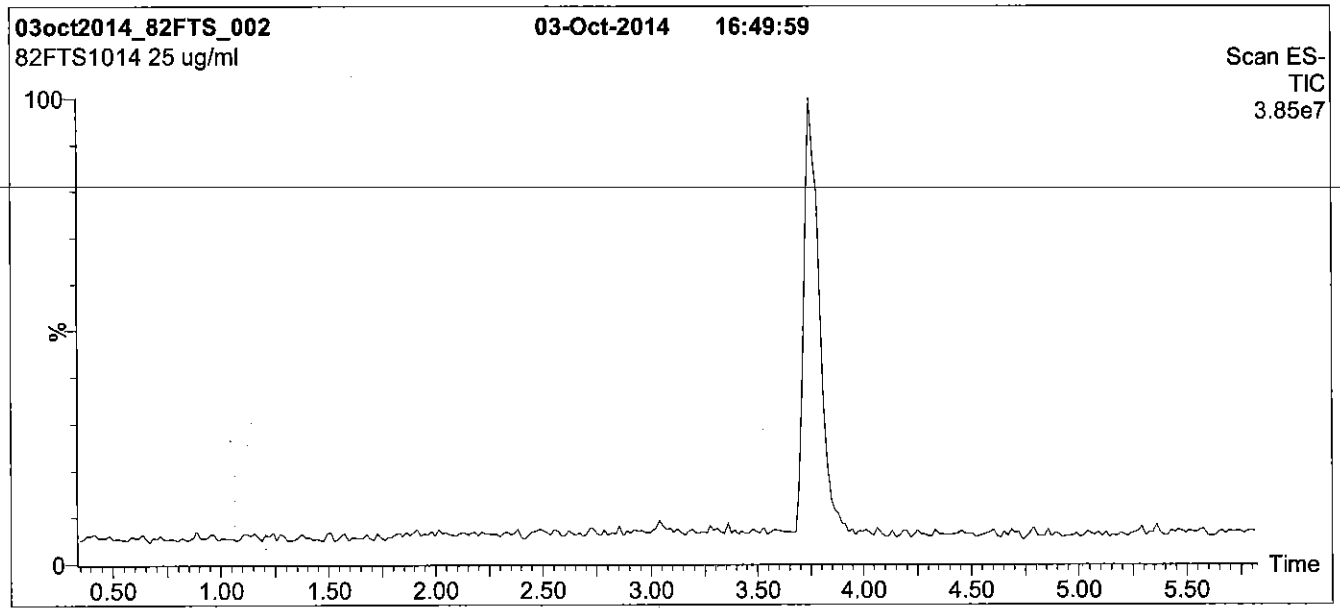
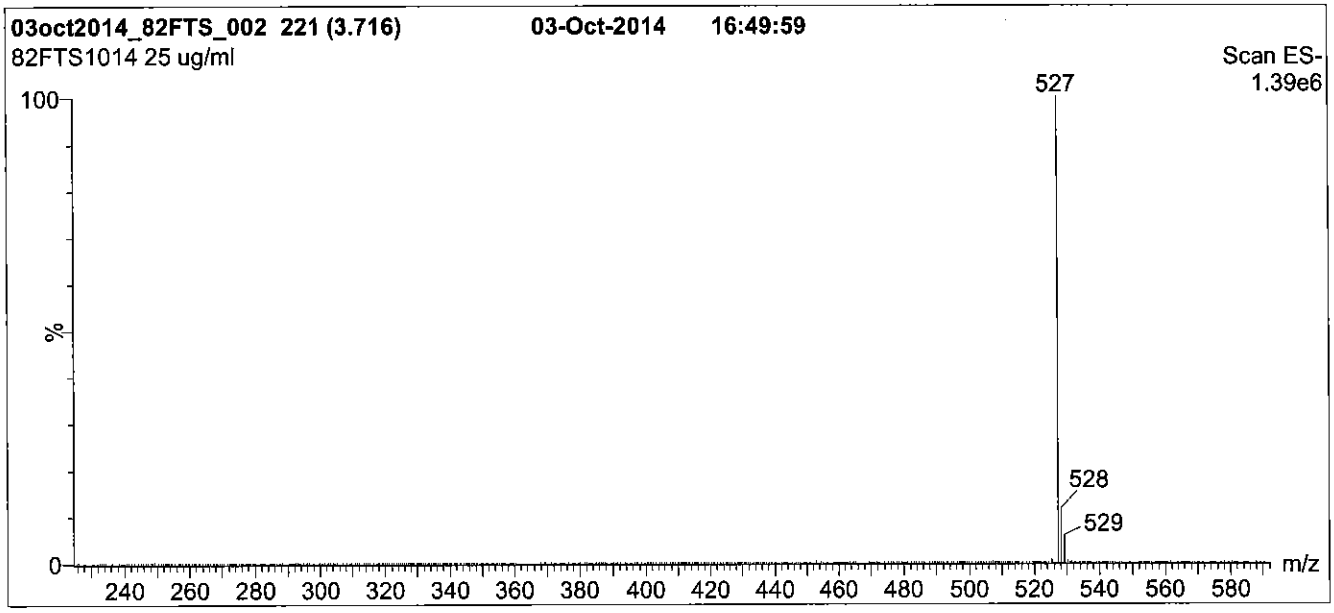
Figure 1: **8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





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

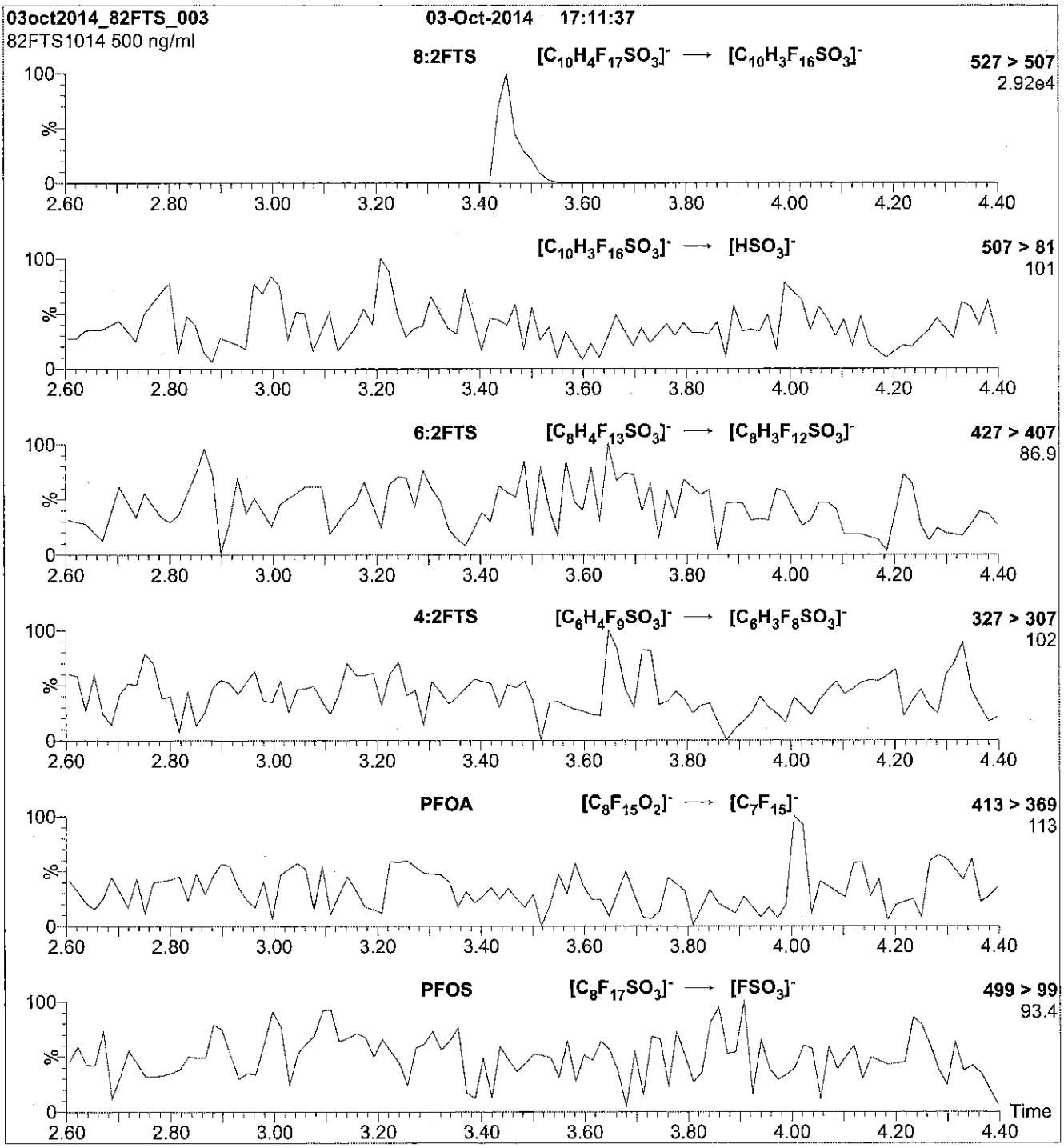
Flow: 300 µl/min

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

LC8:2FTS_00002

R: 8/23/16 SBC

715545
ID: LC8:2FTS_00002
Exp: 10/23/20 Prpd: SBC
8:2FTS

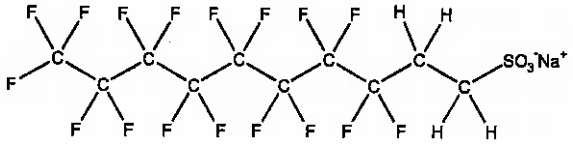
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: 8:2FTS **LOT NUMBER:** 82FTS1015

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
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LAST TESTED: (mm/dd/yyyy)	10/23/2015			
EXPIRY DATE: (mm/dd/yyyy)	10/23/2020			
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Certified By: B.G. Chittim **Date:** 10/27/2015 (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

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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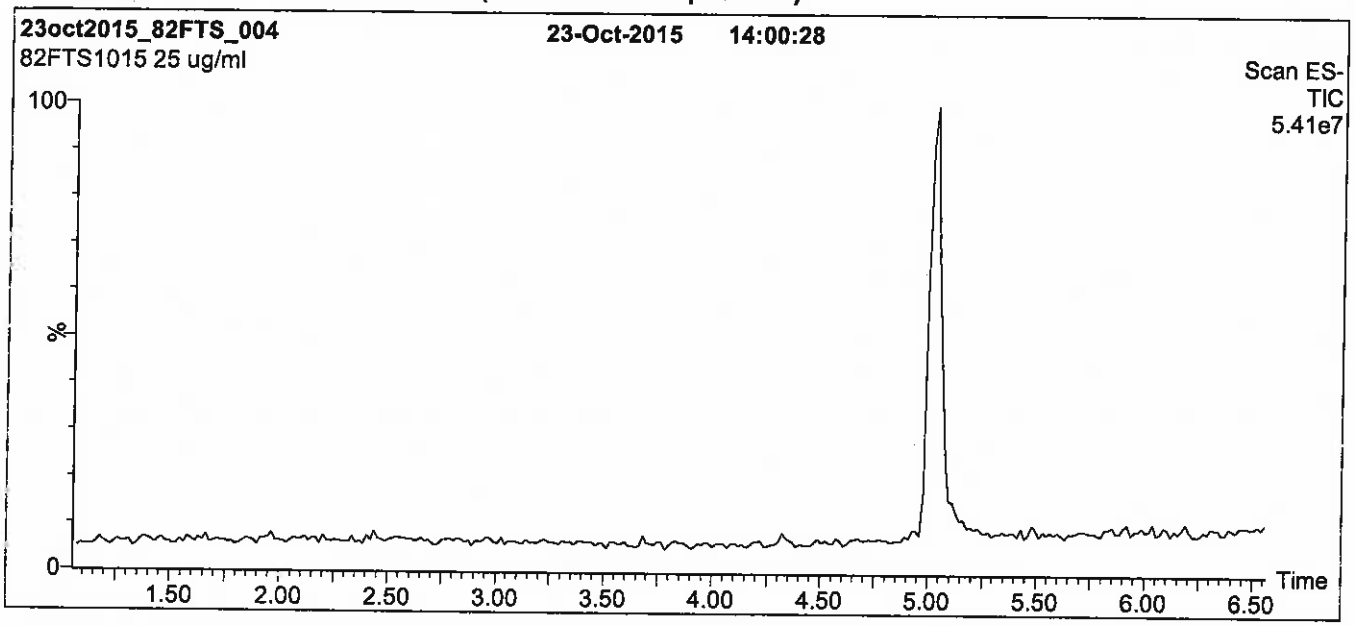
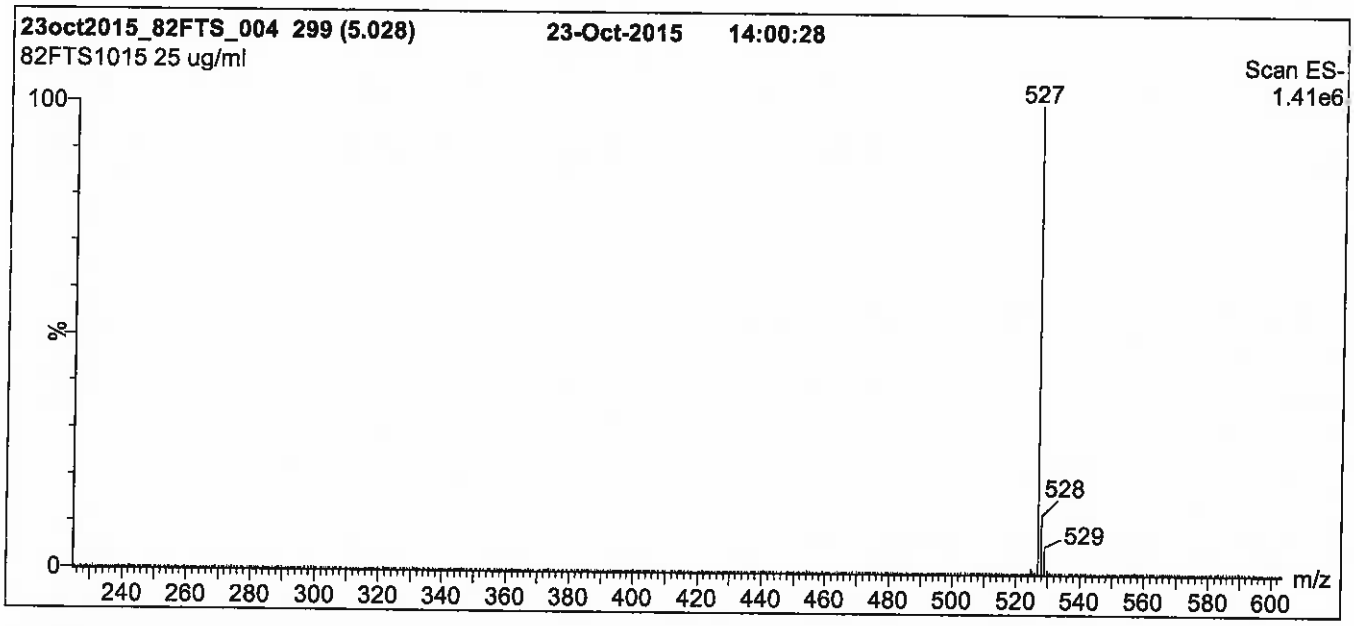
Figure 1: **8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





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: 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.
Return to Initial conditions in 0.5 min.
Time: 10 min

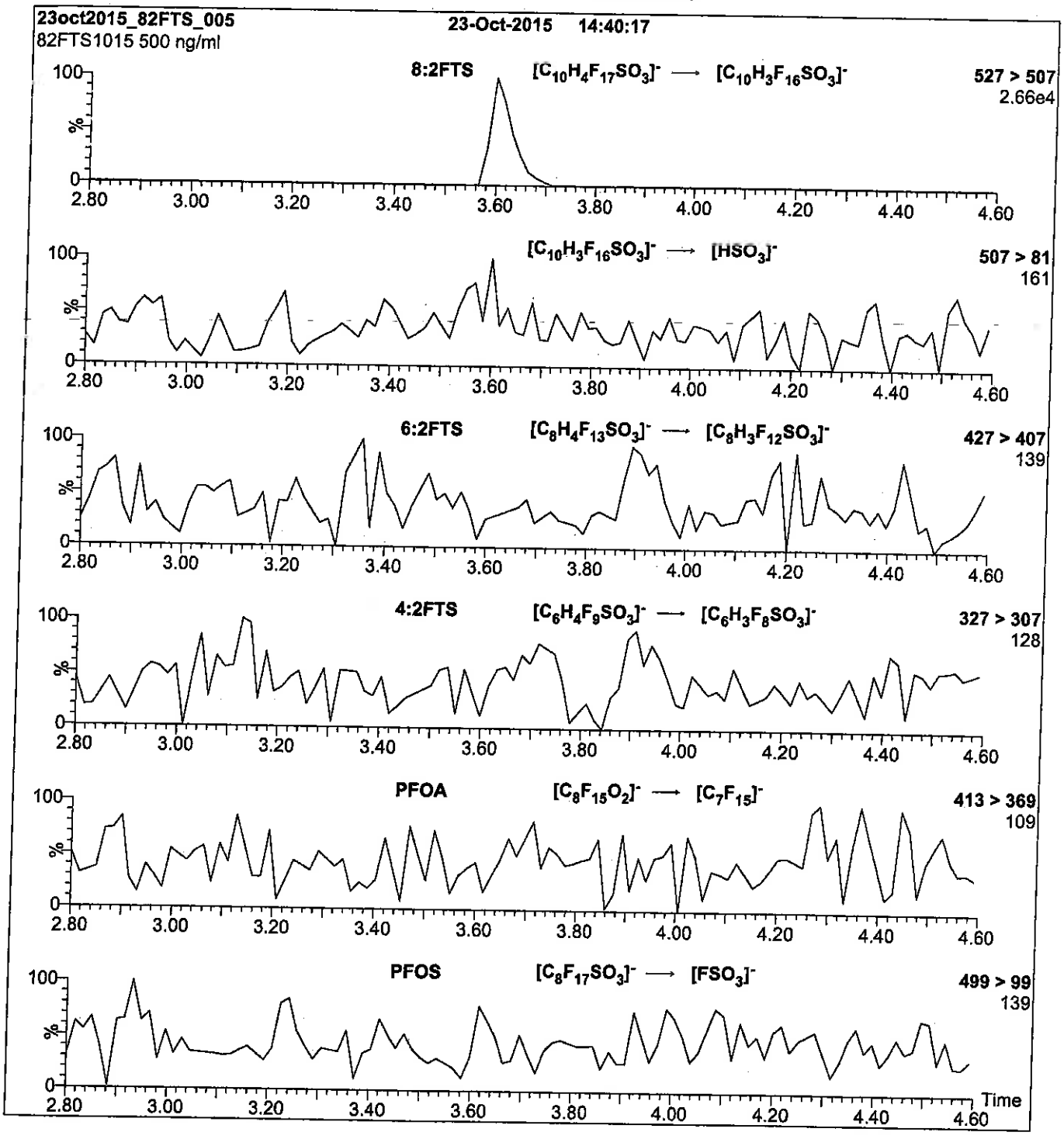
Flow: 300 µl/min

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) = 3.28e-3
Collision Energy (eV) = 30

Reagent

LCd-NEtFOSA-M_00001

R: 7/16/15 SV

WELLINGTON LABORATORIES

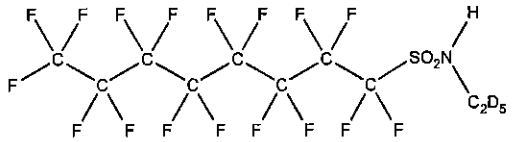
CERTIFICATE OF ANALYSIS DOCUMENTATION

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)

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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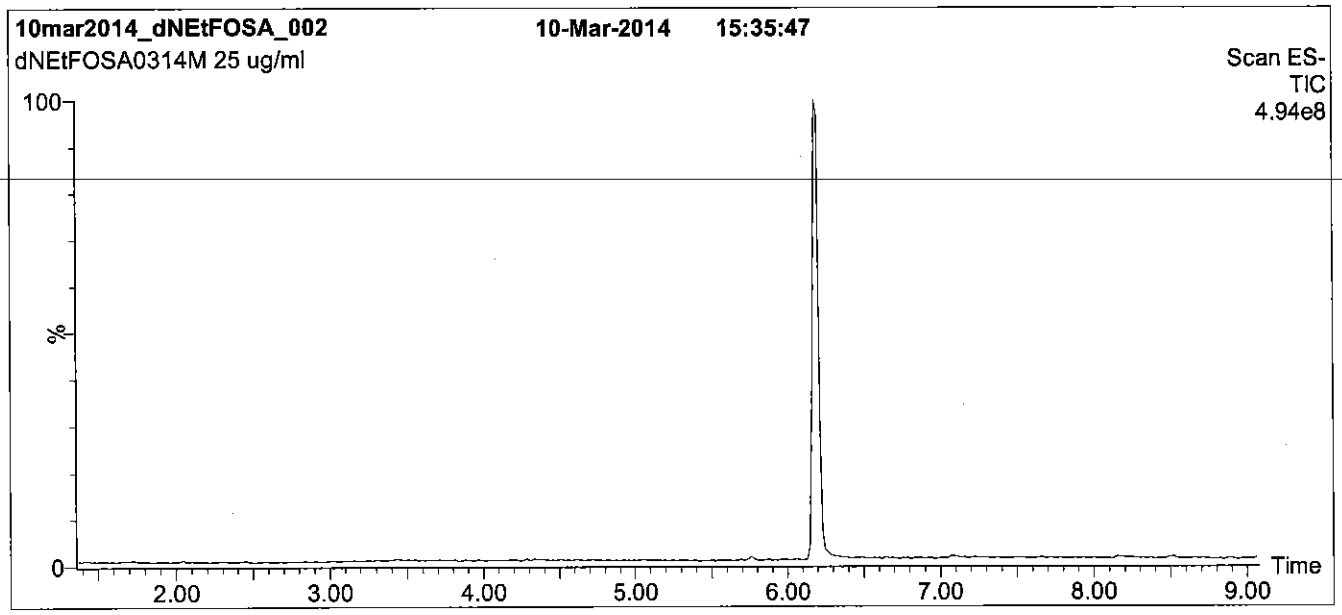
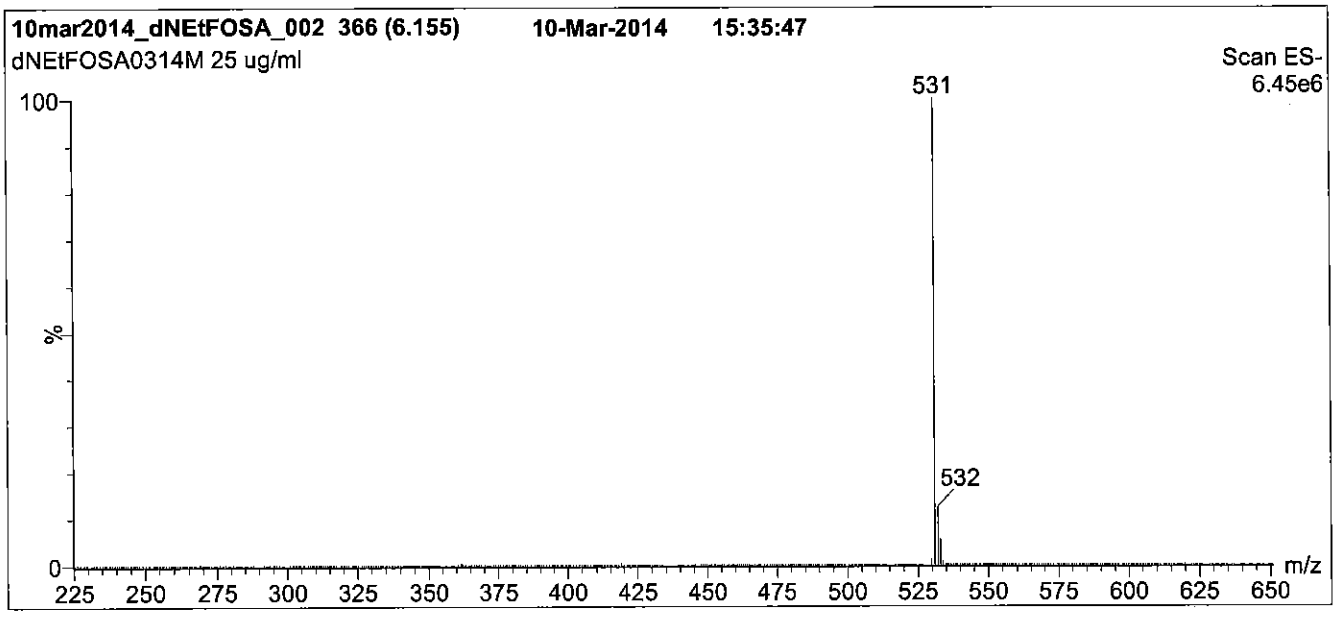




Conditions for Figure 1:

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: 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

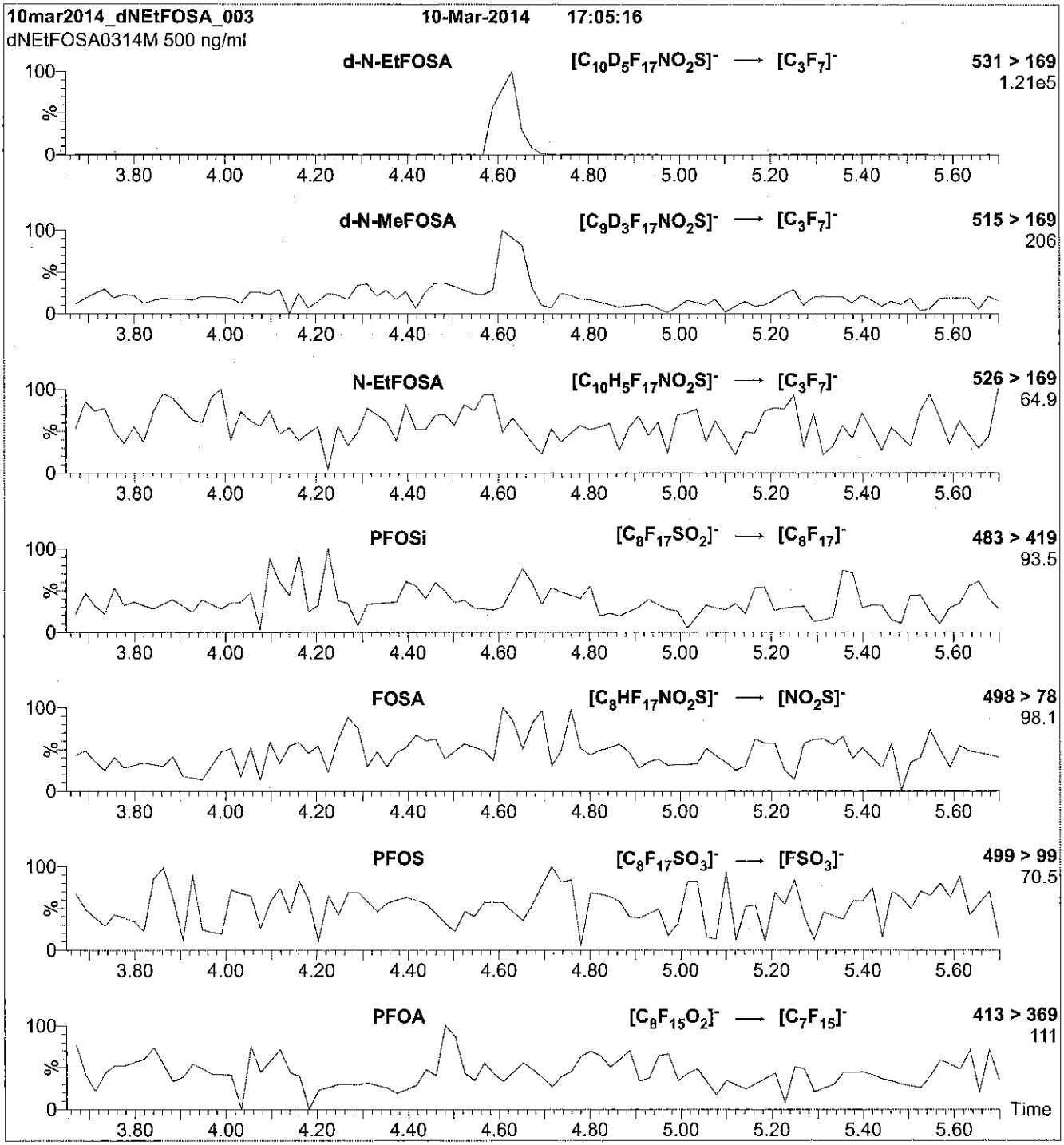
Flow: 300 µl/min

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-NEtFOSA-M_00002

R - 7/6/16 CBW

671571
ID: LCd-NEtFOSA-M_00002
Exp: 03/10/19 Prpd: CBW
d-N-EtFOSA-M

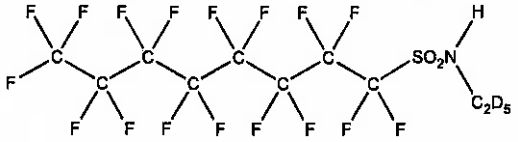
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d-N-EtFOSA-M
LOT NUMBER: dNEtFOSA0314M
COMPOUND: N-ethyl-d_5-perfluoro-1-octanesulfonamide

STRUCTURE:

CAS #: Not available



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LAST TESTED: (mm/dd/yyyy)	03/10/2014		
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Certified By: B.G. Chittim **Date:** 04/01/2015 (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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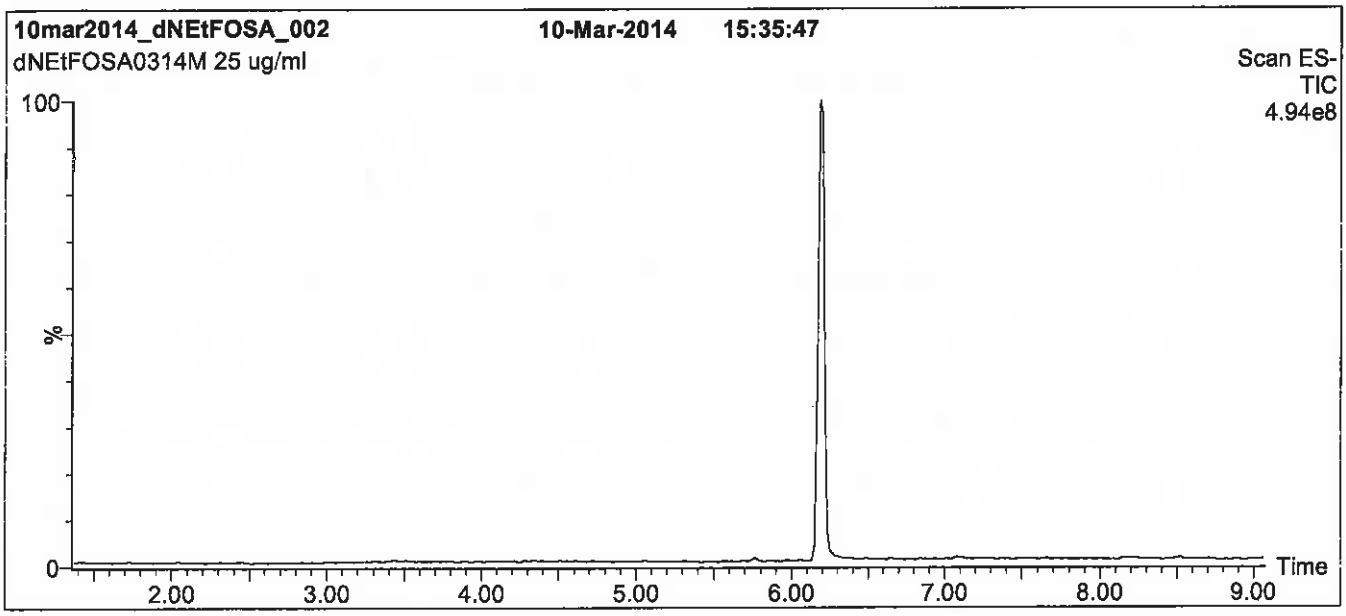

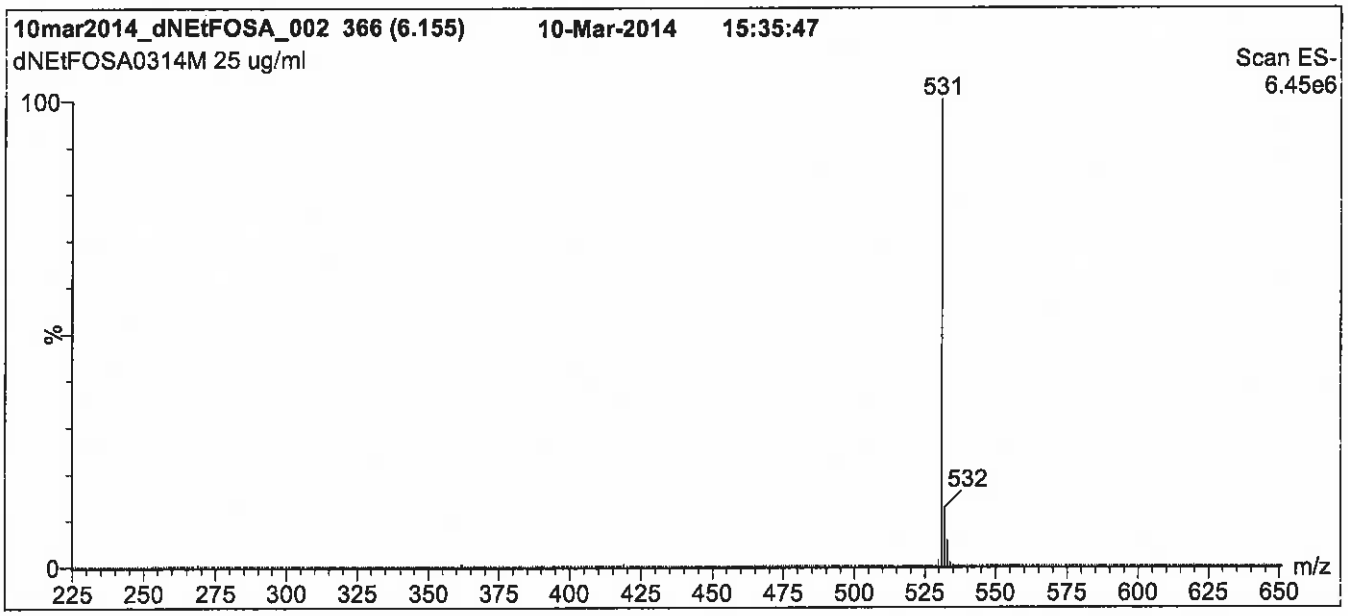

Conditions for Figure 1:

LC: **Waters Acquity Ultra Performance LC**
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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

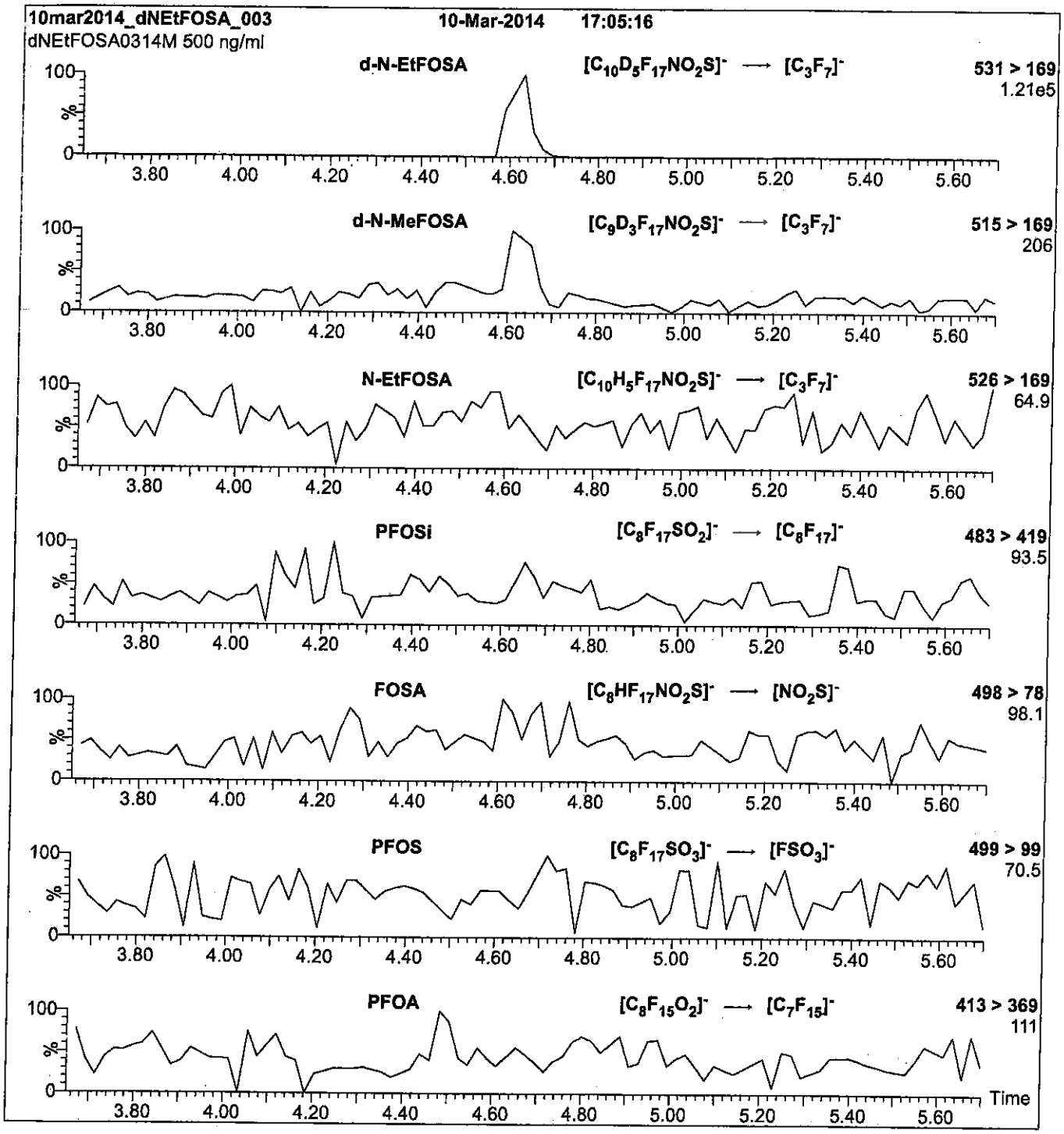
Flow: 300 µl/min

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
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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
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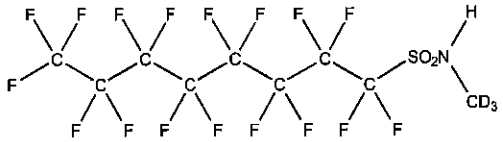
STRUCTURE:
CAS #: Not available



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CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥98% $^2H_3$
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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 GUIDE 34 REFERENCE MATERIAL PRODUCER

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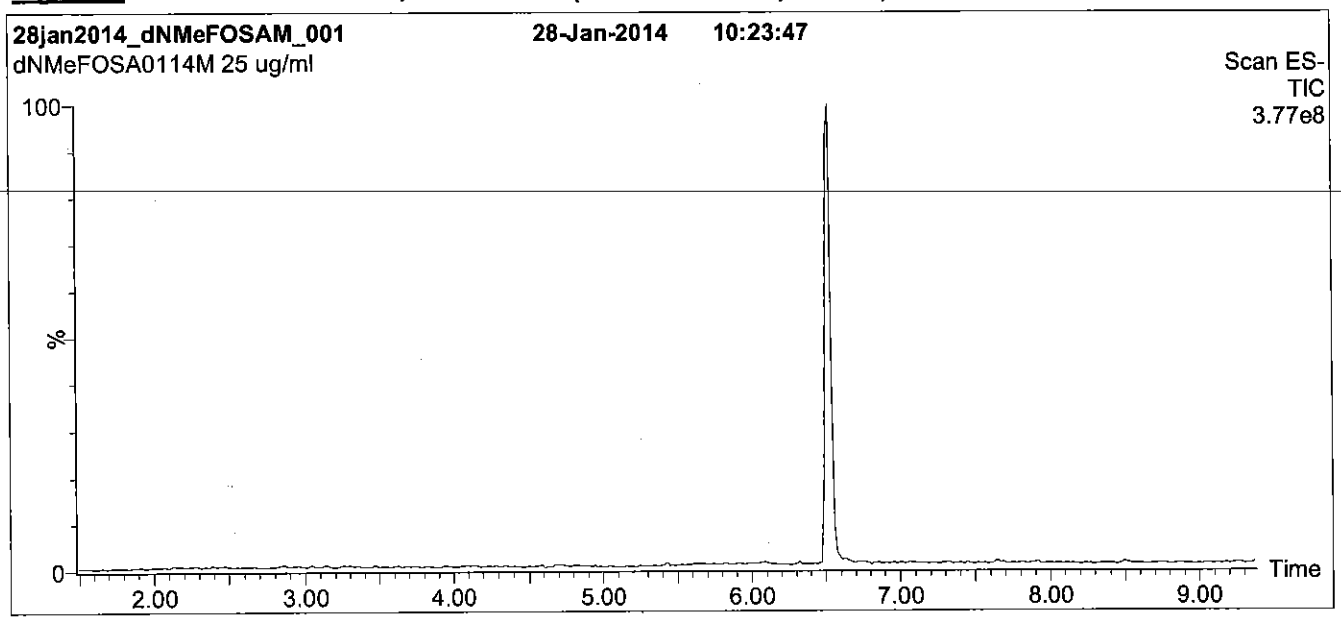
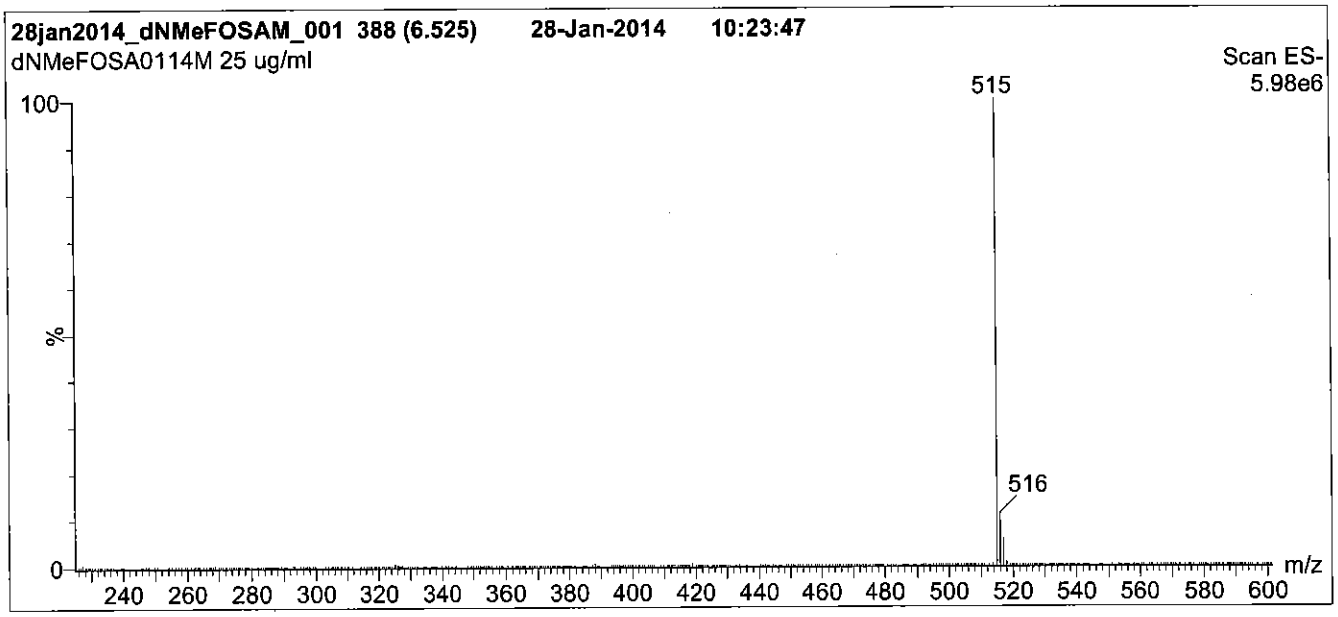
Figure 1: **d-N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





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

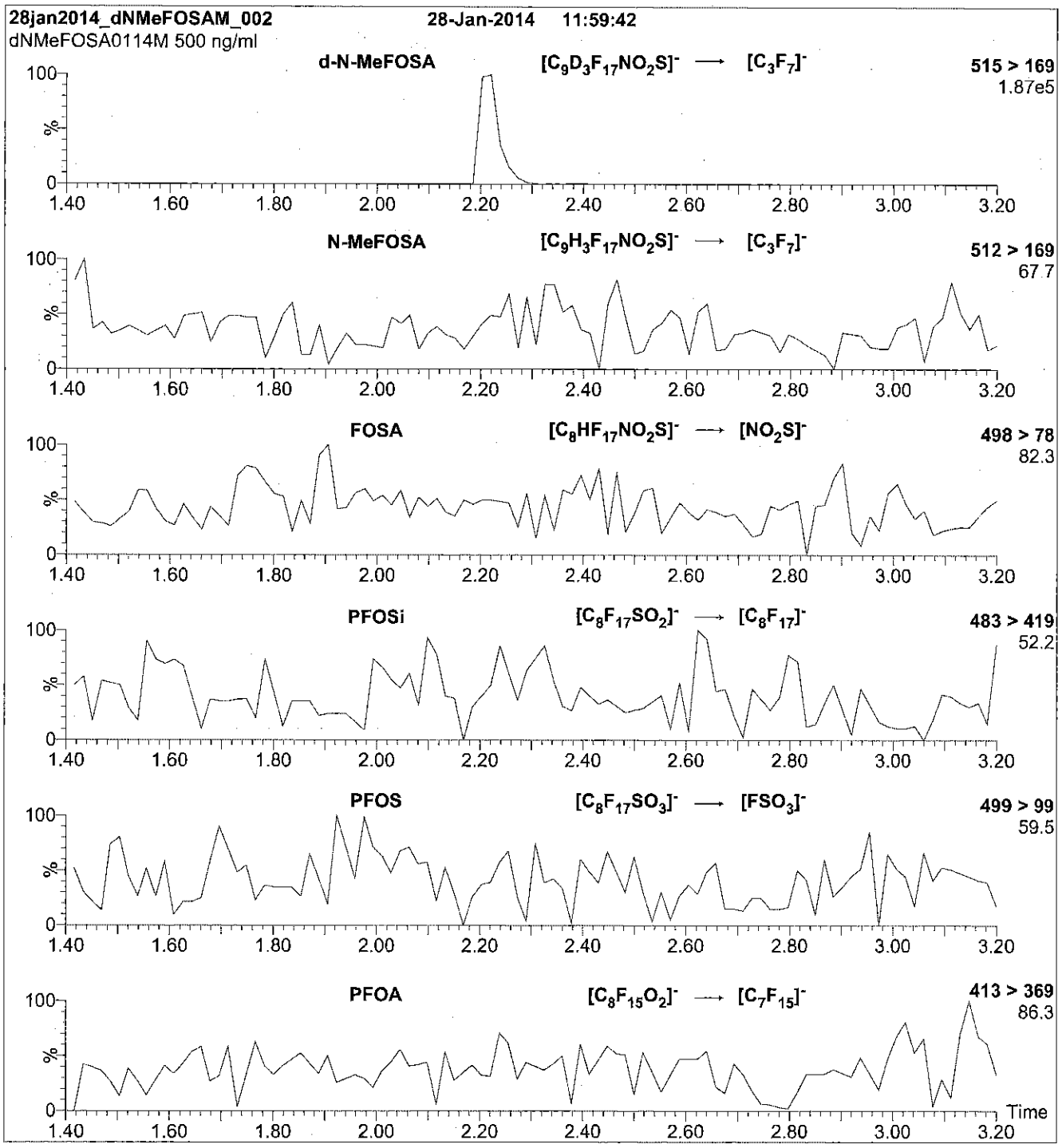
Flow: 300 µl/min

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

LCd-NMeFOSA-M_00002

R: 7/6/16 CBW

671625
ID: LCd-NMeFOSA-M_00002
Exp: 06/13/21 Prpd: CBW
d-N-MeFOSA-M

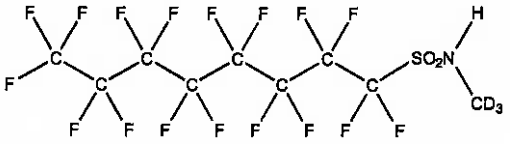
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d-N-MeFOSA-M
LOT NUMBER: dNMeFOSA0616M
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)	06/10/2016		
EXPIRY DATE: (mm/dd/yyyy)	06/10/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 06/16/2016 (mm/dd/yyyy)

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

INTENDED USE:

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HAZARDS:

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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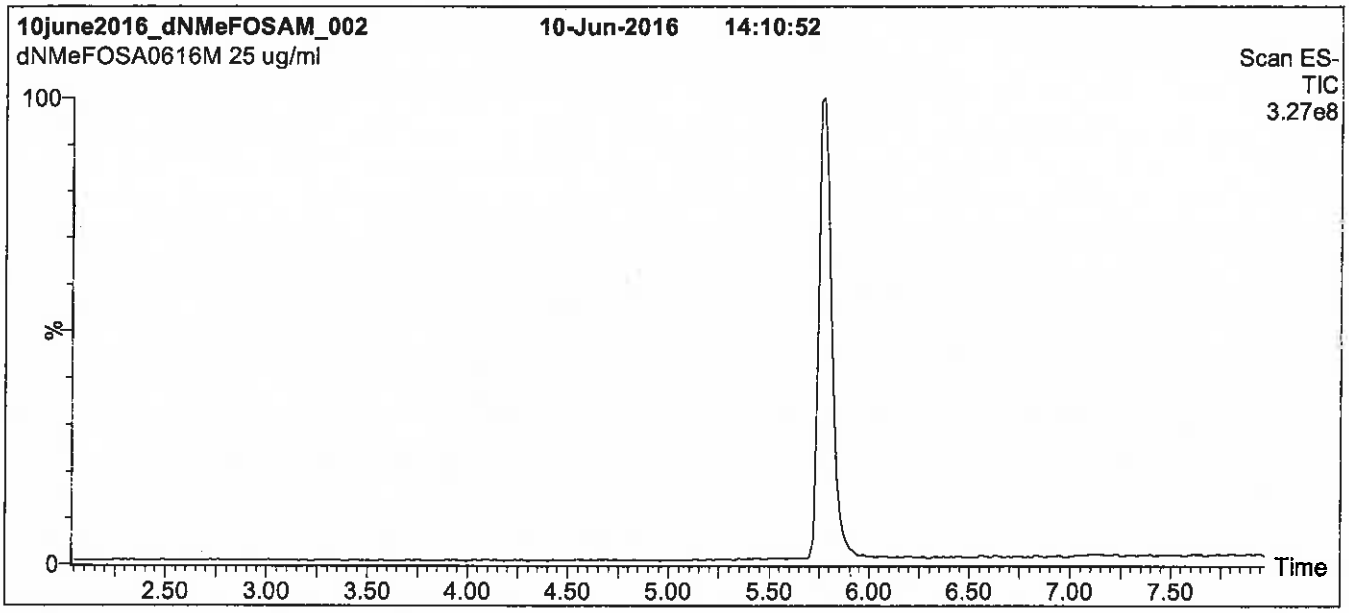
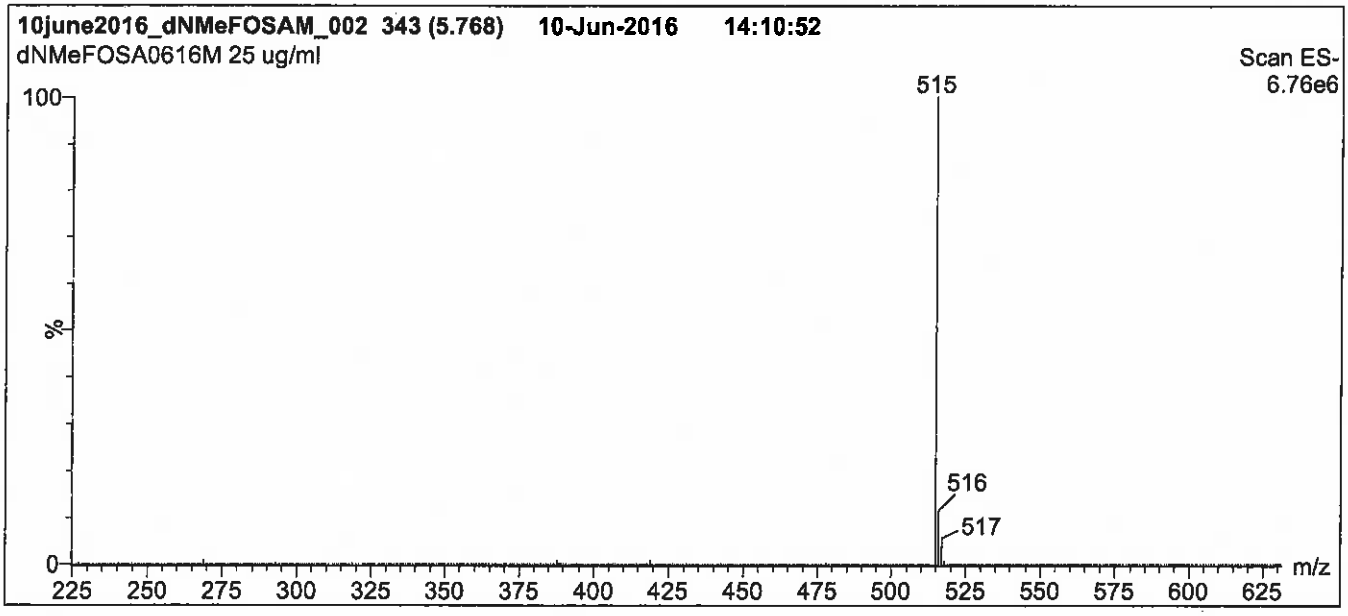




Conditions for Figure 1:

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: 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

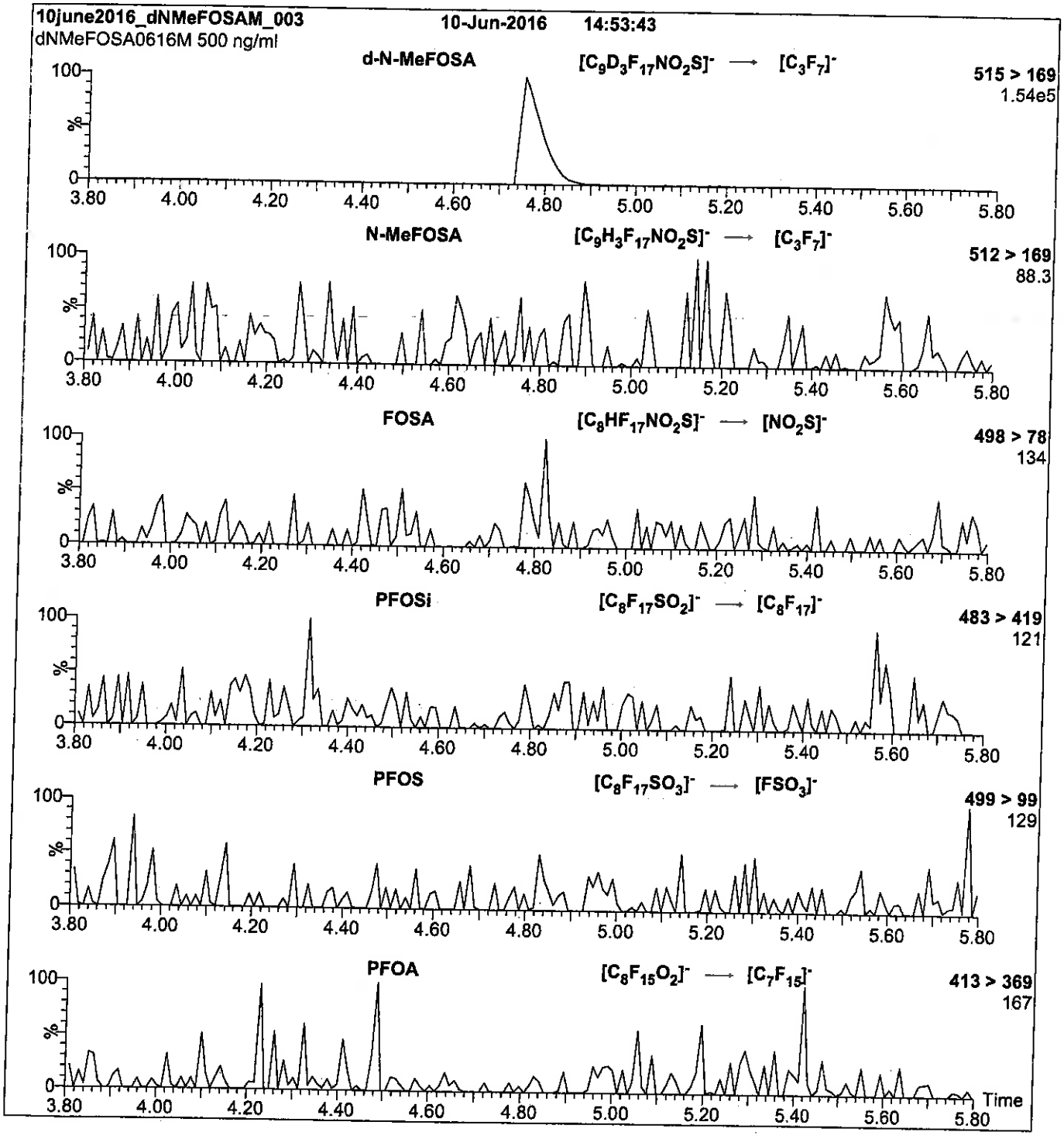
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 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) = 3.39e-3
Collision Energy (eV) = 25

Reagent

LCd3-NMeFOSAA_00001

r: 7/16/15 SKV

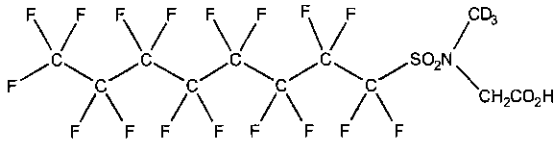
WELLINGTON LABORATORIES

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.

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:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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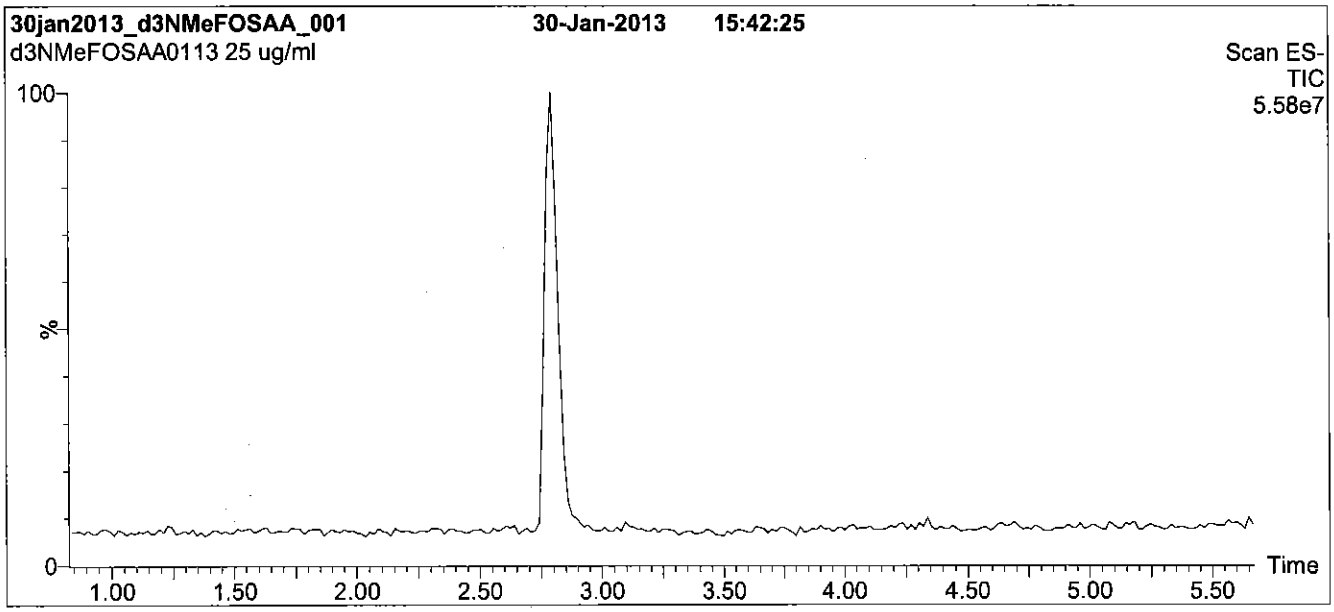
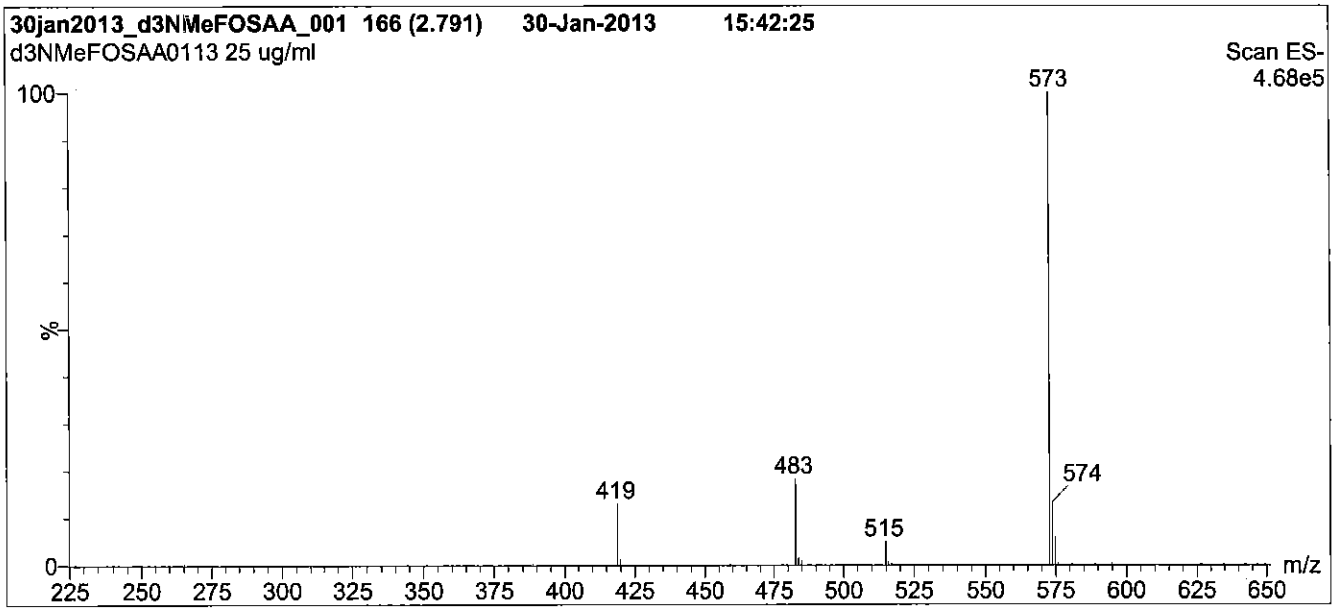
Figure 1: **d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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

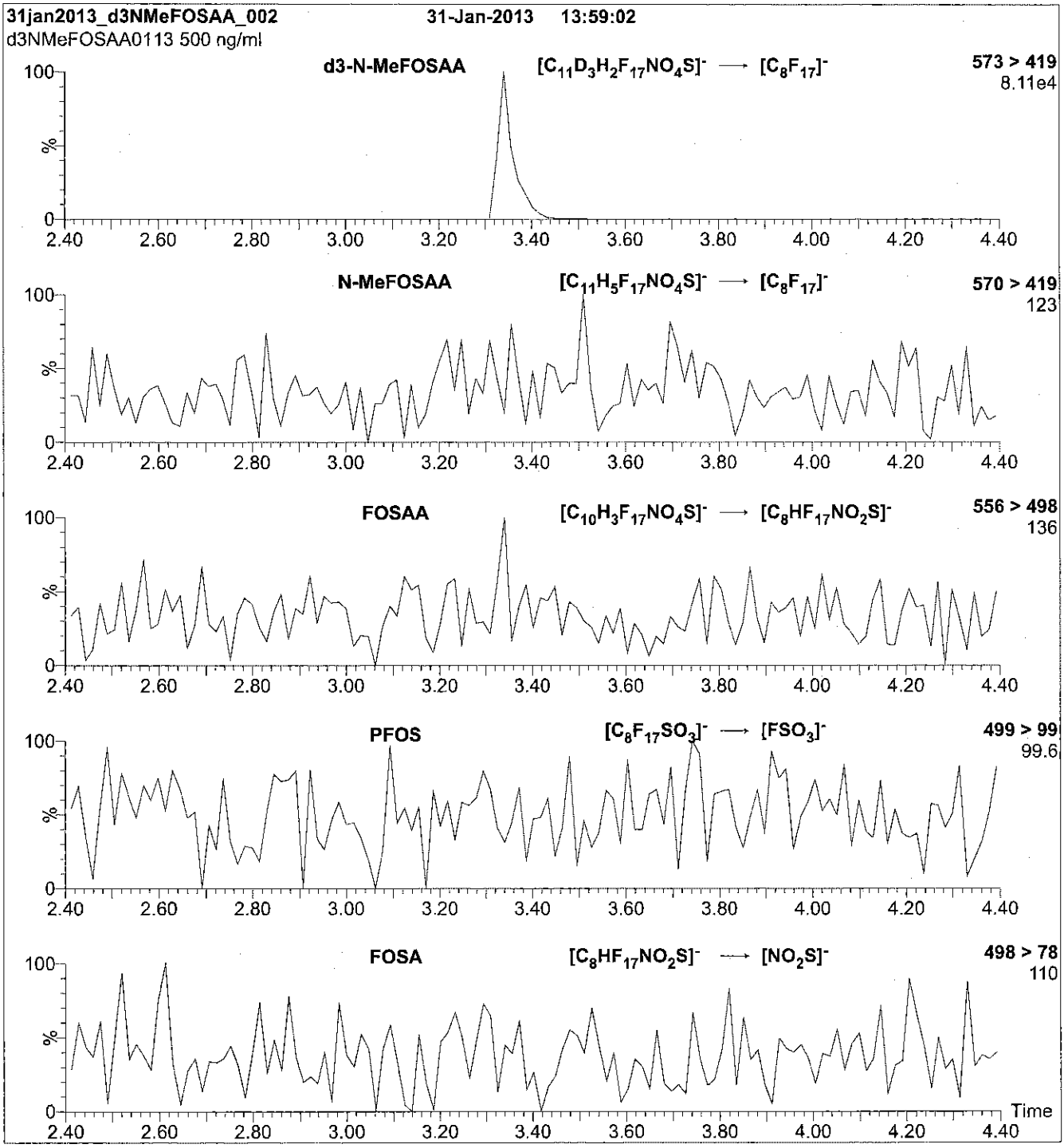
Flow: 300 µl/min

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

LCd3-NMeFOSAA_00002

R: 7/16/16 CBW

671572
ID: LCd3-NMeFOSAA_00002
Exp: 01/20/21 Prpd: CBW
d3-N-MeFOSAA

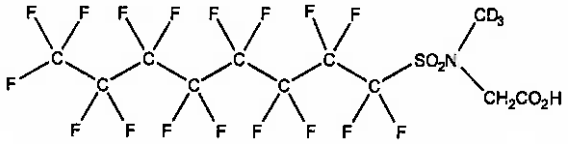
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d3-N-MeFOSAA **LOT NUMBER:** d3NMeFOSAA0116

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)	01/20/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/20/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
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Certified By: B.G. Chittim **Date:** 01/25/2016 (mm/dd/yyyy)

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CALA

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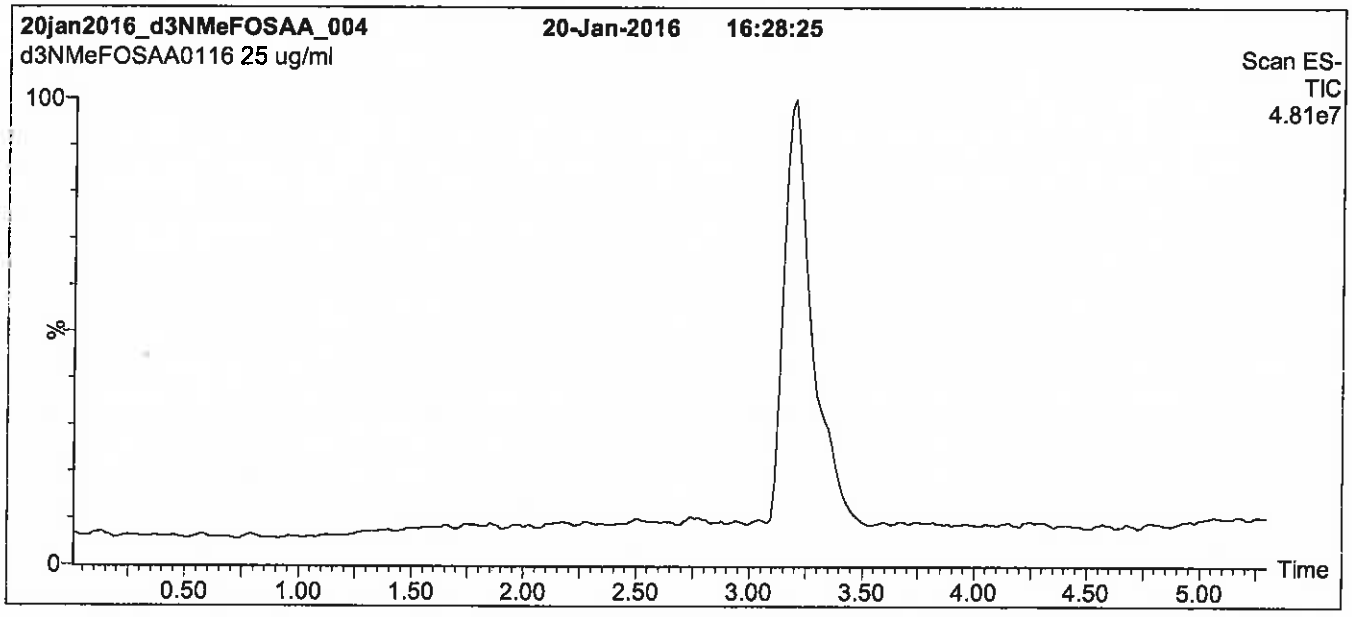
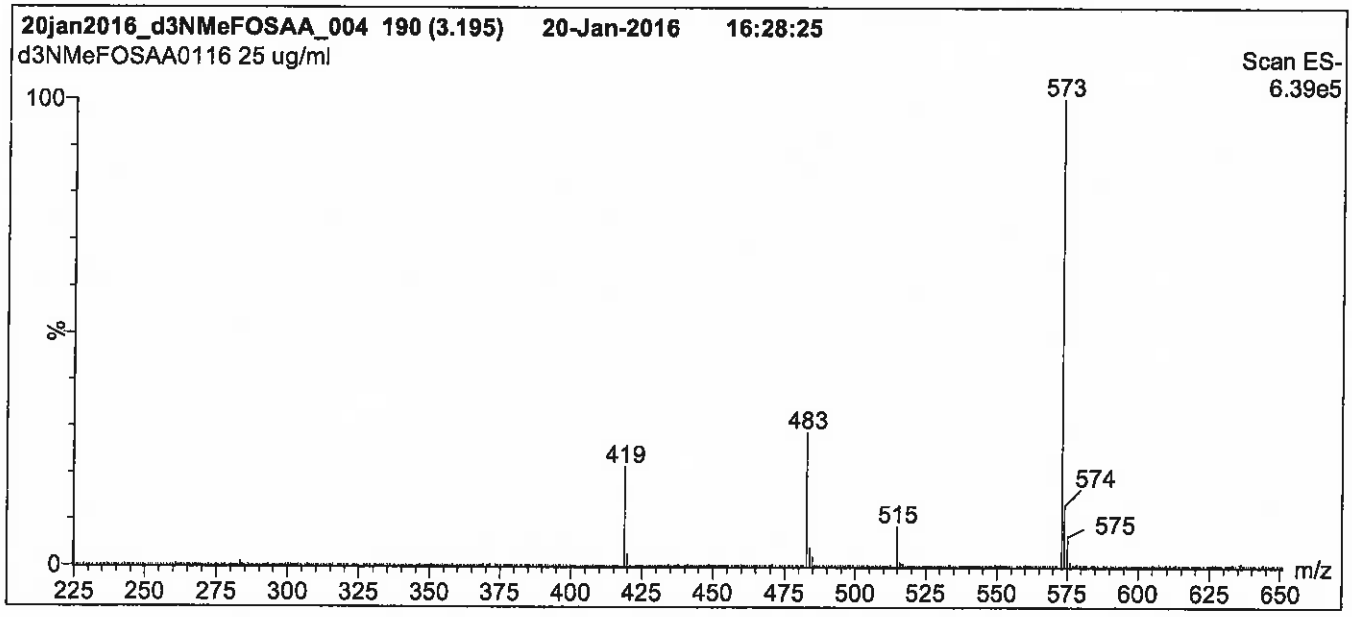
Figure 1: **d3-N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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: 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

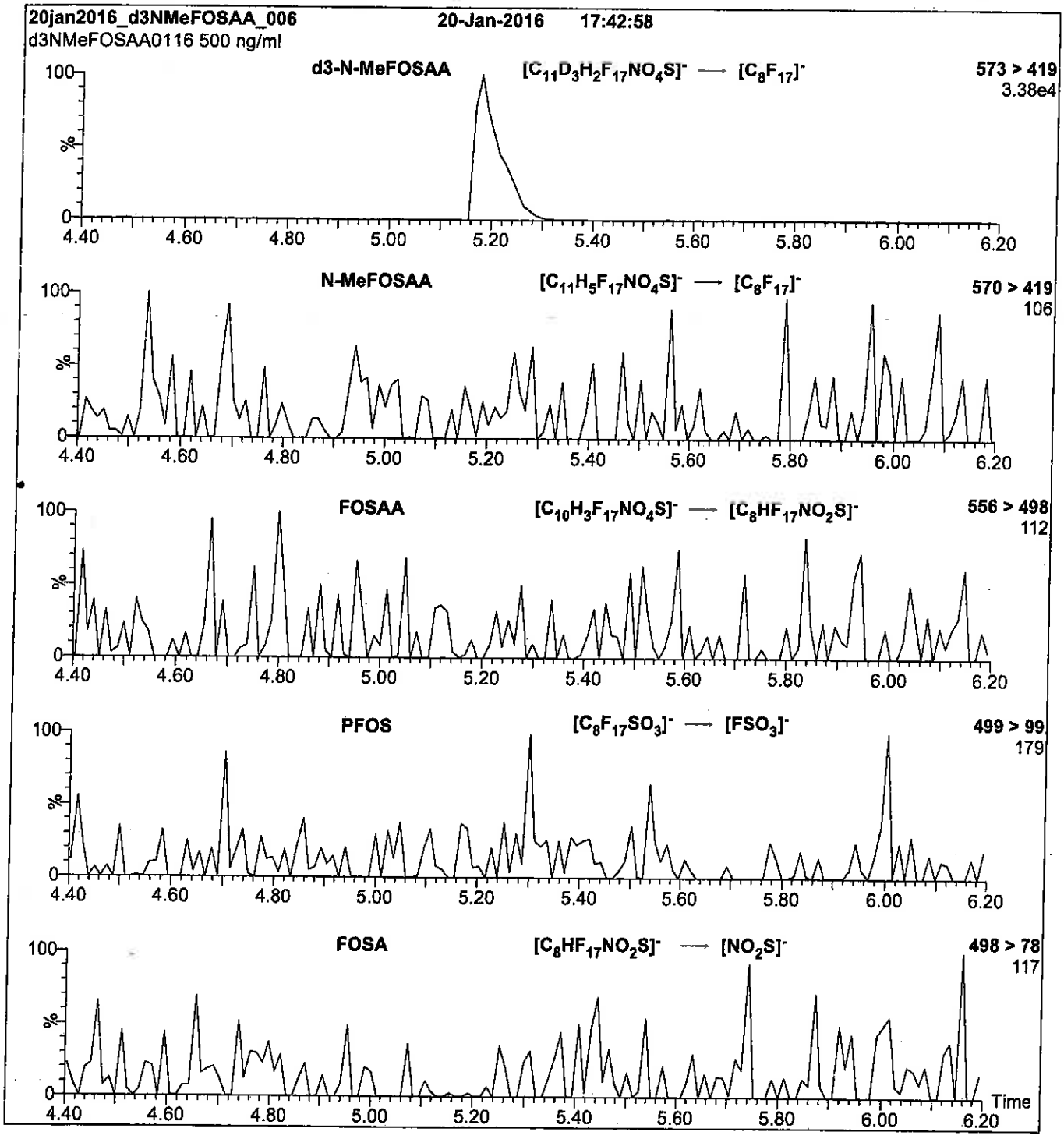
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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) = 3.66e-3
Collision Energy (eV) = 25

Reagent

LCd5-NEtFOSAA_00001

P: 7/10/15 SW

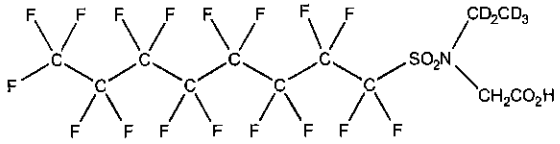
WELLINGTON LABORATORIES

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

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

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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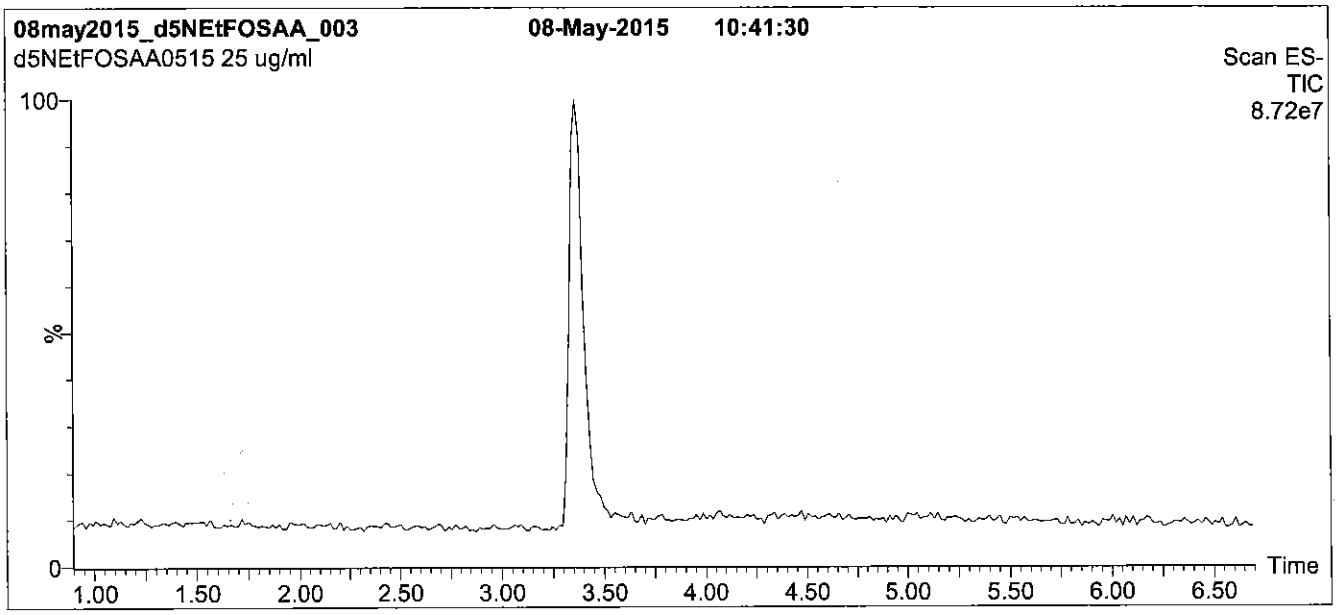
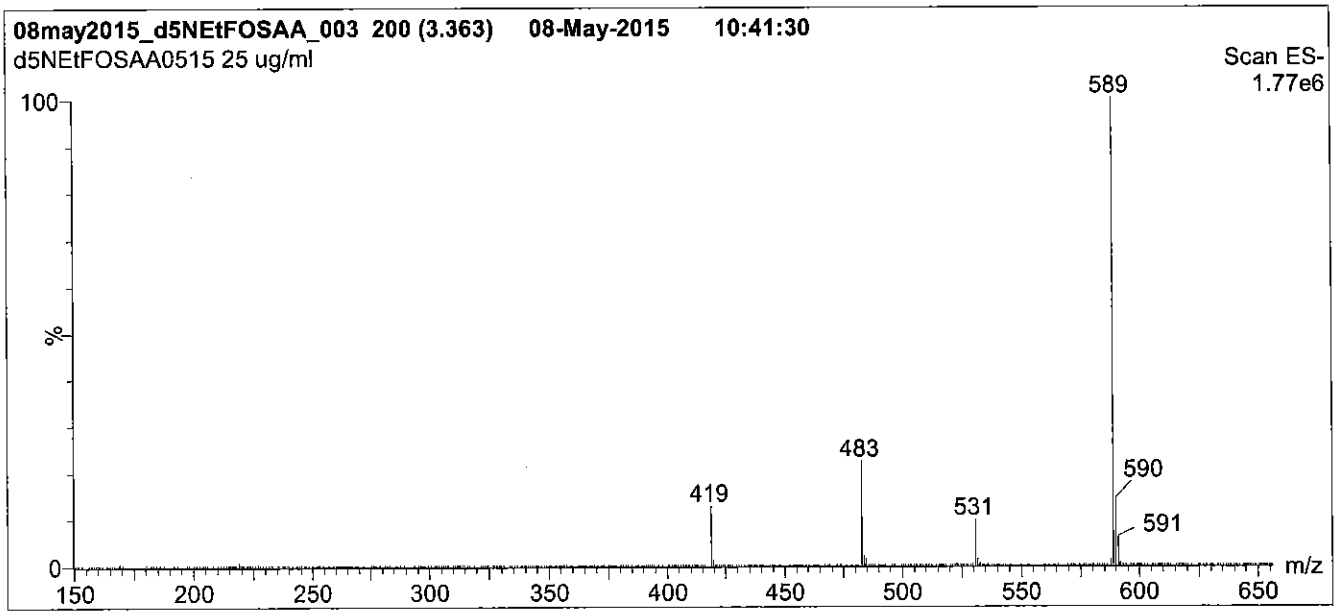




Conditions for Figure 1:

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

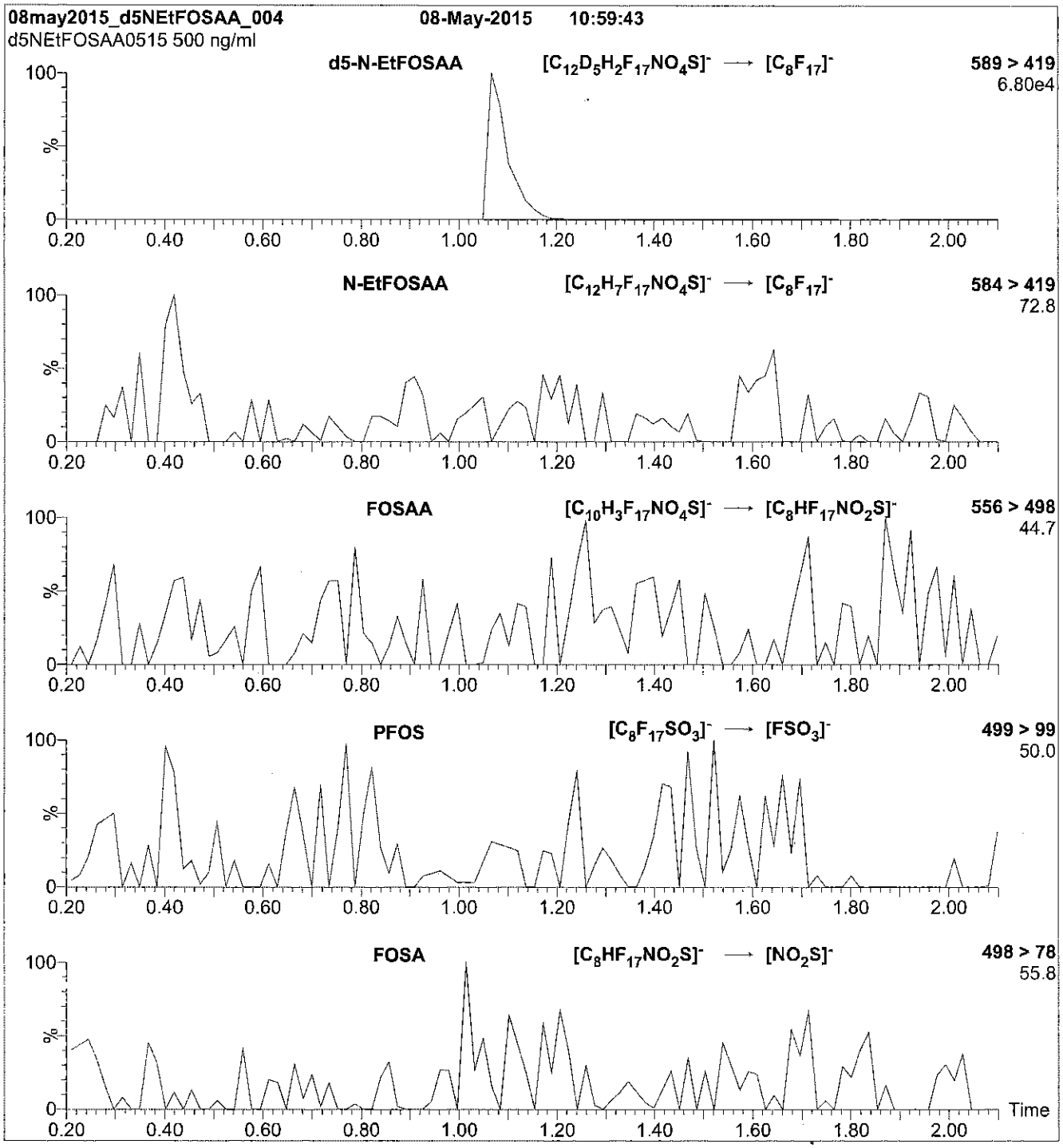
Flow: 300 µl/min

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

LCd5-NEtFOSAA_00002

R: 7/6/16 CBW

671603
ID: LCd5-NEtFOSAA_00002
Exp: 12/07/20 Prpd: CBW
d5-N-EtFOSAA

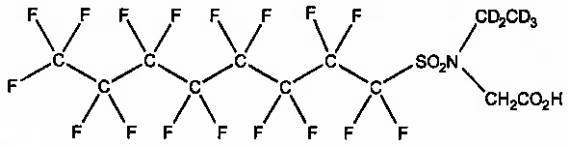
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: d5-N-EtFOSAA **LOT NUMBER:** d5NEtFOSAA1115

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% $^2H_6$
LAST TESTED: (mm/dd/yyyy)	12/07/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/07/2020		
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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

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CALA

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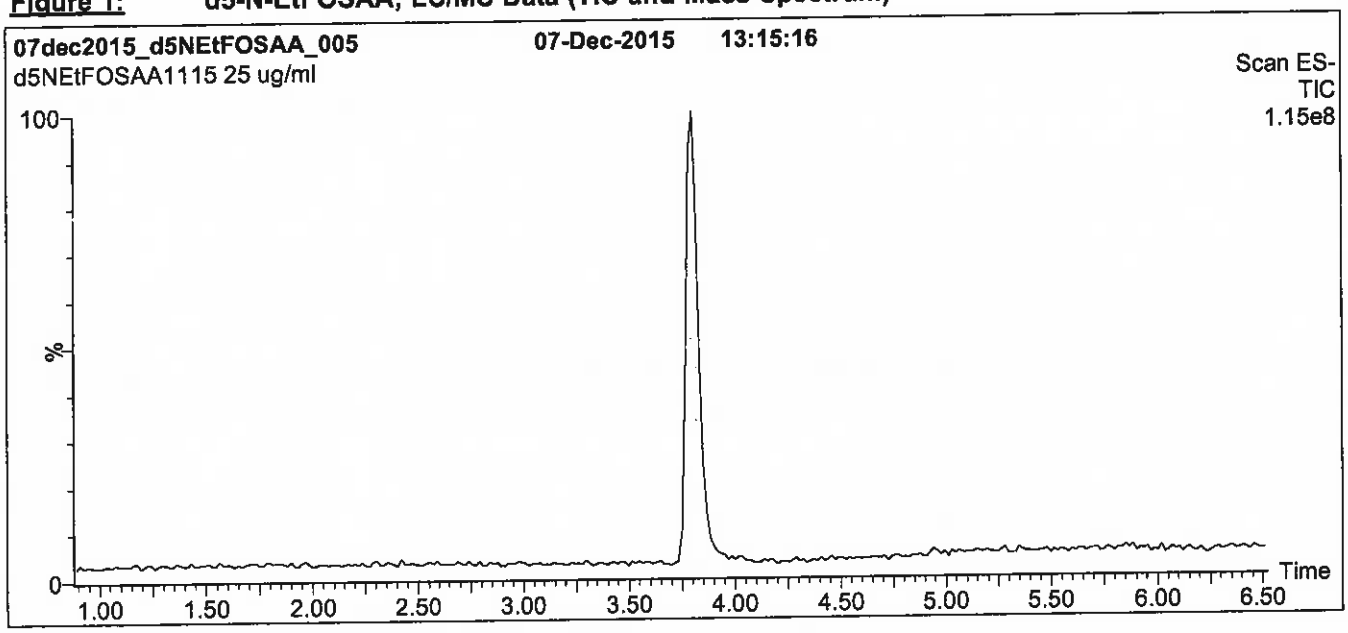
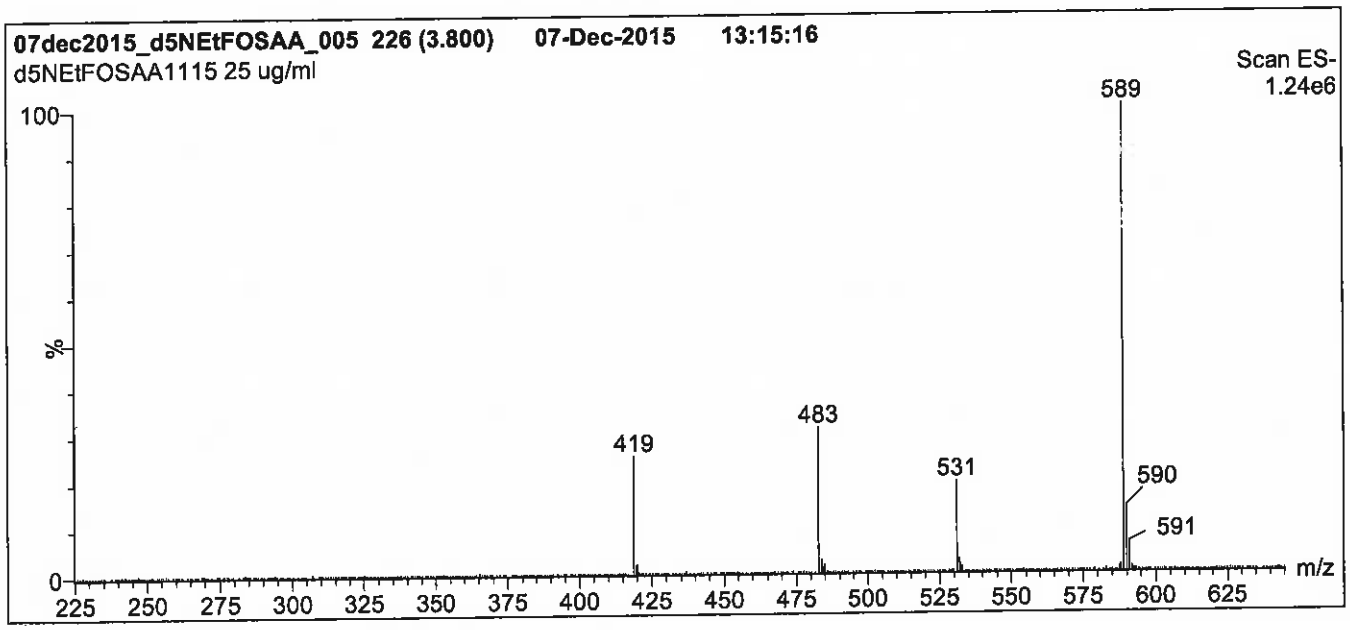




Conditions for Figure 1:

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

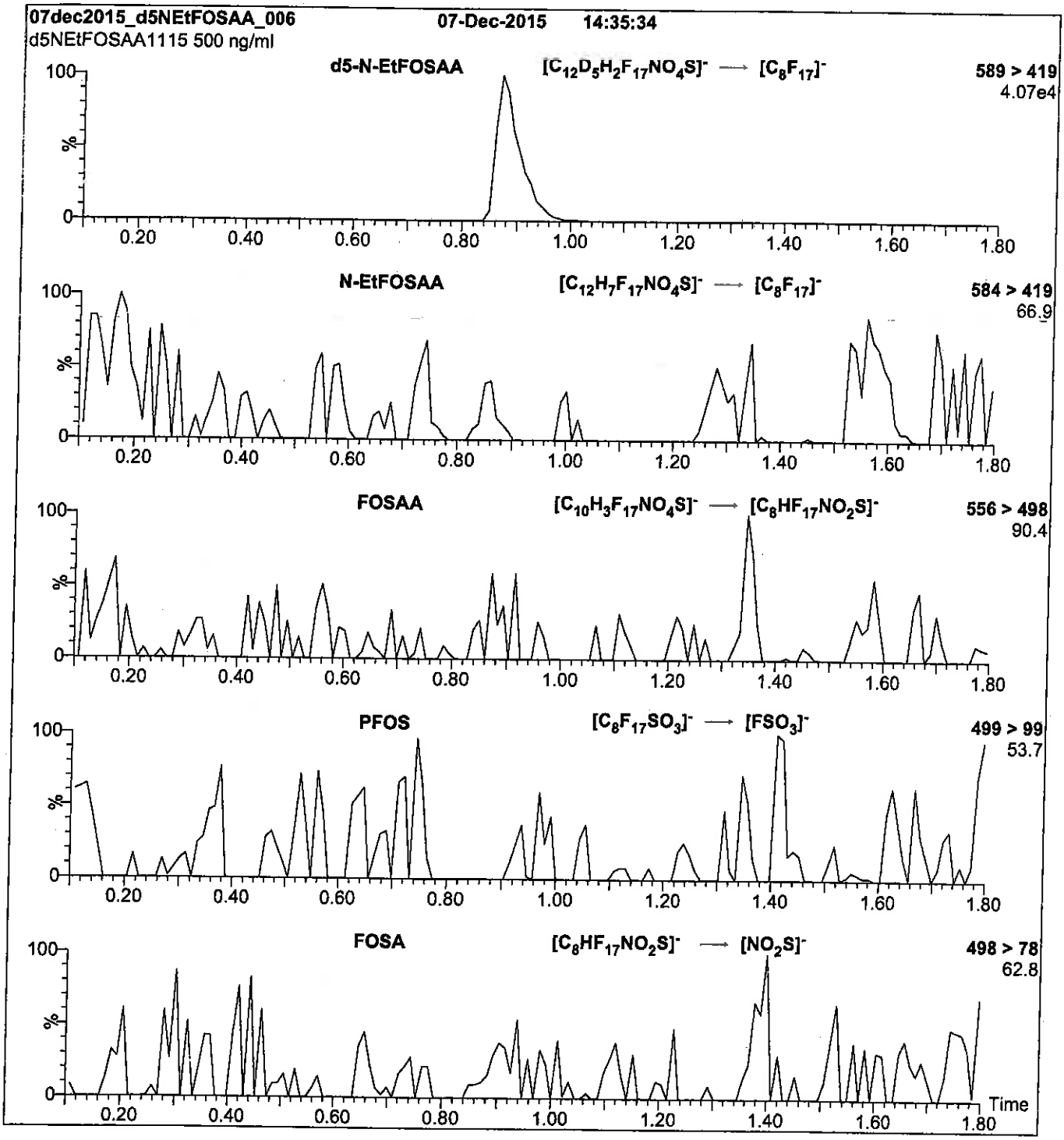
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 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) = 3.43e-3
Collision Energy (eV) = 25

Reagent

LCM2-6:FTS_00001

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

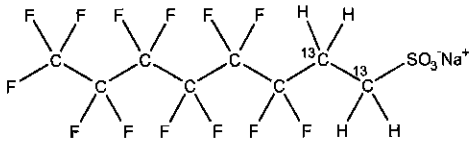
WELLINGTON LABORATORIES

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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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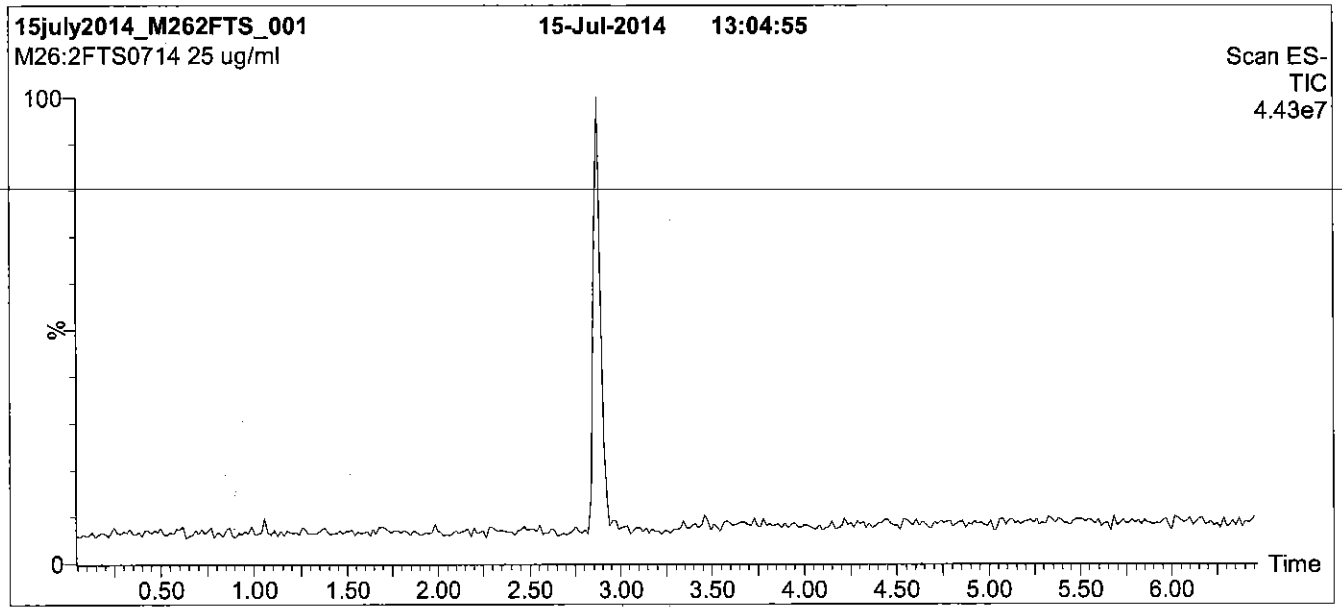
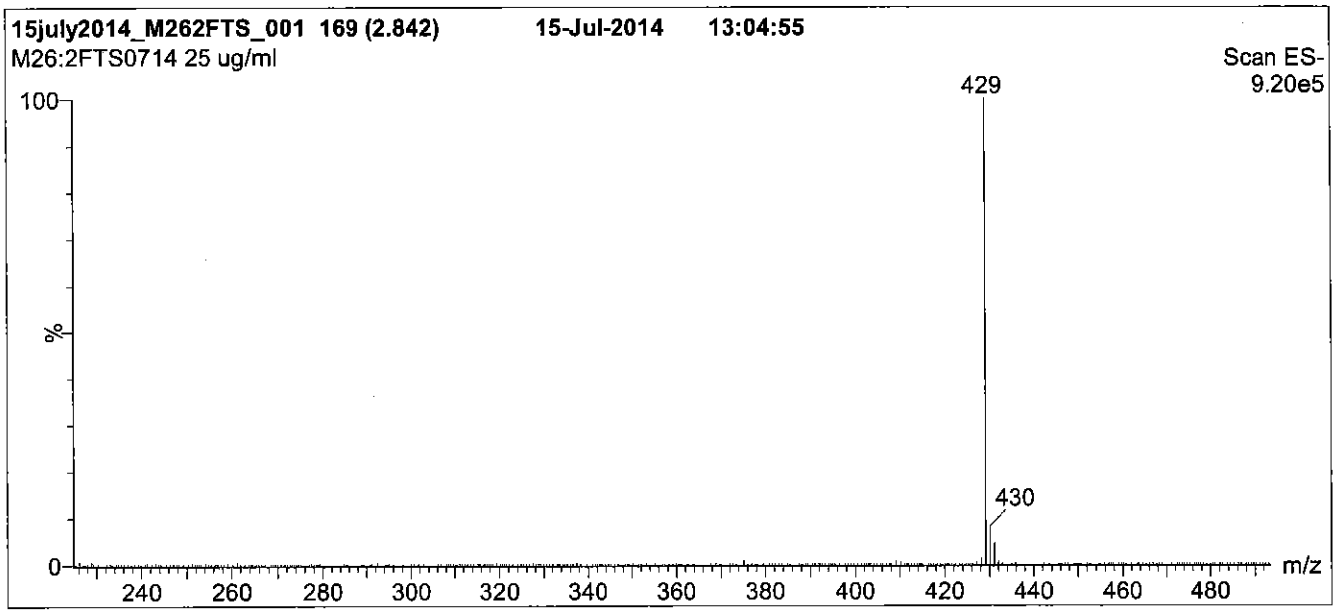
Figure 1: **M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

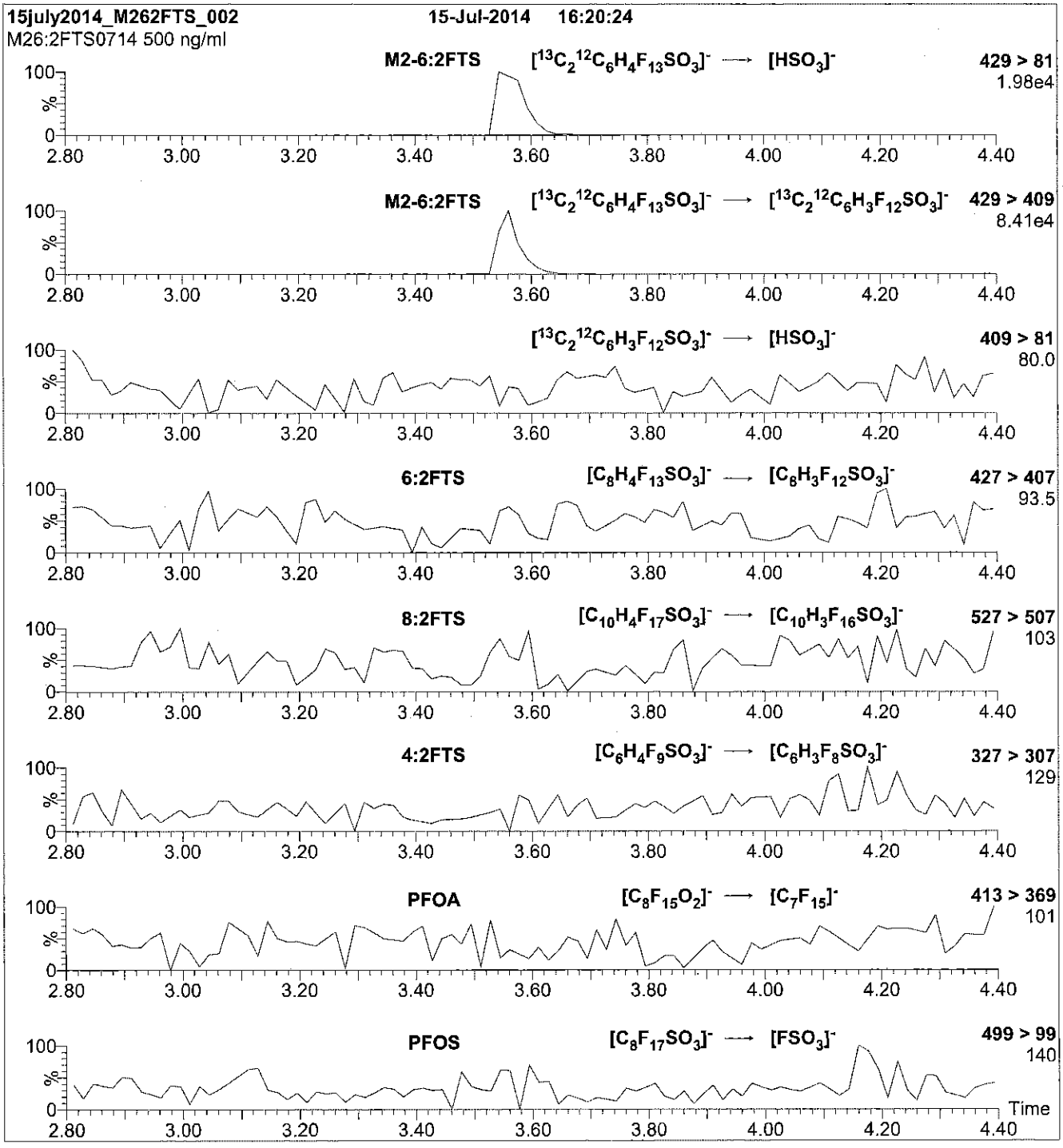
Flow: 300 µl/min

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

LCM2-6:FTS_00002

R: 7/6/16 CBW

671575
ID: LCM2-6:FTS_00002
Exp: 01/08/21 Prpd: CBW
M2-6:2FTS

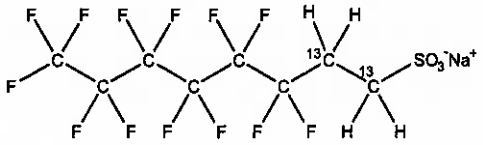
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-6:2FTS **LOT NUMBER:** M262FTS0116

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) 47.5 ± 2.4 µg/ml (M2-6:2FTS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	01/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/08/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- The native 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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/11/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

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HOMOGENEITY:

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UNCERTAINTY:

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

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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.

TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

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CALA

ANAB ACCREDITED

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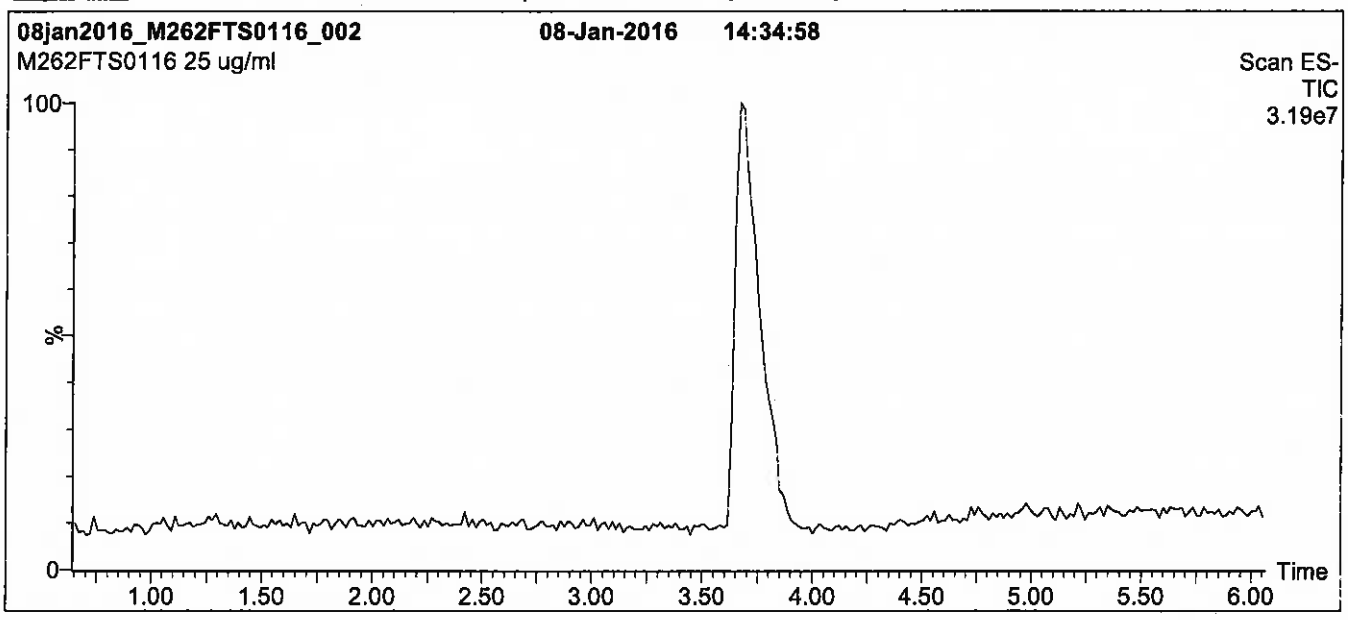
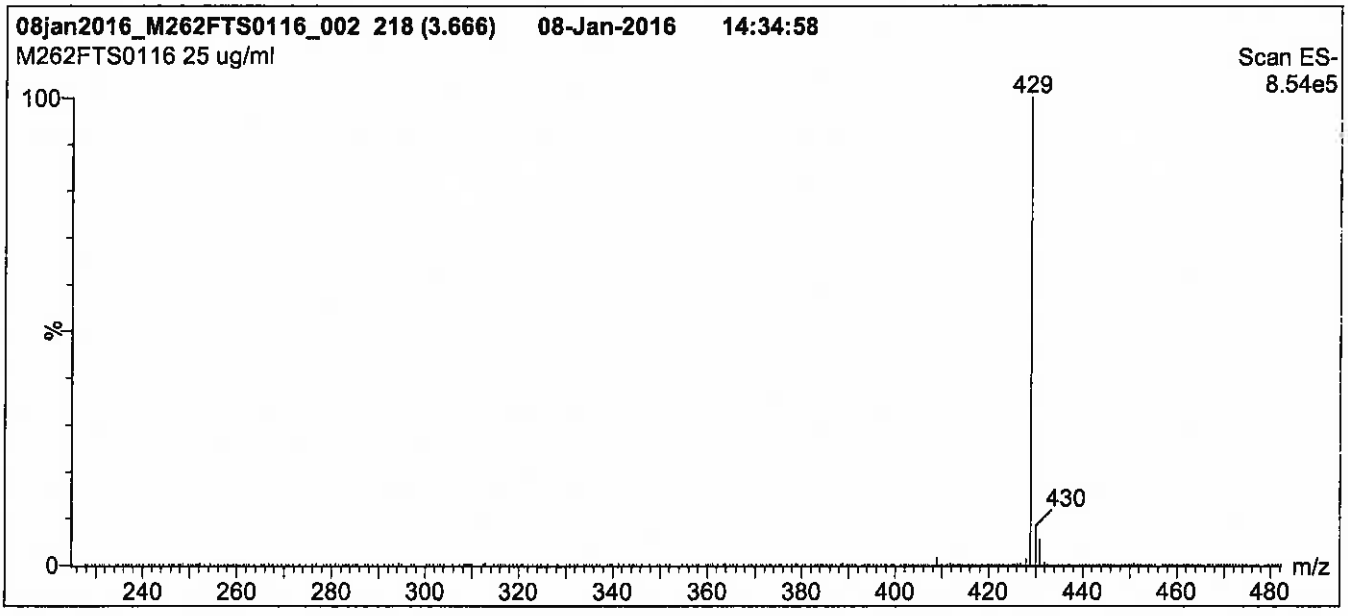
Figure 1: **M2-6:2FTS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

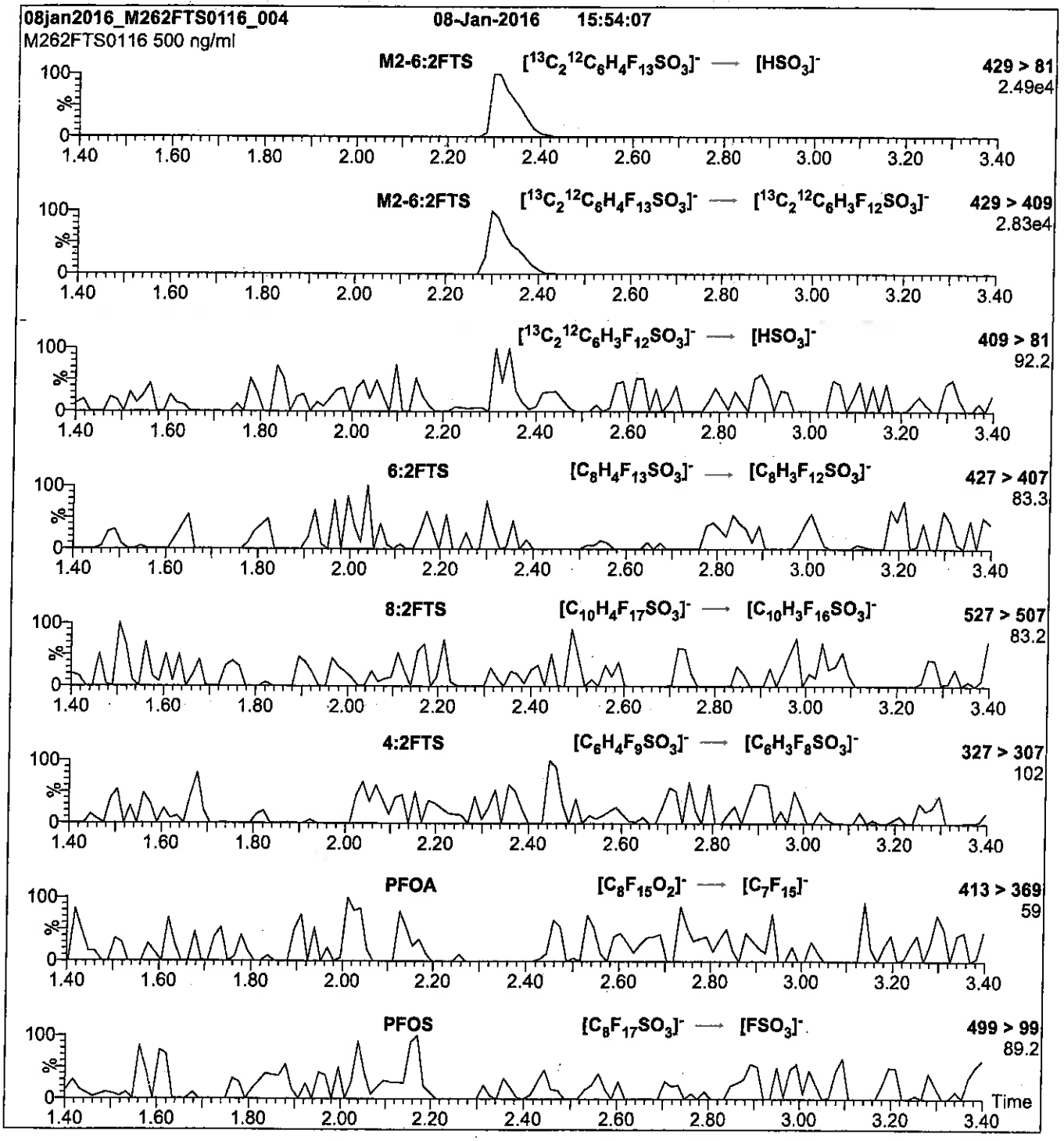
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 30.00
Cone Gas Flow (l/hr) = 100
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) = 3.28e-3
Collision Energy (eV) = 25

Reagent

LCM2-8:2FTS_00001

r: 7/16/15 BV
8 · 7/22/15 STV

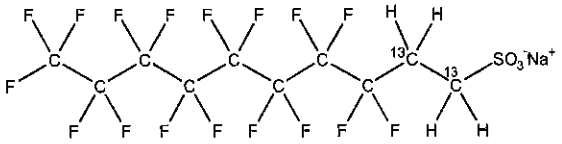
WELLINGTON LABORATORIES

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
LAST TESTED: (mm/dd/yyyy)	04/13/2014		($1,2\text{-}^{13}C_2$)
EXPIRY DATE: (mm/dd/yyyy)	04/13/2017		
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 8:2FTS contains 4.22% of ^{34}S (due to natural isotopic abundance) therefore both native 8:2FTS and M2-8:2FTS will produce signals in the m/z 529 to m/z 509 channel during SRM analysis. We recommend using the m/z 529 to m/z 81 transition to monitor for M2-8:2FTS during quantitative analysis as it will be free of any native contribution (see Figure 2).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 03/27/2015 (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 17025 REFERENCE MATERIAL PRODUCER

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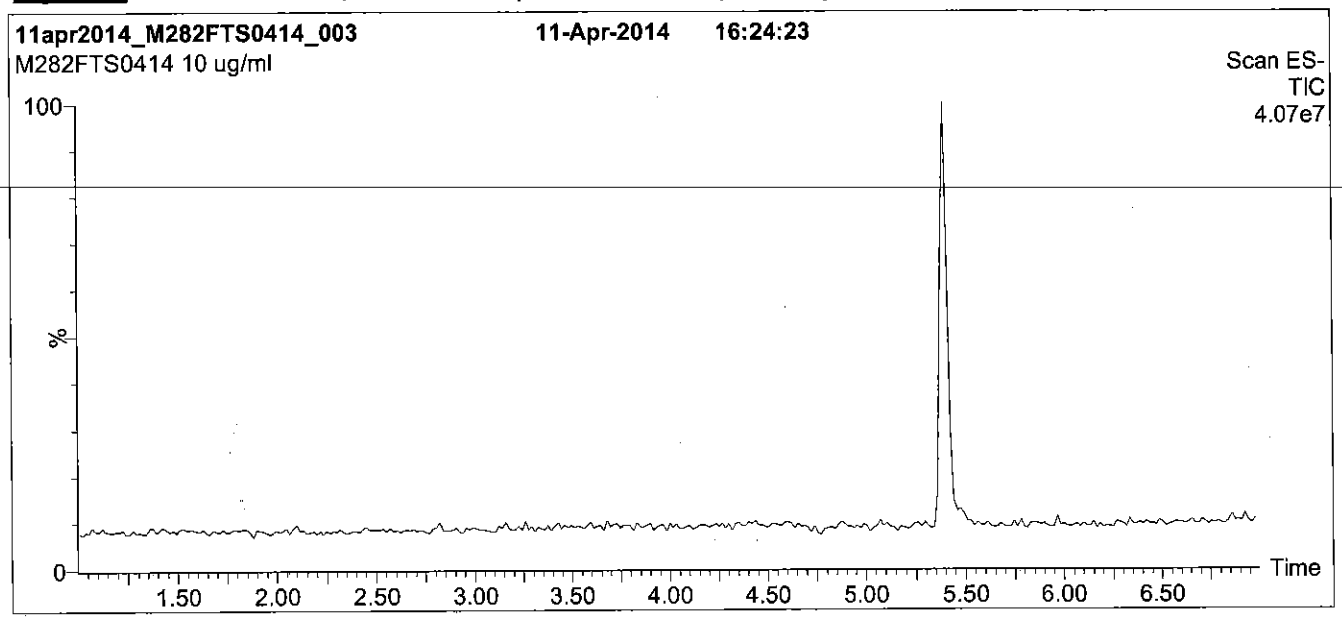
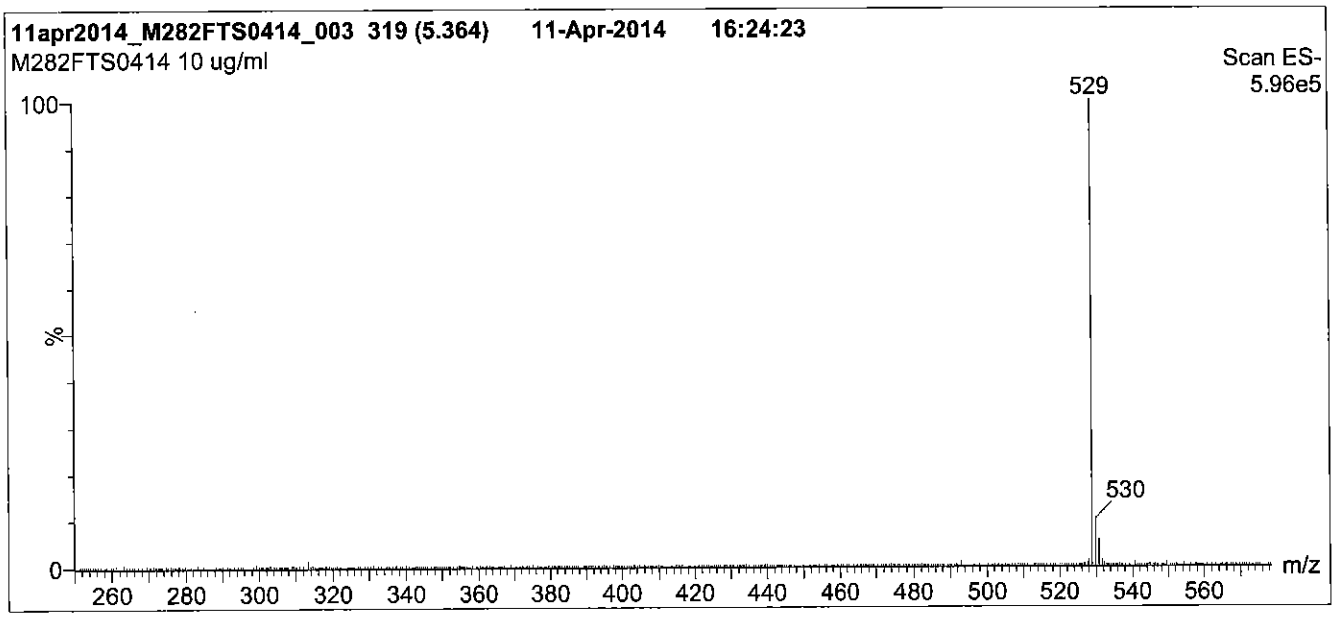
Figure 1: **M2-8:2FTS; LC/MS Data (TIC and Mass Spectrum)**





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

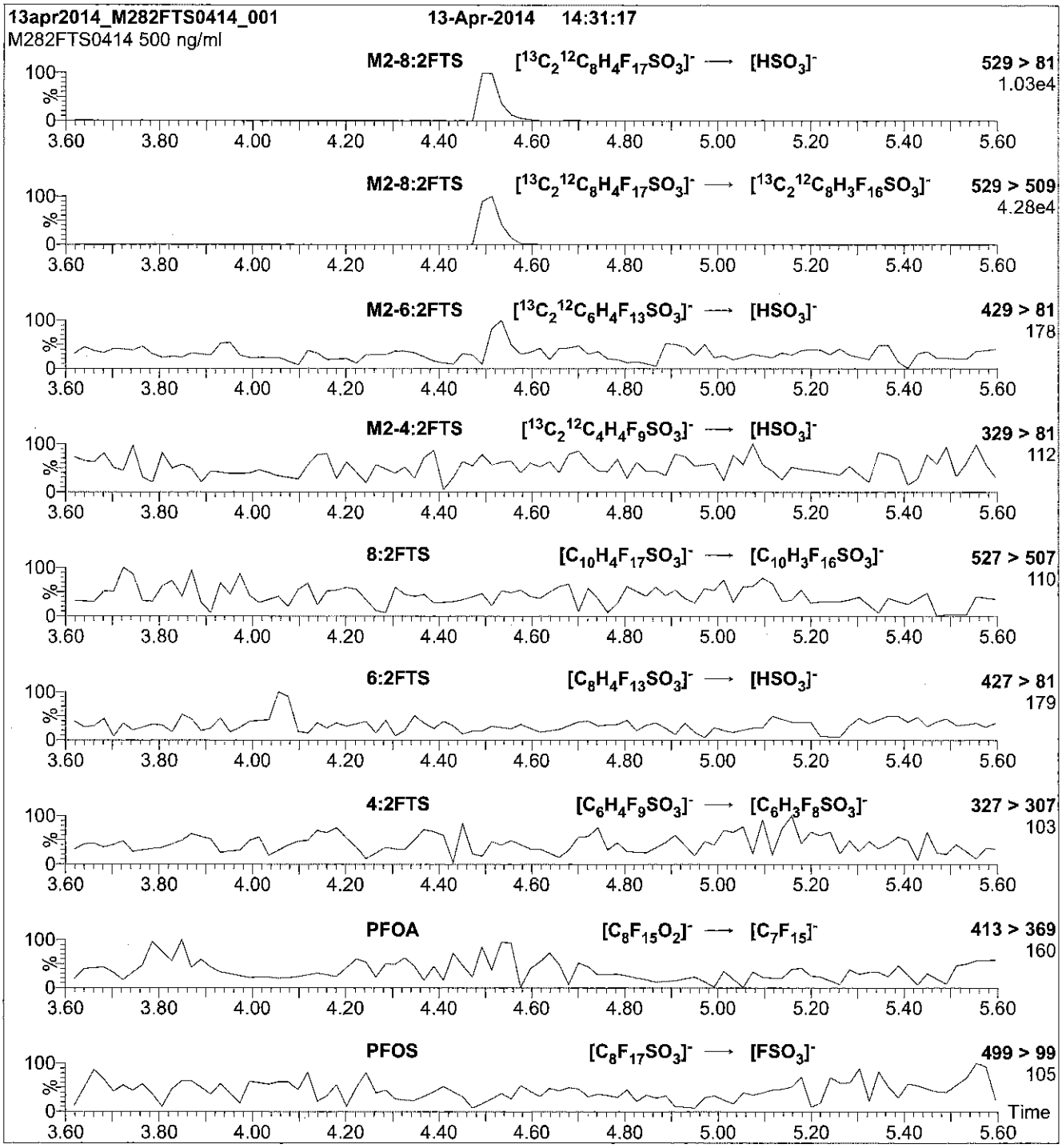
Flow: 300 µl/min

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

LCM2-8:2FTS_00002

R: 7/6/16 cw

671602
ID: LCM2-8:2FTS_00002
Exp: 01/08/21 Prpd: CBW
M2-8:2FTS

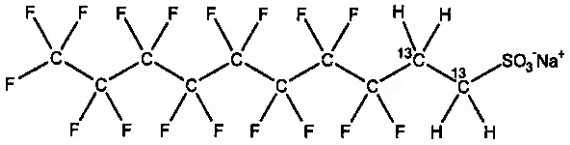
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0116

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

STRUCTURE: **CAS #:** Not available



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Certified By: B.G. Chittim **Date:** 01/18/2016 (mm/dd/yyyy)

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CALA

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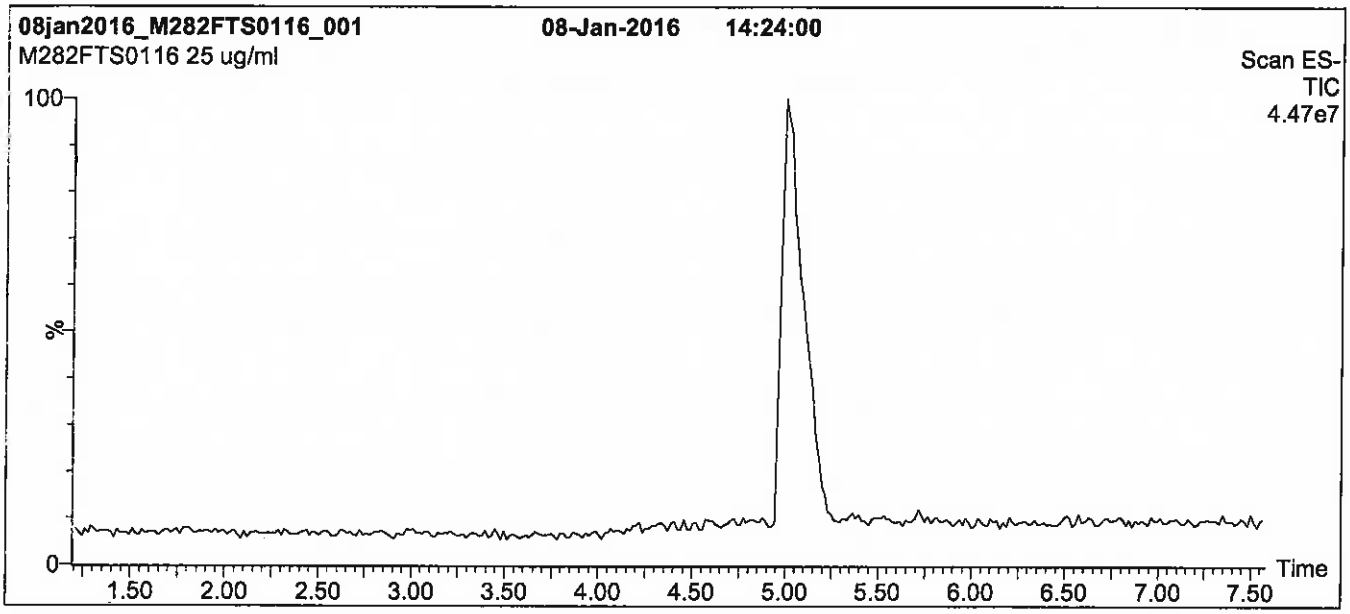
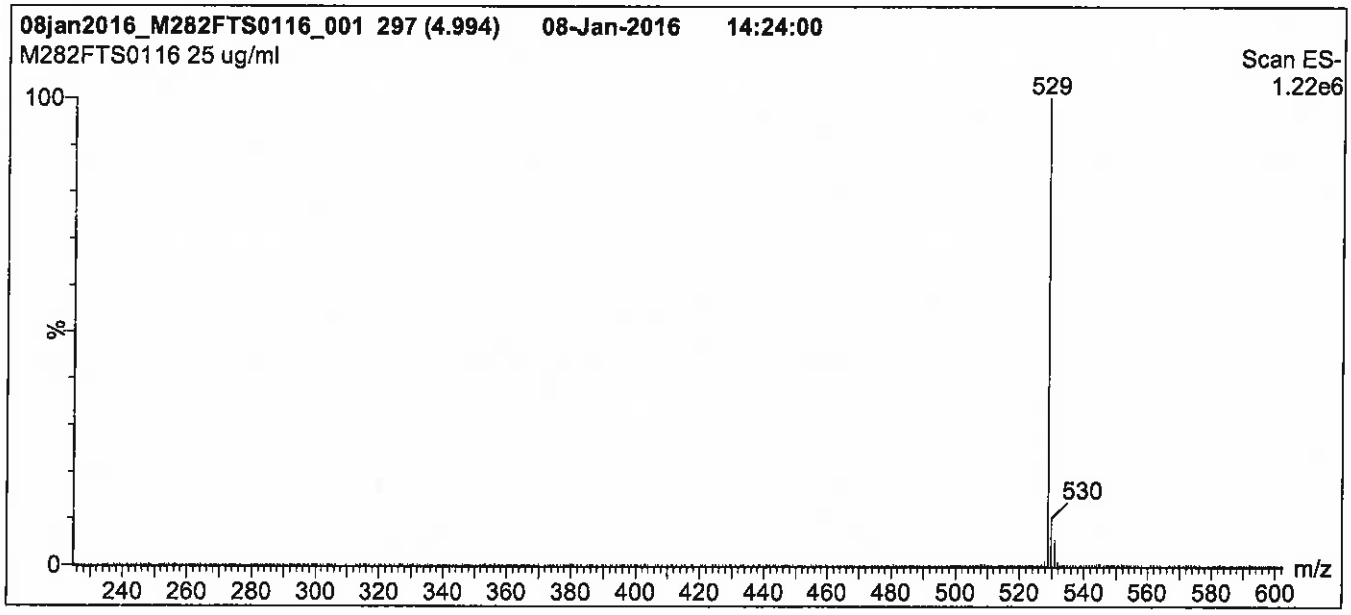




Conditions for Figure 1:

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: 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

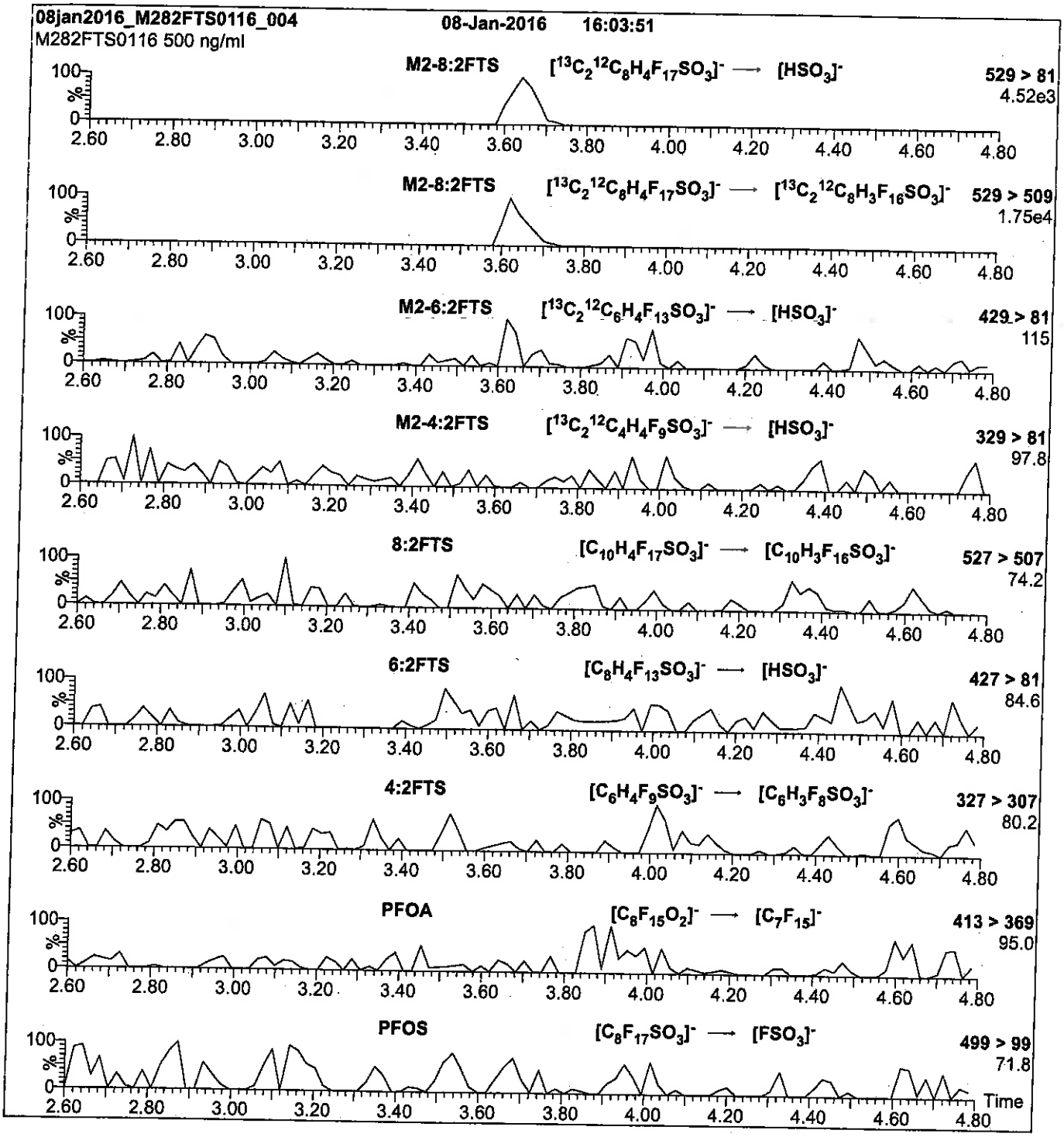
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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) = 3.20e-3
Collision Energy (eV) = 30

Reagent

LCM2PFHxDA_00008

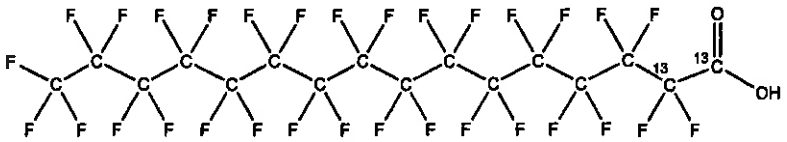
R: SBC 9/22/16

739512
ID: LCM2PFHxDA_00008
Exp: 01/07/21 Prpd: SBC
13C2-PFHxDA at 50ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M2PFHxDA	**LOT NUMBER:**	M2PFHxDA1112
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexadecanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{14}HF_{31}O_2$	**MOLECULAR WEIGHT:**	816.11
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	01/07/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/07/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/11/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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:

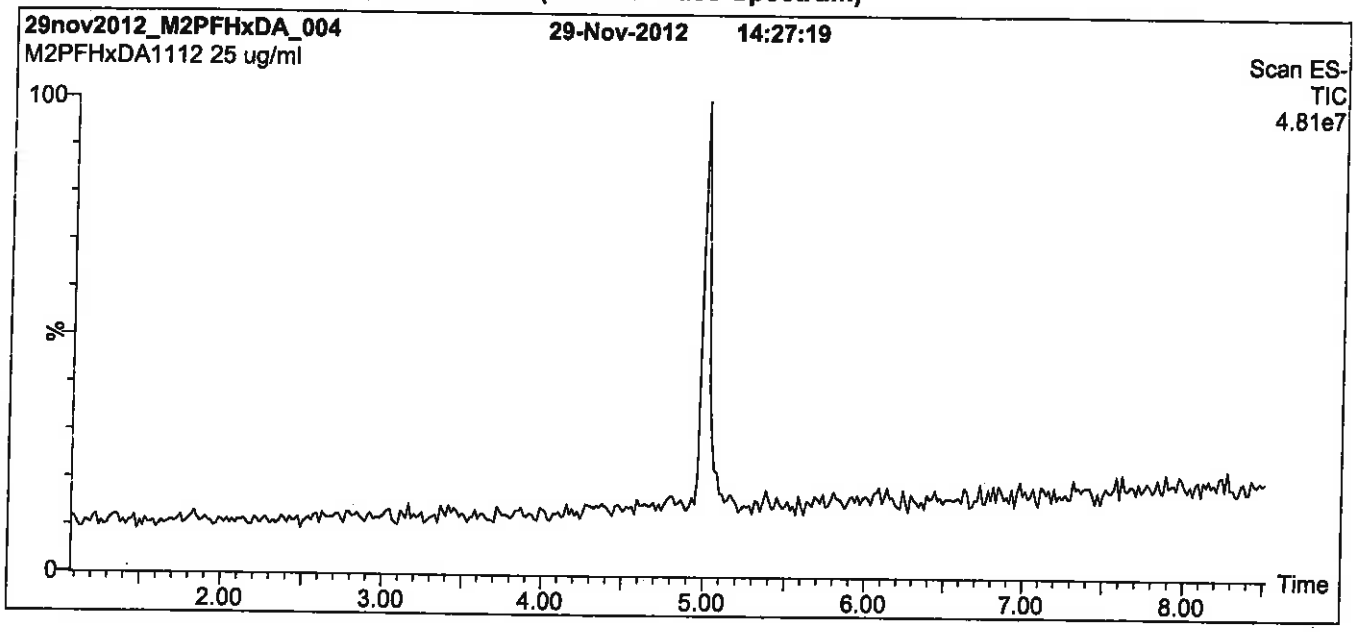
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

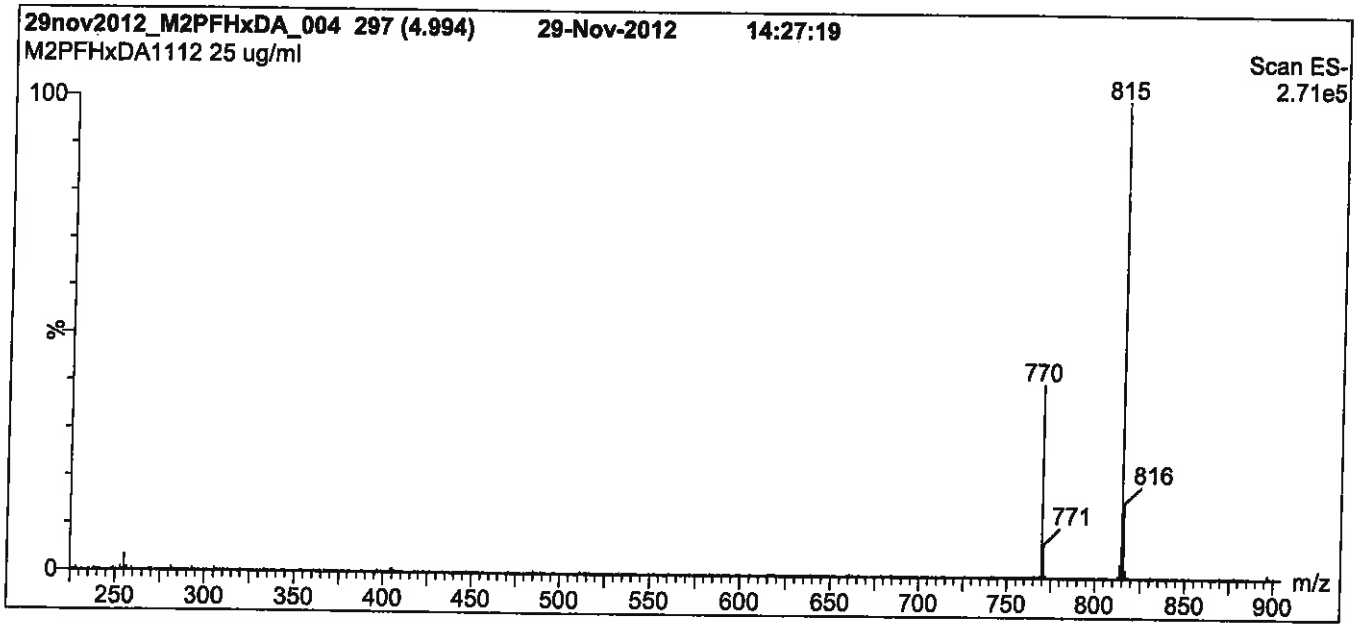
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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 100% organic over 7 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

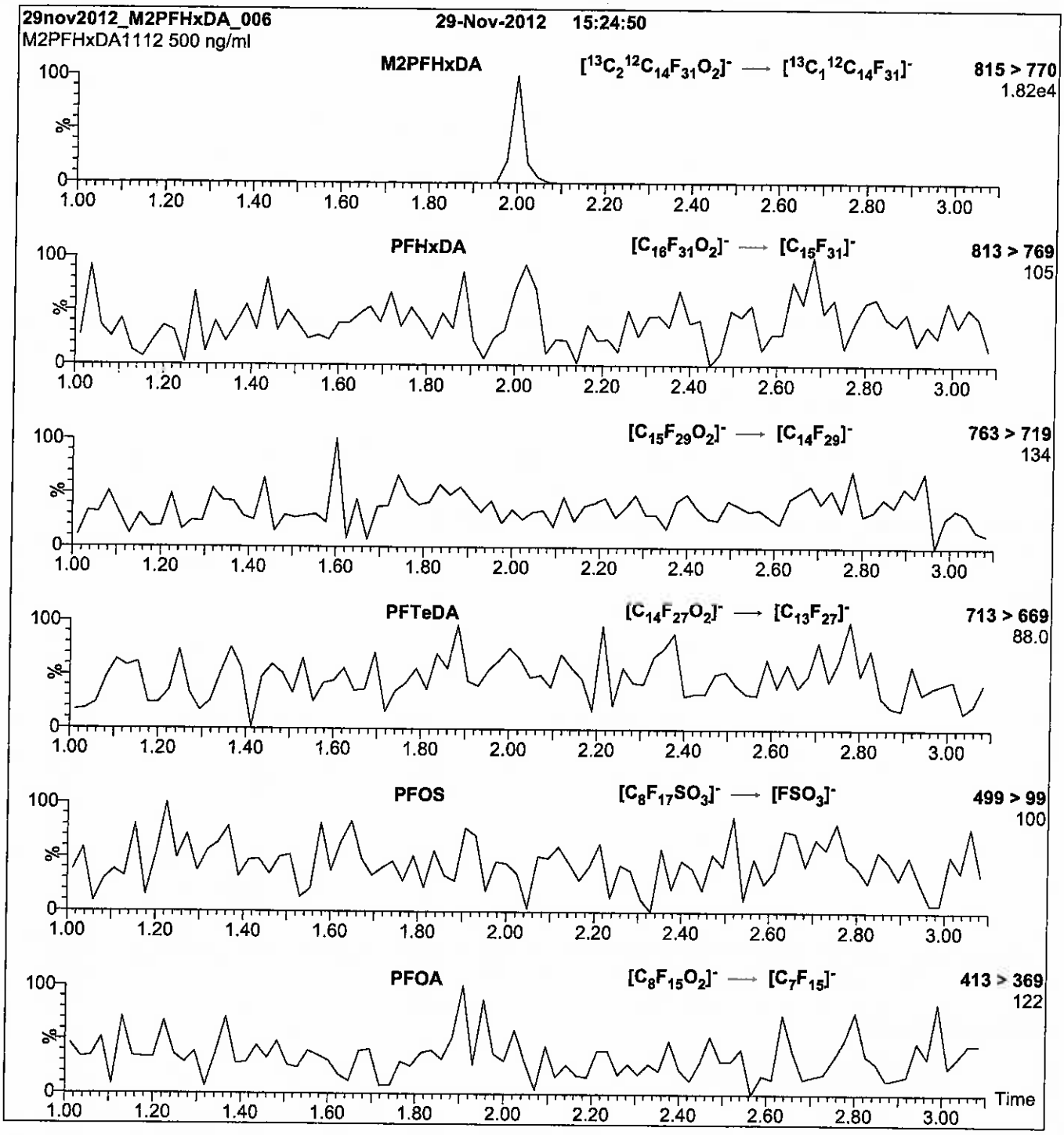
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 1200 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml M2PFHxDA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

Reagent

LCM2PFTeDA_00007

Scanned 10/14/16 R: SBC 9/22/16

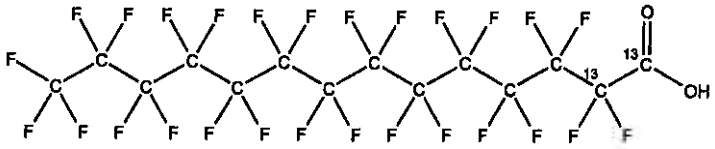
738563
ID: LCM2PFTeDA_00007
Exp: 12/07/20 Prpd: SBC
13C2-PFTeDA at 50ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2PFTeDA
LOT NUMBER: M2PFTeDA1115
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]tetradecanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_{12}HF_{27}O_2$	**MOLECULAR WEIGHT:**	716.10
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	12/07/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/07/2020		
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:** 12/08/2015 (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.

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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:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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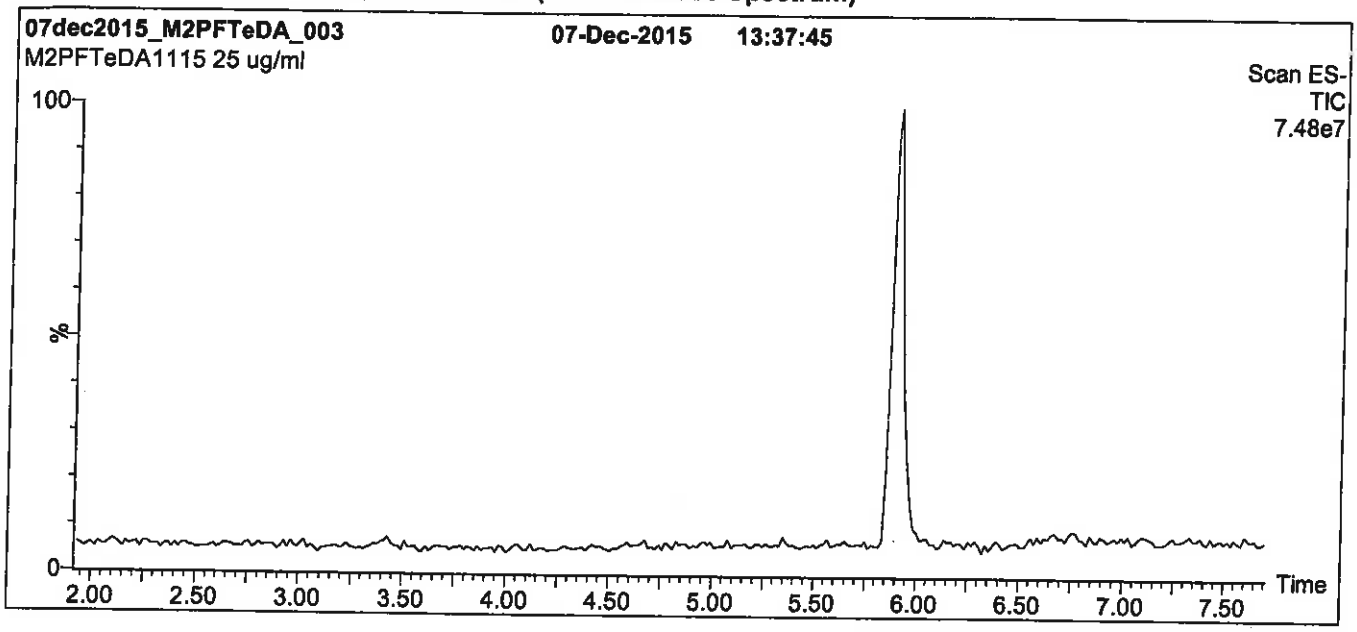
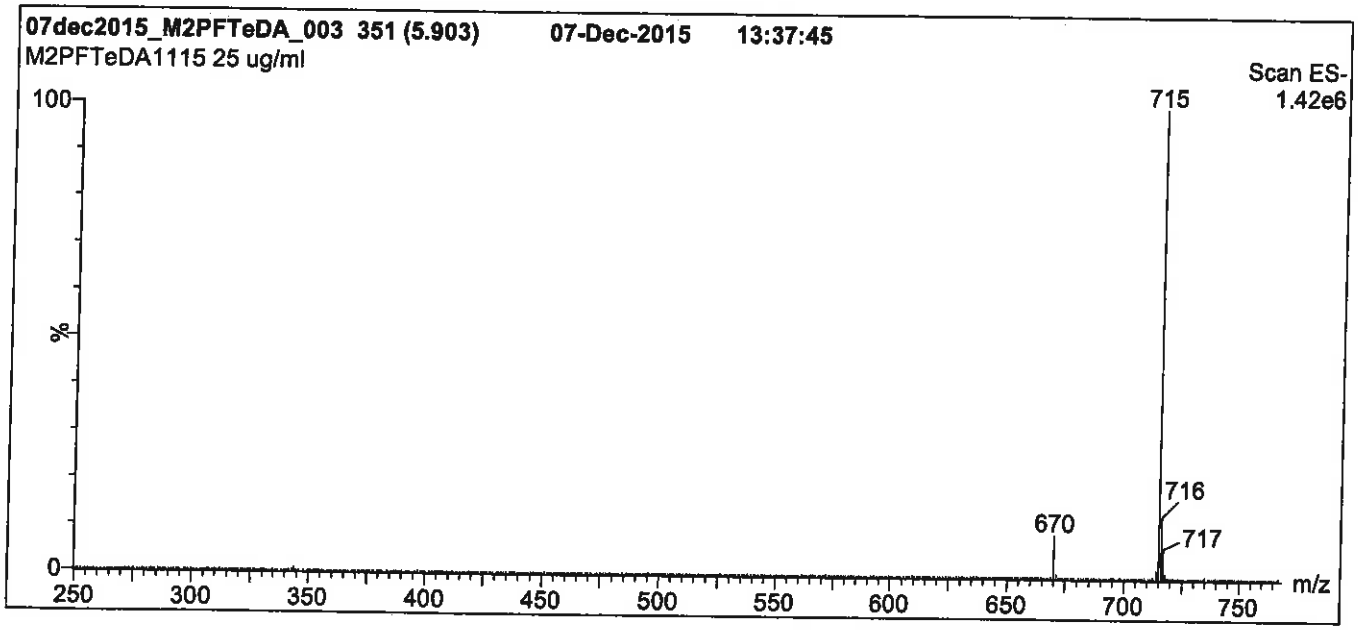
Figure 1: **M2PFTeDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

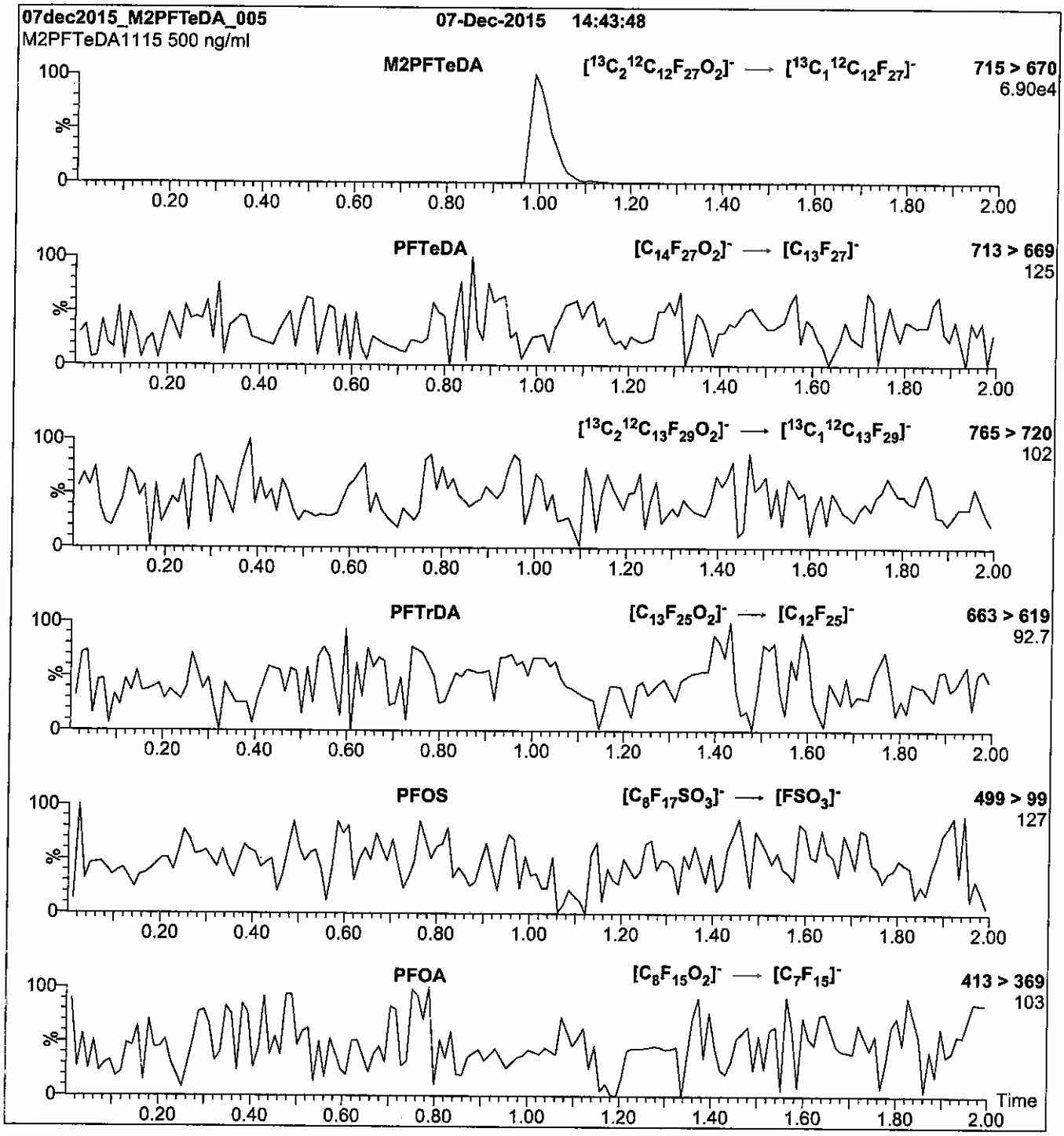
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (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: **M2PFTeDA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.28e-3
Collision Energy (eV) = 14

Reagent

LCM4PFHPA_00007

R: SBC 9/22/16

739567
ID: LCM4PFHPA_00007
Exp: 05/27/21 Prpd: SBC
13C4-Perfluoroheptanoic a

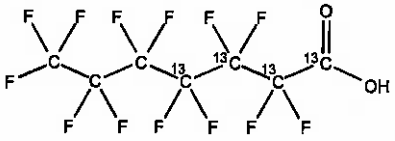
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS

DOCUMENTATION

Scanned 10/14/16 SBC

PRODUCT CODE:	M4PFHpA	**LOT NUMBER:**	M4PFHpA0516
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]heptanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_3HF_{13}O_2$	**MOLECULAR WEIGHT:**	368.03
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/27/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/27/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 07/05/2016 (mm/dd/yyyy)

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

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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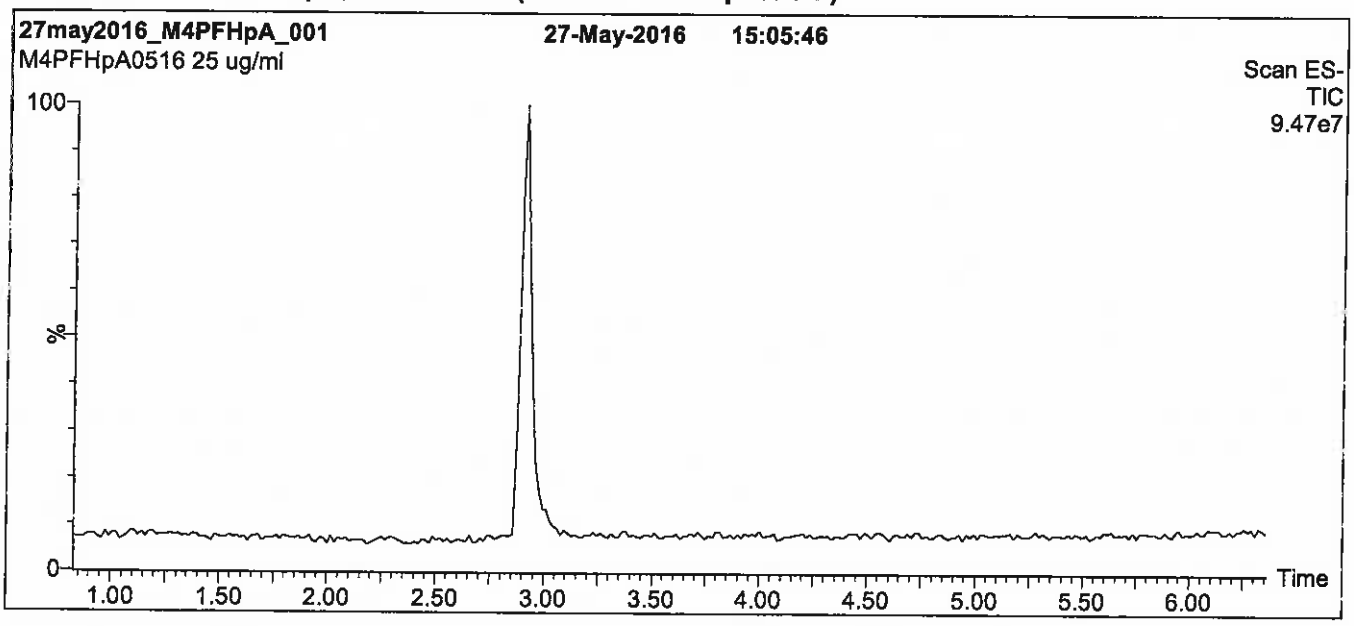
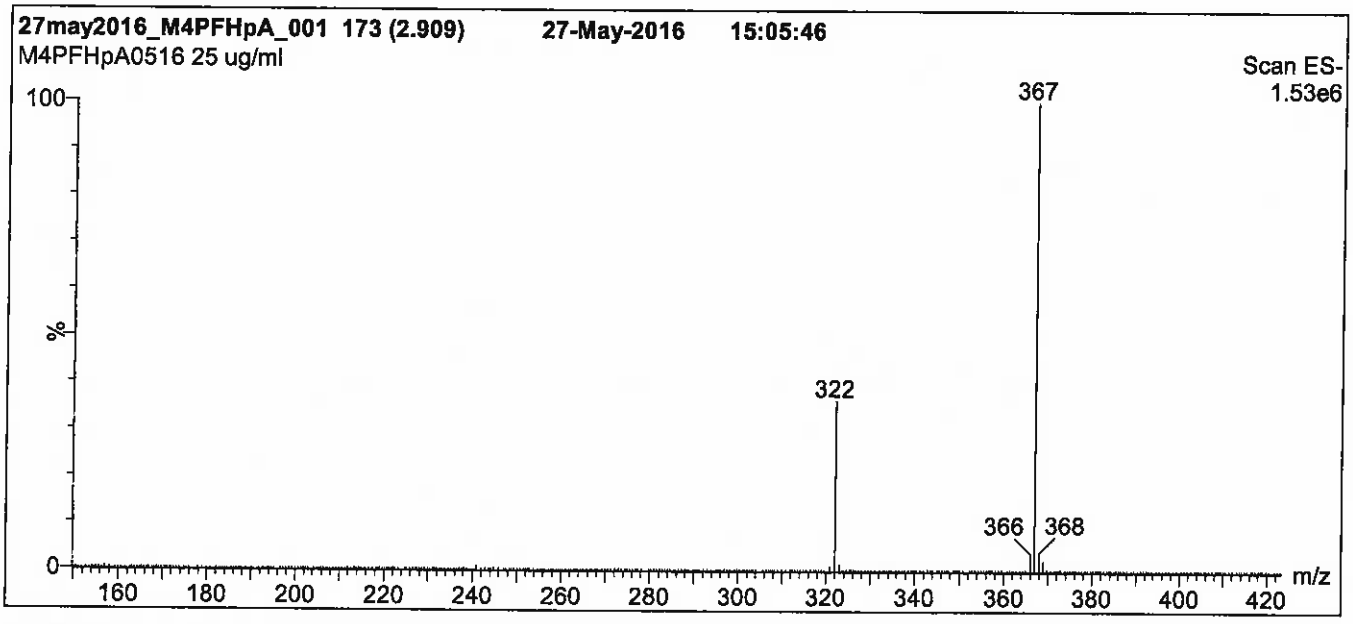
Figure 1: **M4PFHpA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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 7.5 min and hold for 1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

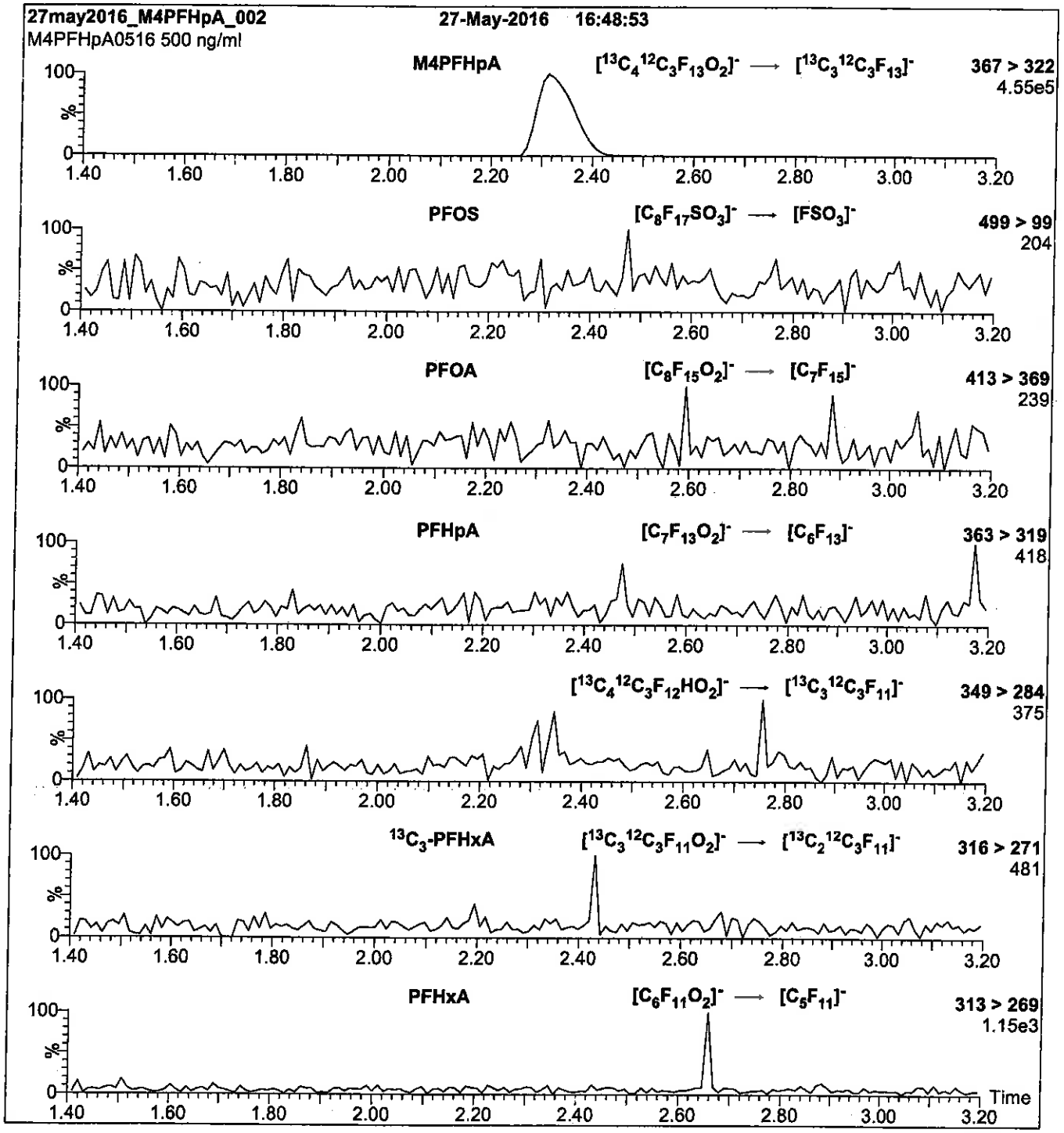
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 11

Reagent

LCM5PFPEA_00008

R: SBC 9/22/16

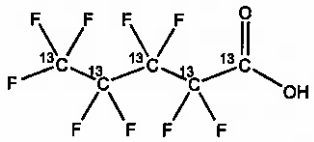
739590
ID: LCM5PFPEA_00008
Exp: 05/22/20 Prpd: SBC
13C5-Perfluoropentanoic a

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SR

PRODUCT CODE:	M5PFPeA	**LOT NUMBER:**	M5PFPeA0515
COMPOUND:	Perfluoro-n-[$^{13}C_5$]pentanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_5HF_9O_2$	**MOLECULAR WEIGHT:**	269.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_5$)
LAST TESTED: (mm/dd/yyyy)	05/22/2015		
EXPIRY DATE: (mm/dd/yyyy)	05/22/2020		
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 < 0.1% of perfluoro-n-pentanoic acid.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/25/2015 (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

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:

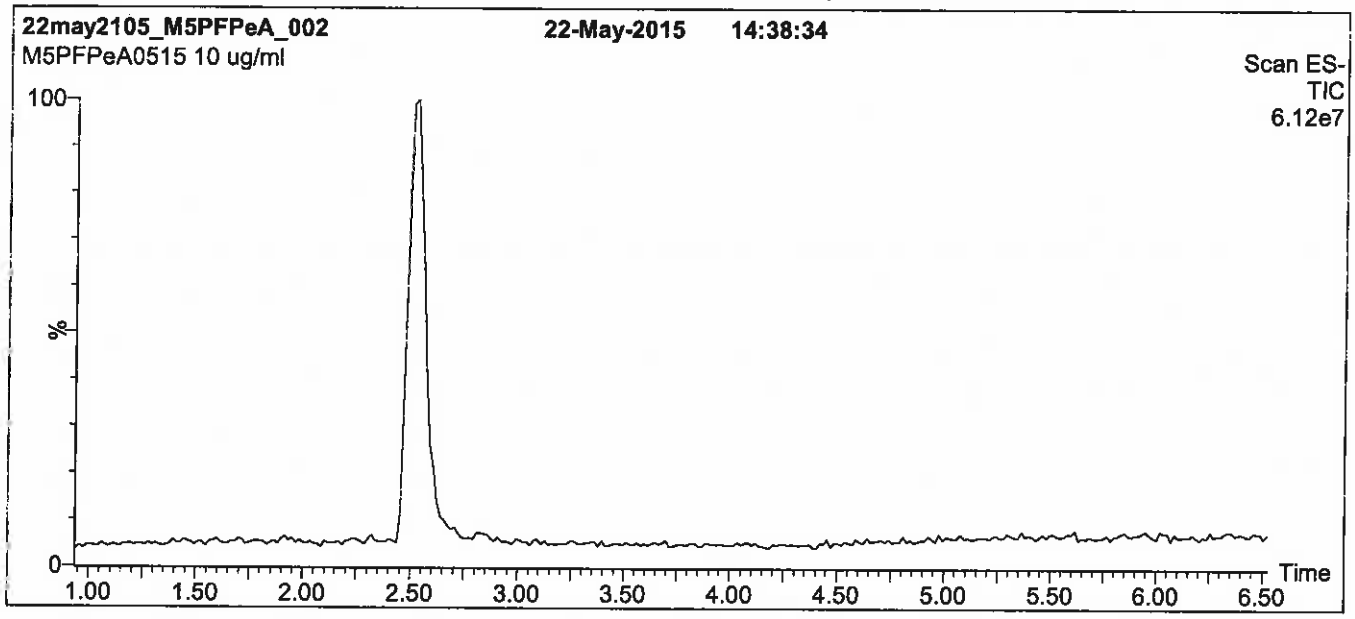
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

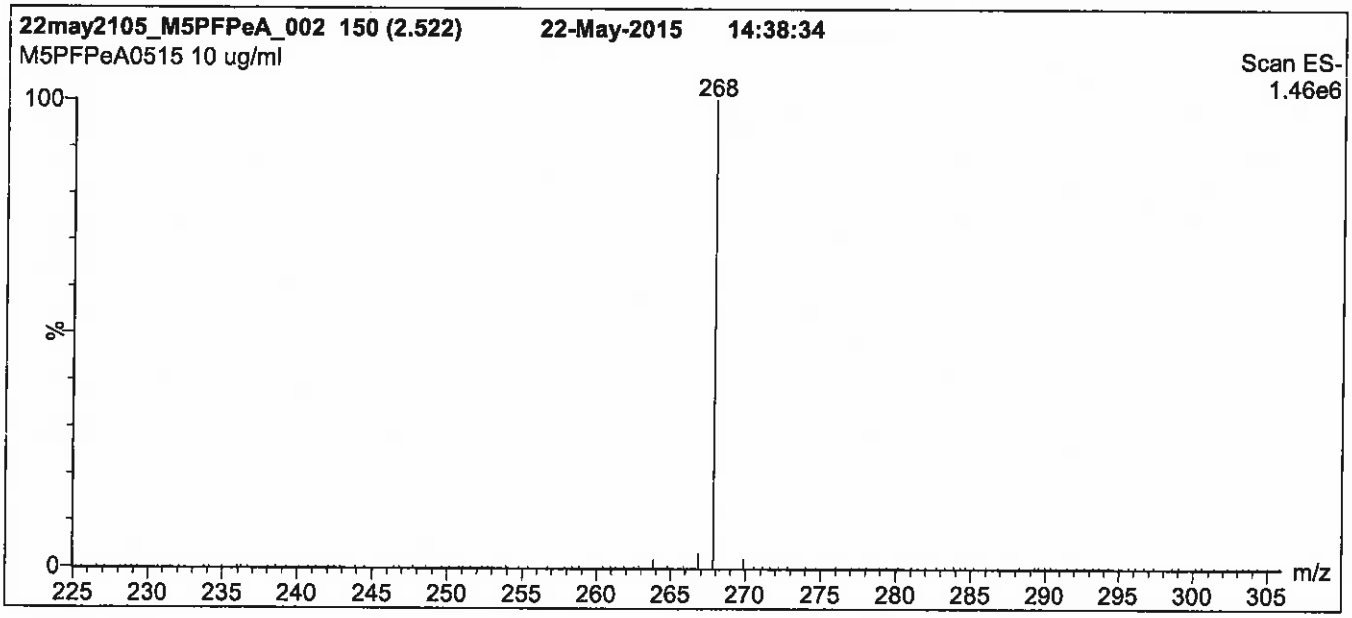
CALA

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

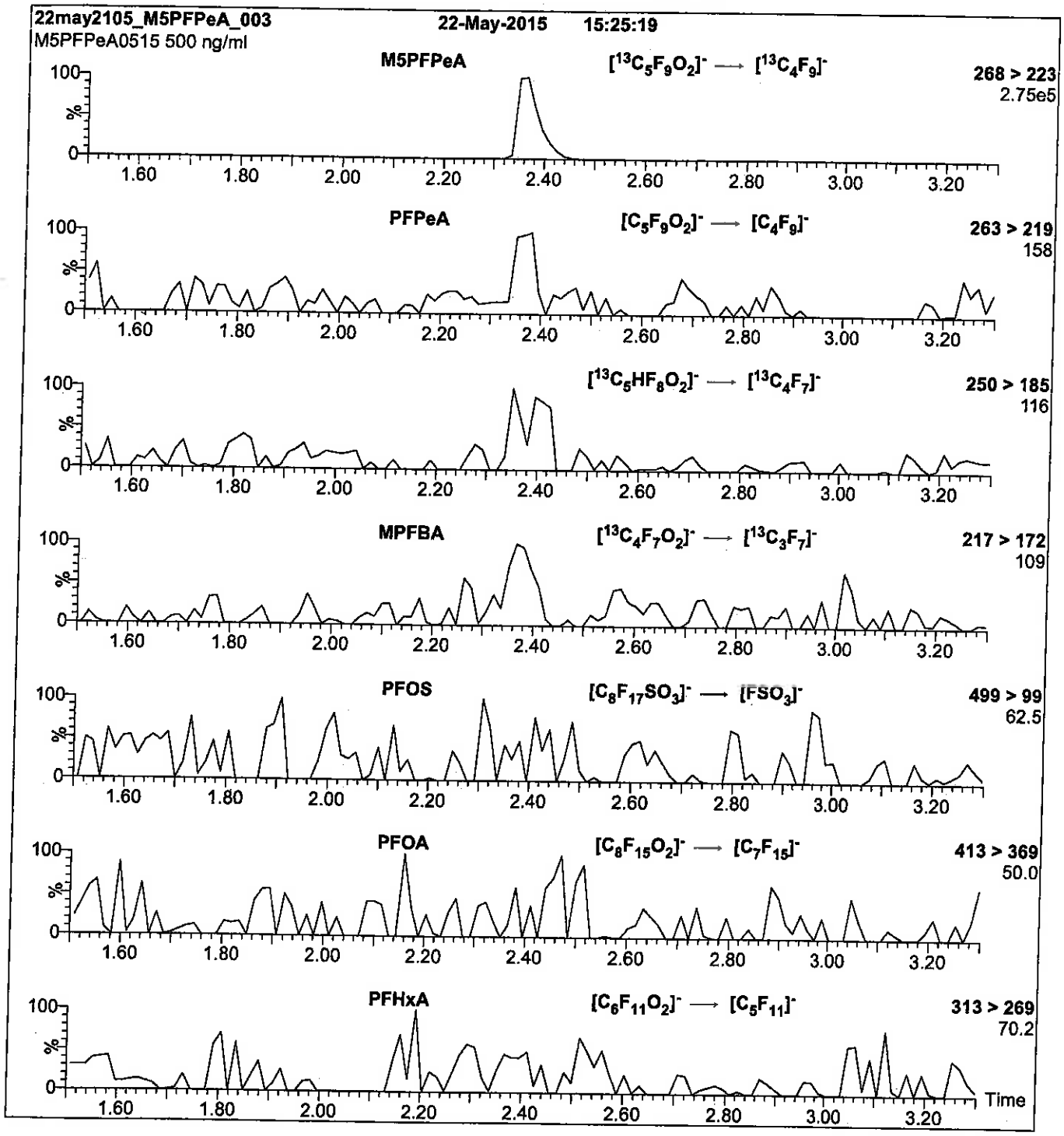
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml M5PFPeA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

Reagent

LCM8FOSA_00011

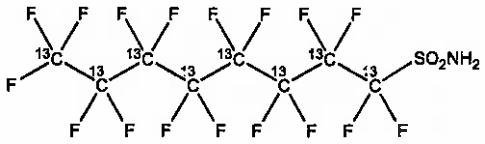
R: SBC 9/22/16
Issued 10/14/16 SBC

739615
ID: LCM8FOSA_00011
Exp: 12/22/17 Prpd: SBC
13C8-Perfluorooctanesulfo

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	M8FOSA-I	**LOT NUMBER:**	M8FOSA1215I
COMPOUND:	Perfluoro-1-[$^{13}C_8$]octanesulfonamide		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_8H_2F_{17}NO_2S$	**MOLECULAR WEIGHT:**	507.09
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Isopropanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($^{13}C_8$)
LAST TESTED: (mm/dd/yyyy)	12/22/2015		
EXPIRY DATE: (mm/dd/yyyy)	12/22/2017		
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:** 01/14/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

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:

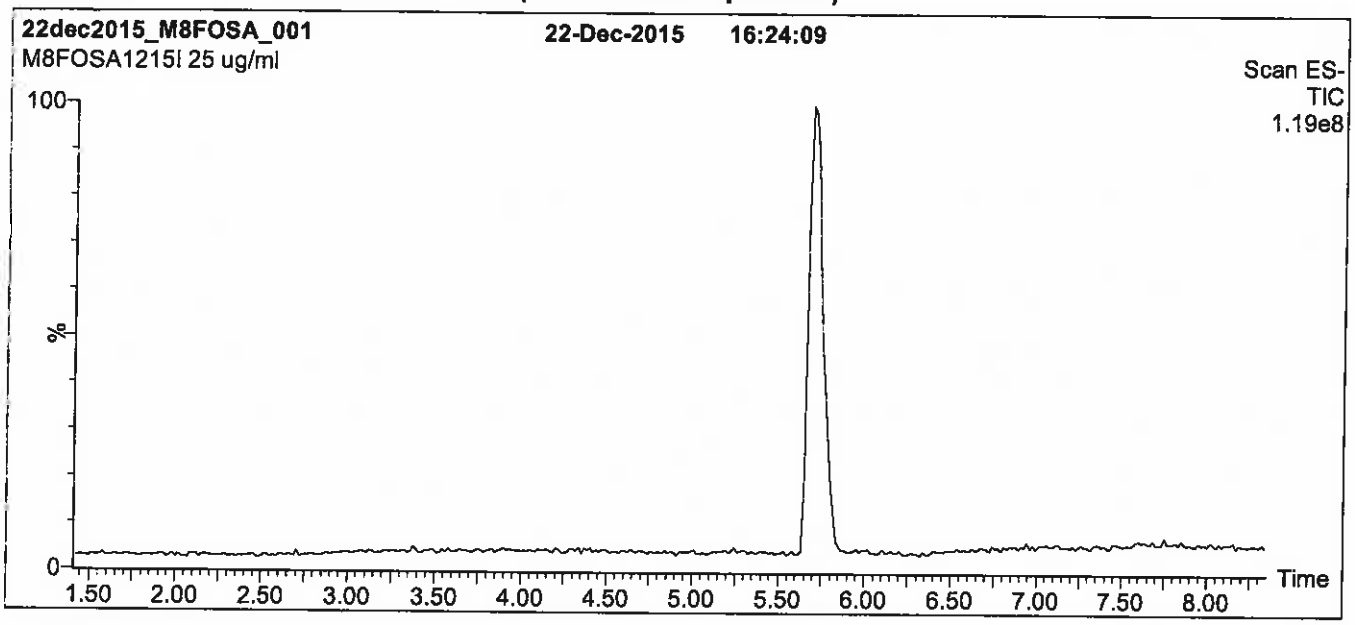
At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

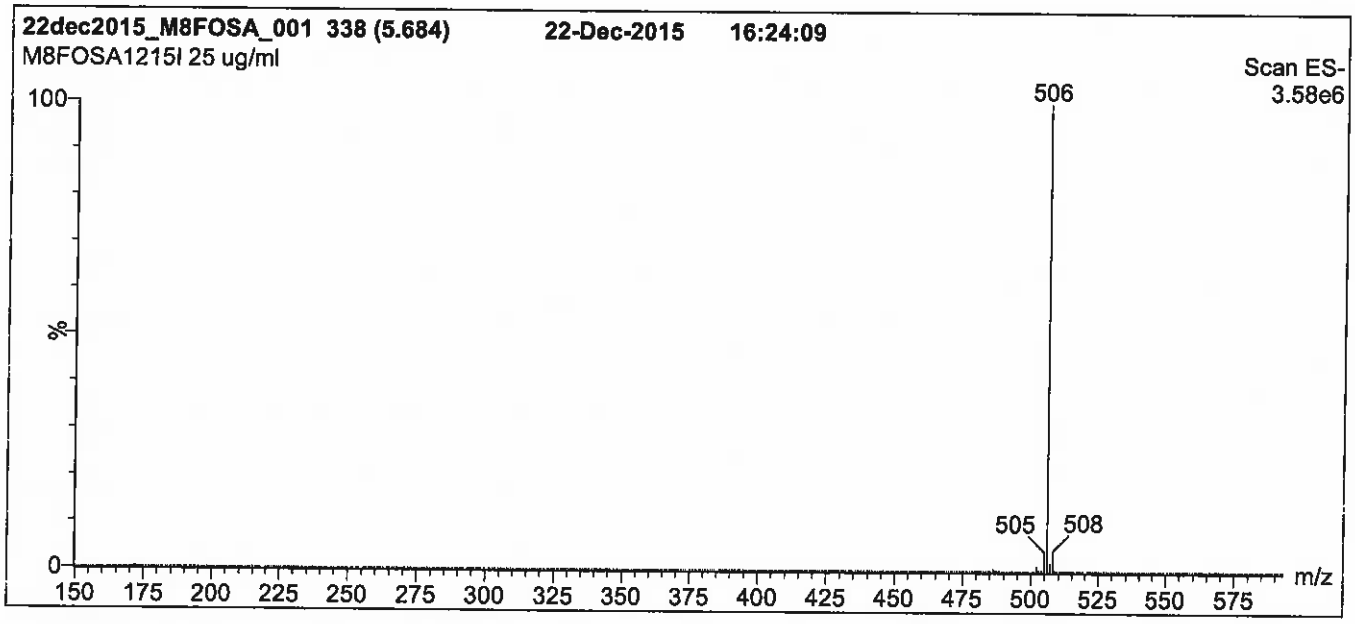
QUALITY MANAGEMENT:

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).

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

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

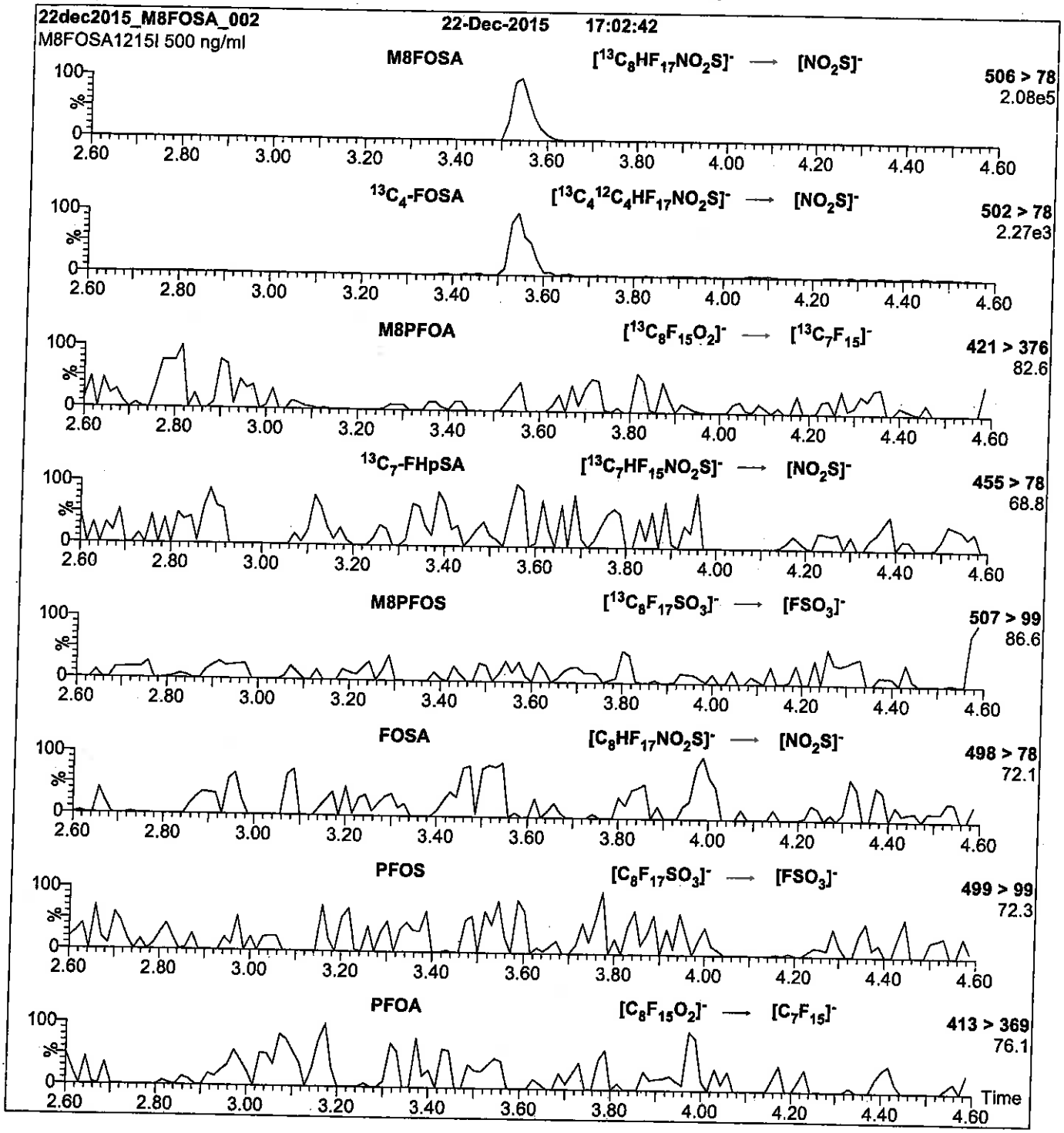
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.39e-3
Collision Energy (eV) = 30

Reagent

LCMPFBA_00008

R: SBC 9/22/16

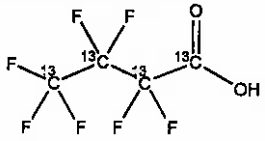
739593
ID: LCMPFBA_00008
Exp: 05/24/21 Prpd: SBC
13C4-Perfluorobutanoic ac

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SR

PRODUCT CODE:	MPFBA	**LOT NUMBER:**	MPFBA0516
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]butanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4HF_7O_2$	**MOLECULAR WEIGHT:**	218.01
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: _____ B.G. Chittim **Date:** 05/30/2016 (mm/dd/yyyy)

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

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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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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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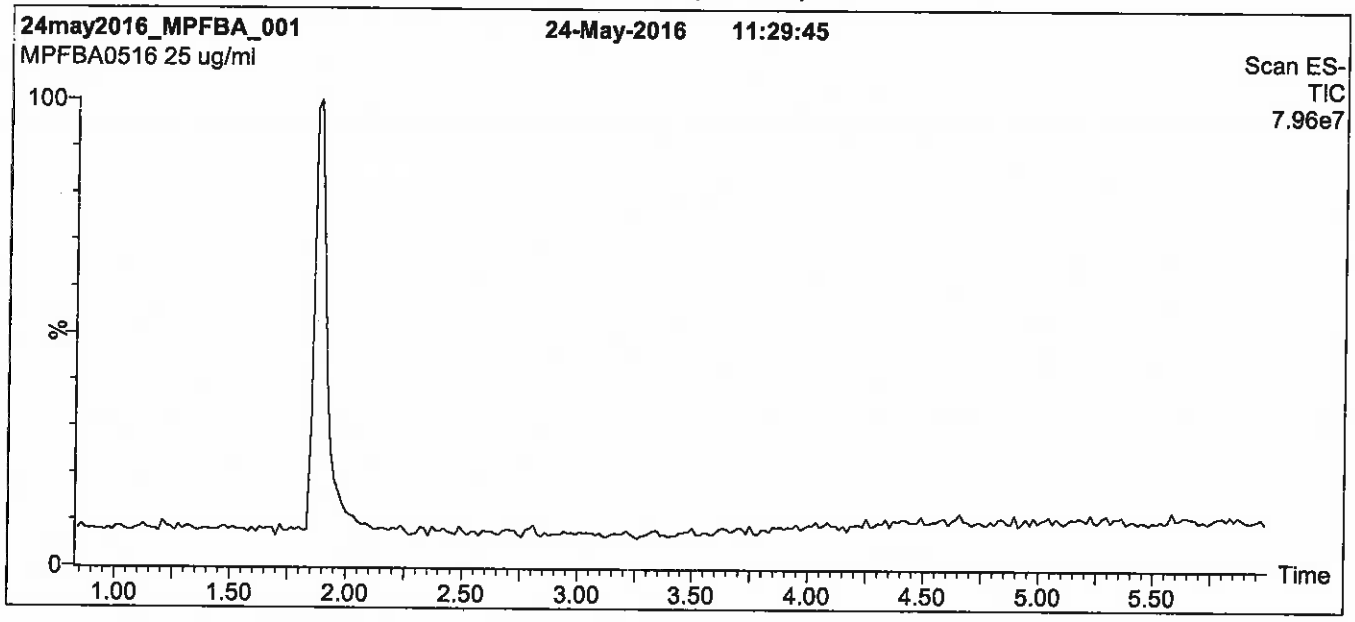
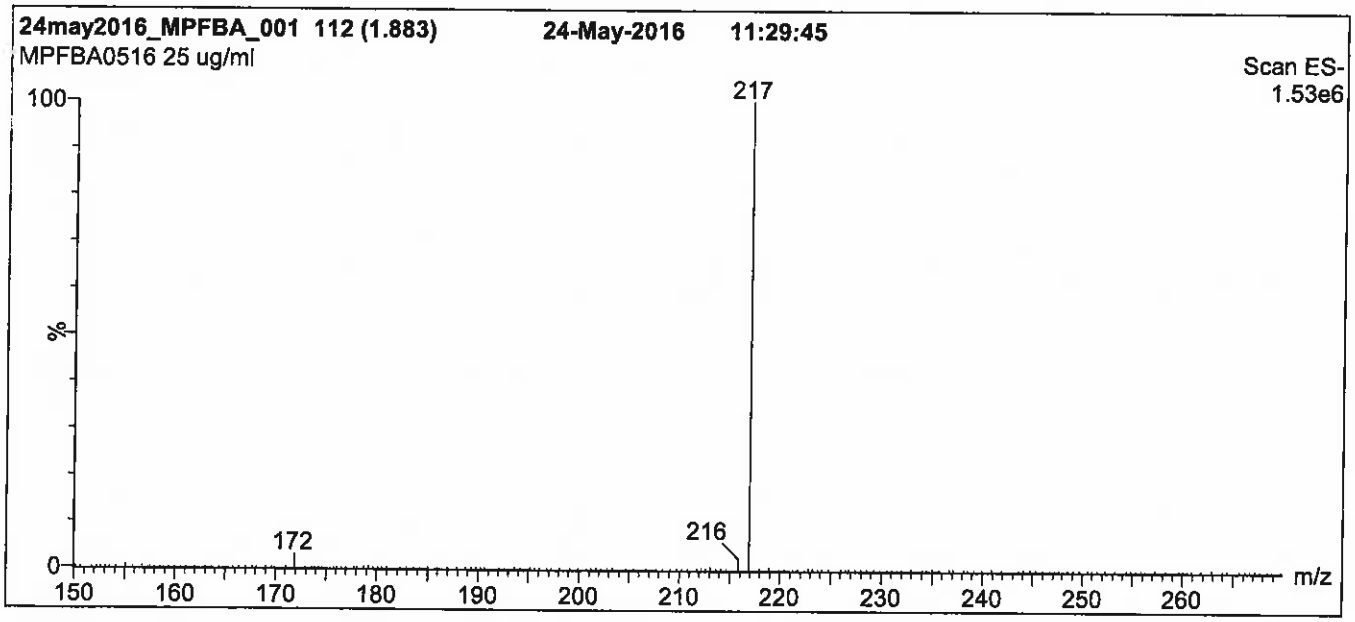
Figure 1: **MPFBA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

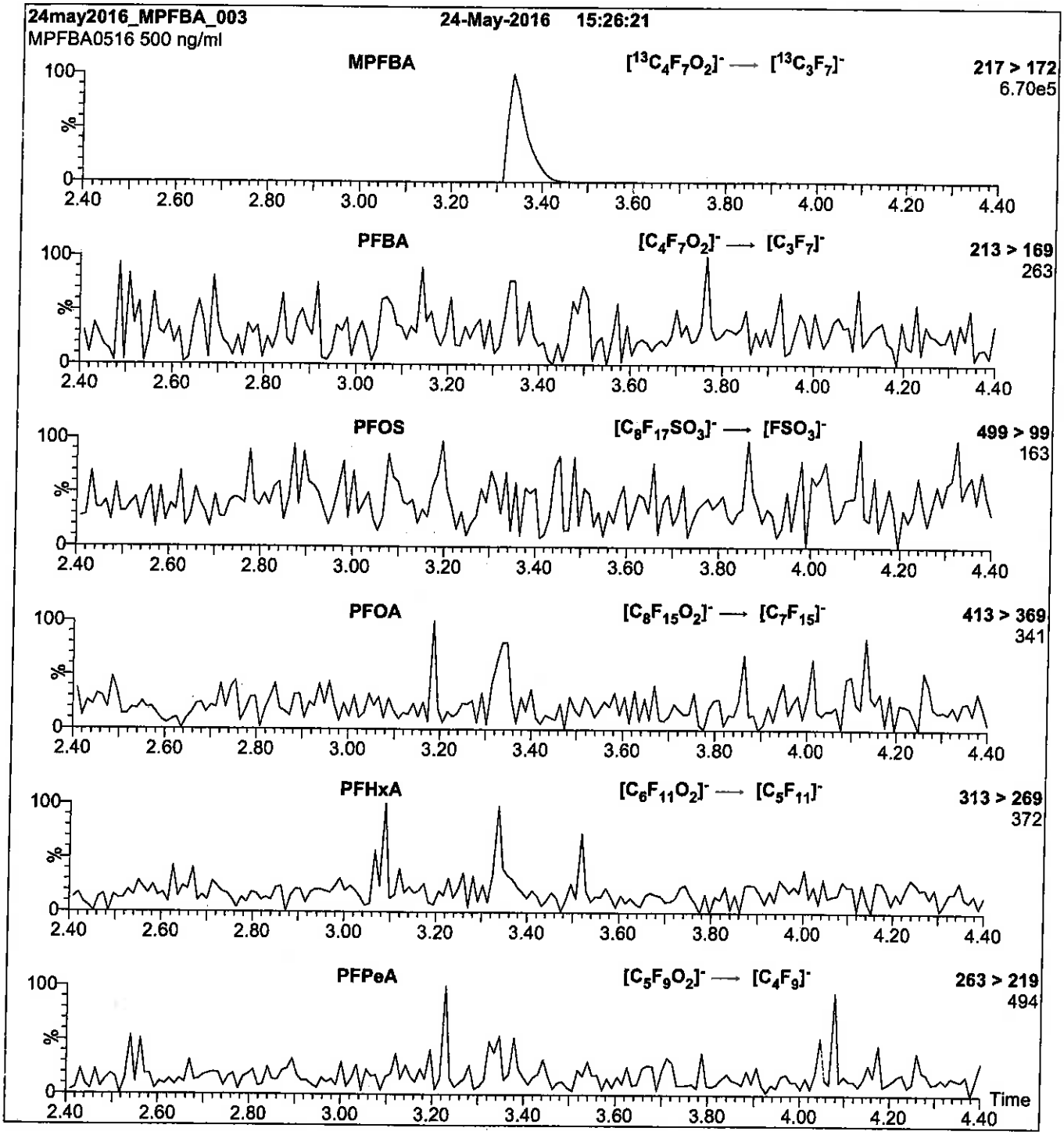
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCMPFDA_00011

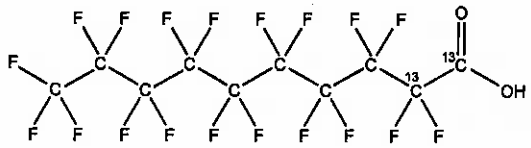
Scanned 10/14/16 R: SBC 9/22/16

739609
ID: LCMPFDA_00011
Exp: 08/19/20 Prpd: SBC
13C2-Perfluorodecanoic a

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	MPFDA	**LOT NUMBER:**	MPFDA0815
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]decanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_8HF_{19}O_2$	**MOLECULAR WEIGHT:**	516.07
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	08/19/2015		
EXPIRY DATE: (mm/dd/yyyy)	08/19/2020		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains < 0.1% of $^{13}C_1$-PFNA.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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:

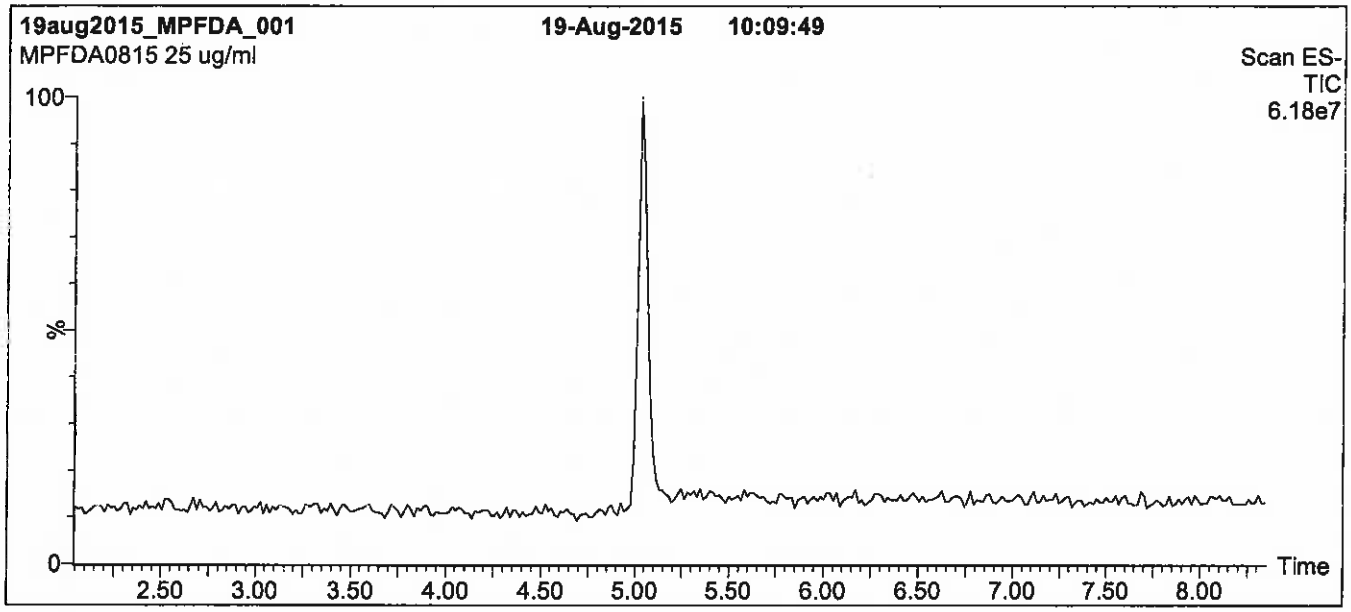
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

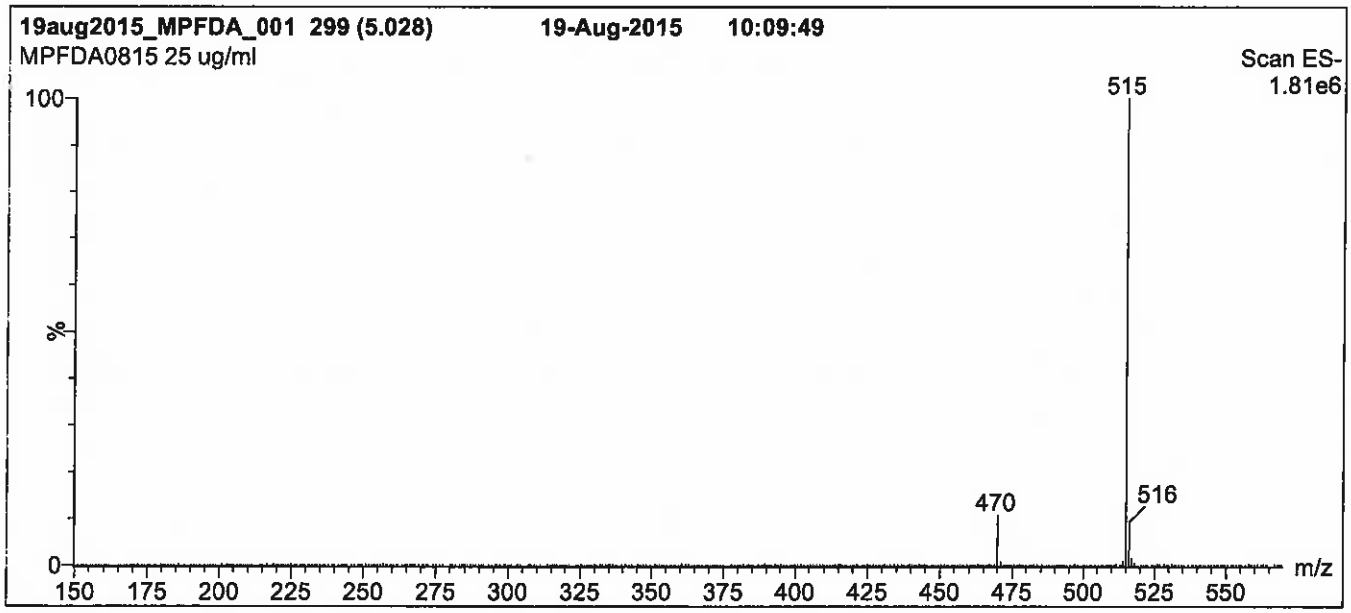
CALA Testing Accreditation for ABCs

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

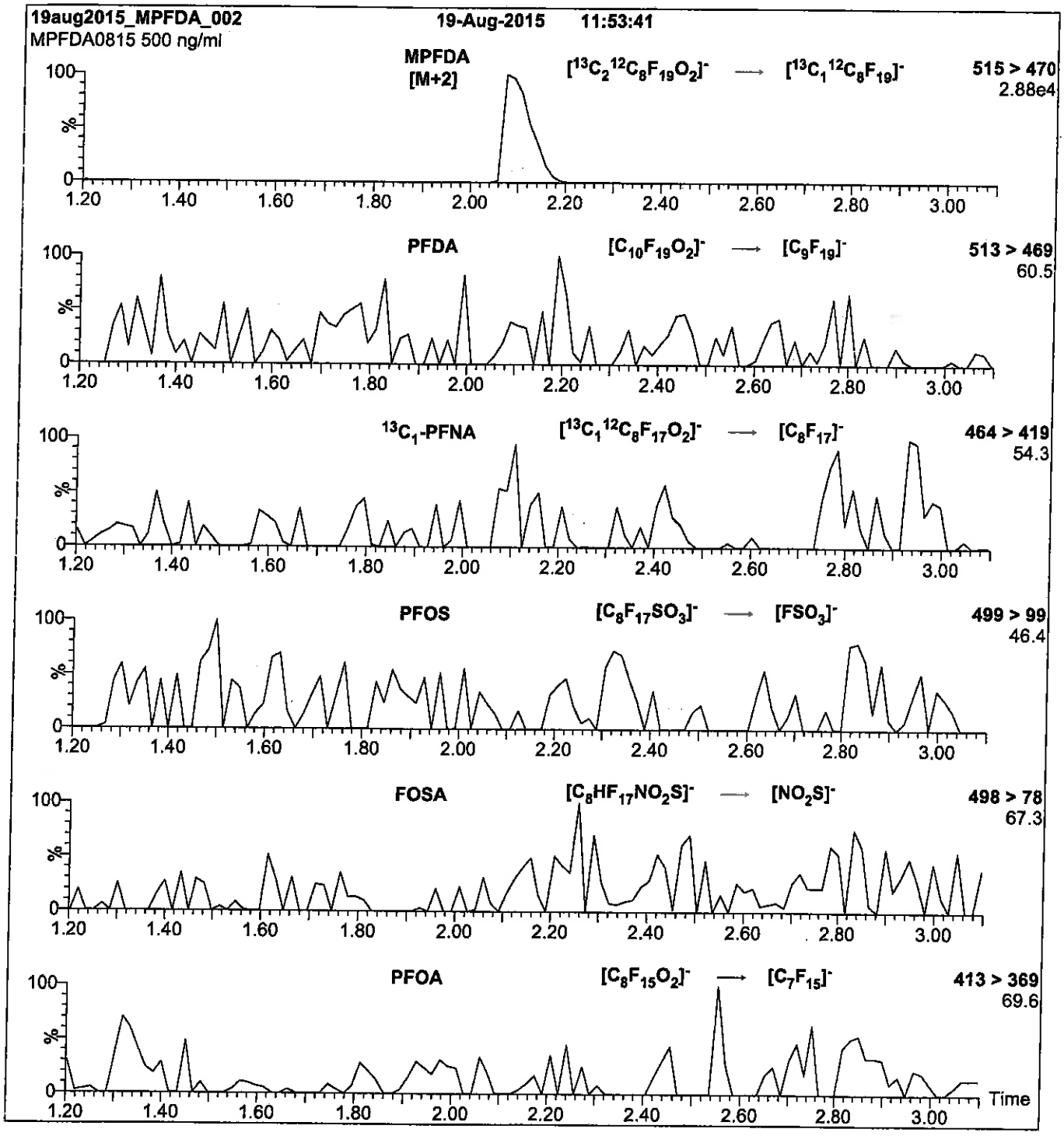
Flow: 300 µl/min

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



Conditions for Figure 2:

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

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) = 13

Reagent

LCMPFDoA_00008

R: SBC 9/22/16

739598
ID: LCMPFDoA_00008
Exp: 04/08/21 Prpd: SBC
13C2-Perfluorododecanoic

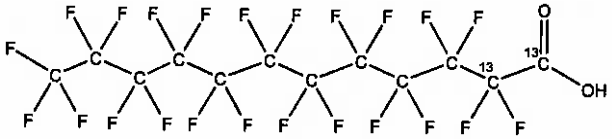
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SR

PRODUCT CODE: MPFDoA
LOT NUMBER: MPFDoA0416
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]dodecanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_2{}^{12}C_{10}HF_{23}O_2$
MOLECULAR WEIGHT: 616.08
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C (1,2-$^{13}C_2$)
LAST TESTED: (mm/dd/yyyy) 04/08/2016
EXPIRY DATE: (mm/dd/yyyy) 04/08/2021
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:** 04/15/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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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.

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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.

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TRACEABILITY:

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

EXPIRY DATE / PERIOD OF VALIDITY:

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

LIMITED WARRANTY:

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

QUALITY MANAGEMENT:

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

CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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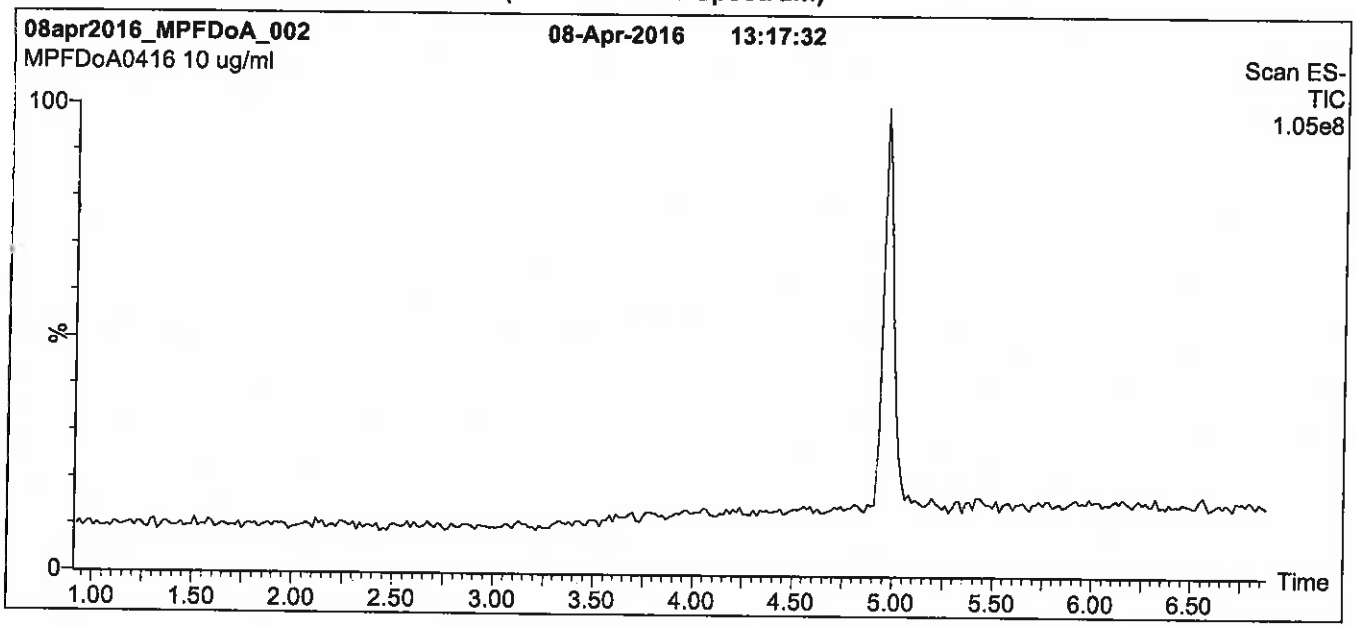
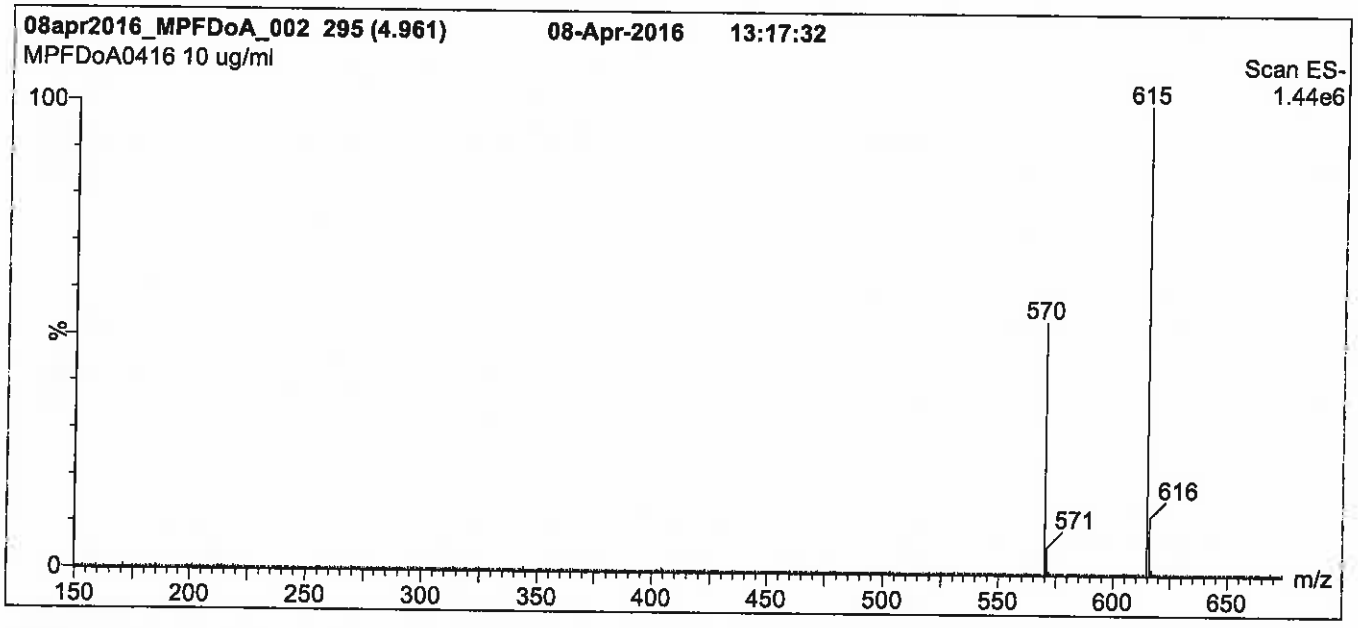
Figure 1: **MPFDoA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

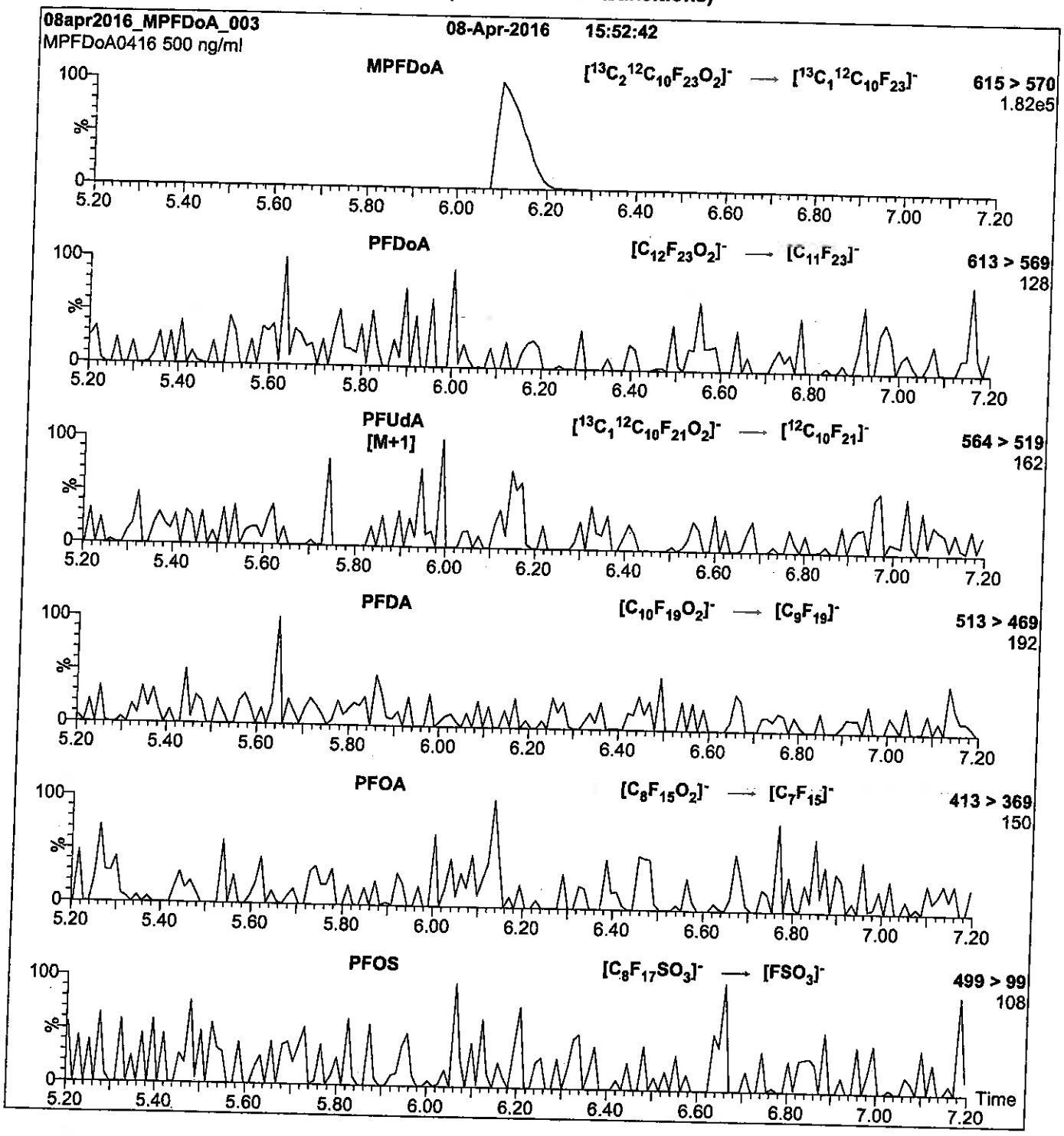
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.24e-3
Collision Energy (eV) = 13

Reagent

LCMPFHxA_00012

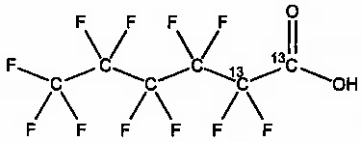
Scanned 10/14/16 JR R: SBC 9/22/16

739612
ID: LCMPFHxA_00012
Exp: 04/08/21 Prpd: SBC
13C2-Perfluorohexanoic ac

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFHxA	**LOT NUMBER:**	MPFHxA0416
COMPOUND:	Perfluoro-n-[1,2-$^{13}C_2$]hexanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_4HF_{11}O_2$	**MOLECULAR WEIGHT:**	316.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	04/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	04/08/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/29/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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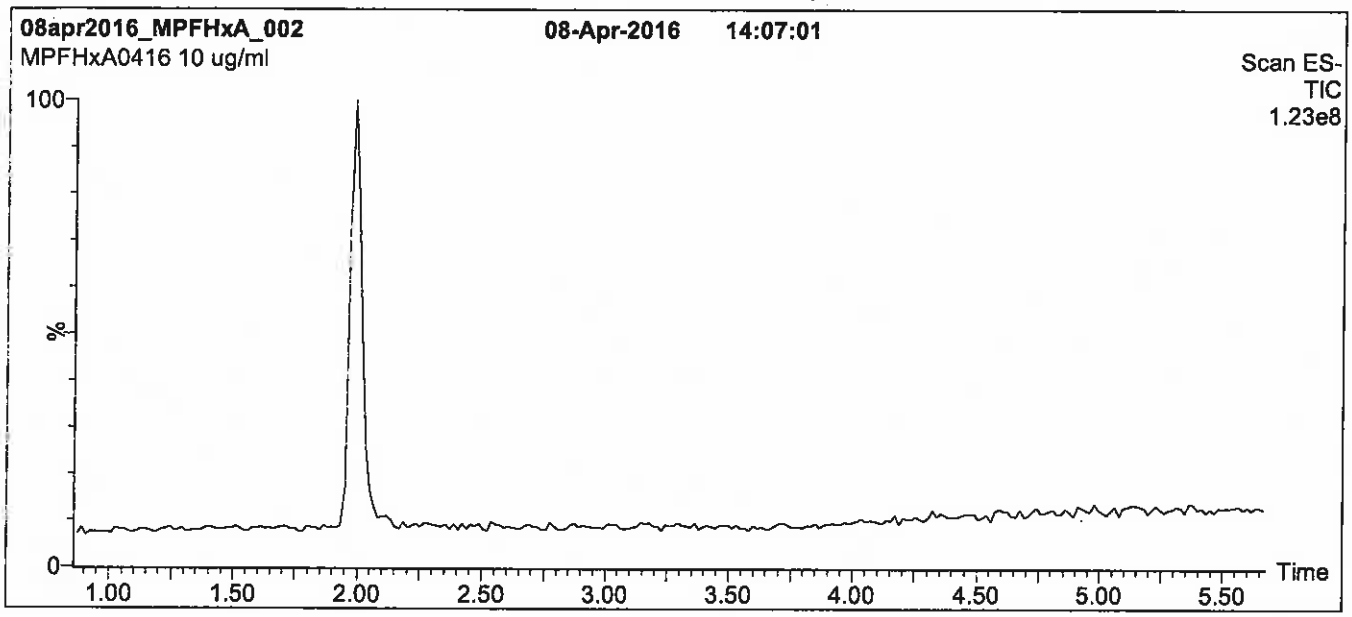
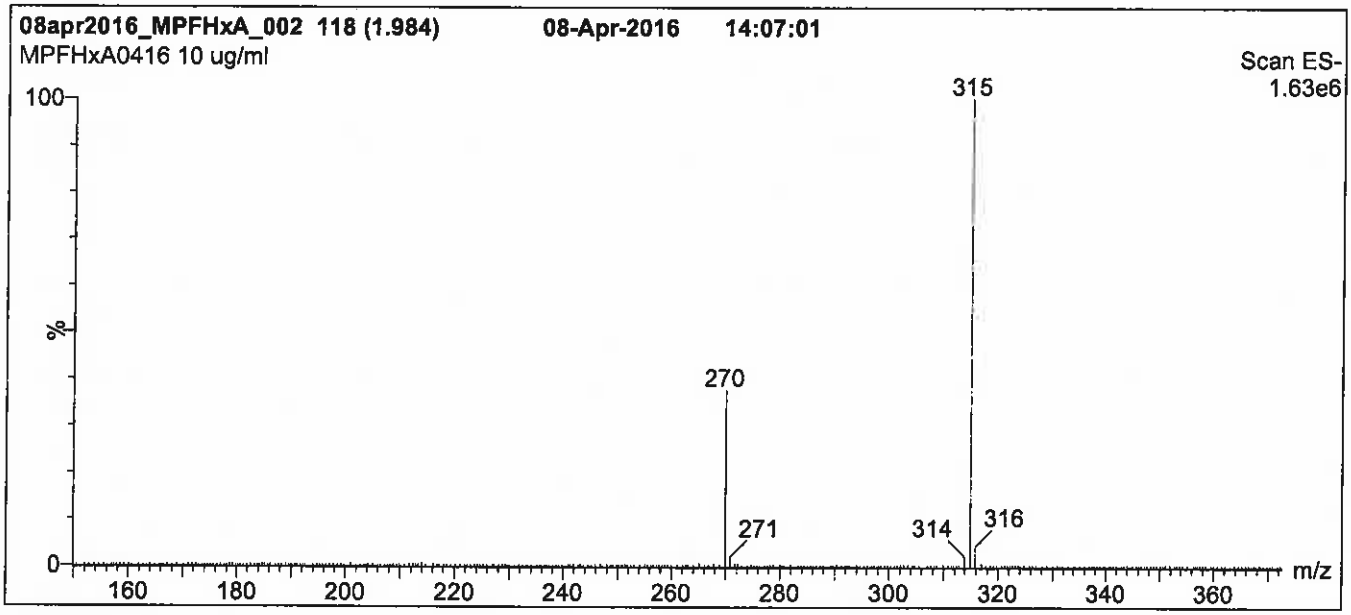
Figure 1: **MPFHxA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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 7.5 min and hold for 1.5 min before returning to initial conditions over 0.5 min.
Time: 10 min

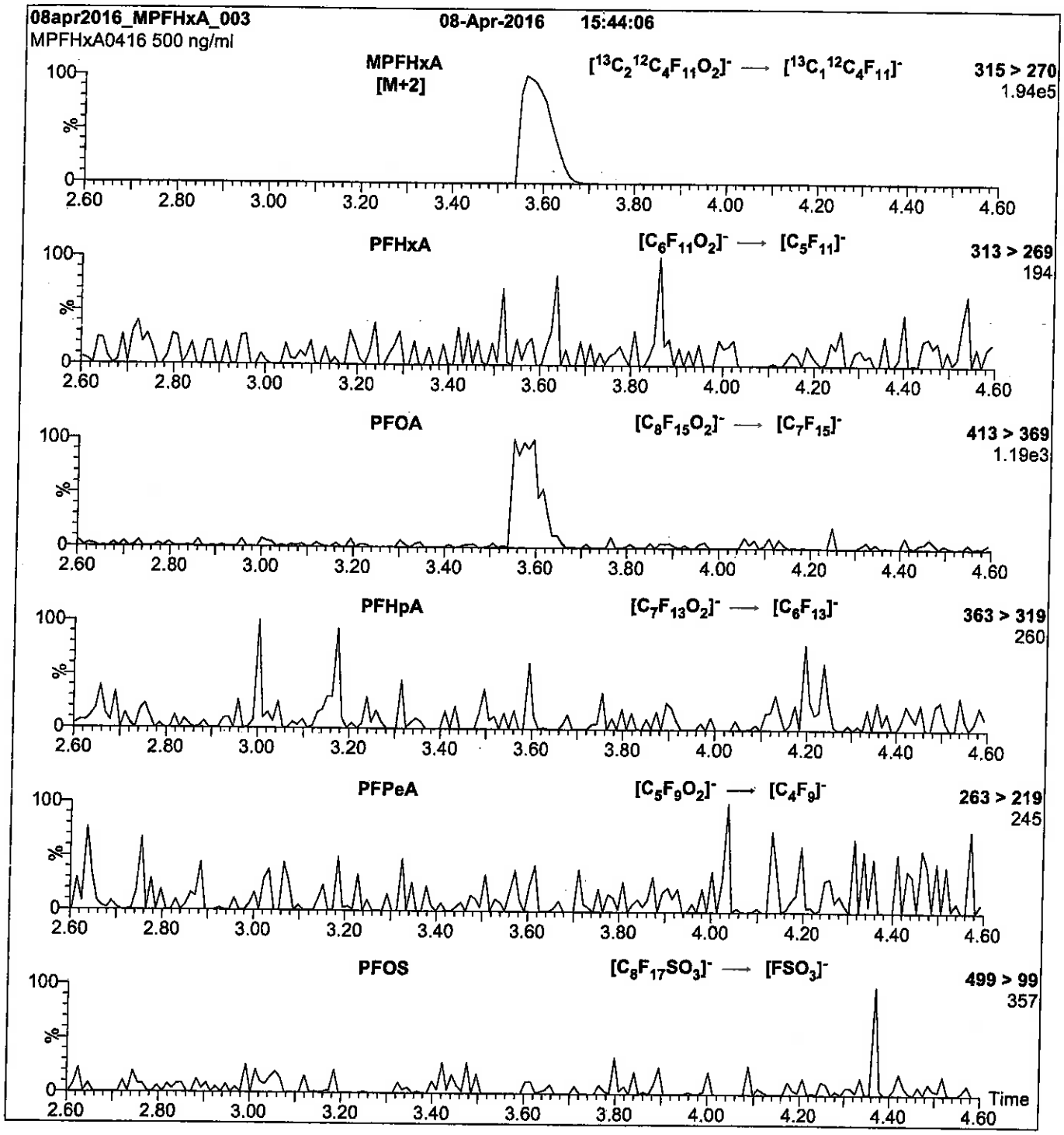
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

Reagent

LCMPFHxS_00008

R: SBC 9/22/16

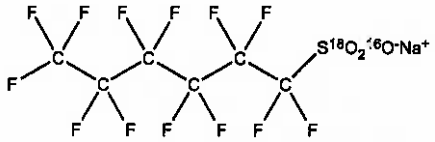
739601
ID: LCMPFHxS_00008
Exp: 10/23/20 Prpd: SBC
18O2-Perfluorohexanesulfo

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

Scanned 10/14/16 SR

PRODUCT CODE:	MPFHxS	**LOT NUMBER:**	MPFHxS1015
COMPOUND:	Sodium perfluoro-1-hexane[$^{18}O_2$]sulfonate		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$C_6F_{13}S^{18}O_2{}^{16}ONa$	**MOLECULAR WEIGHT:**	426.10
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.3 ± 2.4 µg/ml (MPFHxS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	>94% ($^{18}O_2$)
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.
- The response factor for MPFHxS ($C_6F_{13}S^{18}O_2{}^{16}O^-$) has been observed to be up to 10% lower than for PFHxS ($C_6F_{13}S^{16}O_3^-$) when both compounds are injected together. This difference may vary between instruments.
- Due to the isotopic purity of the starting material ($^{18}O_2$ >94%), MPFHxS contains ~ 0.3% of PFHxS. This value agrees with the theoretical percent relative abundance that is expected based on the stated isotopic purity.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 10/28/2015 (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:

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QUALITY MANAGEMENT:

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

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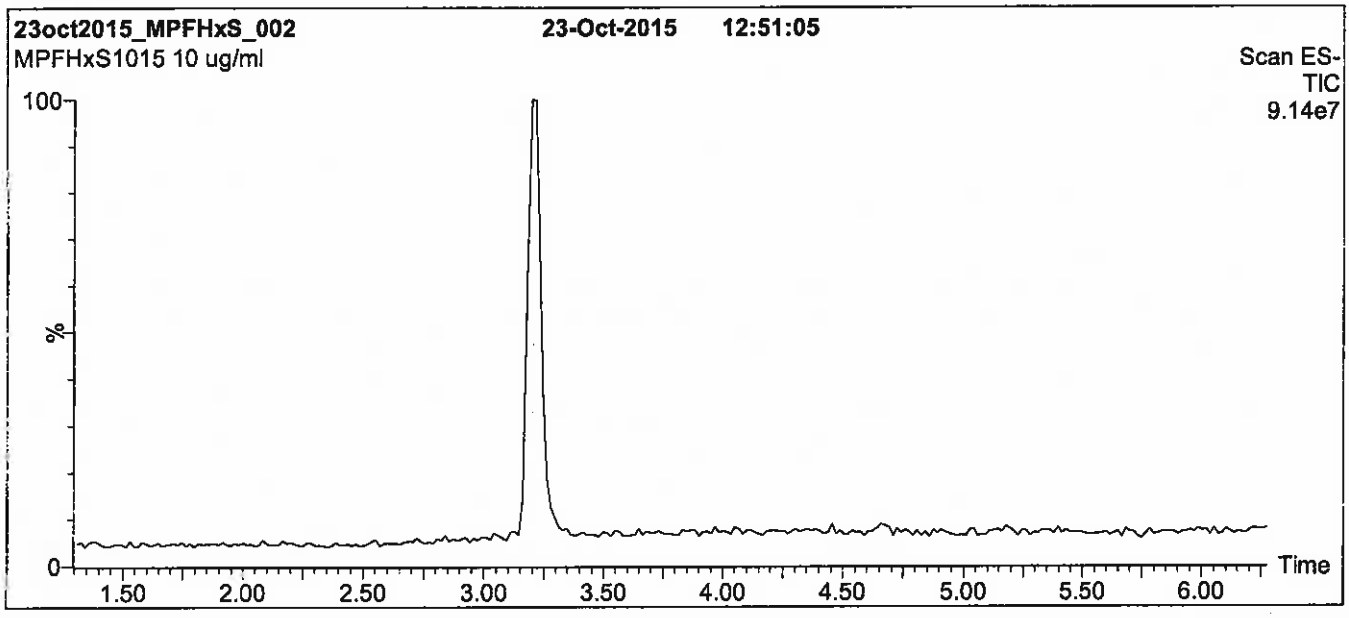
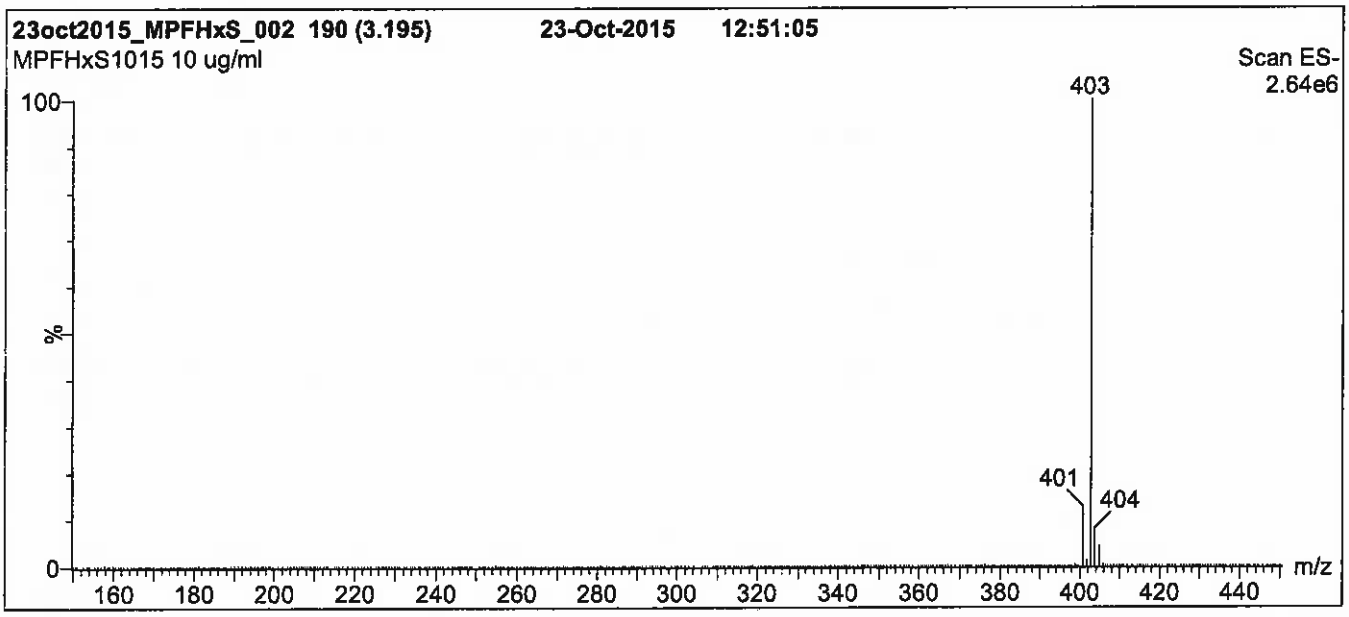
Figure 1: **MPFHxS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

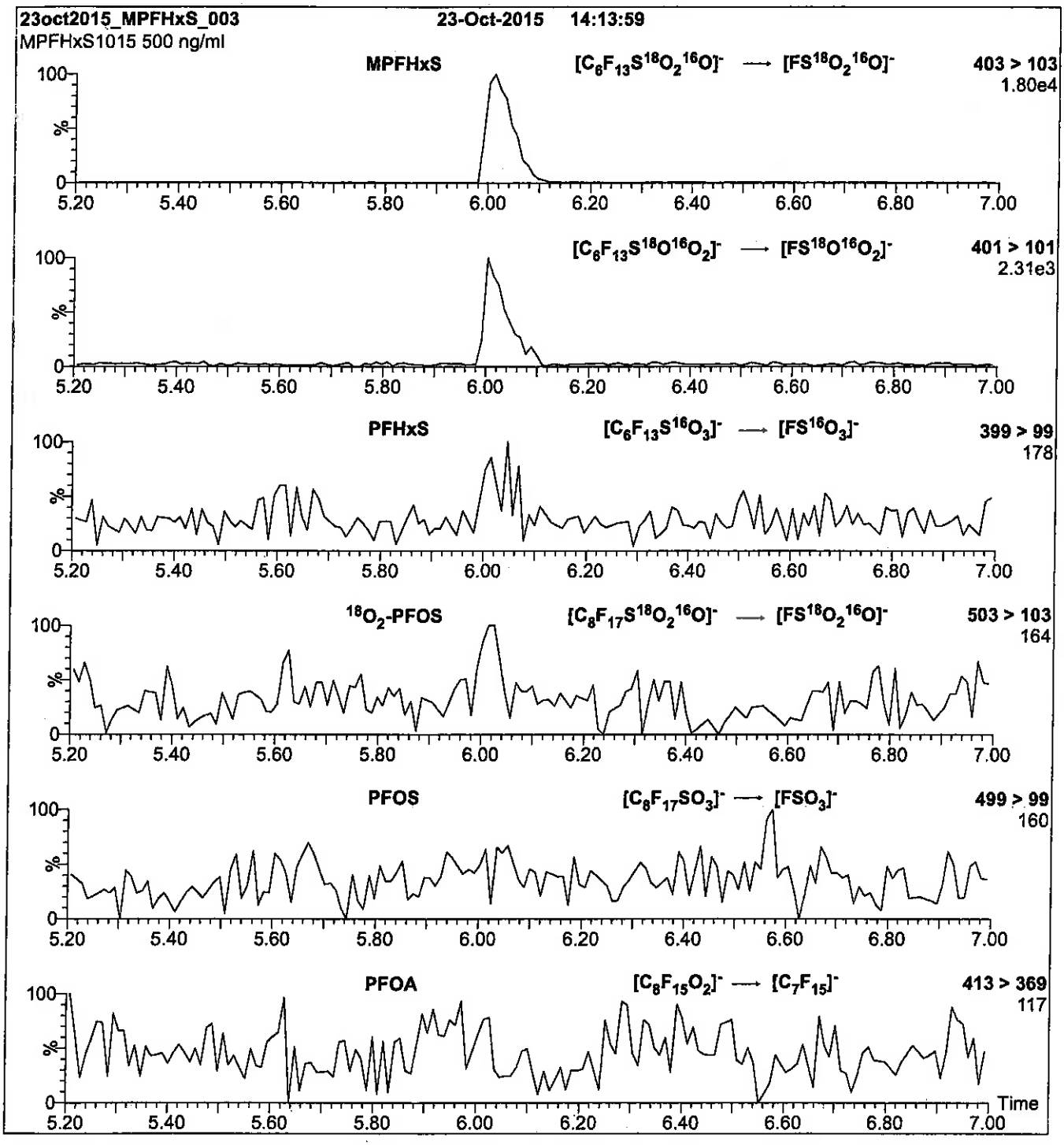
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

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) = 30

Reagent

LCMPFNA_00008

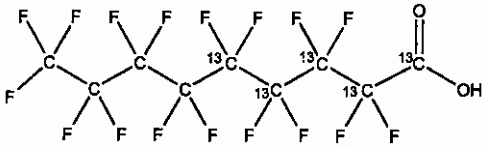
Scanned 10/14/16 R: SBC 9/22/16

739637
ID: LCMPFNA_00008
Exp: 04/13/19 Prpd: SBC
13C5-Perfluorononanoic aci

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFNA
LOT NUMBER: MPFNA0414
COMPOUND: Perfluoro-n-[1,2,3,4,5-$^{13}C_5$]nonanoic acid
STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA: $^{13}C_5{}^{12}C_4HF_{17}O_2$
MOLECULAR WEIGHT: 469.04
CONCENTRATION: 50 ± 2.5 µg/ml
SOLVENT(S): Methanol
Water (<1%)
CHEMICAL PURITY: >98%
ISOTOPIC PURITY: ≥99% ^{13}C ($1,2,3,4,5\text{-}^{13}C_5$)
LAST TESTED: (mm/dd/yyyy) 04/13/2014
EXPIRY DATE: (mm/dd/yyyy) 04/13/2019
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.
- 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:** 04/01/2015 (mm/dd/yyyy)

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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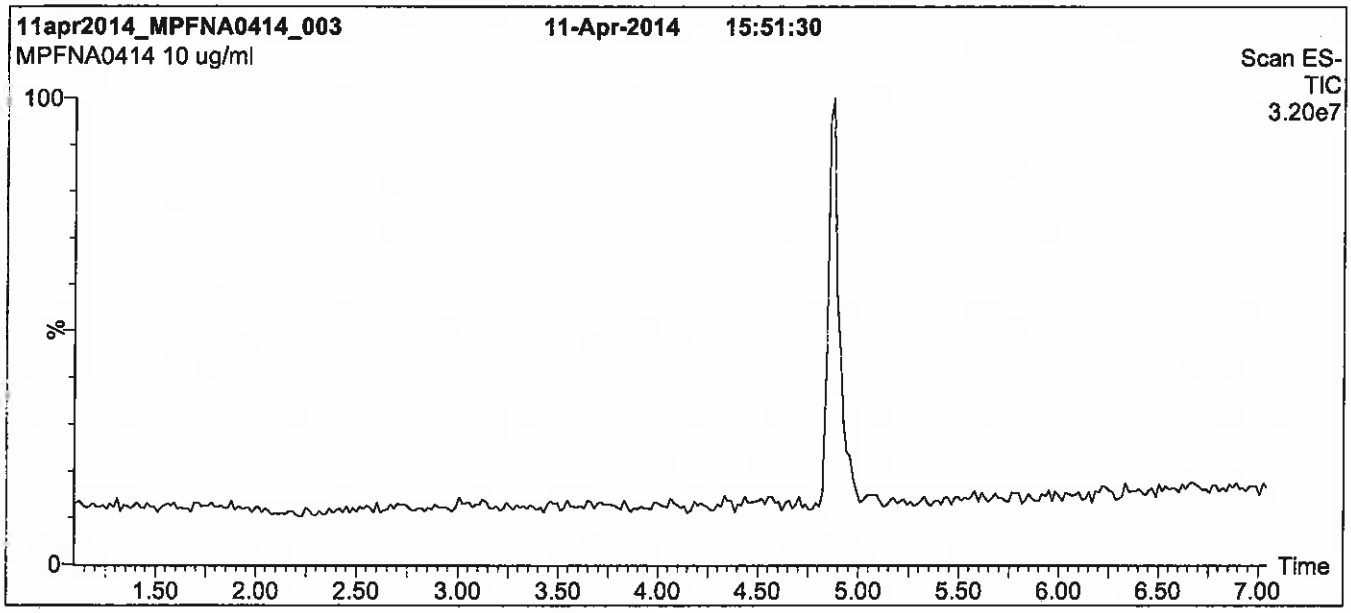

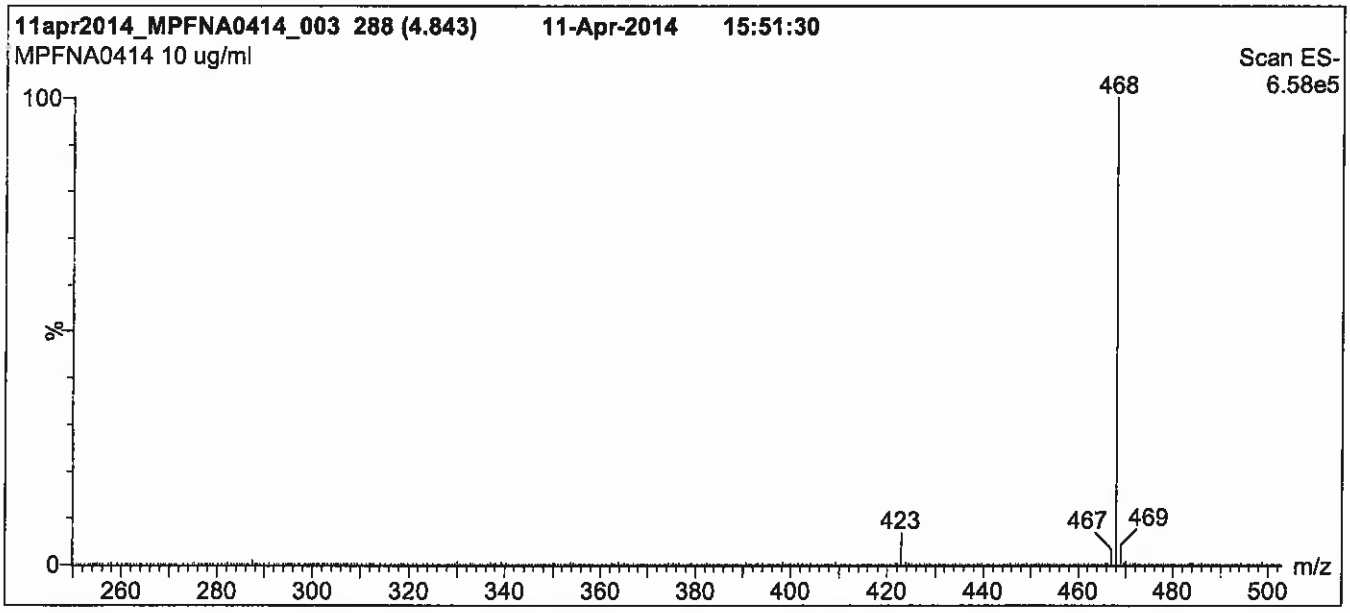

Conditions for Figure 1:

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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

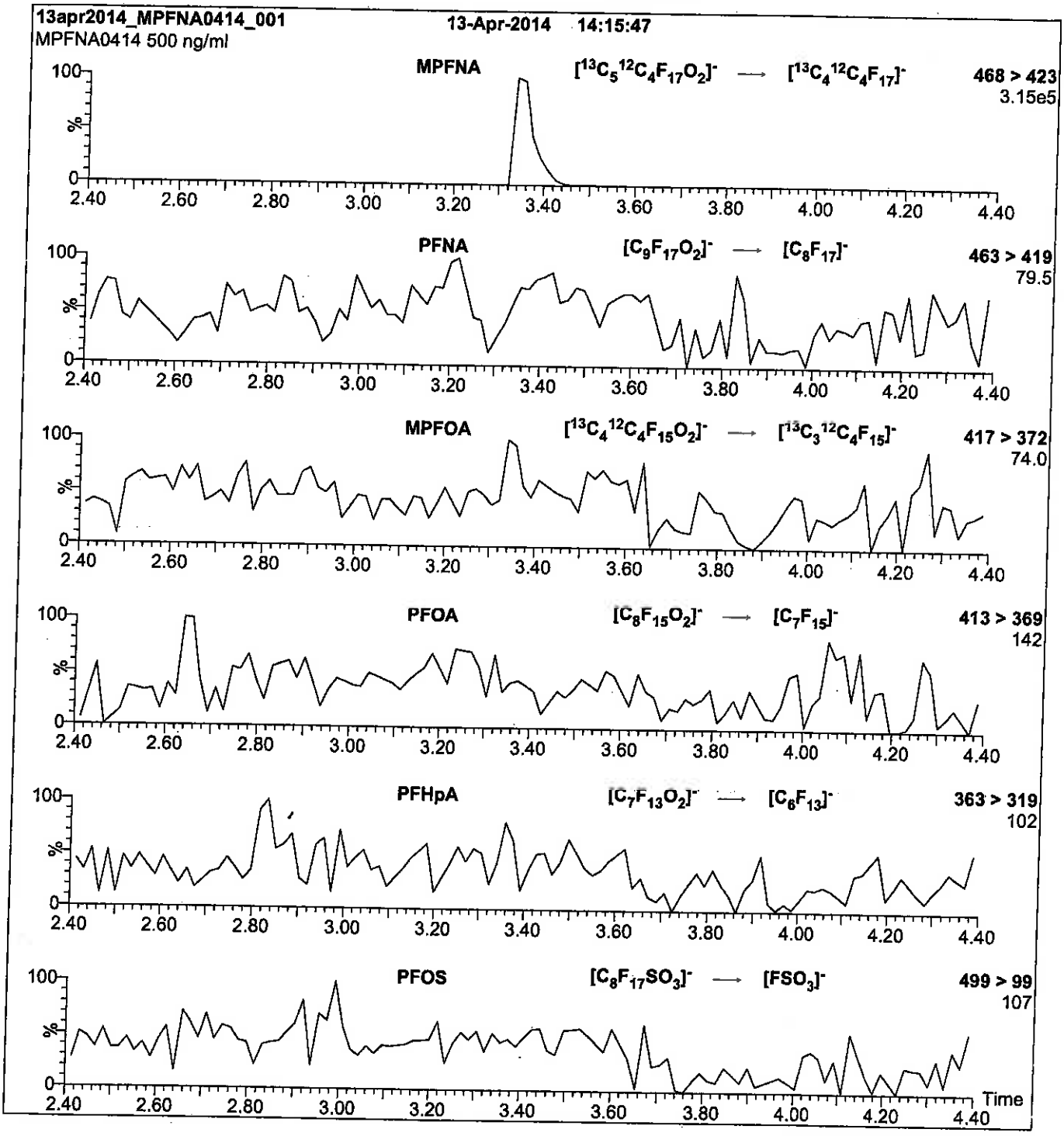
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (250 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

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

Reagent

LCMPFOA_00012

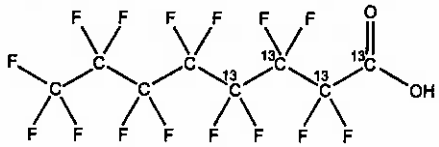
R: SBC 9/22/16

738683
ID: LCMPFOA_00012
Exp: 01/22/21 Prpd: SBC
13C4-Perfluorooctanoic ac

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	MPFOA	**LOT NUMBER:**	MPFOA0116
COMPOUND:	Perfluoro-n-[1,2,3,4-$^{13}C_4$]octanoic acid		
STRUCTURE:		**CAS #:**	Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4HF_{15}O_2$	**MOLECULAR WEIGHT:**	418.04
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C (1,2,3,4-$^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	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.
- Contains ~ 0.1% of native perfluoro-n-octanoic acid (PFOA).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 02/01/2016 (mm/dd/yyyy)

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CALA

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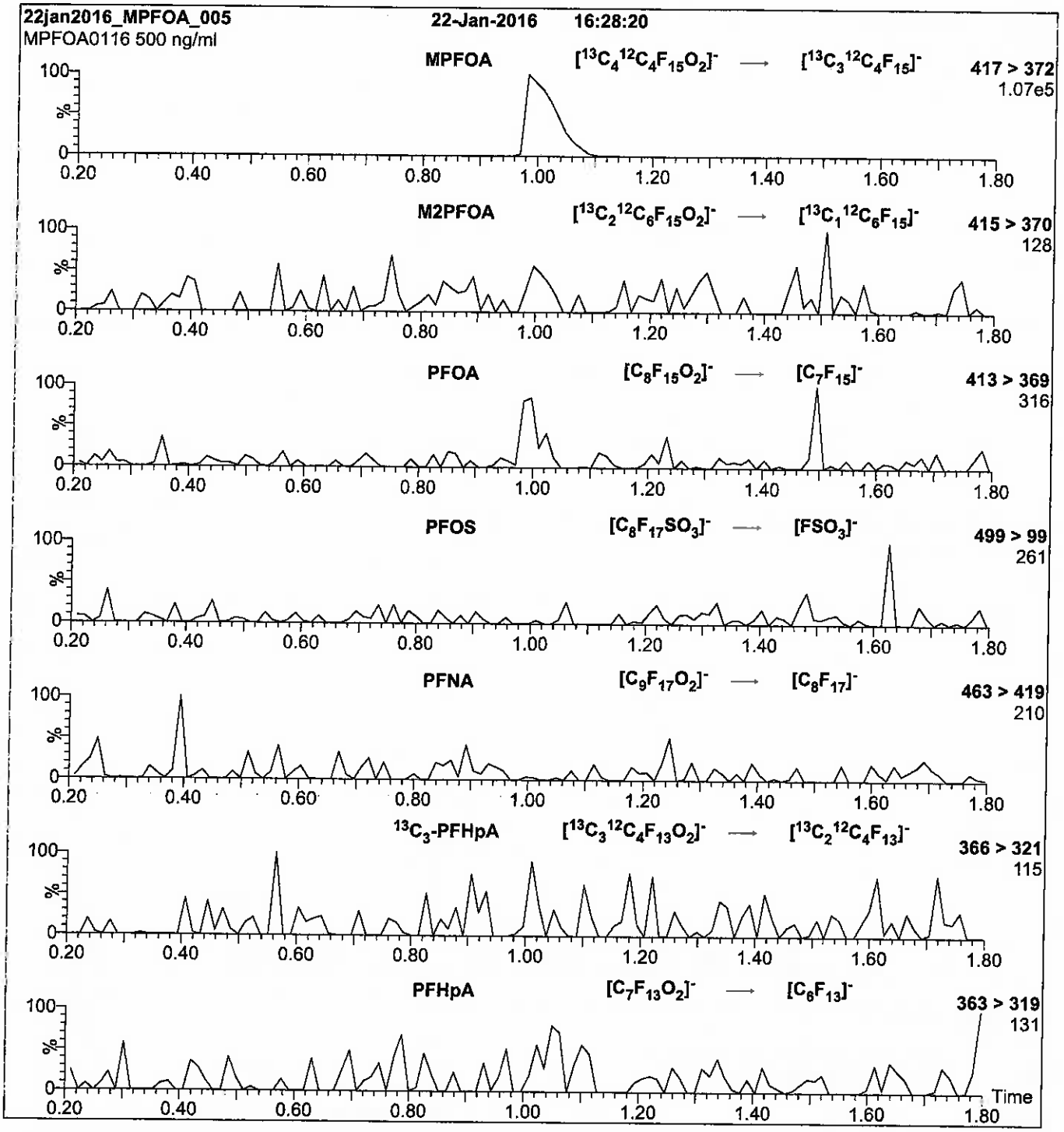
Figure 2: **MPFOA; LC/MS/MS Data (Selected MRM Transitions)**



Conditions for Figure 2:

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

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

Flow: 300 µl/min

MS Parameters

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

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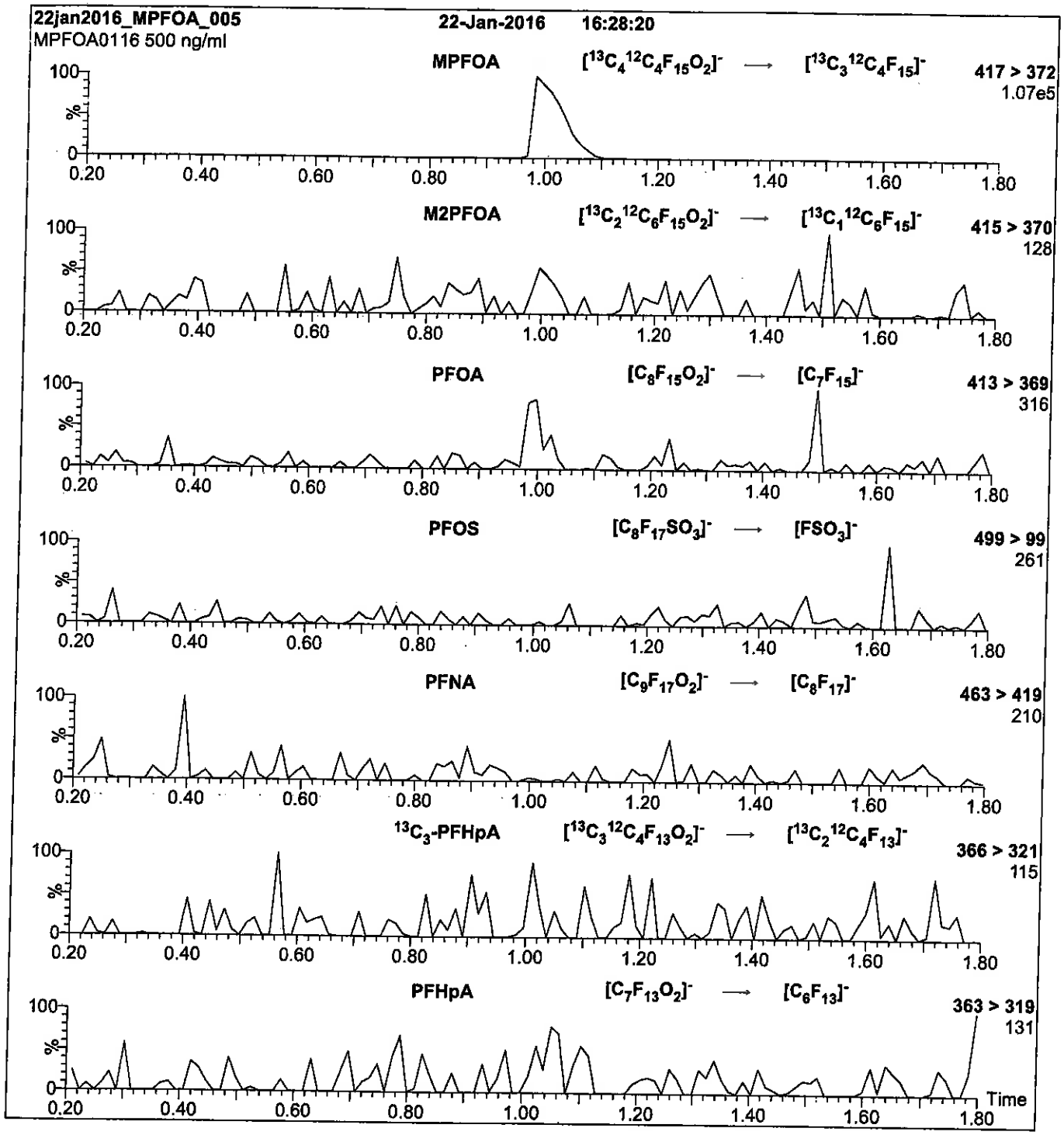

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Injection:	Direct loop injection 10 µl (500 ng/ml MPFOA)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% H_2O (both with 10 mM NH_4OAc buffer)
Flow:	300 µl/min

MS Parameters

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

Reagent

LCMPFOS_00017

R: 9/9/16 SBC

728309
ID: LCMPFOS_00017
Exp: 08/03/21 Prpd: SBC
13C4-Perfluorooctanesulfo

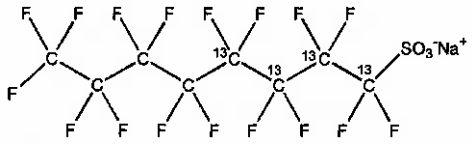
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: MPFOS **LOT NUMBER:** MPFOS0816

COMPOUND: Sodium perfluoro-1-[1,2,3,4-$^{13}C_4$]octanesulfonate

STRUCTURE: **CAS #:** Not available



MOLECULAR FORMULA:	$^{13}C_4{}^{12}C_4F_{17}SO_3Na$	**MOLECULAR WEIGHT:**	526.08
CONCENTRATION:	50.0 ± 2.5 µg/ml (Na salt) 47.8 ± 2.4 µg/ml (MPFOS anion)	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2,3,4\text{-}^{13}C_4$)
LAST TESTED: (mm/dd/yyyy)	08/03/2016		
EXPIRY DATE: (mm/dd/yyyy)	08/03/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains ~ 0.8% Sodium perfluoro-1-[1,2,3-$^{13}C_3$]heptanesulfonate.

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Certified By: B.G. Chittim **Date:** 08/05/2016 (mm/dd/yyyy)

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LIMITED WARRANTY:

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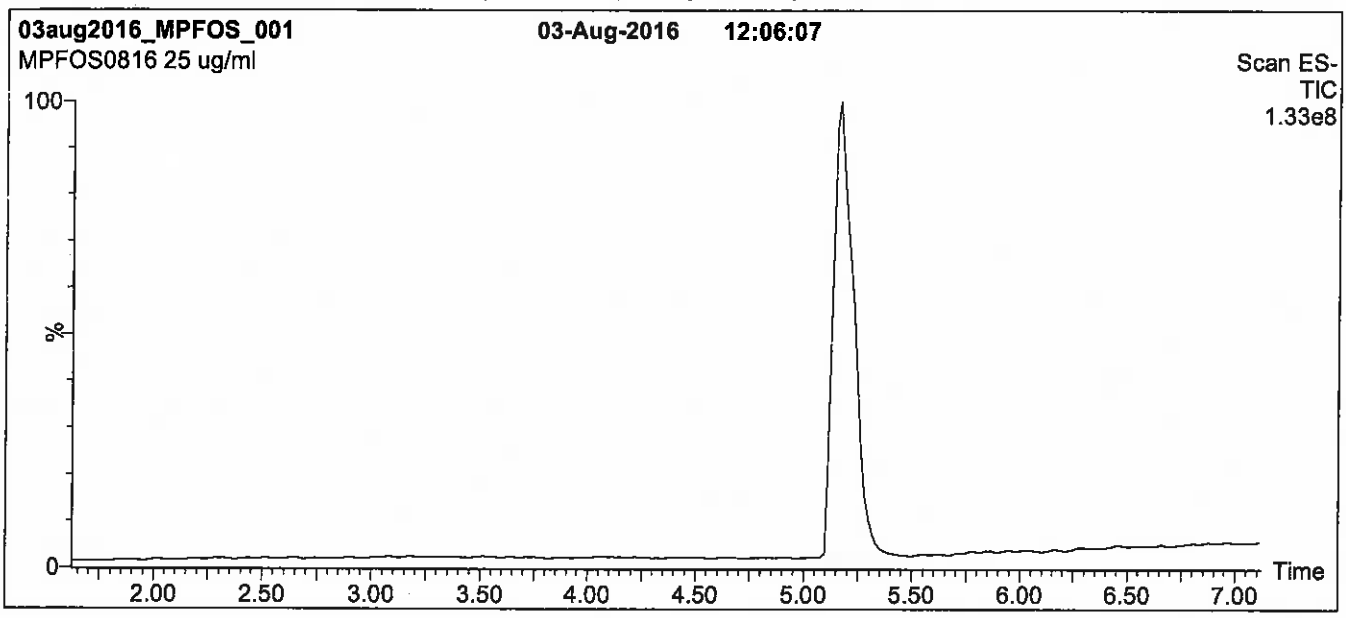
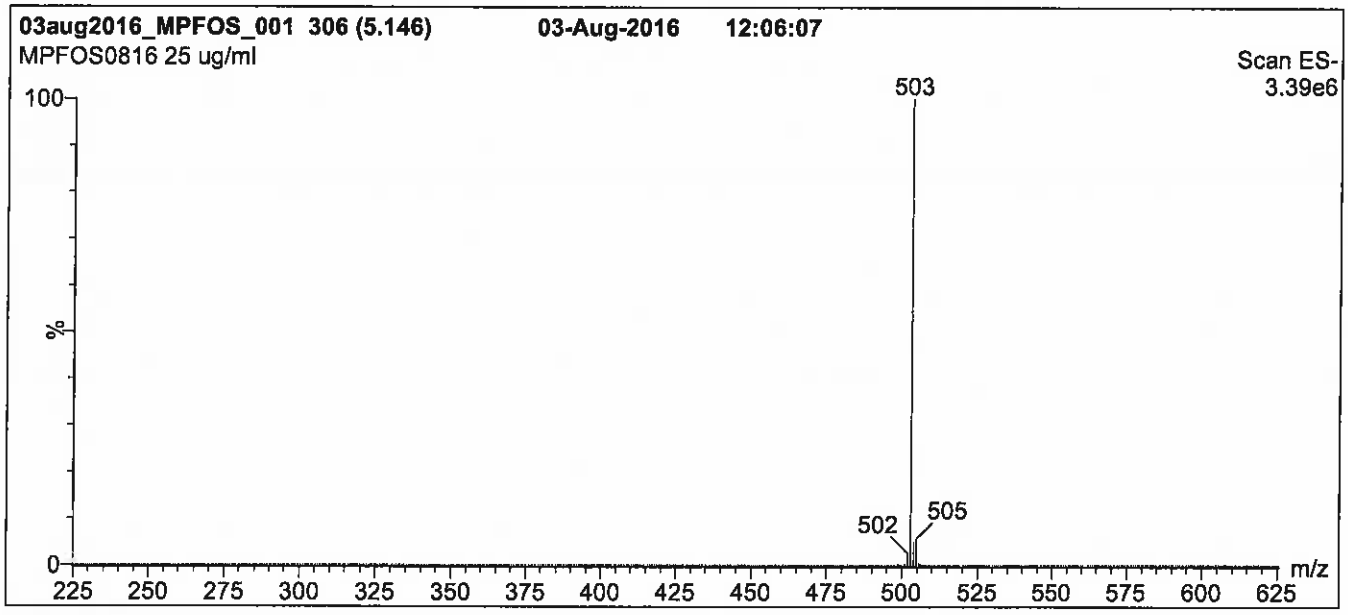
CALA

ANAB ACCREDITED

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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 7 min and hold for 1.5 min
before returning to initial conditions in 0.5 min.
Time: 10 min

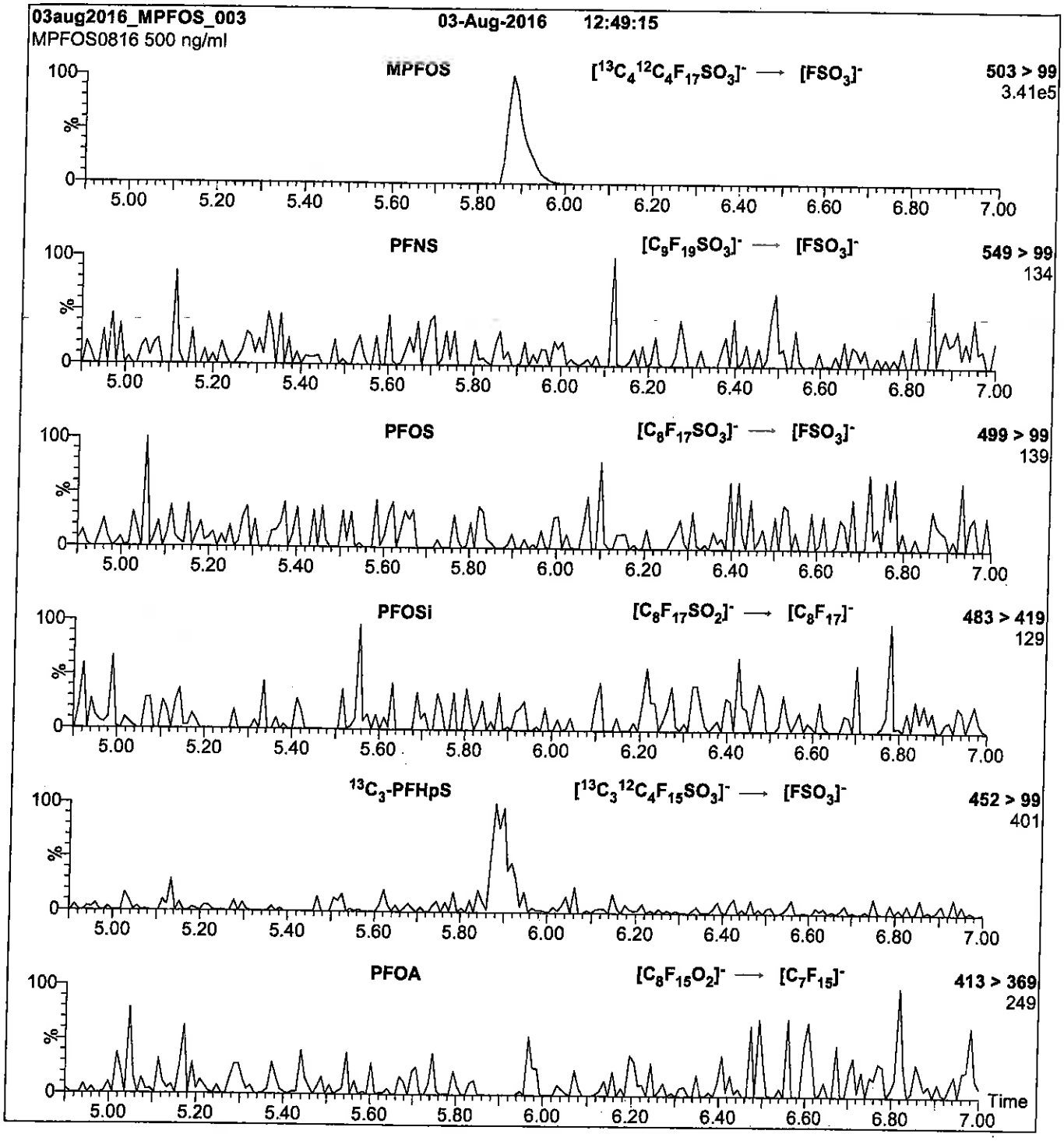
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



Conditions for Figure 2:

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

MS Parameters

Collision Gas (mbar) = 3.46e-3
Collision Energy (eV) = 40

Reagent

LCMPFUdA_00009

R: SBC 9/22/16

739604
ID: LCMPFUdA_00009
Exp: 02/12/21 Prpd: SBC
13C2-Perfluoroundecanoic

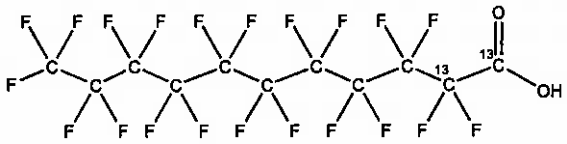
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

Scanned 10/14/16 SBC

PRODUCT CODE: MPFUdA
LOT NUMBER: MPFUdA0216
COMPOUND: Perfluoro-n-[1,2-$^{13}C_2$]undecanoic acid

STRUCTURE:
CAS #: Not available



MOLECULAR FORMULA:	$^{13}C_2{}^{12}C_9HF_{21}O_2$	**MOLECULAR WEIGHT:**	566.08
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol Water (<1%)
CHEMICAL PURITY:	>98%	**ISOTOPIC PURITY:**	≥99% ^{13}C ($1,2\text{-}^{13}C_2$)
LAST TESTED: (mm/dd/yyyy)	02/12/2016		
EXPIRY DATE: (mm/dd/yyyy)	02/12/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Presence of 1-$^{13}C_1$-PFUdA (~1%; see Figure 2), 2-$^{13}C_1$-PFUdA (~1%), and PFUdA (~0.2%; see Figure 2) are due to the isotopic purity of the ^{13}C-precursor.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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HAZARDS:

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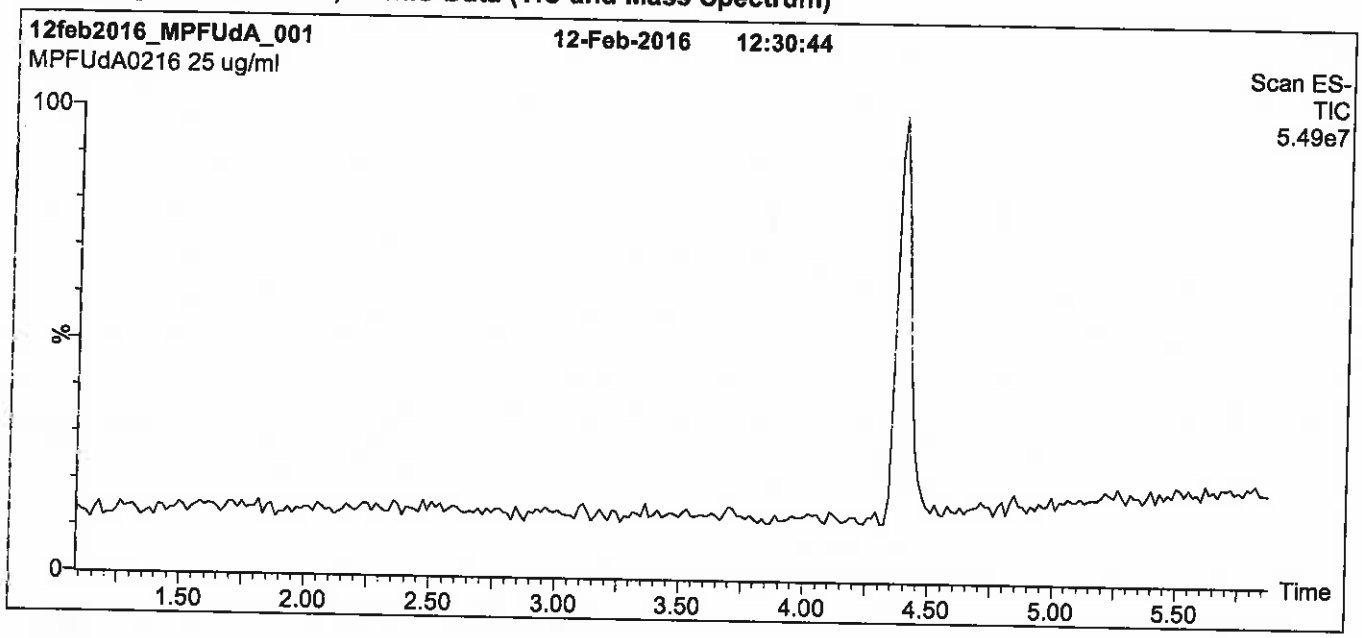
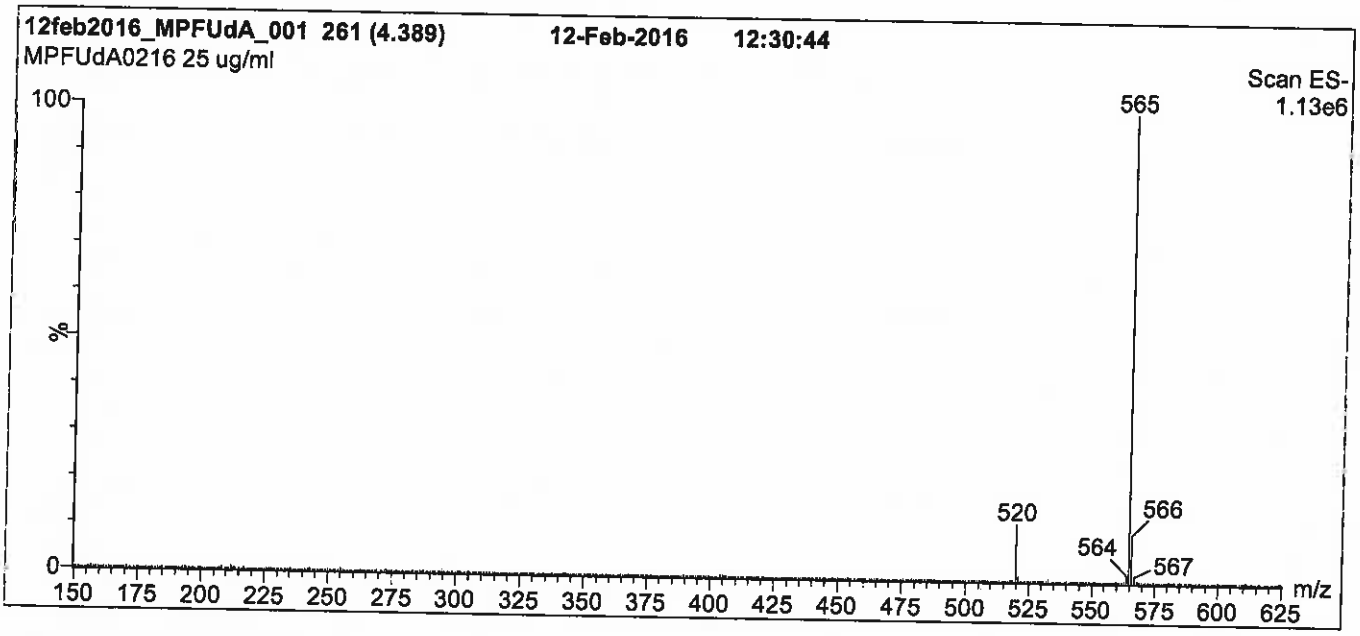
Figure 1: **MPFUdA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

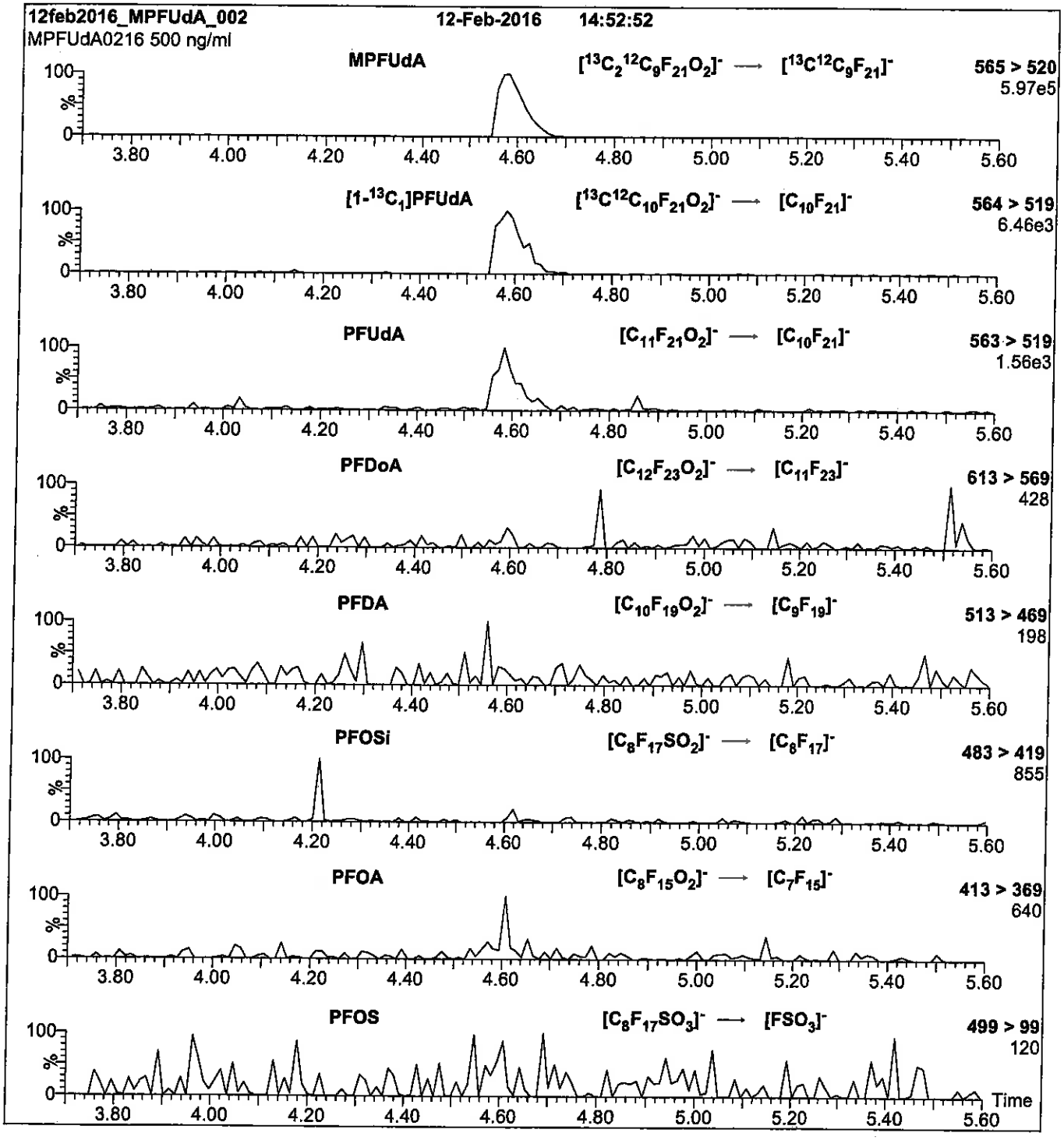
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

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

Mobile phase: Isocratic 80% MeOH / 20% H_2O

Flow: 300 µl/min

MS Parameters

Collision Gas (mbar) = 3.35e-3
Collision Energy (eV) = 11

Reagent

LCN-EtFOSA-M_00002

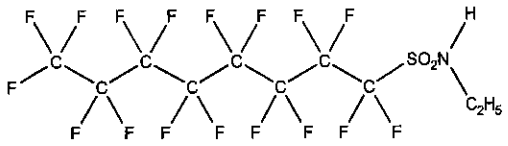
R: 7/16/15 SW

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: N-EtFOSA-M
COMPOUND: N-ethylperfluoro-1-octanesulfonamide
LOT NUMBER: NEtFOSA0714M

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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 04/01/2015 (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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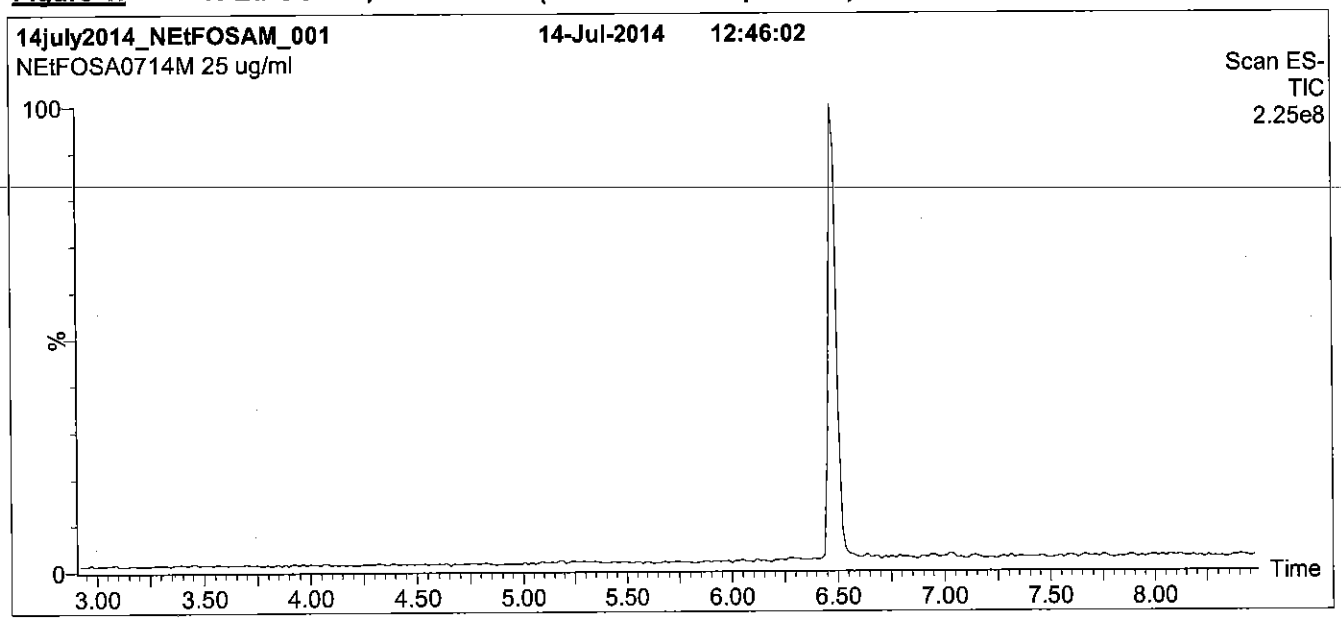
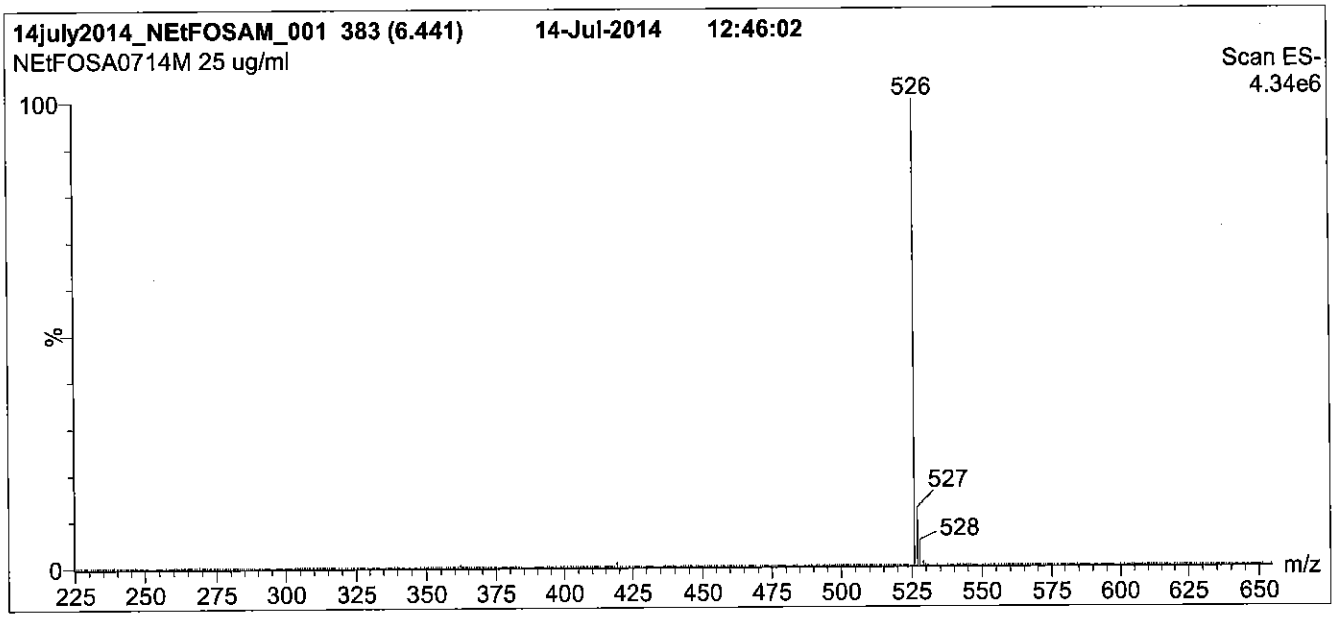
Figure 1: **N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





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
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(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

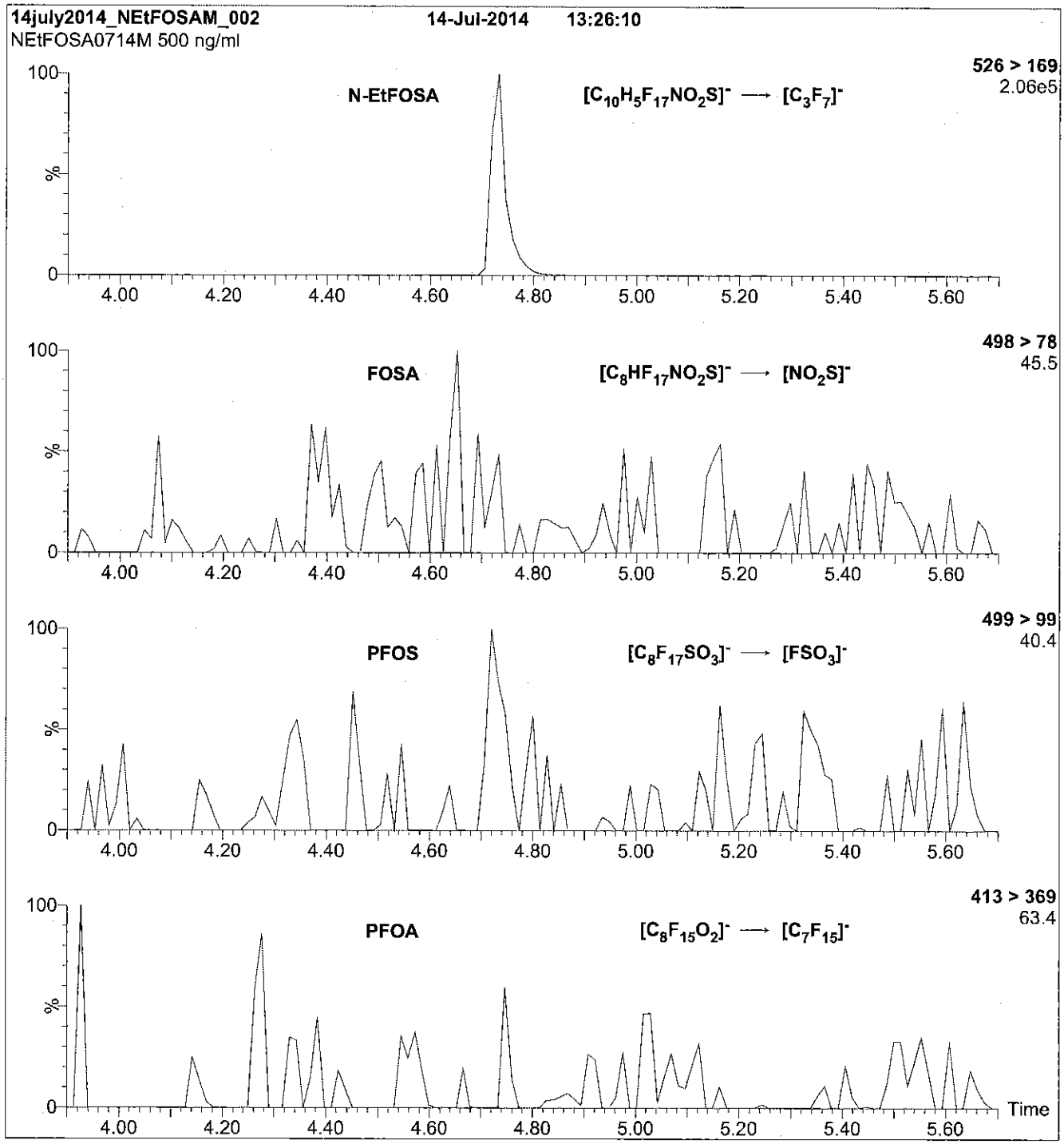
Flow: 300 µl/min

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-EtFOSA-M_00003

R: 8/23/16 SBC

715563
ID: LCN-EtFOSA-M_00003
Exp: 05/24/21 Prpd: SBC
N-EtFOSA-M

WELLINGTON LABORATORIES

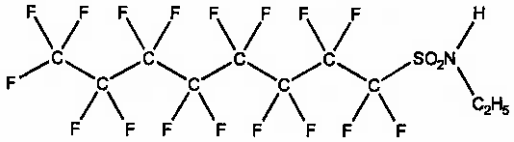
CERTIFICATE OF ANALYSIS DOCUMENTATION

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

LOT NUMBER: NEtFOSA0516M

STRUCTURE:

CAS #: 4151-50-2



MOLECULAR FORMULA:	$C_{10}H_8F_{17}NO_2S$	**MOLECULAR WEIGHT:**	527.20
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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Certified By: B.G. Chittim **Date:** 05/27/2016 (mm/dd/yyyy)

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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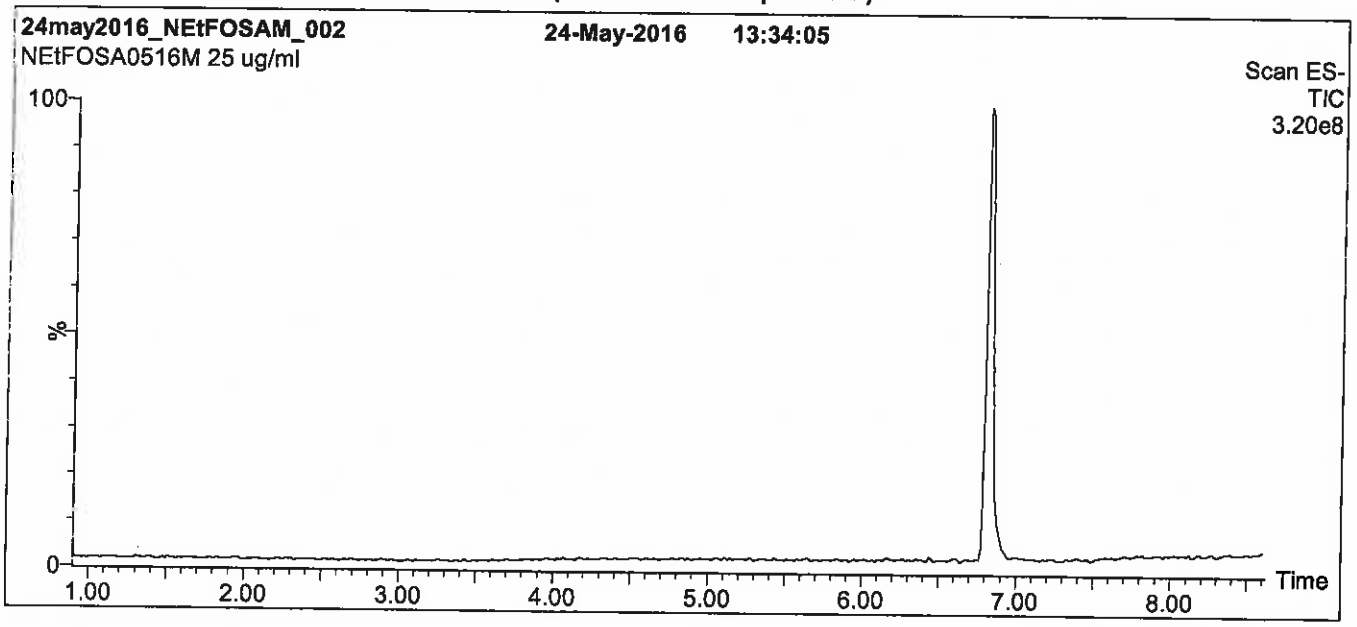
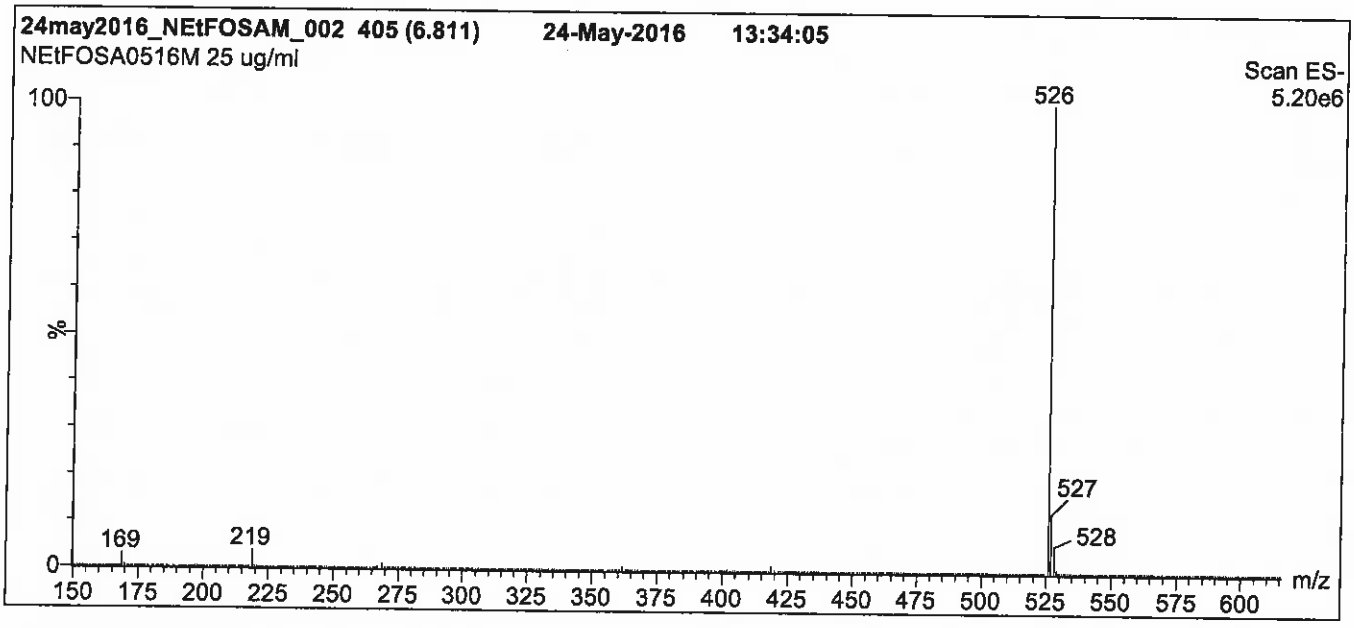
Figure 1: **N-EtFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





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

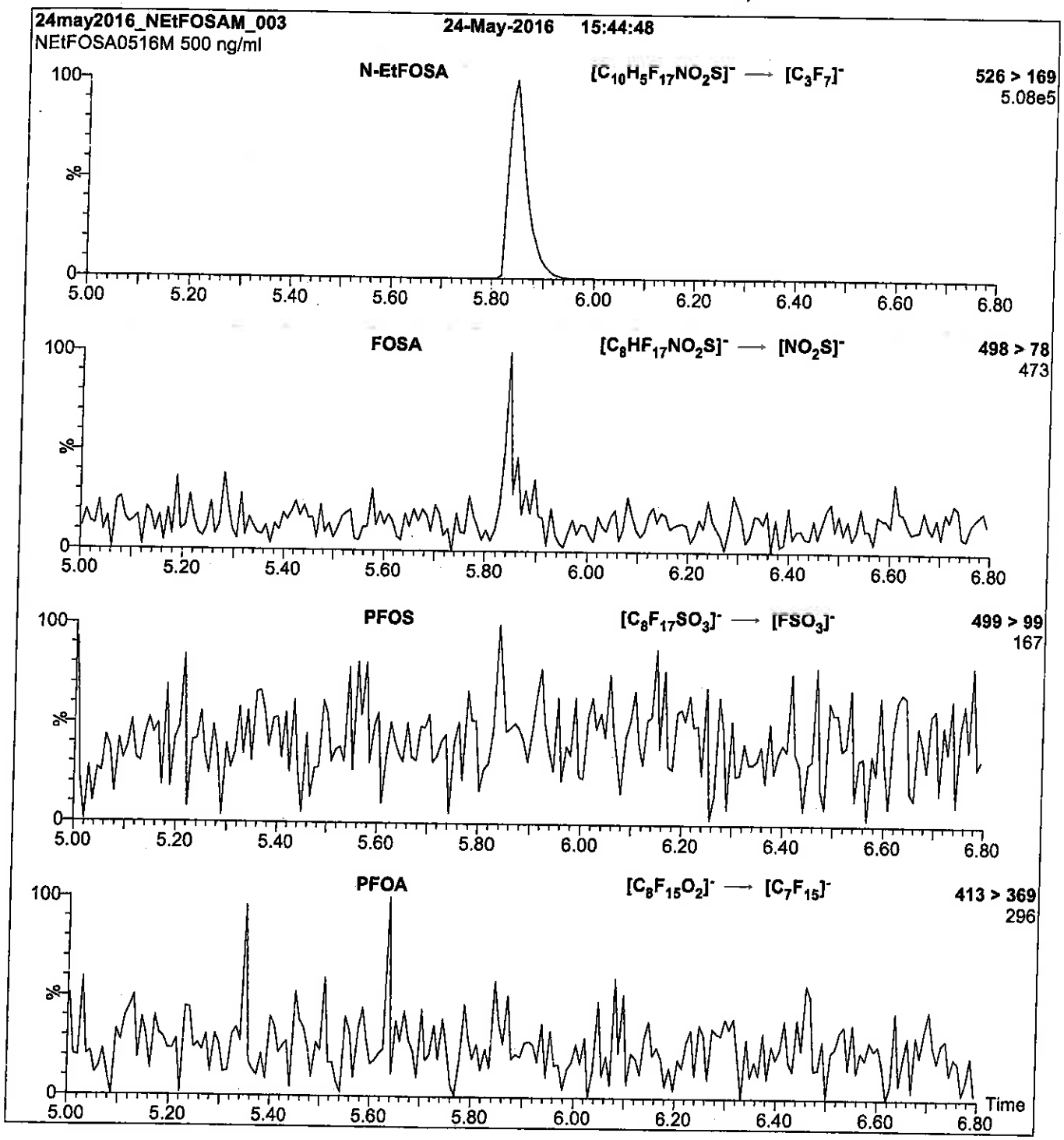
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 µl (500 ng/ml N-EtFOSA-M)
Mobile phase:	Isocratic 80% (80:20 MeOH:ACN) / 20% 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-EtFOSAA_00001

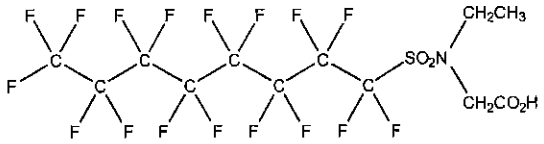
WELLINGTON LABORATORIES

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

INTENDED USE:

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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.

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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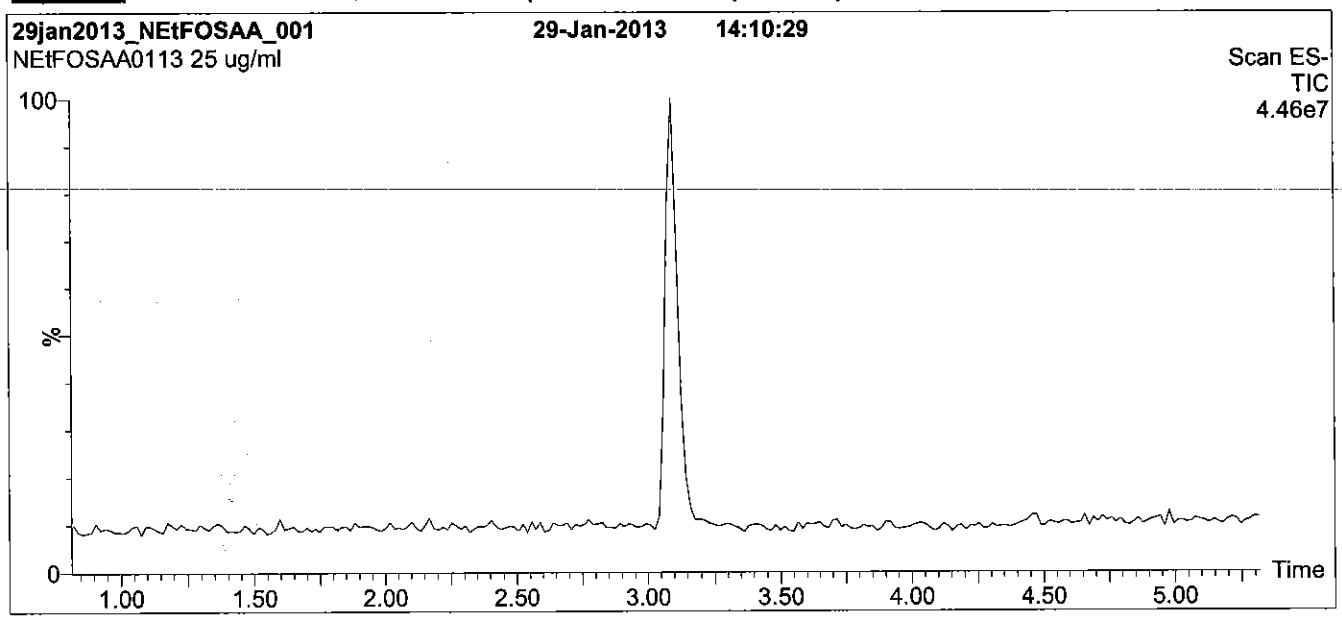
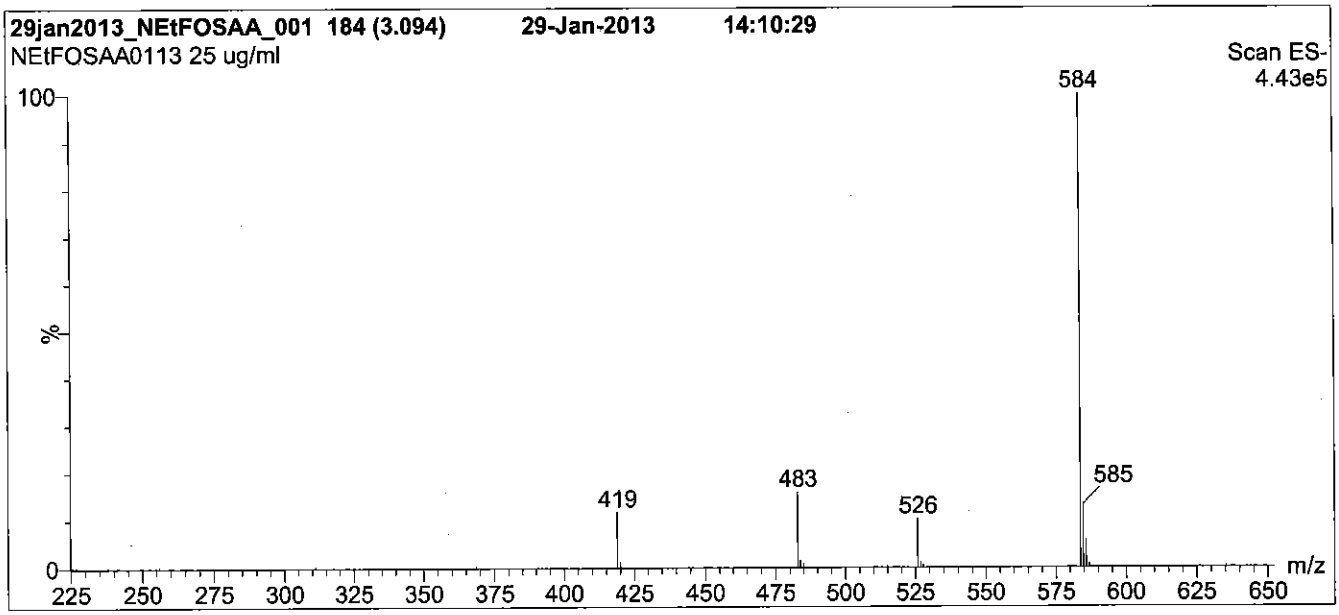




Conditions for Figure 1:

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

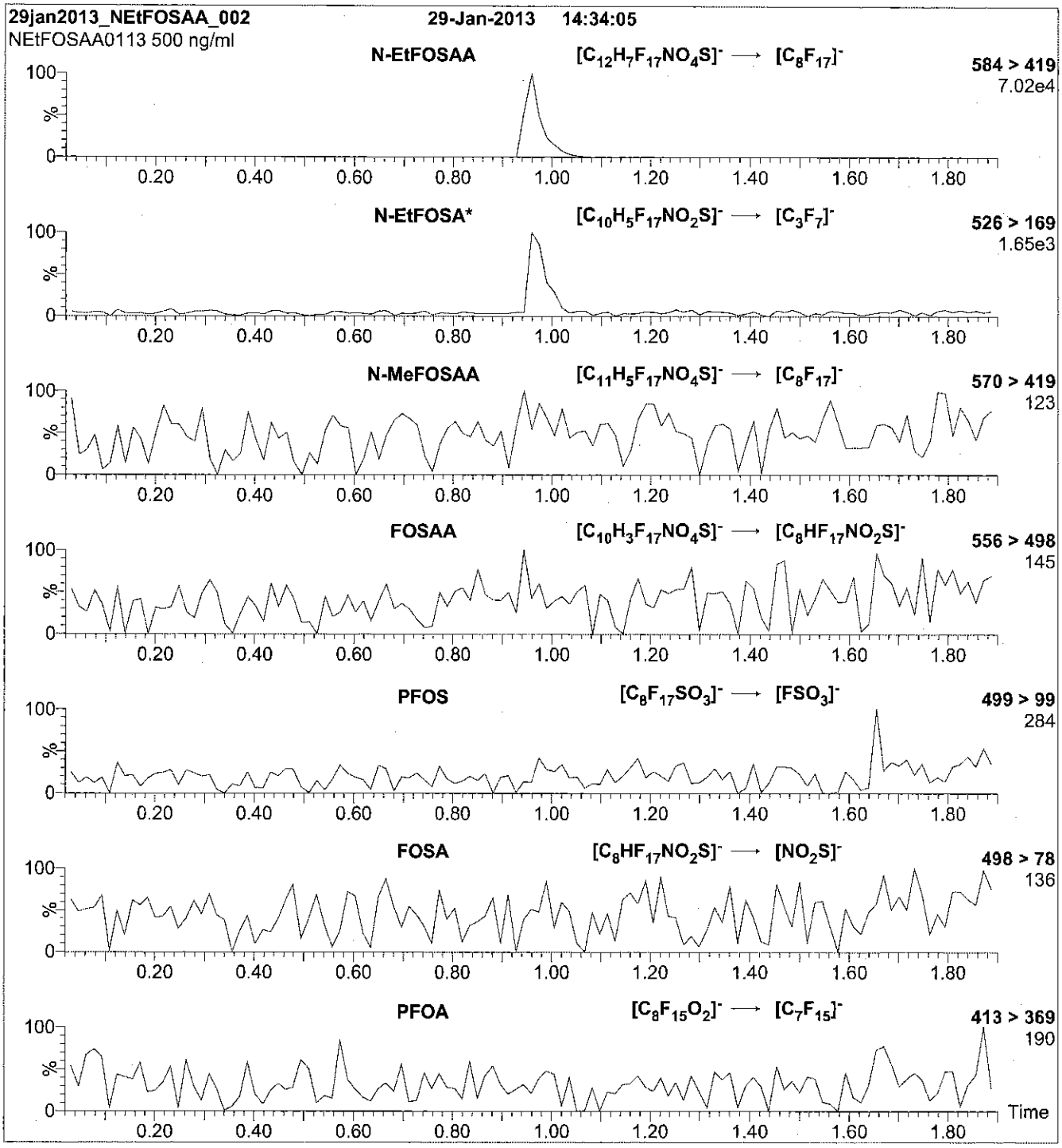
Flow: 300 µl/min

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-EtFOSAA_00002

R: 8/23/16 SBC

715561
ID: LCN-EtFOSAA_00002
Exp: 01/20/21 Prpd: SBC
N-EtFOSAA

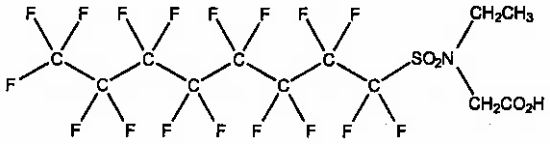
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-EtFOSAA **LOT NUMBER:** NEtFOSAA0116

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) 01/20/2016

EXPIRY DATE: (mm/dd/yyyy) 01/20/2021

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/21/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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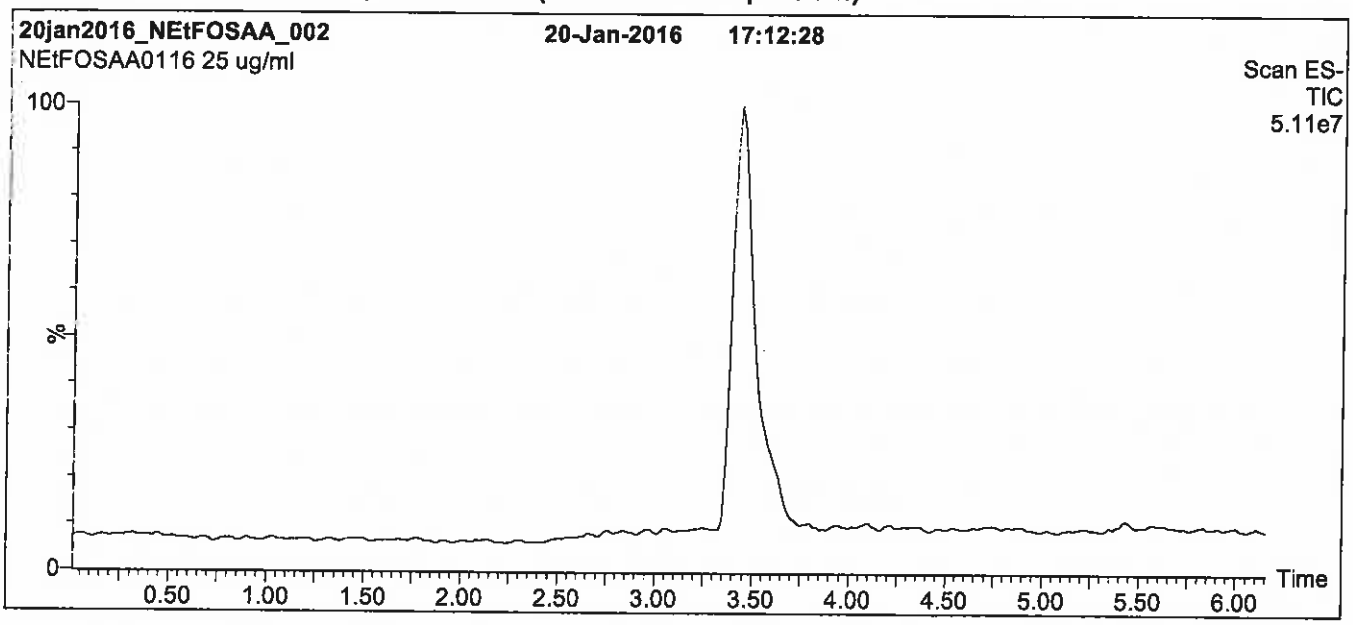
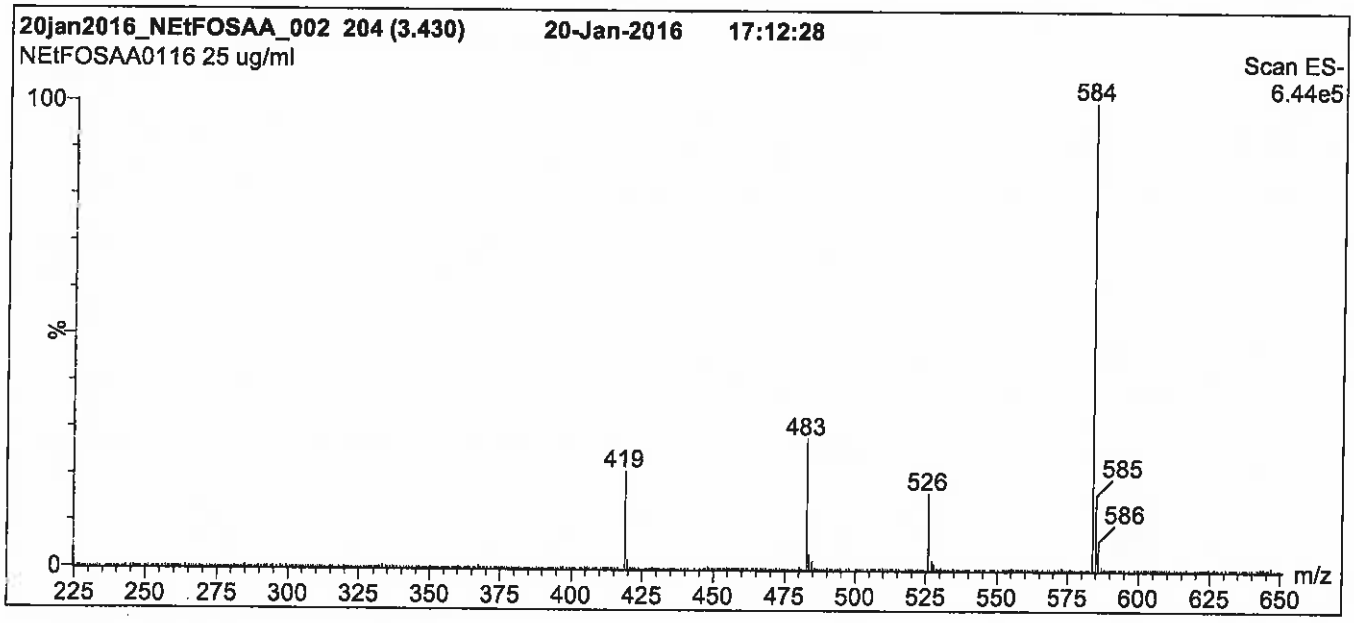
Figure 1: **N-EtFOSAA; LC/MS Data (TIC and Mass Spectrum)**





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: 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

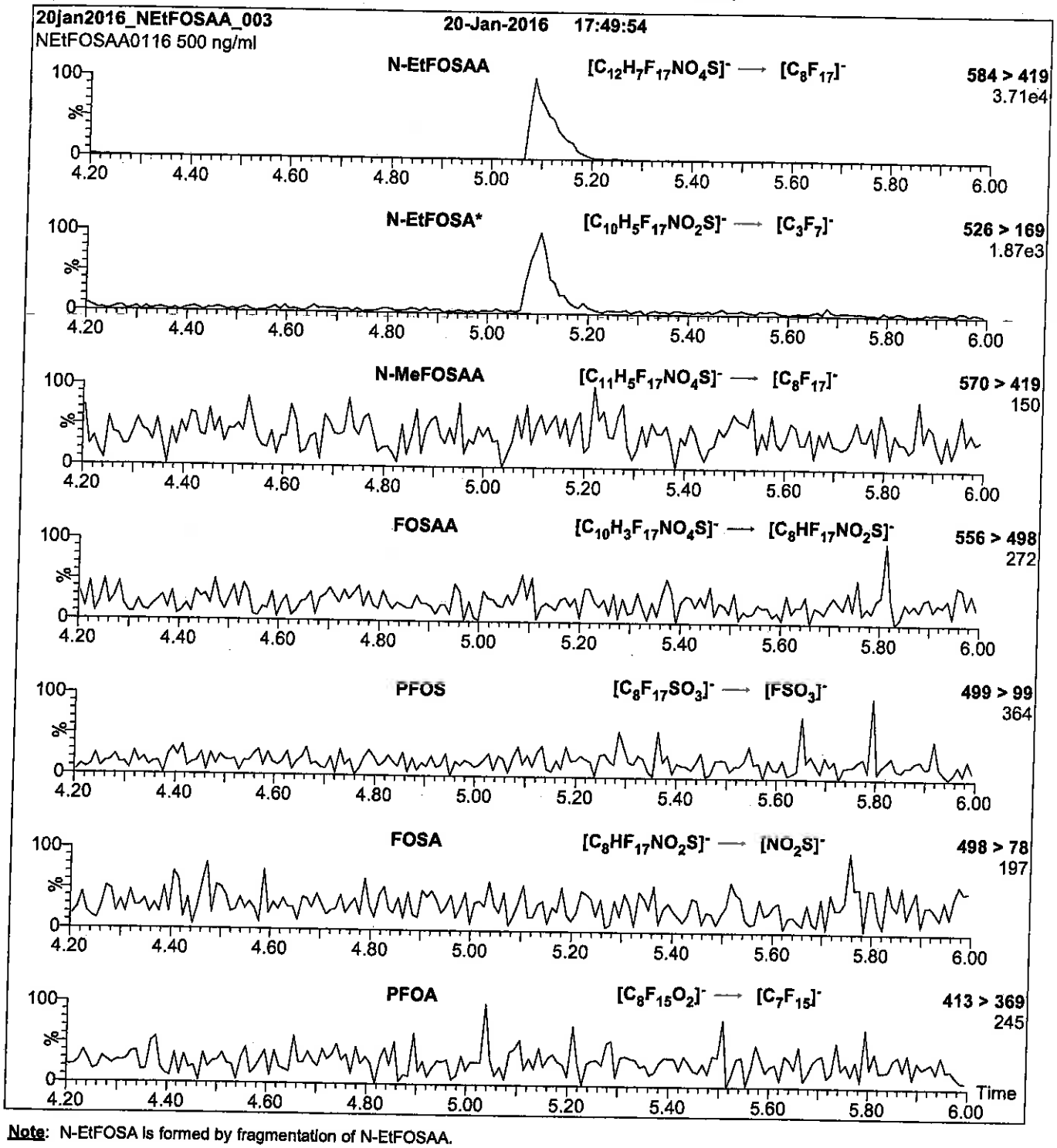
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 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) = 3.66e-3
Collision Energy (eV) = 25

Reagent

LCN-MeFOSA-M_00001

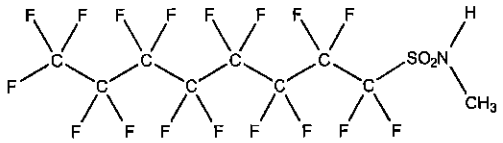
R: 7/16/15 SW

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:

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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CALA Testing Accreditation No. A 1226

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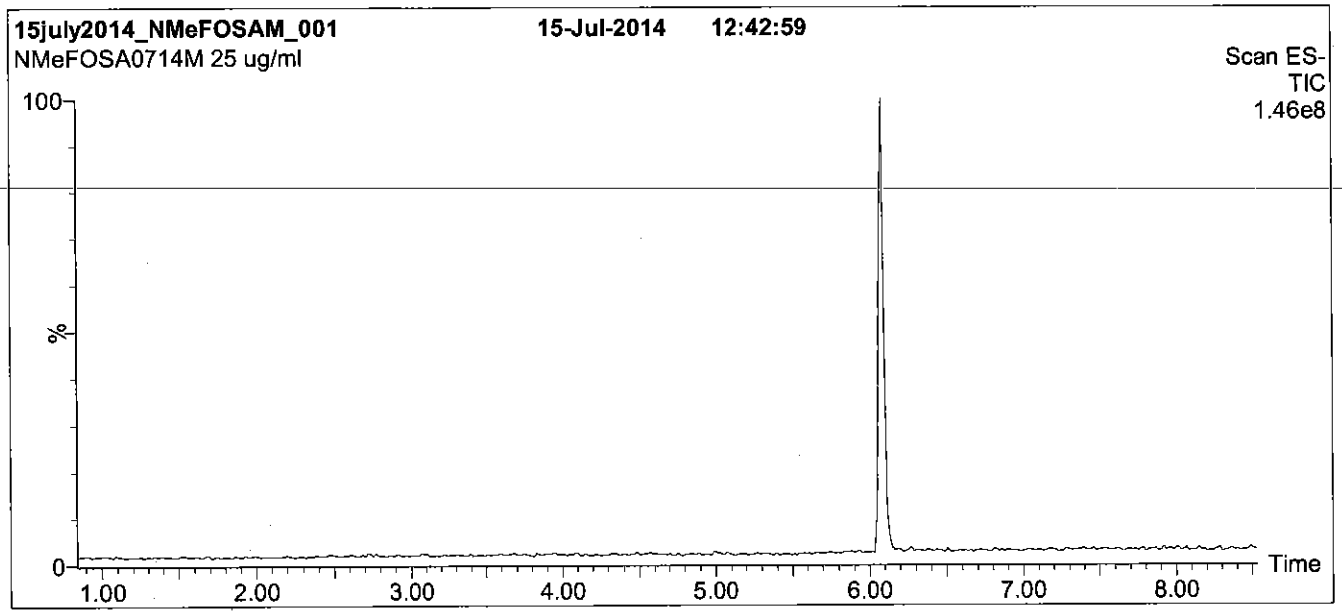

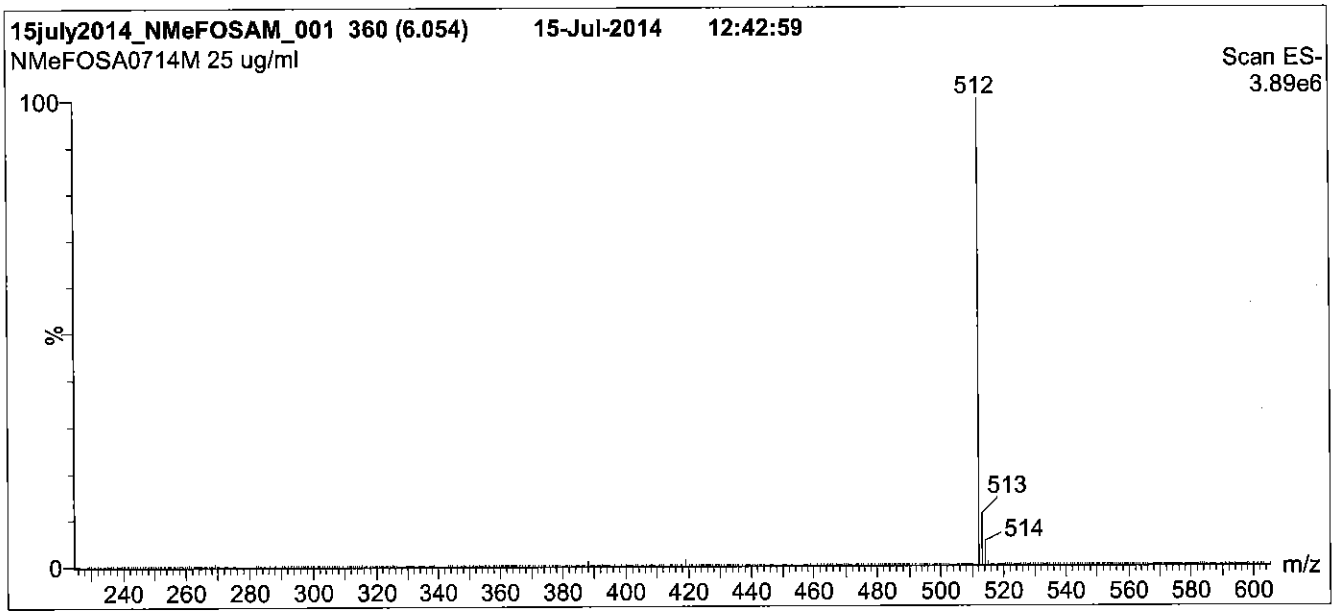

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MS: **Micromass Quattro *micro* API MS**

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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.
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Experiment: Full Scan (225 - 950 amu)

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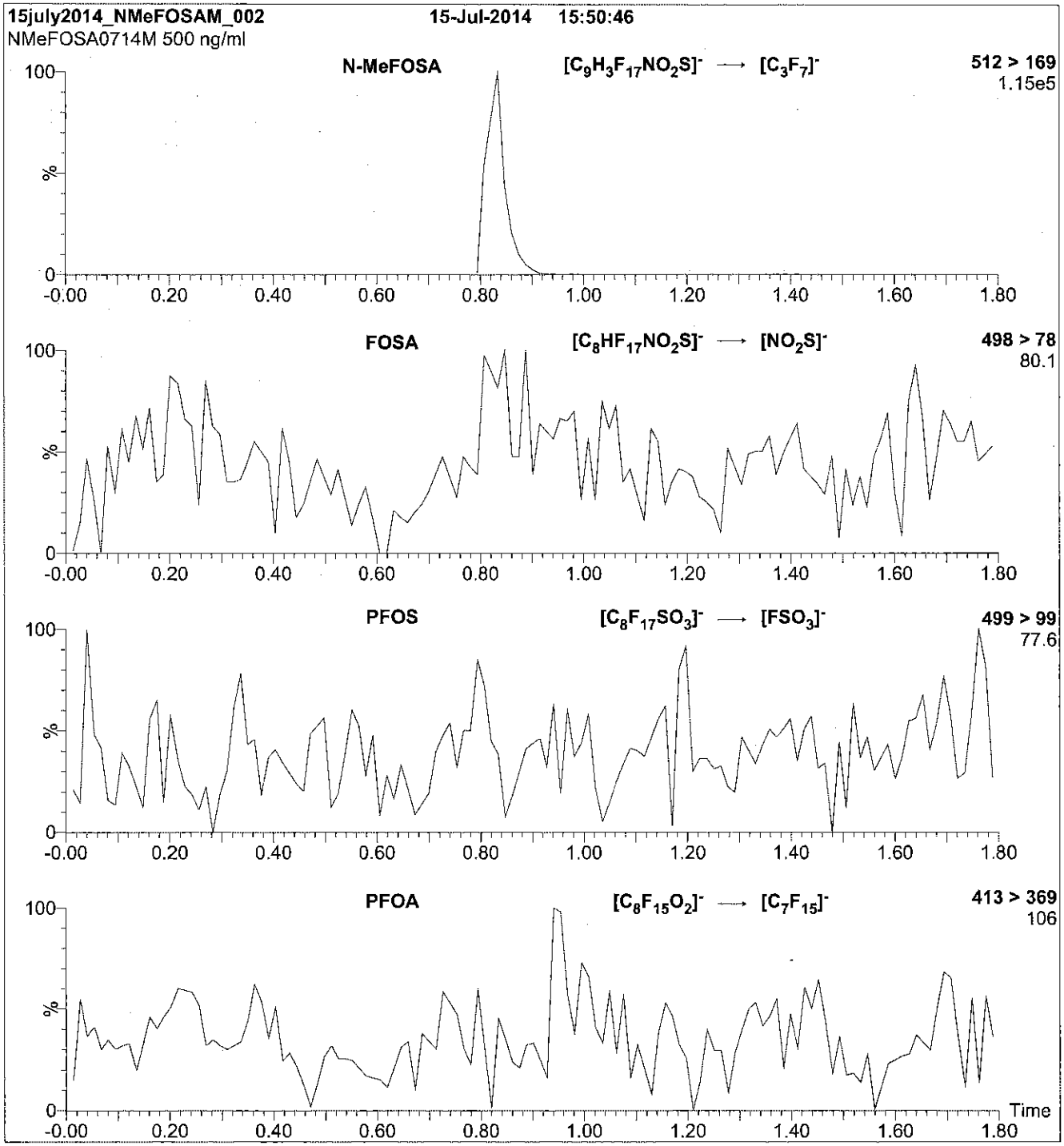
Desolvation Gas Flow (l/hr) = 750

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-MeFOSA-M_00002

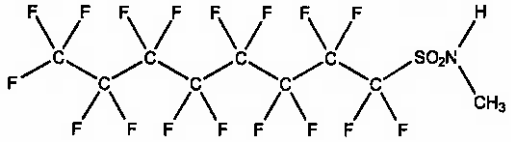
R: 8/23/16 SBC

715564
ID: LCN-MeFOSA-M_00002
Exp: 05/24/21 Prpd: SBC
N-MeFOSA-M

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:	N-MeFOSA-M	**LOT NUMBER:**	NMeFOSA0516M
COMPOUND:	N-methylperfluoro-1-octanesulfonamide		
STRUCTURE:		**CAS #:**	31506-32-8



MOLECULAR FORMULA:	$C_8H_4F_{17}NO_2S$	**MOLECULAR WEIGHT:**	513.17
CONCENTRATION:	50 ± 2.5 µg/ml	**SOLVENT(S):**	Methanol
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	05/24/2016		
EXPIRY DATE: (mm/dd/yyyy)	05/24/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

- See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 05/26/2016 (mm/dd/yyyy)

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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

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

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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

ANAB ACCREDITED

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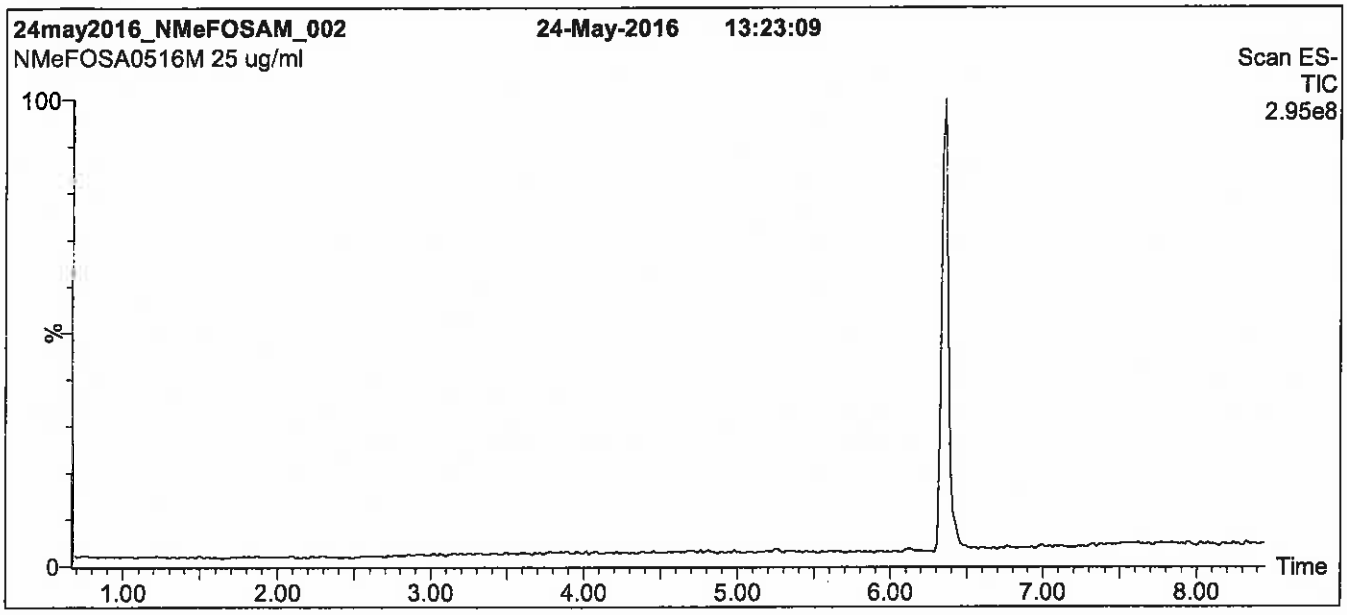
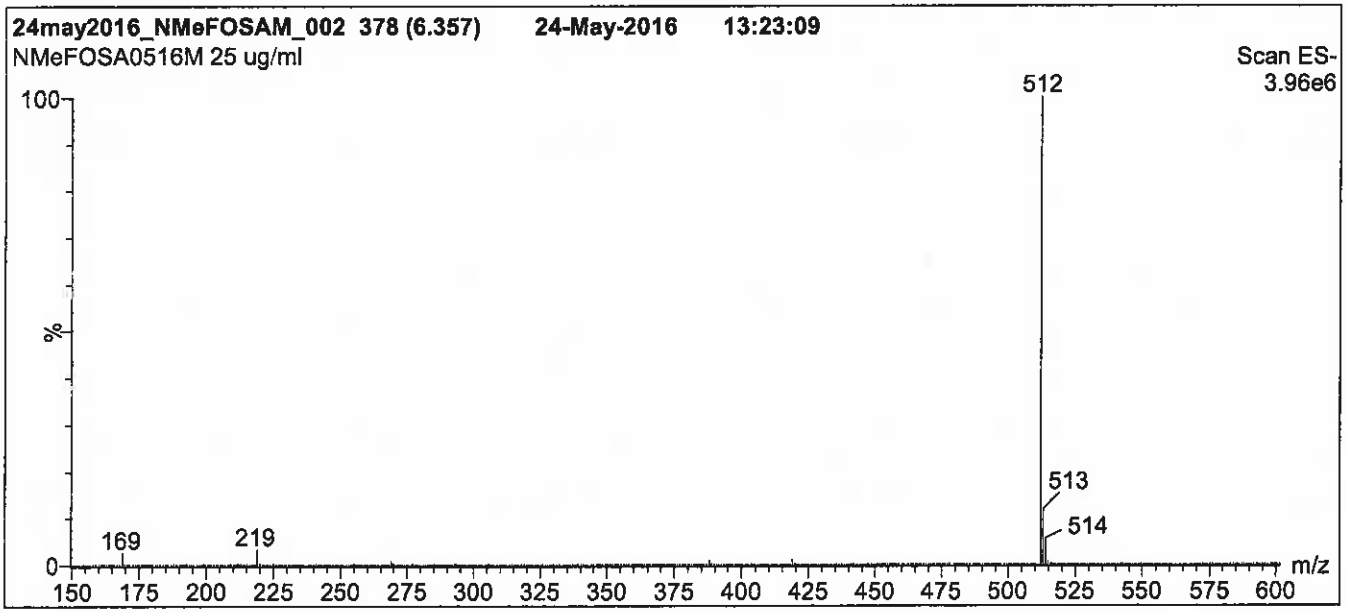
Figure 1: **N-MeFOSA-M; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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 7.5 min and hold for
1.5 min before returning to initial conditions in 0.5 min.
Time: 10 min

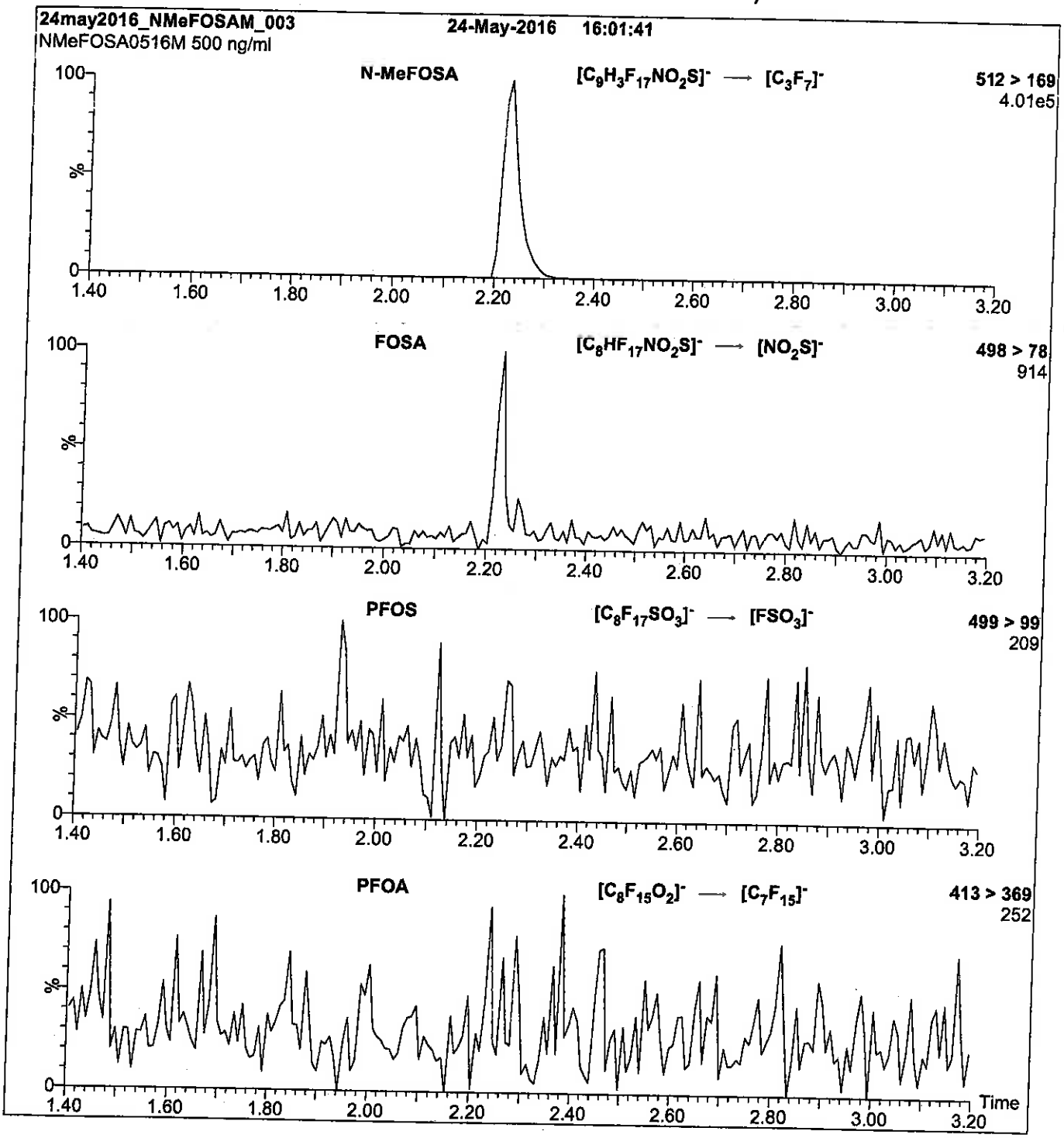
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection:	Direct loop injection 10 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

P: 7/10/15 SEU

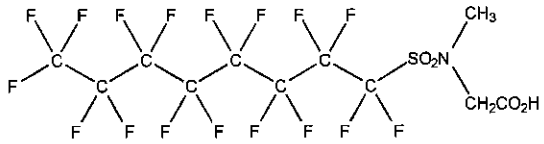
WELLINGTON LABORATORIES

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:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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

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CALA Testing Accreditation No. A 1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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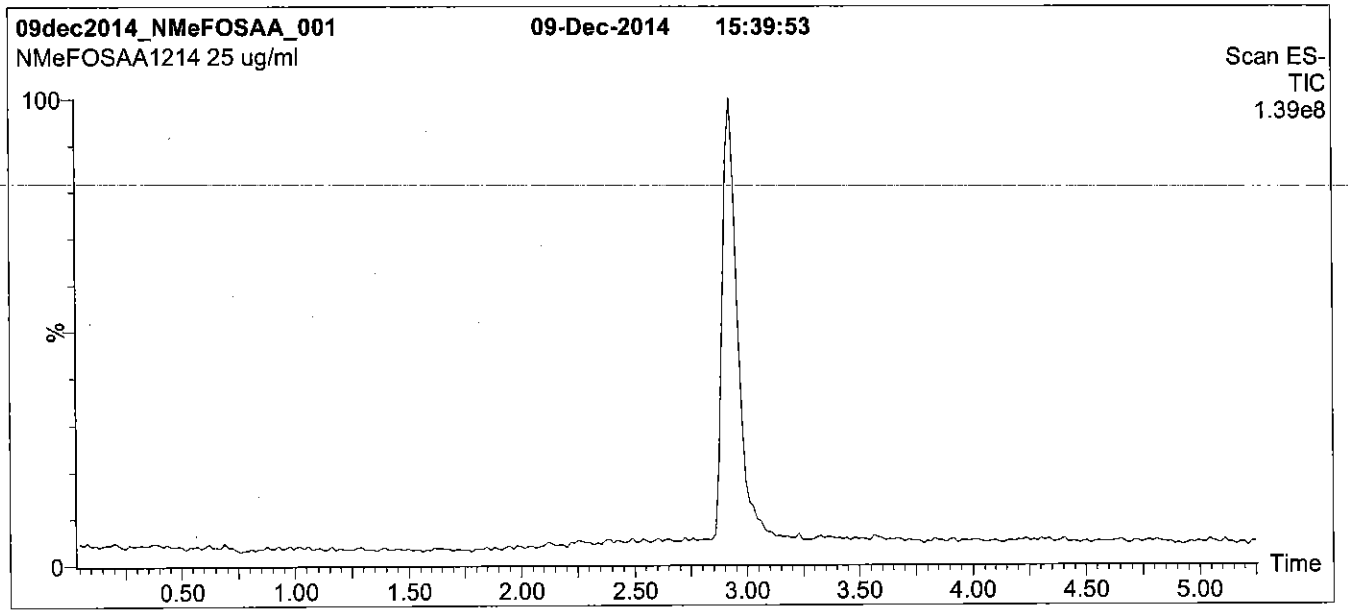
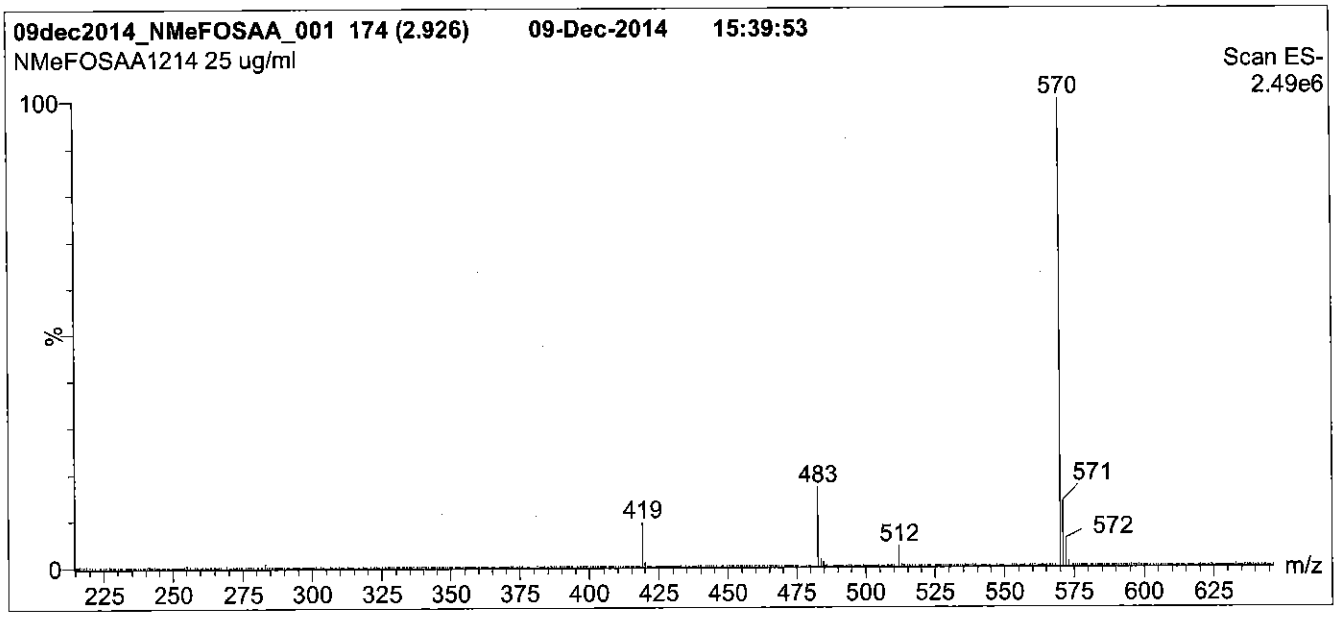
Figure 1: **N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

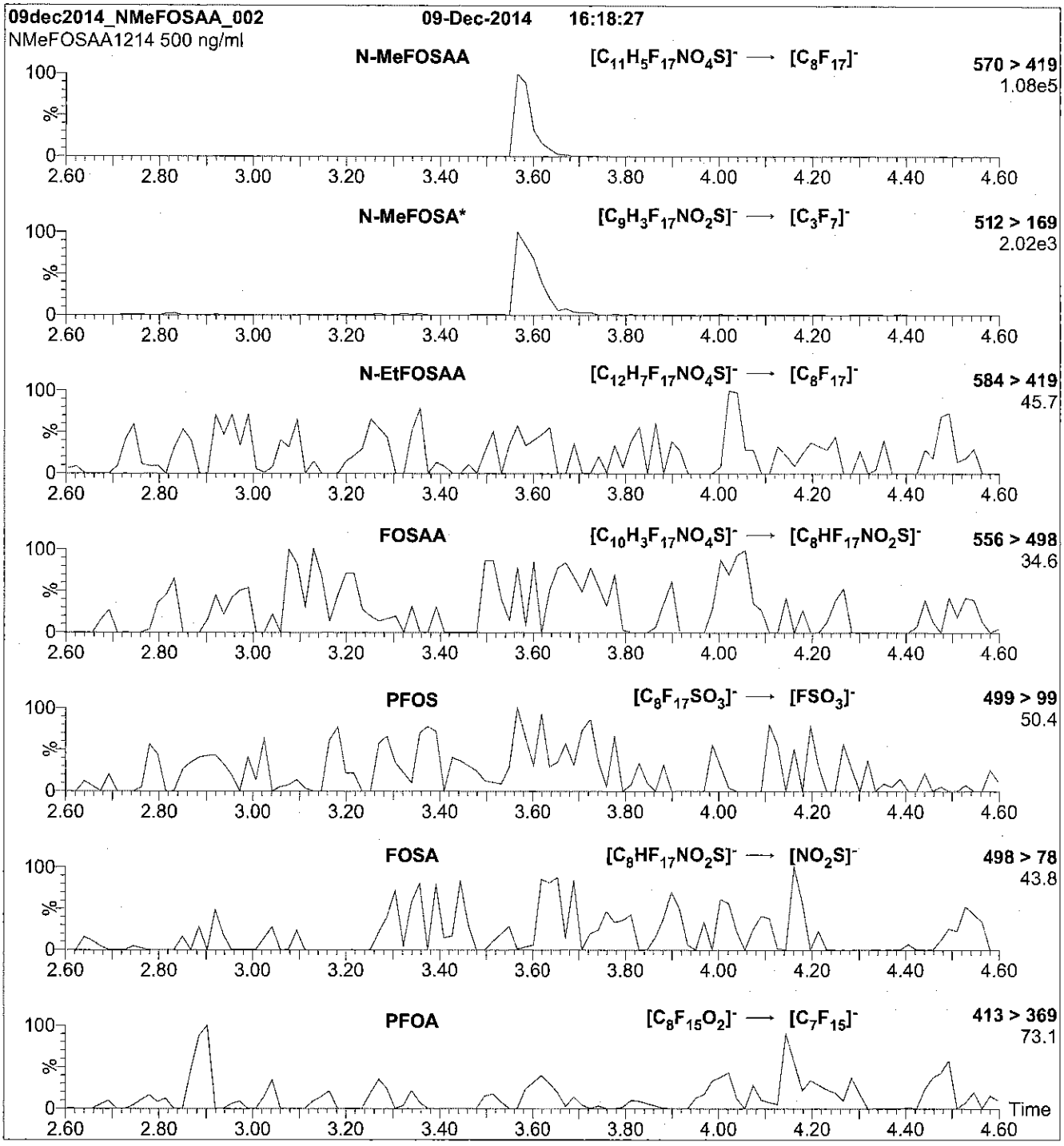
Flow: 300 µl/min

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

LCN-MeFOSAA_00003

R: 8/23/16 SBC

715562
ID: LCN-MeFOSAA_00003
Exp: 01/20/21 Prpd: SBC
N-MeFOSAA

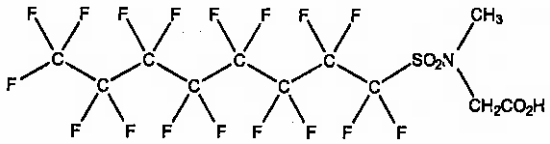
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: N-MeFOSAA **LOT NUMBER:** NMeFOSAA0116

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) 01/20/2016

EXPIRY DATE: (mm/dd/yyyy) 01/20/2021

RECOMMENDED STORAGE: Refrigerate ampoule

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 01/21/2016 (mm/dd/yyyy)

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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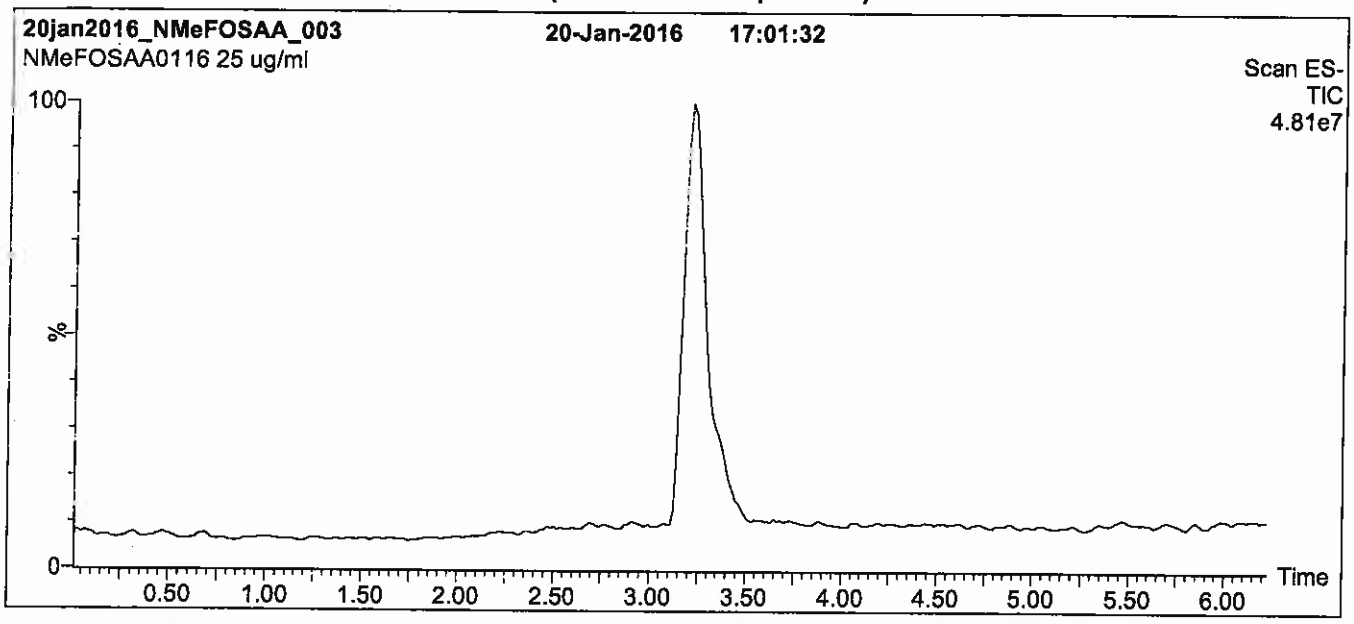
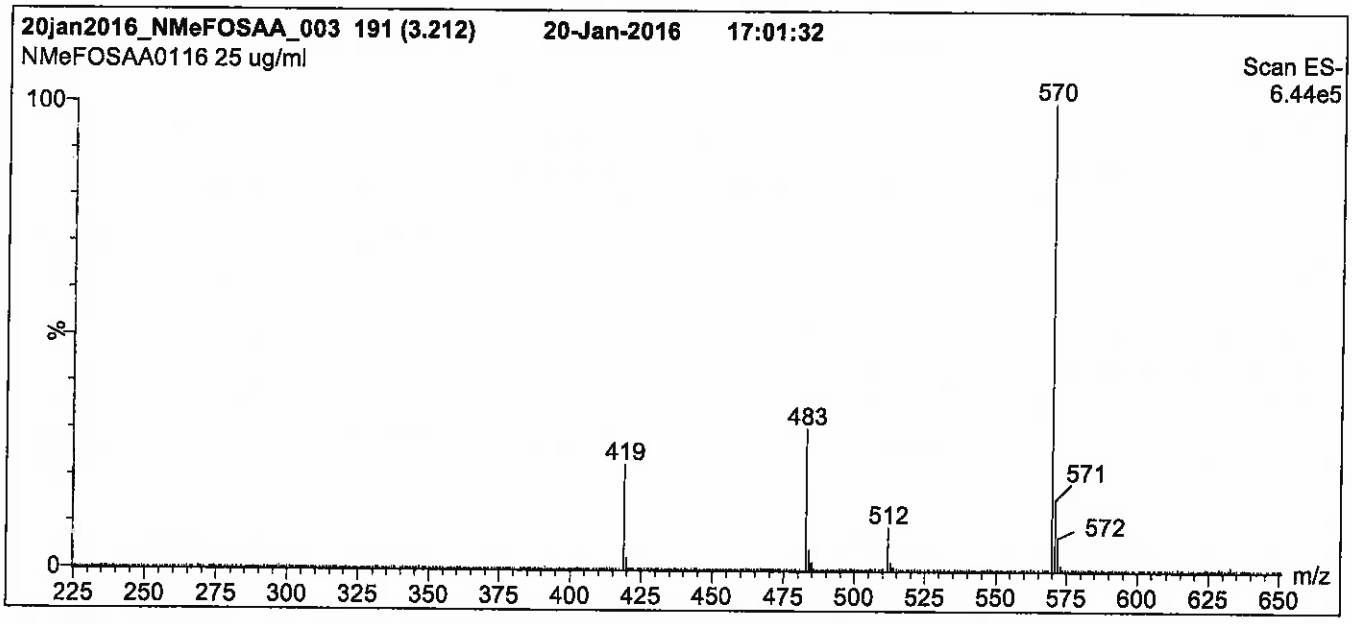
Figure 1: **N-MeFOSAA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

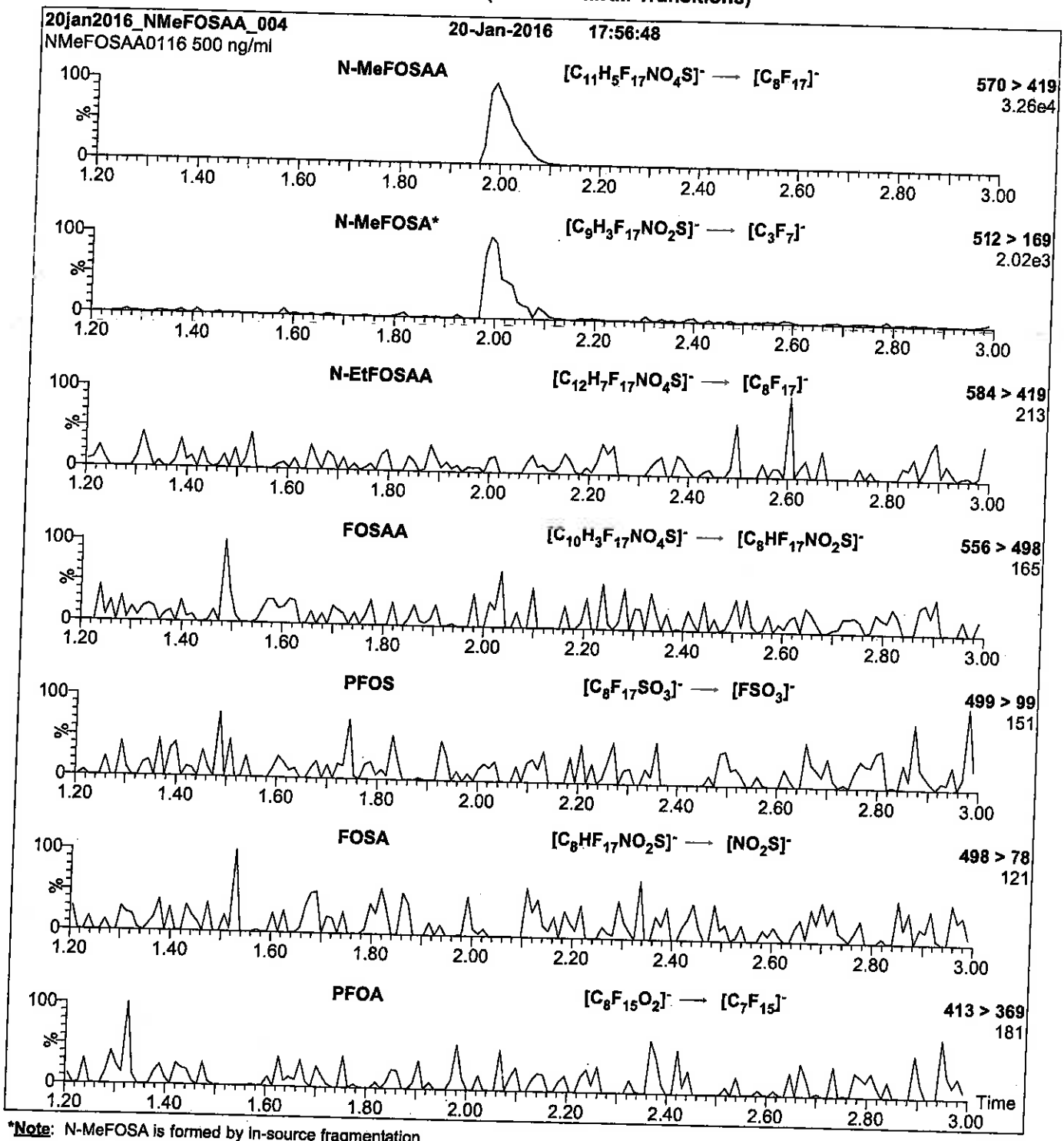
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

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

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



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

Conditions for Figure 2:

Injection: Direct loop injection
10 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) = 3.66e-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.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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UNCERTAINTY:

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

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters x_1, x_2,...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.

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QUALITY MANAGEMENT:

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CALA Testing

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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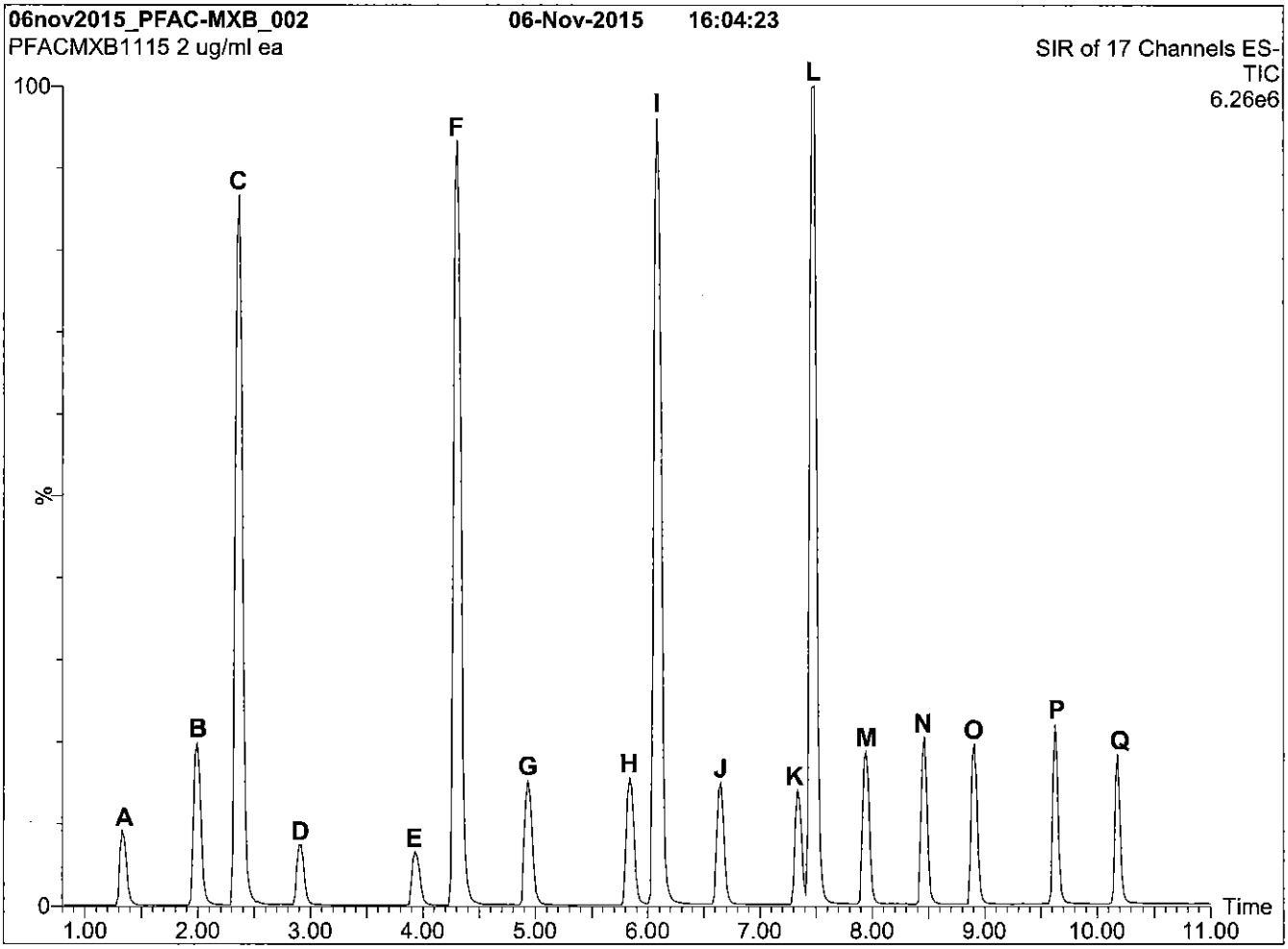
Table A: **PFAC-MXB; Components and Concentrations (ng/ml, ± 5% in Methanol / Water (<1%))**

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)**

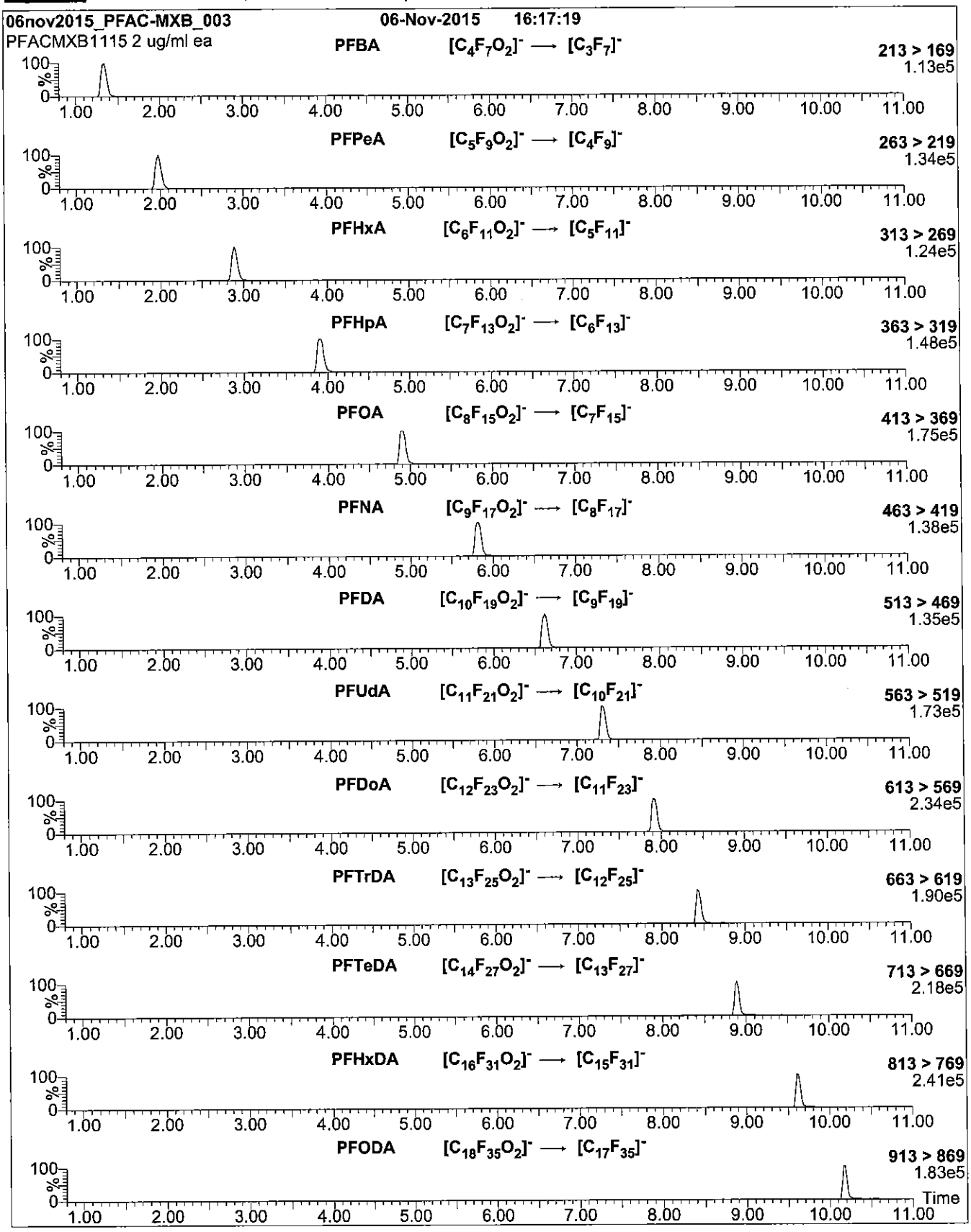
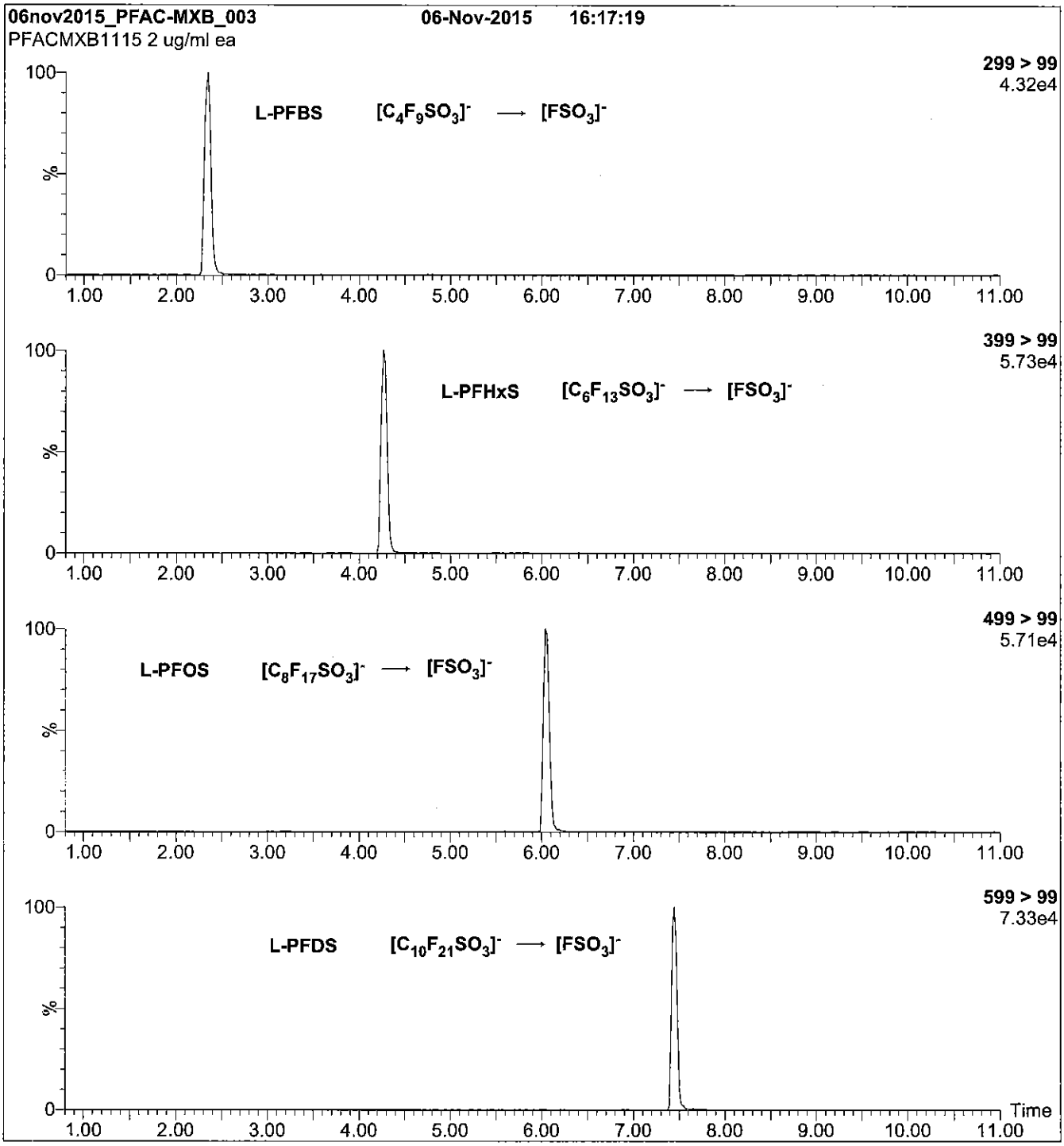


Figure 3: **PFAC-MXB; LC/MS/MS Data (Selected MRM Transitions)**



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

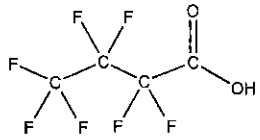
587895
ID: LCPFBA_00004
Exp: 01/30/20 Prpd: CBW
PF-n-butanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFBA
COMPOUND: Perfluoro-n-butanoic acid
LOT NUMBER: PFBA0115

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: 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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TRACEABILITY:

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EXPIRY DATE / PERIOD OF VALIDITY:

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LIMITED WARRANTY:

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QUALITY MANAGEMENT:

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CALA Testing Accredited by A1226

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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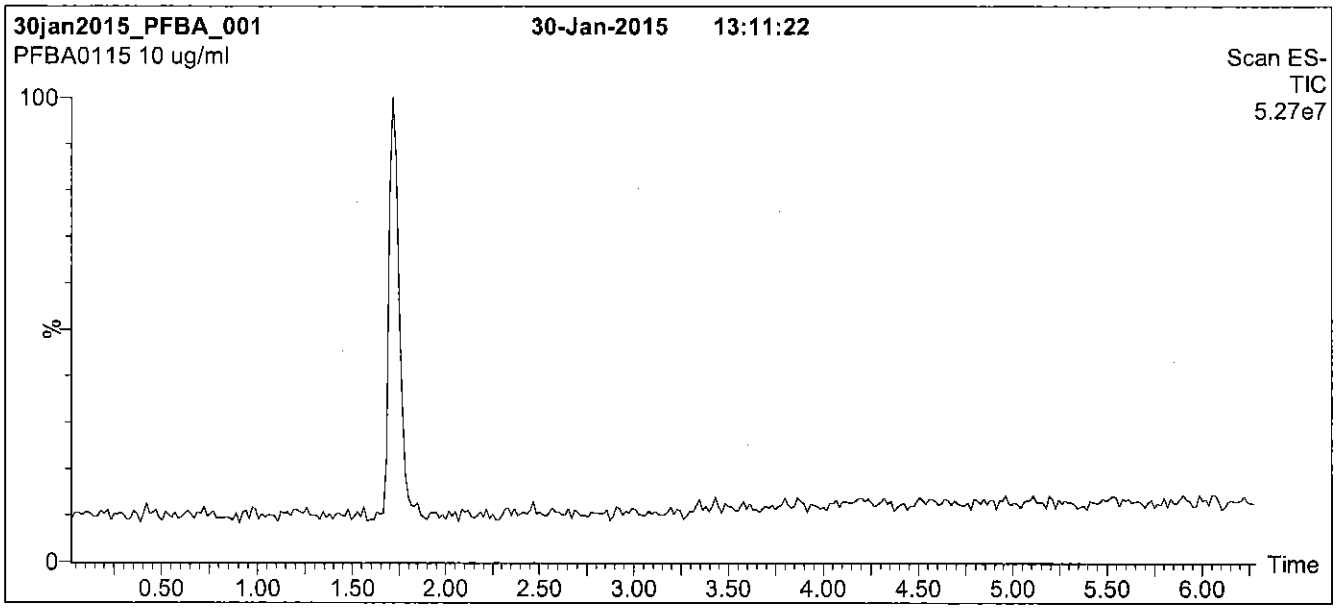
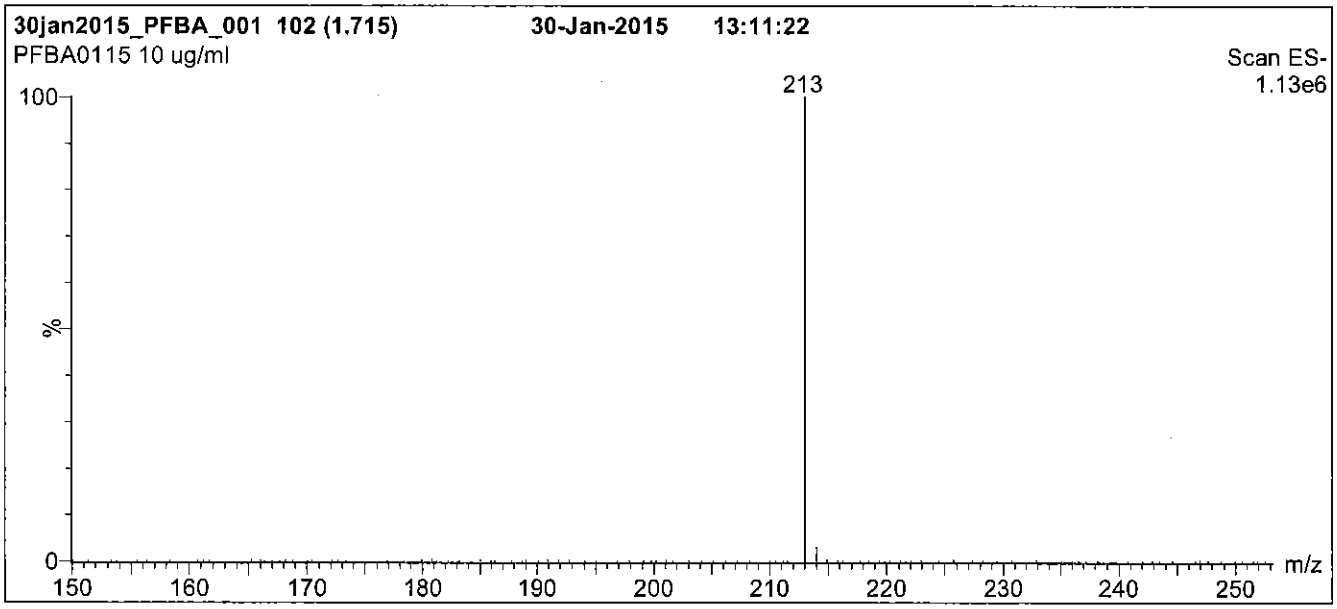
Figure 1: **PFBA; LC/MS Data (TIC and Mass Spectrum)**





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

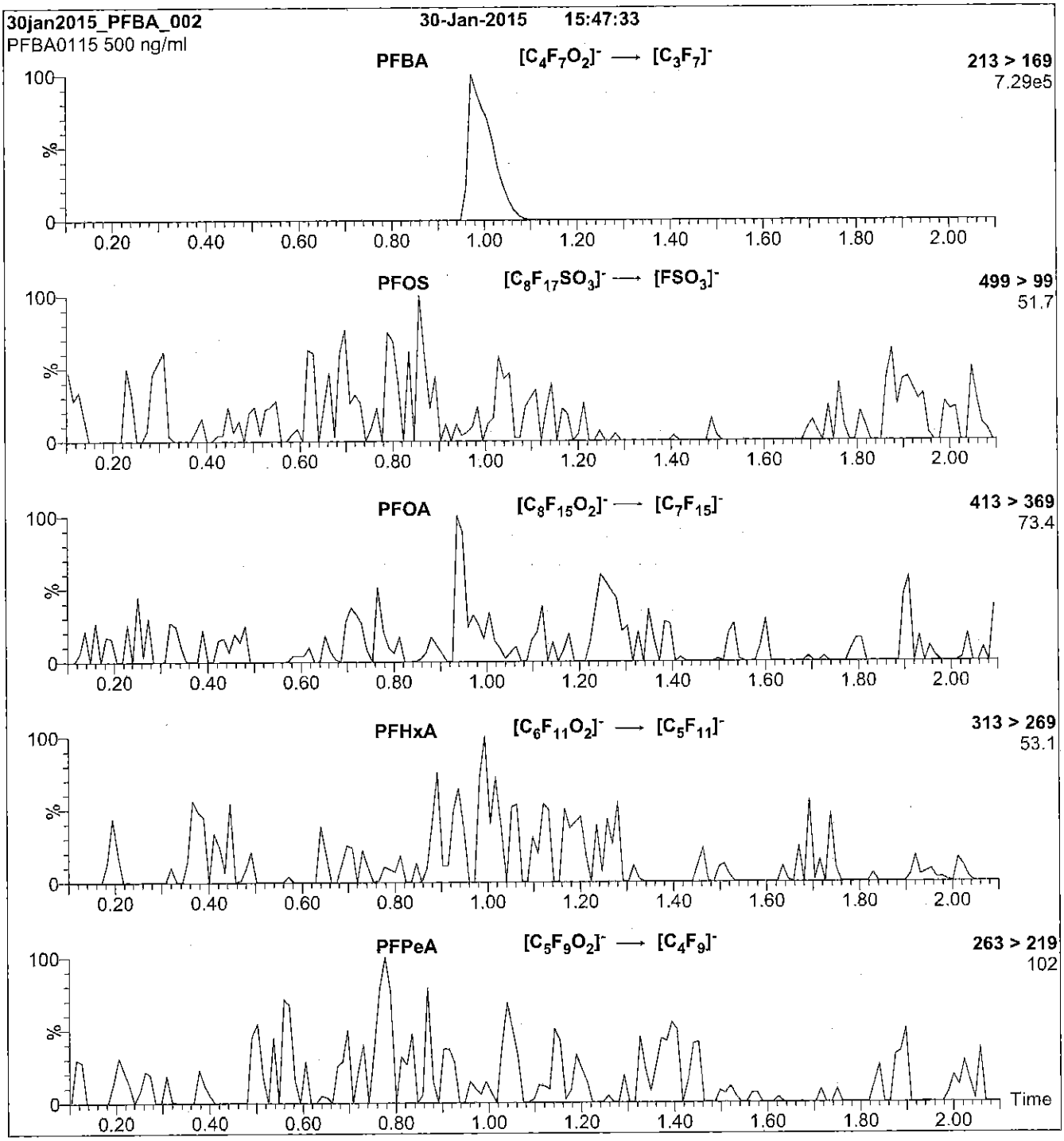
Flow: 300 µl/min

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

LCPFBA_00005

Scanned 10/16/14

R: SBC 9/13/16

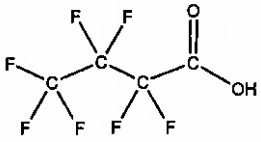
730531
ID: LCPFBA_00005
Exp: 05/27/21 Prpd: SBC
PF-n-butanoic acid

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

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: PFBA
LOT NUMBER: PFBA0516
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) 05/27/2016
EXPIRY DATE: (mm/dd/yyyy) 05/27/2021
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

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Certified By: B.G. Chittim **Date:** 05/31/2016 (mm/dd/yyyy)

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CALA

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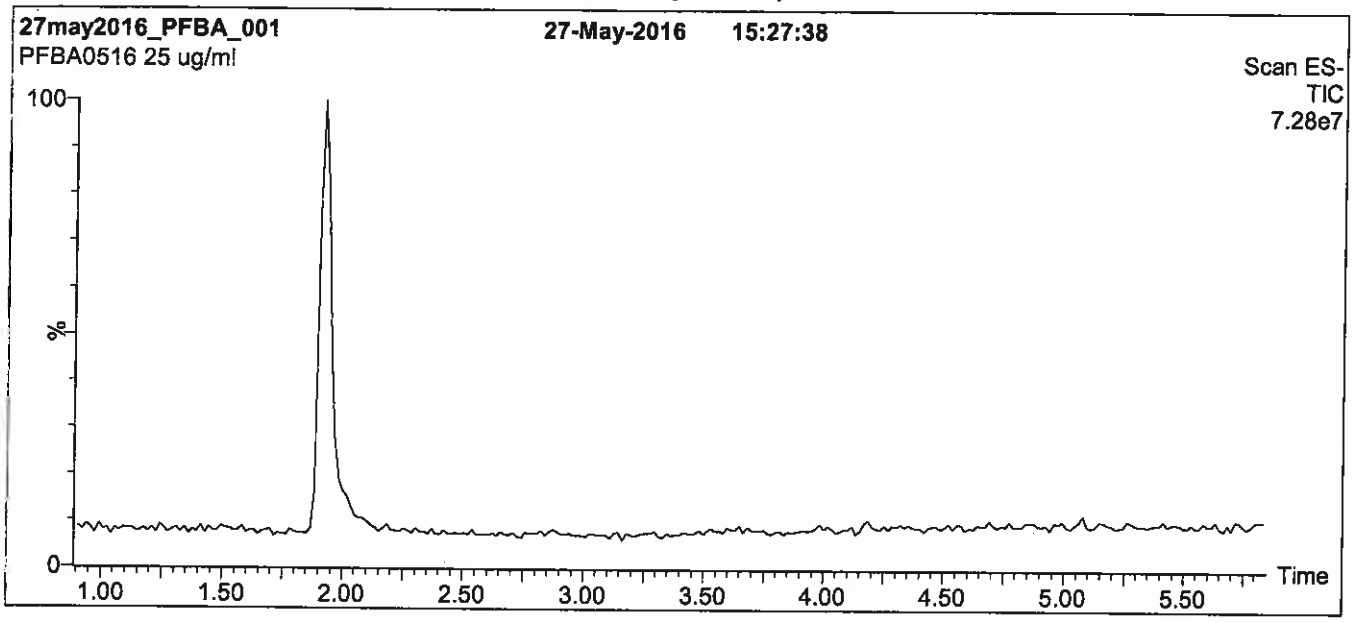
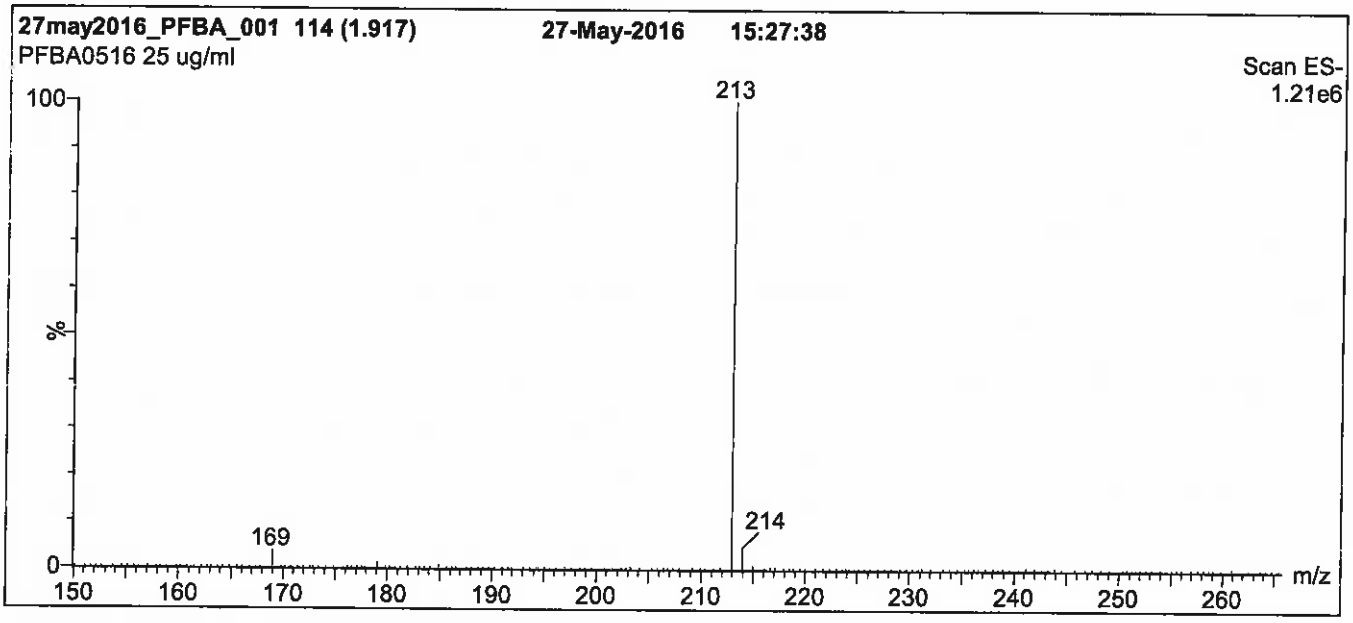
Figure 1: **PFBA; LC/MS Data (TIC and Mass Spectrum)**





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

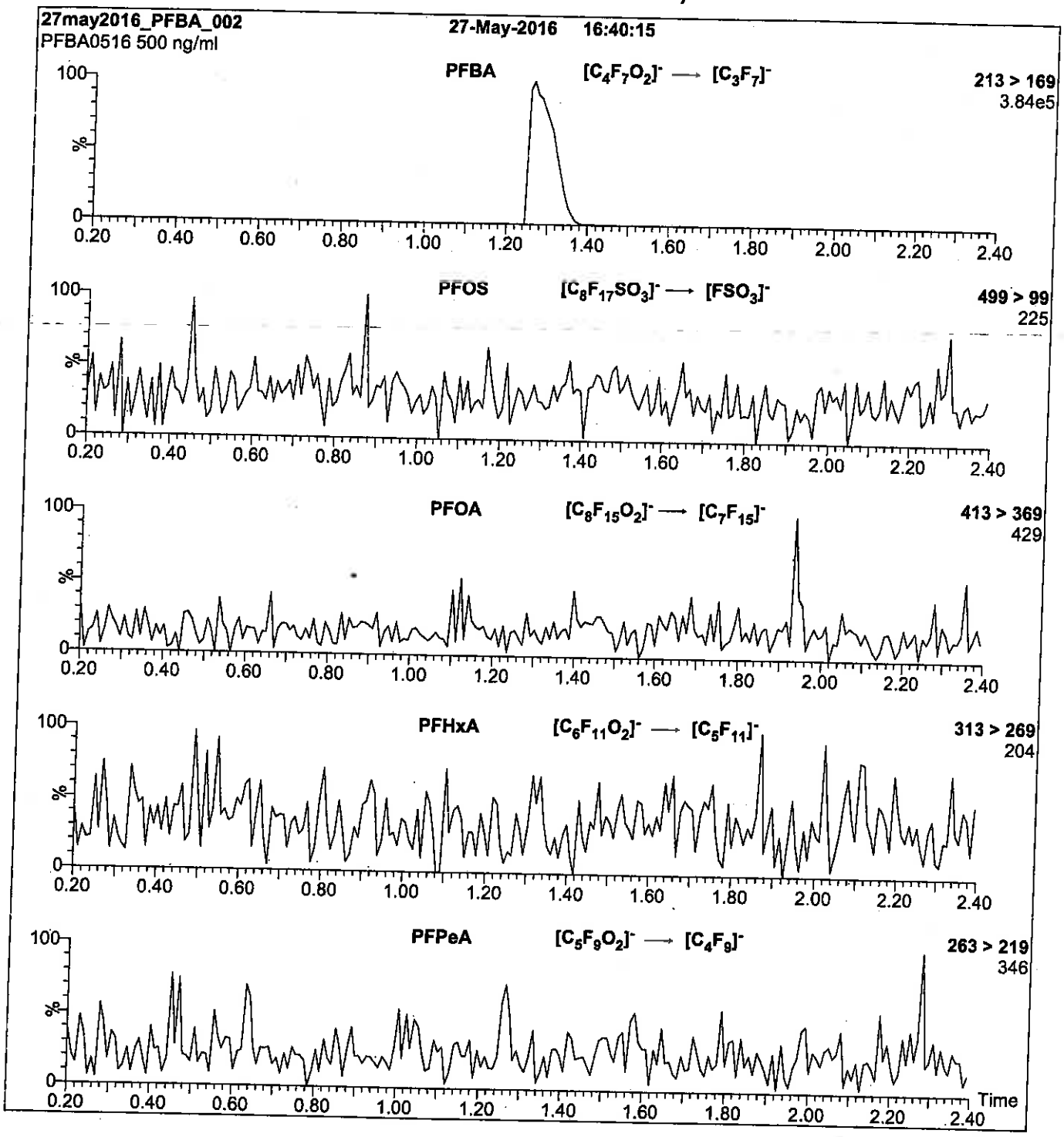
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

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

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



Conditions for Figure 2:

Injection: Direct loop injection
10 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) = 3.62e-3
Collision Energy (eV) = 10

Reagent

LCPFBS_00004

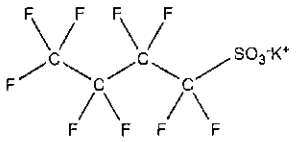
Rec. 3/29/16 JRB ✓

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



MOLECULAR FORMULA:	$C_4F_9SO_3K$	**MOLECULAR WEIGHT:**	338.19
CONCENTRATION:	50.0 ± 2.5 µg/ml (K salt)	**SOLVENT(S):**	Methanol
	44.2 ± 2.2 µg/ml (PFBS anion)		
CHEMICAL PURITY:	>98%		
LAST TESTED: (mm/dd/yyyy)	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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HAZARDS:

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

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

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 Accredited Calibration Lab. A 1226

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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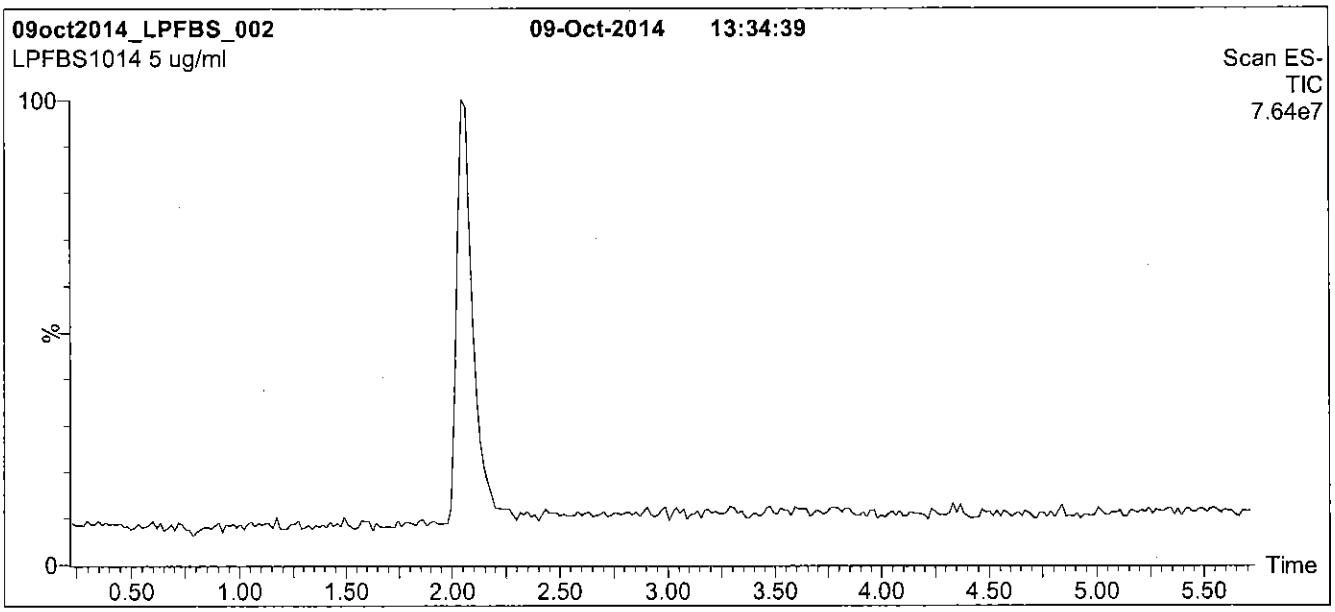
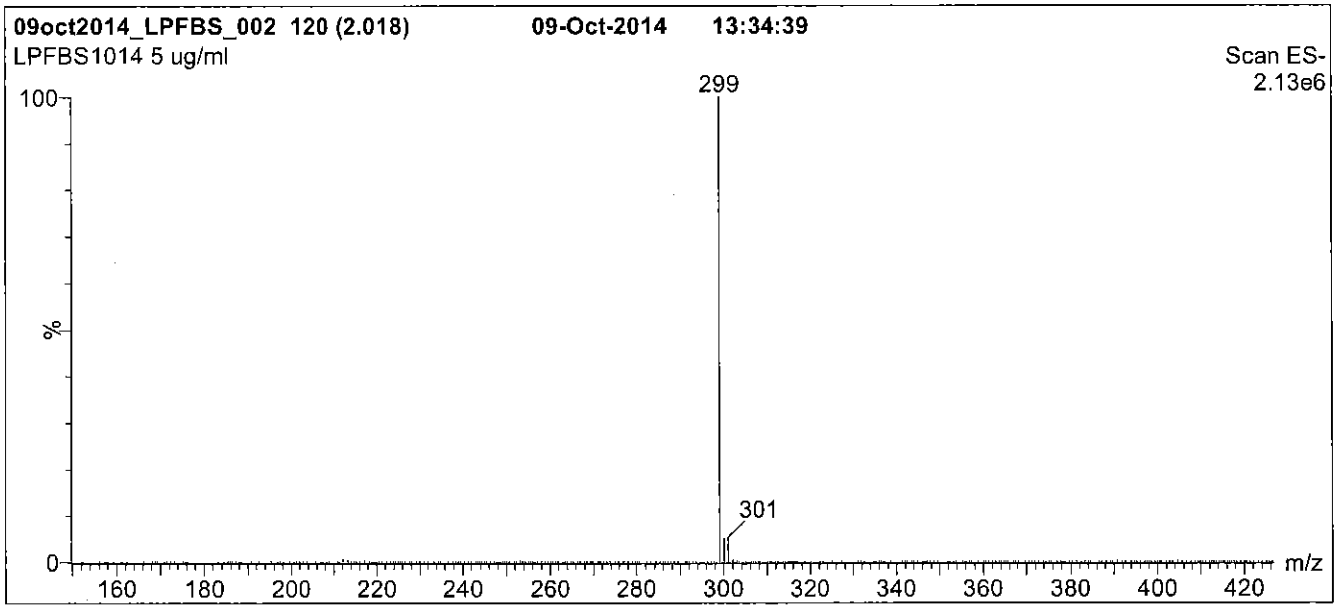
Figure 1: **L-PFBS; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

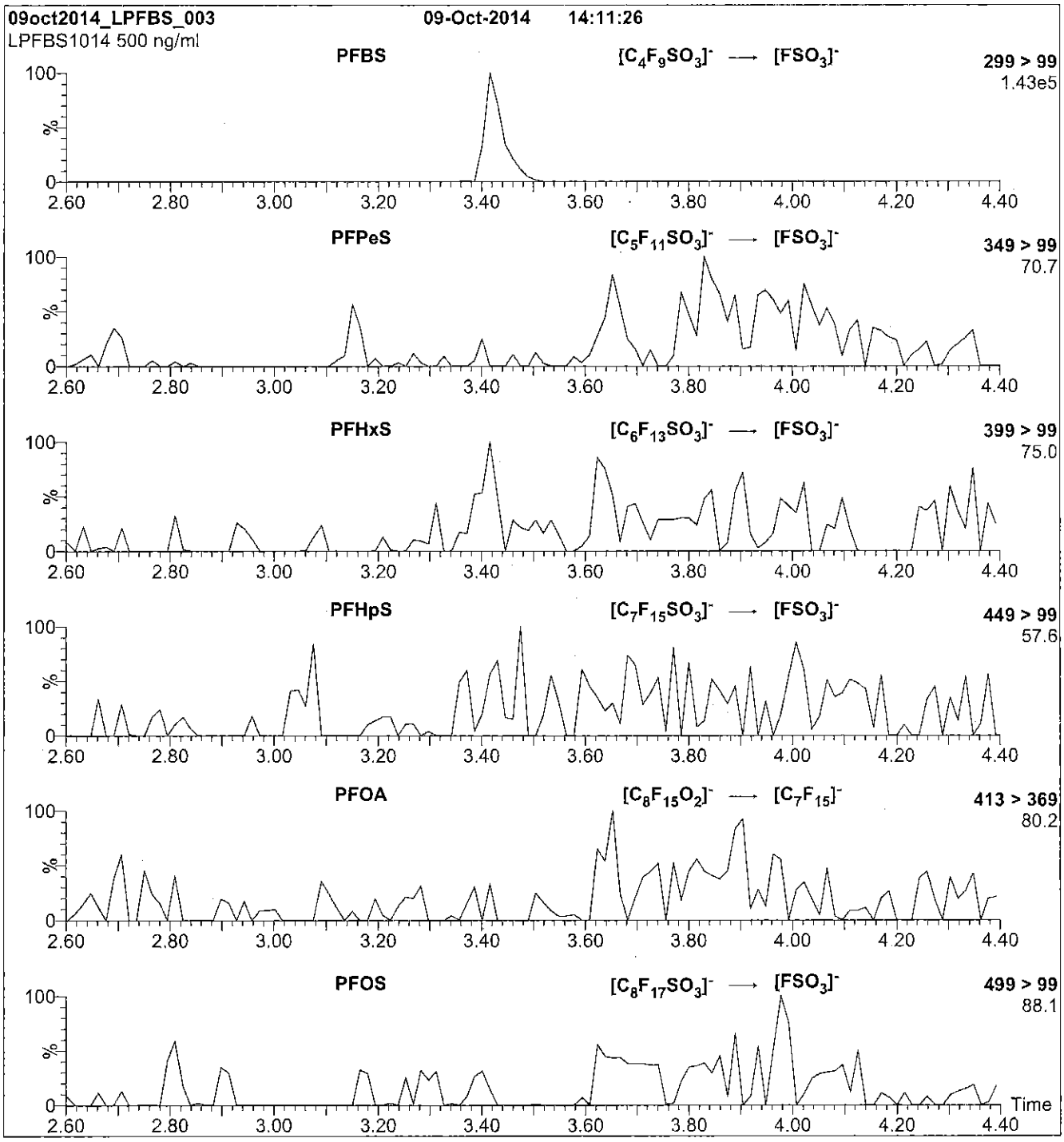
Flow: 300 µl/min

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_00005

R: 9/9/16 SBC

728306
ID: LCM2-8:2FTS_00003
Exp: 01/08/21 Prpd: SBC
M2-8:2FTS

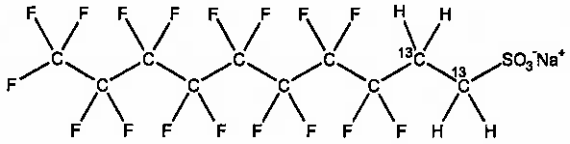
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: M2-8:2FTS **LOT NUMBER:** M282FTS0116

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)	01/08/2016		
EXPIRY DATE: (mm/dd/yyyy)	01/08/2021		
RECOMMENDED STORAGE:	Refrigerate ampoule		

DOCUMENTATION/ DATA ATTACHED:

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

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By: B.G. Chittim **Date:** 01/18/2016 (mm/dd/yyyy)

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

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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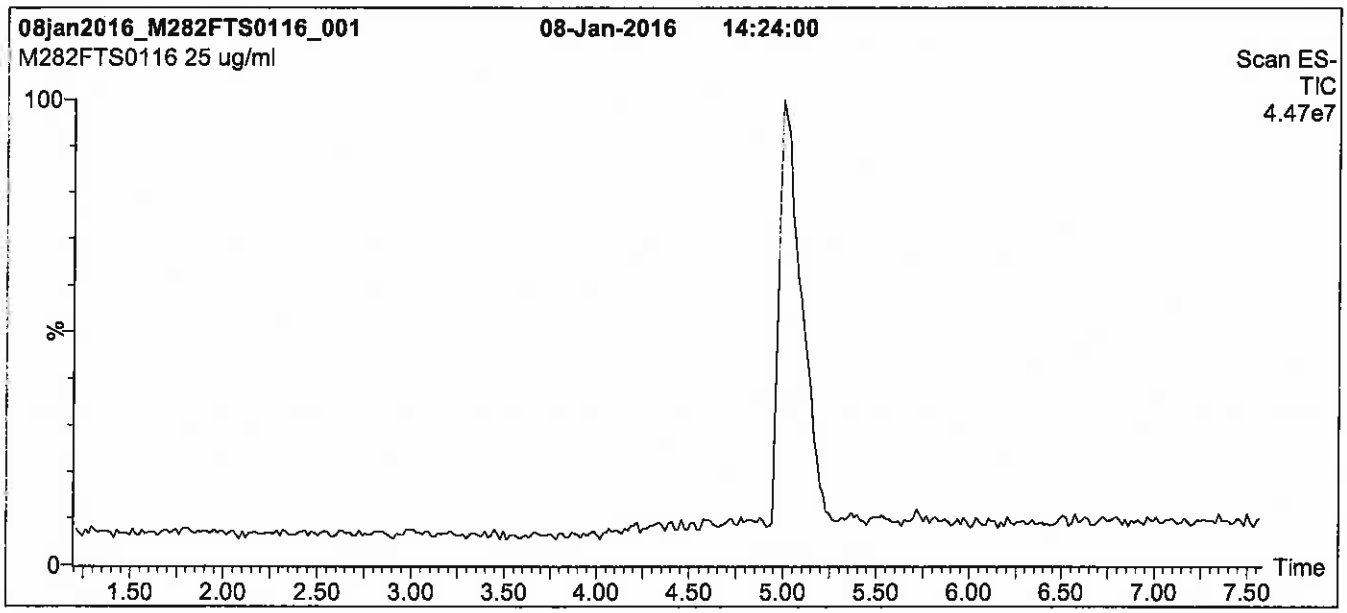
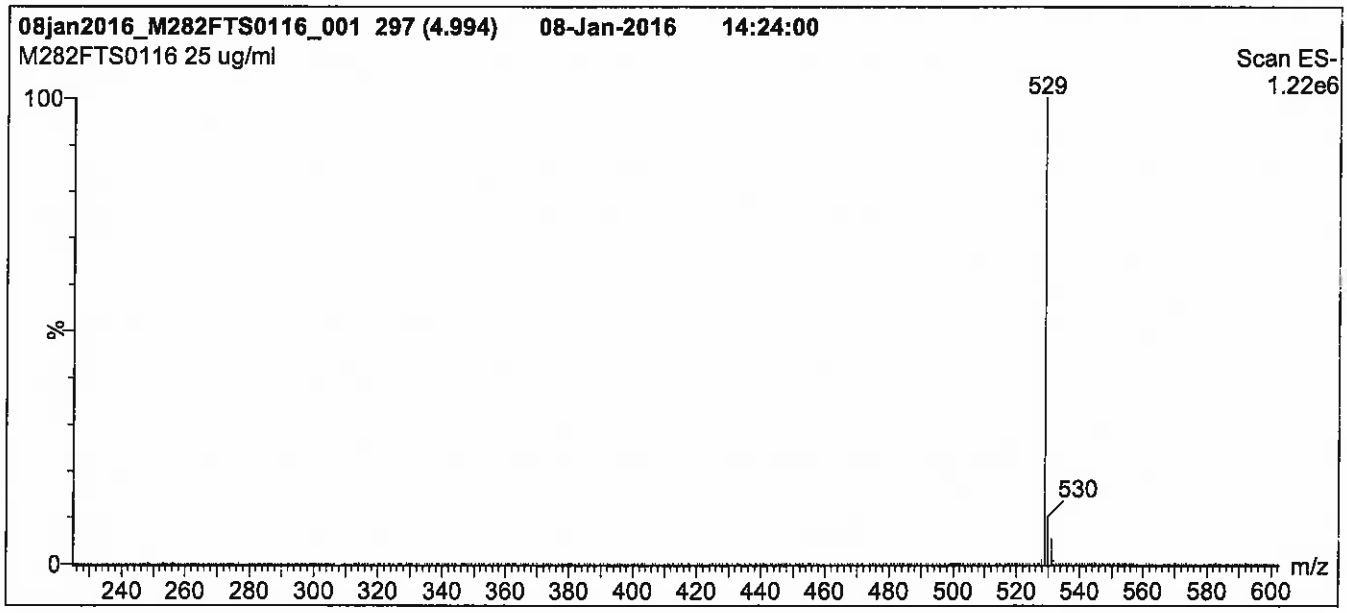




Conditions for Figure 1:

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: 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

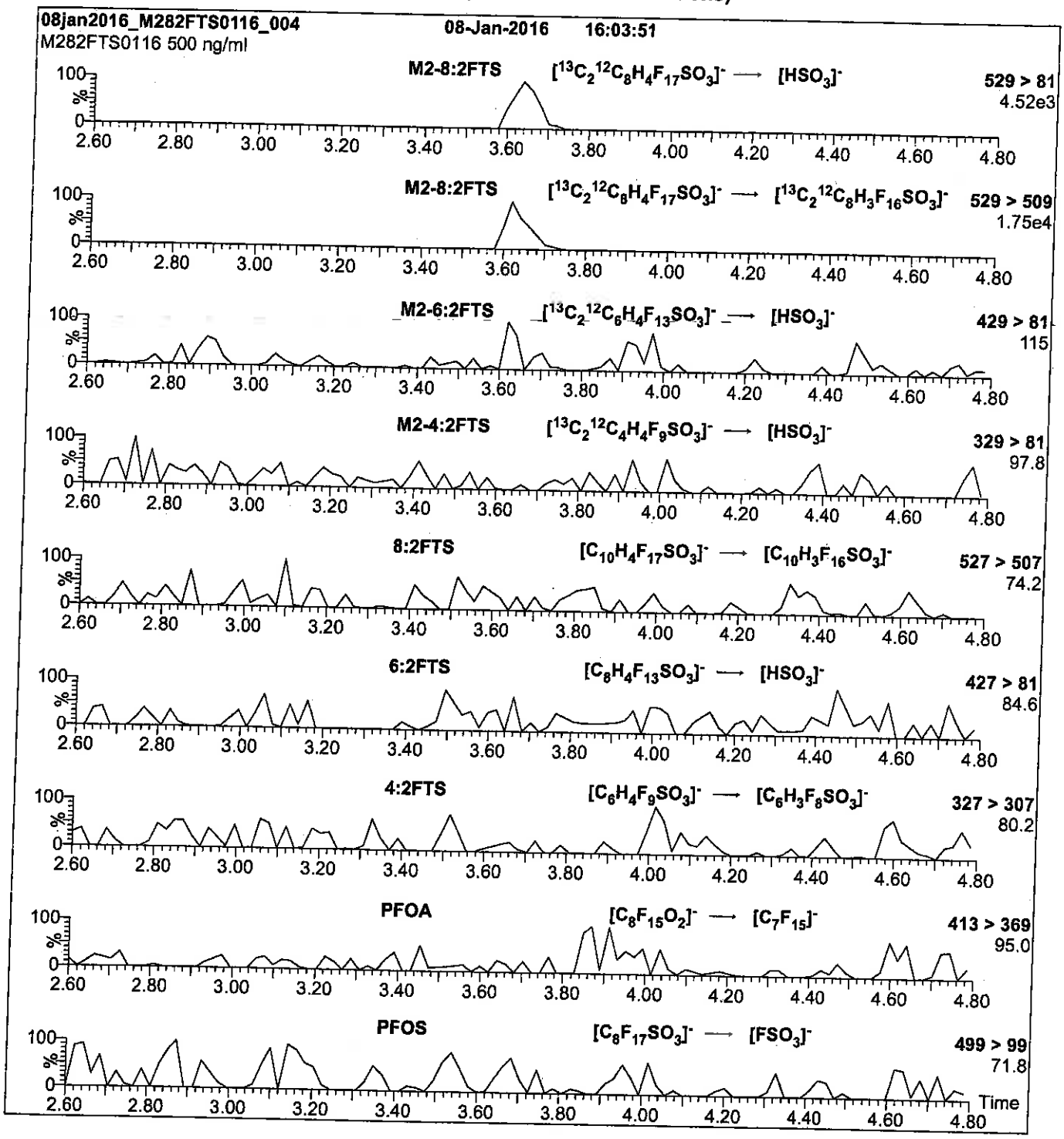
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 3.00
Cone Voltage (V) = 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) = 3.20e-3
Collision Energy (eV) = 30

R: SBC 9/13/16

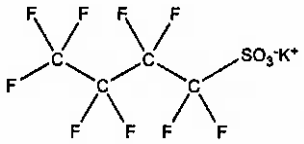
730511
ID: LCPFBS_00005
Exp: 03/15/21 Prpd: SBC
PF-1-butanesulfonate K sa

730512
ID: LCPFBS_00006
Exp: 03/15/21 Prpd: SBC
PF-1-butanesulfonate K sa

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE: L-PFBS
LOT NUMBER: LPFBS0316
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)	03/15/2016		
EXPIRY DATE: (mm/dd/yyyy)	03/15/2021		
RECOMMENDED STORAGE:	Store ampoule in a cool, dark place		

DOCUMENTATION/ DATA ATTACHED:

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ADDITIONAL INFORMATION:

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Certified By: B.G. Chittim **Date:** 03/21/2016 (mm/dd/yyyy)

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CALA Testing Accreditation No. A1226

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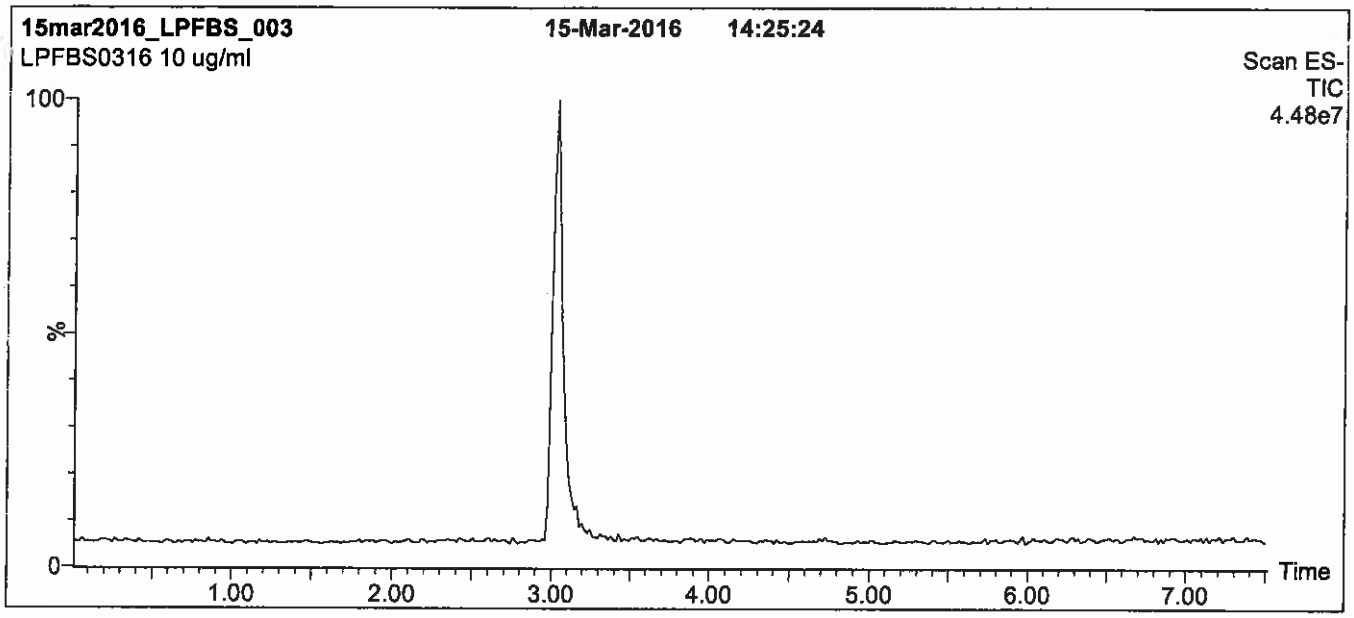

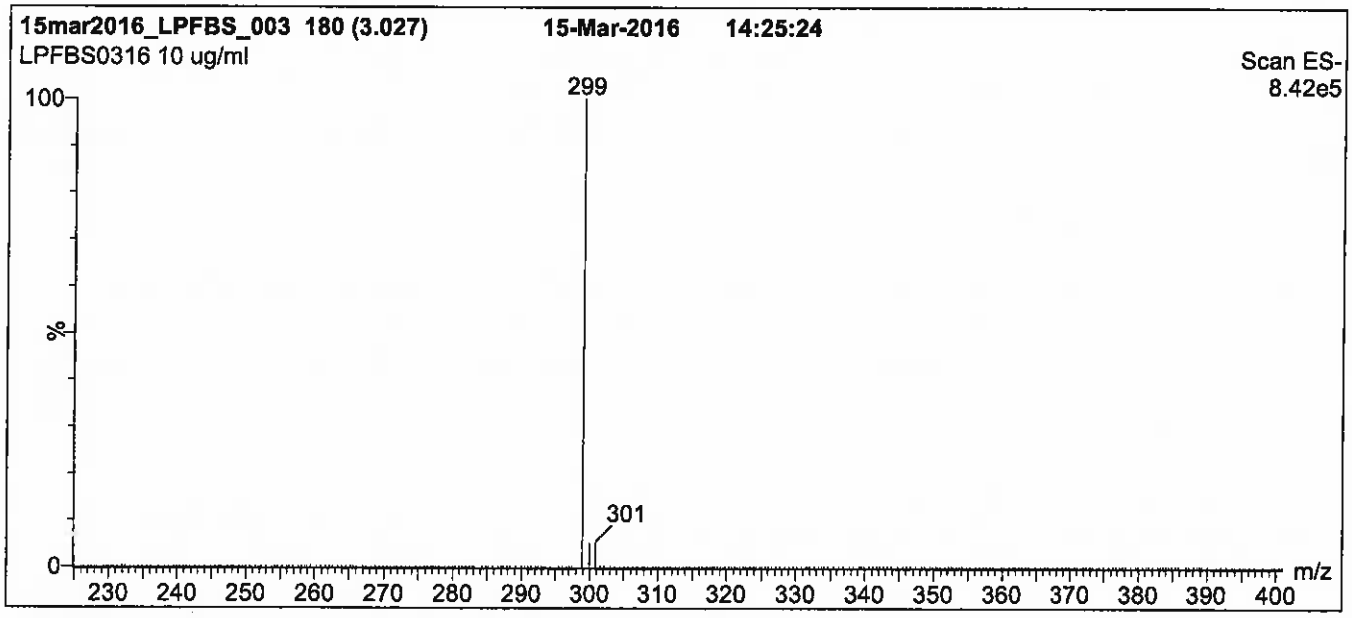

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MS: **Micromass Quattro *micro* API MS**

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1.7 µm, 2.1 x 100 mm

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Start: 40% (80:20 MeOH:ACN) / 60% H_2O
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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)
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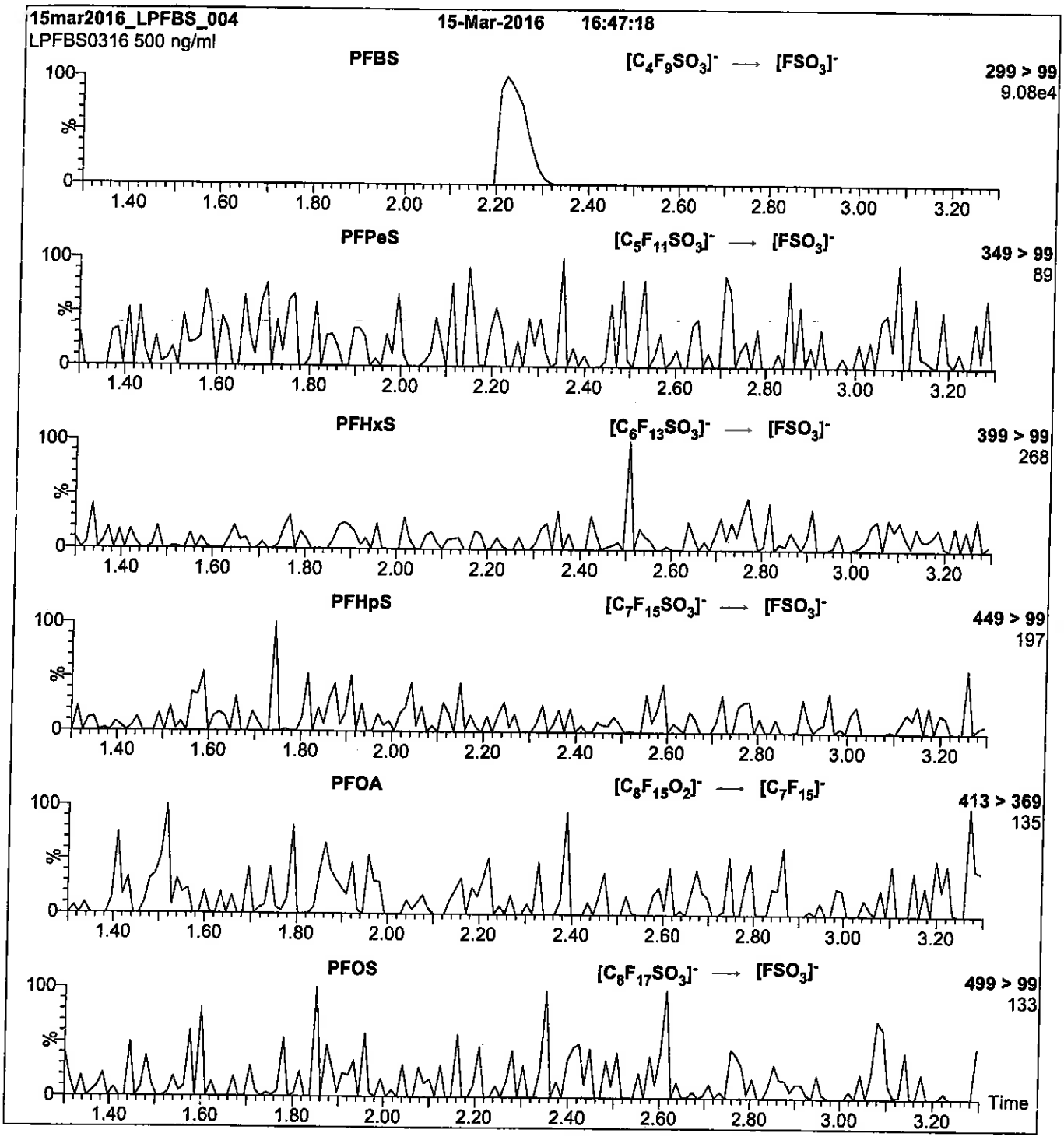
Cone Voltage (V) = 40.00
Cone Gas Flow (l/hr) = 50
Desolvation Gas Flow (l/hr) = 750

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) = 3.20e-3
Collision Energy (eV) = 25

Reagent

LCPFDA_00005

R: 7/16/16 CBW

671576
ID: LCPFDA_00005
Exp: 07/02/20 Prpd: CBW
PF-n-decanoic acid

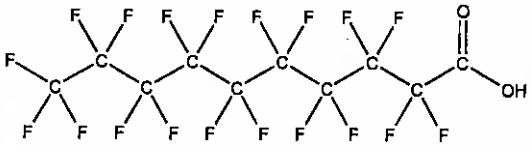
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

STRUCTURE:

CAS #: 335-76-2



MOLECULAR FORMULA: $C_{10}HF_{19}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml
MOLECULAR WEIGHT: 514.08
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)
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ADDITIONAL INFORMATION:

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

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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:

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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 $x_1, x_2, \ldots x_n$ 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:

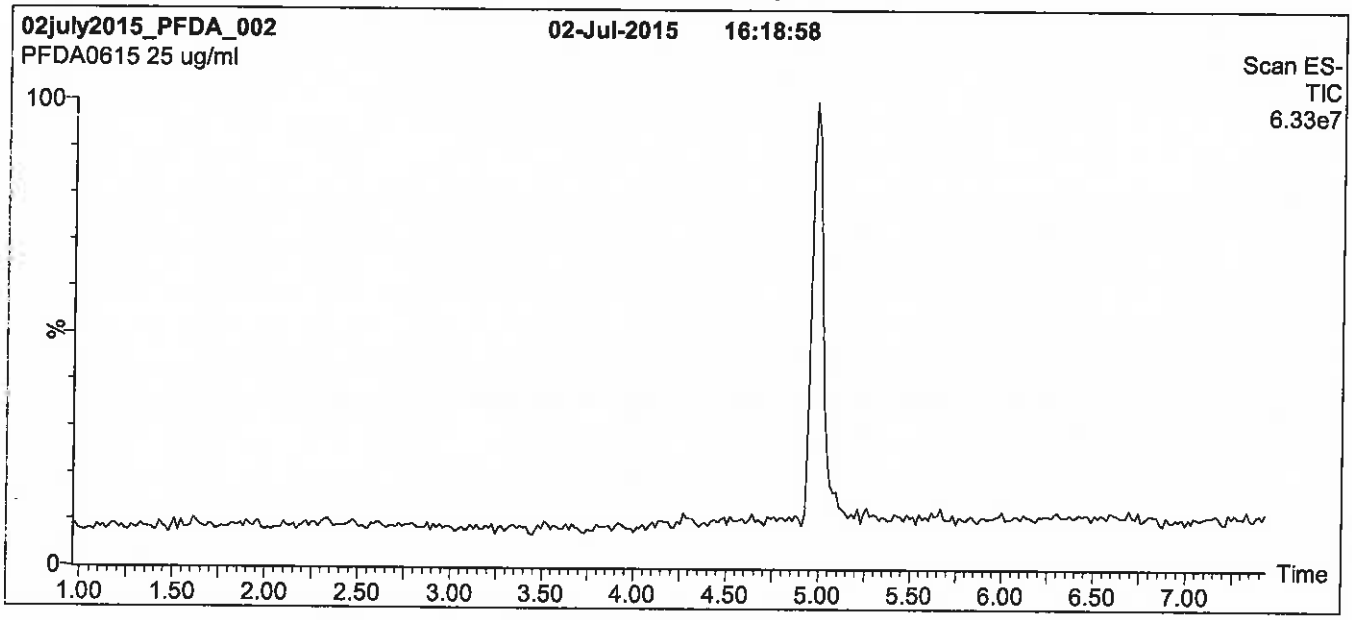
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

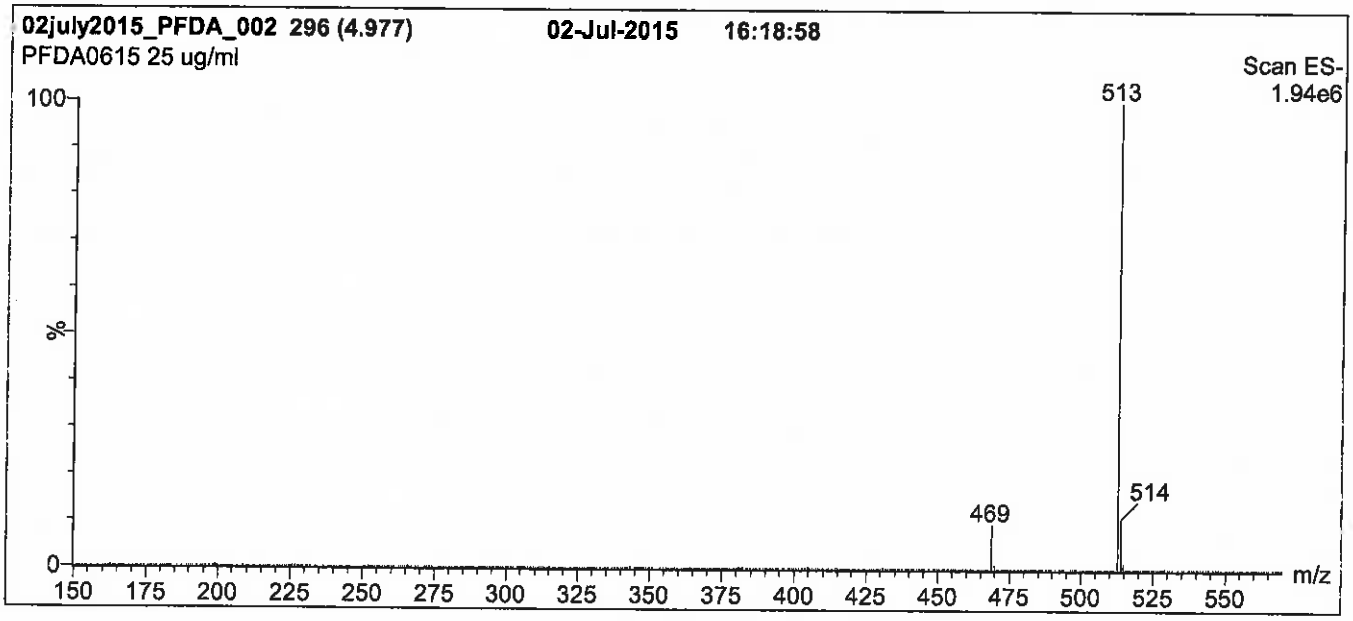
CALA

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: **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

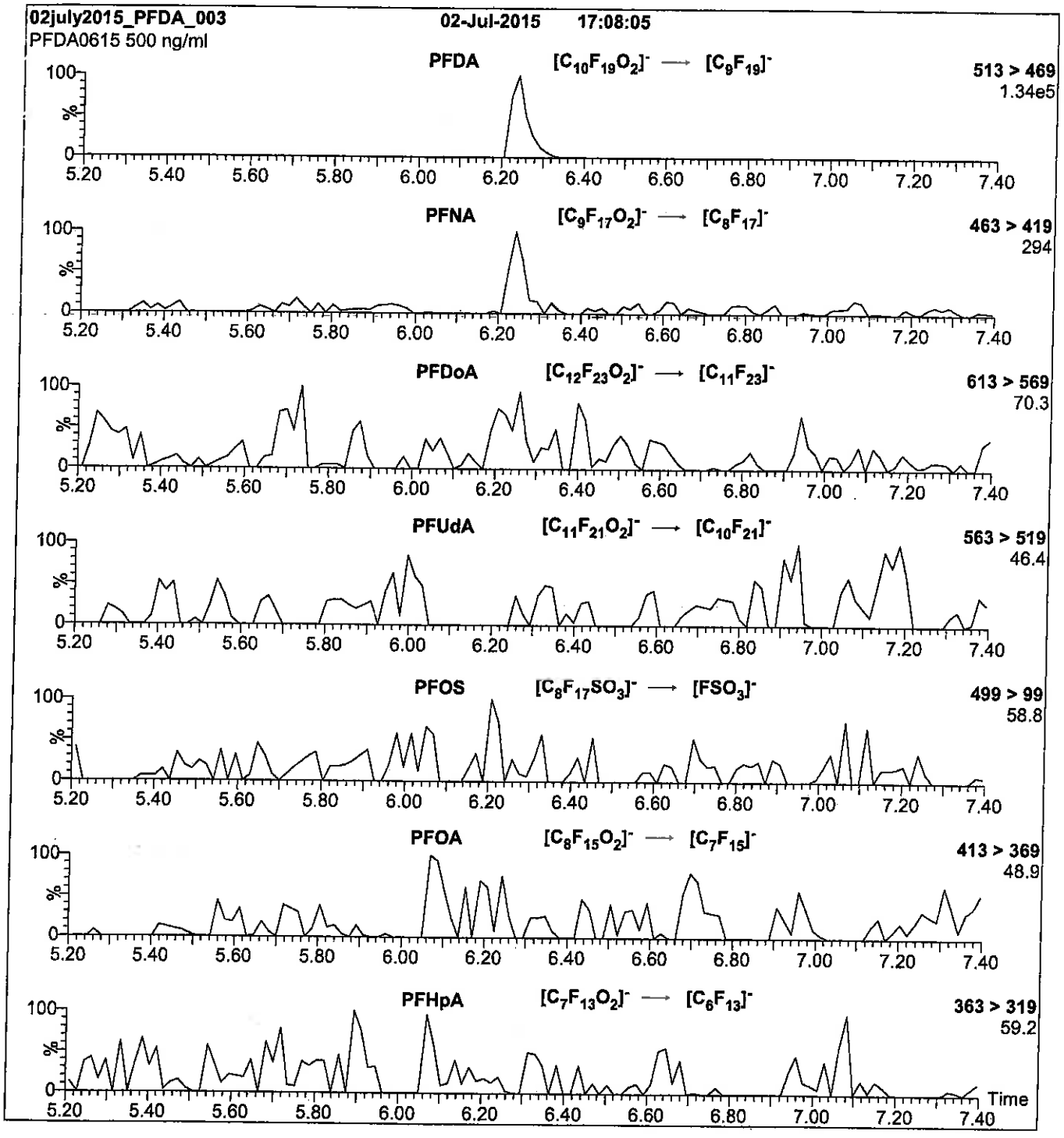
Flow: 300 µl/min

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_00005

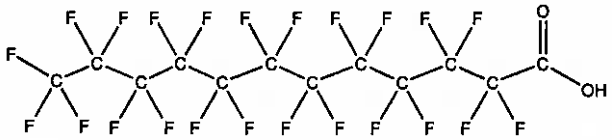
R: 7/6/16 cm

671601
ID: LCPFDoA_00005
Exp: 01/30/20 Prpd: CBW
PF-n-dodecanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFDoA	**LOT NUMBER:**	PFDoA0115
COMPOUND:	Perfluoro-n-dodecanoic acid		
STRUCTURE:		**CAS #:**	307-55-1



MOLECULAR FORMULA:	$C_{12}HF_{23}O_2$	**MOLECULAR WEIGHT:**	614.10
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: 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

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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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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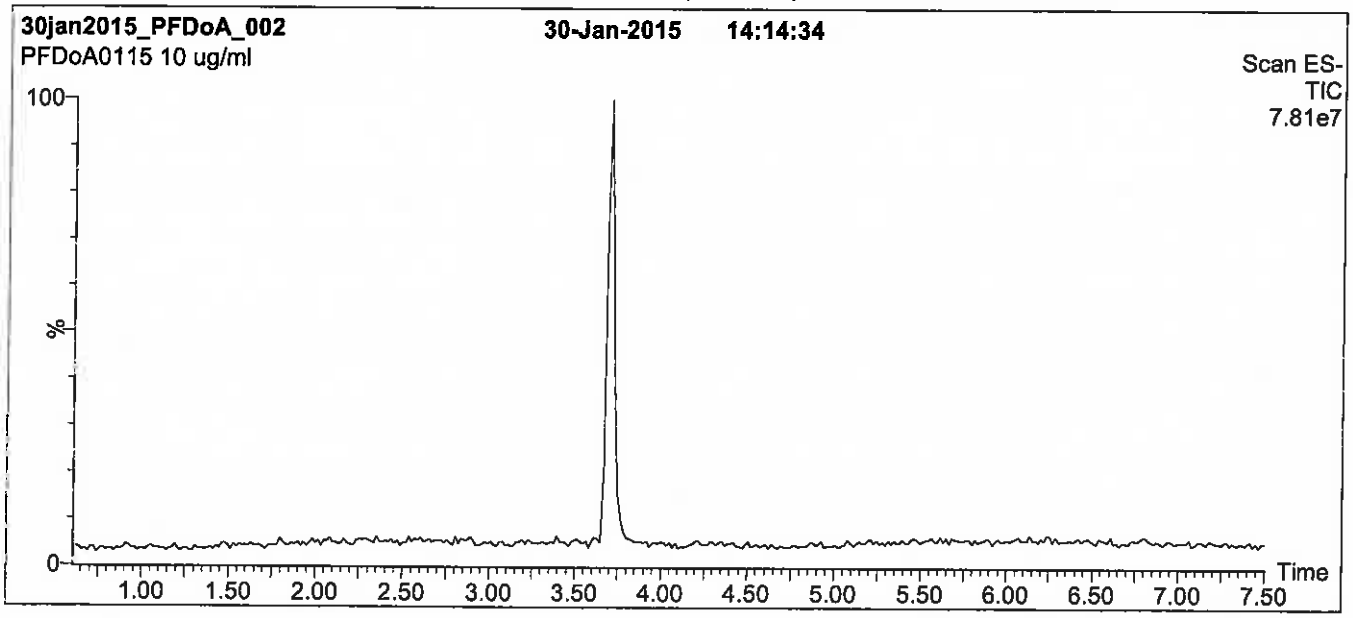
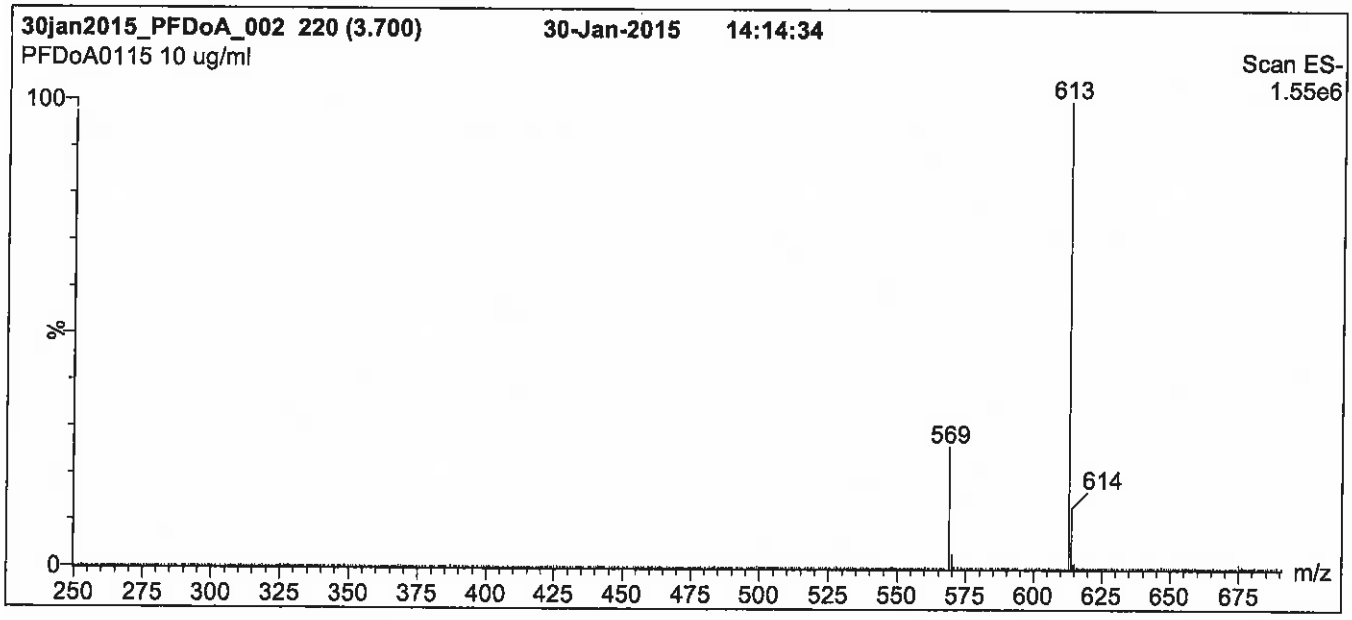
Figure 1: **PFDoA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

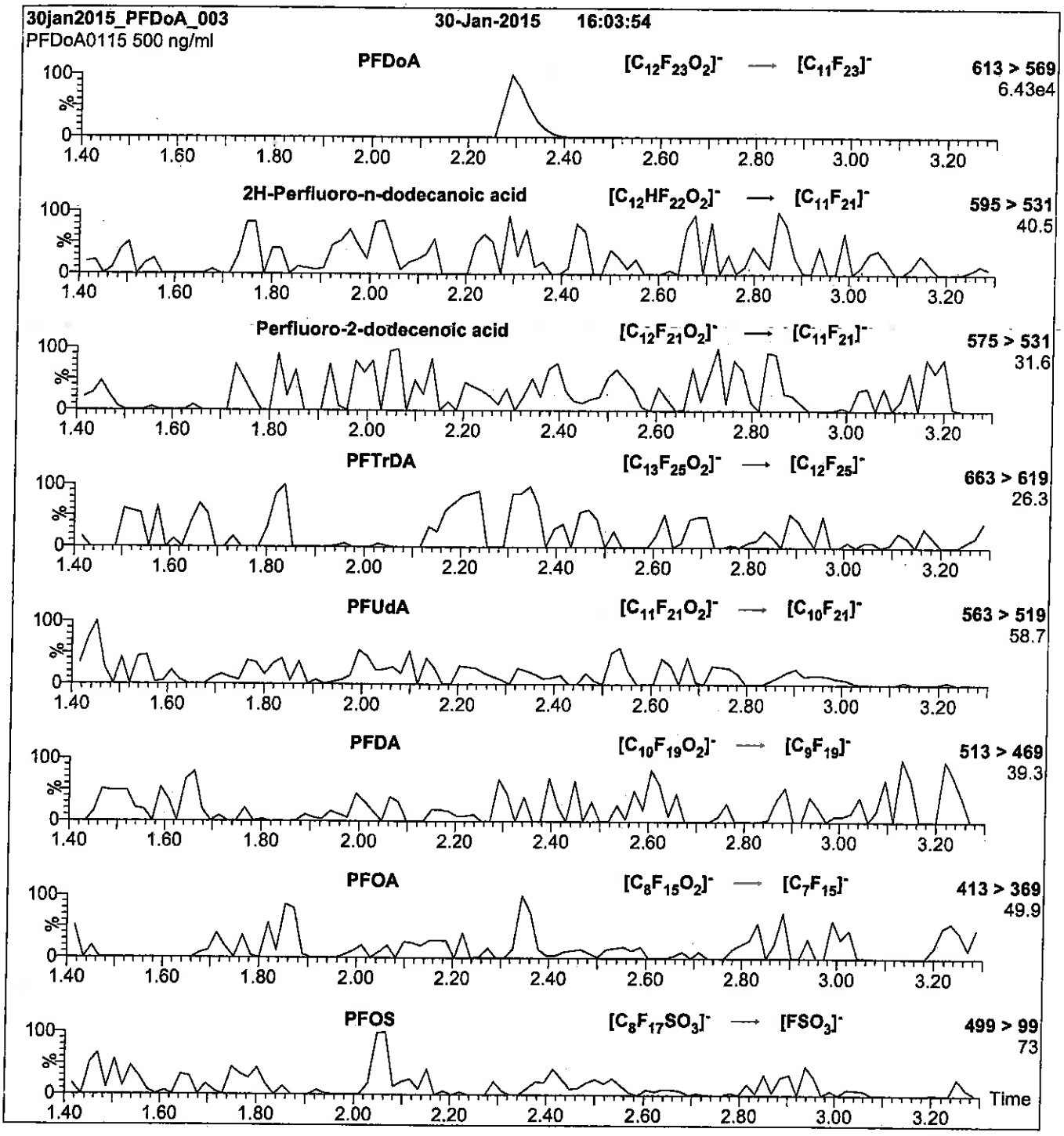
Flow: 300 µl/min

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

Rec. 3/29/16 JRB

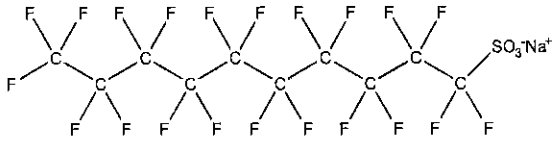
WELLINGTON LABORATORIES

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:

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EXPIRY DATE / PERIOD OF VALIDITY:

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CALA

ANAB ACCREDITED

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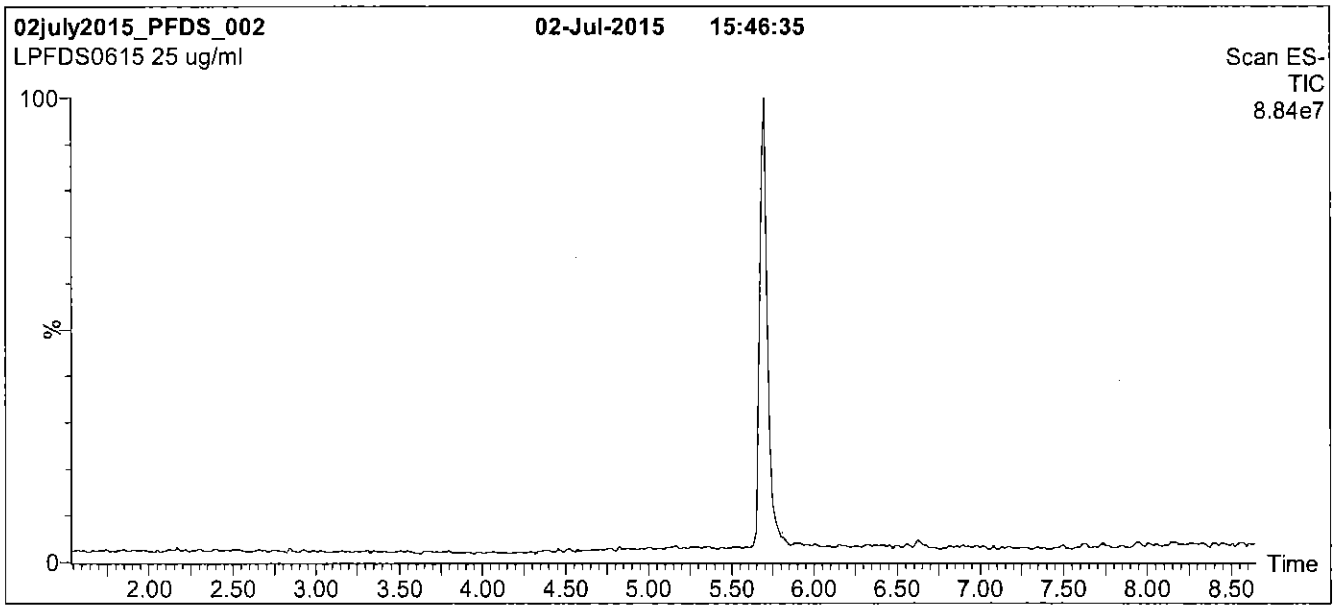
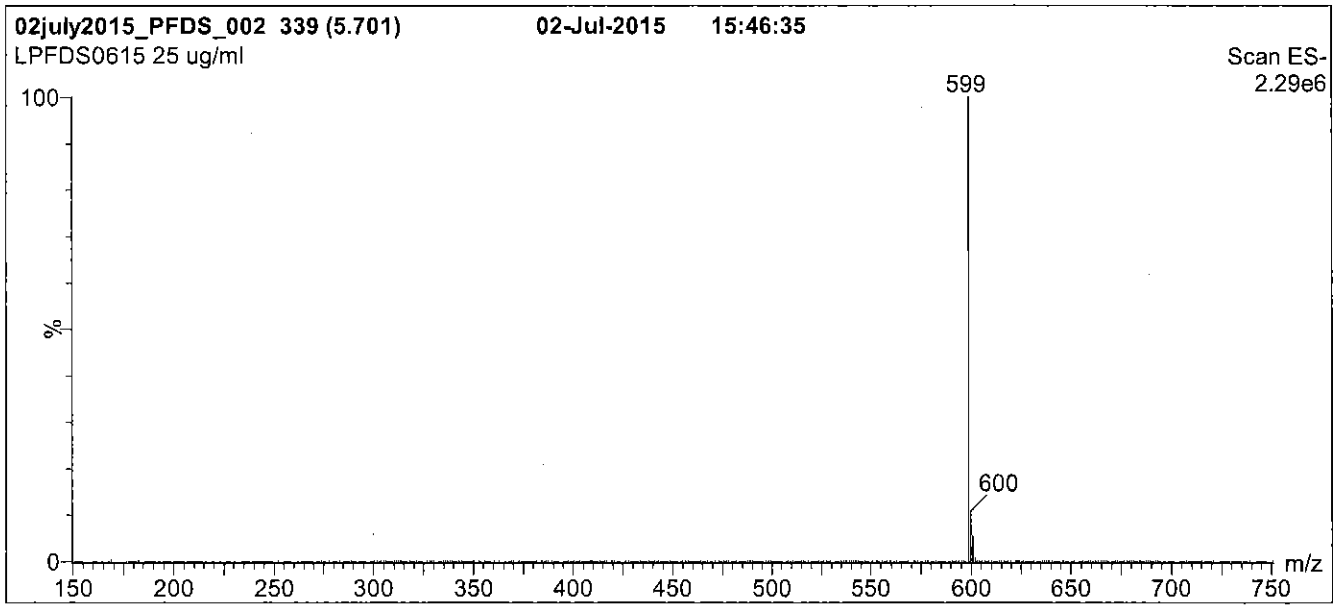
Figure 1: **L-PFDS; LC/MS Data (TIC and Mass Spectrum)**





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

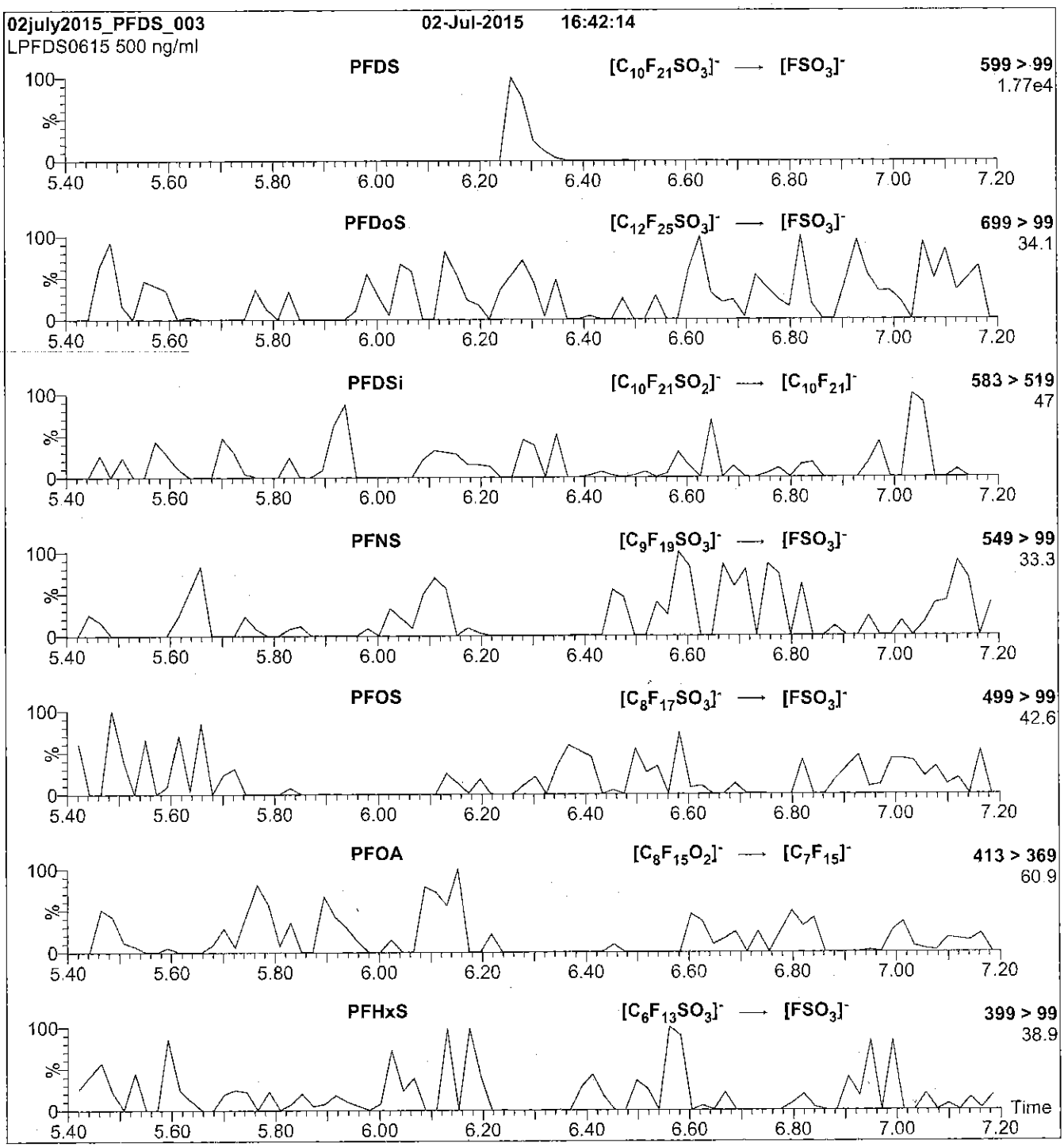
Flow: 300 µl/min

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

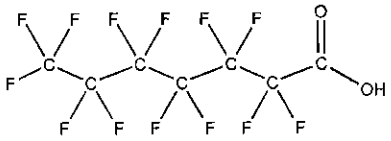
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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
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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:

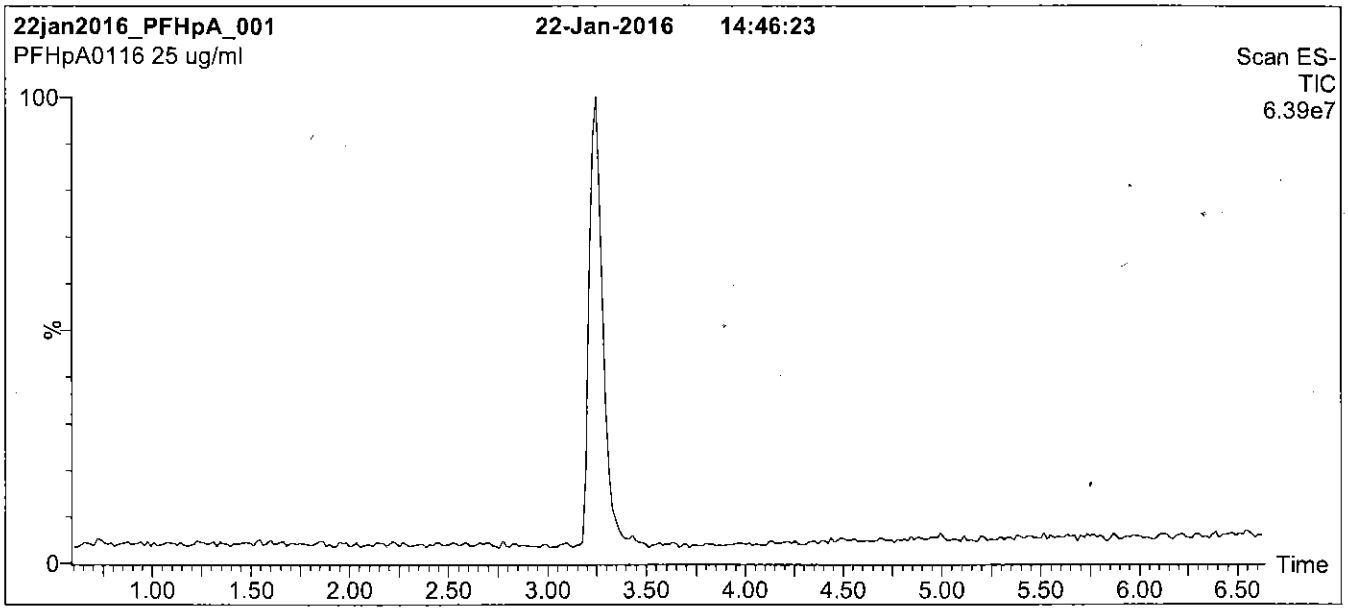
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

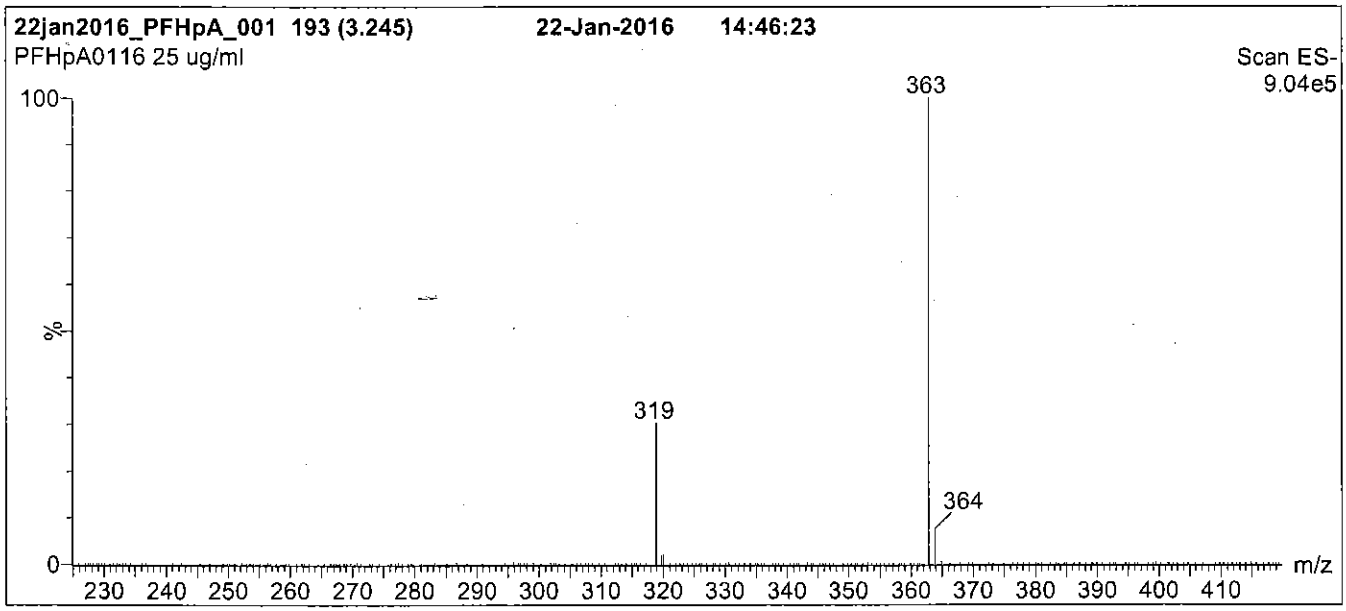
CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 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: **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

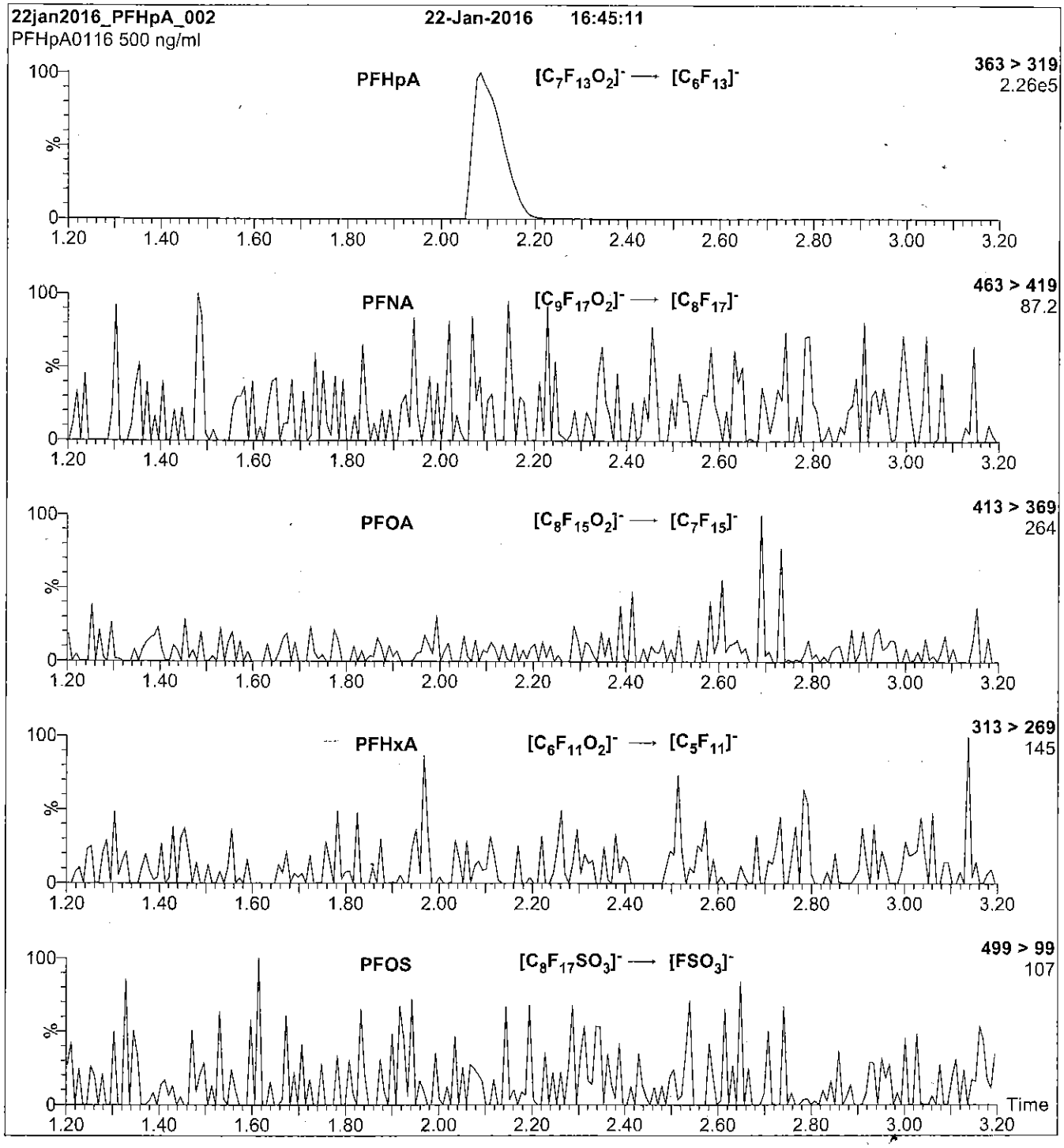
Flow: 300 µl/min

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

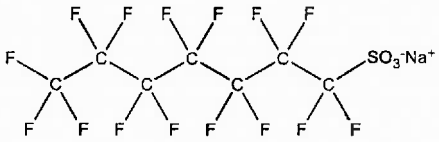
627751
ID: LCPFHpS_00008
Exp: 11/06/20 Prpd: CBW
PFHpS at 47.6ug/mL

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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HOMOGENEITY:

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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.

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO 17034 REFERENCE MATERIAL PRODUCER

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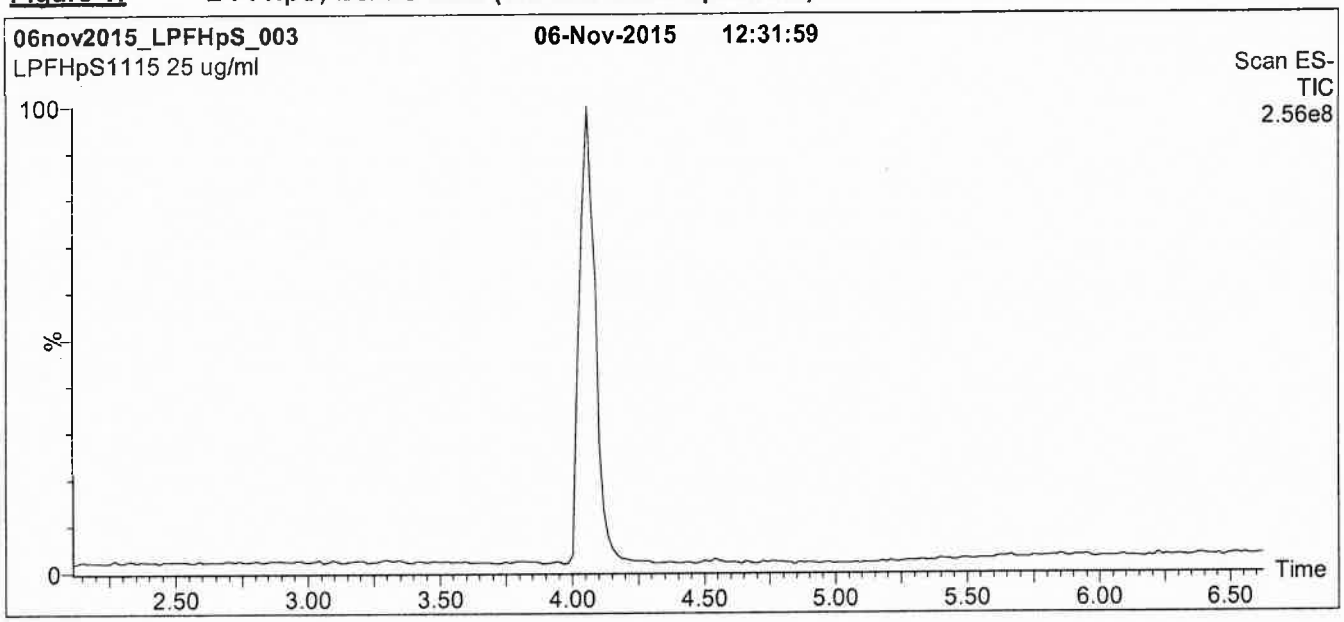
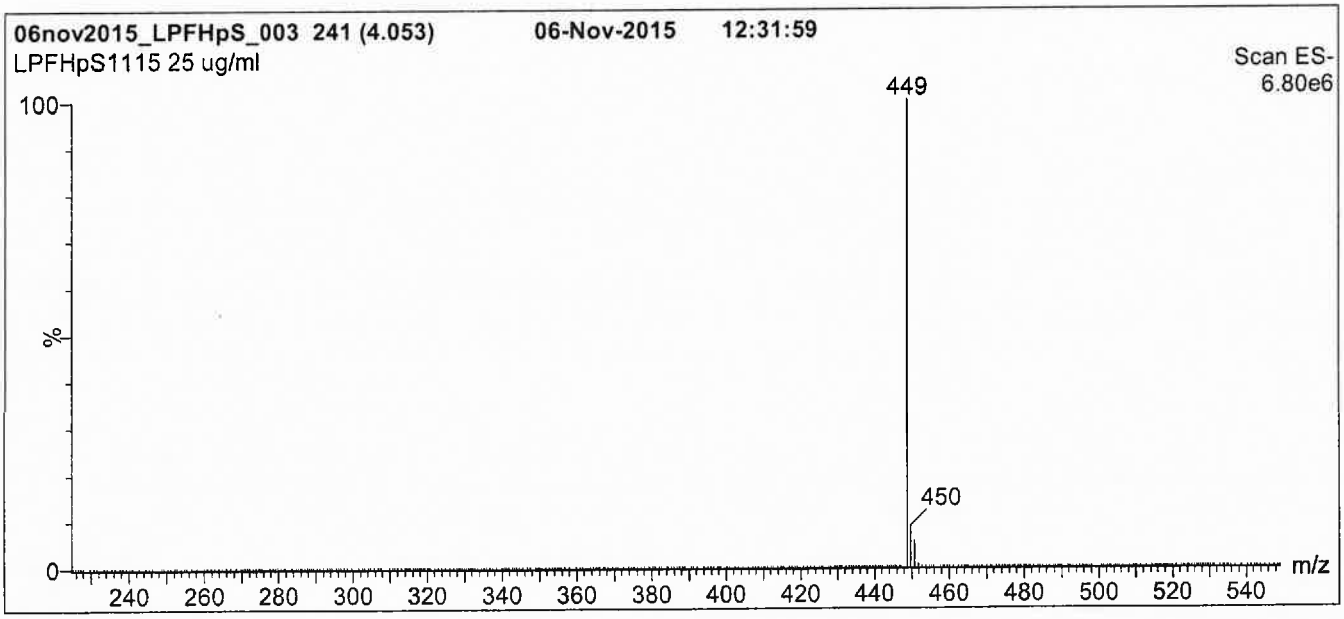
Figure 1: **L-PFHpS; LC/MS Data (TIC and Mass Spectrum)**





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

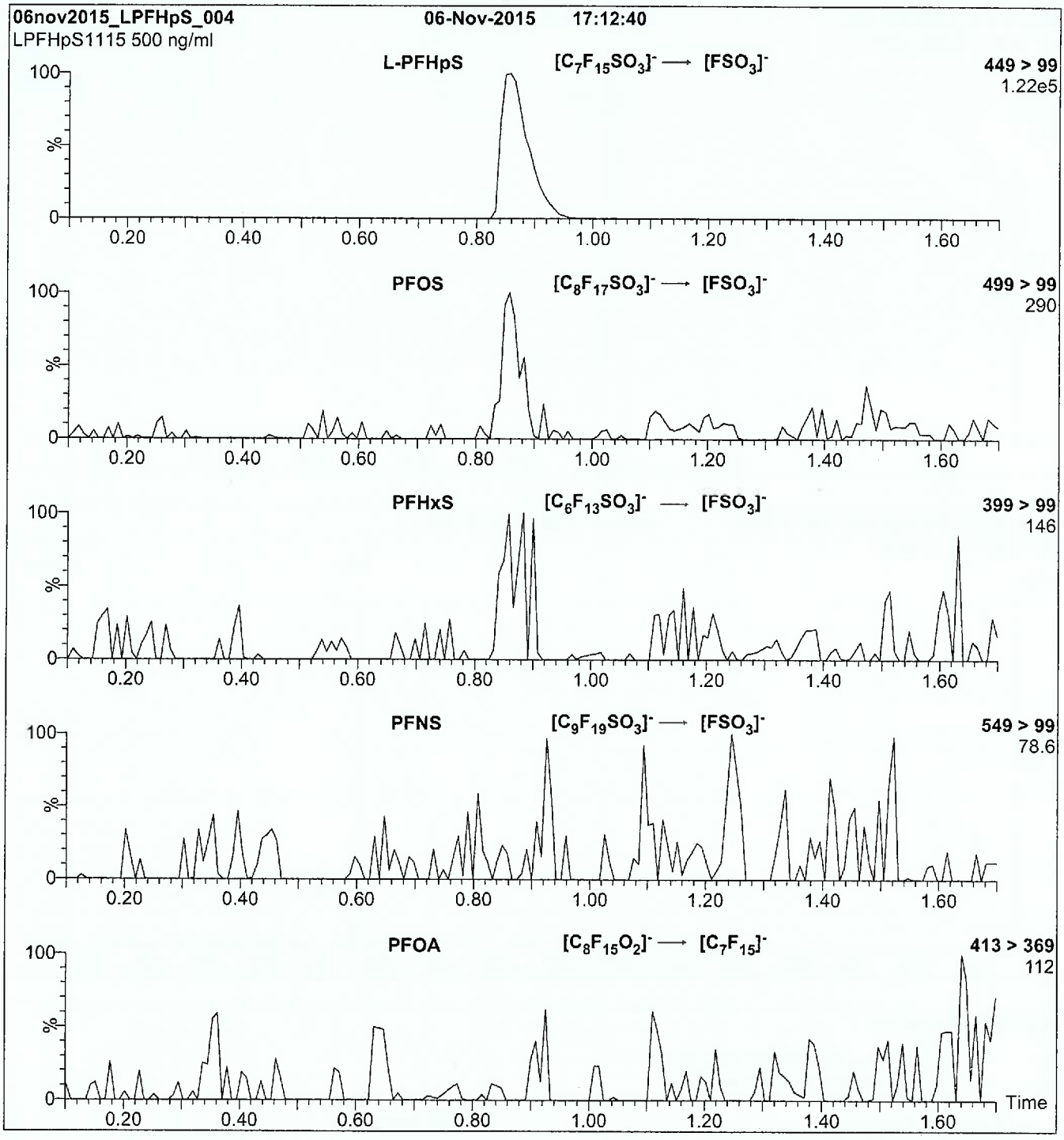
Flow: 300 µl/min

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

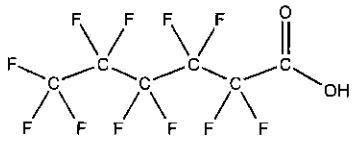
WELLINGTON LABORATORIES

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:

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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

ANAB ACCREDITED ISO 17025 REFERENCE MATERIAL PRODUCER

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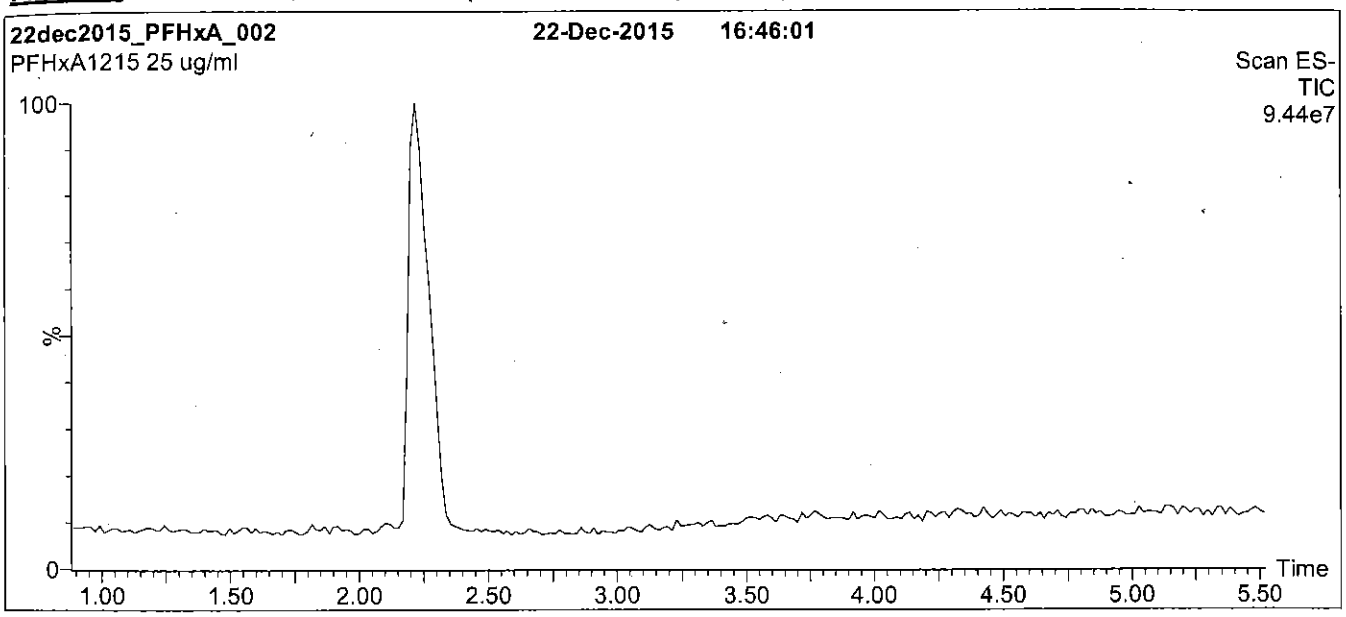
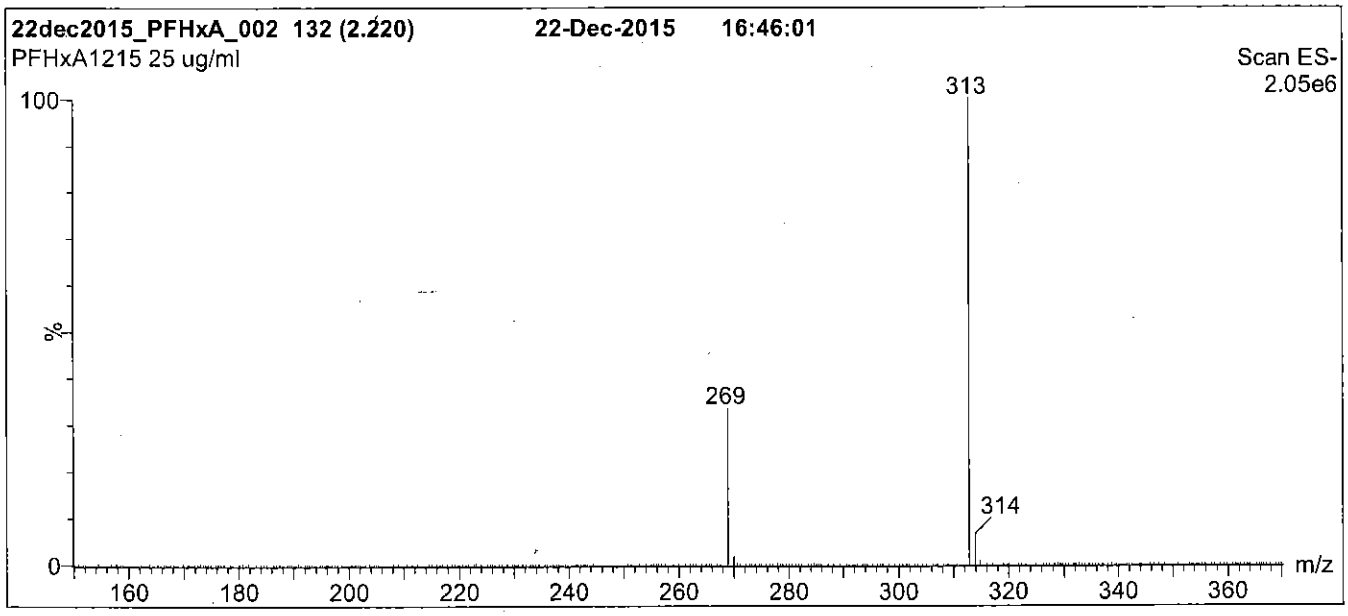
Figure 1: **PFHxA; LC/MS Data (TIC and Mass Spectrum)**





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

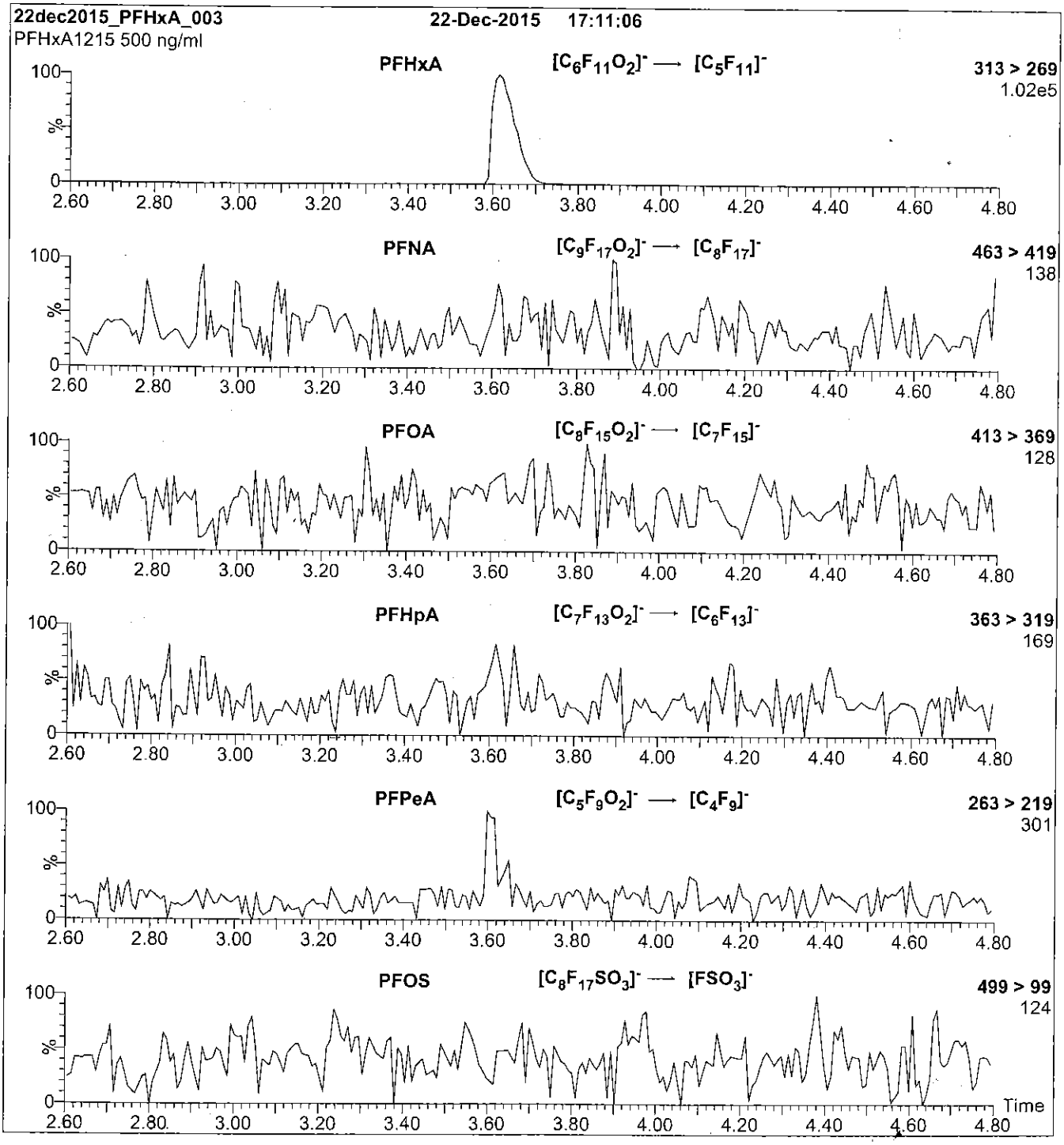
Flow: 300 µl/min

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

LCPFHxDA_00005

Rec. 3/29/16 JRB ✓

WELLINGTON LABORATORIES

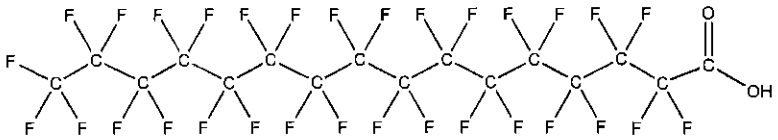
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFHxDA
COMPOUND: Perfluoro-n-hexadecanoic acid

LOT NUMBER: PFHxDA0614

STRUCTURE:

CAS #: 67905-19-5



MOLECULAR FORMULA: $C_{16}HF_{31}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 814.13
SOLVENT(S): Methanol
Water (<1%)

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 06/20/2014
EXPIRY DATE: (mm/dd/yyyy) 06/20/2019
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.
- Contains 4 mole eq. of NaOH to prevent conversion of the carboxylic acid to the methyl ester.
- Contains ~ 0.2% of PFTeDA and ~ 0.1% each of 2H-PFHxDA, PFPeDA, and PFODA.

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 Accredited as per ISO 17025

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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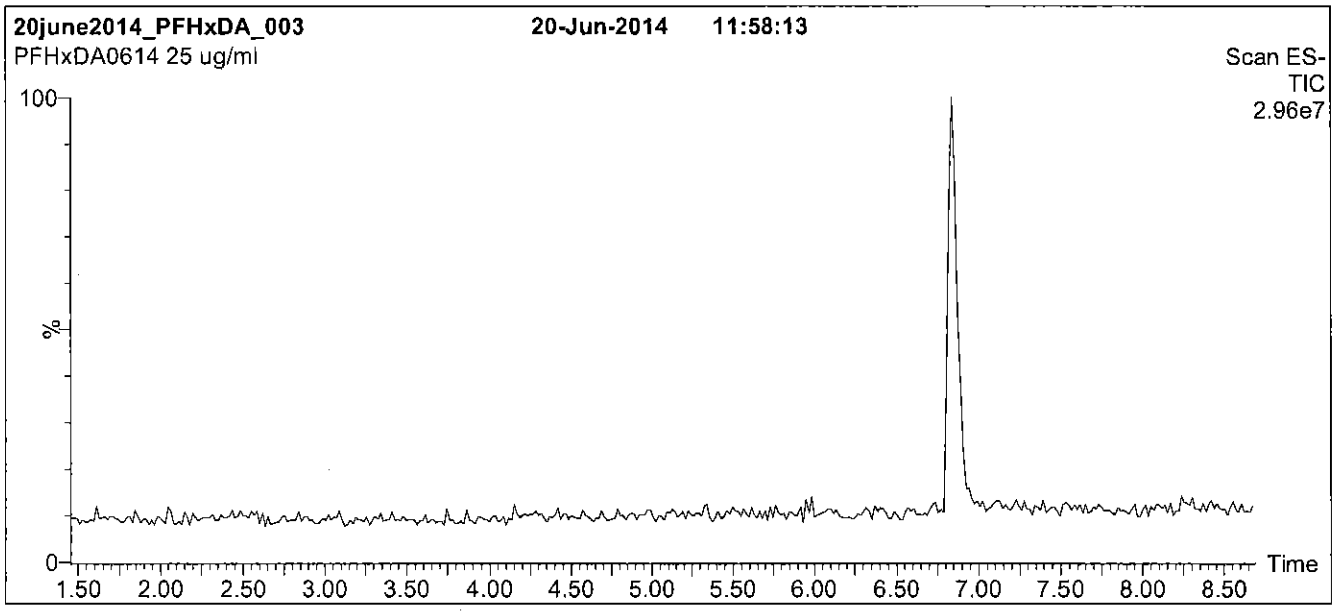
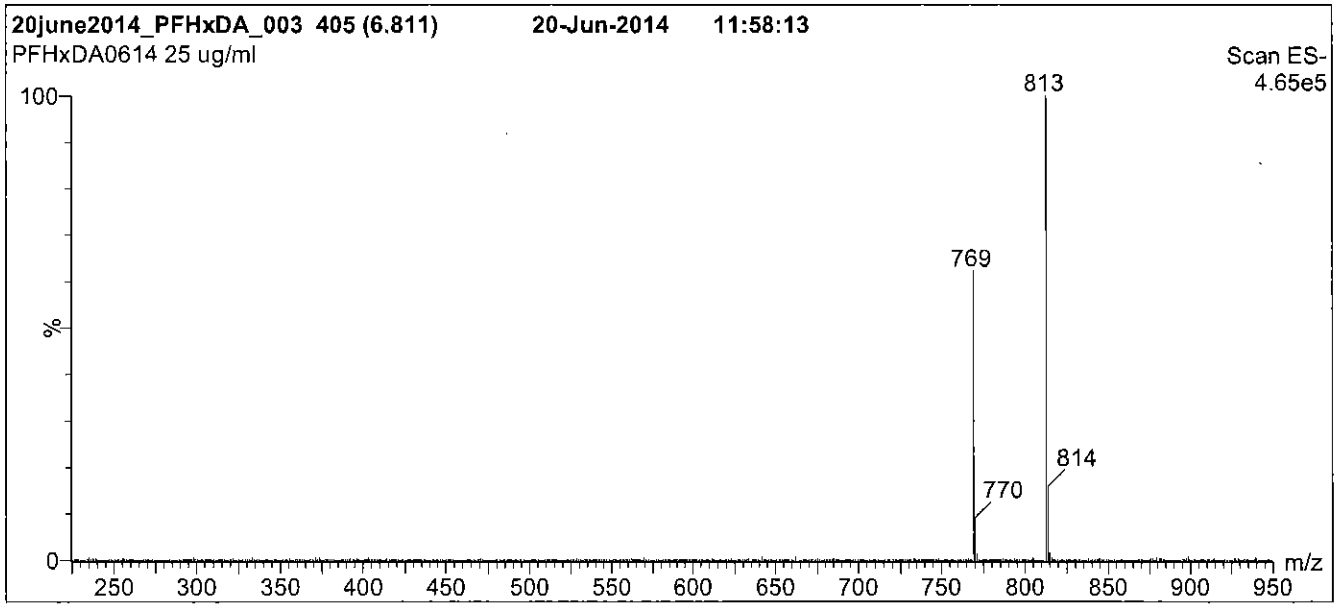
Figure 1: **PFHxDA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

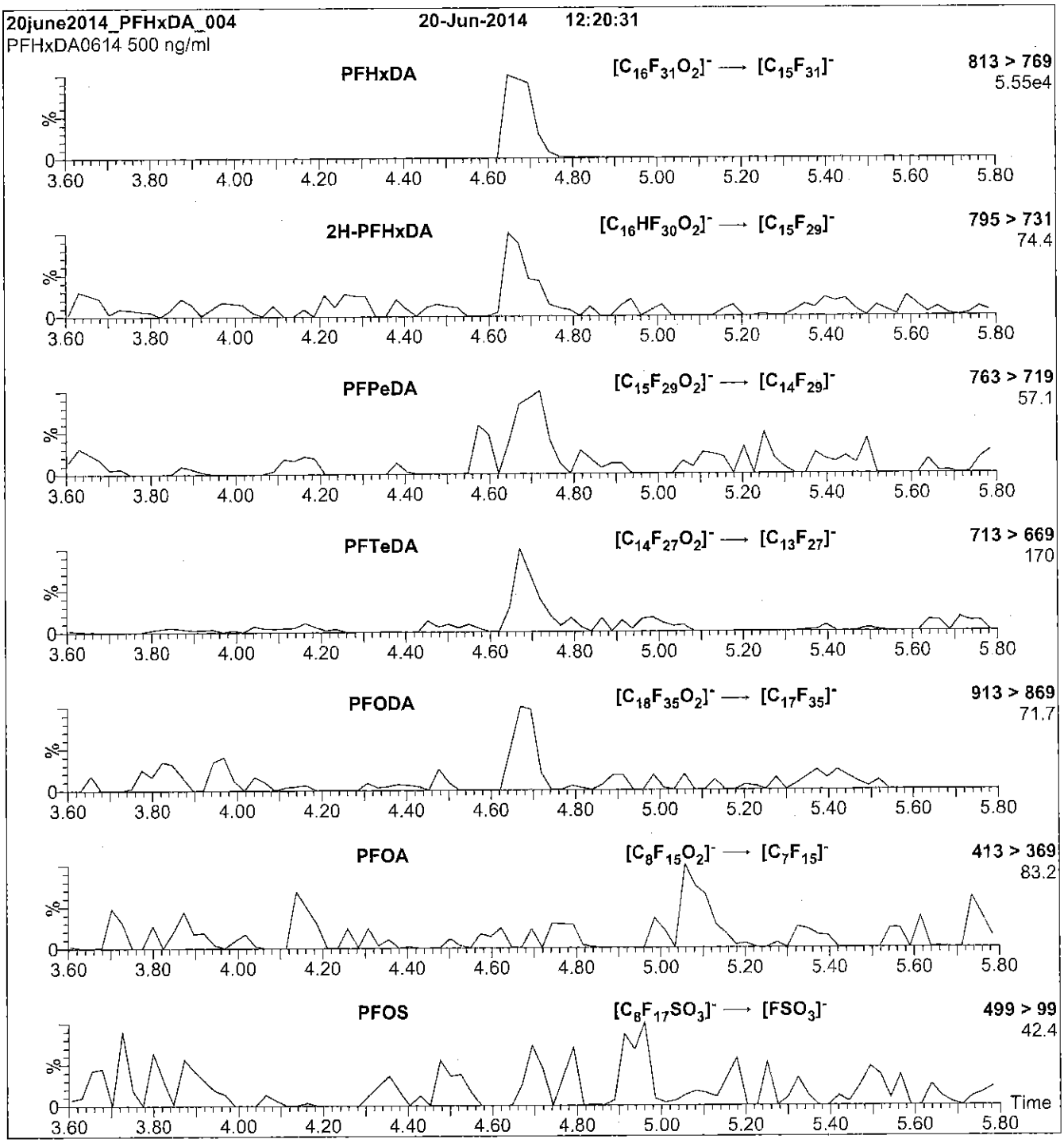
Flow: 300 µl/min

MS Parameters

Experiment: Full Scan (225 - 950 amu)

Source: Electrospray (negative)
Capillary Voltage (kV) = 2.00
Cone Voltage (V) = 25.00
Cone Gas Flow (l/hr) = 60
Desolvation Gas Flow (l/hr) = 750

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



Conditions for Figure 2:

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

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) = 15

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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

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

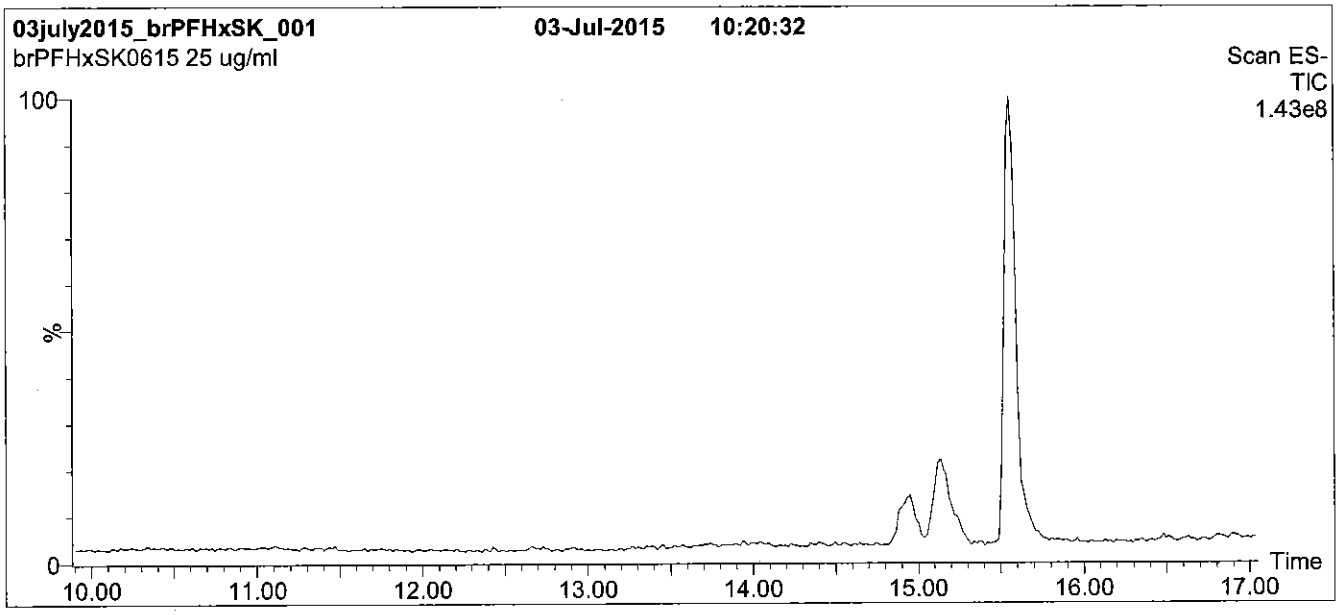
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

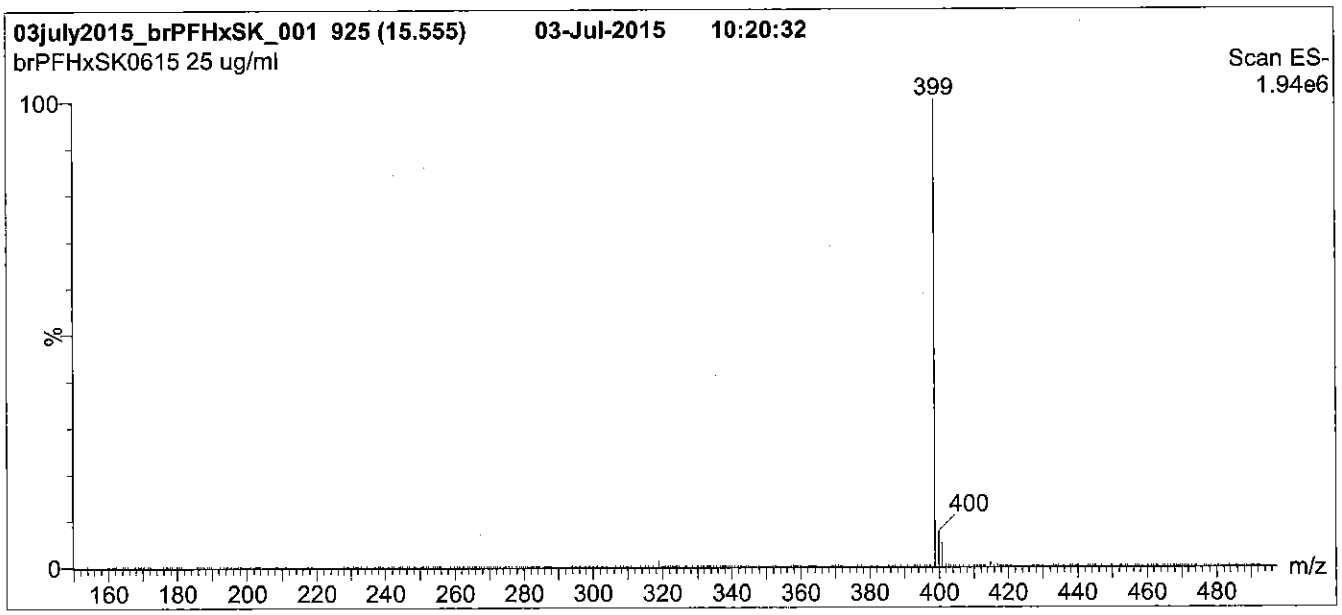
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2CF_2SO_3^-K^+$	1.4
4	Potassium 3-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF(CF_3)CF_2CF_2CF_2SO_3^-K^+$	5.0
5	Potassium 4-trifluoromethylperfluoropentanesulfonate	$CF_3CF(CF_3)CF_2CF_2CF_2CF_2SO_3^-K^+$	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

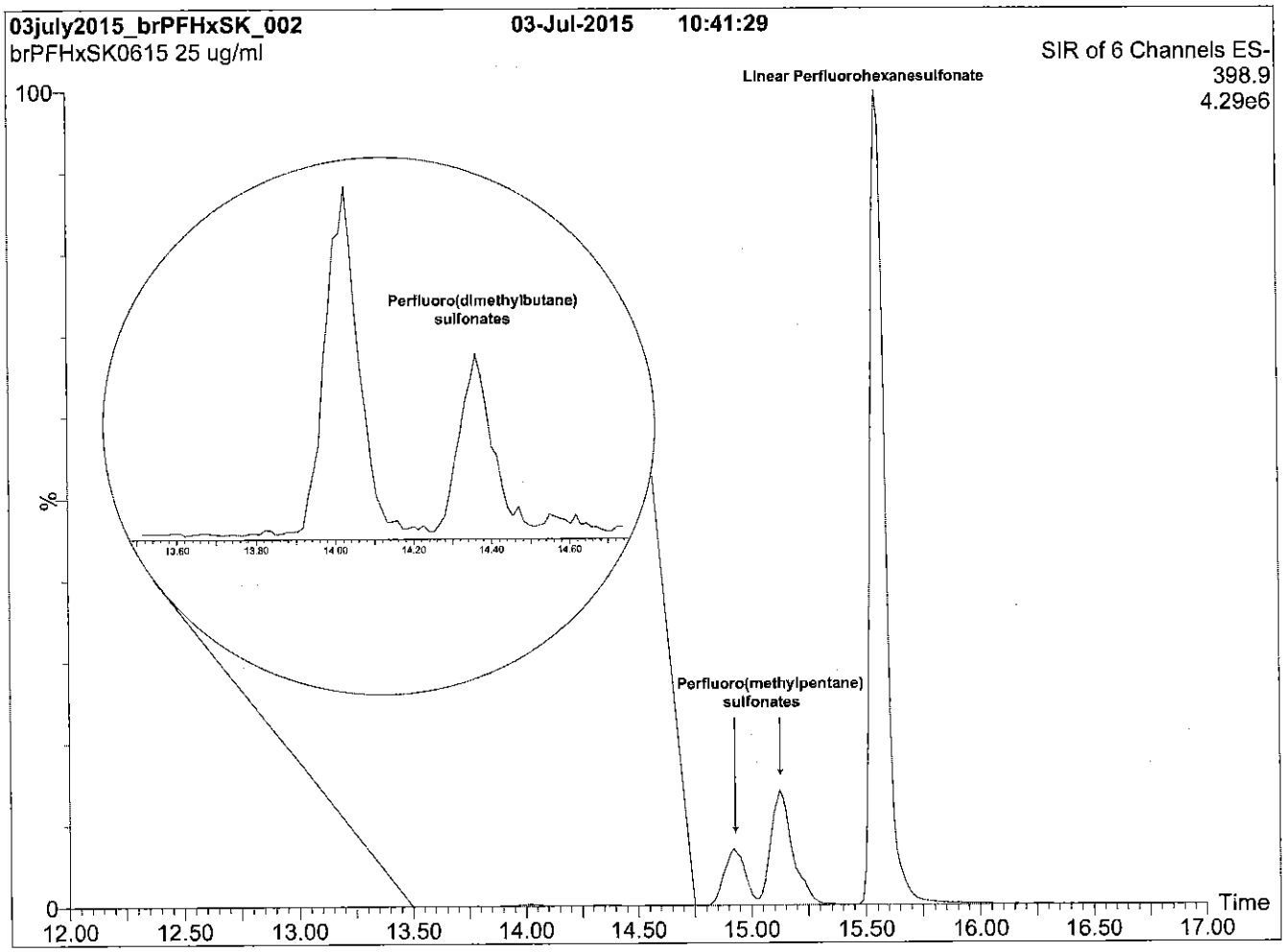
Flow: 300 µl/min

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

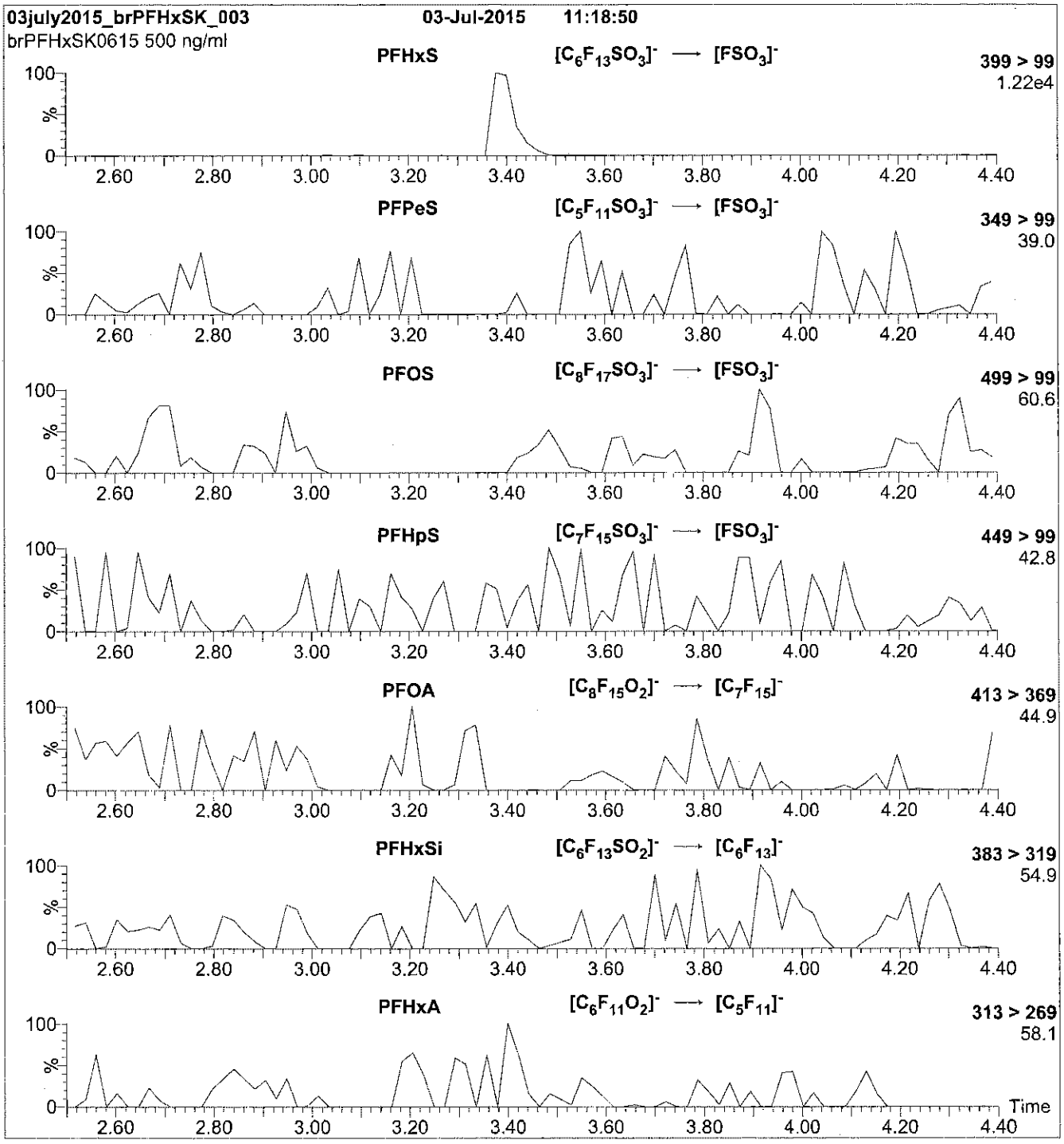
Flow: 300 µl/min

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

LCPFHxS-br_00002

SBC
R: 9/13/16

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

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

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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

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

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

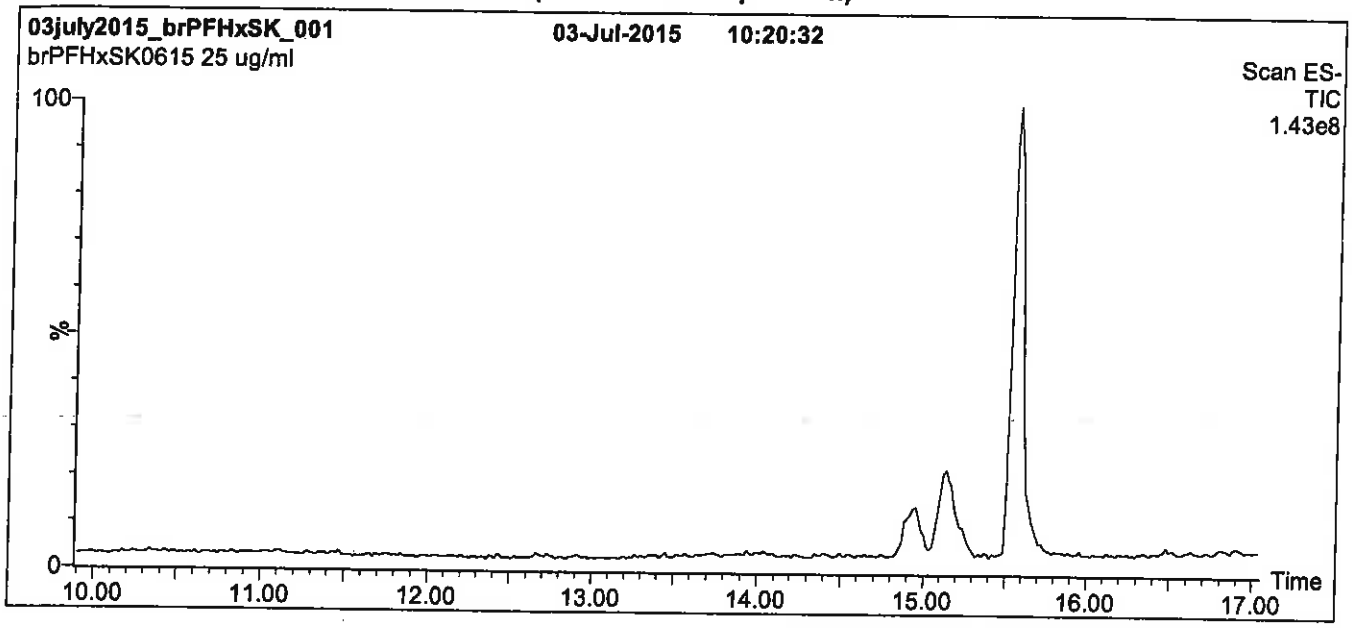
Table A: **br-PFHxSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

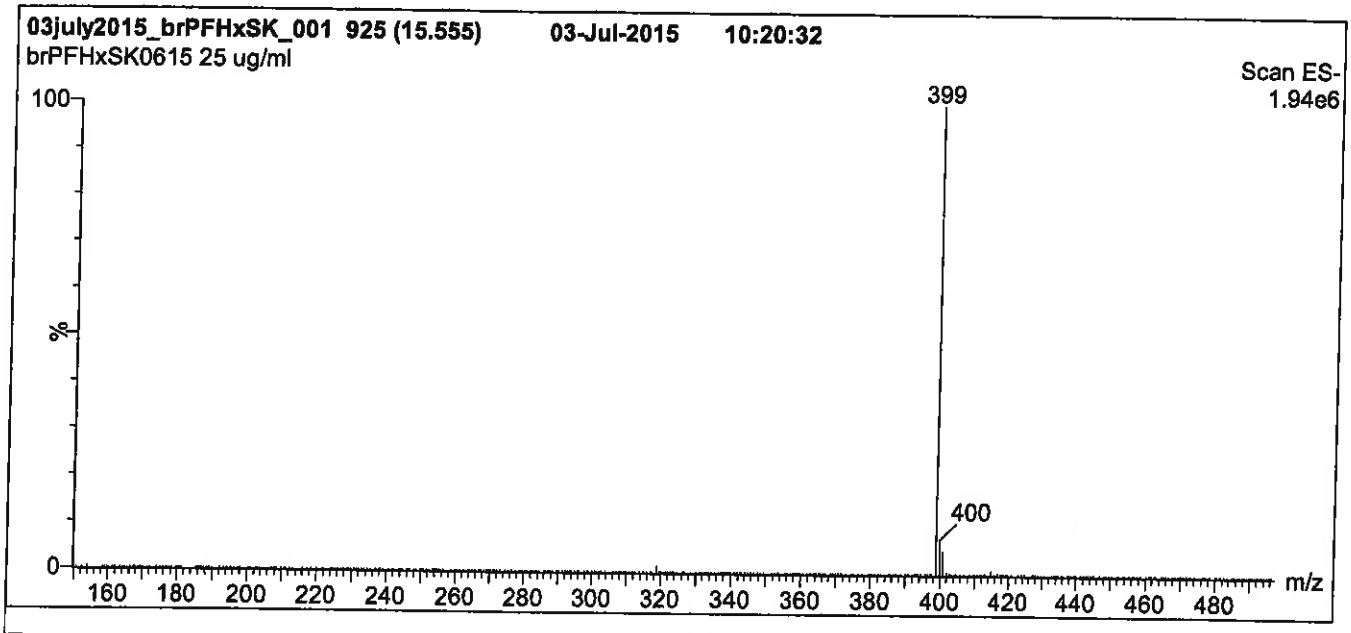
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-hexanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	81.1
2	Potassium 1-trifluoromethylperfluoropentanesulfonate**	$CF_3CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	2.9
3	Potassium 2-trifluoromethylperfluoropentanesulfonate	$CF_3CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	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: B.G. Chittim **Date:** 07/15/2015 (mm/dd/yyyy)

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

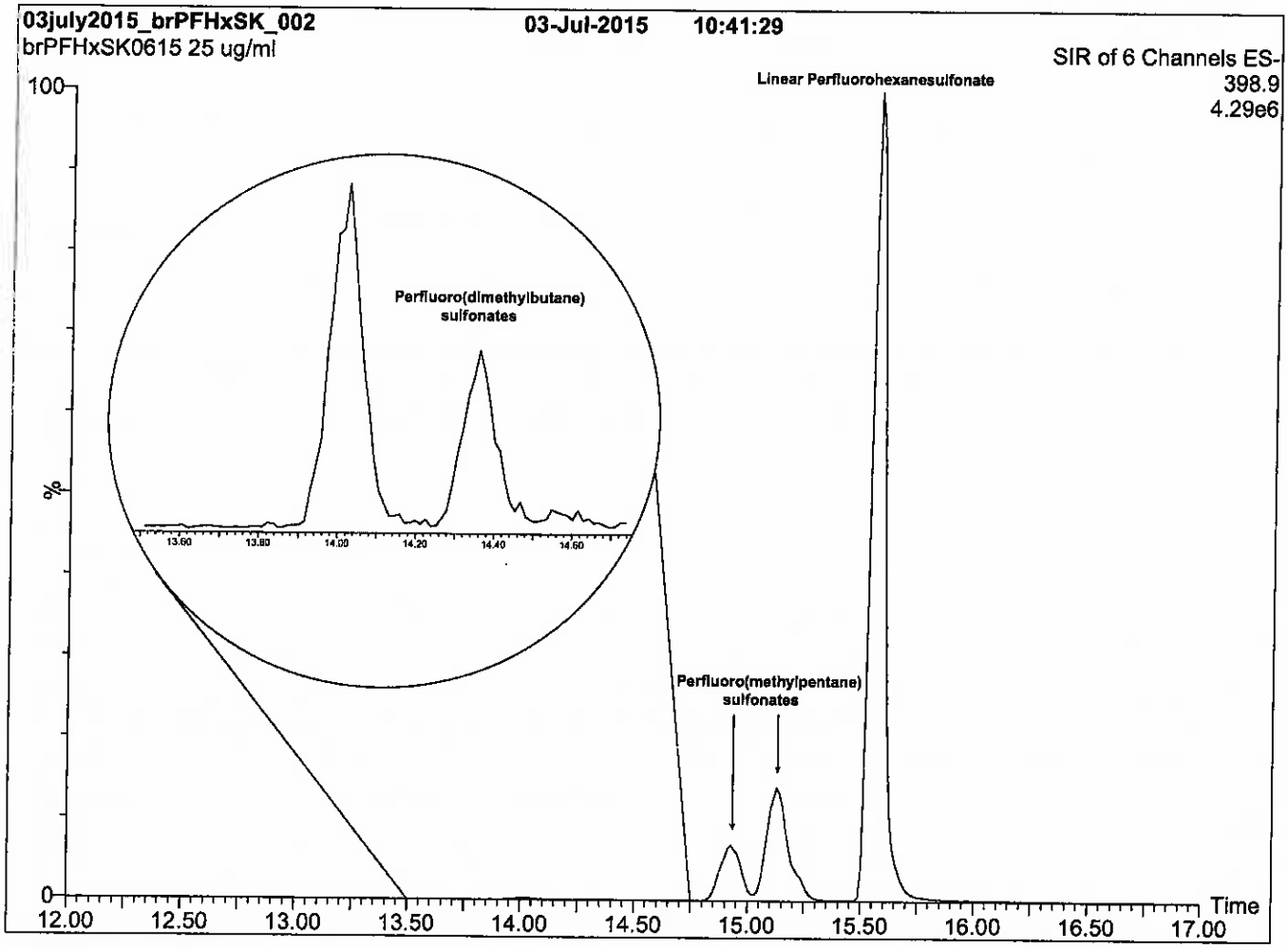
Flow: 300 µl/min

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

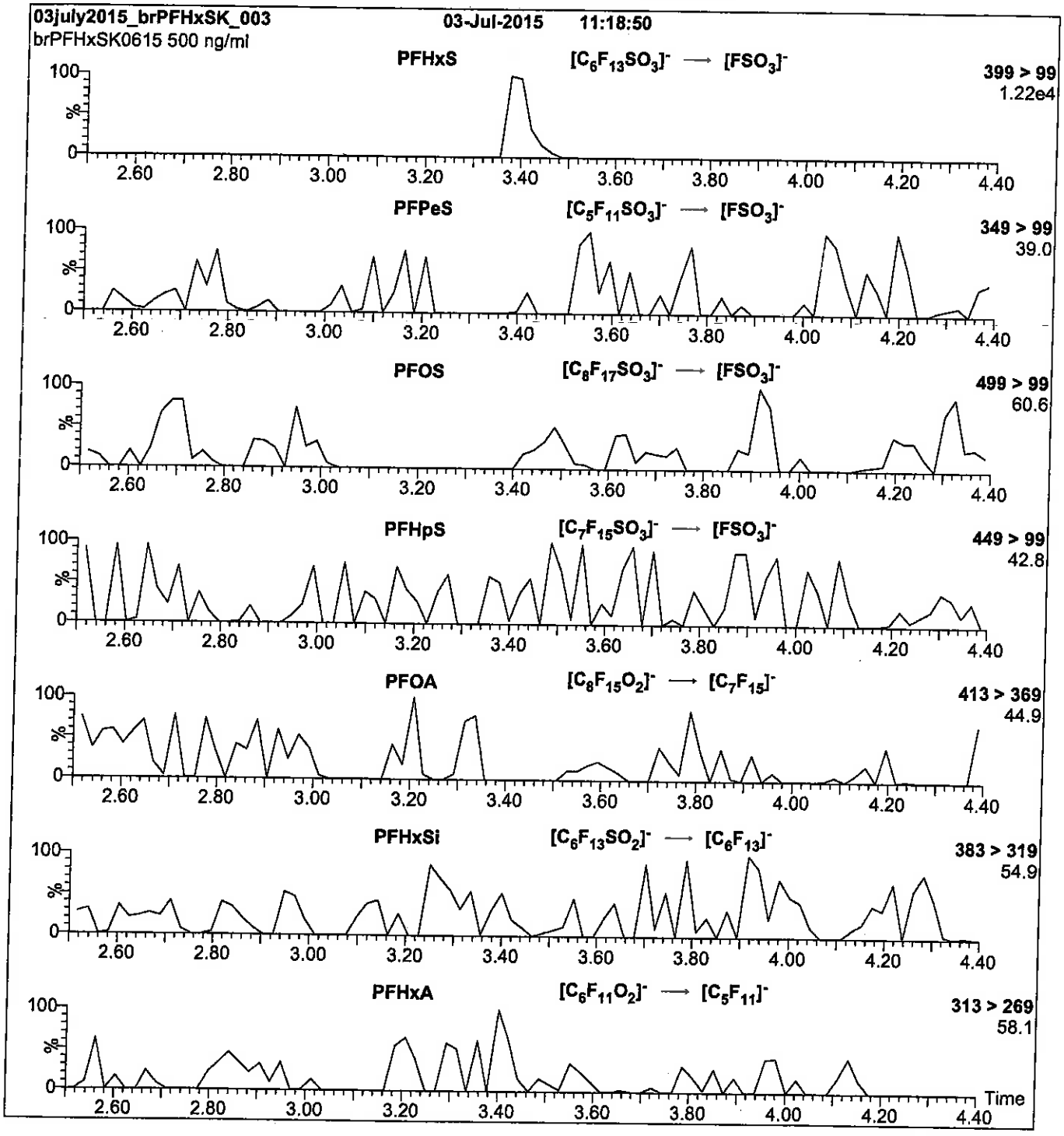
Flow: 300 µl/min

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

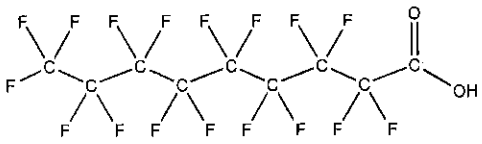
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

LOT NUMBER: PFNA1015

STRUCTURE:

CAS #: 375-95-1



MOLECULAR FORMULA: $C_9HF_{17}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

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

CHEMICAL PURITY: >98%
LAST TESTED: (mm/dd/yyyy) 10/23/2015
EXPIRY DATE: (mm/dd/yyyy) 10/23/2020
RECOMMENDED STORAGE: Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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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 $x_1, x_2, \ldots x_n$ 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:

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CALA Testing Accreditation No. A1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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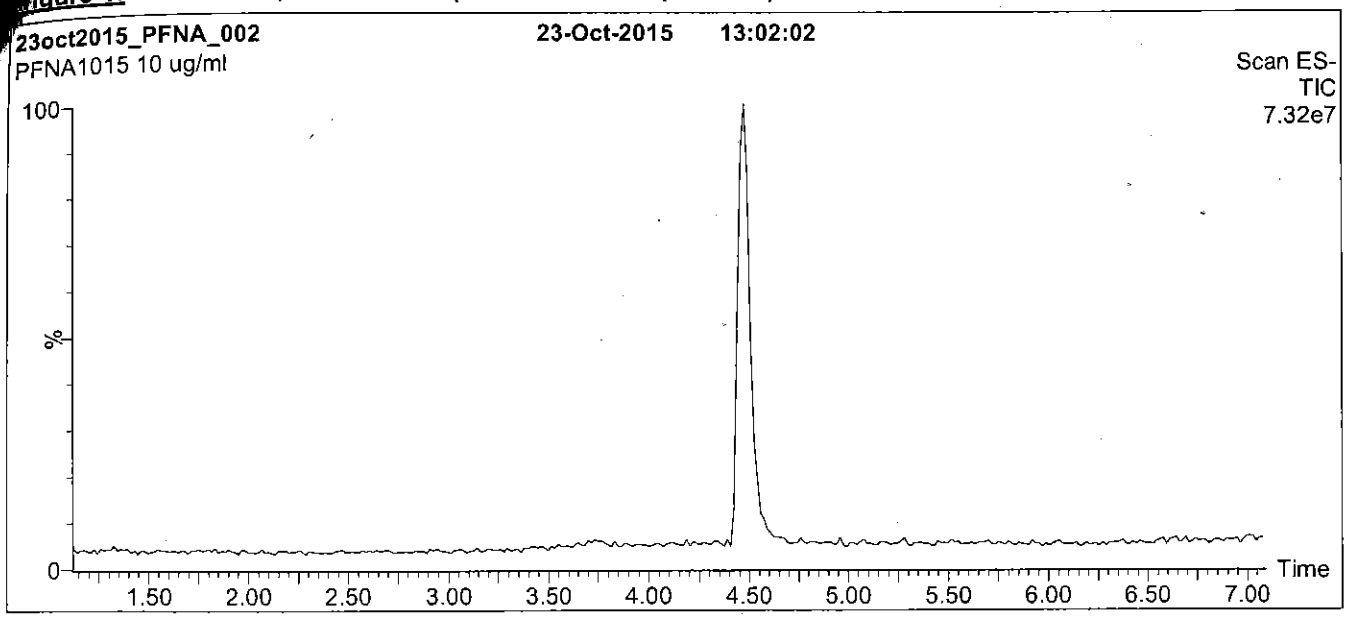
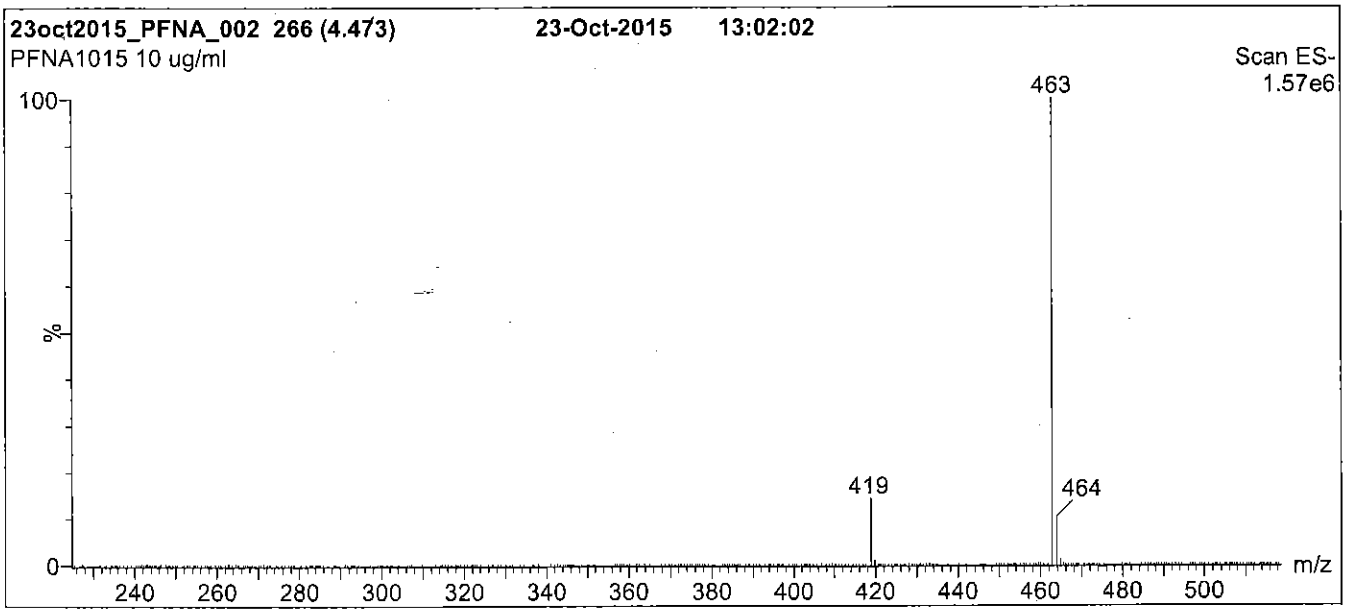
Figure 1: PFNA; LC/MS Data (TIC and Mass Spectrum)





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

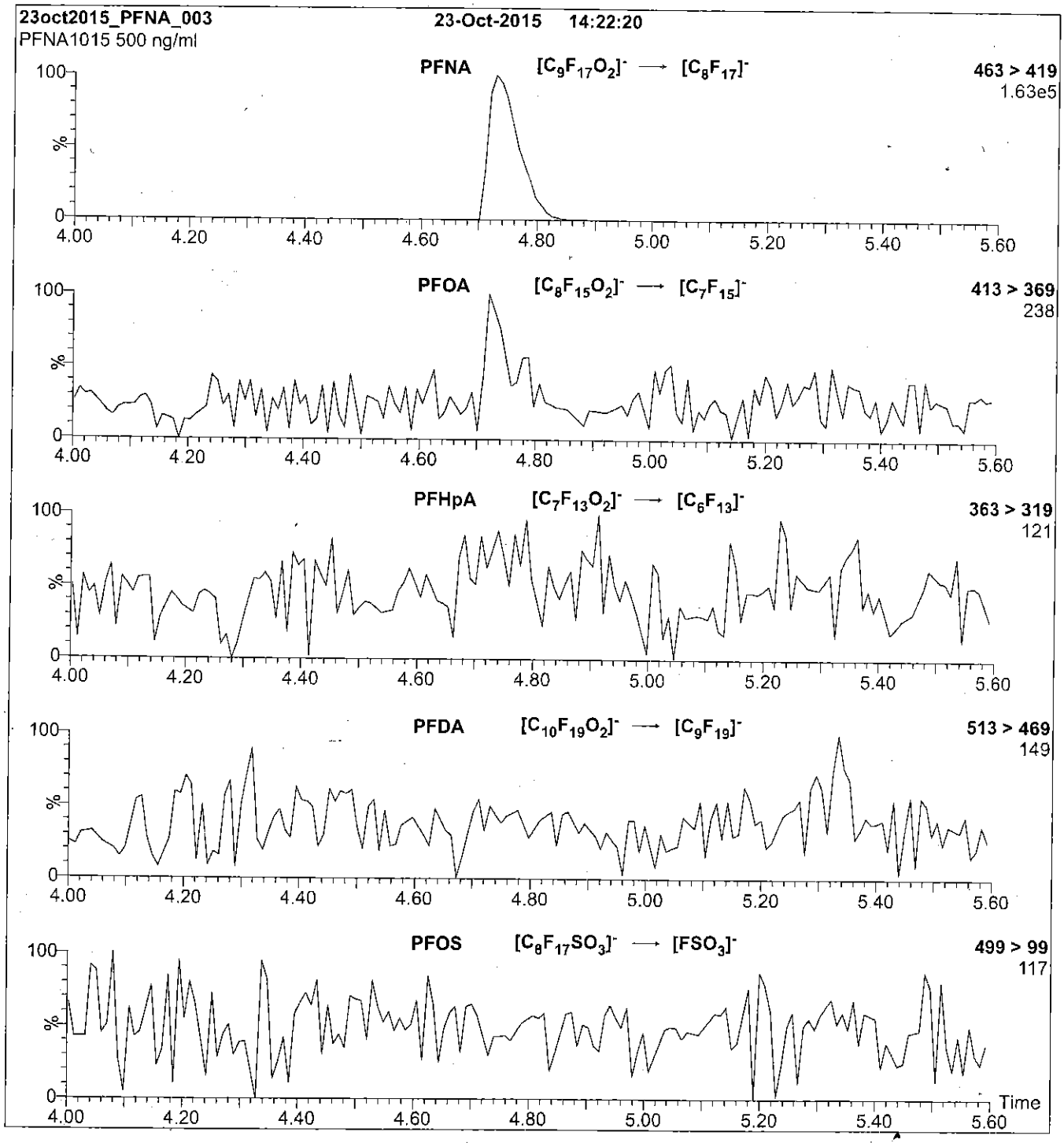
Flow: 300 µl/min

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

LCPFOA_00006

R-7/6/16 CBW

671577
ID: LCPFOA_00006
Exp: 11/06/20 Prpd: CBW
PF-n-octanoic acid

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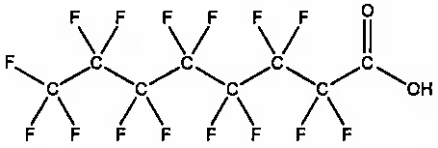
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFOA	**LOT NUMBER:**	PFOA1115
COMPOUND:	Perfluoro-n-octanoic acid		
STRUCTURE:		**CAS #:**	335-67-1



MOLECULAR FORMULA:	$C_8HF_{15}O_2$	**MOLECULAR WEIGHT:**	414.07
CONCENTRATION:	50 ± 2.5 µg/ml	**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.

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

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
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CALA

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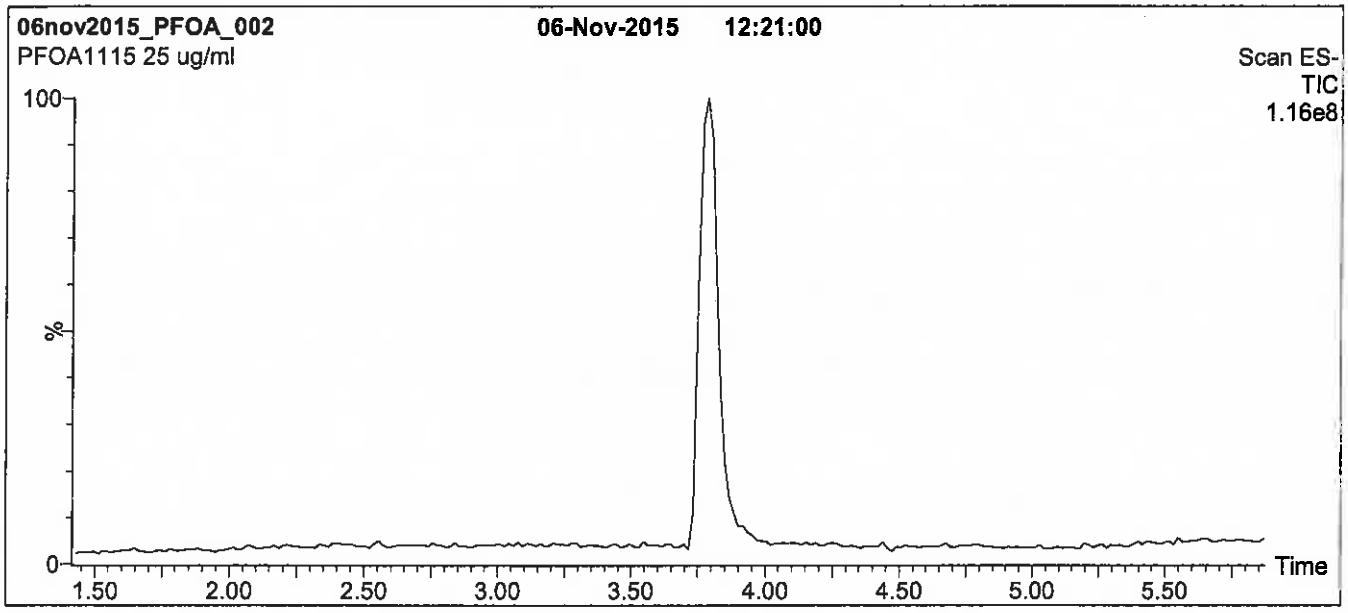
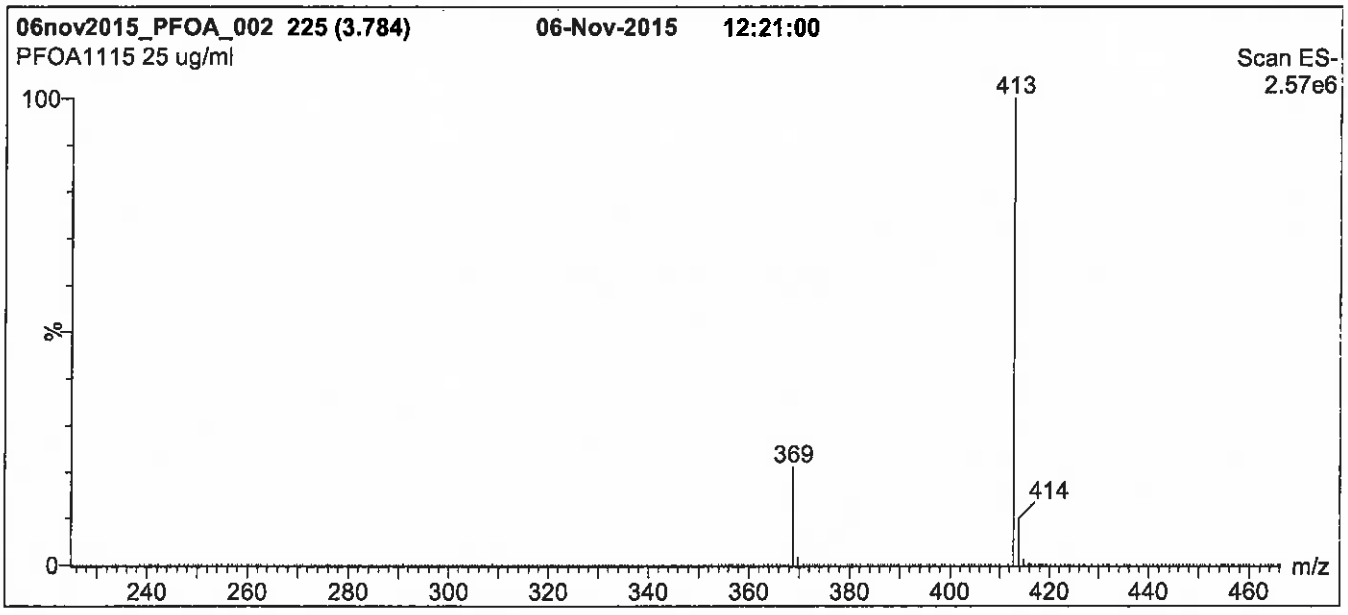
Figure 1: **PFOA; LC/MS Data (TIC and Mass Spectrum)**





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

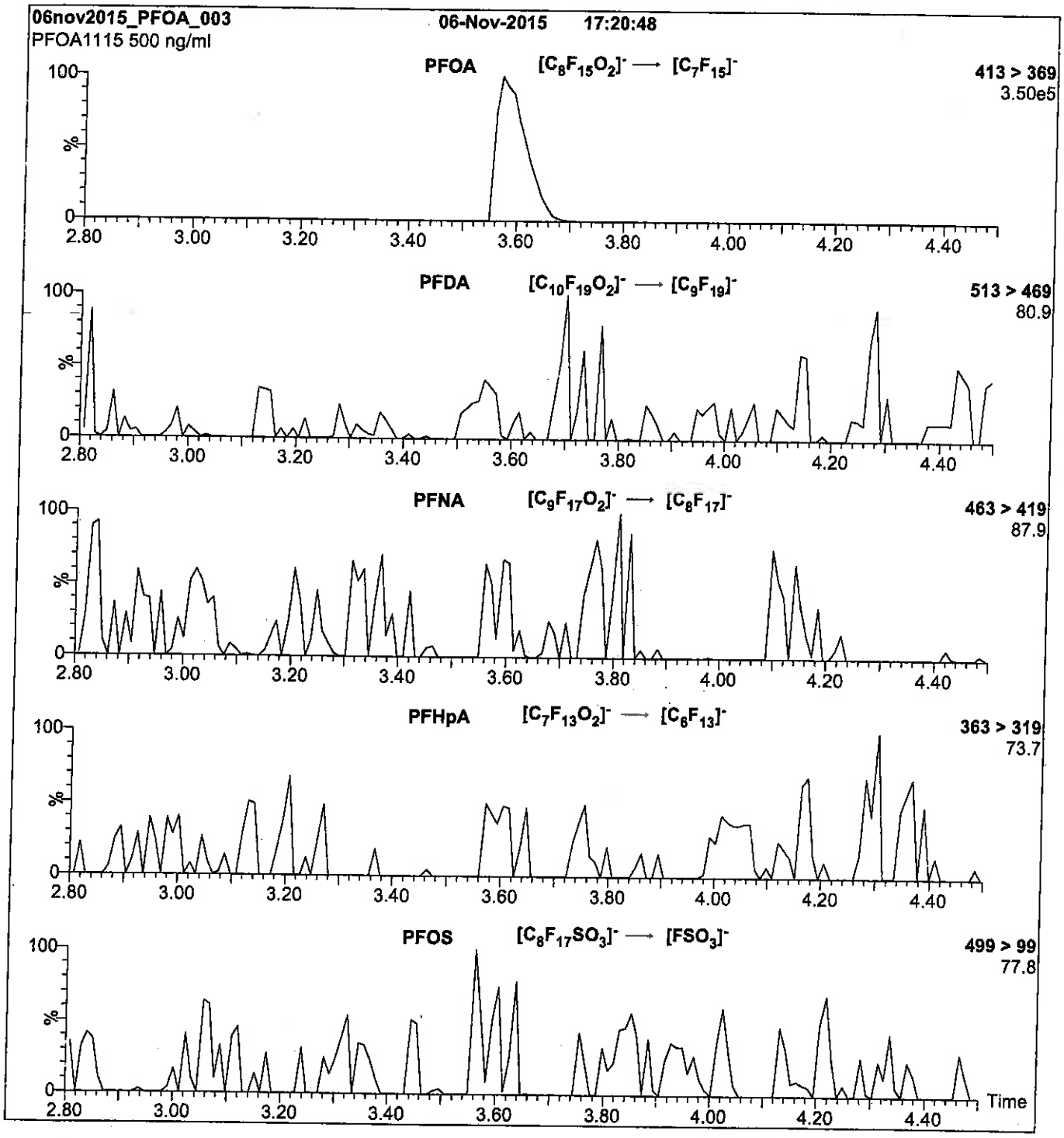
Flow: 300 µl/min

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

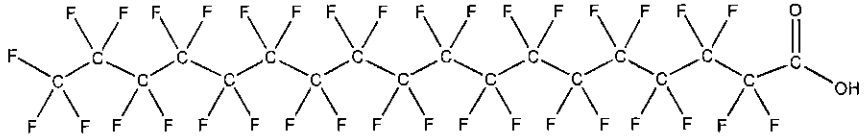
CERTIFICATE OF ANALYSIS
DOCUMENTATION

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.

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

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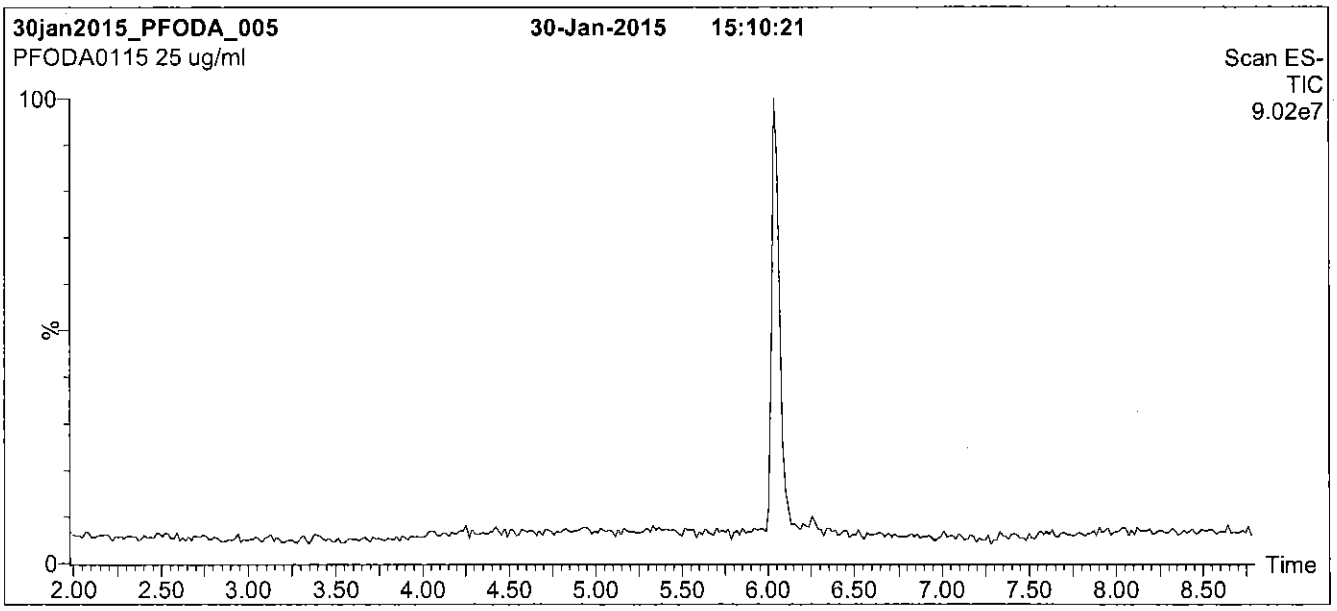

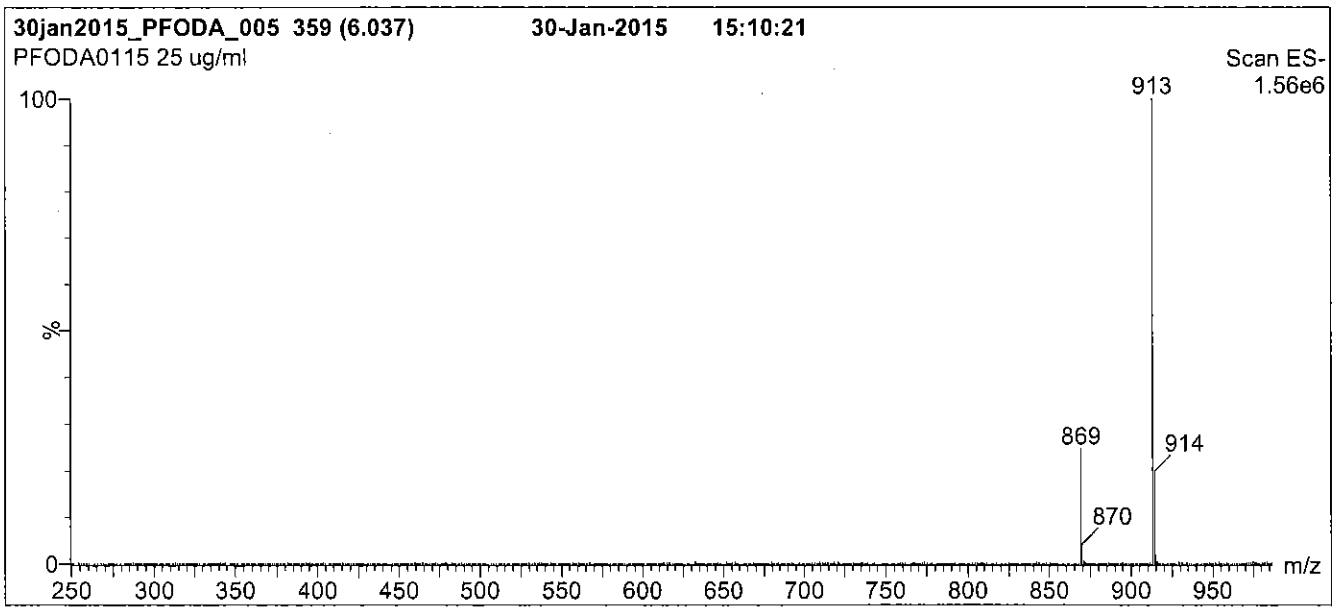

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MS: **Micromass Quattro *micro* API MS**

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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

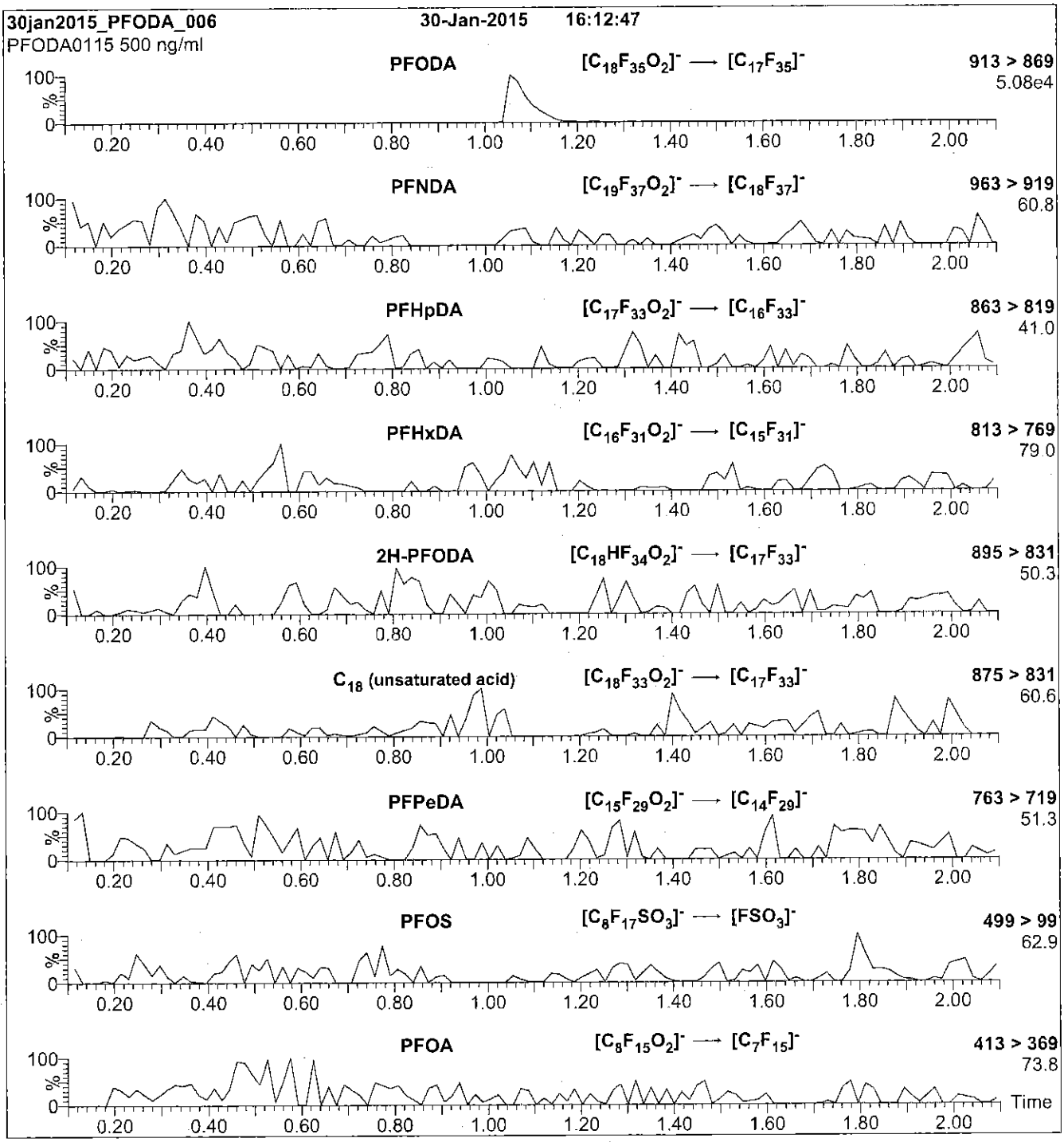
Flow: 300 µl/min

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

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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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 Reference Material Producer

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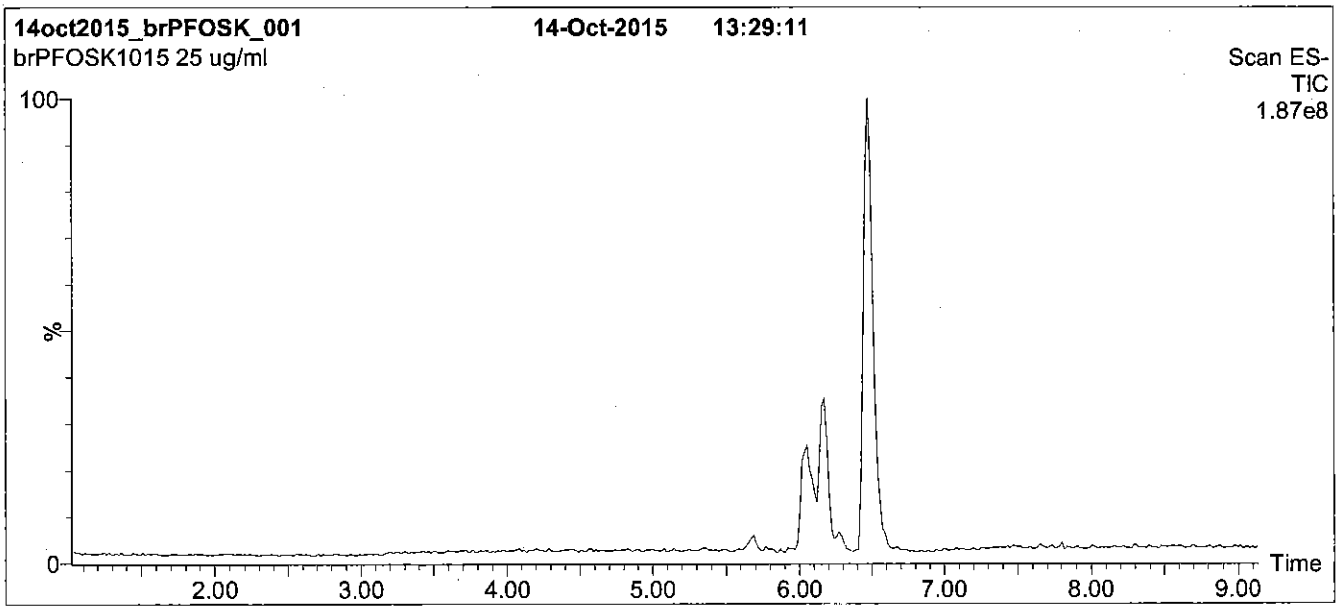
Table A: **br-PFOSK; Isomeric Components and Percent Composition (by ^{19}F-NMR)***

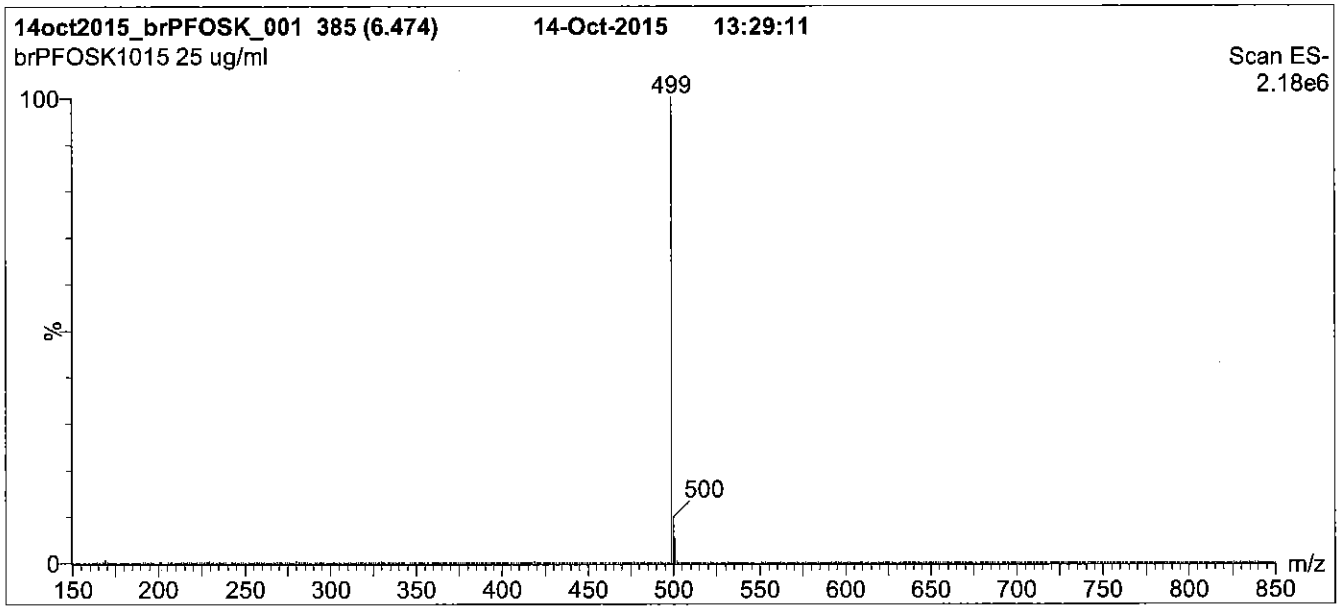
Isomer	Name	Structure	Percent Composition by ^{19}F-NMR
1	Potassium perfluoro-1-octanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF_2CF_2CF_2SO_3^-K^+$	78.8
2	Potassium 1-trifluoromethylperfluoroheptanesulfonate**	$CF_3CF_2CF_2CF_2CF_2CF_2CF(CF_3)SO_3^-K^+$	1.2
3	Potassium 2-trifluoromethylperfluoroheptanesulfonate	$CF_3CF_2CF_2CF_2CF_2CF(CF_3)CF_2SO_3^-K^+$	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
B.G. Chittim (mm/dd/yyyy)

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





Conditions for Figure 1:

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

Chromatographic Conditions

Column: Acquity UPLC BEH Shield 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

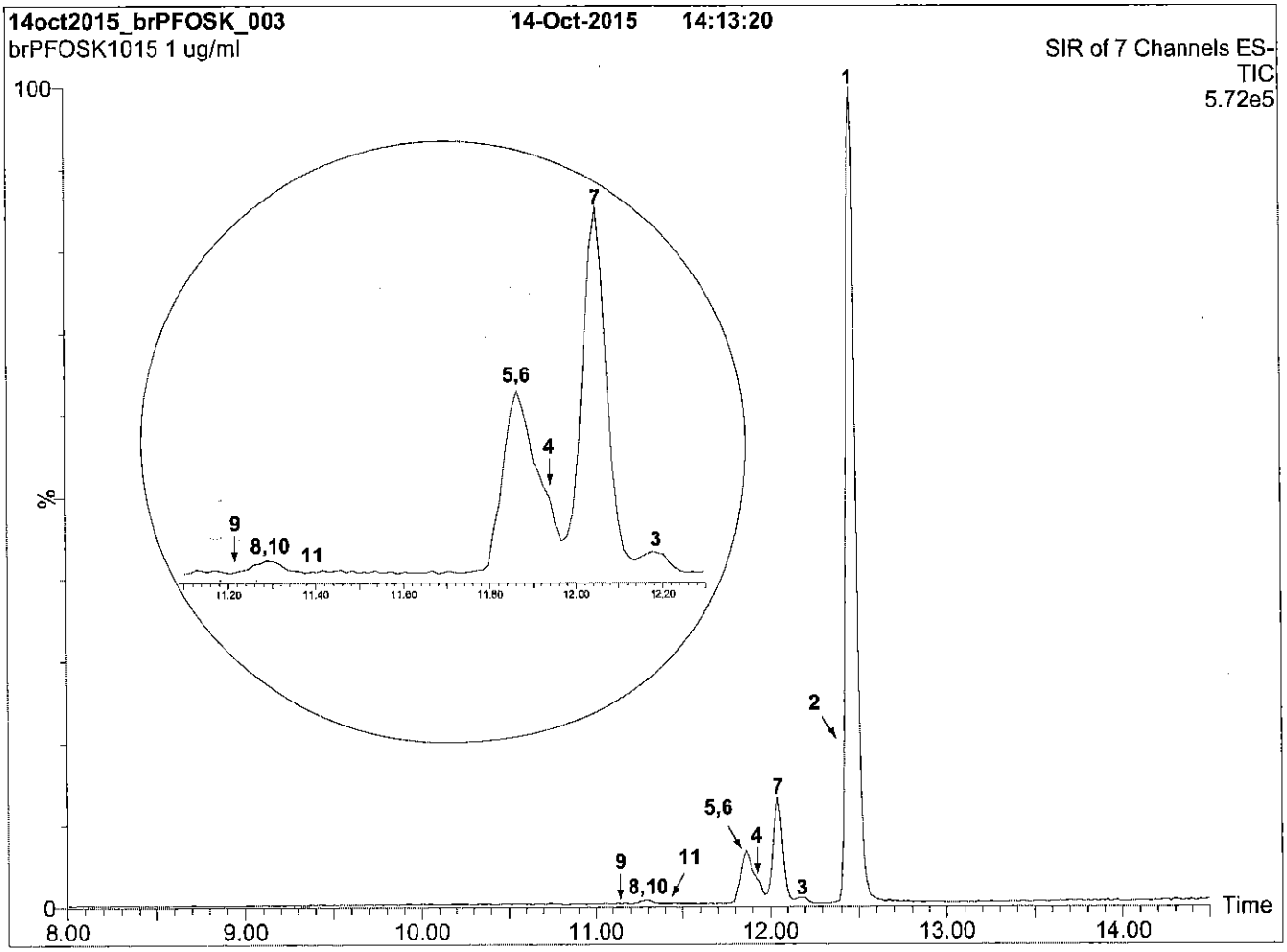
Flow: 300 µl/min

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

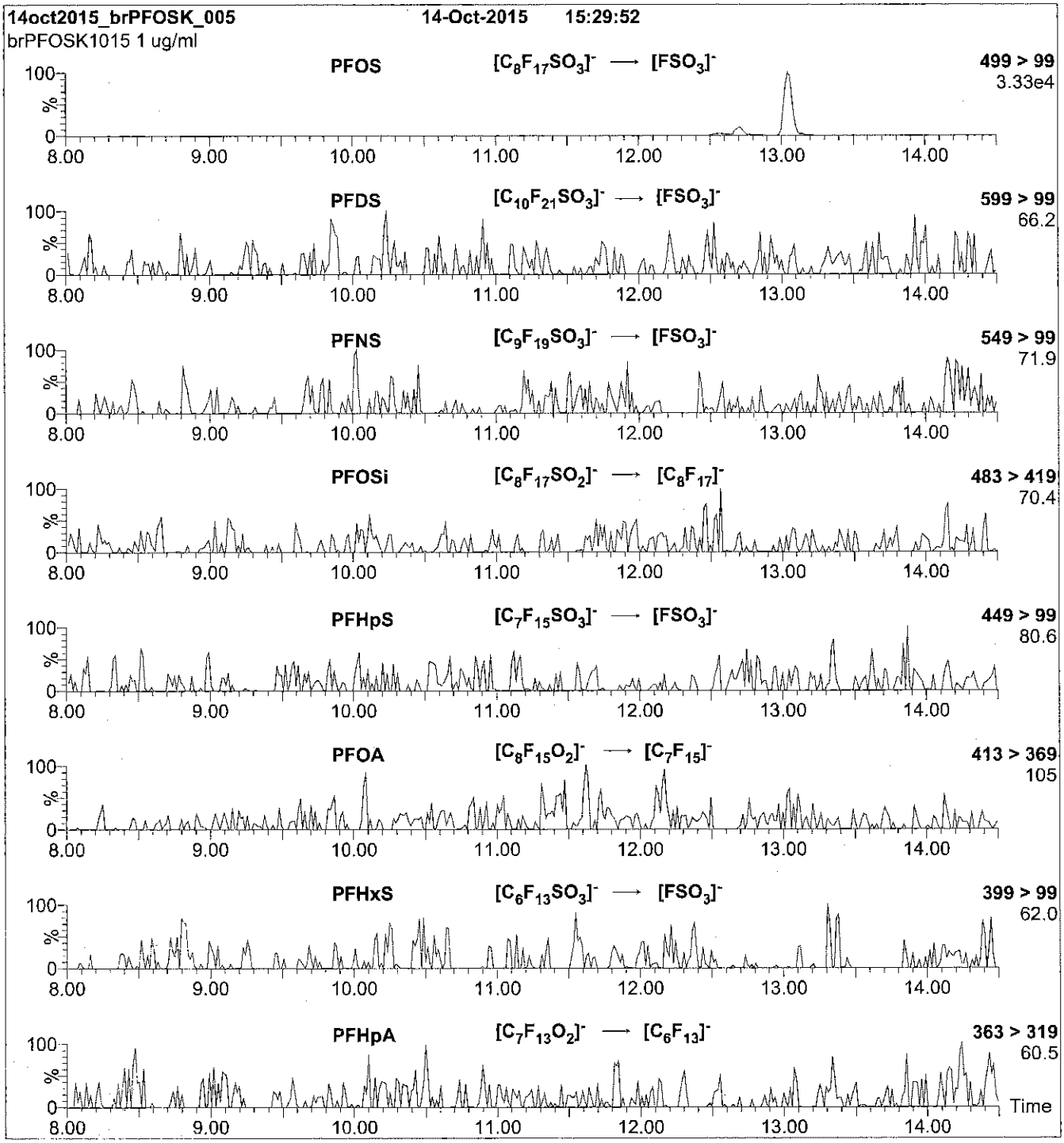
Mobile Phase: Gradient
45% (80:20 MeOH:ACN) / 55% H_2O (both with 10 mM NH_4OAc buffer)
Ramp to 90% organic over 15 min and hold for 3 min.
Return to initial conditions over 1 min.
Time: 20 min

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)**



Condltions 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

LCPFOS-br_00002

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

730515
ID: LCPFOS-br_00002
Exp: 10/14/20 Prpd: SBC
Potassium Perfluorooctane

730516
ID: LCPFOS-br_00003
Exp: 10/14/20 Prpd: SBC
Potassium Perfluorooctane

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).

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

INTENDED USE:

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

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.

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CALA

ANAB ACCREDITED REFERENCE MATERIAL PRODUCER

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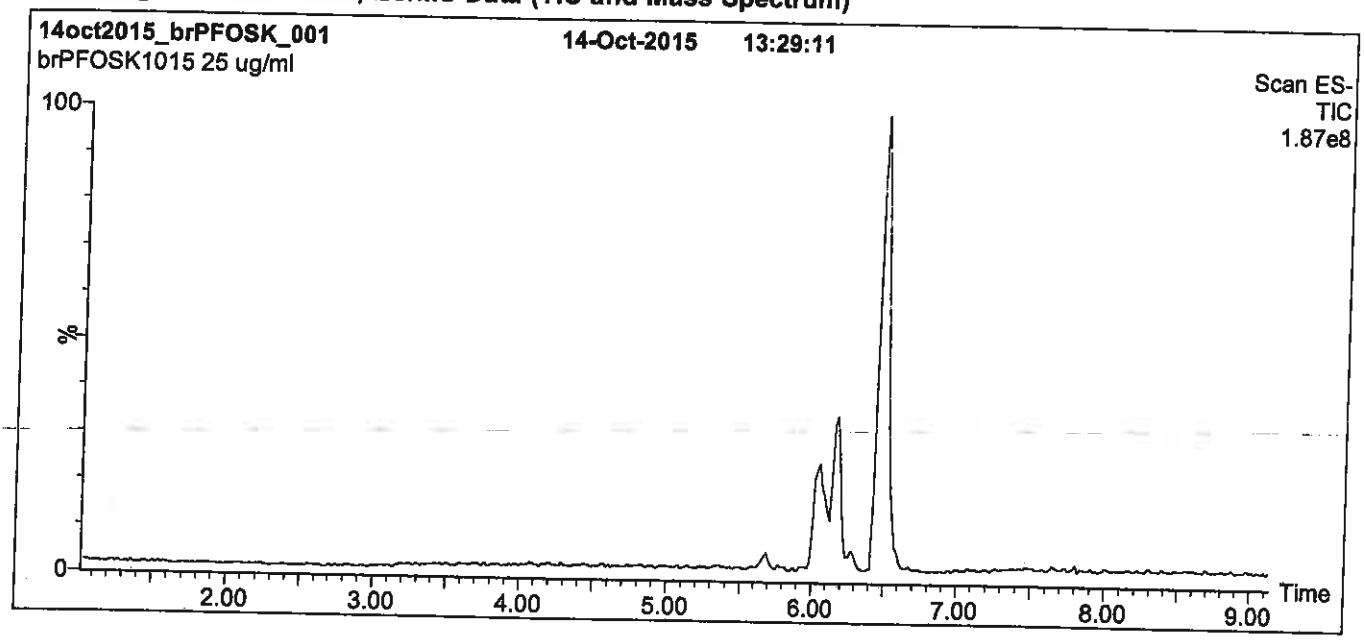
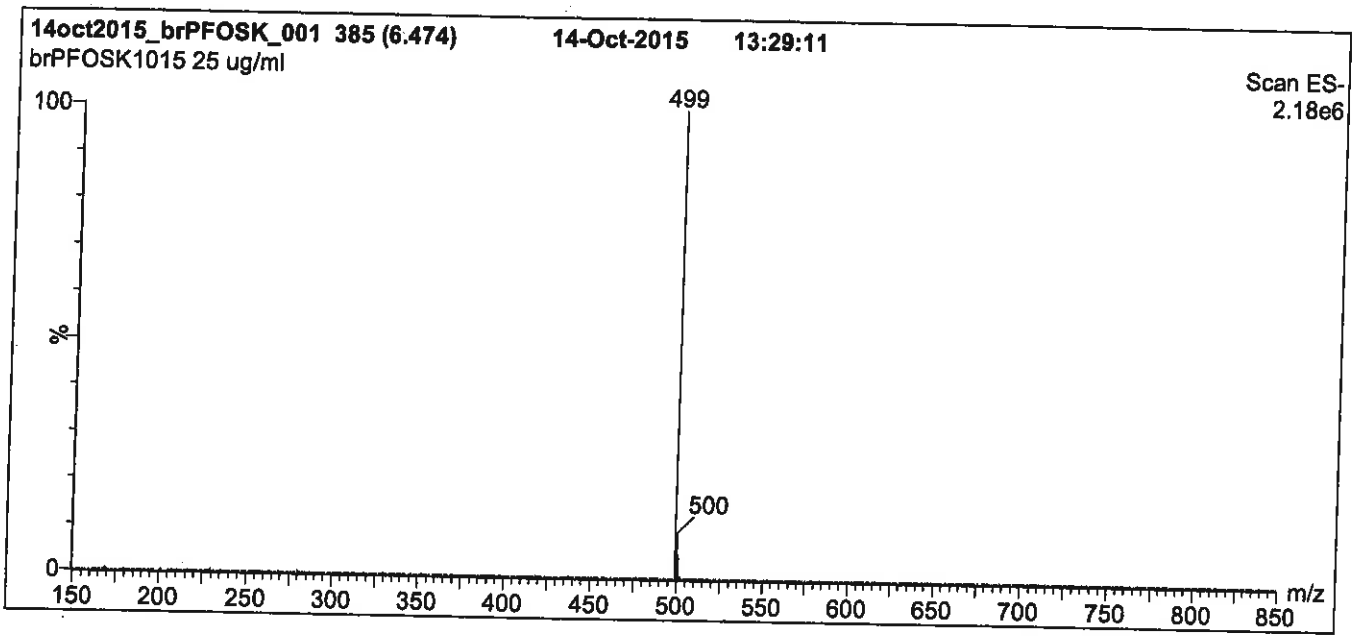
9	Potassium 4,4-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3CF_2-C(CF_3)_2-CF_2CF_2CF_2SO_3^-K^+$	0.03
10	Potassium 4,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF(CF_3)-CF_2CF_2CF_2SO_3^-K^+$	0.4
11	Potassium 3,5-di(trifluoromethyl)perfluorohexanesulfonate	$CF_3-CF(CF_3)-CF_2-CF(CF_3)-CF_2CF_2SO_3^-K^+$	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
B.G. Chittim (mm/dd/yyyy)

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





Conditions for Figure 1:

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

Chromatographic Conditions

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

Mobile phase: Gradient
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(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

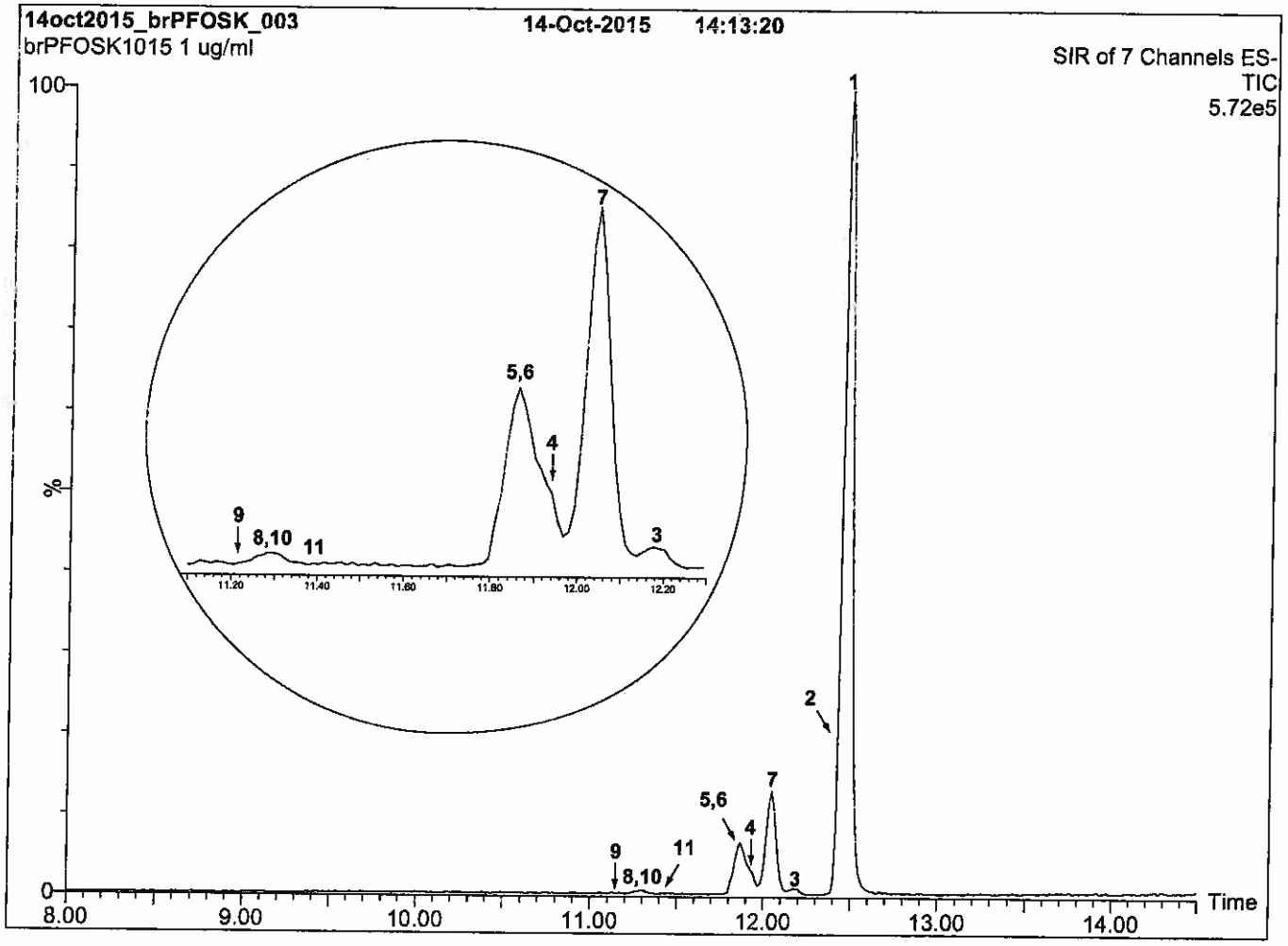
Flow: 300 µl/min

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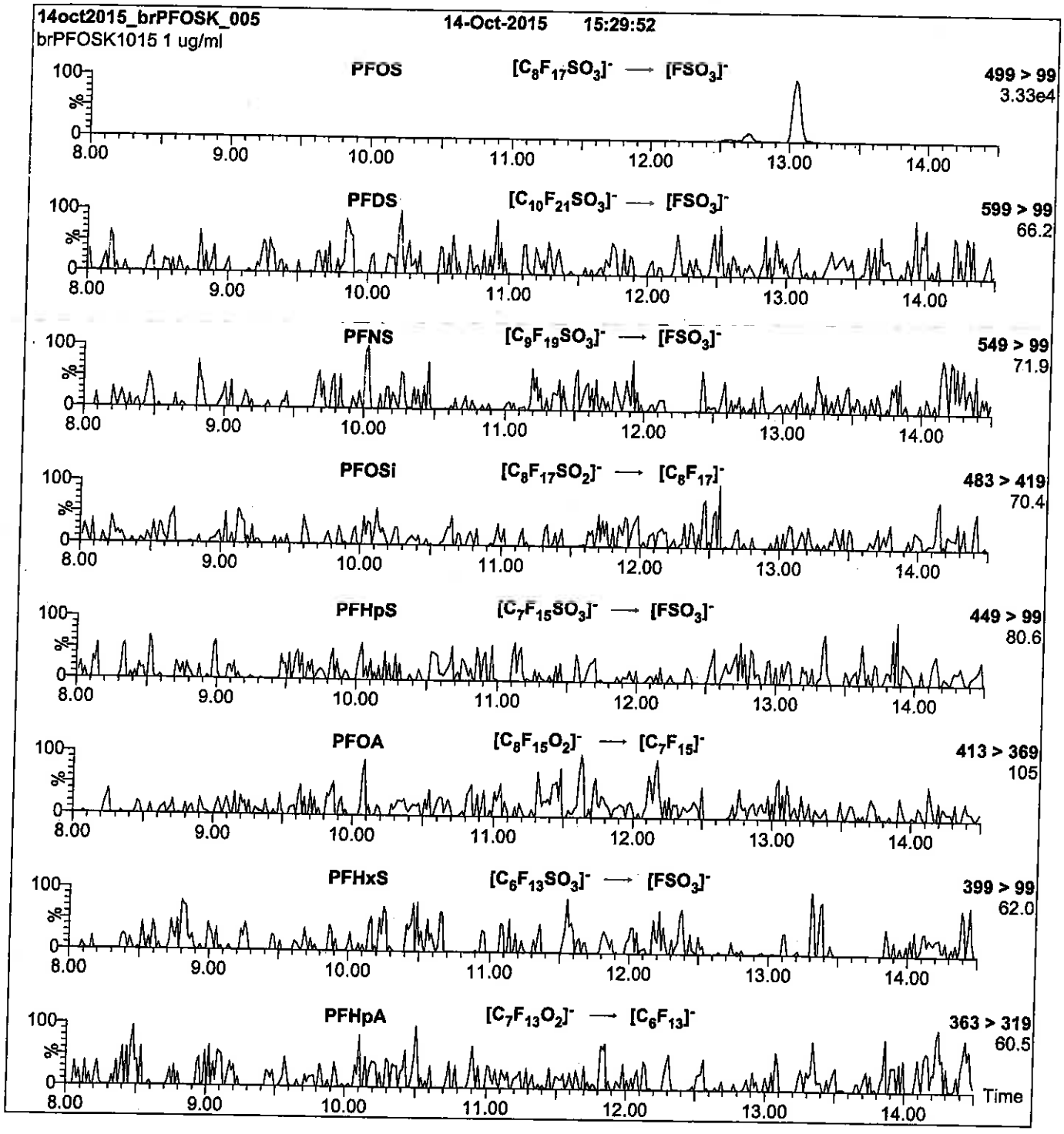
Figure 3: **br-PFOSK; LC/MS/MS Data (Selected MRM Transitions)**



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

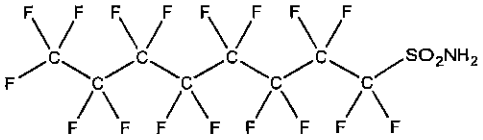
WELLINGTON LABORATORIES

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 17025 AR REFERENCE MATERIAL PRODUCER

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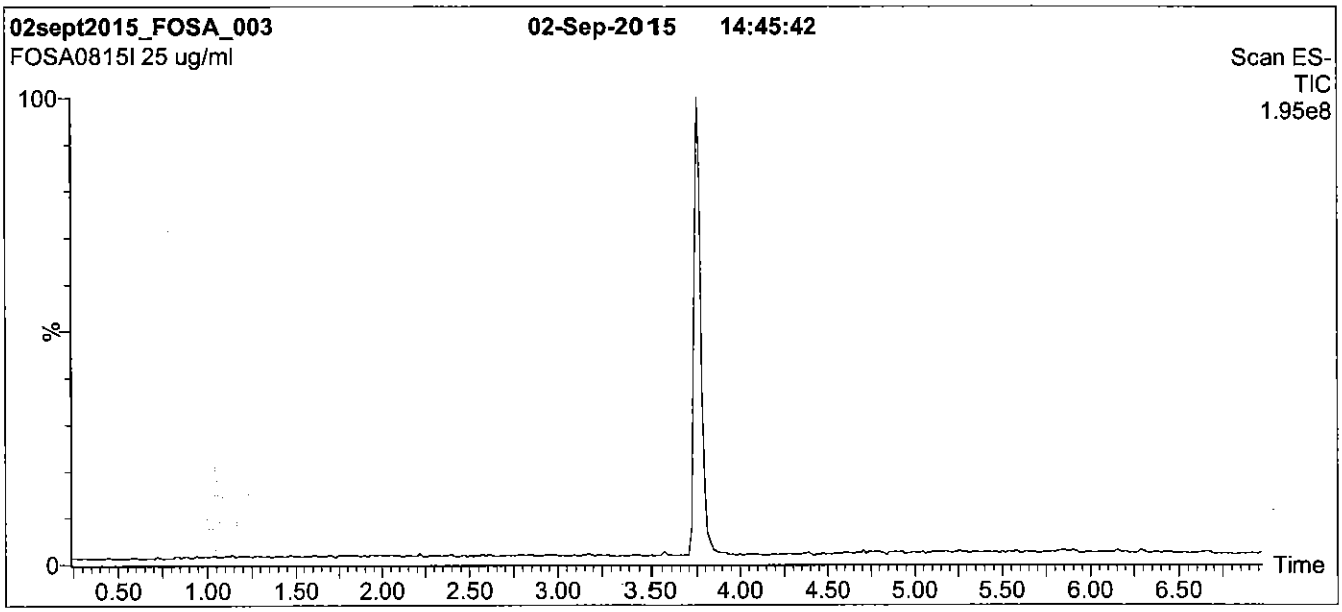
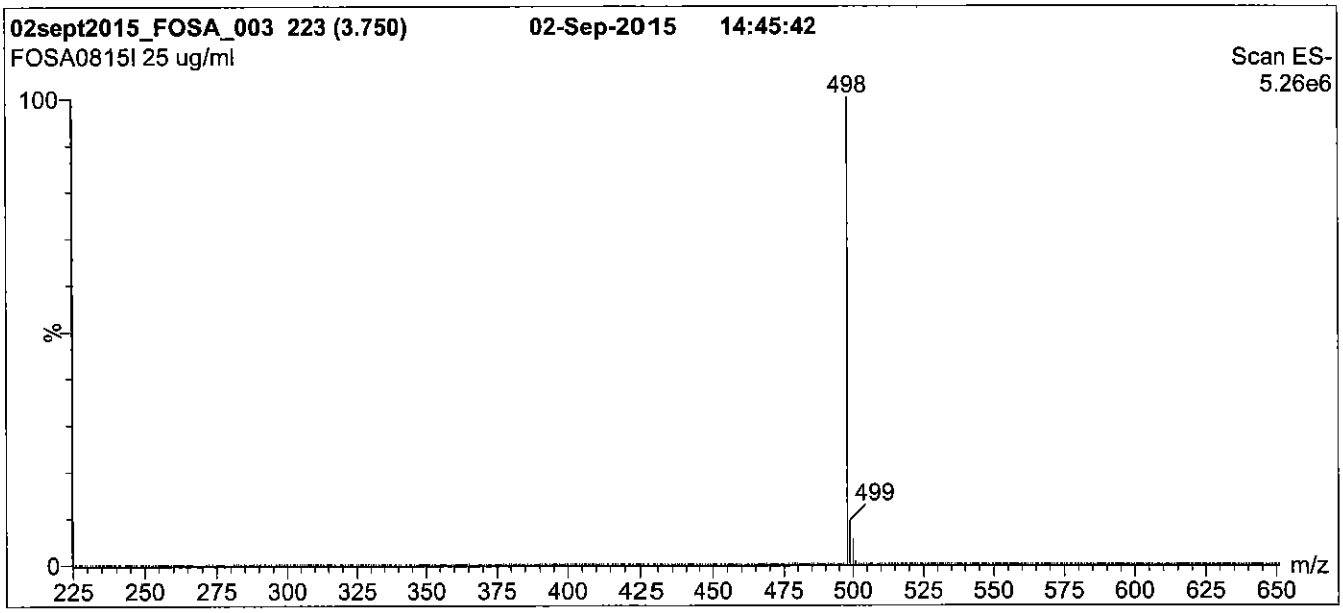
Figure 1: **FOSA-I; LC/MS Data (TIC and Mass Spectrum)**





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(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

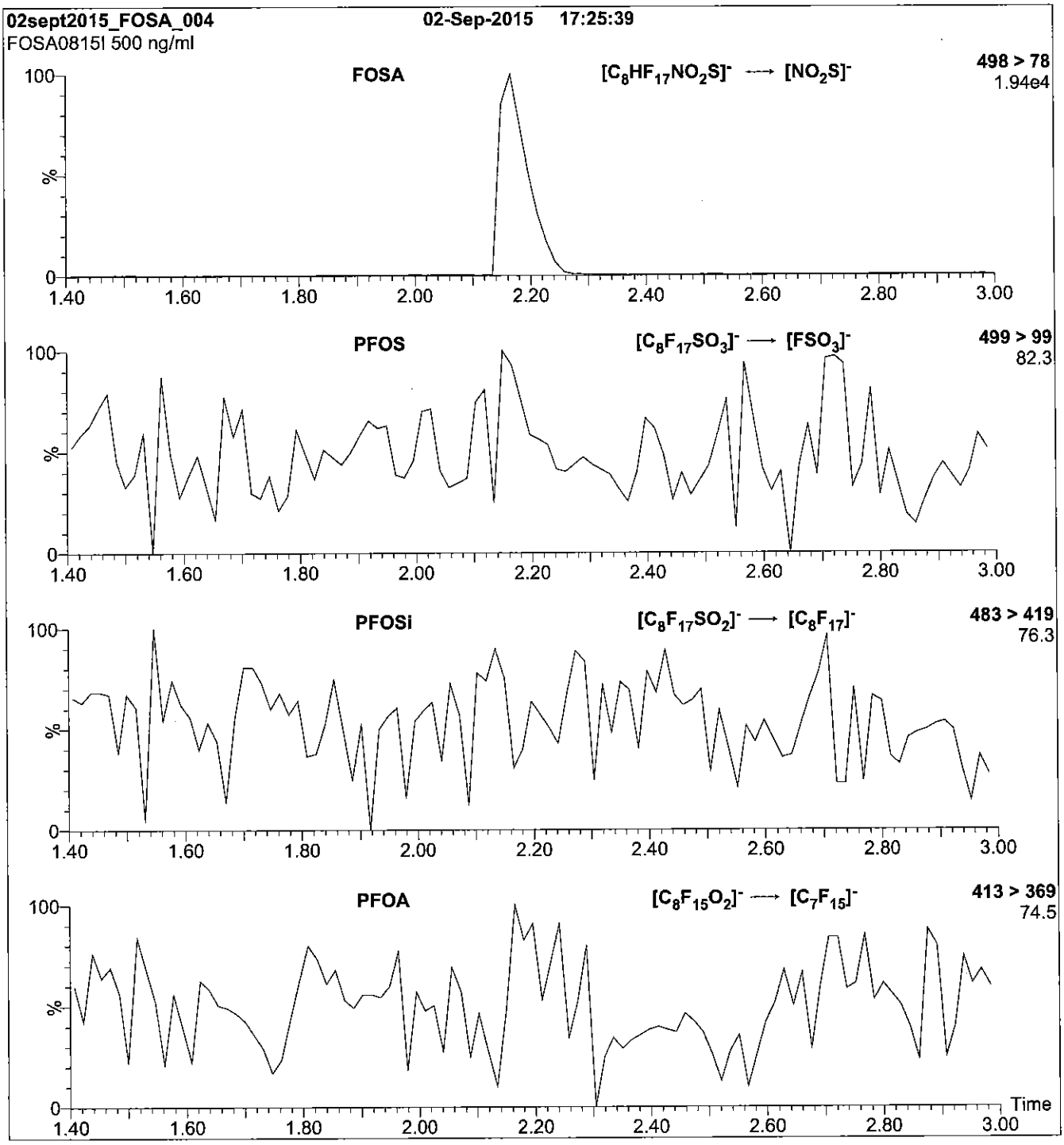
Flow: 300 µl/min

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_00005

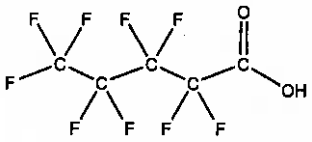
R: 7/6/16 CBW

671579
ID: LCPFPeA_00005
Exp: 01/30/20 Prpd: CBW
PF-n-pentanoic acid

WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE:	PFPeA	**LOT NUMBER:**	PFPeA0115
COMPOUND:	Perfluoro-n-pentanoic acid		
STRUCTURE:		**CAS #:**	2706-90-3



MOLECULAR FORMULA:	$C_5HF_9O_2$	**MOLECULAR WEIGHT:**	264.05
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.
- 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

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:

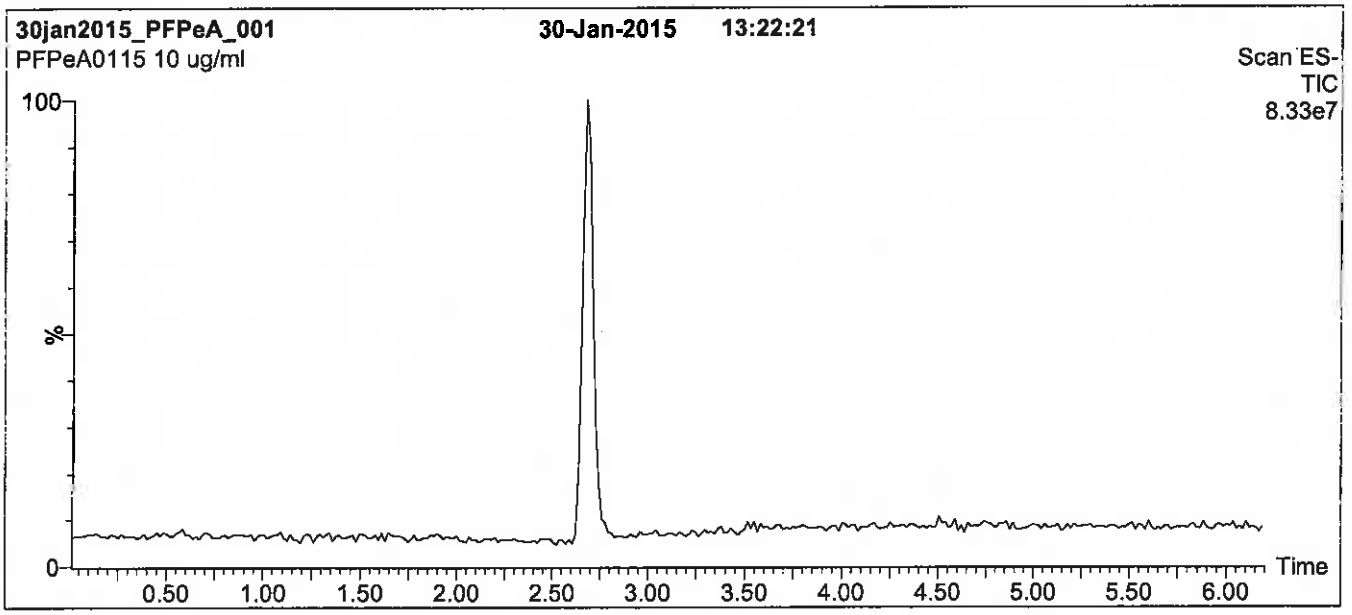
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

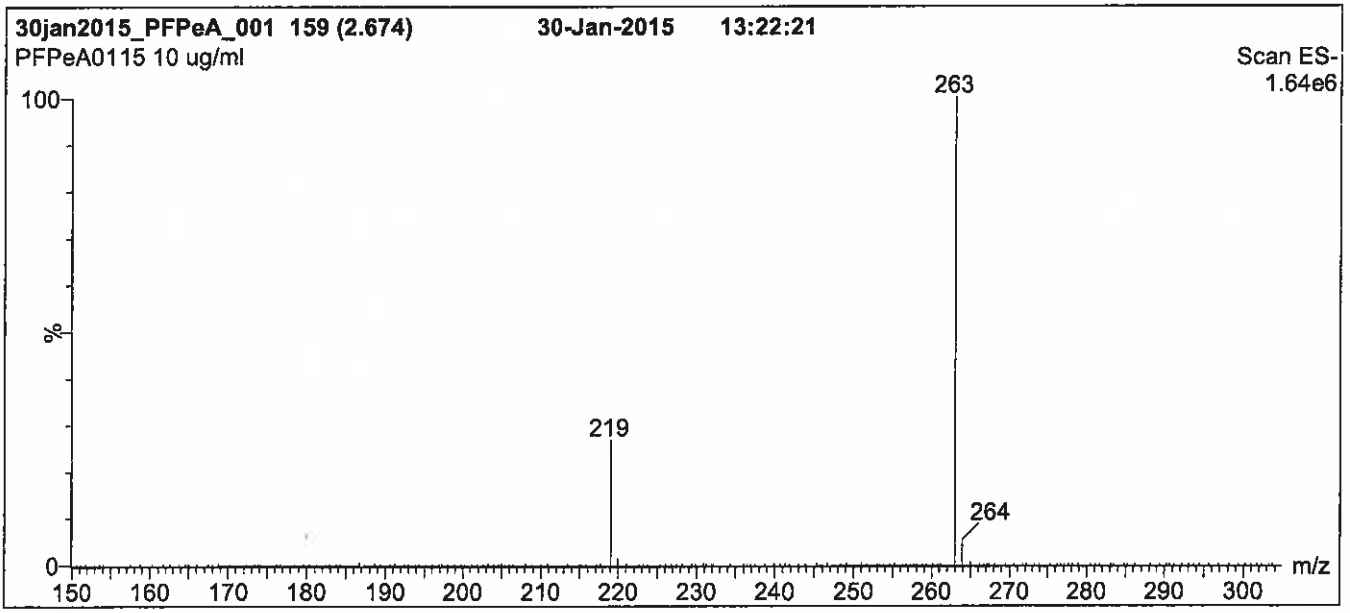
CALA

ANAB ACCREDITED

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: **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

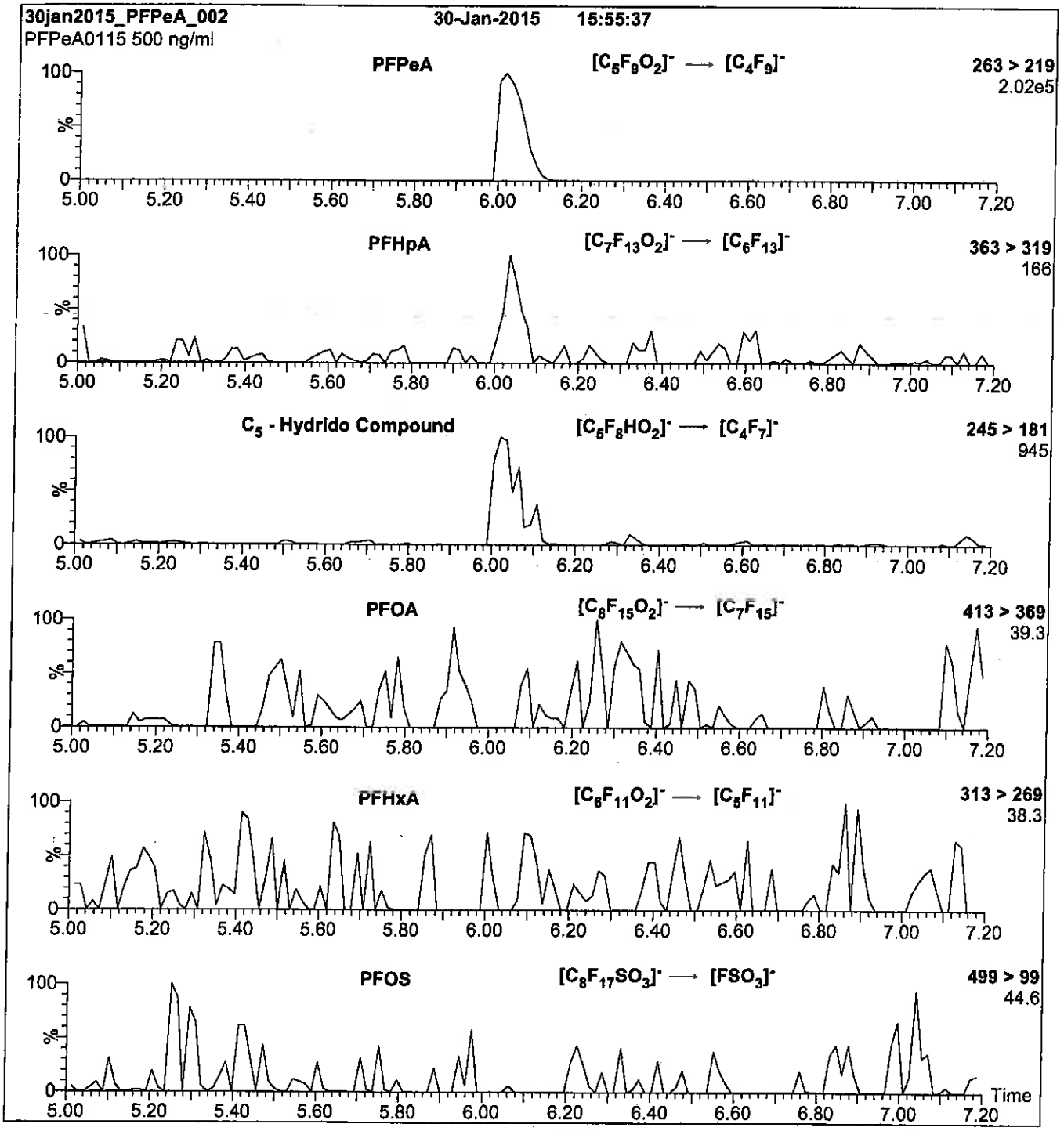
Flow: 300 µl/min

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

LCPFTeDA_00004

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

R: 4/7/16 CBW

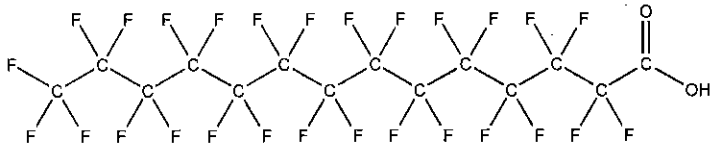
WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS
DOCUMENTATION

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

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)

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

INTENDED USE:

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HAZARDS:

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SYNTHESIS / CHARACTERIZATION:

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

HOMOGENEITY:

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

UNCERTAINTY:

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

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EXPIRY DATE / PERIOD OF VALIDITY:

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QUALITY MANAGEMENT:

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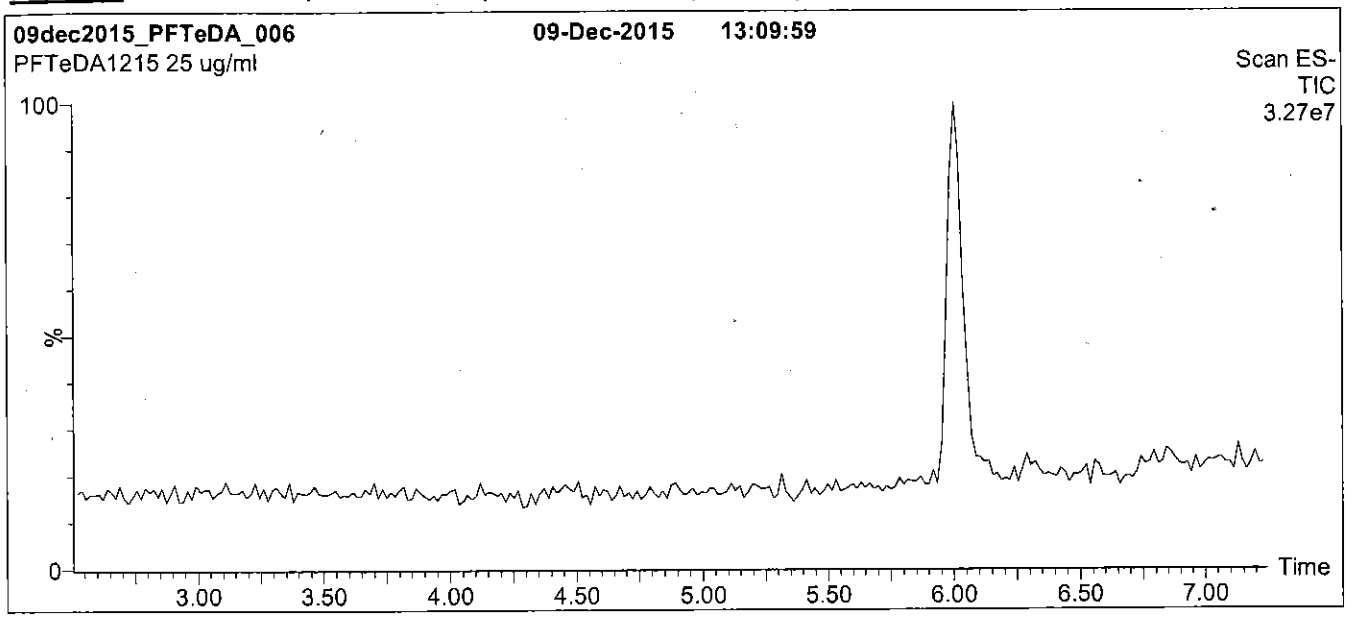
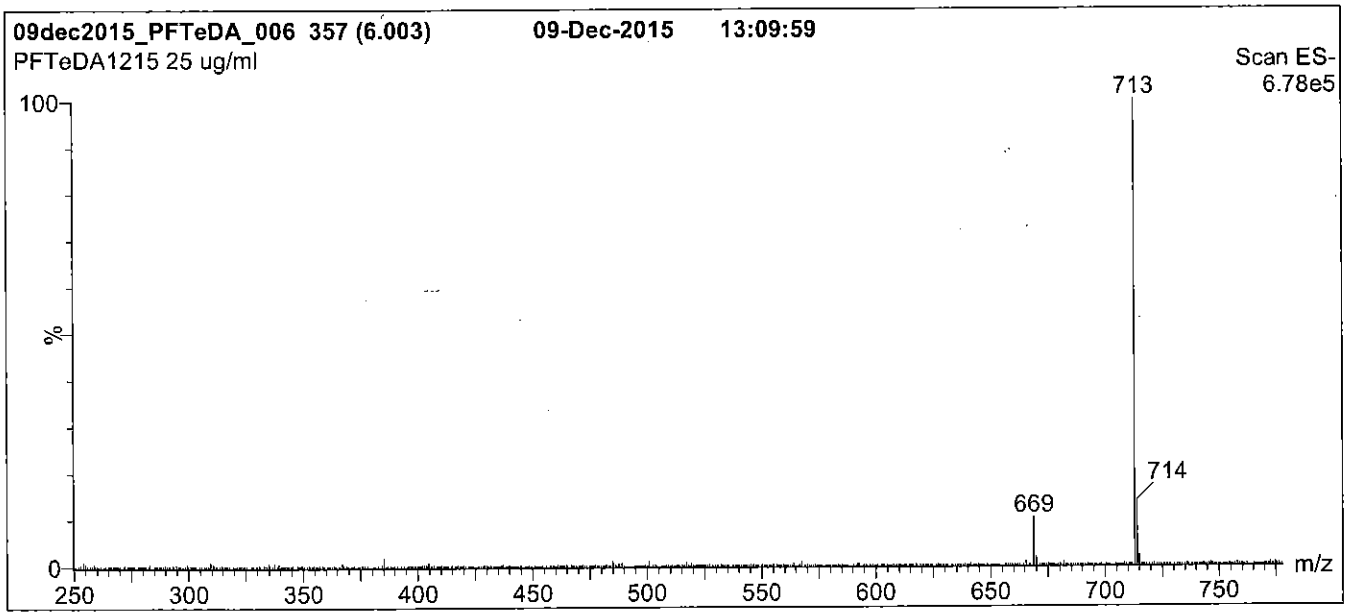
CALA Testing Accreditation No. A 1226

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: **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

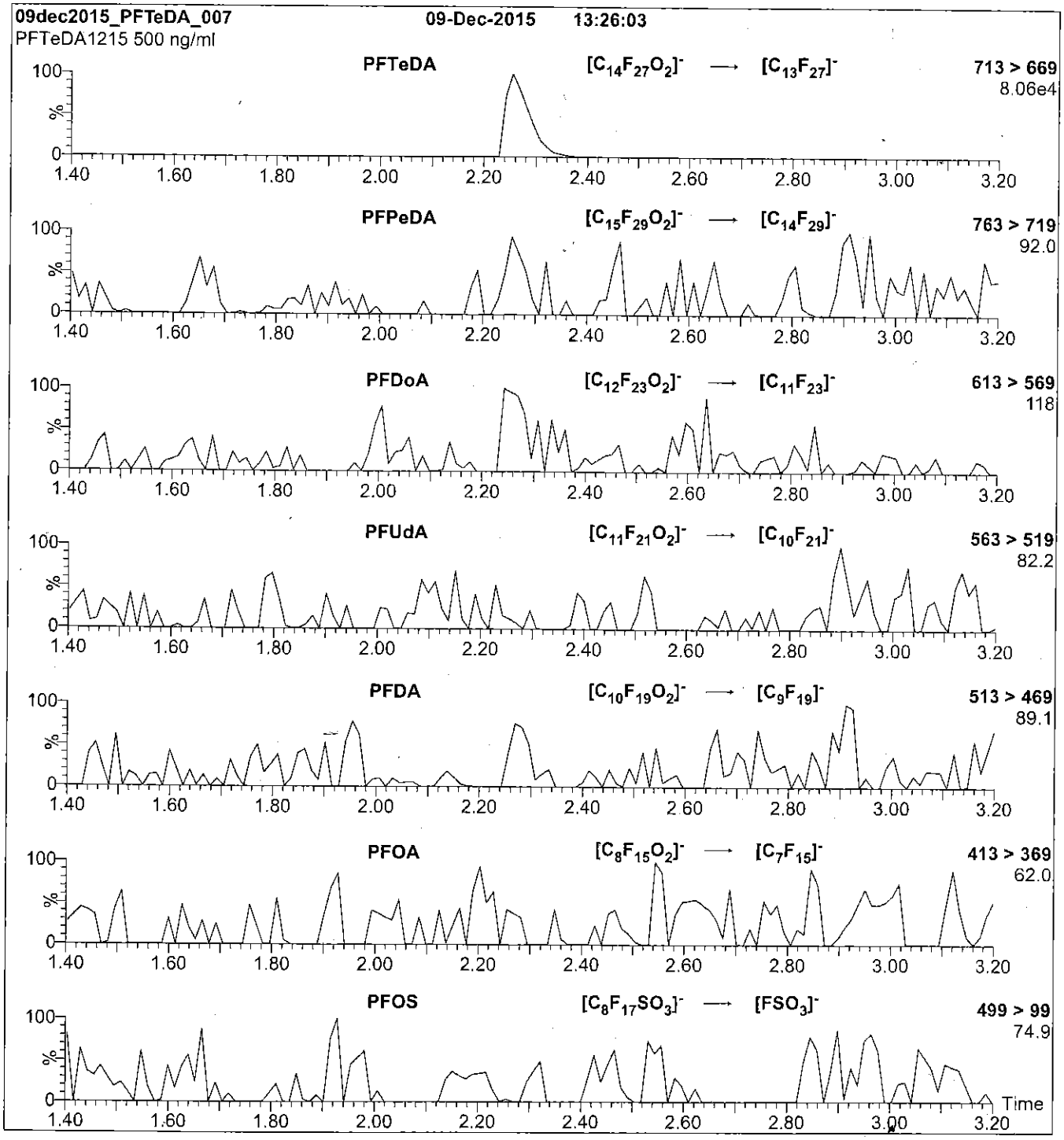
Flow: 300 µl/min

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

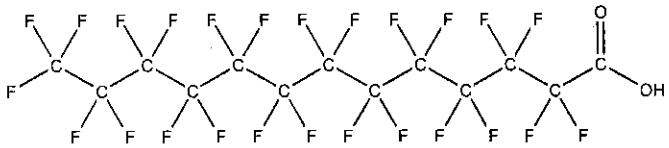
CERTIFICATE OF ANALYSIS
DOCUMENTATION

PRODUCT CODE: PFTrDA
COMPOUND: Perfluoro-n-tridecanoic acid

LOT NUMBER: PFTrDA1213

STRUCTURE:

CAS #: 72629-94-8



MOLECULAR FORMULA: $C_{13}HF_{25}O_2$
CONCENTRATION: 50 ± 2.5 µg/ml

MOLECULAR WEIGHT: 664.11
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)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON 'N1G 3M5 CANADA
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CALA Technical Accreditation No. A 1226

ANAB ACCREDITED ISO GUIDE 34 REFERENCE MATERIAL PRODUCER

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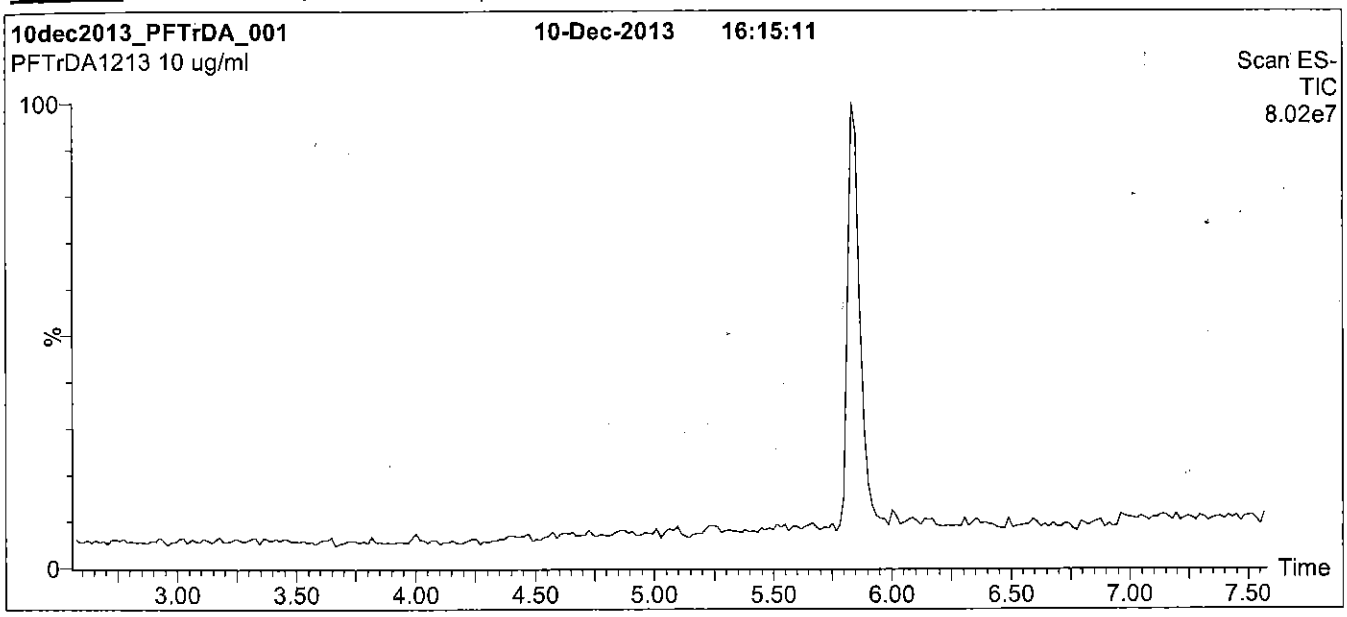
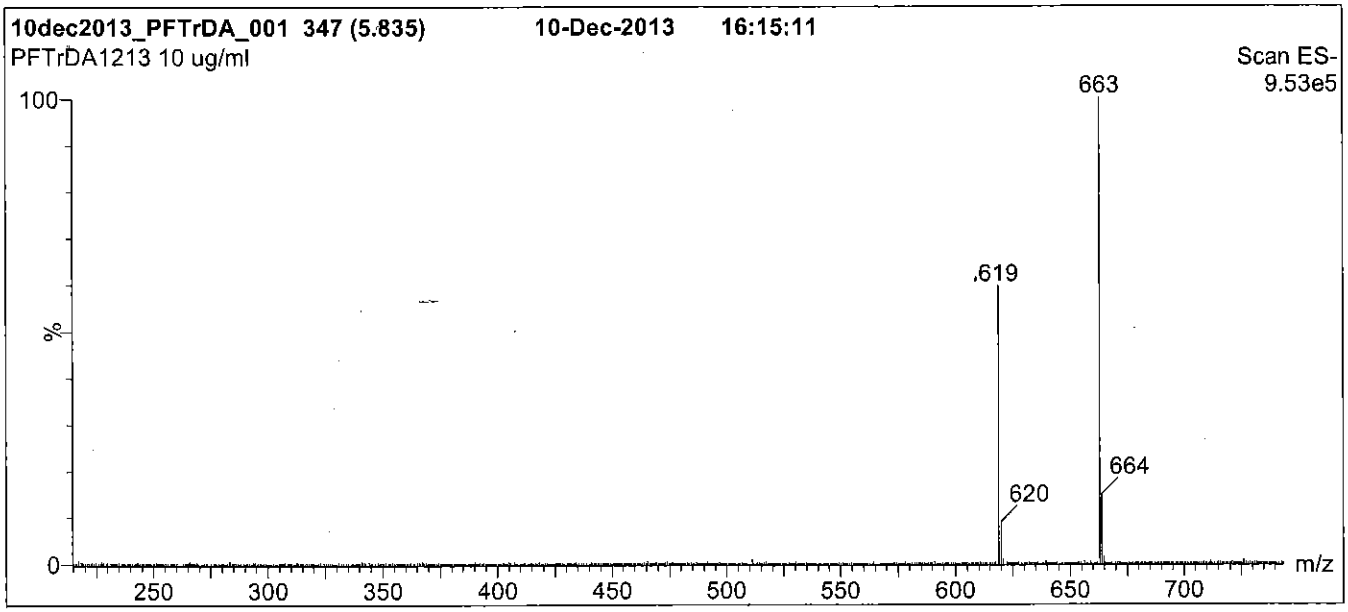
Figure 1: **PFTrDA; LC/MS Data (TIC and Mass Spectrum)**





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

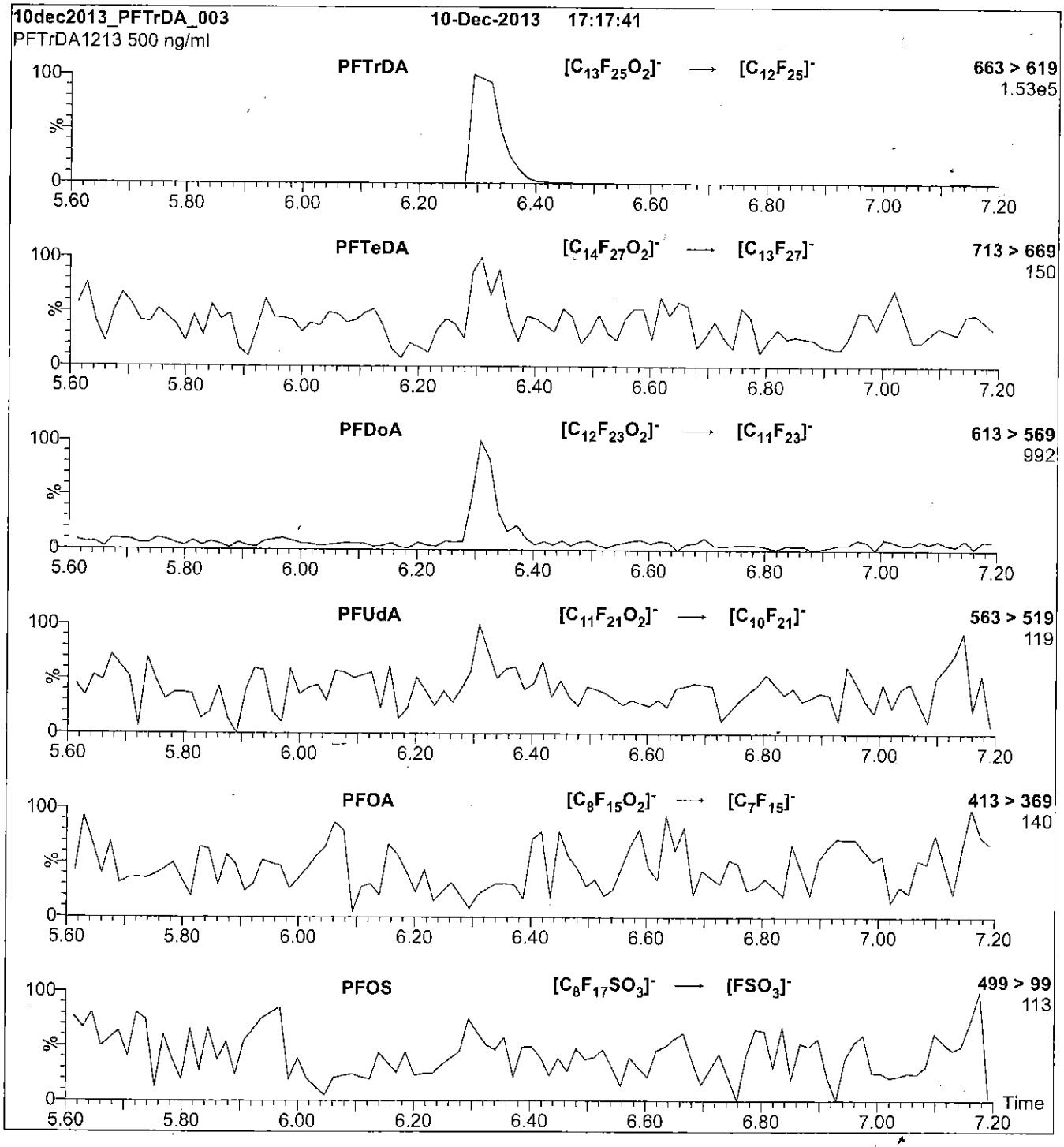
Flow: 300 µl/min

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

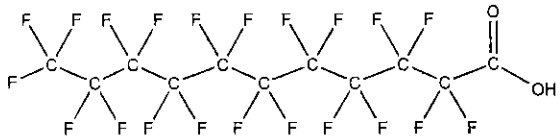
WELLINGTON LABORATORIES

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

DOCUMENTATION/ DATA ATTACHED:

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

ADDITIONAL INFORMATION:

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

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

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

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

INTENDED USE:

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

HAZARDS:

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

SYNTHESIS / CHARACTERIZATION:

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:

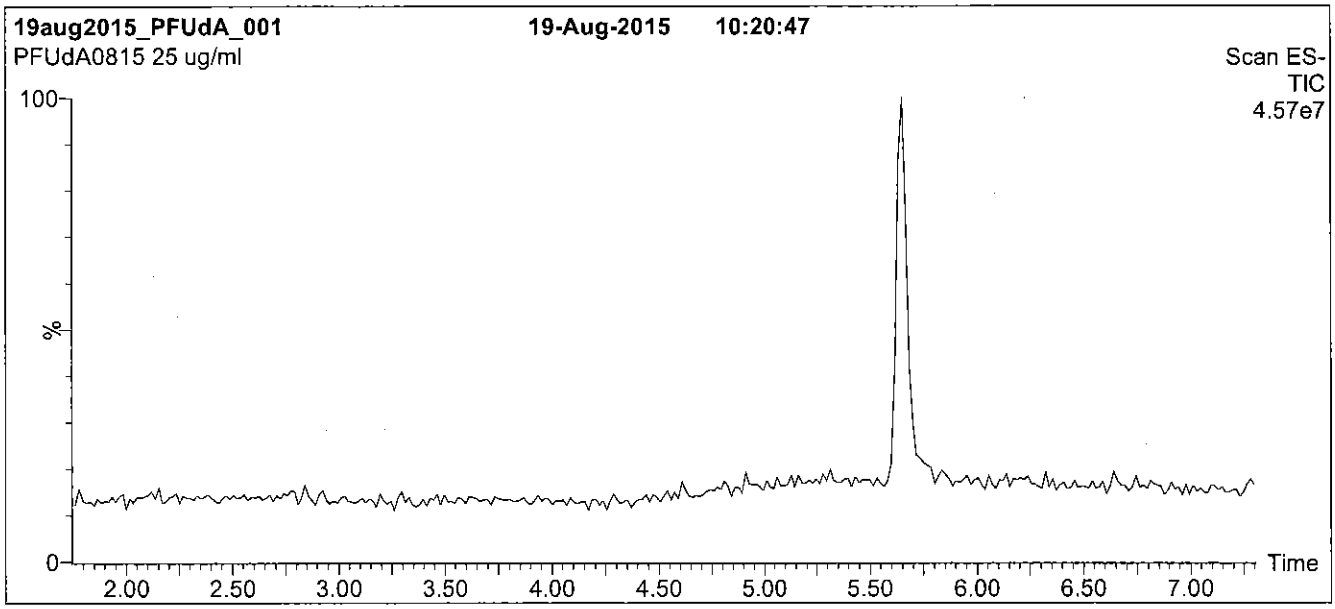
This product was produced using a Quality Management System registered to the latest versions of ISO 9001 by SAI Global, ISO/IEC 17025 by the Canadian Association for Laboratory Accreditation Inc. (CALA; A 1226), and ISO GUIDE 34 by ANSI-ASQ National Accreditation Board (ANAB; AR-1523).

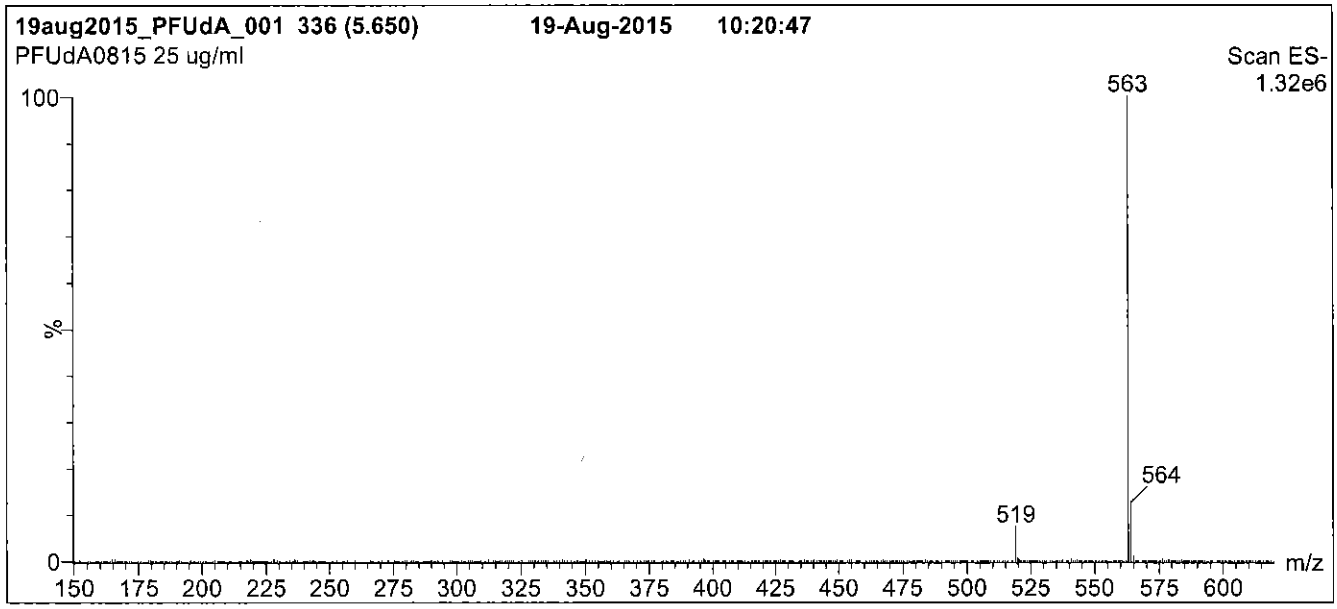
CALA Testing Accreditation No. A1226

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

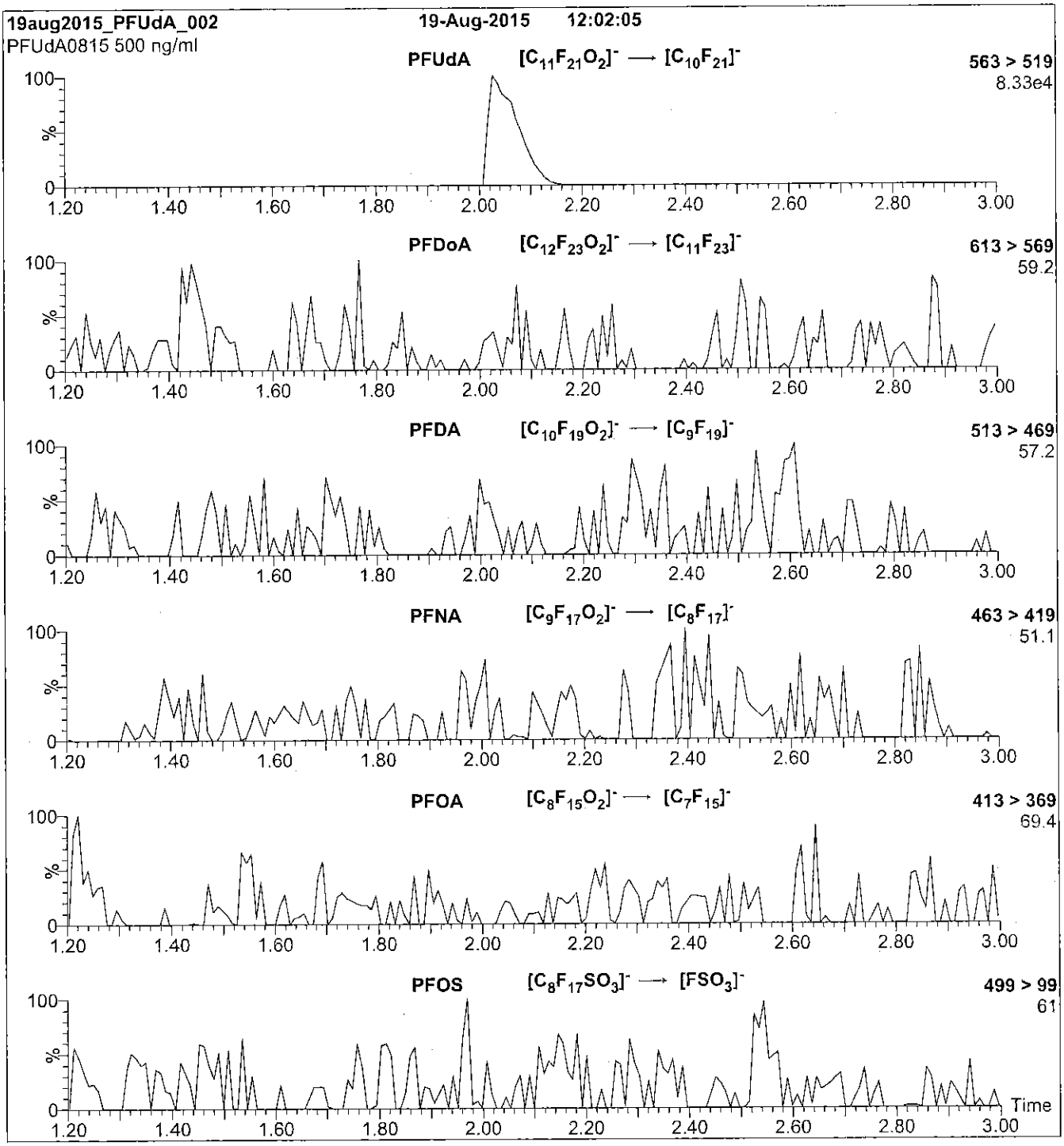
Flow: 300 µl/min

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.: 320-23542-1

SDG No.:

Matrix: Solid Level: Low

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

Client Sample ID	Lab Sample ID	PFHxS #	PFOA #	PFOS #
DPT-16-34-SO-14-15	320-23542-3	73	91	58
DPT-16-34-SO-14-15 DL	320-23542-3 DL	99	125	72
	MB 320-138291/1-A	94	111	89
	LCS 320-138291/2-A	91	107	92
DPT-16-34-SO-14-15 MS	320-23542-3 MS	72	86	54
DPT-16-34-SO-14-15 MS DL	320-23542-3 MS DL	84	110	63
DPT-16-34-SO-14-15 MSD	320-23542-3 MSD	71	84	60
DPT-16-34-SO-14-15 MSD DL	320-23542-3 MSD DL	82	108	67

	QC LIMITS
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150

Column to be used to flag recovery values

FORM II 537 (Modified)

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Matrix: Water Level: Low

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

Client Sample ID	Lab Sample ID	PFHxS #	PFOA #	PFOS #
DPT-16-01-GW-17-21	320-23542-1	96	95	86
DPT-16-01-GW-17-21 DL	320-23542-1 DL	129	110	114
DPT-16-05-GW-17-21	320-23542-2	81	77	63
DPT-16-05-GW-17-21 DL	320-23542-2 DL	154 Q	125	146
DPT-16-34-GW-31-35	320-23542-4	52	54	74
DPT-16-34-GW-31-35 DL	320-23542-4 DL	115	101	125
	MB 320-138217/1-A	108	117	105
	LCS 320-138217/2-A	74	78	72
DPT-16-05-GW-17-21 -MS MS	320-23542-2 MS	76	43	59
DPT-16-05-GW-17-21 -MS MS DL	320-23542-2 MS DL	156 Q	78	145
DPT-16-05-GW-17-21 -MSD MSD	320-23542-2 MSD	82	80	65
DPT-16-05-GW-17-21 -MSD MSD DL	320-23542-2 MSD DL	116	101	99

	QC LIMITS
PFHxS = 18O2 PFHxS	25-150
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	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.: 320-23542-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 20NOV2016D_015.d

Lab ID: LCS 320-138217/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0400	0.0392	98	60-140	
Perfluorooctane Sulfonate (PFOS)	0.0371	0.0347	94	60-140	
13C4 PFOA	0.100	0.0780	78	25-150	
13C4 PFOS	0.0956	0.0687	72	25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0354	0.0365	103	50-150	
18O2 PFHxS	0.0946	0.0703	74	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 20NOV2016D_006.d

Lab ID: LCS 320-138291/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	3.98	4.37	110	60-140	
Perfluorooctane Sulfonate (PFOS)	3.69	3.90	106	60-140	
13C4 PFOA	9.94	10.7	107	25-150	
13C4 PFOS	9.50	8.72	92	25-150	
Perfluorobutanesulfonic acid (PFBS)	3.51	4.70	134	50-150	
18O2 PFHxS	9.40	8.60	91	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 20NOV2016D_018.d

Lab ID: 320-23542-2 MS Client ID: DPT-16-05-GW-17-21-MS MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0398	0.19	0.244	145	60-140	4
Perfluorooctane Sulfonate (PFOS)	0.0369	2.2	2.43	610	60-140	E 4
13C4 PFOA	0.0995	0.074	0.0426	43	25-150	
13C4 PFOS	0.0951	0.058	0.0558	59	25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0352	0.050	0.107	161	50-150	J M
18O2 PFHxS	0.0941	0.074	0.0714	76	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 02DEC2016B_002.d

Lab ID: 320-23542-2 MS DL Client ID: DPT-16-05-GW-17-21-MS MS DL

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0398	0.21 J	0.268	140	60-140	4 D
Perfluorooctane Sulfonate (PFOS)	0.0369	2.8	3.08	749	60-140	4 D
13C4 PFOA	0.0995	0.12	0.0773	78	25-150	
13C4 PFOS	0.0951	0.13	0.138	145	25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0352	0.19 U	0.20 U	NC	50-150	
18O2 PFHxS	0.0941	0.14	0.146	156	25-150	Q

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 20NOV2016D_008.d

Lab ID: 320-23542-3 MS Client ID: DPT-16-34-SO-14-15 MS

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	5.04	3.2	12.2	179	60-140	M J
Perfluorooctane Sulfonate (PFOS)	4.68	34	67.4	719	60-140	E 4
13C4 PFOA	12.6	11	10.8	86	25-150	
13C4 PFOS	12.0	6.9	6.53	54	25-150	
Perfluorobutanesulfonic acid (PFBS)	4.46	0.37 U	6.08	136	50-150	
18O2 PFHxS	11.9	8.6	8.62	72	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 02DEC2016B_007.d

Lab ID: 320-23542-3 MS DL Client ID: DPT-16-34-SO-14-15 MS DL

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	5.04	3.6 J	12.7	182	60-140	J D
Perfluorooctane Sulfonate (PFOS)	4.68	35	69.2	740	60-140	4 D
13C4 PFOA	12.6	16	13.8	110	25-150	
13C4 PFOS	12.0	8.6	7.60	63	25-150	
Perfluorobutanesulfonic acid (PFBS)	4.46	3.7 U	4.90 J	110	50-150	D
18O2 PFHxS	11.9	12	9.97	84	25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 20NOV2016D_019.d

Lab ID: 320-23542-2 MSD Client ID: DPT-16-05-GW-17-21-MSD MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0404	0.210	59	15	30	60-140	4 M
Perfluorooctane Sulfonate (PFOS)	0.0374	2.05	-410	17	30	60-140	E 4
13C4 PFOA	0.101	0.0805	80			25-150	
13C4 PFOS	0.0964	0.0631	65			25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0357	0.0881	106	19	30	50-150	M
18O2 PFHxS	0.0954	0.0785	82			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 02DEC2016B_003.d

Lab ID: 320-23542-2 MSD DL Client ID: DPT-16-05-GW-17-21-MSD MSD DL

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.0404	0.214 J	4	22	30	60-140	4 D
Perfluorooctane Sulfonate (PFOS)	0.0374	2.79	-24	10	30	60-140	4 D
13C4 PFOA	0.101	0.102	101			25-150	
13C4 PFOS	0.0964	0.0959	99			25-150	
Perfluorobutanesulfonic acid (PFBS)	0.0357	0.20 U	NC	NC	30	50-150	
18O2 PFHxS	0.0954	0.111	116			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 20NOV2016D_009.d

Lab ID: 320-23542-3 MSD Client ID: DPT-16-34-SO-14-15 MSD

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	5.00	13.1	198	7	30	60-140	M J
Perfluorooctane Sulfonate (PFOS)	4.64	59.2	549	13	30	60-140	E 4
13C4 PFOA	12.5	10.5	84			25-150	
13C4 PFOS	12.0	7.17	60			25-150	
Perfluorobutanesulfonic acid (PFBS)	4.42	5.82	132	4	30	50-150	
18O2 PFHxS	11.8	8.38	71			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: 02DEC2016B_008.d

Lab ID: 320-23542-3 MSD DL Client ID: DPT-16-34-SO-14-15 MSD DL

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	5.00	13.1	191	3	30	60-140	J D
Perfluorooctane Sulfonate (PFOS)	4.64	63.2	617	9	30	60-140	4 D
13C4 PFOA	12.5	13.6	108			25-150	
13C4 PFOS	12.0	8.06	67			25-150	
Perfluorobutanesulfonic acid (PFBS)	4.42	4.97 J	113	2	30	50-150	D
18O2 PFHxS	11.8	9.64	82			25-150	

Column to be used to flag recovery and RPD values

FORM III 537 (Modified)

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Lab File ID: 20NOV2016D_014.d Lab Sample ID: MB 320-138217/1-A

Matrix: Water Date Extracted: 11/17/2016 08:49

Instrument ID: A8_N Date Analyzed: 11/20/2016 22:18

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-138217/2-A	20NOV2016D_015.d	11/20/2016 22:25
DPT-16-01-GW-17-21	320-23542-1	20NOV2016D_016.d	11/20/2016 22:33
DPT-16-05-GW-17-21	320-23542-2	20NOV2016D_017.d	11/20/2016 22:40
DPT-16-05-GW-17-21-MS MS	320-23542-2 MS	20NOV2016D_018.d	11/20/2016 22:48
DPT-16-05-GW-17-21-MSD MSD	320-23542-2 MSD	20NOV2016D_019.d	11/20/2016 22:55
DPT-16-34-GW-31-35	320-23542-4	20NOV2016D_020.d	11/20/2016 23:03
DPT-16-05-GW-17-21 DL	320-23542-2 DL	02DEC2016B_001.d	12/02/2016 12:59
DPT-16-05-GW-17-21-MS MS DL	320-23542-2 MS DL	02DEC2016B_002.d	12/02/2016 13:06
DPT-16-05-GW-17-21-MSD MSD DL	320-23542-2 MSD DL	02DEC2016B_003.d	12/02/2016 13:14
DPT-16-01-GW-17-21 DL	320-23542-1 DL	02DEC2016B_004.d	12/02/2016 13:22
DPT-16-34-GW-31-35 DL	320-23542-4 DL	02DEC2016C_011.d	12/02/2016 16:14

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Lab File ID: 20NOV2016D_005.d Lab Sample ID: MB 320-138291/1-A

Matrix: Solid Date Extracted: 11/17/2016 12:49

Instrument ID: A8_N Date Analyzed: 11/20/2016 21:10

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 320-138291/2-A	20NOV2016D_006.d	11/20/2016 21:18
DPT-16-34-SO-14-15	320-23542-3	20NOV2016D_007.d	11/20/2016 21:25
DPT-16-34-SO-14-15 MS	320-23542-3 MS	20NOV2016D_008.d	11/20/2016 21:33
DPT-16-34-SO-14-15 MSD	320-23542-3 MSD	20NOV2016D_009.d	11/20/2016 21:40
DPT-16-34-SO-14-15 DL	320-23542-3 DL	02DEC2016B_006.d	12/02/2016 13:37
DPT-16-34-SO-14-15 MS DL	320-23542-3 MS DL	02DEC2016B_007.d	12/02/2016 13:44
DPT-16-34-SO-14-15 MSD DL	320-23542-3 MSD DL	02DEC2016B_008.d	12/02/2016 13:52

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-01-GW-17-21 Lab Sample ID: 320-23542-1

Matrix: Water Lab File ID: 20NOV2016D_016.d

Analysis Method: 537 (Modified) Date Collected: 11/14/2016 10:30

Extraction Method: 3535 Date Extracted: 11/17/2016 08:49

Sample wt/vol: 240.6(mL) Date Analyzed: 11/20/2016 22:33

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

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

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

Analysis Batch No.: 138814 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.062	M	0.0026	0.0021	0.00078
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*0.86*	*E*	*0.0042*	0.0031	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.011	M	0.0026	0.0021	0.00095

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	95		25-150
STL00991	13C4 PFOS	86		25-150
STL00994	18O2 PFHxS	96		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_016.d
Lims ID: 320-23542-A-1-A
Client ID: DPT-16-01-GW-17-21
Sample Type: Client
Inject. Date: 20-Nov-2016 22:33:19 ALS Bottle#: 21 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23542-a-1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 15:49:25 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 15:49:25

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.791	1.791	0.0	1.000	1514435	5.14				M
298.90 > 99.00	1.791	1.791	0.0	1.000	648843		2.33(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.387	2.382	0.005		9191228	45.5		96.2	523603	
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.732	2.733	-0.001	1.000	4080092	29.9			51238	M
413.00 > 169.00	2.732	2.733	-0.001	1.000	2758151		1.48(0.90-1.10)		130044	
D 14 13C4 PFOA										
417.00 > 372.00	2.732	2.733	-0.001		6498915	47.6		95.2	687147	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.103	3.096	0.007	1.000	60206367	413.5			1007678	E
499.00 > 99.00	3.103	3.096	0.007	1.000	13735025		4.38(0.90-1.10)		1029863	
D 17 13C4 PFOS										
503.00 > 80.00	3.103	3.096	0.007		6398614	41.1		86.0	149122	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

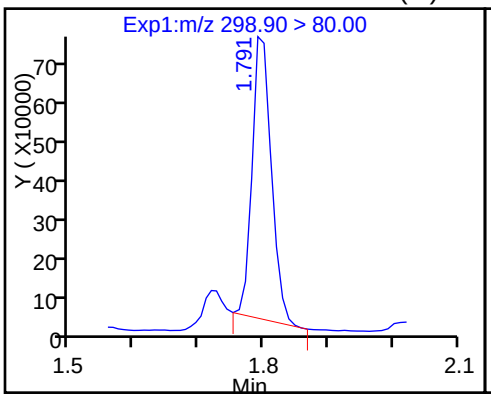
Report Date: 23-Nov-2016 15:49:26 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

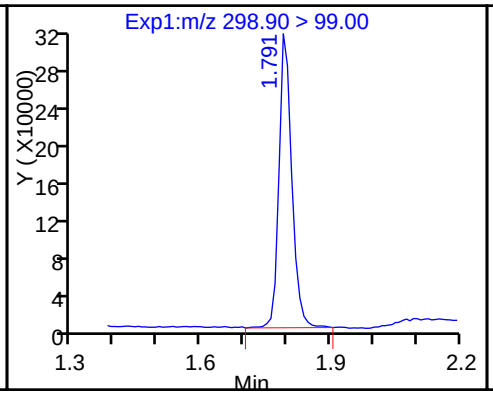
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_016.d

Injection Date:	20-Nov-2016 22:33:19	Instrument ID:	A8_N		
Lims ID:	320-23542-A-1-A	Lab Sample ID:	320-23542-1		
Client ID:	DPT-16-01-GW-17-21				
Operator ID:	A8-PC\A8	ALS Bottle#:	21	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

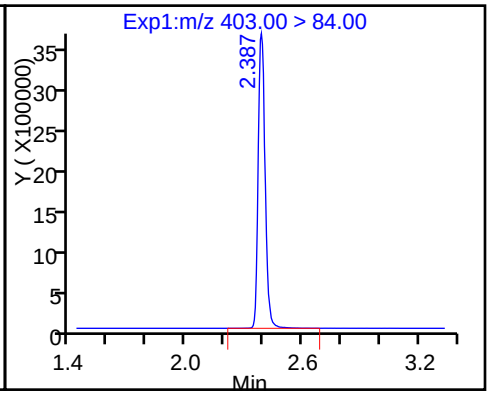
5 Perfluorobutanesulfonic acid (M)



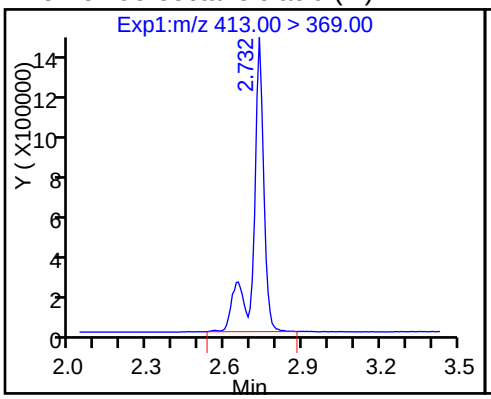
5 Perfluorobutanesulfonic acid



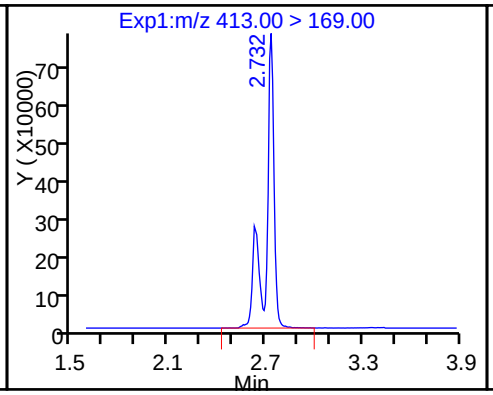
D 10 18O2 PFHxS



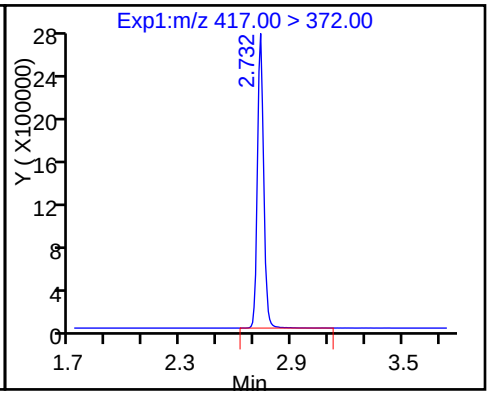
15 Perfluorooctanoic acid (M)



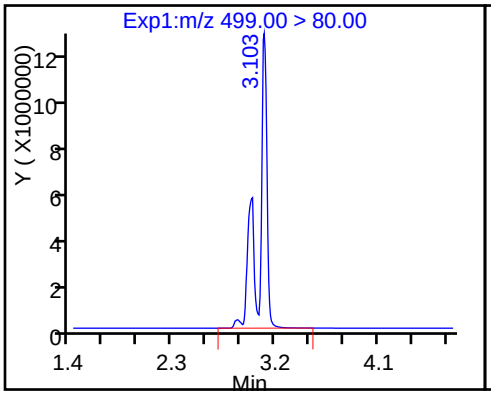
15 Perfluorooctanoic acid



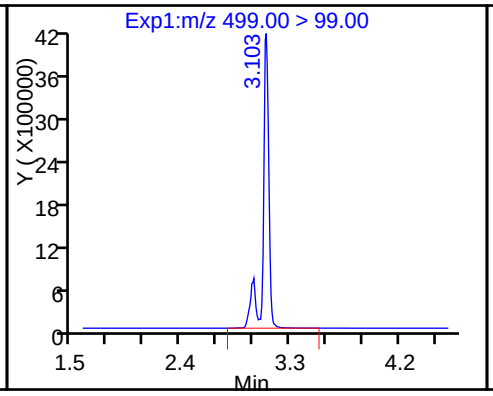
D 14 13C4 PFOA



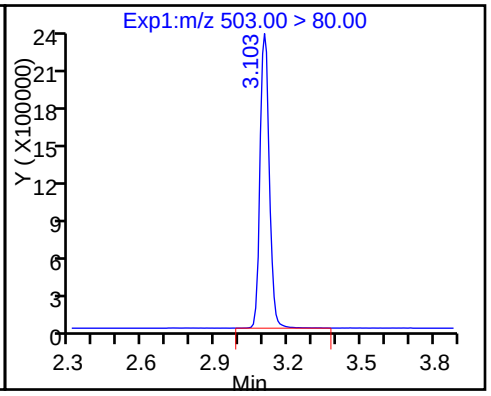
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

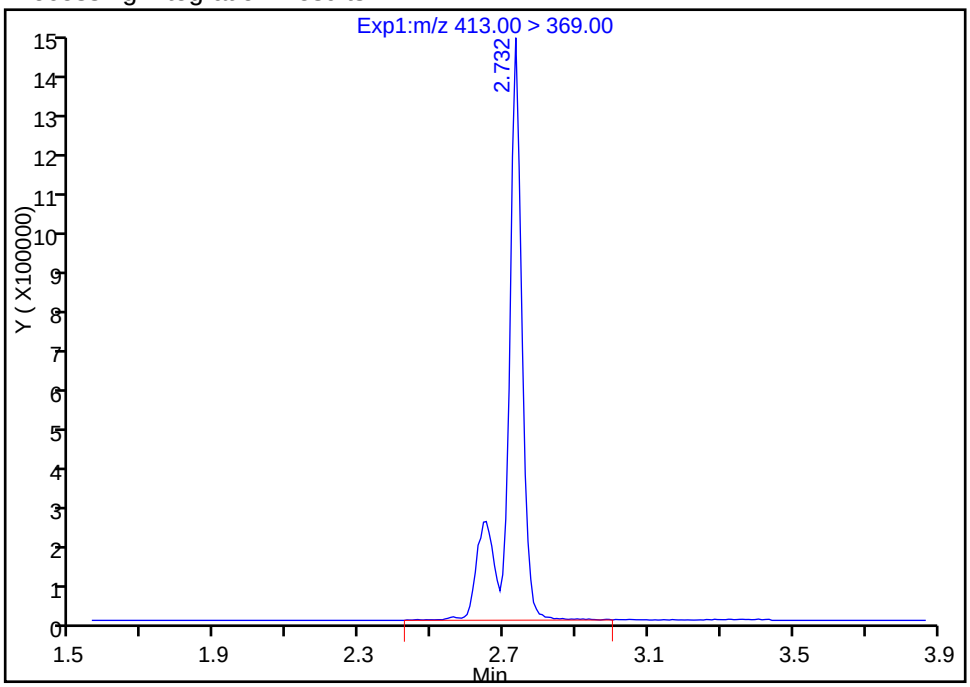
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_016.d
Injection Date: 20-Nov-2016 22:33:19 Instrument ID: A8_N
Lims ID: 320-23542-A-1-A Lab Sample ID: 320-23542-1
Client ID: DPT-16-01-GW-17-21
Operator ID: A8-PC\A8 ALS Bottle#: 21 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

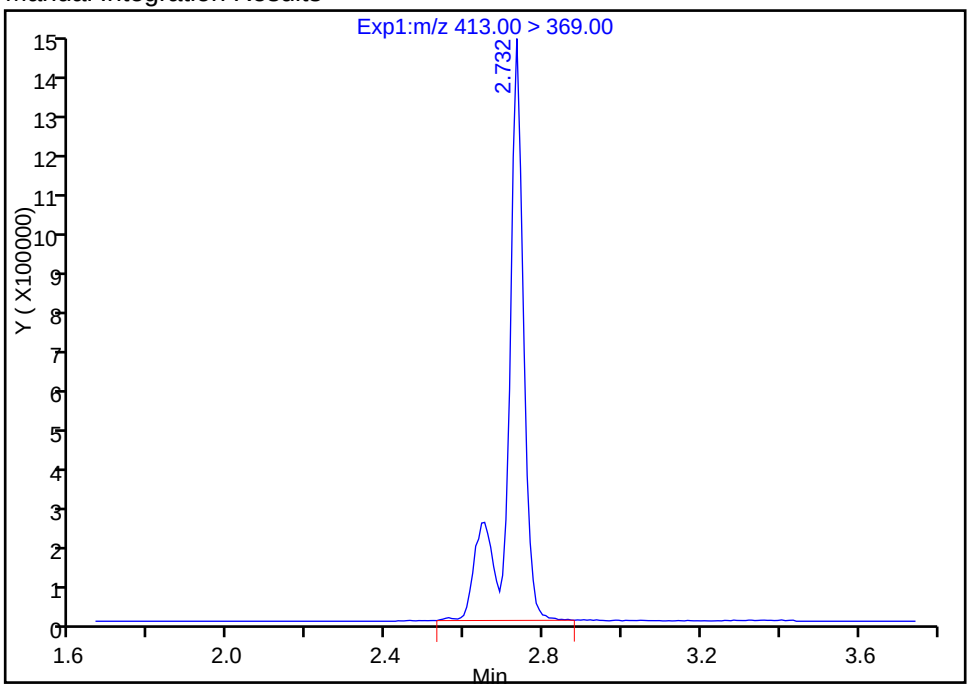
Processing Integration Results

RT: 2.73
Area: 4133135
Amount: 30.281606
Amount Units: ng/ml



Manual Integration Results

RT: 2.73
Area: 4080092
Amount: 29.892984
Amount Units: ng/ml



Reviewer: changnoit, 23-Nov-2016 15:49:25
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

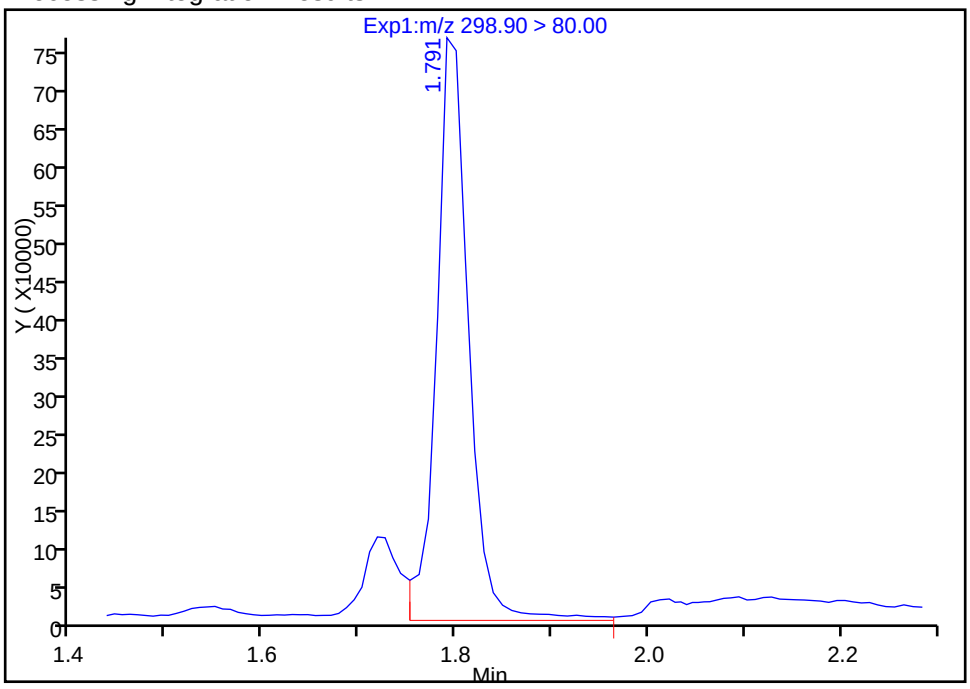
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_016.d				
Injection Date:	20-Nov-2016 22:33:19	Instrument ID:	A8_N		
Lims ID:	320-23542-A-1-A	Lab Sample ID:	320-23542-1		
Client ID:	DPT-16-01-GW-17-21				
Operator ID:	A8-PC\A8	ALS Bottle#:	21	Worklist Smp#:	16
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

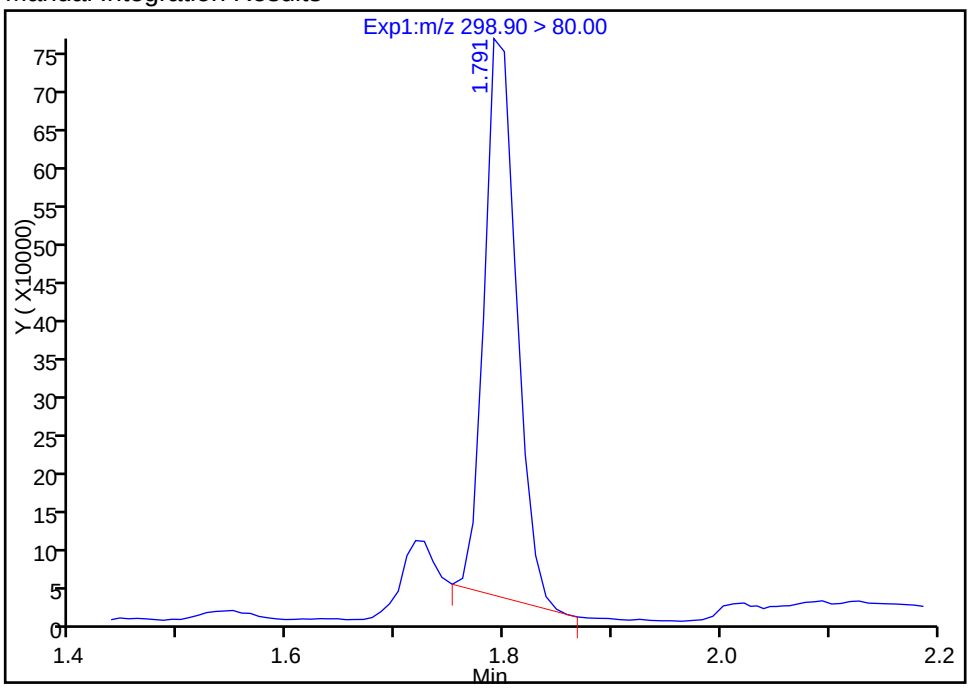
Processing Integration Results

RT: 1.79
Area: 1768418
Amount: 5.999246
Amount Units: ng/ml



Manual Integration Results

RT: 1.79
Area: 1514435
Amount: 5.137625
Amount Units: ng/ml



Reviewer: changnoit, 23-Nov-2016 15:49:25

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-01-GW-17-21 DL Lab Sample ID: 320-23542-1 DL

Matrix: Water Lab File ID: 02DEC2016B_004.d

Analysis Method: 537 (Modified) Date Collected: 11/14/2016 10:30

Extraction Method: 3535 Date Extracted: 11/17/2016 08:49

Sample wt/vol: 240.6(mL) Date Analyzed: 12/02/2016 13:22

Con. Extract Vol.: 0.5(mL) Dilution Factor: 10

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

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

Analysis Batch No.: 140382 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.066*	*D*	*0.026*	0.021	*0.0078*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.98	D	0.042	0.031	0.013
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.021*	*U*	*0.026*	0.021	*0.0095*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	110		25-150
STL00991	13C4 PFOS	114		25-150
STL00994	18O2 PFHxS	129		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_004.d
Lims ID: 320-23542-A-1-A
Client ID: DPT-16-01-GW-17-21
Sample Type: Client
Inject. Date: 02-Dec-2016 13:22:02 ALS Bottle#: 4 Worklist Smp#: 27
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23542-A-1-A 10X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:55:36 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 15:01:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.916	1.961	-0.045	1.000	274972	0.4359				
298.90 > 99.00	1.916	1.961	-0.045	1.000	120300		2.29(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.559	2.614	-0.055		1849400	6.11		12.9	389202	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.914	2.984	-0.070	1.000	778389	3.17			9355	
413.00 > 169.00	2.922	2.984	-0.062	1.003	516345		1.51(0.90-1.10)		24963	
D 14 13C4 PFOA										
417.00 > 372.00	2.914	2.984	-0.070		1203801	5.49		11.0	158086	
D 17 13C4 PFOS										
503.00 > 80.00	3.294	3.365	-0.071		1332769	5.45		11.4	68116	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.302	3.366	-0.064	1.000	14352193	47.3			915541	
499.00 > 99.00	3.294	3.366	-0.072	0.998	2921573		4.91(0.90-1.10)		322213	

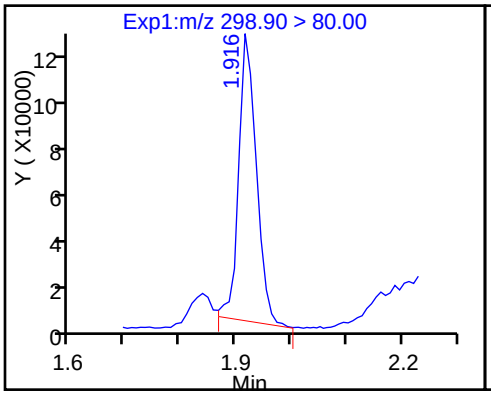
Report Date: 02-Dec-2016 15:01:37 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

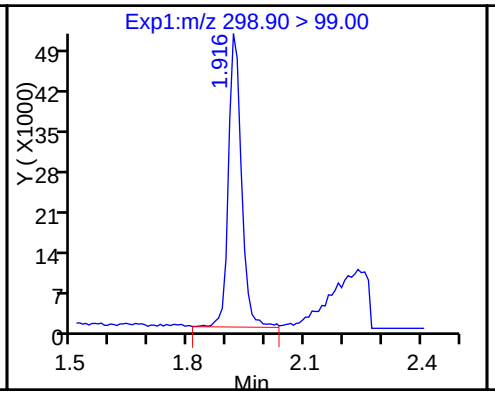
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_004.d

Injection Date:	02-Dec-2016 13:22:02	Instrument ID:	A8_N		
Lims ID:	320-23542-A-1-A	Lab Sample ID:	320-23542-1		
Client ID:	DPT-16-01-GW-17-21				
Operator ID:	A8-PC\A8	ALS Bottle#:	4	Worklist Smp#:	27
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

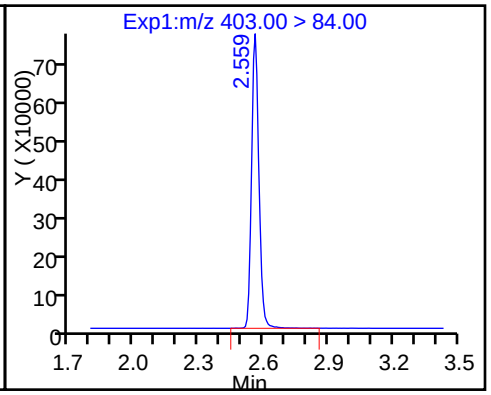
5 Perfluorobutanesulfonic acid



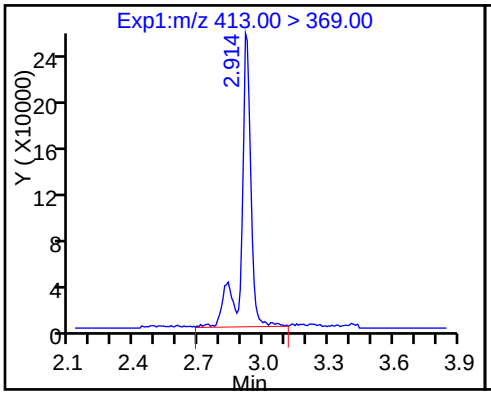
5 Perfluorobutanesulfonic acid



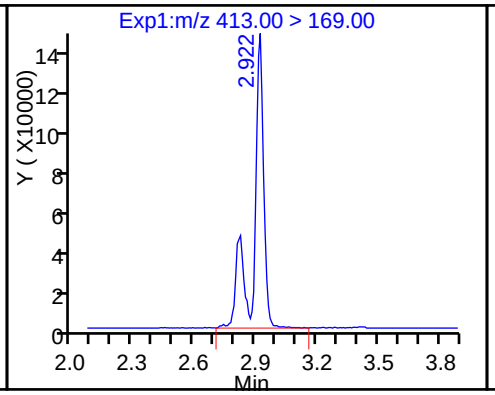
D 10 18O2 PFHxS



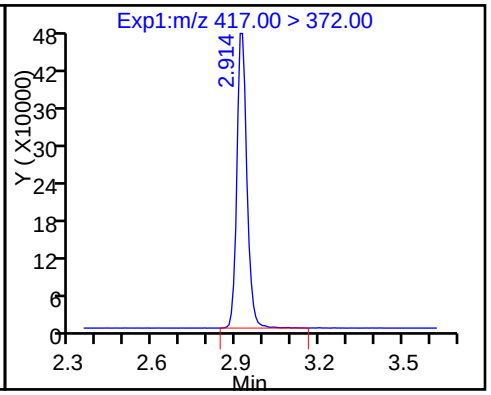
15 Perfluorooctanoic acid



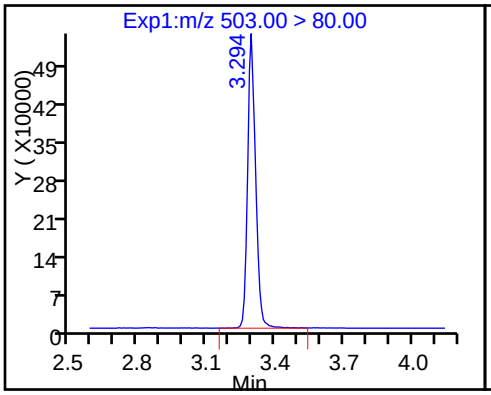
15 Perfluorooctanoic acid



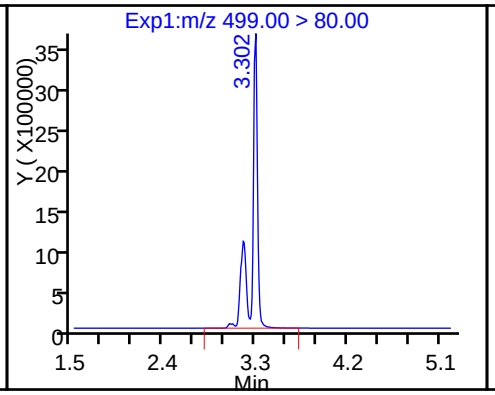
D 14 13C4 PFOA



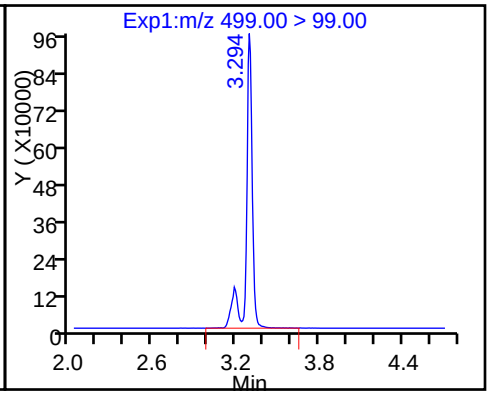
D 17 13C4 PFOS



18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-05-GW-17-21 | Lab Sample ID: 320-23542-2

Matrix: Water | Lab File ID: 20NOV2016D_017.d

Analysis Method: 537 (Modified) | Date Collected: 11/14/2016 11:45

Extraction Method: 3535 | Date Extracted: 11/17/2016 08:49

Sample wt/vol: 258.6(mL) | Date Analyzed: 11/20/2016 22:40

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 1

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

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

Analysis Batch No.: 138814 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.19	J M	0.0024	0.0019	0.00072
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*2.2*	*J E*	*0.0039*	0.0029	*0.0012*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.050	J M	0.0024	0.0019	0.00089

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	77		25-150
STL00991	13C4 PFOS	63		25-150
STL00994	18O2 PFHxS	81		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_017.d
Lims ID: 320-23542-A-2-A
Client ID: DPT-16-05-GW-17-21
Sample Type: Client
Inject. Date: 20-Nov-2016 22:40:50 ALS Bottle#: 22 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23542-a-2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 15:55:17 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 15:55:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.502	1.493	0.009	1.000	2018566	21.4			12559	
D 2 13C4 PFBA										
217.00 > 172.00	1.494	1.493	0.001		5421106	27.4		54.9	510052	
D 4 13C5-PFPeA										
267.90 > 223.00	1.762	1.752	0.010		6461102	40.4		80.8	438769	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.762	1.762	0.0	1.000	4241169	31.6			22271	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.801	1.791	0.010	1.000	6513928	26.1				M
298.90 > 99.00	1.801	1.791	0.010	1.000	2910369		2.24(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.040	2.040	0.0	1.000	16733249	147.7			100510	
D 6 13C2 PFHxA										
315.00 > 270.00	2.046	2.040	0.006		5997283	41.3		82.6	378863	
D 11 13C4-PFHpA										
367.00 > 322.00	2.369	2.366	0.003		4224117	32.1		64.3	390495	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.369	2.372	-0.003	1.000	1686415	19.5			3907	
D 10 18O2 PFHxS										
403.00 > 84.00	2.390	2.382	0.008		7786326	38.5		81.5	439450	
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.390	2.387	0.003	1.000	69378393	397.9				E
D 47 M2-6:2FTS										
429.00 > 409.00	2.712	2.704	0.008		20172	0.3848		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.712	2.713	-0.001	1.000	345084	NR				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.740	2.733	0.007	1.000	10620697	96.2			133830	M
413.00 > 169.00	2.740	2.733	0.007	1.000	7444048		1.43(0.90-1.10)		221199	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.740	2.733	0.007	1.000	1888405	16.8				
D 14 13C4 PFOA										
417.00 > 372.00	2.740	2.733	0.007		5254940	38.5		77.0	306239	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.110	3.096	0.014	1.000	122004722	1140.2			1038840	E
499.00 > 99.00	3.110	3.096	0.014	1.000	32962146		3.70(0.90-1.10)		0.0	
20 Perfluorononanoic acid										
463.00 > 419.00	3.110	3.096	0.014	1.000	206059	4.67			687	
D 19 13C5 PFNA										
468.00 > 423.00	3.110	3.096	0.014		2245929	20.5		41.1	147930	
D 17 13C4 PFOS										
503.00 > 80.00	3.102	3.096	0.006		4702767	30.2		63.2	67102	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.464	3.456	0.008	1.000	111697	NR				
D 42 M2-8:2FTS										
529.00 > 509.00	3.464	3.456	0.008		4759	0.0872		0.0		
D 21 13C8 FOSA										
506.00 > 78.00	3.464	3.458	0.006		967198	3.86		7.7	102857	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.472	3.458	0.014	1.000	15242	0.8744			157	
D 23 13C2 PFDA										
515.00 > 470.00	3.472	3.465	0.007		3480993	34.7		69.5	238520	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.472	3.465	0.007	1.000	85687	1.24			719	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.624	3.623	0.001		2128	0.0489		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.624	3.632	-0.008	1.000	404	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.780	3.782	-0.002	1.000	3114	0.0521				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.799	3.789	0.009		2571	0.0522		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.816	3.798	0.018	1.005	983	NR				
D 27 13C2 PFUnA										
565.00 > 520.00	3.799	3.800	-0.002		2632535	33.6		67.1	297669	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.707	3.800	-0.093	1.000	30196	0.5578			1023	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.963	3.963	0.0		1461	0.0241		0.0		
54 MeFOSA										
512.00 > 169.00	4.132	3.972	0.160	1.000	220	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.097	4.091	0.006		2527068	32.7		65.4	154806	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.161	4.153	0.008		2007	0.0367		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.161	4.161	0.0	1.000	450	NR				
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.598	4.586	0.012	1.000	13302	0.1480			304	
713.00 > 169.00	4.592	4.586	0.006	0.999	4436		3.00(0.00-0.00)		941	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.592	4.586	0.006		9122539	53.5		107	554878	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.003	4.990	0.013	1.000	62671	0.6426			1396	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.996	4.990	0.006		5663432	60.1		120	431418	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.352	5.344	0.008	1.000	2725	0.0501			20.6	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

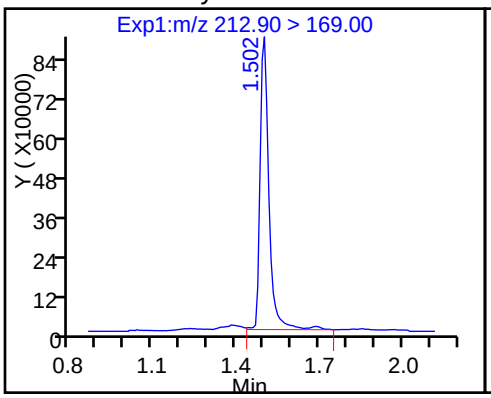
Report Date: 23-Nov-2016 15:55:18 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

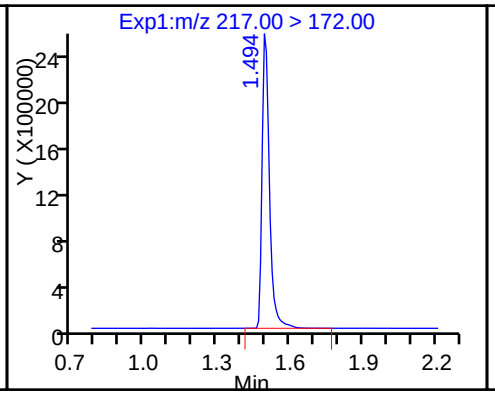
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_017.d

Injection Date:	20-Nov-2016 22:40:50	Instrument ID:	A8_N		
Lims ID:	320-23542-A-2-A	Lab Sample ID:	320-23542-2		
Client ID:	DPT-16-05-GW-17-21				
Operator ID:	A8-PC\A8	ALS Bottle#:	22	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

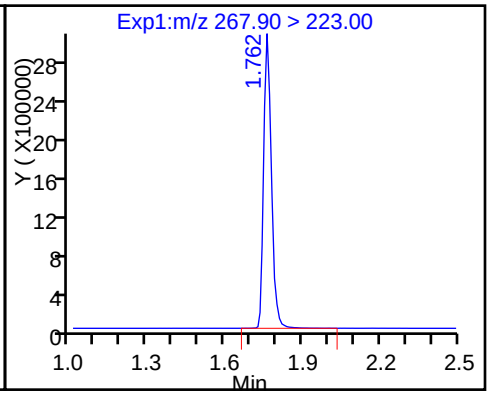
1 Perfluorobutyric acid



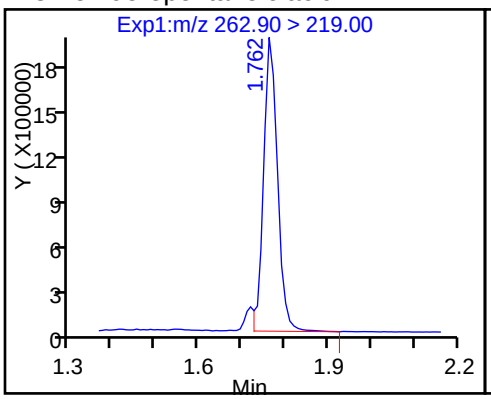
D 2 13C4 PFBA



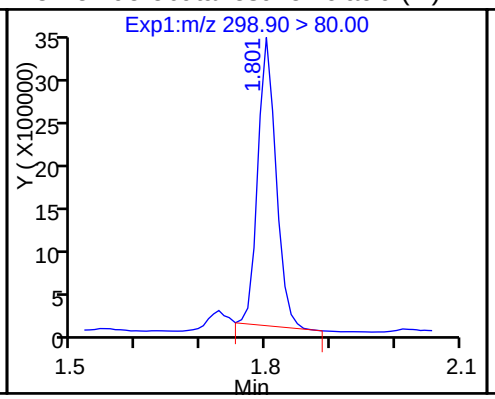
D 4 13C5-PFPeA



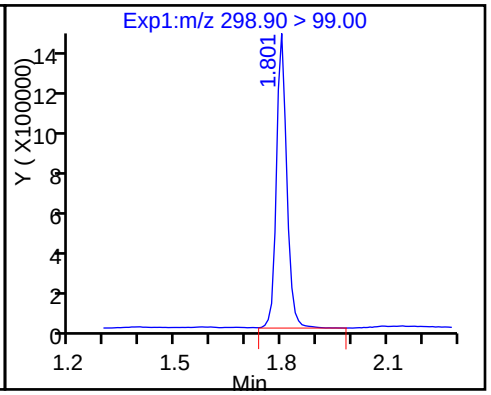
3 Perfluoropentanoic acid



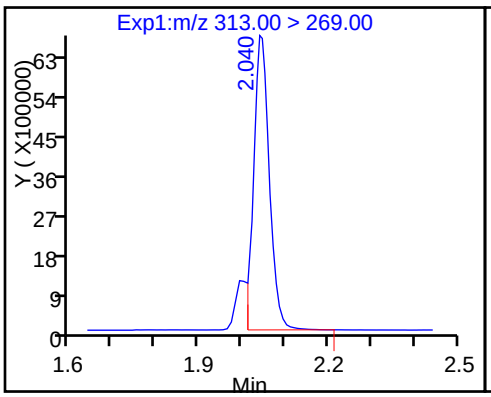
5 Perfluorobutanesulfonic acid (M)



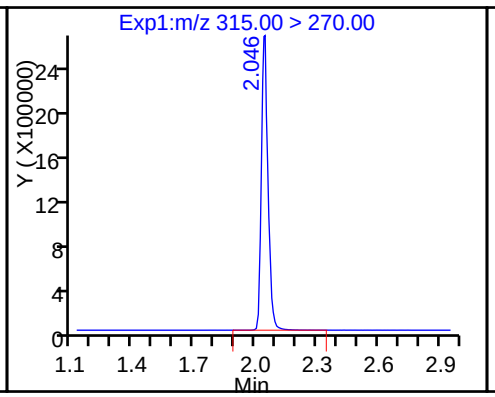
5 Perfluorobutanesulfonic acid



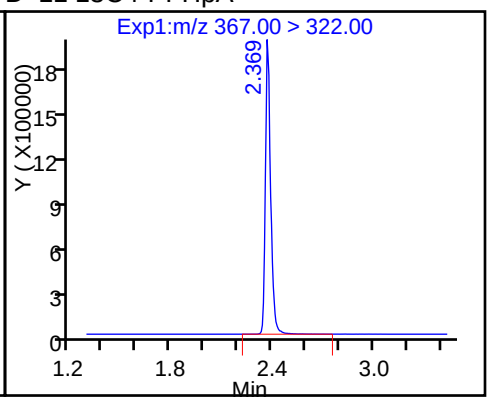
7 Perfluorohexanoic acid



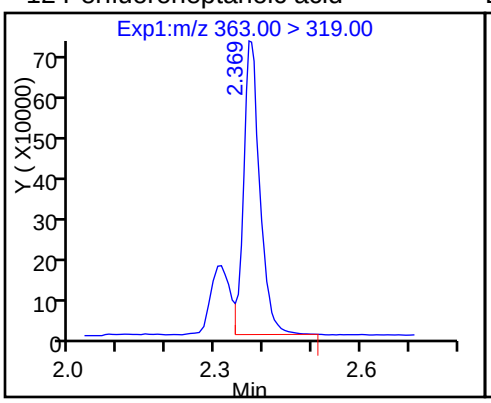
D 6 13C2 PFHxA



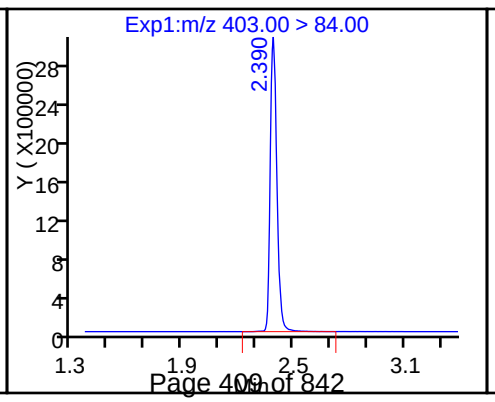
D 11 13C4-PFHpA



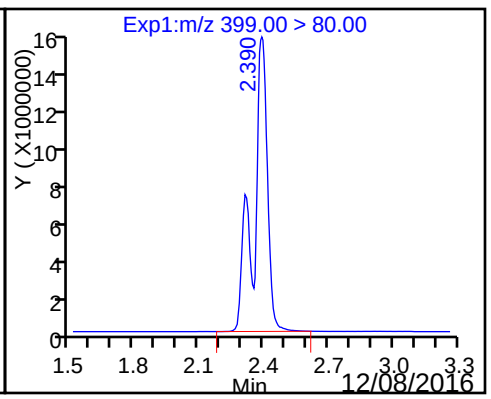
12 Perfluoroheptanoic acid



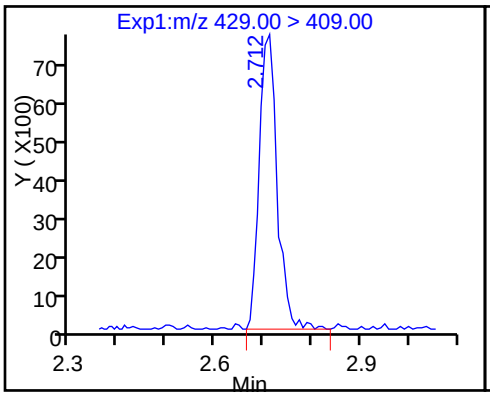
D 10 18O2 PFHxS



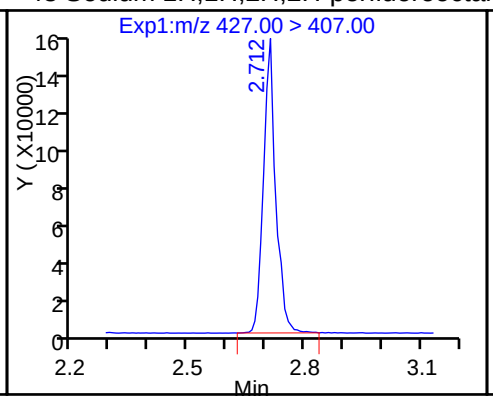
9 Perfluorohexanesulfonic acid



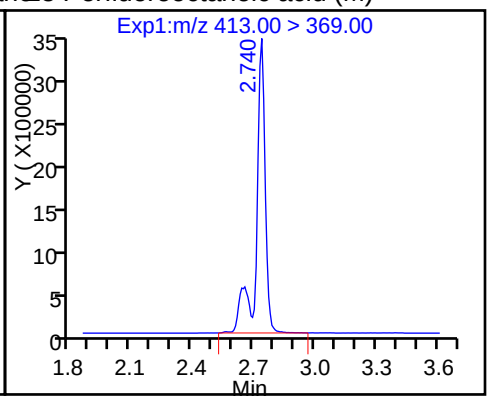
D 47 M2-6:2FTS



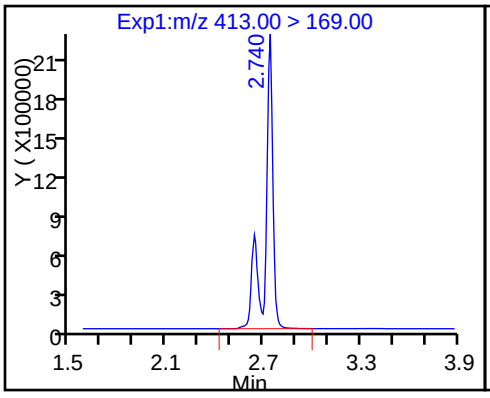
48 Sodium 1H,1H,2H,2H-perfluorooctane



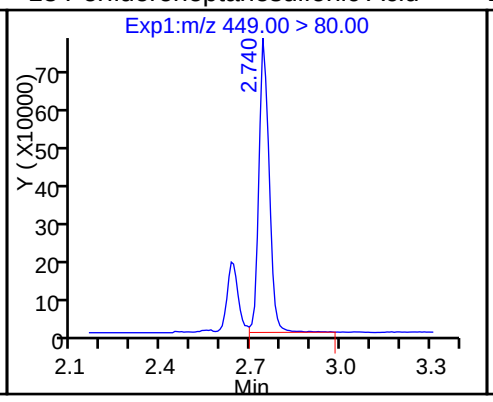
15 Perfluorooctanoic acid (M)



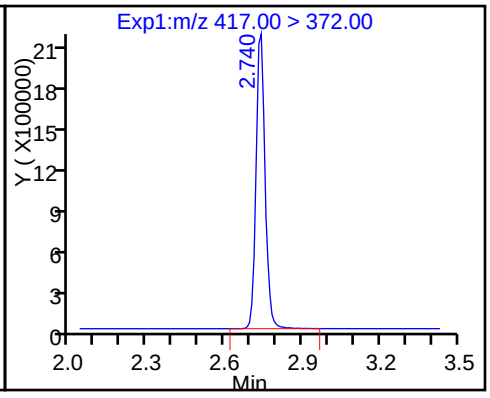
15 Perfluorooctanoic acid



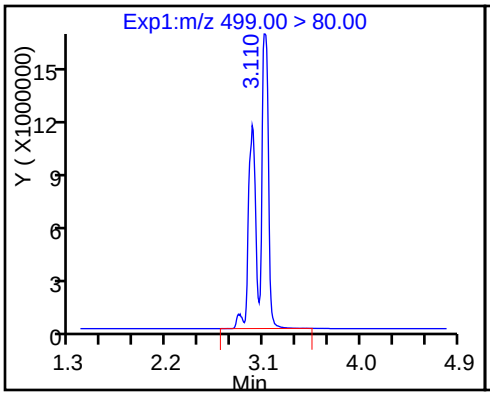
13 Perfluoroheptanesulfonic Acid



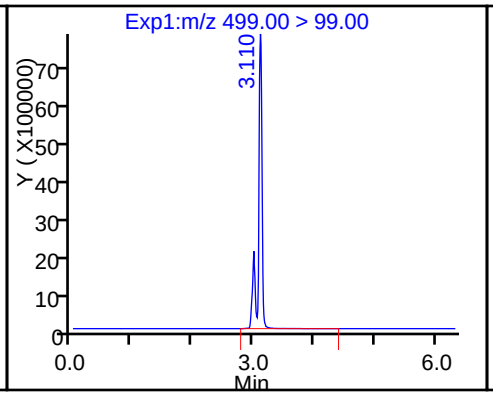
D 14 13C4 PFOA



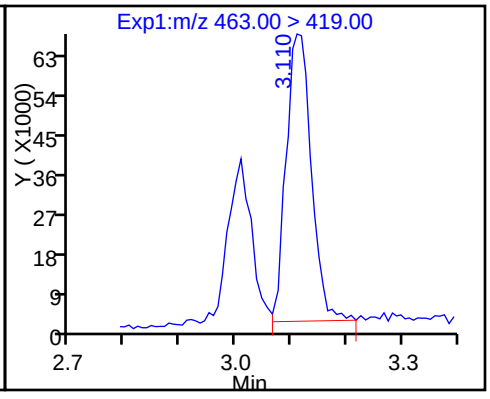
18 Perfluorooctane sulfonic acid



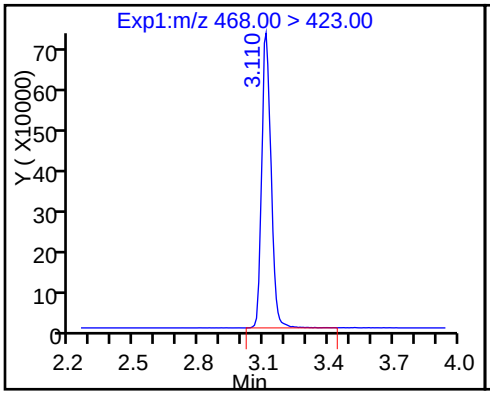
18 Perfluorooctane sulfonic acid



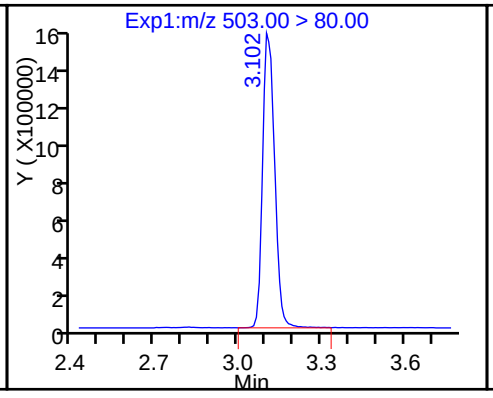
20 Perfluorononanoic acid



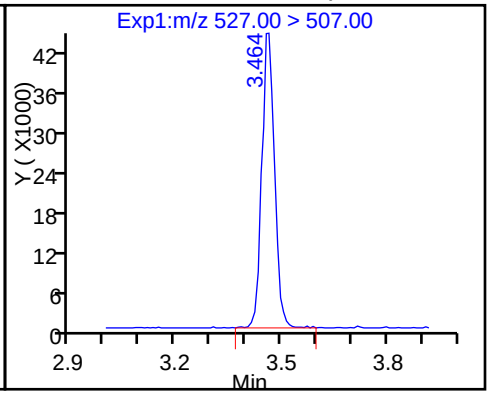
D 19 13C5 PFNA



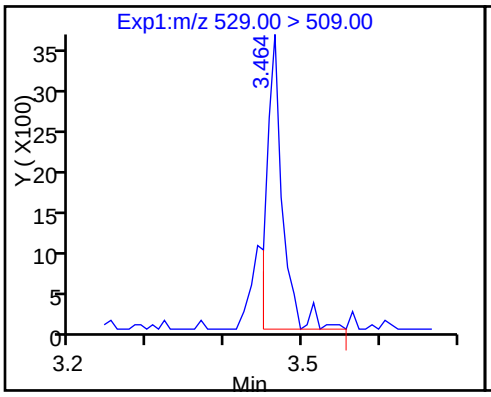
D 17 13C4 PFOS



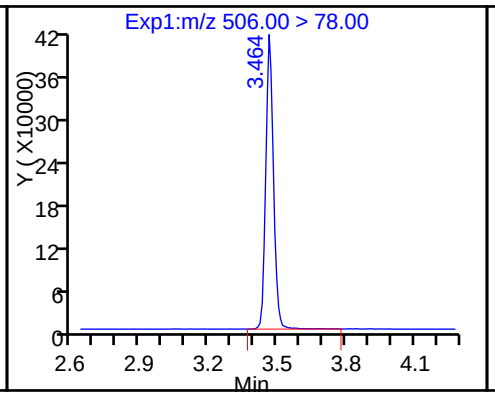
43 Sodium 1H,1H,2H,2H-perfluorooctane



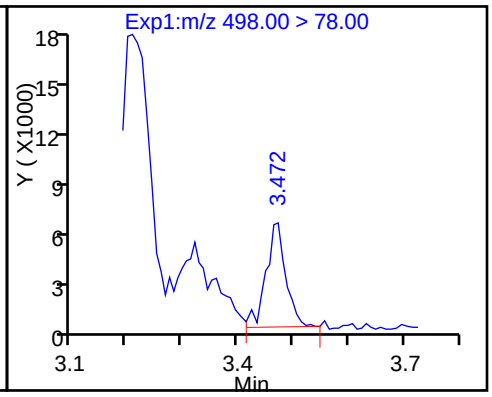
D 42 M2-8:2FTS



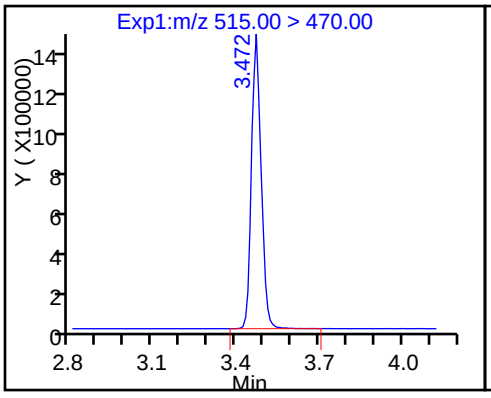
D 21 13C8 FOSA



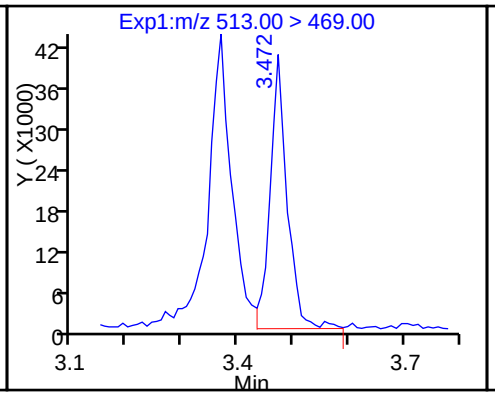
22 Perfluorooctane Sulfonamide



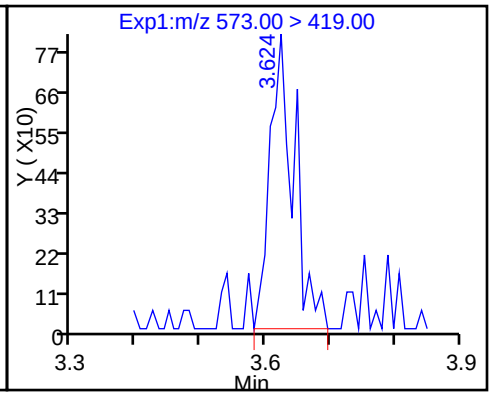
D 23 13C2 PFDA



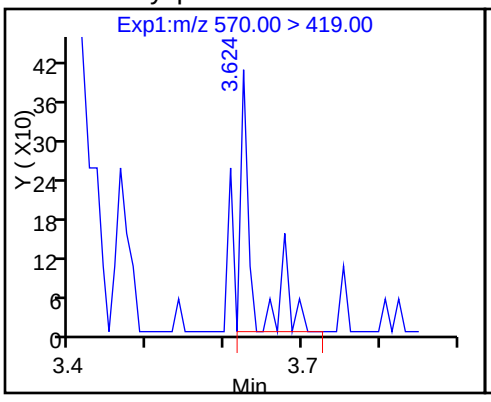
24 Perfluorodecanoic acid



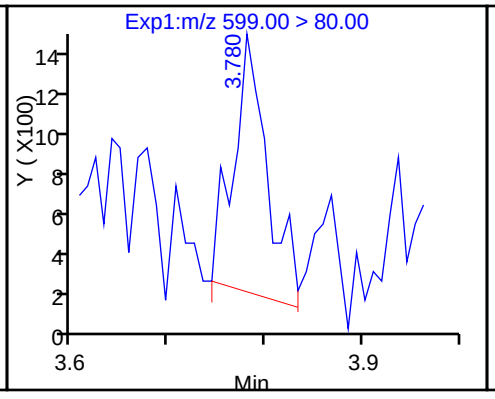
D 45 d3-NMeFOSAA



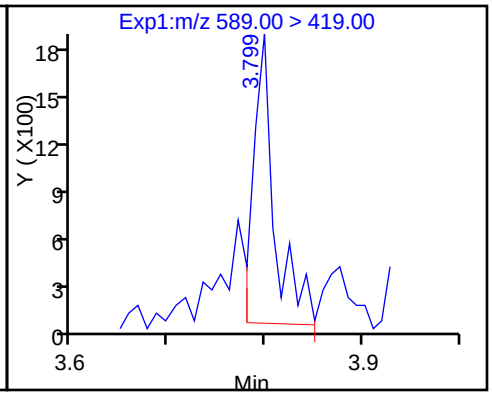
44 N-methyl perfluorooctane sulfonami



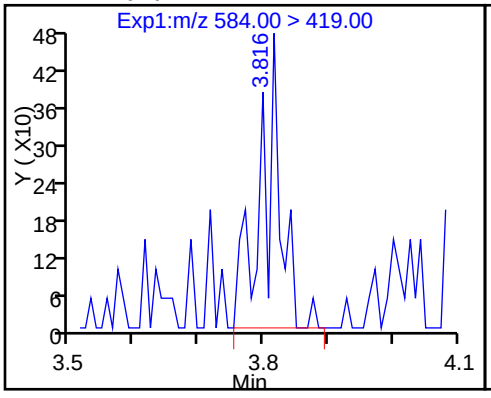
26 Perfluorodecane Sulfonic acid



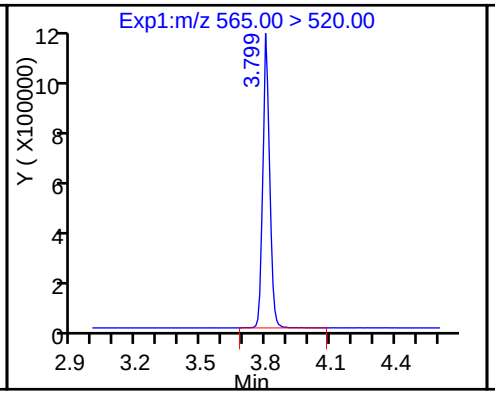
D 46 d5-NEtFOSAA



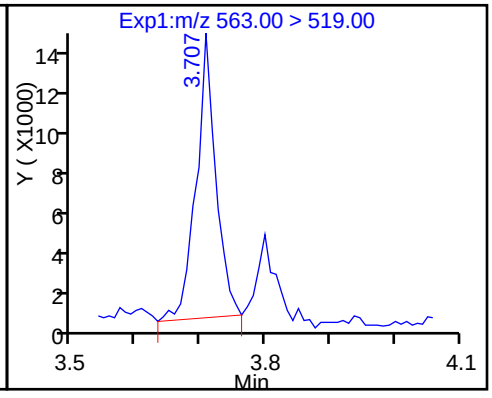
49 N-ethyl perfluorooctane sulfonamid



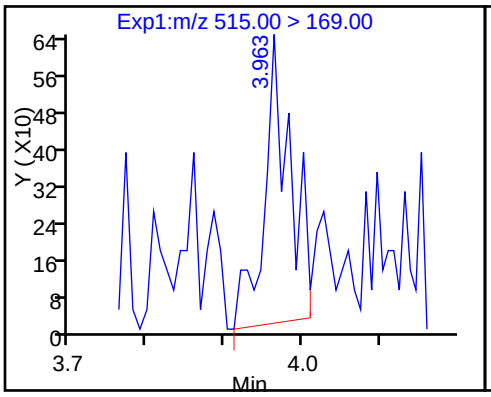
D 27 13C2 PFUnA



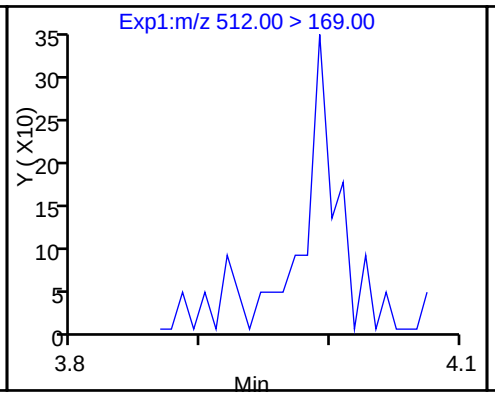
28 Perfluoroundecanoic acid



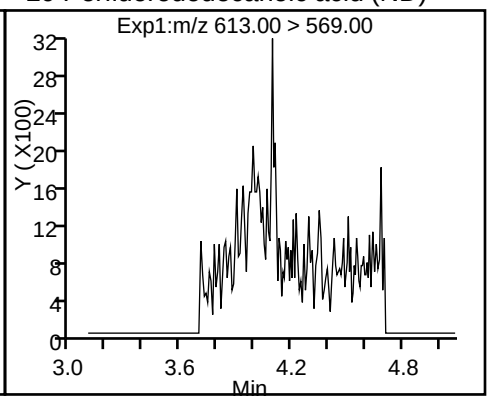
D 52 d-N-MeFOSA-M



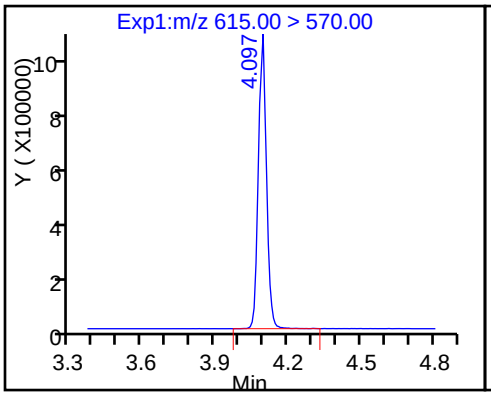
54 MeFOSA



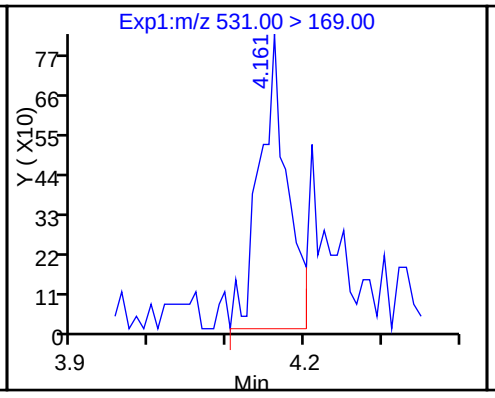
29 Perfluorododecanoic acid (ND)



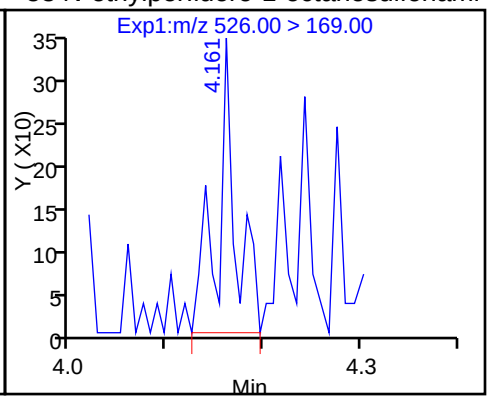
D 30 13C2 PFDoA



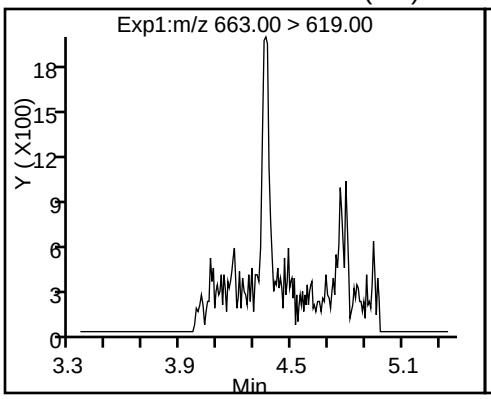
D 51 d-N-EtFOSA-M



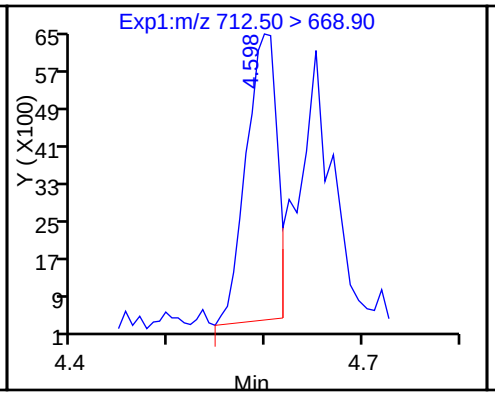
53 N-ethylperfluoro-1-octanesulfonami



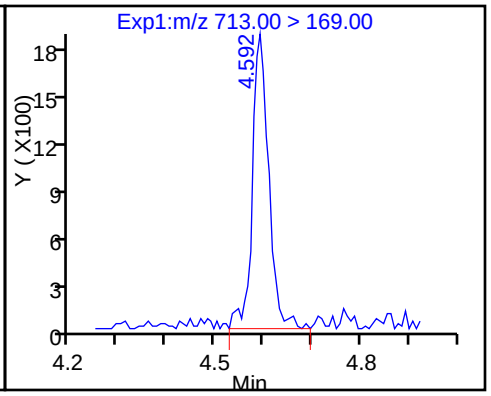
31 Perfluorotridecanoic acid (ND)



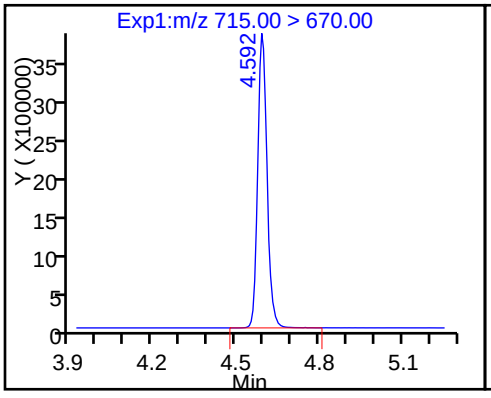
33 Perfluorotetradecanoic acid



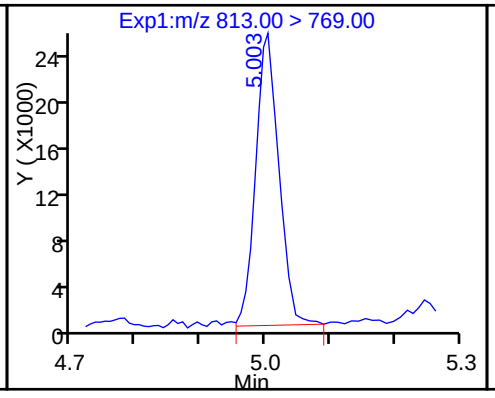
33 Perfluorotetradecanoic acid



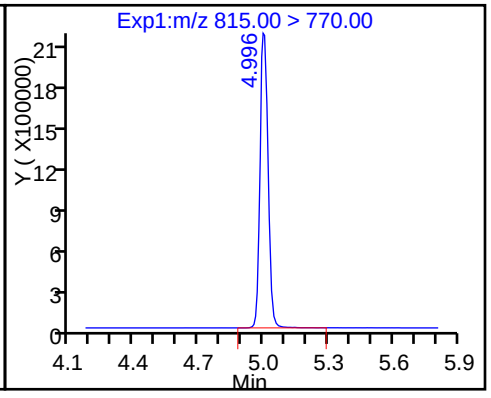
D 32 13C2-PFTeDA



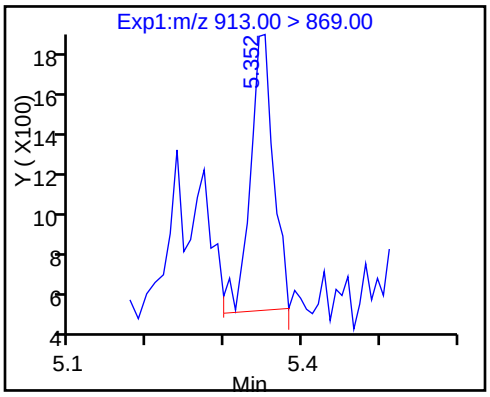
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

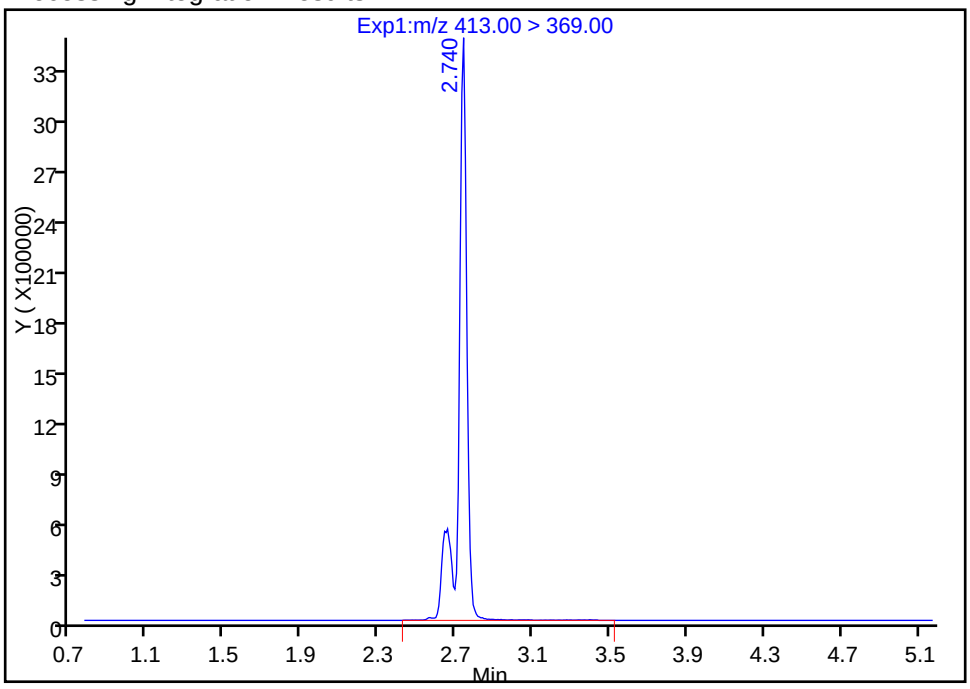
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_017.d				
Injection Date:	20-Nov-2016 22:40:50	Instrument ID:	A8_N		
Lims ID:	320-23542-A-2-A	Lab Sample ID:	320-23542-2		
Client ID:	DPT-16-05-GW-17-21				
Operator ID:	A8-PC\A8	ALS Bottle#:	22	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

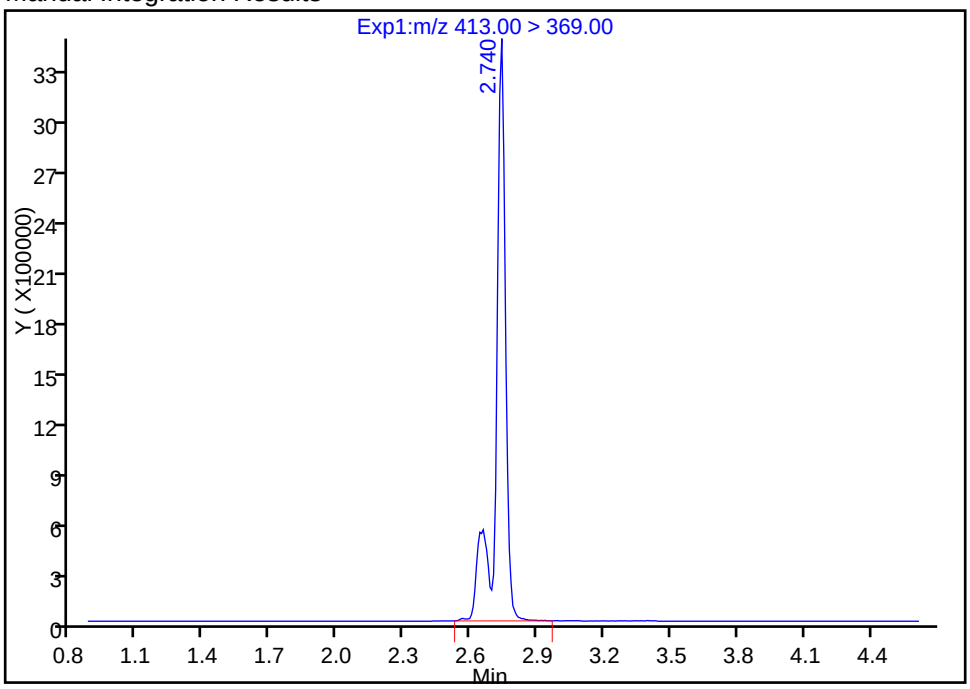
Processing Integration Results

RT: 2.74
Area: 10746798
Amount: 97.375902
Amount Units: ng/ml



Manual Integration Results

RT: 2.74
Area: 10620697
Amount: 96.233310
Amount Units: ng/ml



Reviewer: changnoit, 23-Nov-2016 15:55:17

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

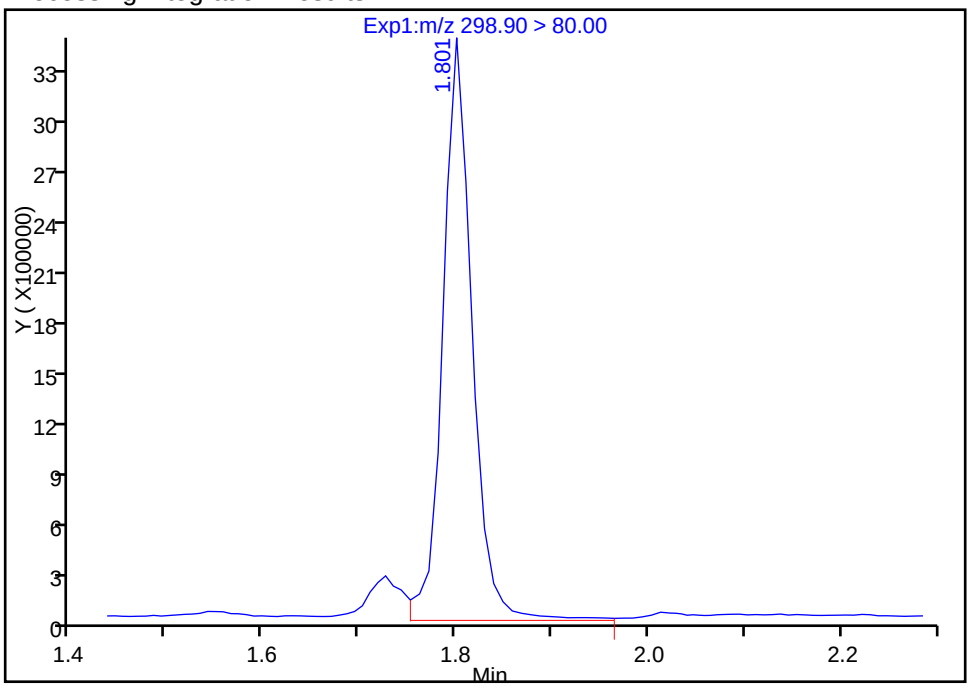
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_017.d				
Injection Date:	20-Nov-2016 22:40:50	Instrument ID:	A8_N		
Lims ID:	320-23542-A-2-A	Lab Sample ID:	320-23542-2		
Client ID:	DPT-16-05-GW-17-21				
Operator ID:	A8-PC\A8	ALS Bottle#:	22	Worklist Smp#:	17
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

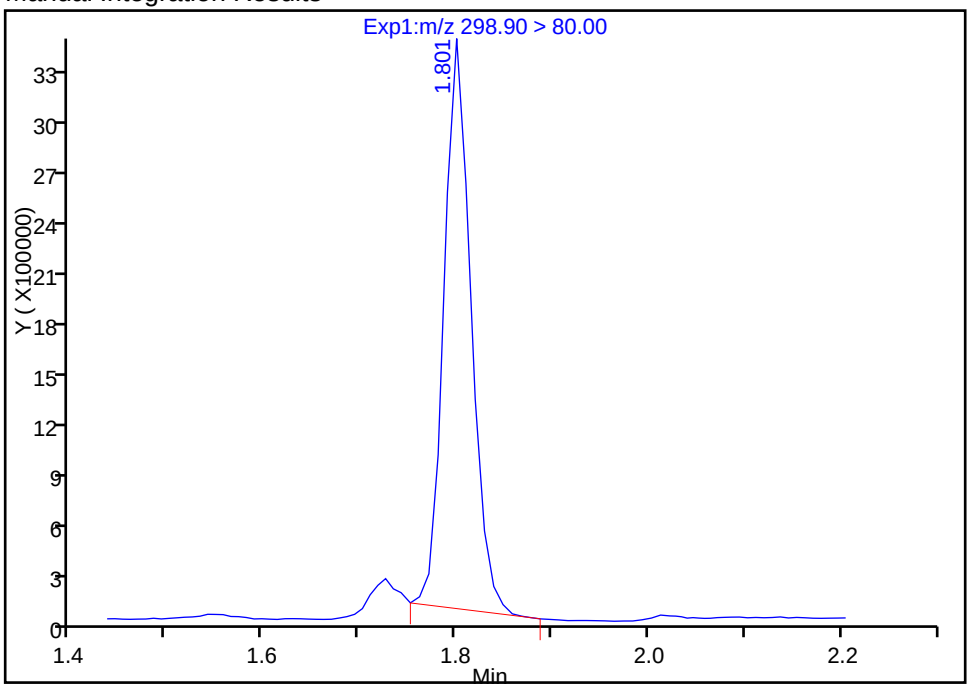
Processing Integration Results

RT: 1.80
Area: 7179874
Amount: 28.752097
Amount Units: ng/ml



Manual Integration Results

RT: 1.80
Area: 6513928
Amount: 26.085289
Amount Units: ng/ml



Reviewer: changnoit, 23-Nov-2016 15:55:17

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-05-GW-17-21 DL | Lab Sample ID: 320-23542-2 DL

Matrix: Water | Lab File ID: 02DEC2016B_001.d

Analysis Method: 537 (Modified) | Date Collected: 11/14/2016 11:45

Extraction Method: 3535 | Date Extracted: 11/17/2016 08:49

Sample wt/vol: 258.6(mL) | Date Analyzed: 12/02/2016 12:59

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 100

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

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

Analysis Batch No.: 140382 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.21*	*D J*	*0.24*	0.19	*0.072*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	2.8	J D	0.39	0.29	0.12
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.19*	*U*	*0.24*	0.19	*0.089*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	125		25-150
STL00991	13C4 PFOS	146		25-150
STL00994	18O2 PFHxS	154	Q	25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_001.d
Lims ID: 320-23542-A-2-A
Client ID: DPT-16-05-GW-17-21
Sample Type: Client
Inject. Date: 02-Dec-2016 12:59:27 ALS Bottle#: 1 Worklist Smp#: 24
Injection Vol: 2.0 ul Dil. Factor: 100.0000
Sample Info: 320-23542-A-2-A 100X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:55:36 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 14:51:28

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.598	1.615	-0.017		170642	0.5014		1.0	19443	
1 Perfluorobutyric acid										
212.90 > 169.00	1.598	1.617	-0.019	1.000	56787	0.1879			538	
D 4 13C5-PFPeA										
267.90 > 223.00	1.887	1.918	-0.031		138551	0.5128		1.0	18929	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.887	1.920	-0.033	1.000	102256	0.3545			954	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.925	1.961	-0.036	1.000	132946	0.1770				
298.90 > 99.00	1.925	1.961	-0.036	1.000	54603		2.43(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.196	2.239	-0.043		120336	0.4882		1.0	16445	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.204	2.241	-0.037	1.000	362268	1.57			9205	
D 11 13C4-PFHpA										
367.00 > 322.00	2.559	2.599	-0.040		122200	0.5805		1.2	25468	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.551	2.600	-0.049	1.000	43655	0.1727			615	
D 10 18O2 PFHxS										
403.00 > 84.00	2.567	2.614	-0.047		220201	0.7281		1.5	48666	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.567	2.615	-0.048	1.000	2619093	5.31				
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.910	2.913	-0.003	1.000	21353	NR				
D 47 M2-6:2FTS										
429.00 > 409.00	2.910	2.915	-0.005		6503	0.0467		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.926	2.984	-0.058	1.000	307948	1.10			5050	
413.00 > 169.00	2.926	2.984	-0.058	1.000	182089		1.69(0.90-1.10)		10212	
D 14 13C4 PFOA										
417.00 > 372.00	2.926	2.984	-0.058		137568	0.6270		1.3	28780	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.934	2.986	-0.052	1.000	39882	0.0956				
D 17 13C4 PFOS										
503.00 > 80.00	3.306	3.365	-0.059		170612	0.6975		1.5	14107	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.314	3.366	-0.052	1.000	5622123	14.5			319061	
499.00 > 99.00	3.314	3.366	-0.052	1.000	1111553		5.06(0.90-1.10)		93337	
20 Perfluorononanoic acid										
463.00 > 419.00	3.314	3.373	-0.059	1.000	8185	0.0458			203	
D 19 13C5 PFNA										
468.00 > 423.00	3.314	3.374	-0.060		90167	0.5062		1.0	18957	
D 21 13C8 FOSA										
506.00 > 78.00	3.615	3.651	-0.036		39568	0.0955		0.2	1891	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.649	3.674	-0.025	0.992	3663	NR				
D 42 M2-8:2FTS										
529.00 > 509.00	3.677	3.676	0.001		3338	0.0250		0.0		
24 Perfluorodecanoic acid										
513.00 > 469.00	3.784	3.738	0.046	1.000	796	0.005107			56.8	
D 23 13C2 PFDA										
515.00 > 470.00	3.677	3.738	-0.061		80394	0.4841		1.0	2727	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.830	3.839	-0.009		10098	0.1262		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.820	3.847	-0.027	0.998	5077	NR				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.997	4.009	-0.012		17363	0.1949		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	4.006	4.016	-0.010	1.002	7400	NR				
D 27 13C2 PFUnA										
565.00 > 520.00	4.006	4.070	-0.064		56571	0.4498		0.9	7343	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.100	4.105	-0.005		7275	0.0684		0.0		
54 MeFOSA										
512.00 > 169.00	4.107	4.110	-0.003	1.000	2615	NR				
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.288	4.290	-0.002		9240	0.0907		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.298	4.299	-0.001	1.000	2999	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.298	4.370	-0.072		61374	0.5250		1.0	2188	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.813	4.882	-0.069		160888	0.6651		1.3	16407	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 34 13C2-PFHxDA										
815.00 > 770.00	5.238	5.320	-0.082		106019	0.8132		1.6	8539	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.337	5.320	0.017	1.000	1533	-0.8106			23.4	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.675	5.720	-0.045	1.000	356	0.003689			24.7	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

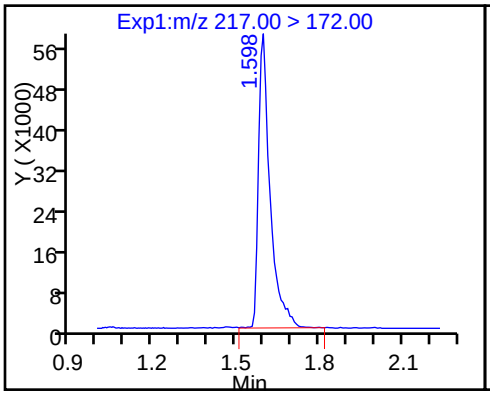
Report Date: 02-Dec-2016 15:02:52 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

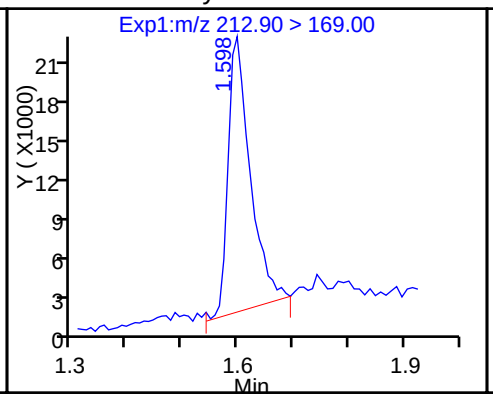
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_001.d

Injection Date:	02-Dec-2016 12:59:27	Instrument ID:	A8_N
Lims ID:	320-23542-A-2-A	Lab Sample ID:	320-23542-2
Client ID:	DPT-16-05-GW-17-21		
Operator ID:	A8-PC\A8	ALS Bottle#:	1 Worklist Smp#: 24
Injection Vol:	2.0 ul	Dil. Factor:	100.0000
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL

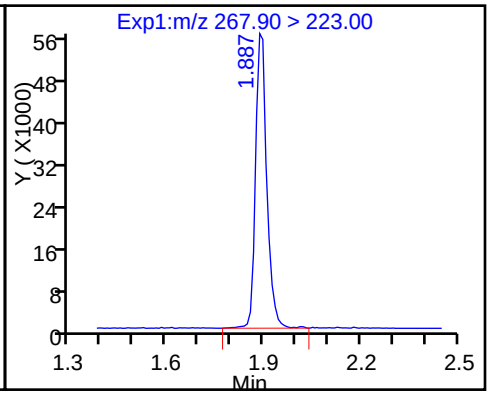
D 2 13C4 PFBA



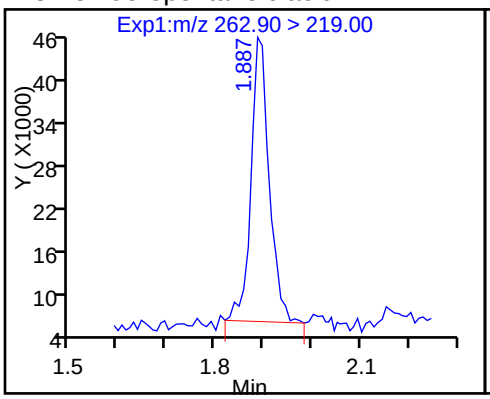
1 Perfluorobutyric acid



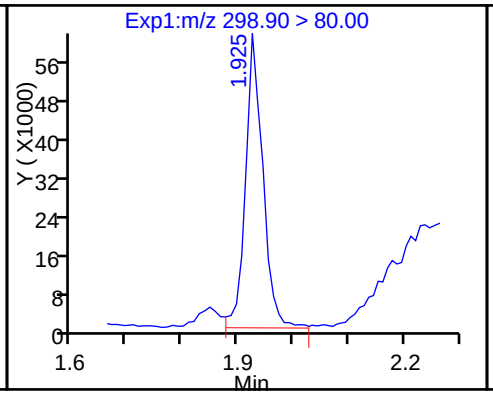
D 4 13C5-PFPeA



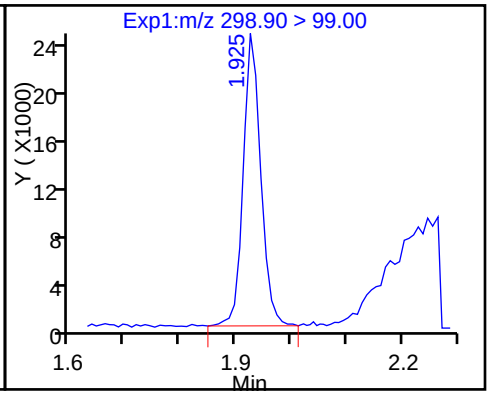
3 Perfluoropentanoic acid



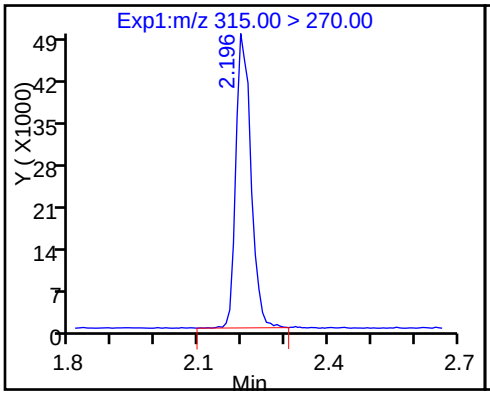
5 Perfluorobutanesulfonic acid



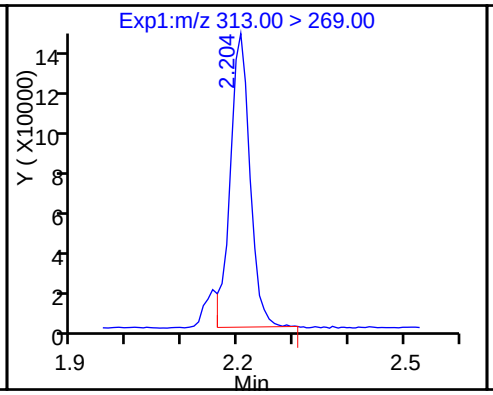
5 Perfluorobutanesulfonic acid



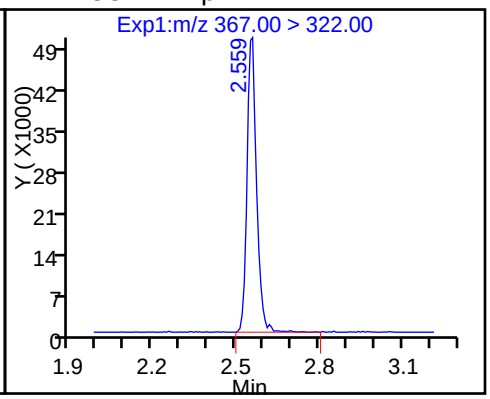
D 6 13C2 PFHxA



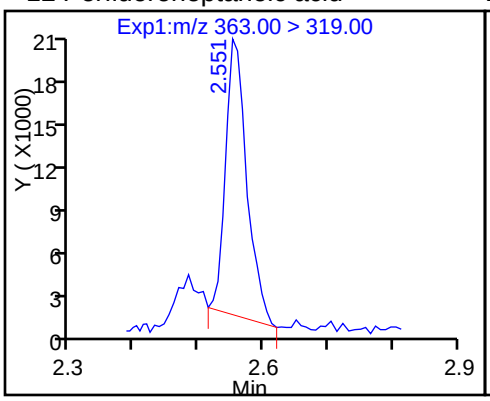
7 Perfluorohexanoic acid



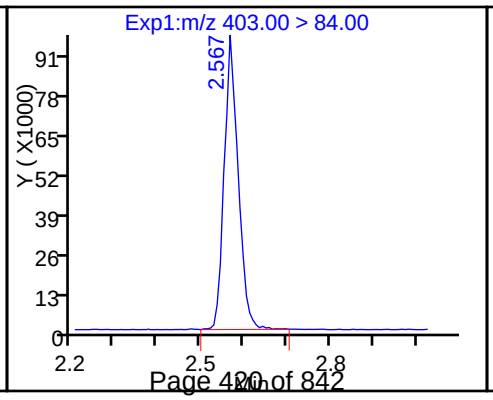
D 11 13C4-PFHpA



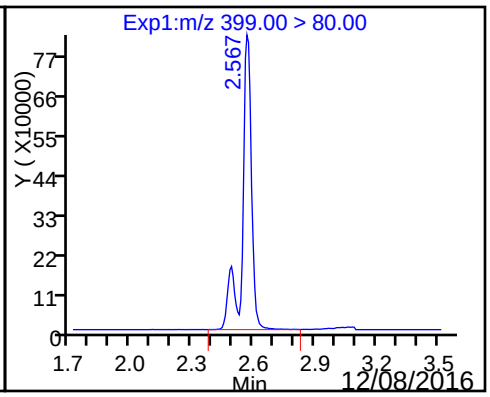
12 Perfluoroheptanoic acid



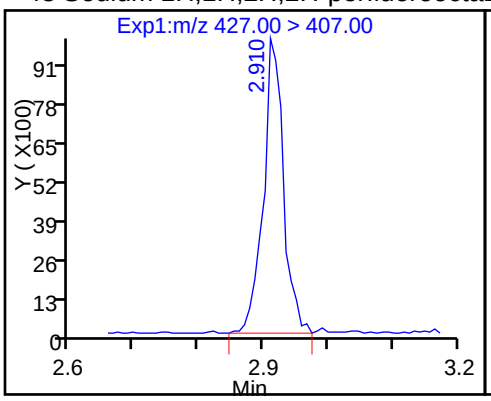
D 10 18O2 PFHxS



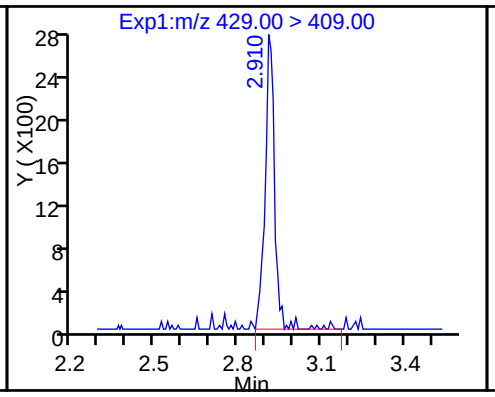
9 Perfluorohexanesulfonic acid



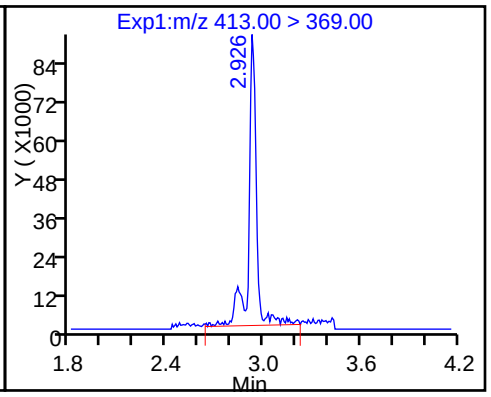
48 Sodium 1H,1H,2H,2H-perfluorooctane



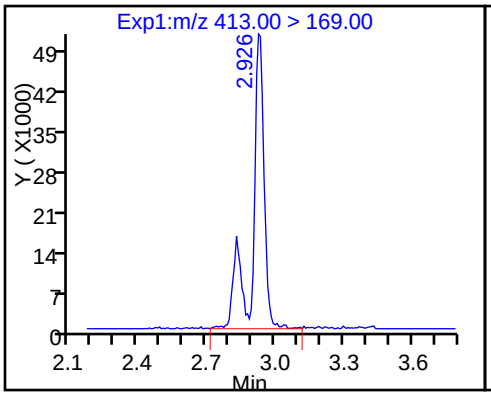
D 47 M2-6:2FTS



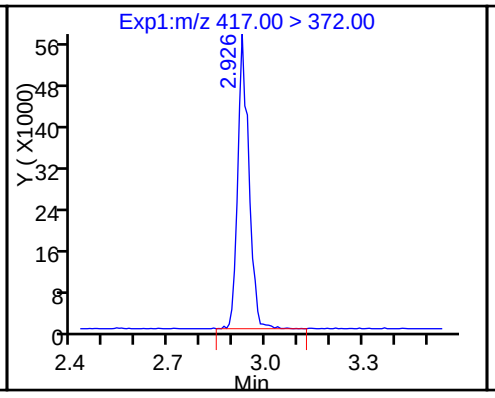
15 Perfluorooctanoic acid



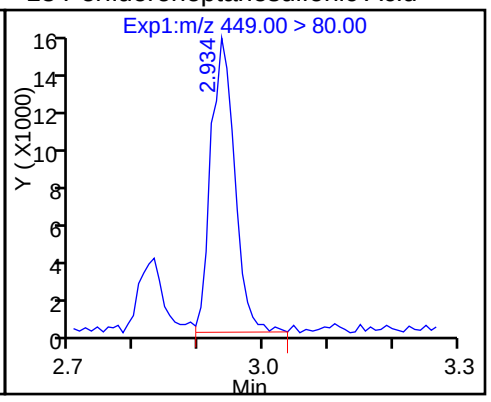
15 Perfluorooctanoic acid



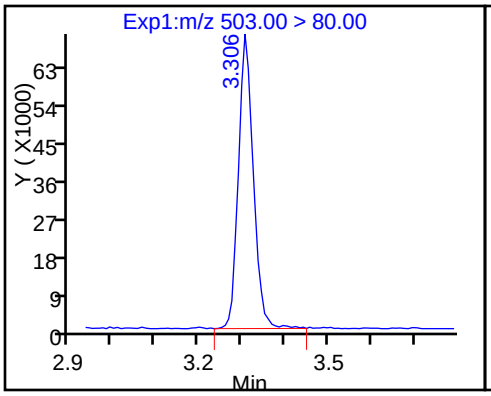
D 14 13C4 PFOA



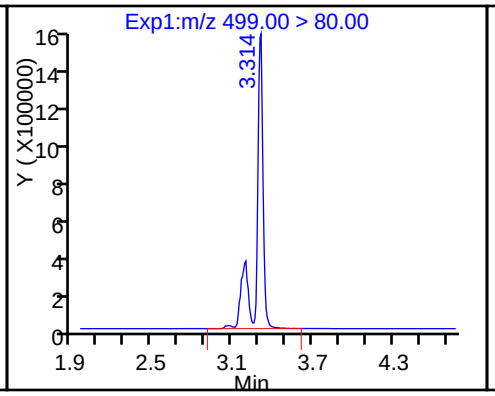
13 Perfluoroheptanesulfonic Acid



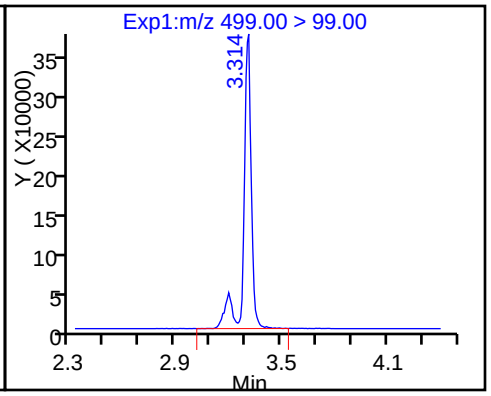
D 17 13C4 PFOS



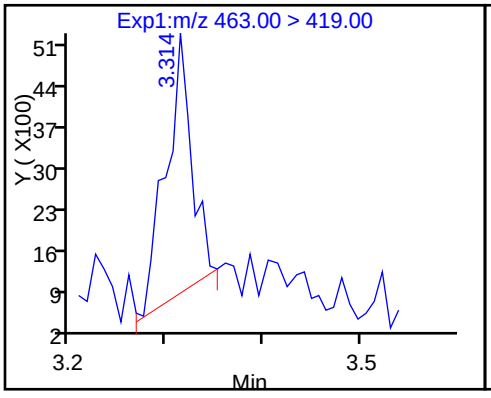
18 Perfluorooctane sulfonic acid



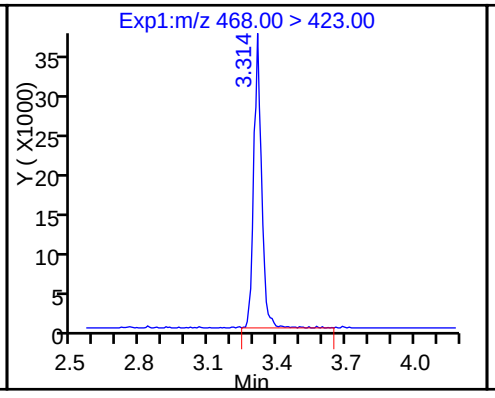
18 Perfluorooctane sulfonic acid



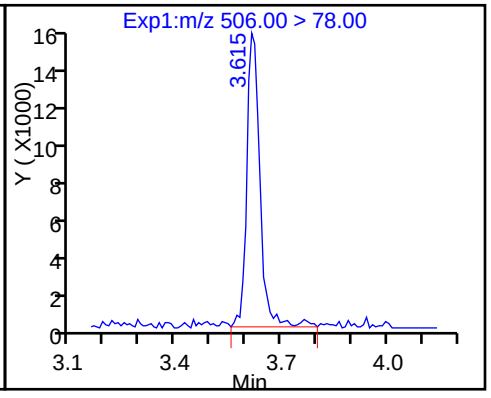
20 Perfluorononanoic acid



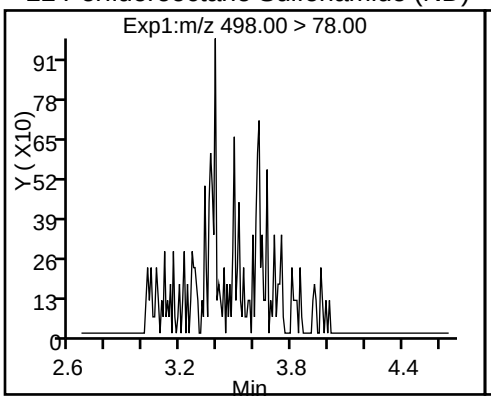
D 19 13C5 PFNA



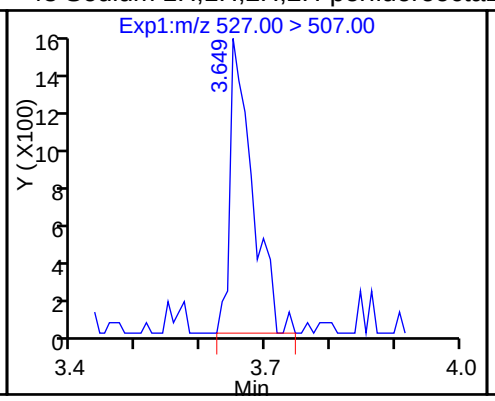
D 21 13C8 FOSA



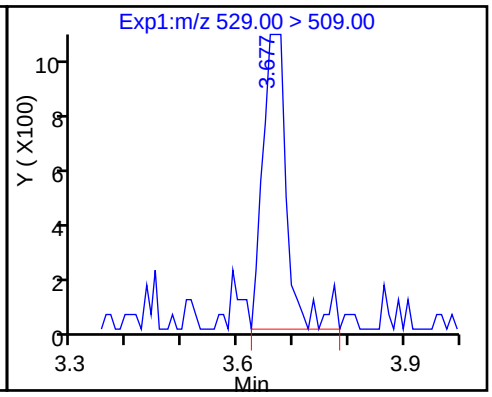
22 Perfluorooctane Sulfonamide (ND)



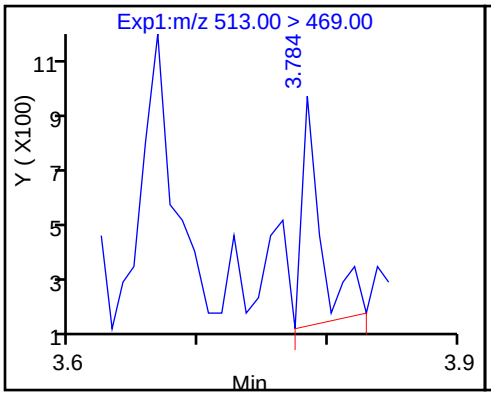
43 Sodium 1H,1H,2H,2H-perfluorooctane



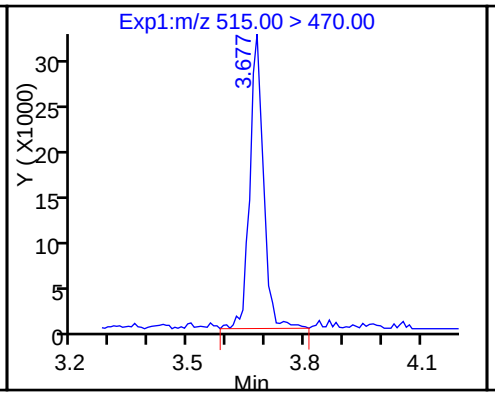
D 42 M2-8:2FTS



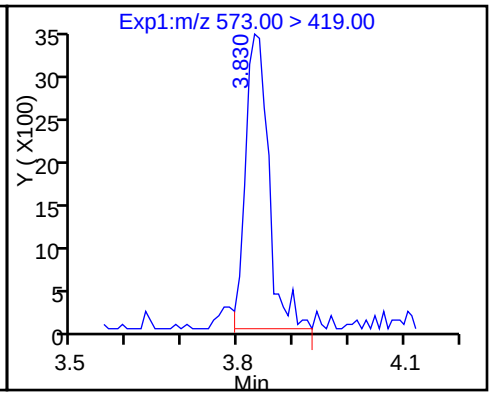
24 Perfluorodecanoic acid



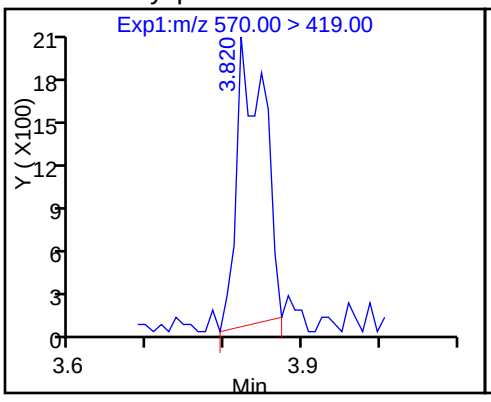
D 23 13C2 PFDA



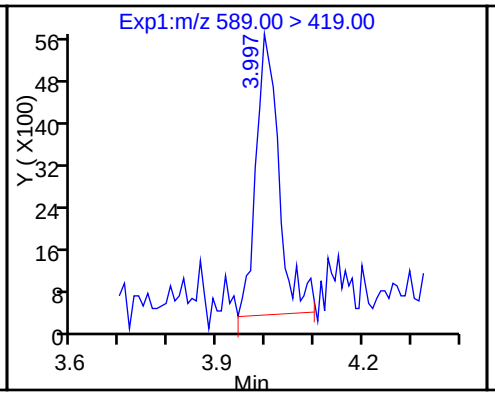
D 45 d3-NMeFOSAA



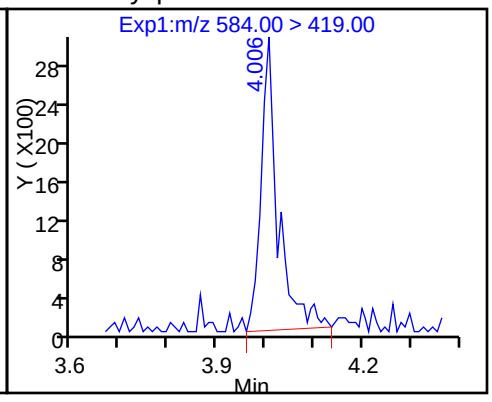
44 N-methyl perfluorooctane sulfonami



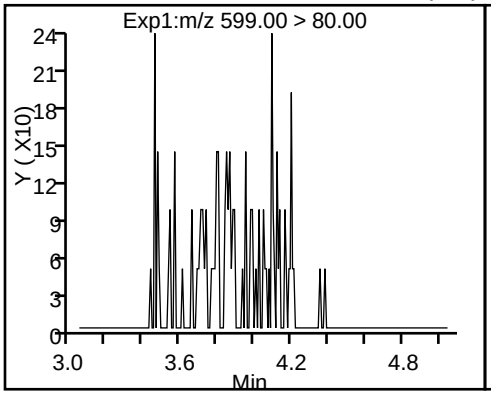
D 46 d5-NEtFOSAA



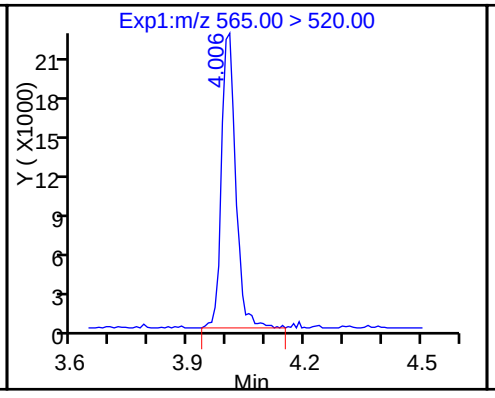
49 N-ethyl perfluorooctane sulfonamid



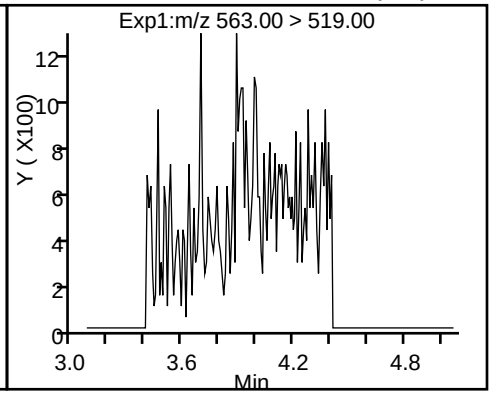
26 Perfluorodecane Sulfonic acid (ND)



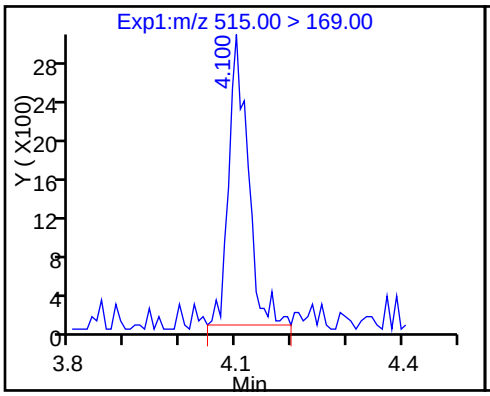
D 27 13C2 PFUnA



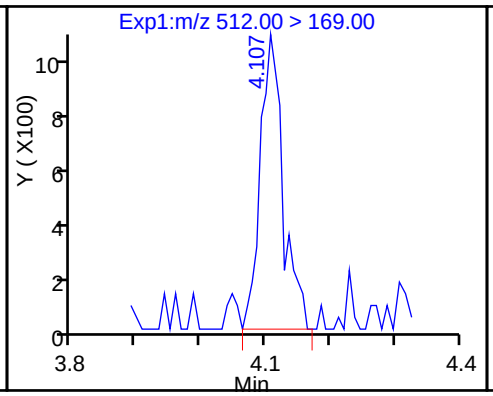
28 Perfluoroundecanoic acid (ND)



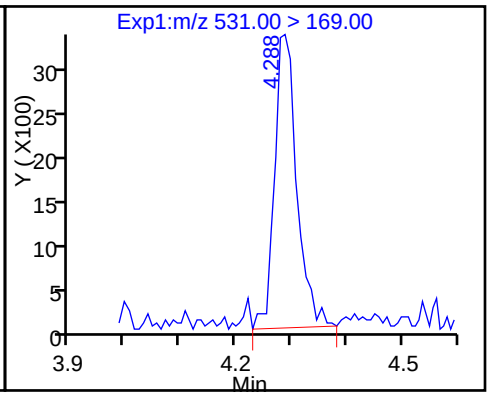
D 52 d-N-MeFOSA-M



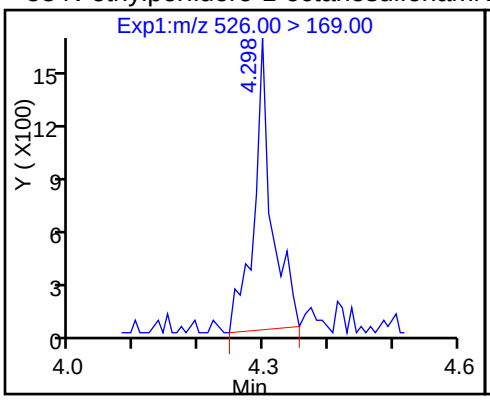
54 MeFOSA



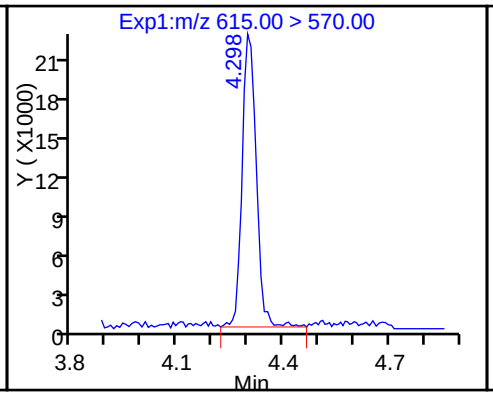
D 51 d-N-EtFOSA-M



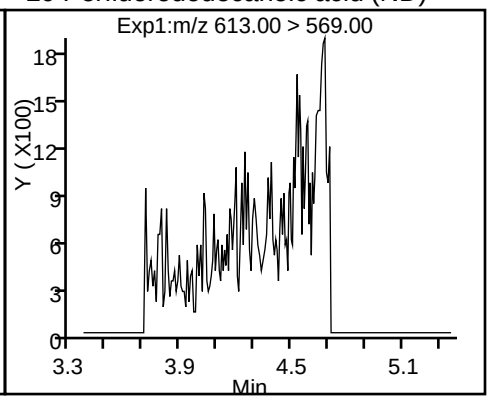
53 N-ethylperfluoro-1-octanesulfonami



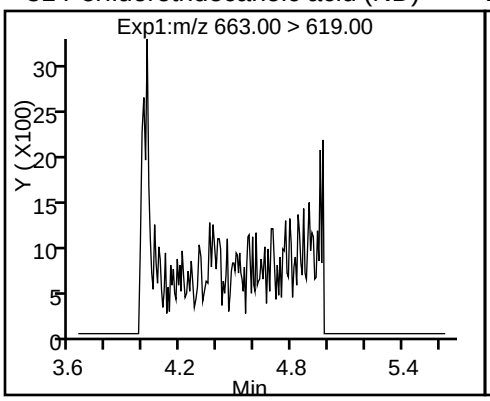
D 30 13C2 PFDoA



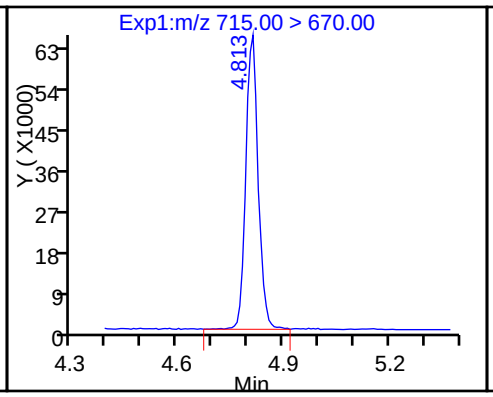
29 Perfluorododecanoic acid (ND)



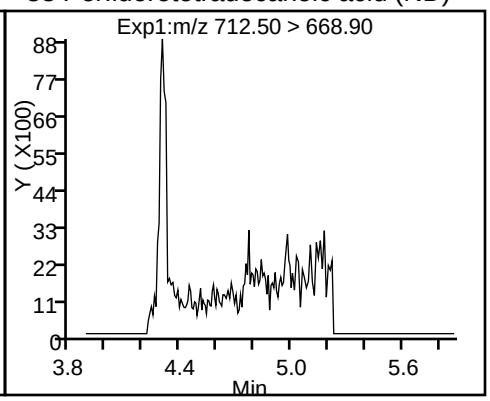
31 Perfluorotridecanoic acid (ND)



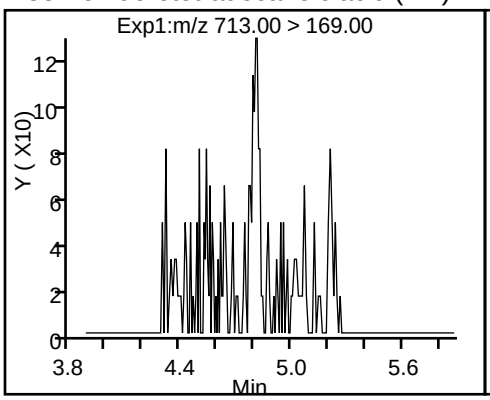
D 32 13C2-PFTeDA



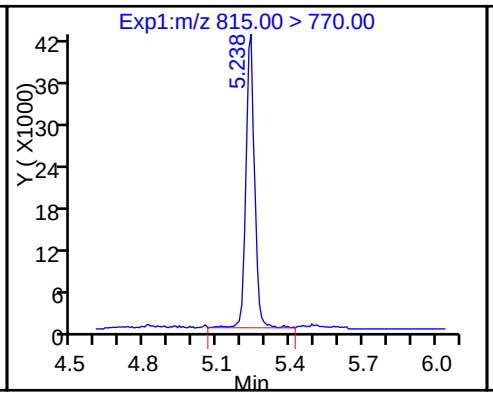
33 Perfluorotetradecanoic acid (ND)



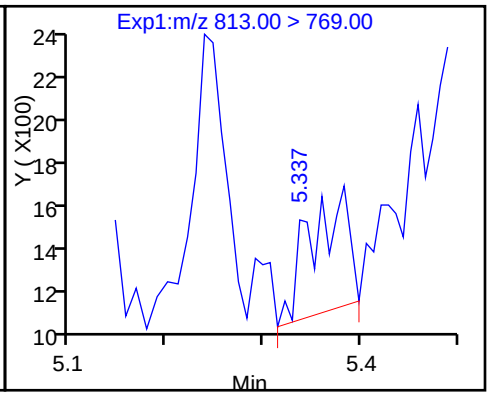
33 Perfluorotetradecanoic acid (ND)



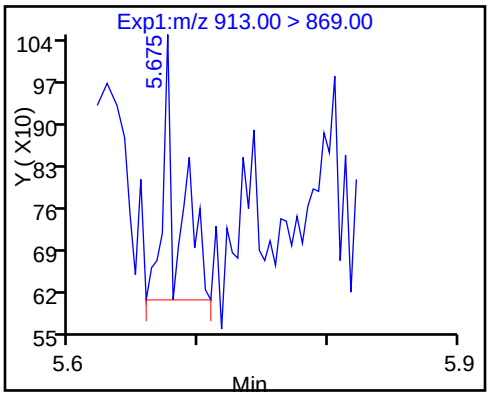
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-34-SO-14-15 Lab Sample ID: 320-23542-3

Matrix: Solid Lab File ID: 20NOV2016D_007.d

Analysis Method: 537 (Modified) Date Collected: 11/14/2016 13:25

Extraction Method: SHAKE Date Extracted: 11/17/2016 12:49

Sample wt/vol: 5.05(g) Date Analyzed: 11/20/2016 21:25

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

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

% Moisture: 20.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 138814 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	3.2	M J	0.62	0.37	0.13
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*34*	*J*	*0.62*	0.37	*0.16*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.37	U	0.50	0.37	0.13

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	91		25-150
STL00991	13C4 PFOS	58		25-150
STL00994	18O2 PFHxS	73		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_007.d
Lims ID: 320-23542-A-3-A
Client ID: DPT-16-34-SO-14-15
Sample Type: Client
Inject. Date: 20-Nov-2016 21:25:48 ALS Bottle#: 16 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23542-a-3-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 16:24:46 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK015

First Level Reviewer: changnoit Date: 23-Nov-2016 15:14:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.493	1.493	0.0	1.000	57166	0.3923			531	
D 2 13C4 PFBA										
217.00 > 172.00	1.493	1.493	0.0		8376510	42.4		84.8	930175	
D 4 13C5-PFPeA										
267.90 > 223.00	1.752	1.752	0.0		8191032	51.2		102	670633	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.752	1.762	-0.010	1.000	95954	0.5637			884	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.791	1.791	0.0	1.000	27508	0.1228				
298.90 > 99.00	1.791	1.791	0.0	1.000	12560		2.19(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.042	2.040	0.002	1.000	141021	1.02			2379	
D 6 13C2 PFHxA										
315.00 > 270.00	2.042	2.040	0.002		7288295	50.2		100	449988	
D 11 13C4-PFHpA										
367.00 > 322.00	2.367	2.366	0.001		6468335	49.2		98.4	444770	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.367	2.372	-0.005	1.000	101808	0.7689			570	
D 10 18O2 PFHxS										
403.00 > 84.00	2.383	2.382	0.001		6982890	34.6		73.1	522646	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.388	2.387	0.001	1.000	797472	5.10				
D 47 M2-6:2FTS										
429.00 > 409.00	2.706	2.704	0.002		6119	0.1167		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.706	2.713	-0.007	1.000	69778	NR				

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.725	2.733	-0.008	1.000	1659453	12.7			24917	M
413.00 > 169.00	2.725	2.733	-0.008	1.000	1099513		1.51(0.90-1.10)		37747	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.743	2.733	0.010	1.000	38246	0.3716				
D 14 13C4 PFOA										
417.00 > 372.00	2.725	2.733	-0.008		6239172	45.7		91.4	605585	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.104	3.096	0.008	1.000	13290993	135.5			1336771	
499.00 > 99.00	3.104	3.096	0.008	1.000	2969240		4.48(0.90-1.10)		361023	
20 Perfluorononanoic acid										M
463.00 > 419.00	3.096	3.096	0.0	1.000	64185	0.7061			543	M
D 19 13C5 PFNA										
468.00 > 423.00	3.104	3.096	0.008		4626806	42.3		84.6	303643	
D 17 13C4 PFOS										
503.00 > 80.00	3.104	3.096	0.008		4310431	27.7		57.9	297213	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.451	3.456	-0.005	1.004	23732	NR				
D 42 M2-8:2FTS										
529.00 > 509.00	3.436	3.456	-0.020		2521	0.0462		0.0		
D 21 13C8 FOSA										
506.00 > 78.00	3.451	3.458	-0.007		5123735	20.4		40.9	204639	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.459	3.458	0.001	1.000	5586574	60.5			1827	
D 23 13C2 PFDA										
515.00 > 470.00	3.459	3.465	-0.006		3631532	36.2		72.5	356782	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.459	3.465	-0.006	1.000	32315	0.4484			510	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.617	3.623	-0.006		1242	0.0286		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.609	3.632	-0.023	0.998	1449	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.774	3.782	-0.008	1.000	1273	0.0232				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.793	3.789	0.004		2016	0.0409		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.801	3.798	0.003	1.002	2367	NR				
D 27 13C2 PFUnA										
565.00 > 520.00	3.793	3.800	-0.007		2306352	29.4		58.8	186835	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.699	3.800	-0.101	1.000	66347	1.40			1614	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.940	3.963	-0.023		1337	0.0221		0.0		
54 MeFOSA										
512.00 > 169.00	3.966	3.972	-0.006	1.000	2008	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.084	4.091	-0.007		1755415	22.7		45.4	120978	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.149	4.153	-0.004		2198	0.0402		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.296	4.161	0.135	1.000	378	NR				
D 32 13C2-PFTeDA										
715.00 > 670.00	4.581	4.586	-0.005		3799101	22.3		44.5	322006	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	4.991	4.990	0.001	1.000	34151	0.3945			790	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.991	4.990	0.001		2916703	30.9		61.9	401932	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.336	5.344	-0.008	1.000	1355	0.0359			21.9	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Review Flags

M - Manually Integrated

Report Date: 23-Nov-2016 14:16:00 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_007.d

Injection Date: 20-Nov-2016 21:25:48 Instrument ID: A8_N

Lims ID: 320-23542-A-3-A Lab Sample ID: 320-23542-3

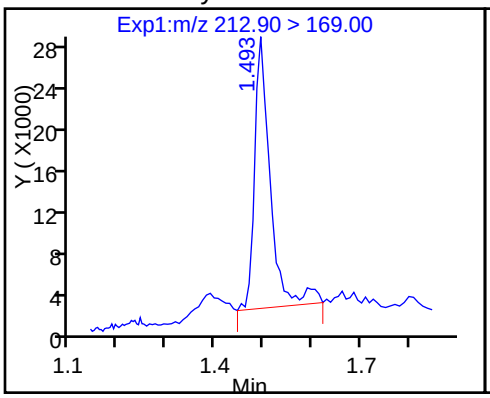
Client ID: DPT-16-34-SO-14-15

Operator ID: A8-PC\A8 ALS Bottle#: 16 Worklist Smp#: 7

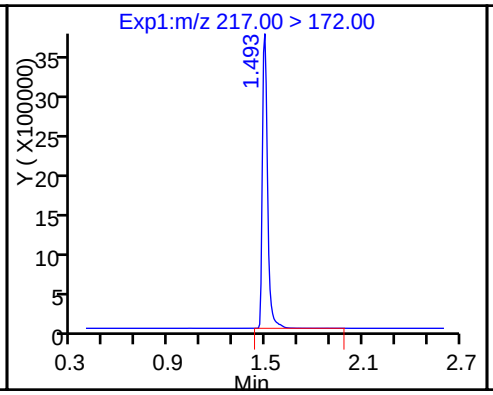
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

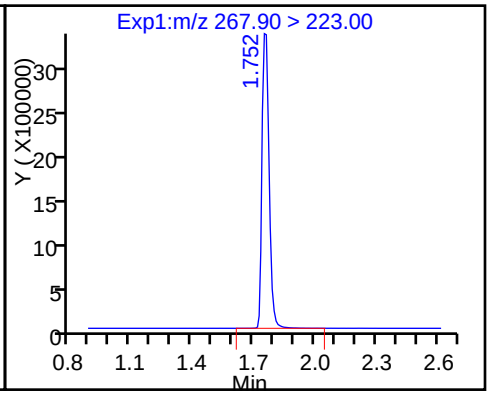
1 Perfluorobutyric acid



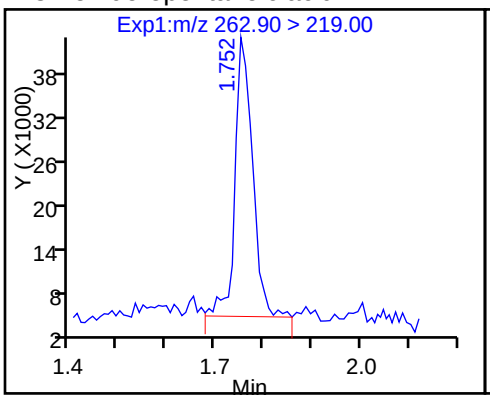
D 2 13C4 PFBA



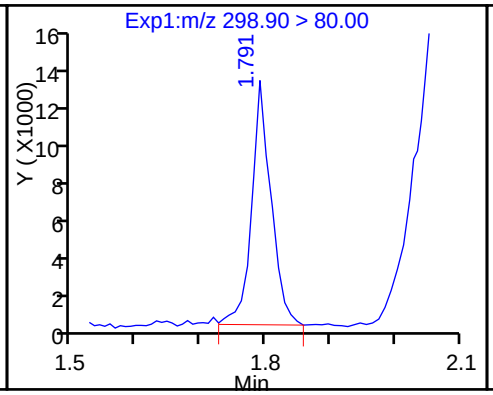
D 4 13C5-PFPeA



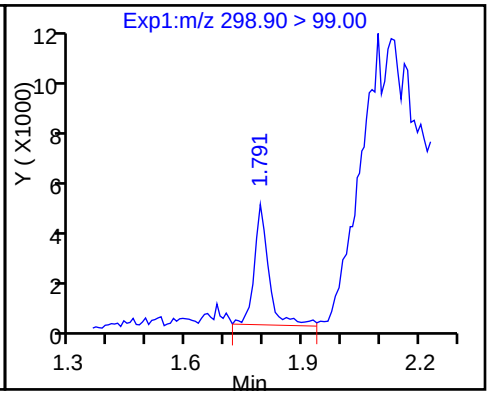
3 Perfluoropentanoic acid



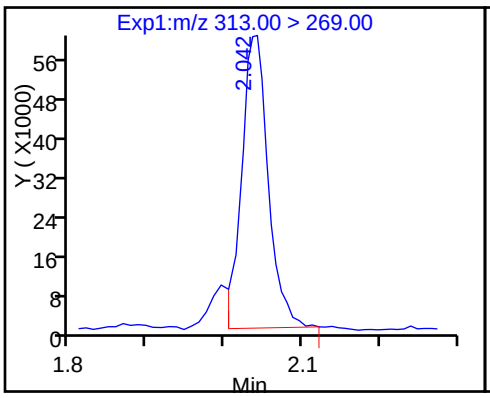
5 Perfluorobutanesulfonic acid



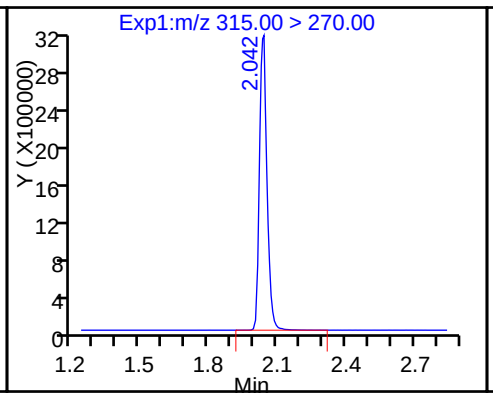
5 Perfluorobutanesulfonic acid



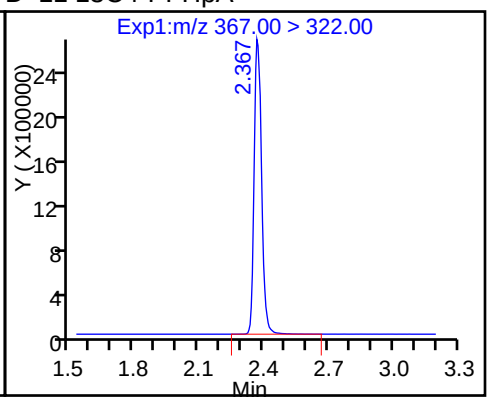
7 Perfluorohexanoic acid



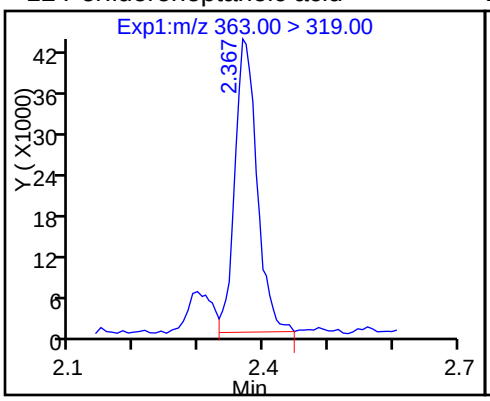
D 6 13C2 PFHxA



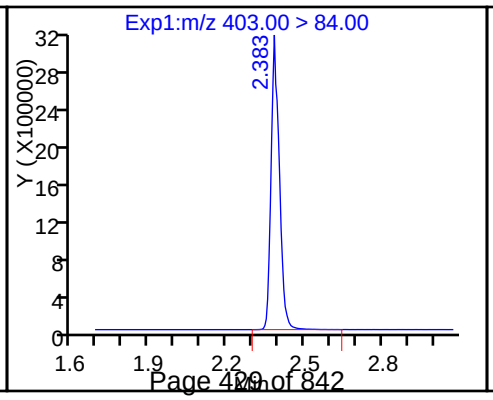
D 11 13C4-PFHpA



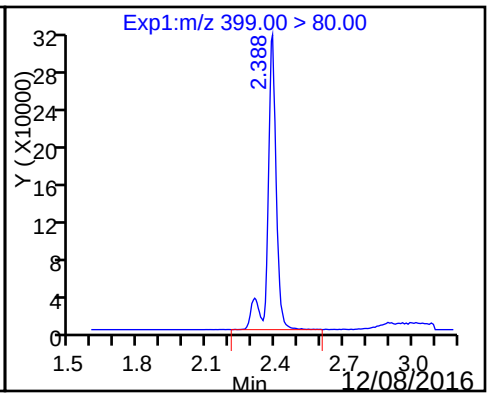
12 Perfluoroheptanoic acid



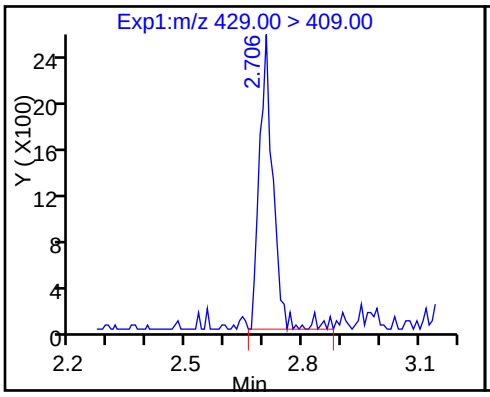
D 10 18O2 PFHxS



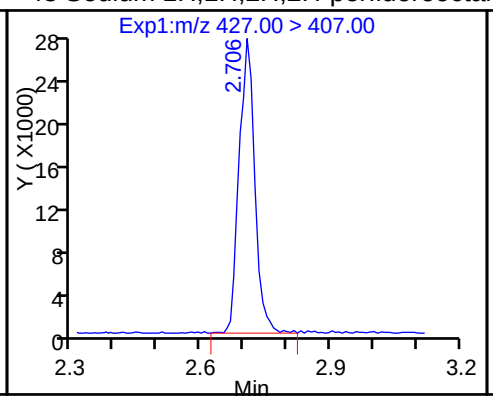
9 Perfluorohexanesulfonic acid



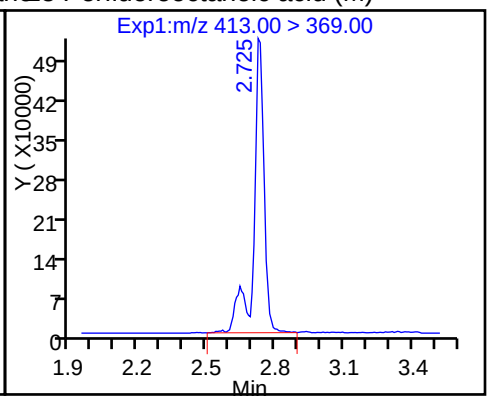
D 47 M2-6:2FTS



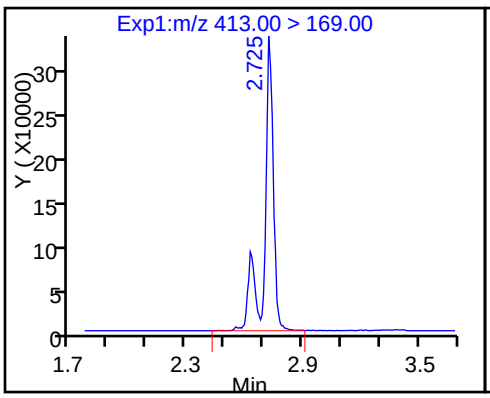
48 Sodium 1H,1H,2H,2H-perfluorooctane



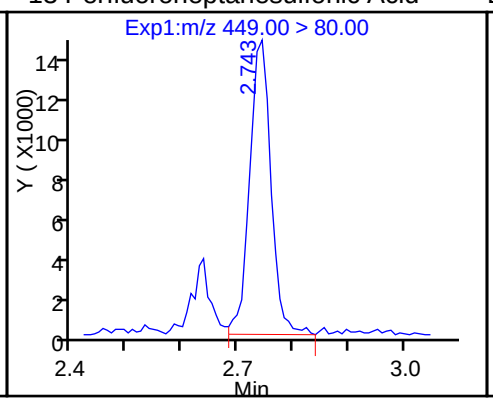
15 Perfluorooctanoic acid (M)



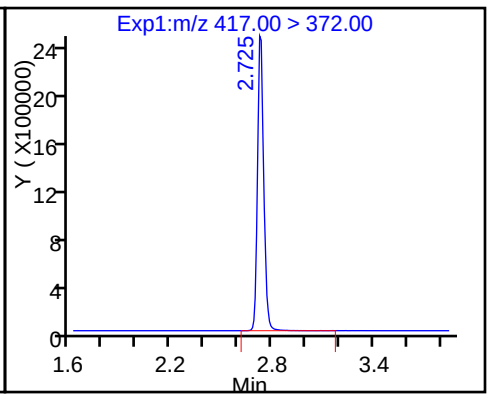
15 Perfluorooctanoic acid



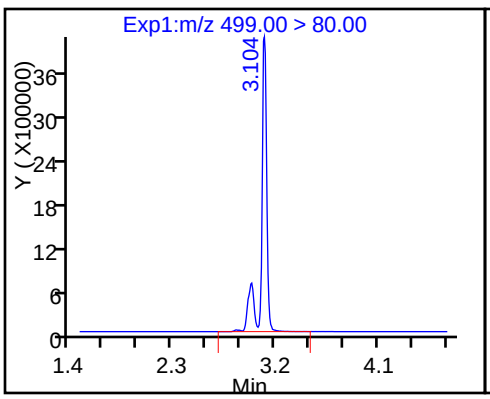
13 Perfluoroheptanesulfonic Acid



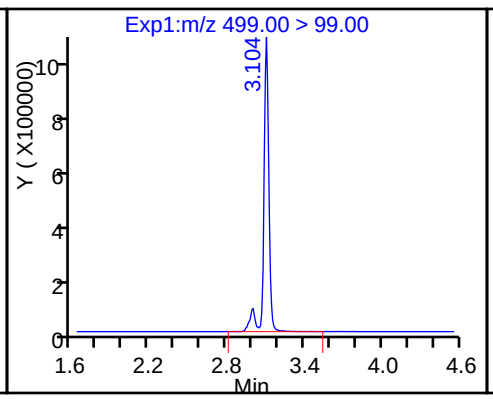
D 14 13C4 PFOA



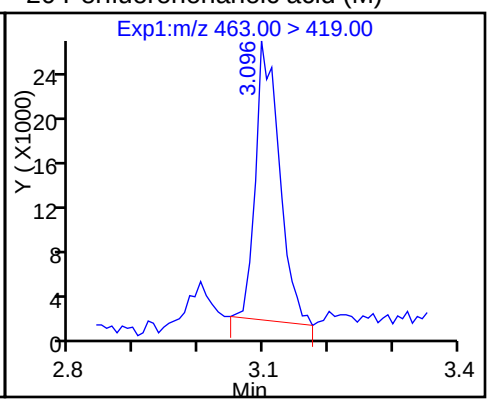
18 Perfluorooctane sulfonic acid



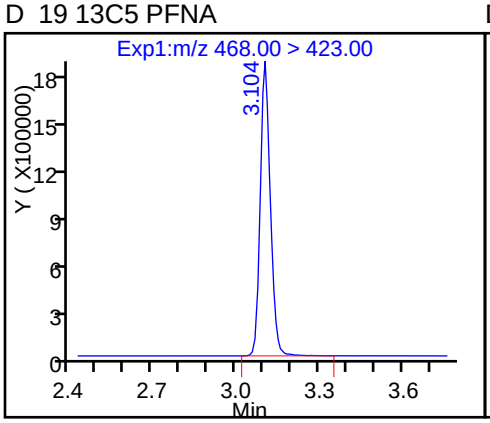
18 Perfluorooctane sulfonic acid



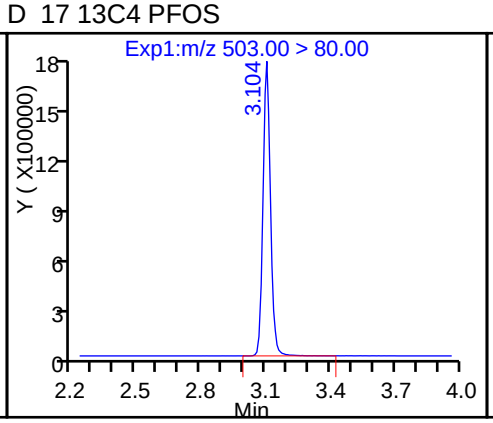
20 Perfluorononanoic acid (M)



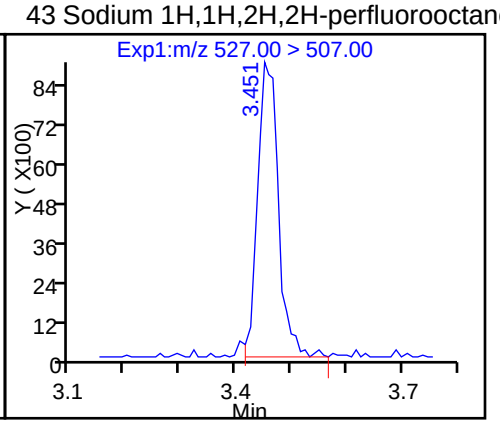
D 19 13C5 PFNA



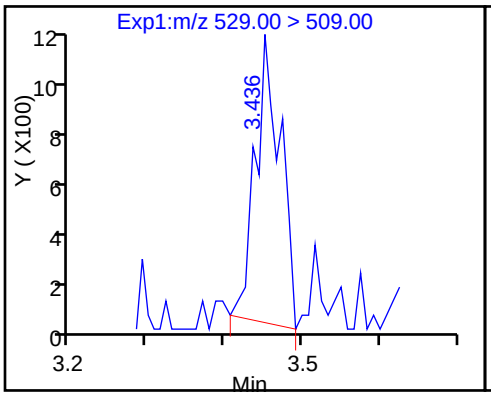
D 17 13C4 PFOS



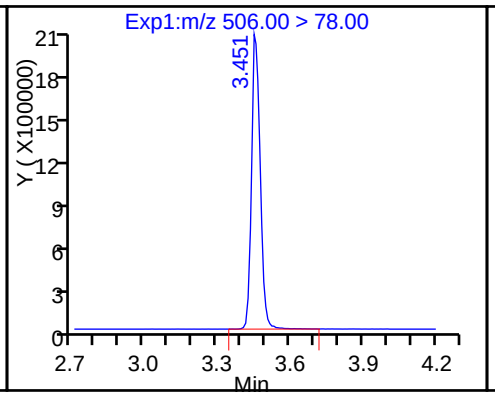
43 Sodium 1H,1H,2H,2H-perfluorooctane



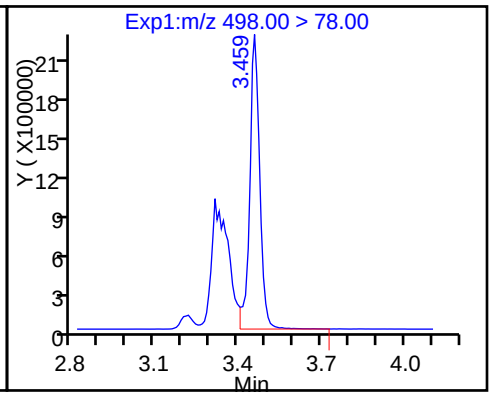
D 42 M2-8:2FTS



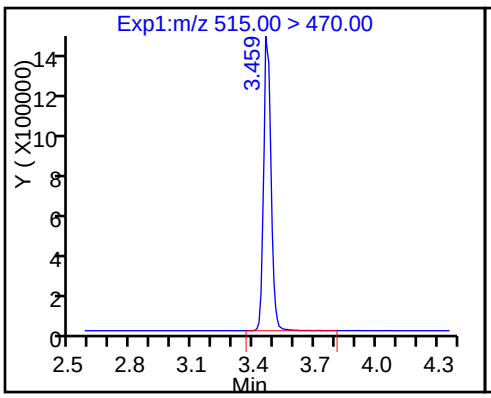
D 21 13C8 FOSA



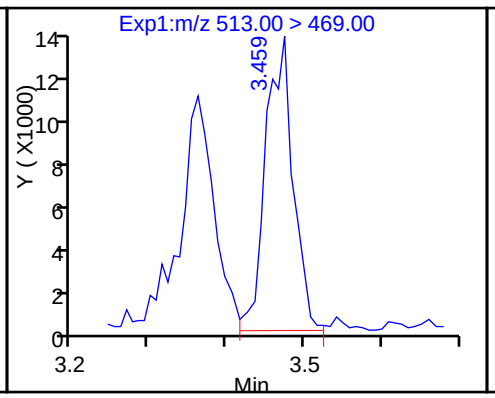
22 Perfluorooctane Sulfonamide



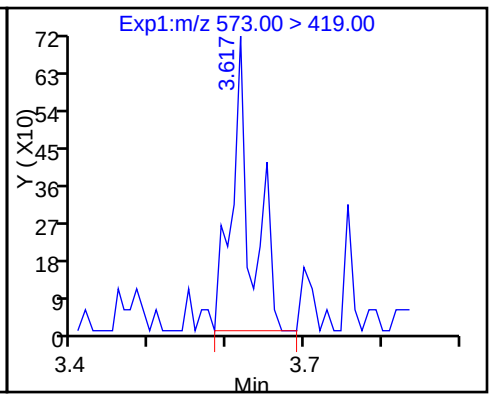
D 23 13C2 PFDA



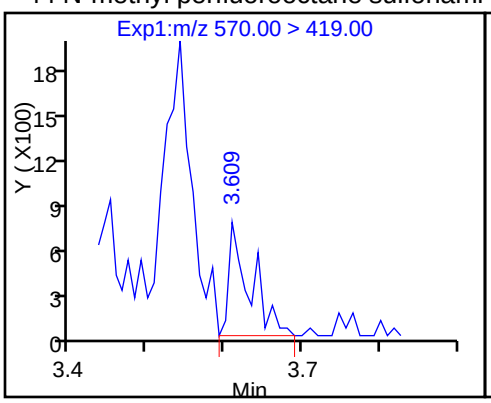
24 Perfluorodecanoic acid



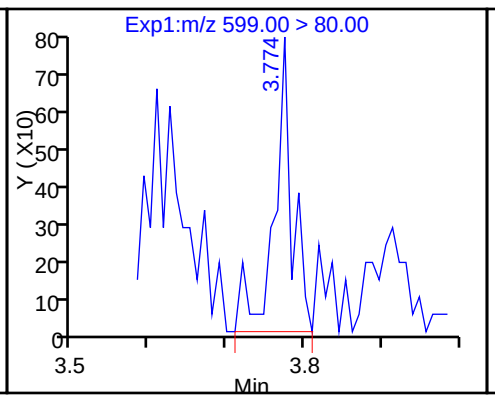
D 45 d3-NMeFOSAA



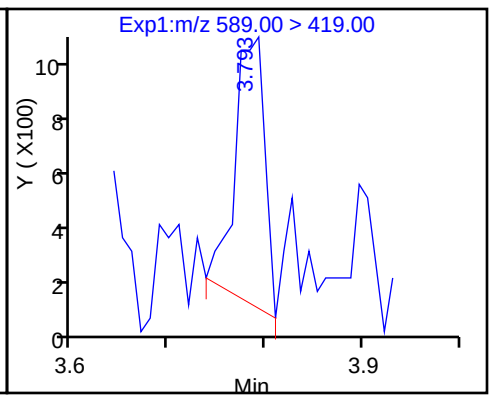
44 N-methyl perfluorooctane sulfonami



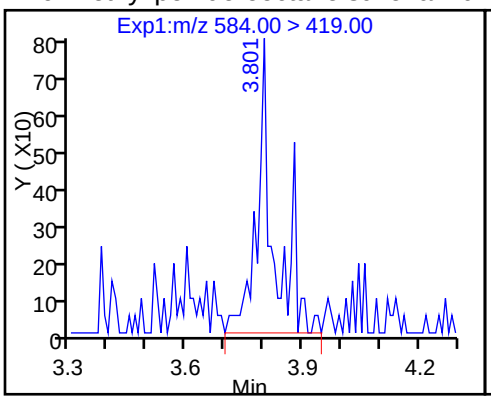
26 Perfluorodecane Sulfonic acid



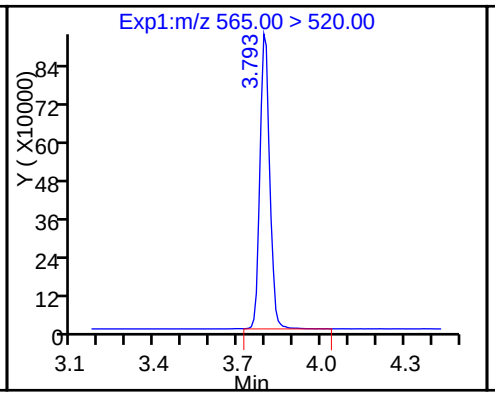
D 46 d5-NEtFOSAA



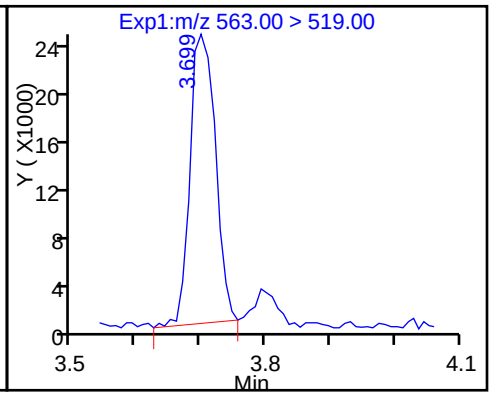
49 N-ethyl perfluorooctane sulfonamid



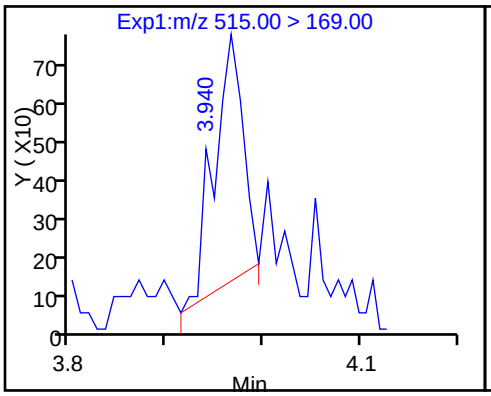
D 27 13C2 PFUnA



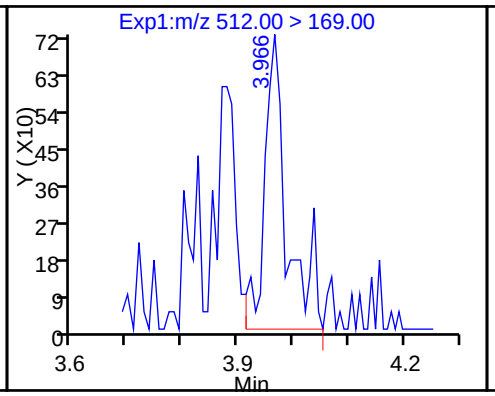
28 Perfluoroundecanoic acid



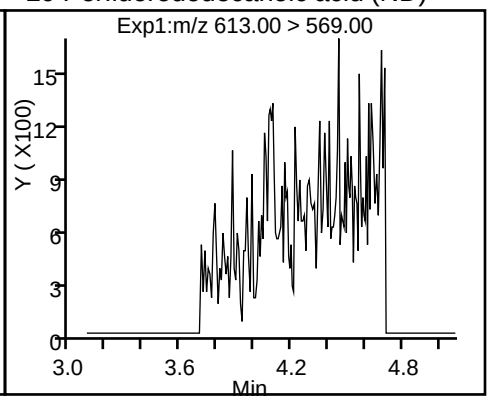
D 52 d-N-MeFOSA-M



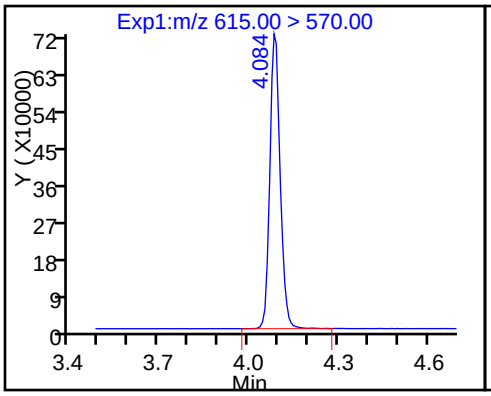
54 MeFOSA



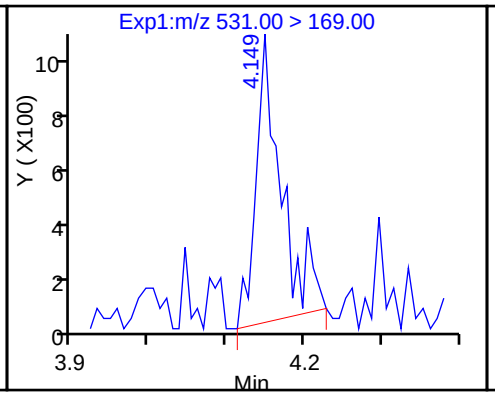
29 Perfluorododecanoic acid (ND)



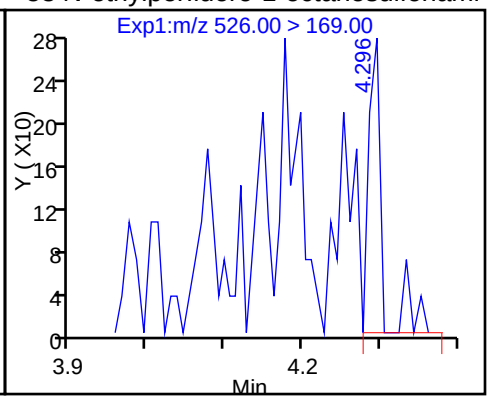
D 30 13C2 PFDoA



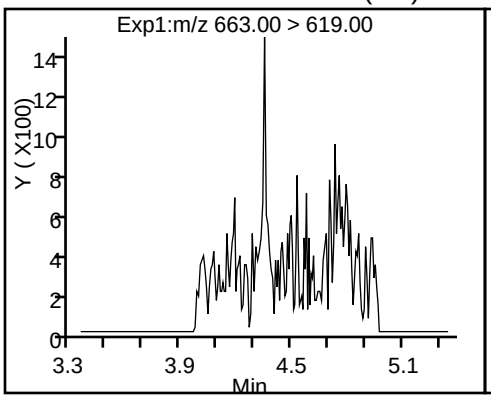
D 51 d-N-EtFOSA-M



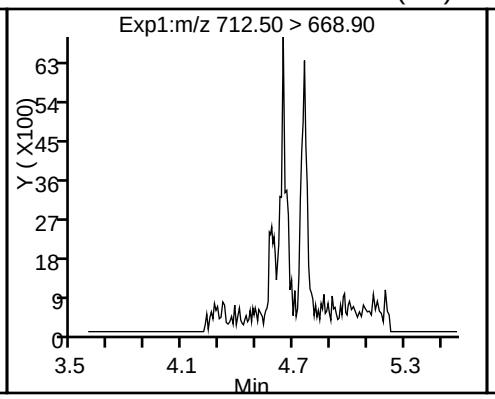
53 N-ethylperfluoro-1-octanesulfonami



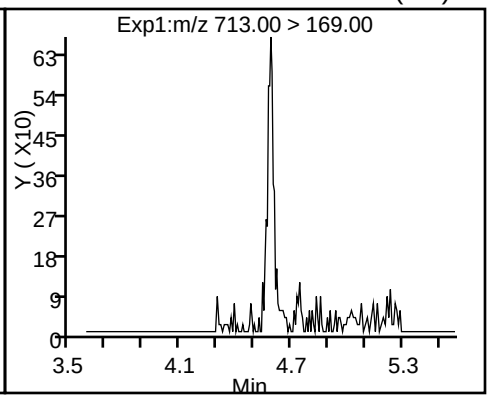
31 Perfluorotridecanoic acid (ND)



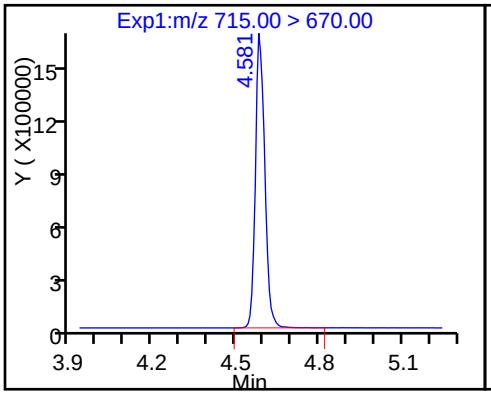
33 Perfluorotetradecanoic acid (ND)



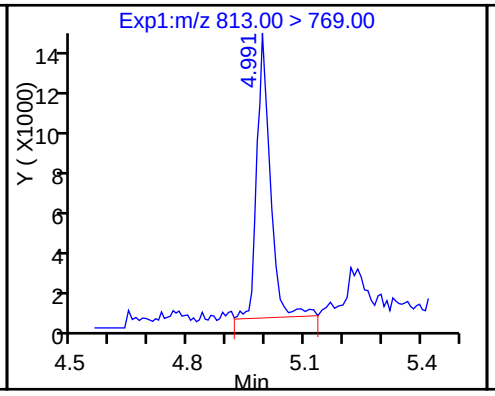
33 Perfluorotetradecanoic acid (ND)



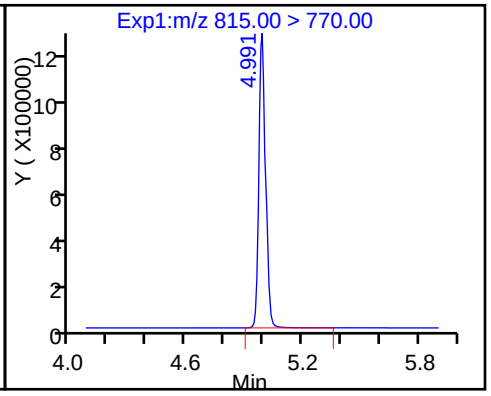
D 32 13C2-PFTeDA



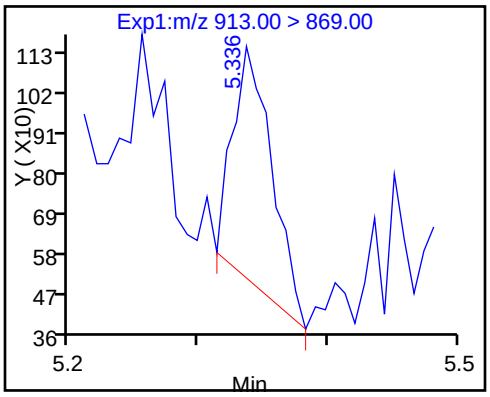
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

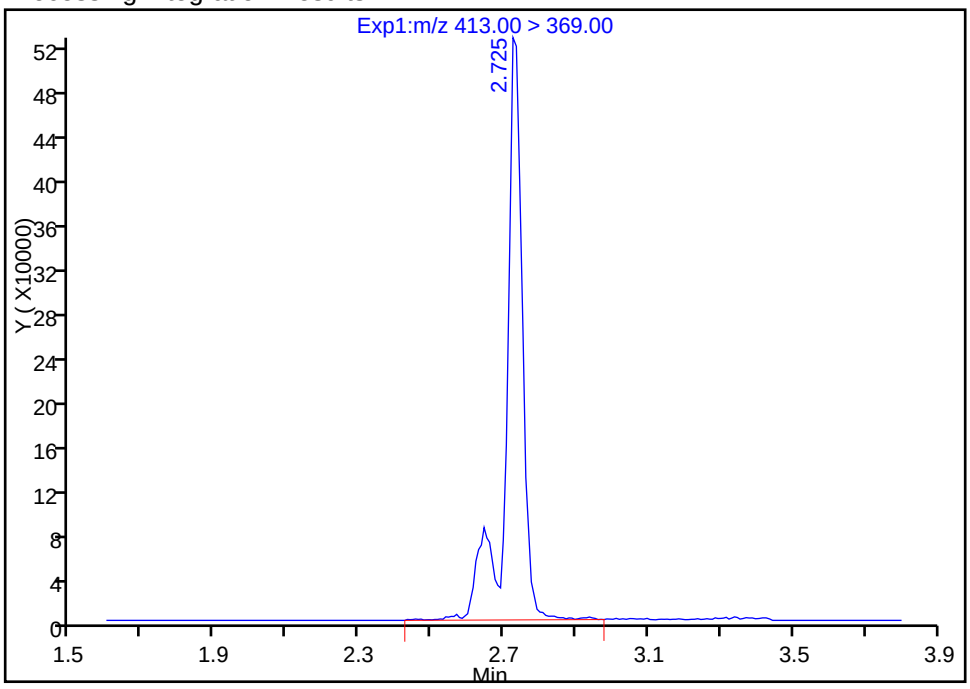
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_007.d				
Injection Date:	20-Nov-2016 21:25:48	Instrument ID:	A8_N		
Lims ID:	320-23542-A-3-A	Lab Sample ID:	320-23542-3		
Client ID:	DPT-16-34-SO-14-15				
Operator ID:	A8-PC\A8	ALS Bottle#:	16	Worklist Smp#:	7
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

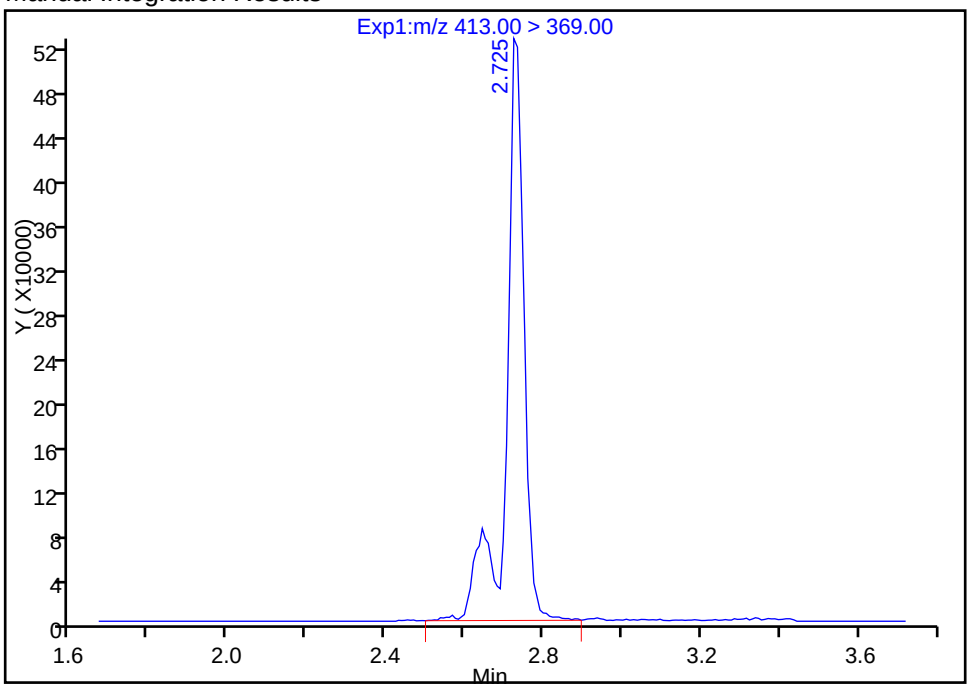
Processing Integration Results

RT: 2.72
Area: 1675254
Amount: 12.784798
Amount Units: ng/ml



Manual Integration Results

RT: 2.72
Area: 1659453
Amount: 12.664212
Amount Units: ng/ml



Reviewer: changnoit, 23-Nov-2016 15:14:17

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-34-SO-14-15 DL | Lab Sample ID: 320-23542-3 DL

Matrix: Solid | Lab File ID: 02DEC2016B_006.d

Analysis Method: 537 (Modified) | Date Collected: 11/14/2016 13:25

Extraction Method: SHAKE | Date Extracted: 11/17/2016 12:49

Sample wt/vol: 5.05(g) | Date Analyzed: 12/02/2016 13:37

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 10

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

% Moisture: 20.5 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 140382 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*3.6*	*J D*	*6.2*	3.7	*1.3*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	35	J D	6.2	3.7	1.6
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*3.7*	*U*	*5.0*	3.7	*1.3*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	125		25-150
STL00991	13C4 PFOS	72		25-150
STL00994	18O2 PFHxS	99		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_006.d
Lims ID: 320-23542-A-3-A
Client ID: DPT-16-34-SO-14-15
Sample Type: Client
Inject. Date: 02-Dec-2016 13:37:02 ALS Bottle#: 6 Worklist Smp#: 29
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23542-A-3-A 10X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 15:05:01 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 15:02:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.582	1.615	-0.033		1614574	4.74		9.5	266296	
1 Perfluorobutyric acid										
212.90 > 169.00	1.582	1.617	-0.035	1.000	10185	0.0356			76.1	
D 4 13C5-PFPeA										
267.90 > 223.00	1.877	1.918	-0.041		1442054	5.34		10.7	572894	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.877	1.920	-0.043	1.000	17598	0.0586			132	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.916	1.961	-0.045	1.000	5999	0.0124				
298.90 > 99.00	1.916	1.961	-0.045	1.000	3098		1.94(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.179	2.239	-0.060		1209075	4.91		9.8	165509	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.179	2.241	-0.062	1.000	26164	0.1132			681	
D 11 13C4-PFHpA										
367.00 > 322.00	2.536	2.599	-0.063		1225690	5.82		11.6	255164	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.536	2.600	-0.064	1.000	16399	0.0647			230	
D 10 18O2 PFHxS										
403.00 > 84.00	2.544	2.614	-0.070		1415961	4.68		9.9	582115	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.551	2.615	-0.064	1.000	167174	0.5270				
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.893	2.913	-0.020	1.000	38473	NR				
D 47 M2-6:2FTS										
429.00 > 409.00	2.893	2.915	-0.022		2701	0.0194		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.909	2.984	-0.075	1.000	404716	1.44			5840	
413.00 > 169.00	2.909	2.984	-0.075	1.000	239802		1.69(0.90-1.10)		19169	
D 14 13C4 PFOA										
417.00 > 372.00	2.909	2.984	-0.075		1376307	6.27		12.5	175339	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.918	2.986	-0.068	1.000	7306	0.0355				
D 17 13C4 PFOS										
503.00 > 80.00	3.282	3.365	-0.083		840509	3.44		7.2	167660	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.282	3.366	-0.084	1.000	2655370	13.9			872555	
499.00 > 99.00	3.282	3.366	-0.084	1.000	603840		4.40(0.90-1.10)		57610	
20 Perfluorononanoic acid										
463.00 > 419.00	3.297	3.373	-0.076	1.000	16867	0.0970			317	
D 19 13C5 PFNA										
468.00 > 423.00	3.289	3.374	-0.085		876878	4.92		9.8	65703	
D 21 13C8 FOSA										
506.00 > 78.00	3.596	3.651	-0.055		1001179	2.42		4.8	209244	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.605	3.656	-0.051	1.000	1066053	5.69			2013	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.638	3.674	-0.036	1.000	5105	NR				
24 Perfluorodecanoic acid										
513.00 > 469.00	3.742	3.738	0.004	1.000	1042	0.008431			28.7	
D 23 13C2 PFDA										
515.00 > 470.00	3.656	3.738	-0.082		637552	3.84		7.7	23465	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.787	3.839	-0.052		1138	0.0142		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.805	3.847	-0.042	1.005	1627	NR				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.980	4.009	-0.029		2861	0.0321		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.971	4.016	-0.045	0.998	1455	NR				
D 27 13C2 PFUnA										
565.00 > 520.00	3.971	4.070	-0.099		390923	3.11		6.2	36028	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.874	4.071	-0.197	1.000	12722	0.1536			303	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.292	4.105	0.187		242	0.002276		0.0		
54 MeFOSA										
512.00 > 169.00	4.102	4.110	-0.008	1.000	544	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.275	4.370	-0.095		304563	2.61		5.2	9620	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.787	4.882	-0.095		651319	2.69		5.4	135746	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.209	5.320	-0.111		373011	2.86		5.7	31399	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.282	5.320	-0.038	1.000	627	-0.8128			11.9	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.671	5.720	-0.049	1.000	574	0.0120			9.0	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

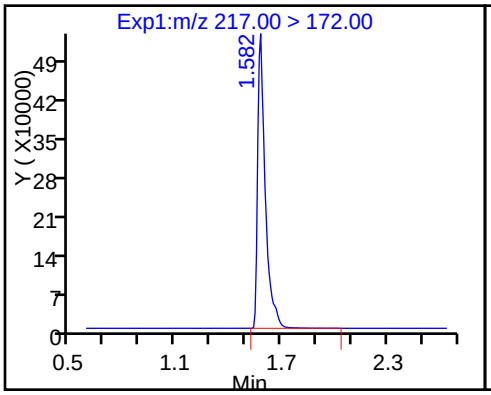
Report Date: 02-Dec-2016 15:08:13 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

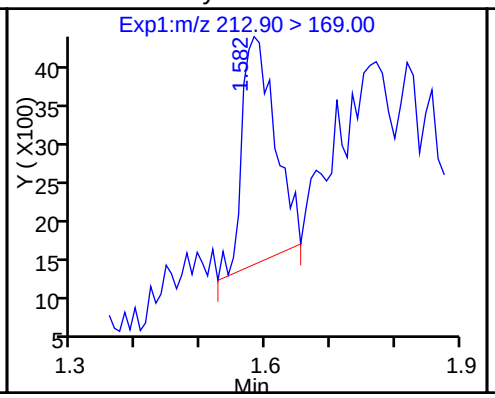
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_006.d

Injection Date:	02-Dec-2016 13:37:02	Instrument ID:	A8_N		
Lims ID:	320-23542-A-3-A	Lab Sample ID:	320-23542-3		
Client ID:	DPT-16-34-SO-14-15				
Operator ID:	A8-PC\A8	ALS Bottle#:	6	Worklist Smp#:	29
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

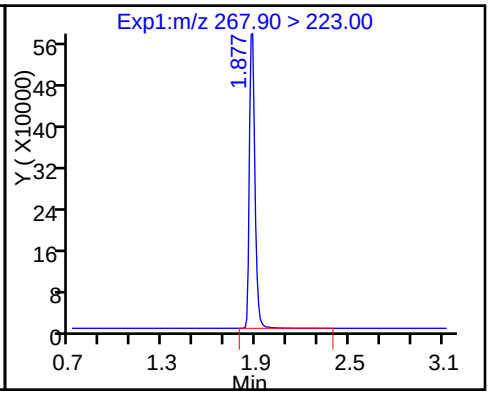
D 2 13C4 PFBA



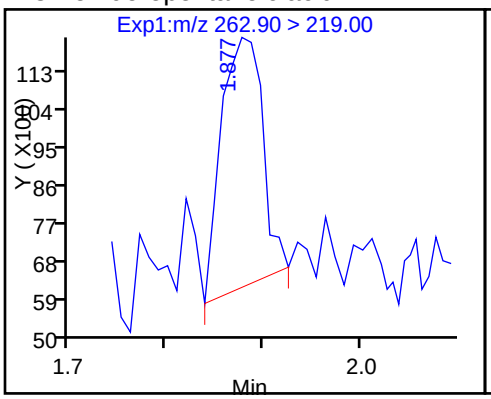
1 Perfluorobutyric acid



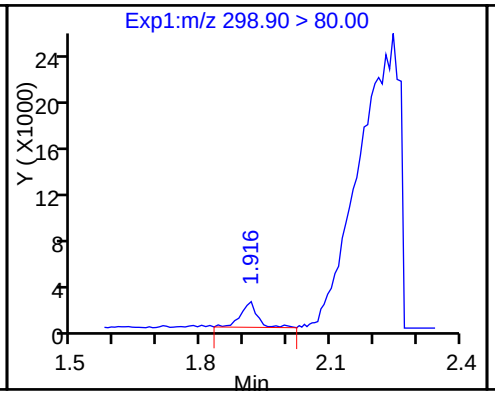
D 4 13C5-PFPeA



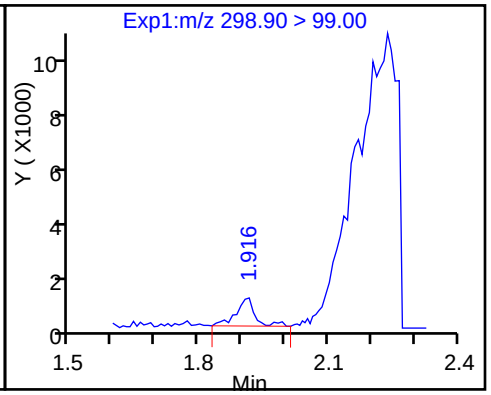
3 Perfluoropentanoic acid



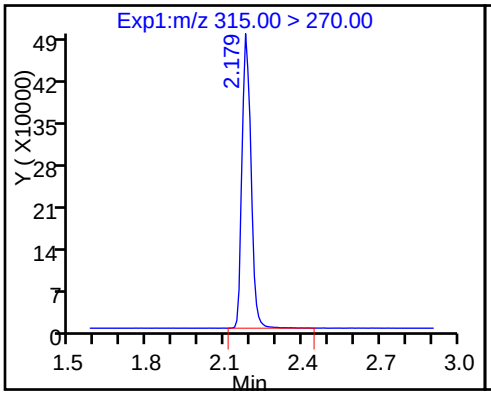
5 Perfluorobutanesulfonic acid



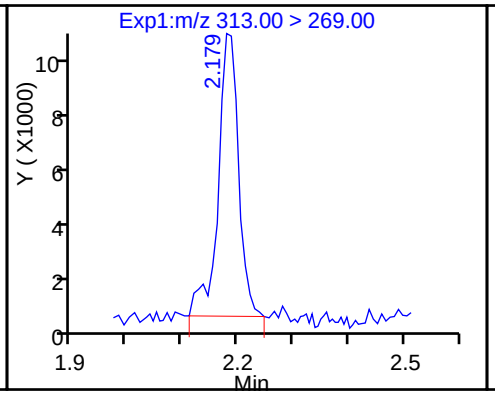
5 Perfluorobutanesulfonic acid



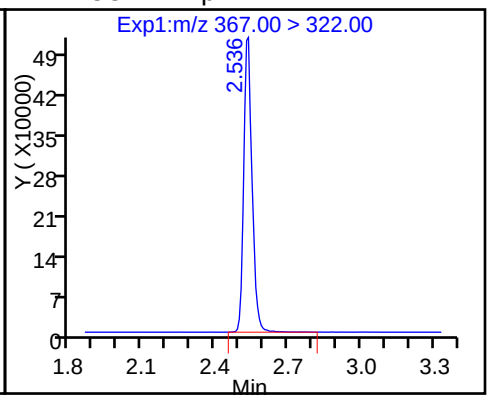
D 6 13C2 PFHxA



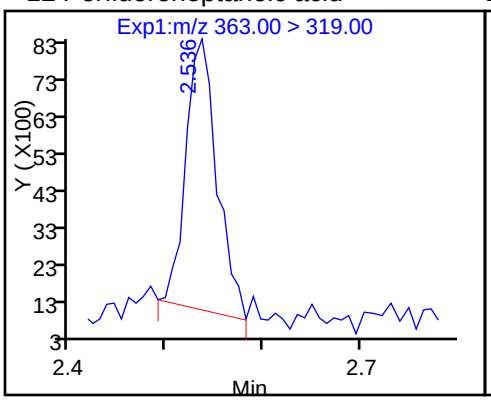
7 Perfluorohexanoic acid



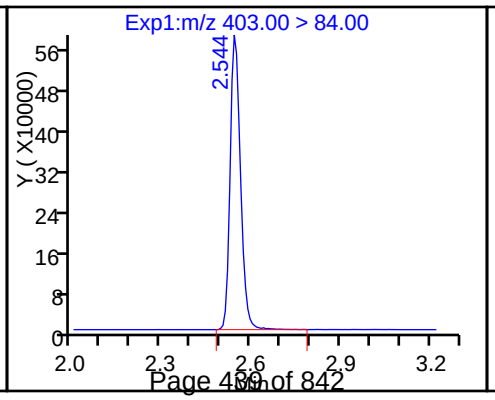
D 11 13C4-PFHpA



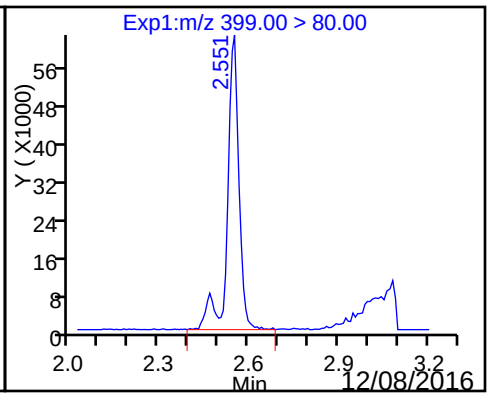
12 Perfluoroheptanoic acid



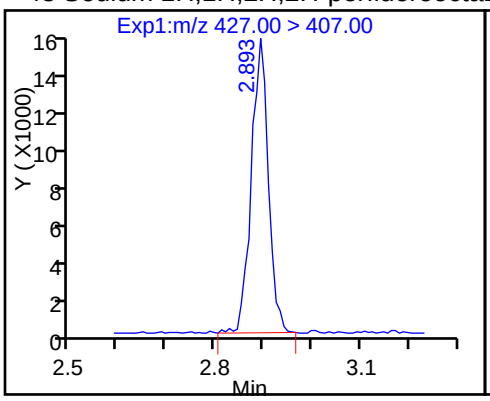
D 10 18O2 PFHxS



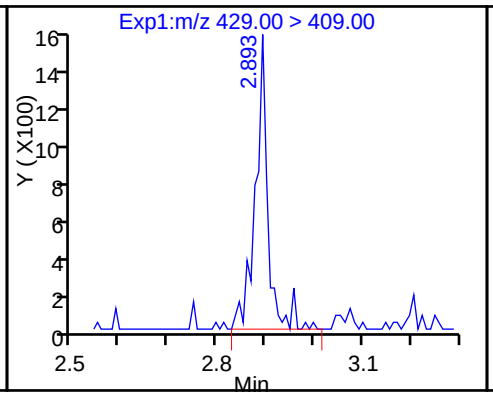
9 Perfluorohexanesulfonic acid



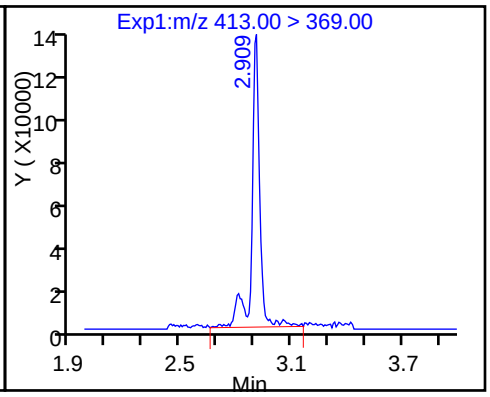
48 Sodium 1H,1H,2H,2H-perfluorooctane



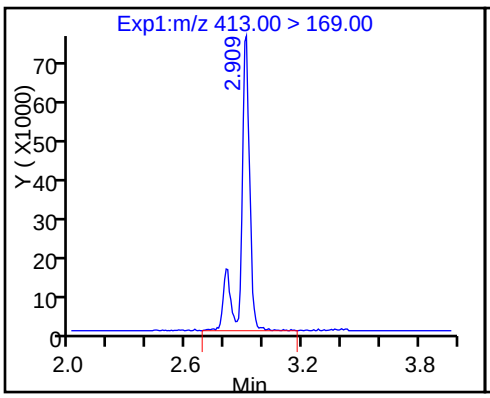
D 47 M2-6:2FTS



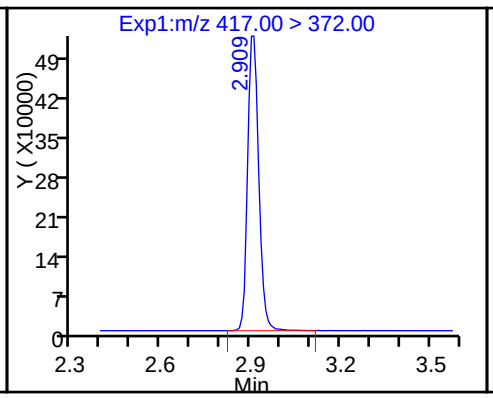
15 Perfluorooctanoic acid



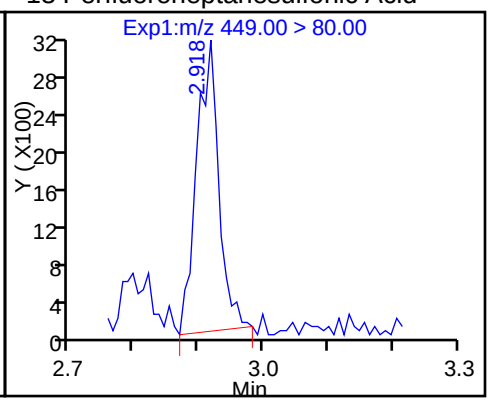
15 Perfluorooctanoic acid



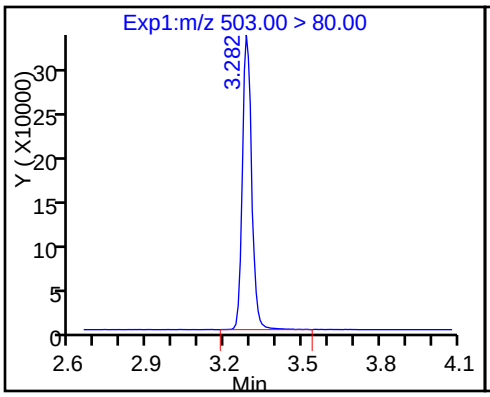
D 14 13C4 PFOA



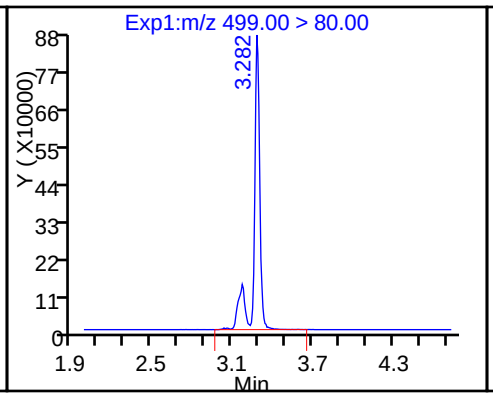
13 Perfluoroheptanesulfonic Acid



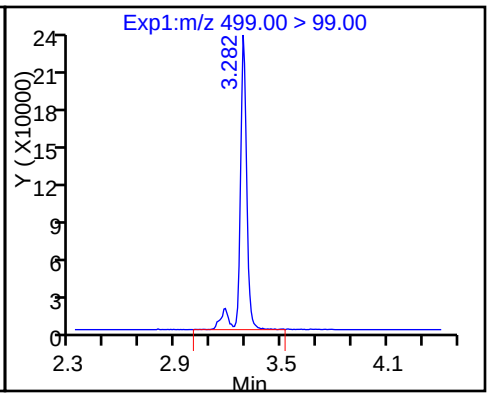
D 17 13C4 PFOS



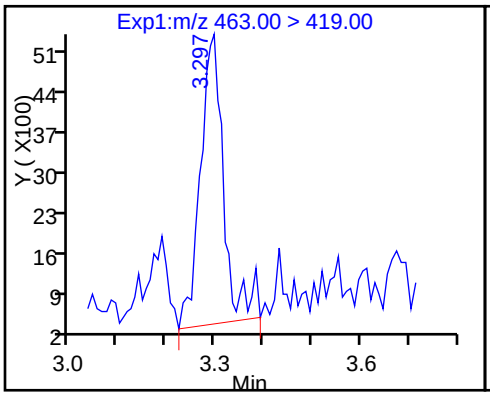
18 Perfluorooctane sulfonic acid



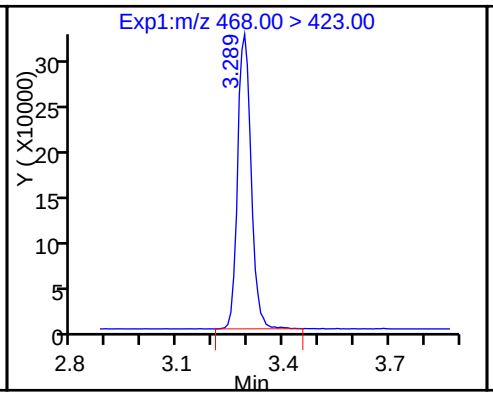
18 Perfluorooctane sulfonic acid



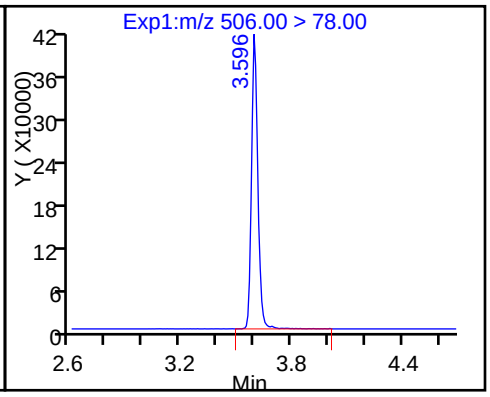
20 Perfluorononanoic acid



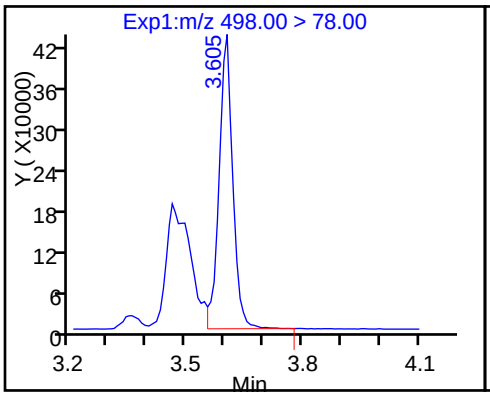
D 19 13C5 PFNA



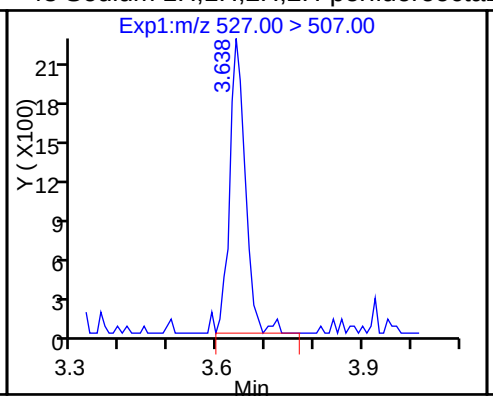
D 21 13C8 FOSA



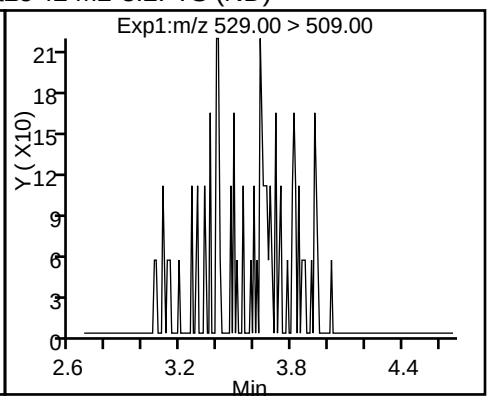
22 Perfluorooctane Sulfonamide



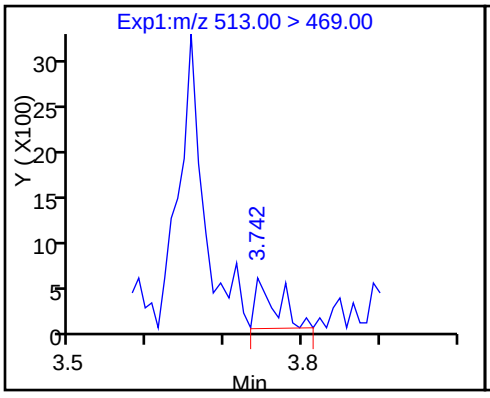
43 Sodium 1H,1H,2H,2H-perfluorooctane



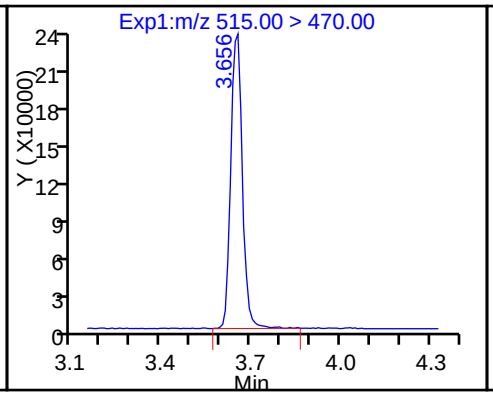
D 42 M2-8:2FTS (ND)



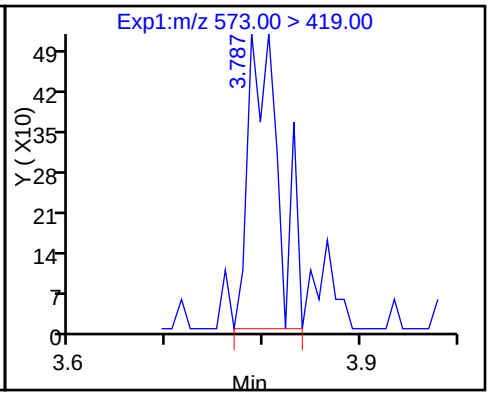
24 Perfluorodecanoic acid



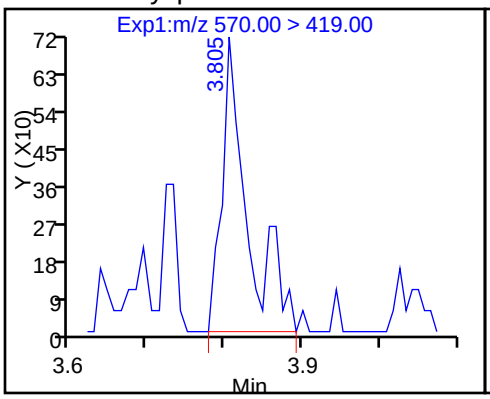
D 23 13C2 PFDA



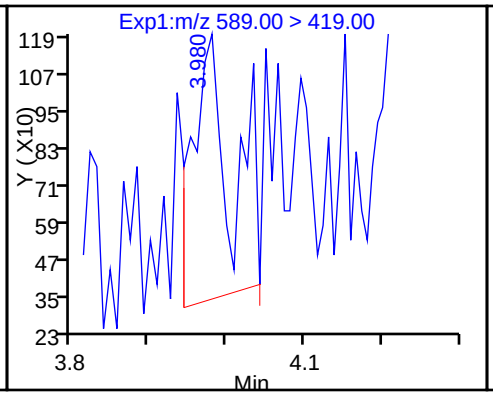
D 45 d3-NMeFOSAA



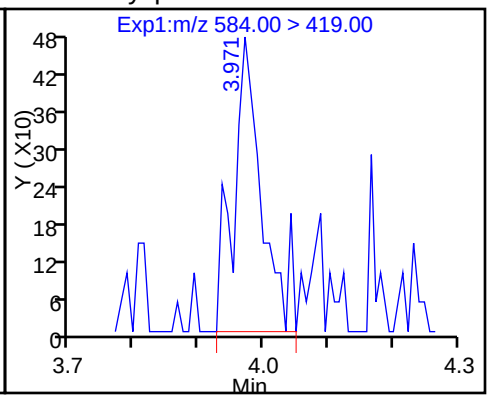
44 N-methyl perfluorooctane sulfonami



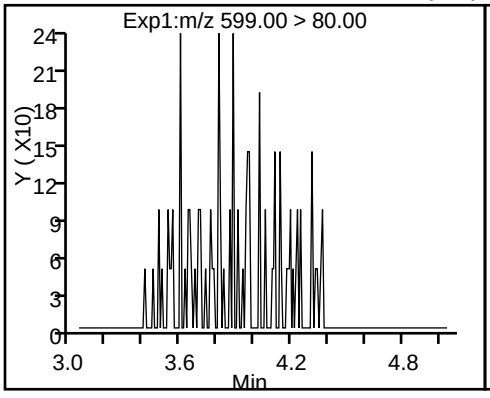
D 46 d5-NEtFOSAA



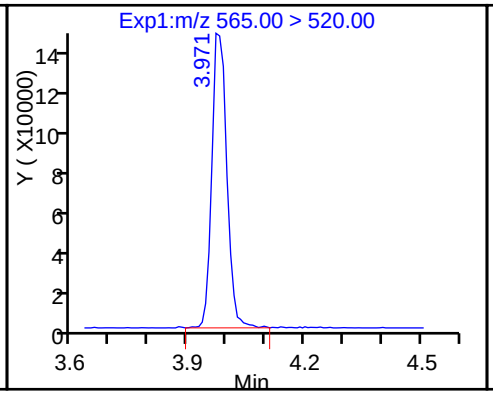
49 N-ethyl perfluorooctane sulfonamid



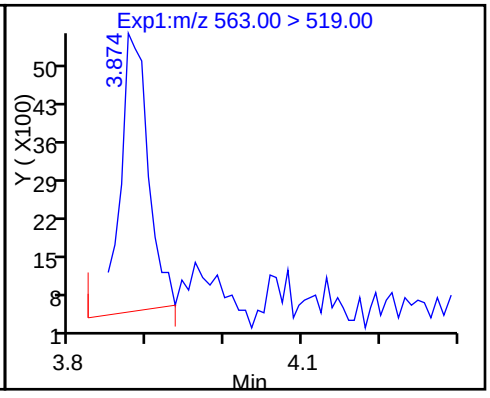
26 Perfluorodecane Sulfonic acid (ND)



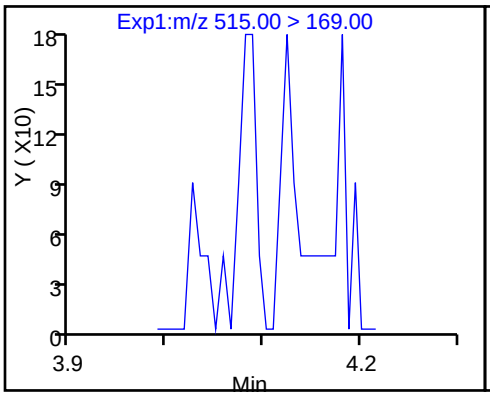
D 27 13C2 PFUnA



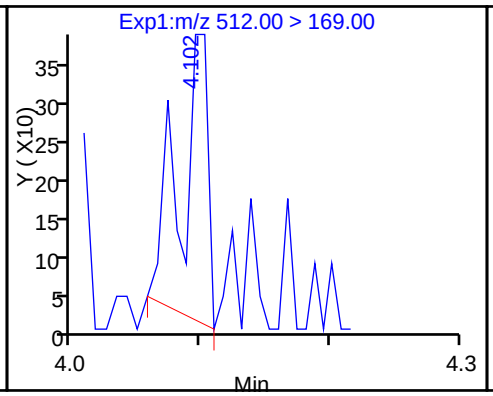
28 Perfluoroundecanoic acid



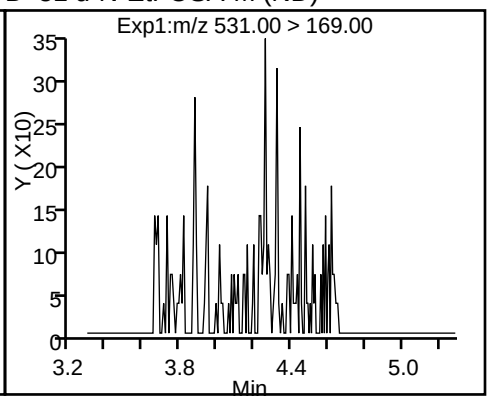
D 52 d-N-MeFOSA-M



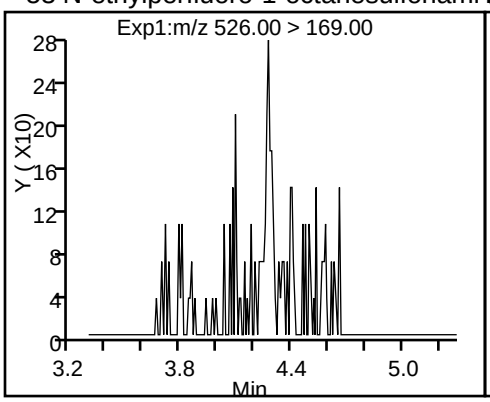
54 MeFOSA



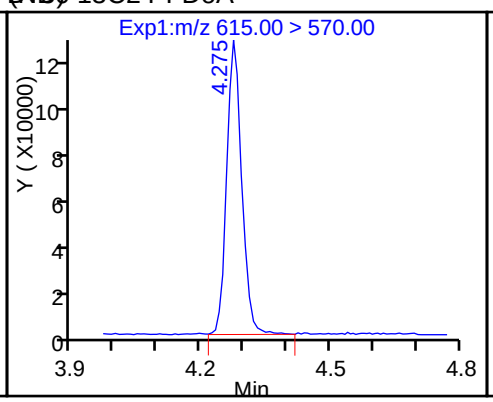
D 51 d-N-EtFOSA-M (ND)



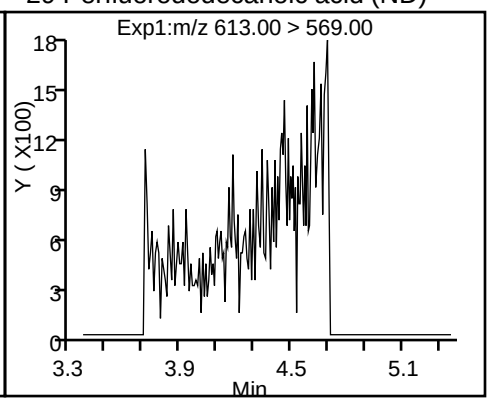
53 N-ethylperfluoro-1-octanesulfonami (ND)



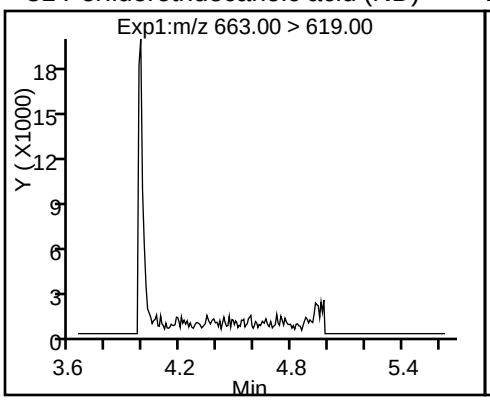
D 30 13C2 PFDoA



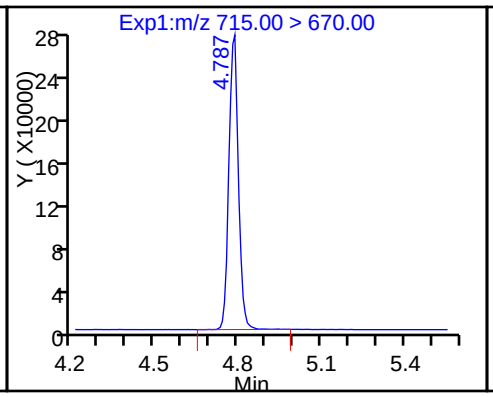
29 Perfluorododecanoic acid (ND)



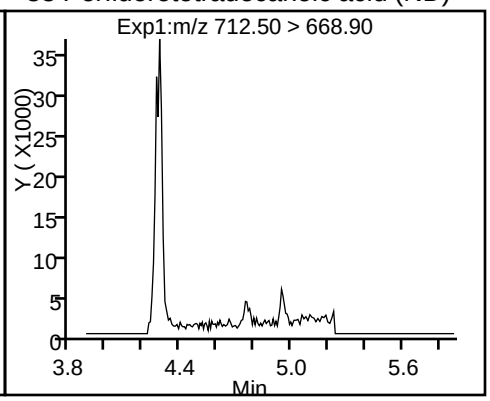
31 Perfluorotridecanoic acid (ND)



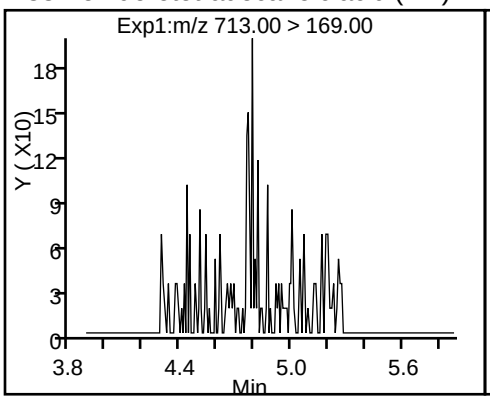
D 32 13C2-PFTeDA



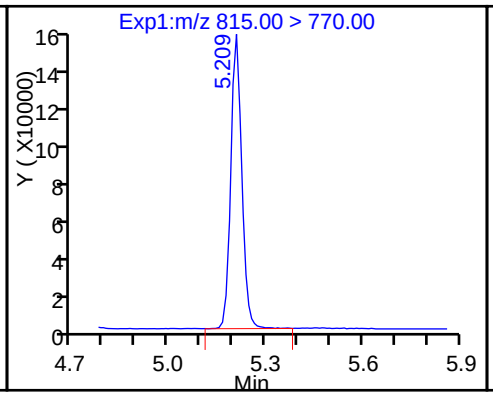
33 Perfluorotetradecanoic acid (ND)



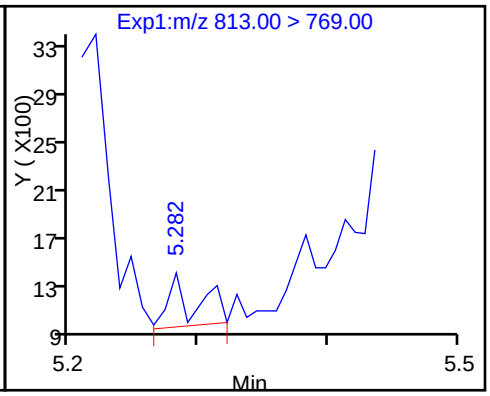
33 Perfluorotetradecanoic acid (ND)



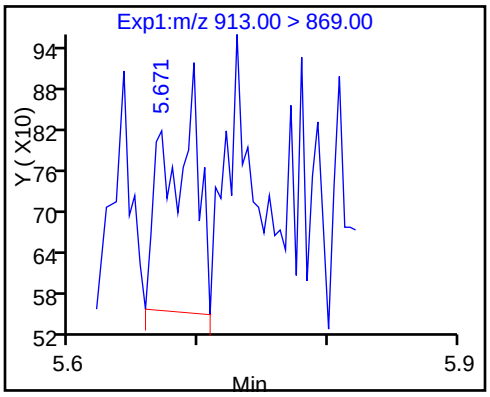
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-34-GW-31-35 | Lab Sample ID: 320-23542-4

Matrix: Water | Lab File ID: 20NOV2016D_020.d

Analysis Method: 537 (Modified) | Date Collected: 11/14/2016 14:30

Extraction Method: 3535 | Date Extracted: 11/17/2016 08:49

Sample wt/vol: 254.2(mL) | Date Analyzed: 11/20/2016 23:03

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 1

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

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

Analysis Batch No.: 138814 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.95*	*E M*	*0.0025*	0.0020	*0.00074*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*1.2*	*E*	*0.0039*	0.0030	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.12	M	0.0025	0.0020	0.00090

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	54		25-150
STL00991	13C4 PFOS	74		25-150
STL00994	18O2 PFHxS	52		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_020.d
Lims ID: 320-23542-A-4-A
Client ID: DPT-16-34-GW-31-35
Sample Type: Client
Inject. Date: 20-Nov-2016 23:03:21 ALS Bottle#: 25 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23542-a-4-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 16:22:35 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 16:22:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.800	1.791	0.009	1.000	9736539	61.3				M
298.90 > 99.00	1.800	1.791	0.009	1.000	4218666		2.31(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.391	2.382	0.009		4952033	24.5		51.8	235624	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.731	2.733	-0.002	1.000	37038385	481.0			328488	EM
413.00 > 169.00	2.731	2.733	-0.002	1.000	26318365		1.41(0.90-1.10)		710449	
D 14 13C4 PFOA										
417.00 > 372.00	2.731	2.733	-0.002		3666272	26.9		53.7	255201	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.111	3.096	0.015	1.000	77796488	624.8			714775	E
499.00 > 99.00	3.103	3.096	0.007	0.997	19589306		3.97(0.90-1.10)		1086933	
D 17 13C4 PFOS										
503.00 > 80.00	3.103	3.096	0.007		5472838	35.1		73.5	106582	

QC Flag Legend

Processing Flags
E - Exceeded Maximum Amount
Review Flags
M - Manually Integrated

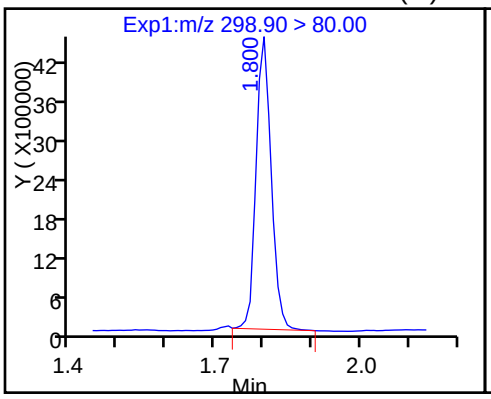
Report Date: 23-Nov-2016 16:22:37 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

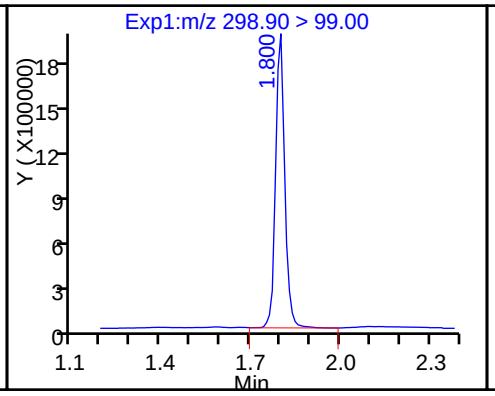
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_020.d

Injection Date:	20-Nov-2016 23:03:21	Instrument ID:	A8_N		
Lims ID:	320-23542-A-4-A	Lab Sample ID:	320-23542-4		
Client ID:	DPT-16-34-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	25	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

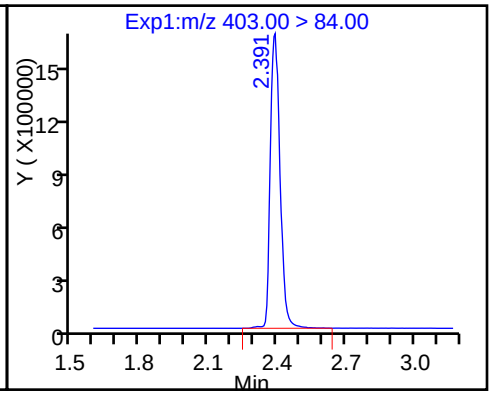
5 Perfluorobutanesulfonic acid (M)



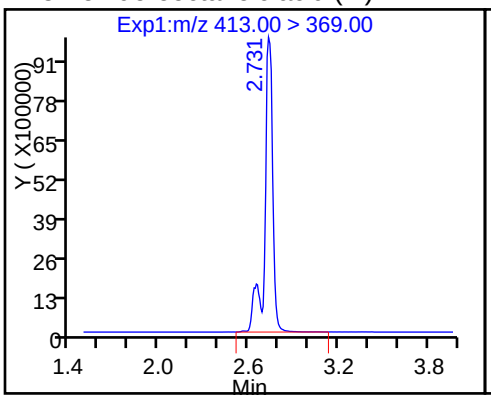
5 Perfluorobutanesulfonic acid



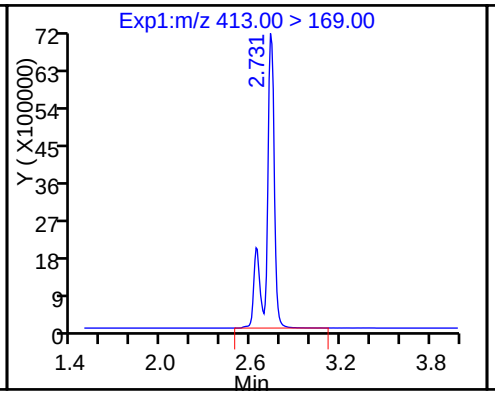
D 10 18O2 PFHxS



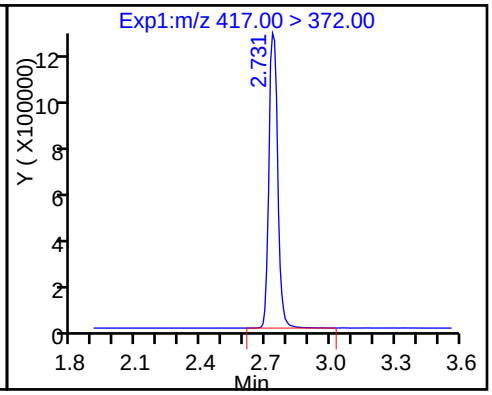
15 Perfluorooctanoic acid (M)



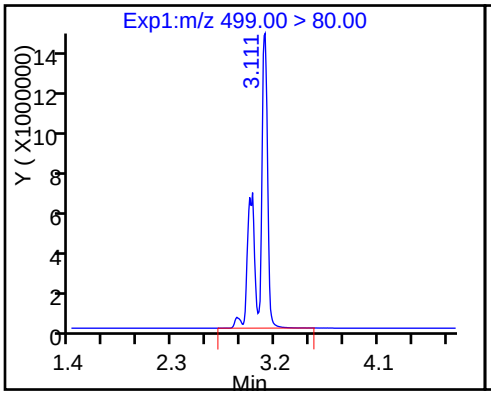
15 Perfluorooctanoic acid



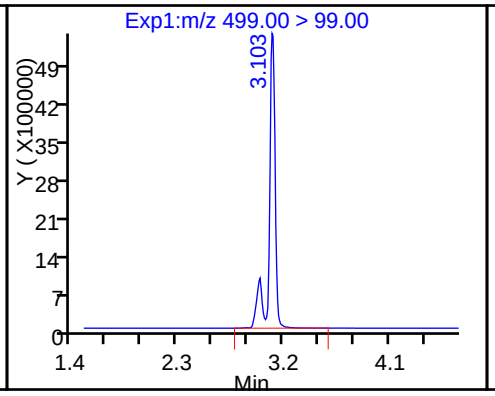
D 14 13C4 PFOA



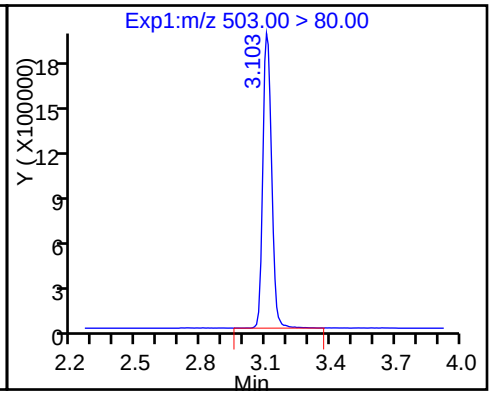
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



TestAmerica Sacramento

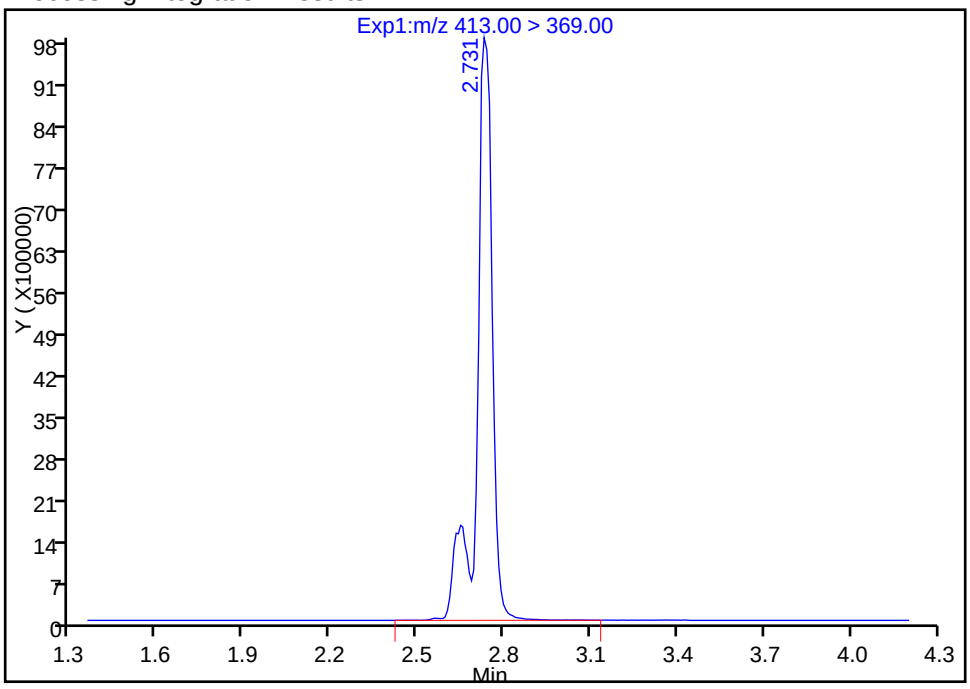
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_020.d				
Injection Date:	20-Nov-2016 23:03:21	Instrument ID:	A8_N		
Lims ID:	320-23542-A-4-A	Lab Sample ID:	320-23542-4		
Client ID:	DPT-16-34-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	25	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

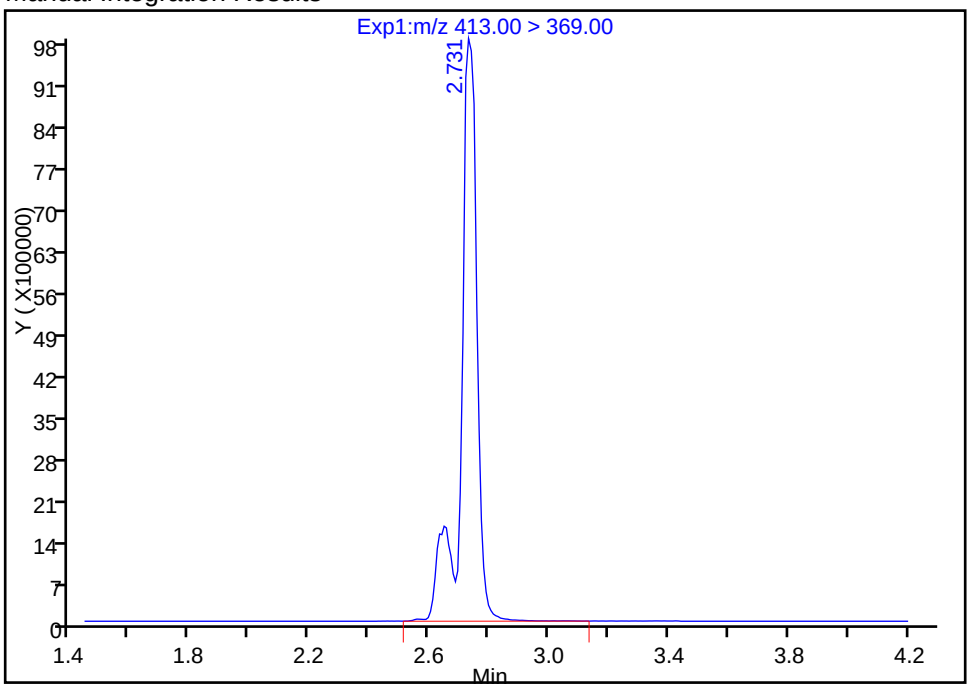
Processing Integration Results

RT: 2.73
Area: 37051374
Amount: 481.1936
Amount Units: ng/ml



Manual Integration Results

RT: 2.73
Area: 37038385
Amount: 481.0249
Amount Units: ng/ml



Reviewer: changnoit, 23-Nov-2016 16:22:35
Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

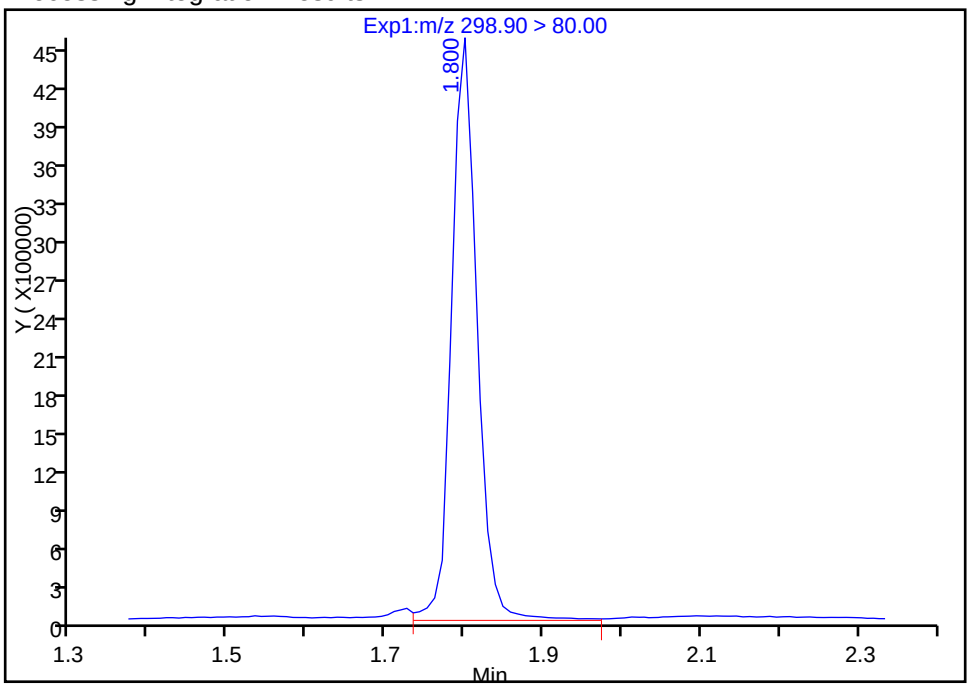
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_020.d				
Injection Date:	20-Nov-2016 23:03:21	Instrument ID:	A8_N		
Lims ID:	320-23542-A-4-A	Lab Sample ID:	320-23542-4		
Client ID:	DPT-16-34-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	25	Worklist Smp#:	20
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

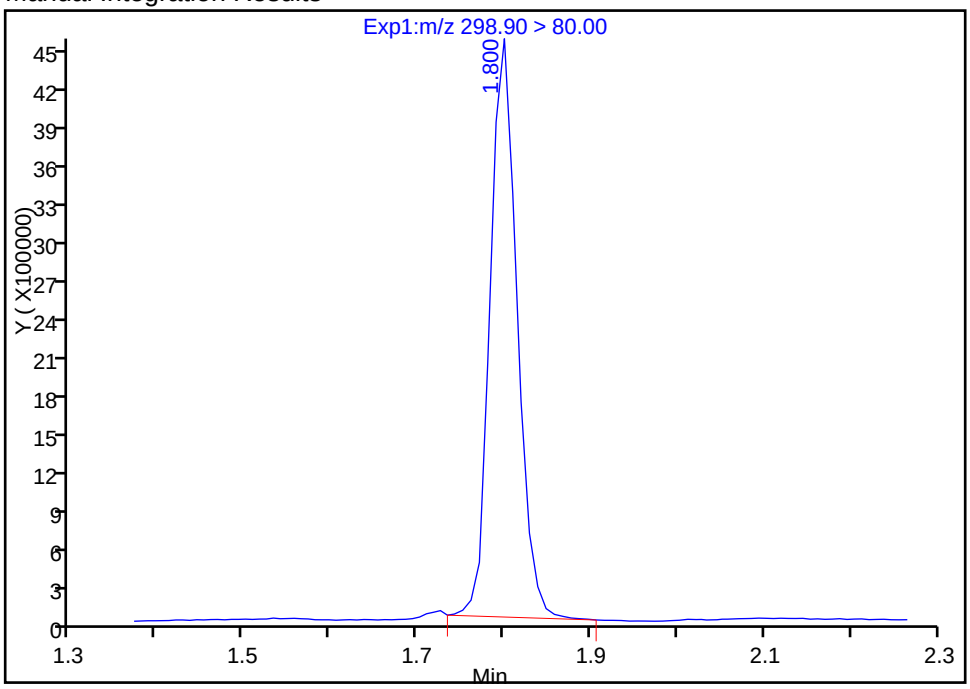
Processing Integration Results

RT: 1.80
Area: 10204327
Amount: 64.251922
Amount Units: ng/ml



Manual Integration Results

RT: 1.80
Area: 9736539
Amount: 61.306478
Amount Units: ng/ml



Reviewer: changnoit, 23-Nov-2016 16:22:35

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-34-GW-31-35 DL | Lab Sample ID: 320-23542-4 DL

Matrix: Water | Lab File ID: 02DEC2016C_011.d

Analysis Method: 537 (Modified) | Date Collected: 11/14/2016 14:30

Extraction Method: 3535 | Date Extracted: 11/17/2016 08:49

Sample wt/vol: 254.2(mL) | Date Analyzed: 12/02/2016 16:14

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 10

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

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

Analysis Batch No.: 140429 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.0	D	0.025	0.020	0.0074
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.4	D	0.039	0.030	0.013
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.081*	*D*	*0.025*	0.020	*0.0090*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	101		25-150
STL00991	13C4 PFOS	125		25-150
STL00994	18O2 PFHxS	115		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_011.d
Lims ID: 320-23542-A-4-A
Client ID: DPT-16-34-GW-31-35
Sample Type: Client
Inject. Date: 02-Dec-2016 16:14:44 ALS Bottle#: 9 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23542-a-4-a 10X NEW ALQ
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 04-Dec-2016 18:06:22 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK025

First Level Reviewer: chandrasenas Date: 04-Dec-2016 18:06:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.900	1.907	-0.007	1.000	2295661	4.10				
298.90 > 99.00	1.900	1.907	-0.007	1.000	970696		2.36(0.00-0.00)			
D 10 18O2 PFHxS										
403.00 > 84.00	2.531	2.534	-0.003		1642742	5.43		11.5	129525	
D 14 13C4 PFOA										
417.00 > 372.00	2.888	2.886	0.002		1107241	5.05		10.1	140047	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.888	2.894	-0.006	1.000	11600134	51.3			226911	
413.00 > 169.00	2.888	2.894	-0.006	1.000	7752752		1.50(0.90-1.10)		495730	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.262	3.267	-0.005	1.000	23773320	71.8			493443	
499.00 > 99.00	3.270	3.267	0.003	1.002	5086471		4.67(0.90-1.10)		811148	
D 17 13C4 PFOS										
503.00 > 80.00	3.262	3.267	-0.005		1456234	5.95		12.5	46290	

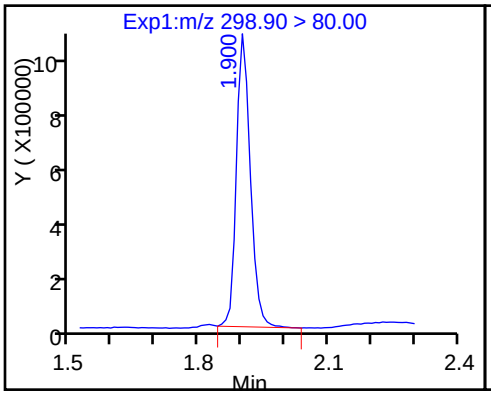
Report Date: 04-Dec-2016 18:06:33 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

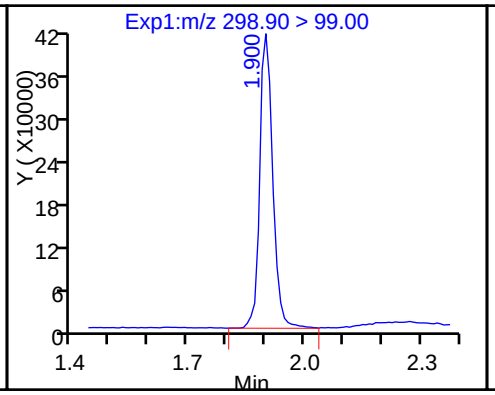
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_011.d

Injection Date:	02-Dec-2016 16:14:44	Instrument ID:	A8_N		
Lims ID:	320-23542-A-4-A	Lab Sample ID:	320-23542-4		
Client ID:	DPT-16-34-GW-31-35				
Operator ID:	A8-PC\A8	ALS Bottle#:	9	Worklist Smp#:	15
Injection Vol:	2.0 ul	Dil. Factor:	10.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		

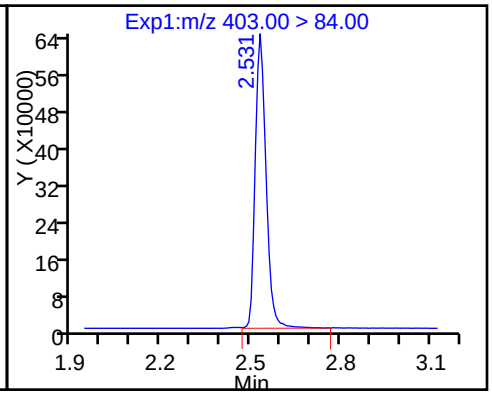
5 Perfluorobutanesulfonic acid



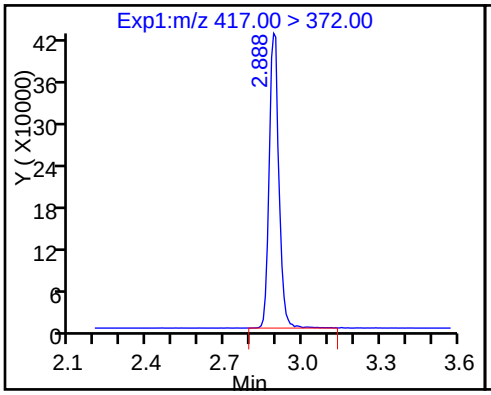
5 Perfluorobutanesulfonic acid



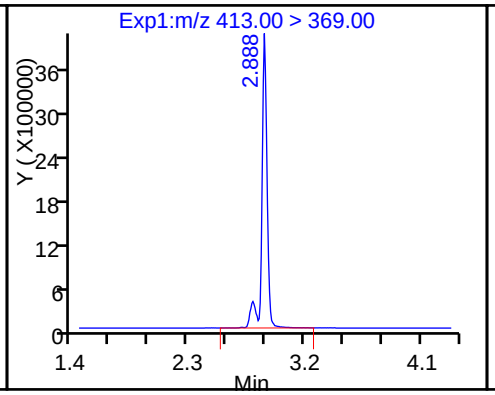
D 10 18O2 PFHxS



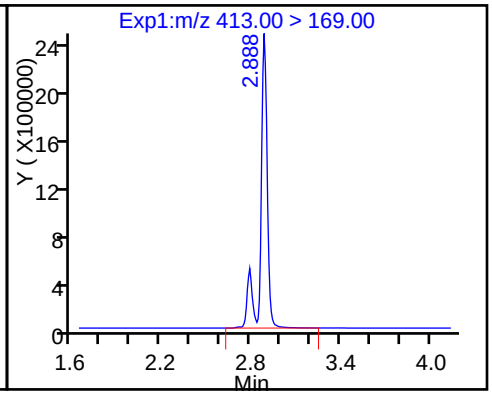
D 14 13C4 PFOA



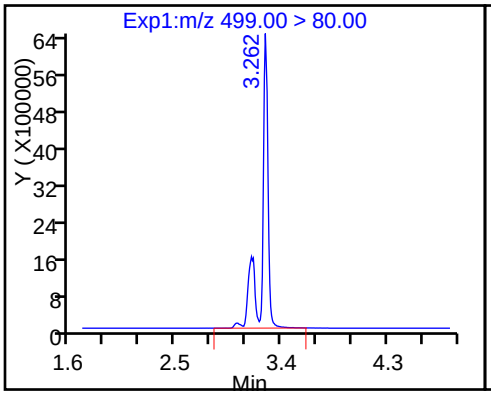
15 Perfluorooctanoic acid



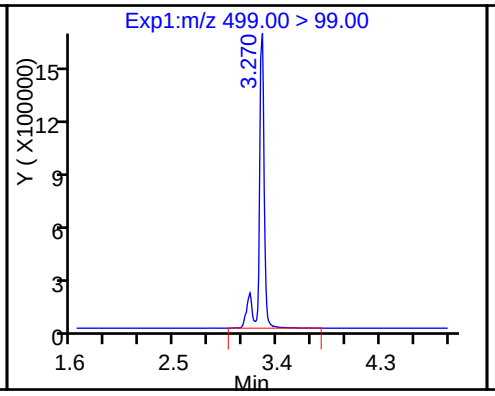
15 Perfluorooctanoic acid



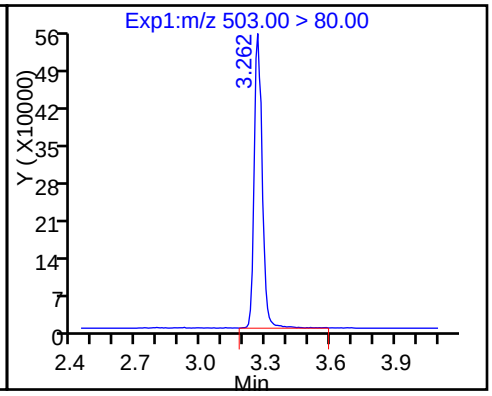
18 Perfluorooctane sulfonic acid



18 Perfluorooctane sulfonic acid



D 17 13C4 PFOS



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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-137684/4	14NOV2016A_004.d
Level 2	IC 320-137684/13	14NOV2016A_013.d
Level 3	IC 320-137684/5	14NOV2016A_005.d
Level 4	IC 320-137684/14	14NOV2016A_014.d
Level 5	IC 320-137684/6	14NOV2016A_006.d
Level 6	IC 320-137684/15	14NOV2016A_015.d
Level 7	IC 320-137684/7	14NOV2016A_007.d
Level 8	IC 320-137684/16	14NOV2016A_016.d
Level 9	IC 320-137684/8	14NOV2016A_008.d
Level 10	IC 320-137684/17	14NOV2016A_017.d
Level 11	IC 320-137684/9	14NOV2016A_009.d
Level 12	IC 320-137684/18	14NOV2016A_018.d

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
Perfluorobutanoic acid (PFBA)	1.518 1.513		1.518		1.518		1.518		1.518		1.267 - 1.767	1.517
Perfluoropentanoic acid (PFPeA)	1.801 1.794		1.801		1.791		1.791		1.791		1.545 - 2.045	1.795
Perfluorobutanesulfonic acid (PFBS)	1.839 1.832		1.839		1.830		1.829		1.830		1.653 - 2.013	1.833
Perfluorohexanoic acid (PFHxA)	2.102 2.091		2.102		2.094		2.087		2.087		1.844 - 2.344	2.094
Perfluorohexanesulfonic acid (PFHxS)	+++++ 2.449		2.445		2.379		2.371		2.367		2.149 - 2.649	2.402
Perfluoroheptanoic acid (PFHpA)	2.448 2.433		2.452		2.443		2.432		2.431		2.190 - 2.690	2.440
6:2FTS		2.774 2.750		2.758		2.760		2.758		2.758	2.510 - 3.010	2.760
Perfluorooctanoic acid (PFOA)	+++++ 2.802		2.829		2.805		2.808		2.799		2.561 - 3.061	2.809
Perfluoroheptanesulfonic Acid (PFHpS)	2.834 2.810		2.829		2.821		2.816		2.807		2.569 - 3.069	2.820
Perfluorooctane Sulfonate (PFOS)	+++++ 3.072		3.101		3.198		3.185		3.159		2.904 - 3.404	3.143
Perfluorononanoic acid (PFNA)	3.212 3.186		3.215		3.198		3.194		3.183		2.948 - 3.448	3.198
Perfluorooctane Sulfonamide (FOSA)	3.484 3.485		3.487		3.480		3.484		3.482		3.234 - 3.734	3.484
8:2FTS		3.531 3.515		3.523		3.524		3.514		3.514	3.270 - 3.770	3.520
Perfluorodecanoic acid (PFDA)	3.577 3.553		3.571		3.564		3.560		3.550		3.312 - 3.812	3.563

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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		3.707 3.688		3.696		3.699		3.696		3.686	3.445 - 3.945	3.695
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		3.876 3.860		3.868		3.861		3.859		3.868	3.615 - 4.115	3.865
Perfluorodecanesulfonic acid (PFDS)	3.900 3.866		3.893		3.885		3.872		3.870		3.631 - 4.131	3.881
Perfluoroundecanoic acid (PFUnA)	3.917 3.892		3.910		3.902		3.889		3.887		3.650 - 4.150	3.900
MeFOSA		3.973 3.964		3.973		3.975		3.972		3.972	3.722 - 4.222	3.972
N-EtFOSA-M		4.161 4.156		4.154		4.155		4.154		4.154	3.905 - 4.405	4.156
Perfluorododecanoic acid (PFDoA)	4.224 4.184		4.210		4.197		4.193		4.192		3.950 - 4.450	4.200
Perfluorotridecanoic Acid (PFTriA)	4.490 4.457		4.485		4.470		4.466		4.457		4.221 - 4.721	4.471
Perfluorotetradecanoic acid (PFTeA)	4.745 4.706		4.731		4.721		4.715		4.707		4.471 - 4.971	4.721
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 5.126		5.169		5.145		5.135		5.135		4.898 - 5.398	5.142
Perfluoro-n-octadecanoic acid (PFODA)	5.571 5.510		5.558		5.539		5.525		5.516		5.287 - 5.787	5.537
13C4 PFBA	1.518 1.513		1.526		1.518		1.518		1.510		1.267 - 1.767	1.517
13C5-PFPeA	1.801 1.794		1.801		1.791		1.791		1.791		1.545 - 2.045	1.795
13C2 PFHxA	2.102 2.091		2.102		2.094		2.087		2.087		1.844 - 2.344	2.094
13C4-PFHpA	2.448 2.424		2.452		2.443		2.432		2.424		2.187 - 2.687	2.437
18O2 PFHxS	2.464 2.449		2.467		2.458		2.447		2.447		2.205 - 2.705	2.455
M2-6:2FTS		2.766 2.750		2.766		2.760		2.758		2.758	2.510 - 3.010	2.760
13C4 PFOA	2.826 2.802		2.821		2.813		2.808		2.799		2.561 - 3.061	2.812
13C4 PFOS	3.212 3.186		3.206		3.198		3.194		3.183		2.947 - 3.447	3.197
13C5 PFNA	3.212 3.186		3.206		3.198		3.194		3.183		2.947 - 3.447	3.197
13C8 FOSA	3.484 3.477		3.487		3.480		3.475		3.482		3.231 - 3.731	3.481
M2-8:2FTS		3.531 3.507		3.523		3.524		3.522		3.514	3.270 - 3.770	3.520

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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

ANALYTE	LVL 1 LVL 11	LVL 2 LVL 12	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8	LVL 9	LVL 10	RT WINDOW	AVG RT
13C2 PFDA	3.577 3.544		3.571		3.564		3.560		3.550		3.311 - 3.811	3.561
d3-NMeFOSAA		3.696 3.678		3.696		3.689		3.686		3.686	3.439 - 3.939	3.689
d5-NEtFOSAA		3.868 3.852		3.859		3.861		3.850		3.850	3.607 - 4.107	3.857
13C2 PFUnA	3.917 3.892		3.910		3.902		3.889		3.887		3.650 - 4.150	3.900
d-N-MeFOSA-M		3.963 3.964		3.963		3.965		3.963		3.963	3.714 - 4.214	3.964
d-N-EtFOSA-M		4.154 4.148		4.147		4.148		4.146		4.146	3.898 - 4.398	4.148
13C2 PFDoA	4.216 4.184		4.210		4.190		4.186		4.185		3.945 - 4.445	4.195
13C2-PFTeDA	4.737 4.706		4.731		4.714		4.715		4.707		4.468 - 4.968	4.718
13C2-PFHxDA	5.167 5.126		5.158		5.145		5.135		5.124		4.893 - 5.393	5.143

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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-137684/4	14NOV2016A_004.d
Level 2	IC 320-137684/13	14NOV2016A_013.d
Level 3	IC 320-137684/5	14NOV2016A_005.d
Level 4	IC 320-137684/14	14NOV2016A_014.d
Level 5	IC 320-137684/6	14NOV2016A_006.d
Level 6	IC 320-137684/15	14NOV2016A_015.d
Level 7	IC 320-137684/7	14NOV2016A_007.d
Level 8	IC 320-137684/16	14NOV2016A_016.d
Level 9	IC 320-137684/8	14NOV2016A_008.d
Level 10	IC 320-137684/17	14NOV2016A_017.d
Level 11	IC 320-137684/9	14NOV2016A_009.d
Level 12	IC 320-137684/18	14NOV2016A_018.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5 LVL 9	LVL 2 LVL 6 LVL 10	LVL 3 LVL 7 LVL 11	LVL 4 LVL 8 LVL 12		B	M1	M2								
13C4 PFBA	186753 236465 178725		184880 209514 189584		Ave		197653.540				11.0		50.0			
13C5-PFPeA	151476 194997 141434		154480 166385 150547		Ave		159886.543				11.9		50.0			
13C2 PFHxA	131714 176393 129902		134980 154781 143378		Ave		145191.167				12.3		50.0			
13C4-PFHpA	127266 163159 117130		123873 139676 117359		Ave		131410.400				13.4		50.0			
18O2 PFHxS	186681 241891 186676		191307 214803 191140		Ave		202083.027				11.0		50.0			
M2-6:2FTS		46038 47820 44437		44956 66679 64629	Ave		52426.1439				19.7		50.0			
13C4 PFOA	132085 170046 118382		136388 143595 118391		Ave		136481.063				14.1		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.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5 LVL 9	LVL 2 LVL 6 LVL 10	LVL 3 LVL 7 LVL 11	LVL 4 LVL 8 LVL 12		B	M1	M2								
13C4 PFOS	140602 190353 140904		146408 164827 151270		Ave		155727.280				12.3		50.0			
13C5 PFNA	105676 136121 97928		105687 113471 97422		Ave		109384.190				13.1		50.0			
13C8 FOSA	231911 305729 229150		228274 267469 242208		Ave		250790.180				12.2		50.0			
M2-8:2FTS		49544 49164 46901		47156 66179 68498	Ave		54573.4795				18.3		50.0			
13C2 PFDA	95161 123392 89201		93894 104471 95176		Ave		100215.640				12.4		50.0			
d3-NMeFOSAA		41601 40894 34724		40988 54802 47924	Ave		43489.0433				16.0		50.0			
d5-NEtFOSAA		47587 47828 40605		44545 60199 54935	Ave		49283.1667				14.5		50.0			
13C2 PFUnA	75635 98846 68259		74725 83202 69945		Ave		78435.0367				14.4		50.0			
d-N-MeFOSA-M		55528 57677 50288		57262 74738 68051	Ave		60590.4433				14.9		50.0			
d-N-EtFOSA-M		50117 52252 46057		50427 67935 61398	Ave		54697.5733				15.1		50.0			
13C2 PFDoA	72175 95377 68165		73582 79357 75378		Ave		77338.8800				12.4		50.0			
13C2-PFTeDA	163258 212084 149617		161462 176579 160747		Ave		170624.357				12.9		50.0			
13C2-PFHxDA	88272 114657 83802		89062 95842 94164		Ave		94299.7500				11.5		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.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

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 4 LVL 9	LVL 5 LVL 10		B	M1	M2								
Perfluorobutanoic acid (PFBA)	170838 142588	195362	156859	155437	213061	AveID		0.8697				7.5		35.0			
Perfluoropentanoic acid (PFPeA)	181632 127146	175099	171439	141250	200758	AveID		1.0390				11.4		35.0			
Perfluorobutanesulfonic acid (PFBS)	303158 225208	356025	285600	277793	401826	AveID		1.5170				12.1		50.0			
Perfluorohexanoic acid (PFHxA)	135330 122162	151768	125895	121455	166052	AveID		0.9448				6.2		35.0			
Perfluorohexanesulfonic acid (PFHxS)	+++++ 184851	231396	226281	185465	260028	AveID		1.0591				8.0		35.0			
Perfluoroheptanoic acid (PFHpA)	138054 114181	145221	126956	119312	163114	AveID		1.0234				3.7		35.0			
6:2FTS	34197	40536 51456	60254	38359	43121	AveID		0.8532				10.4		35.0			
Perfluorooctanoic acid (PFOA)	+++++ 114070	151630	156234	123859	176720	AveID		1.0501				6.2		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	164899 155260	197442	163447	159289	229142	AveID		1.1413				5.8		50.0			
Perfluorooctane Sulfonate (PFOS)	+++++ 165443	182843	165637	146829	202054	AveID		1.0876				3.3		35.0			
Perfluorononanoic acid (PFNA)	98794 94475	119032	103453	97968	130769	AveID		0.9823				4.0		35.0			
Perfluorooctane Sulfonamide (FOSA)	214768 187637	258489	202005	206788	291150	AveID		0.9011				7.6		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.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

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 4 LVL 9	LVL 5 LVL 10		B	M1	M2								
8:2FTS	36793	37983 53989	63867	38926	45020	AveID		0.8423				11.5		35.0			
Perfluorodecanoic acid (PFDA)	102058 90752	103571	94938	84936	120030	AveID		0.9922				4.6		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	30841	34300 43004	52528	31177	36960	AveID		0.8766				13.8		35.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	29918	33776 44007	53091	35264	37625	AveID		0.7894				14.0		35.0			
Perfluorodecanesulfonic acid (PFDS)	82473 93914	104014	84093	86096	118653	AveID		0.6079				3.7		50.0			
Perfluoroundecanoic acid (PFUnA)	89184 70268	86932	73688	67492	95431	AveID		1.0282				7.6		35.0			
MeFOSA	41341	47776 59730	71435	45683	51156	AveID		0.8710				12.4		35.0			
N-EtFOSA-M	38440	43332 54966	66001	39458	47873	AveID		0.8815				12.9		35.0			
Perfluorododecanoic acid (PFDoA)	73806 69861	78741	67208	63111	90508	AveID		0.9550				4.5		35.0			
Perfluorotridecanoic Acid (PFTriA)	68558 72462	79142	62850	64701	90968	AveID		0.9443				5.0		50.0			
Perfluorotetradecanoic acid (PFTeA)	142094 122054	147082	130108	116280	167539	AveID		1.7787				6.8		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	+++++ 81051	88750	118495	75164	112335	L1ID	0.5477	1.0772							1.0000		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	69086 80431	72606	81153	84470	112104	AveID		1.0761				11.6		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.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-137684/4	14NOV2016A_004.d
Level 2	IC 320-137684/13	14NOV2016A_013.d
Level 3	IC 320-137684/5	14NOV2016A_005.d
Level 4	IC 320-137684/14	14NOV2016A_014.d
Level 5	IC 320-137684/6	14NOV2016A_006.d
Level 6	IC 320-137684/15	14NOV2016A_015.d
Level 7	IC 320-137684/7	14NOV2016A_007.d
Level 8	IC 320-137684/16	14NOV2016A_016.d
Level 9	IC 320-137684/8	14NOV2016A_008.d
Level 10	IC 320-137684/17	14NOV2016A_017.d
Level 11	IC 320-137684/9	14NOV2016A_009.d
Level 12	IC 320-137684/18	14NOV2016A_018.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 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
13C4 PFBA	Ave	9337655 9479214	10475703	9243990	8936233	11823267	50.0 50.0	50.0	50.0	50.0	50.0
13C5-PFPeA	Ave	7573795 7527340	8319267	7724013	7071703	9749845	50.0 50.0	50.0	50.0	50.0	50.0
13C2 PFHxA	Ave	6585676 7168880	7739058	6748988	6495105	8819643	50.0 50.0	50.0	50.0	50.0	50.0
13C4-PFHpA	Ave	6363291 5867935	6983820	6193648	5856487	8157939	50.0 50.0	50.0	50.0	50.0	50.0
18O2 PFHxS	Ave	8830019 9040925	10160165	9048832	8829789	11441433	47.3 47.3	47.3	47.3	47.3	47.3
M2-6:2FTS	Ave	2271427	2186782 3069884	3167233	2135389	2110736	47.5	47.5 47.5	47.5	47.5	47.5
13C4 PFOA	Ave	6604259 5919540	7179751	6819396	5919095	8502278	50.0 50.0	50.0	50.0	50.0	50.0
13C4 PFOS	Ave	6720753 7230705	7878720	6998315	6735234	9098857	47.8 47.8	47.8	47.8	47.8	47.8

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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (NG/ML)				
		LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
13C5 PFNA	Ave	5283790 4871116	5673546	5284368	4896384	6806053	50.0 50.0	50.0	50.0	50.0	50.0
13C8 FOSA	Ave	11595532 12110421	13373430	11413682	11457517	15286472	50.0 50.0	50.0	50.0	50.0	50.0
M2-8:2FTS	Ave	2354945	2373160 3281047	3169967	2258760	2246539	47.9	47.9 47.9	47.9	47.9	47.9
13C2 PFDA	Ave	4758041 4758777	5223539	4694685	4460035	6169615	50.0 50.0	50.0	50.0	50.0	50.0
d3-NMeFOSAA	Ave	2044718	2080071 2396215	2740100	2049410	1736199	50.0	50.0 50.0	50.0	50.0	50.0
d5-NEtFOSAA	Ave	2391408	2379328 2746746	3009967	2227255	2030246	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFUnA	Ave	3781752 3497235	4160080	3736242	3412926	4942276	50.0 50.0	50.0	50.0	50.0	50.0
d-N-MeFOSA-M	Ave	2883849	2776398 3402541	3736883	2863079	2514383	50.0	50.0 50.0	50.0	50.0	50.0
d-N-EtFOSA-M	Ave	2612591	2505838 3069915	3396758	2521340	2302830	50.0	50.0 50.0	50.0	50.0	50.0
13C2 PFDoA	Ave	3608738 3768909	3967844	3679078	3408241	4768854	50.0 50.0	50.0	50.0	50.0	50.0
13C2-PFTeDA	Ave	8162889 8037332	8828960	8073104	7480844	10604178	50.0 50.0	50.0	50.0	50.0	50.0
13C2-PFHxDA	Ave	4413600 4708207	4792086	4453082	4190109	5732841	50.0 50.0	50.0	50.0	50.0	50.0

Curve Type Legend:
Ave = Average

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-137684/4	14NOV2016A_004.d
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Level 10	IC 320-137684/17	14NOV2016A_017.d
Level 11	IC 320-137684/9	14NOV2016A_009.d
Level 12	IC 320-137684/18	14NOV2016A_018.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 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Perfluorobutanoic acid (PFBA)		AveID	85419 28517516	3907232	156859	7771826	1065307	0.500 200	20.0	1.00	50.0	5.00
Perfluoropentanoic acid (PFPeA)		AveID	90816 25429167	3501981	171439	7062509	1003791	0.500 200	20.0	1.00	50.0	5.00
Perfluorobutanesulfonic acid (PFBS)		AveID	133996 39816824	6294518	252470	12278449	1776071	0.442 177	17.7	0.884	44.2	4.42
Perfluorohexanoic acid (PFHxA)		AveID	67665 24432332	3035352	125895	6072771	830262	0.500 200	20.0	1.00	50.0	5.00
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 33642968	4211405	205916	8438680	1183129	+++++ 182	18.2	0.910	45.5	4.55
Perfluoroheptanoic acid (PFHpA)		AveID	69027 22836127	2904421	126956	5965596	815572	0.500 200	20.0	1.00	50.0	5.00
6:2FTS		AveID	162096	19214 9756112	1142424	36364	2043932	4.74	0.474 190	19.0	0.948	47.4
Perfluorooctanoic acid (PFOA)		AveID	+++++ 22813929	3032598	156234	6192971	883601	+++++ 200	20.0	1.00	50.0	5.00

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

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 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	78492 29561540	3759299	155602	7582180	1090716	0.476 190	19.0	0.952	47.6	4.76
Perfluorooctane Sulfonate (PFOS)		AveID	+++++ 30706189	3393561	153711	6812886	937530	+++++ 186	18.6	0.928	46.4	4.64
Perfluorononanoic acid (PFNA)		AveID	49397 18895041	2380645	103453	4898420	653846	0.500 200	20.0	1.00	50.0	5.00
Perfluorooctane Sulfonamide (FOSA)		AveID	107384 37527381	5169777	202005	10339396	1455748	0.500 200	20.0	1.00	50.0	5.00
8:2FTS		AveID	176239	18194 10344377	1223686	37291	2156480	4.79	0.479 192	19.2	0.958	47.9
Perfluorodecanoic acid (PFDA)		AveID	51029 18150490	2071411	94938	4246788	600149	0.500 200	20.0	1.00	50.0	5.00
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	154205	17150 8600829	1050550	31177	1848003	5.00	0.500 200	20.0	1.00	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	149588	16888 8801345	1061824	35264	1881272	5.00	0.500 200	20.0	1.00	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	39752 18106699	2005394	81066	4149841	571908	0.482 193	19.3	0.964	48.2	4.82
Perfluoroundecanoic acid (PFUnA)		AveID	44592 14053548	1738635	73688	3374586	477157	0.500 200	20.0	1.00	50.0	5.00
MeFOSA		AveID	206706	23888 11946092	1428691	45683	2557821	5.00	0.500 200	20.0	1.00	50.0
N-EtFOSA-M		AveID	192199	21666 10993287	1320019	39458	2393631	5.00	0.500 200	20.0	1.00	50.0
Perfluorododecanoic acid (PFDoA)		AveID	36903 13972115	1574822	67208	3155550	452538	0.500 200	20.0	1.00	50.0	5.00

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 137684

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 11/14/2016 11:42 Calibration End Date: 11/14/2016 13:27 Calibration ID: 26566

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 4 LVL 9	LVL 5 LVL 10	LVL 1 LVL 6 LVL 11	LVL 2 LVL 7 LVL 12	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5 LVL 10
Perfluorotridecanoic Acid (PFTriA)		AveID	34279 14492441	1582837	62850	3235045	454838	0.500 200	20.0	1.00	50.0	5.00
Perfluorotetradecanoic acid (PFTeA)		AveID	71047 24410873	2941630	130108	5813985	837693	0.500 200	20.0	1.00	50.0	5.00
Perfluoro-n-hexadecanoic acid (PFHxDA)		L1ID	+++++ 16210200	1774997	118495	3758175	561675	+++++ 200	20.0	1.00	50.0	5.00
Perfluoro-n-octadecanoic acid (PFODA)		AveID	34543 16086225	1452122	81153	4223490	560518	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_N\20161114-36864.b\14NOV2016A_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 14-Nov-2016 11:42:23 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:27:46 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: chandrasenas Date: 14-Nov-2016 16:01:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.518	1.517	0.001	1.000	85419	0.5259		105	965	
D 2 13C4 PFBA										
217.00 > 172.00	1.518	1.517	0.001		9337655	47.2		94.5	1337620	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.801	1.795	0.006	1.000	90816	0.5770		115	1120	
D 4 13C5-PFPeA										
267.90 > 223.00	1.801	1.795	0.006		7573795	47.4		94.7	1657765	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.839	1.833	0.006	1.000	133996	0.4732		107		
298.90 > 99.00	1.839	1.833	0.006	1.000	56968		2.35(0.00-0.00)	107		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.102	2.094	0.008	1.000	67665	0.5437		109	1570	
D 6 13C2 PFHxA										
315.00 > 270.00	2.102	2.094	0.008		6585676	45.4		90.7	904511	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.384	2.399	-0.015	1.000	126019	0.6374		140		
D 11 13C4-PFHpA										
367.00 > 322.00	2.448	2.437	0.011		6363291	48.4		96.8	641575	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.448	2.440	0.008	1.000	69027	0.5300		106	797	
D 10 18O2 PFHxS										
403.00 > 84.00	2.464	2.455	0.009		8830019	43.7		92.4	453725	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.826	2.811	0.015	1.000	100177	0.7222		144	1401	
413.00 > 169.00	2.826	2.811	0.015	1.000	49276		2.03(0.90-1.10)	144	2189	
D 14 13C4 PFOA										
417.00 > 372.00	2.826	2.811	0.015		6604259	48.4		96.8	500240	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.834	2.819	0.015	1.000	78492	0.4891		103		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.212	3.154	0.058	1.000	99187	0.6486		140	12095	
D 19 13C5 PFNA										
468.00 > 423.00	3.212	3.197	0.015		5283790	48.3		96.6	340849	
D 17 13C4 PFOS										
503.00 > 80.00	3.212	3.197	0.015		6720753	43.2		90.3	253226	
20 Perfluorononanoic acid										
463.00 > 419.00	3.212	3.198	0.014	1.000	49397	0.4759		95.2	715	
D 21 13C8 FOSA										
506.00 > 78.00	3.484	3.481	0.003		11595532	46.2		92.5	339991	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.484	3.484	0.0	1.000	107384	0.5138		103	6184	
D 23 13C2 PFDA										
515.00 > 470.00	3.577	3.561	0.016		4758041	47.5		95.0	261957	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.577	3.562	0.015	1.000	51029	0.5404		108	1491	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.900	3.881	0.019	1.000	39752	0.4651		96.5		
D 27 13C2 PFUnA										
565.00 > 520.00	3.917	3.900	0.017		3781752	48.2		96.4	518778	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.917	3.900	0.017	1.000	44592	0.5734		115	1079	
D 30 13C2 PFDoA										
615.00 > 570.00	4.216	4.195	0.021		3608738	46.7		93.3	229019	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.224	4.200	0.024	1.000	36903	0.5354		107	401	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.490	4.471	0.019	1.000	34279	0.5030		101	1174	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.737	4.718	0.019		8162889	47.8		95.7	1717174	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.745	4.721	0.024	1.000	71047	0.5534		111	157	
713.00 > 169.00	4.737	4.721	0.016	0.998	14378		4.94(0.00-0.00)	111	3220	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.167	5.143	0.024		4413600	46.8		93.6	300594	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.178	5.148	0.030	1.000	91596	0.6696		134	328	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.571	5.537	0.034	1.000	34543	0.4448		89.0	128	

Reagents:

LCPFC-L1_00021 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:27:47 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_004.d

Injection Date: 14-Nov-2016 11:42:23 Instrument ID: A8_N

Lims ID: IC L1

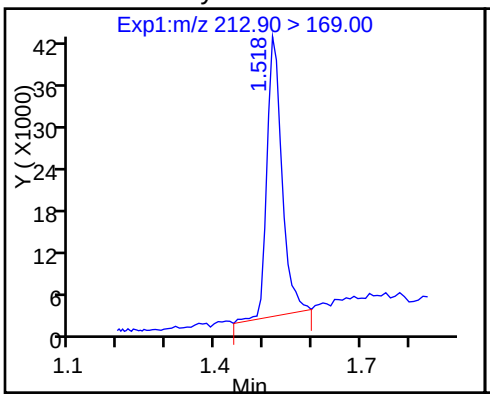
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4

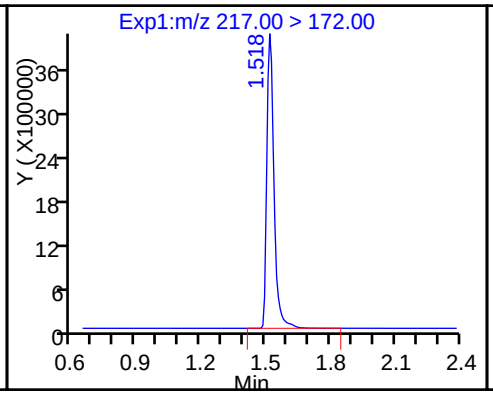
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

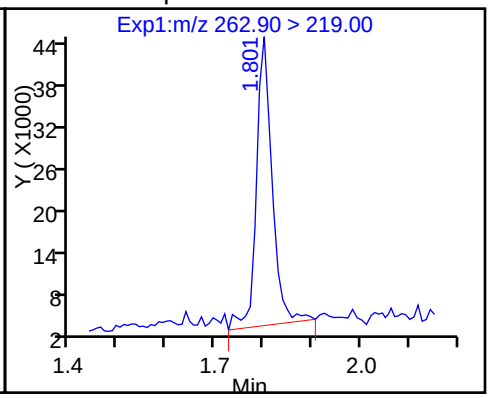
1 Perfluorobutyric acid



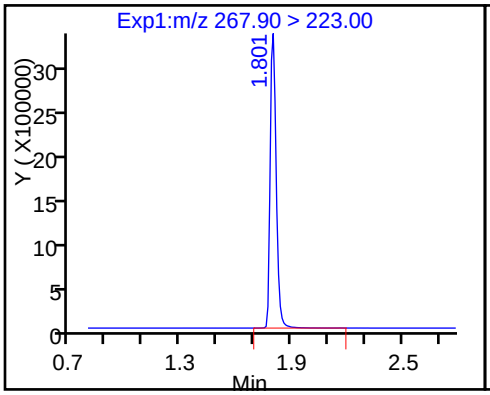
D 2 13C4 PFBA



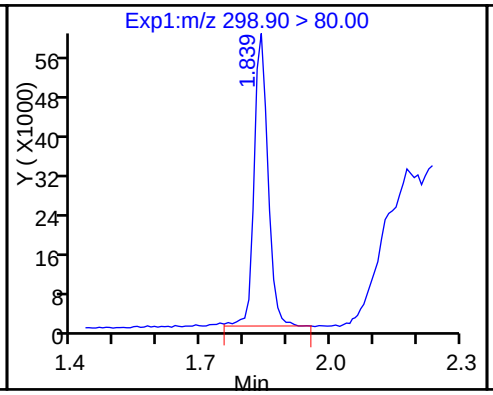
3 Perfluoropentanoic acid



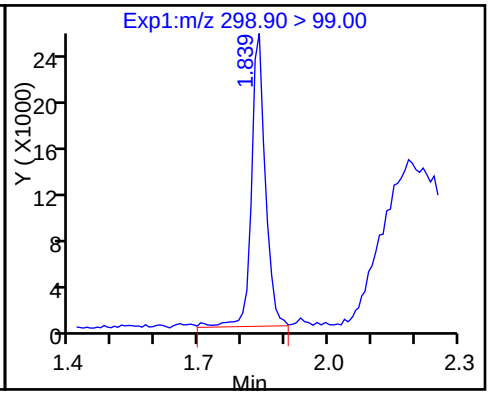
D 4 13C5-PFPeA



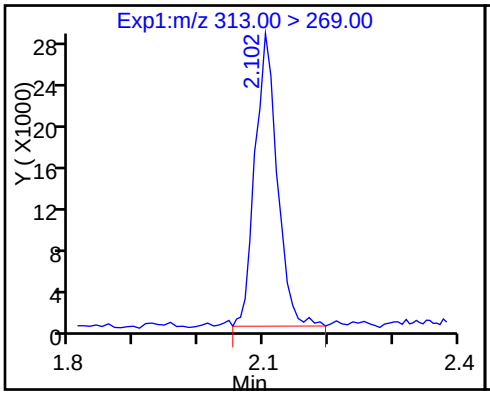
5 Perfluorobutanesulfonic acid



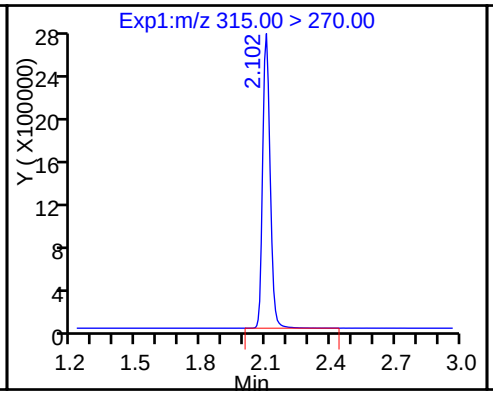
5 Perfluorobutanesulfonic acid



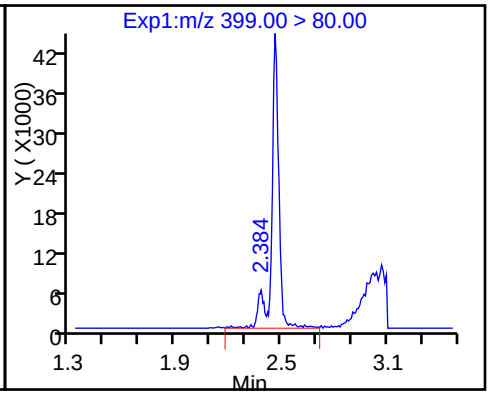
7 Perfluorohexanoic acid



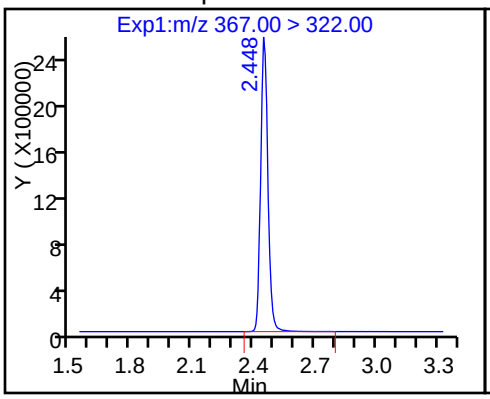
D 6 13C2 PFHxA



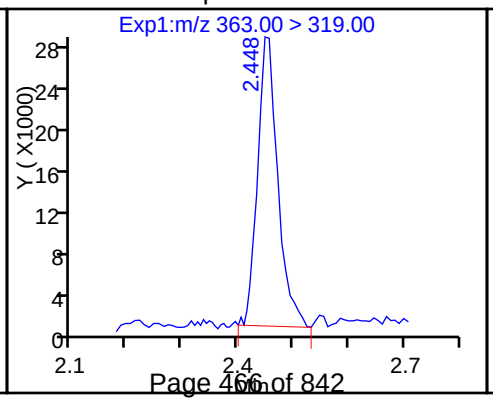
9 Perfluorohexanesulfonic acid



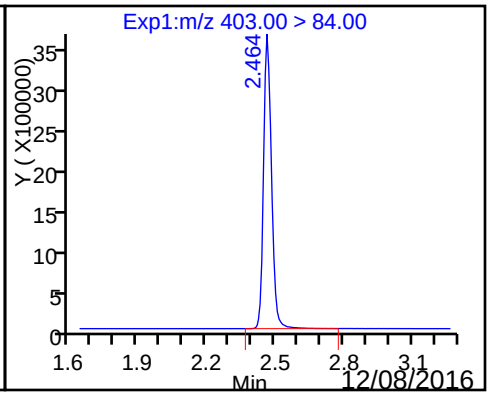
D 11 13C4-PFHpA



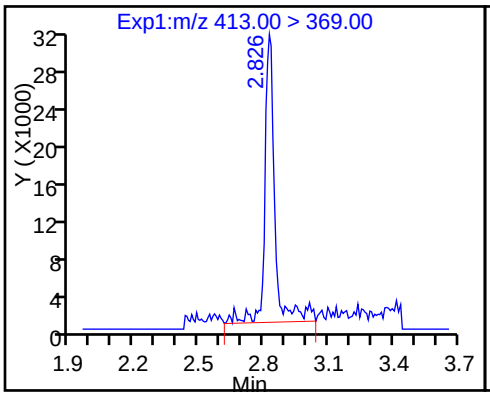
12 Perfluoroheptanoic acid



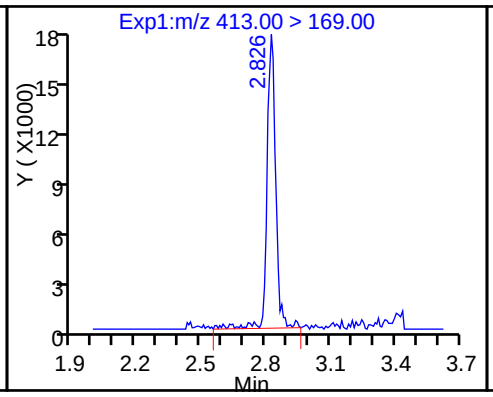
D 10 18O2 PFHxS



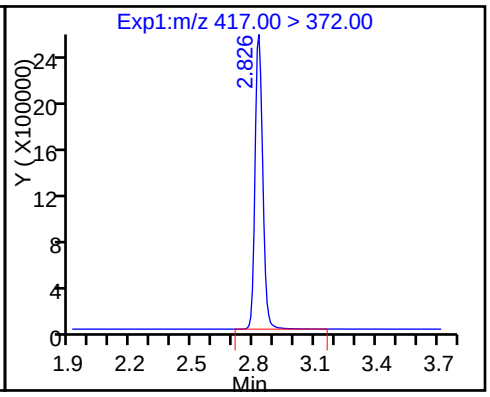
15 Perfluorooctanoic acid



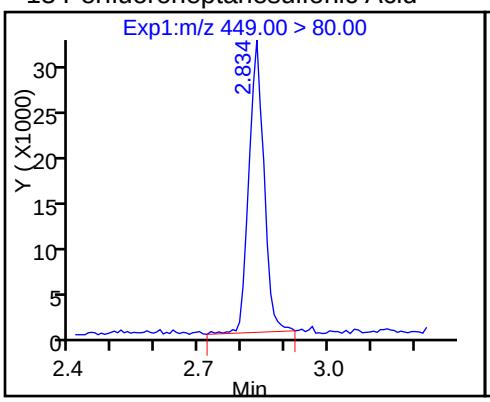
15 Perfluorooctanoic acid



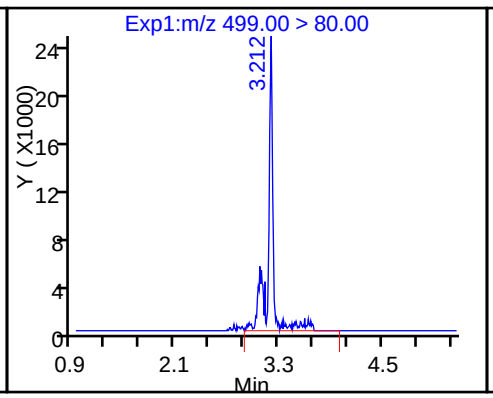
D 14 13C4 PFOA



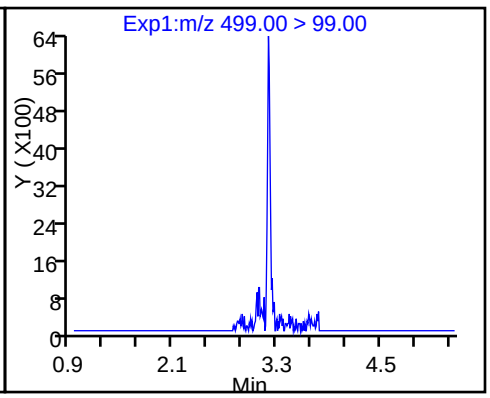
13 Perfluoroheptanesulfonic Acid



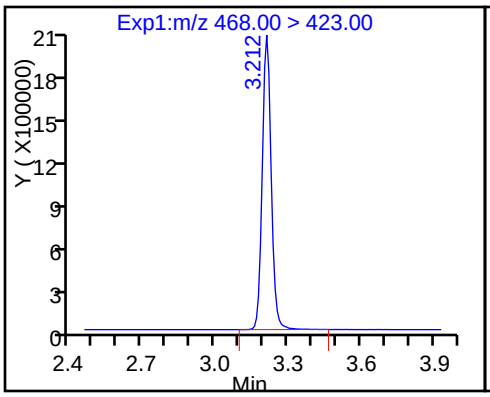
18 Perfluorooctane sulfonic acid



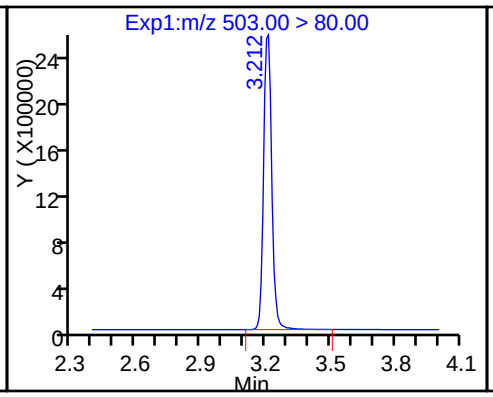
18 Perfluorooctane sulfonic acid



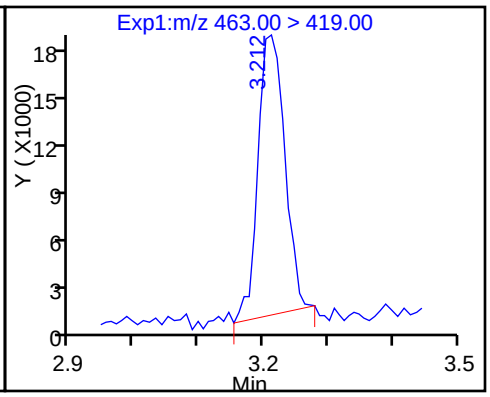
D 19 13C5 PFNA



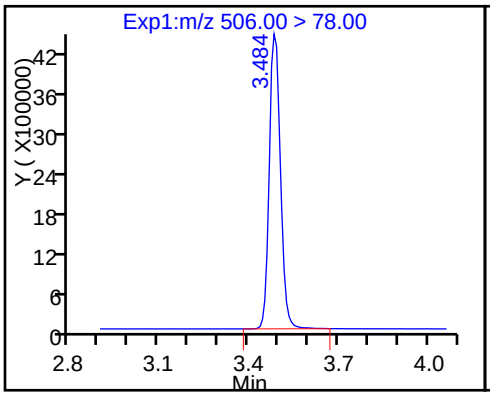
D 17 13C4 PFOS



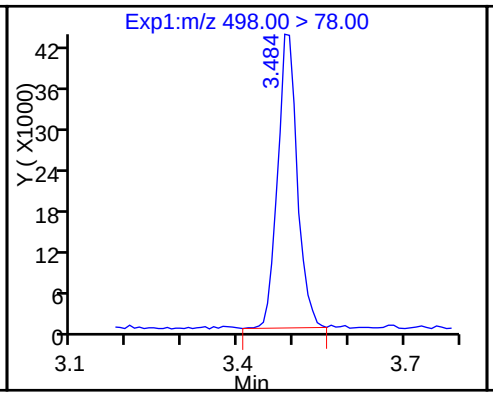
20 Perfluorononanoic acid



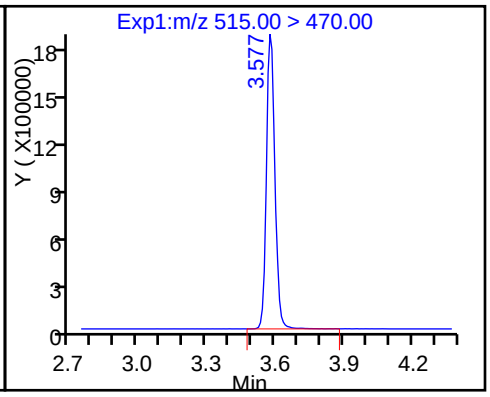
D 21 13C8 FOSA



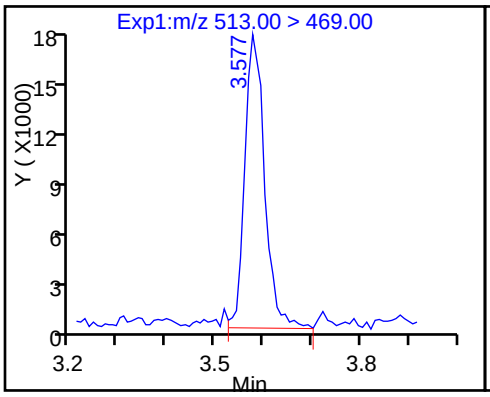
22 Perfluorooctane Sulfonamide



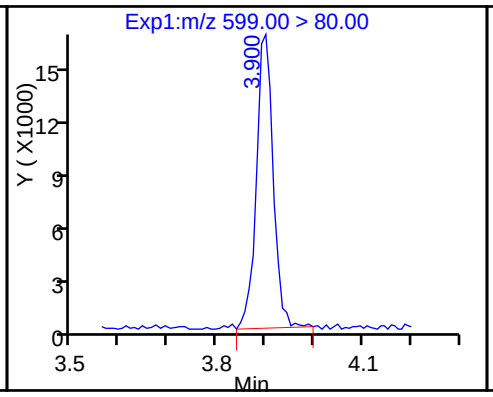
D 23 13C2 PFDA



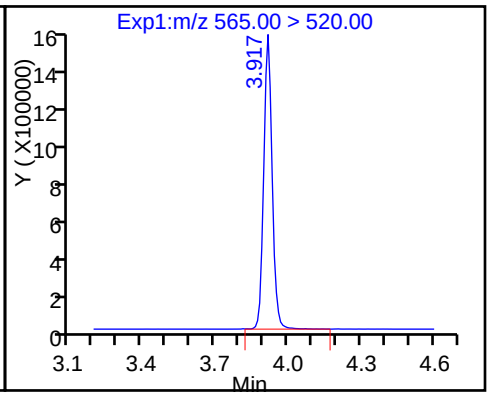
24 Perfluorodecanoic acid



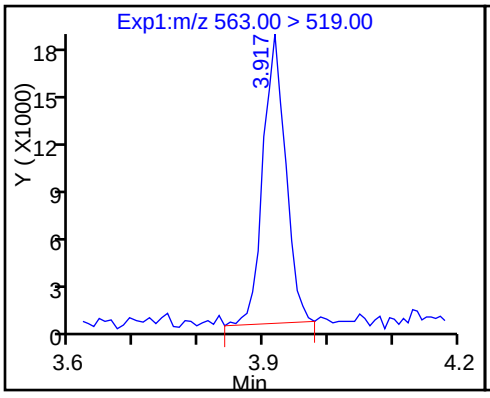
26 Perfluorodecane Sulfonic acid



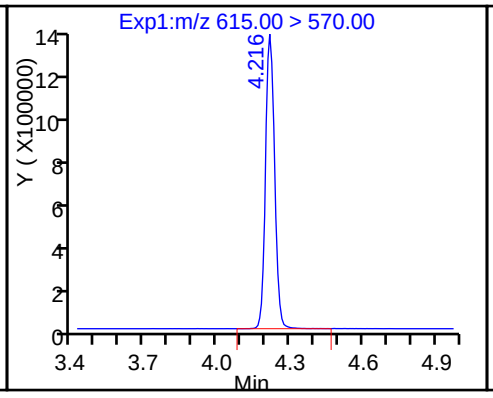
D 27 13C2 PFUnA



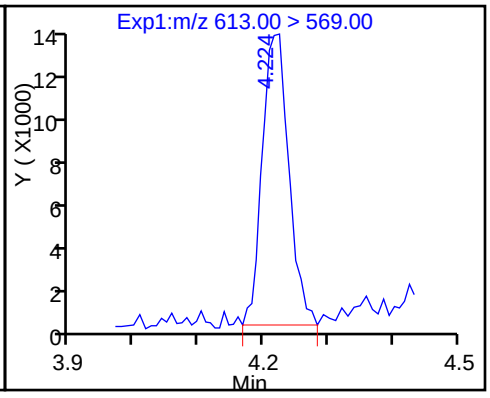
28 Perfluoroundecanoic acid



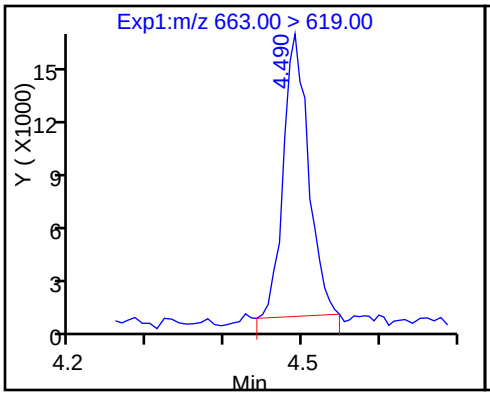
D 30 13C2 PFDoA



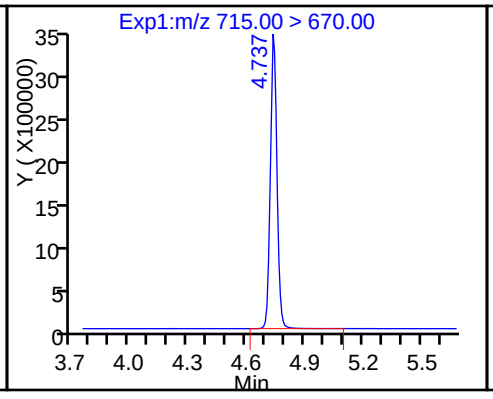
29 Perfluorododecanoic acid



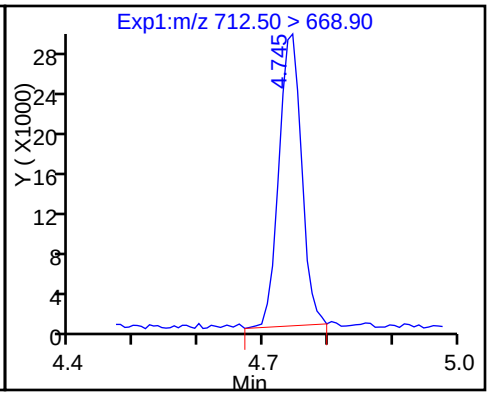
31 Perfluorotridecanoic acid



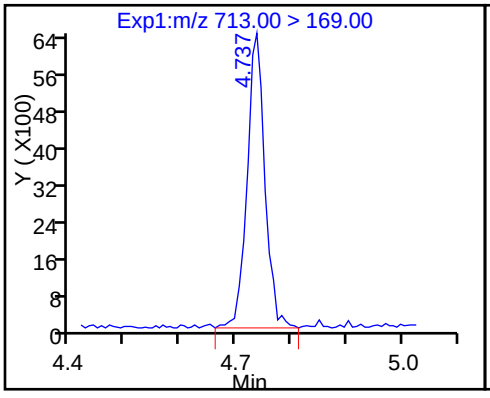
D 32 13C2-PFTeDA



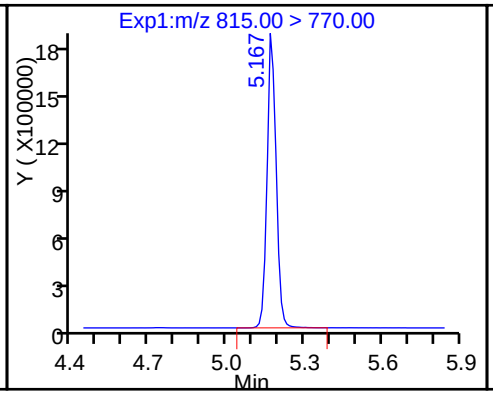
33 Perfluorotetradecanoic acid



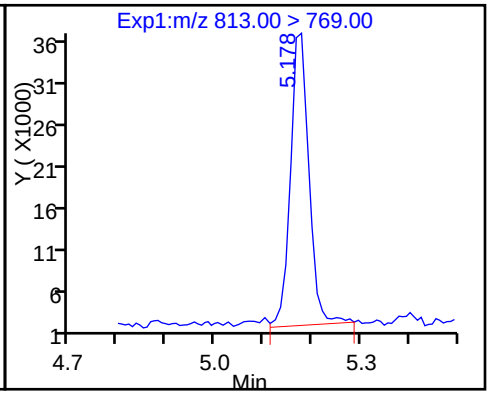
33 Perfluorotetradecanoic acid



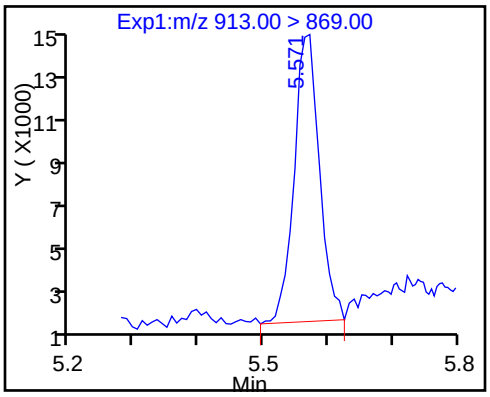
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 14-Nov-2016 11:49:56 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:27:49 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: chandrasenas Date: 14-Nov-2016 16:05:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.518	1.517	0.001	1.000	156859	0.9755		97.5	1474	
D 2 13C4 PFBA										
217.00 > 172.00	1.526	1.517	0.009		9243990	46.8		93.5	1008626	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.801	1.795	0.006	1.000	171439	1.07		107	1913	
D 4 13C5-PFPeA										
267.90 > 223.00	1.801	1.795	0.006		7724013	48.3		96.6	1146696	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.839	1.833	0.006	1.000	252470	0.8700		98.4		
298.90 > 99.00	1.839	1.833	0.006	1.000	108552		2.33(0.00-0.00)	98.4		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.102	2.094	0.008	1.000	125895	0.9871		98.7	3129	
D 6 13C2 PFHxA										
315.00 > 270.00	2.102	2.094	0.008		6748988	46.5		93.0	576196	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.445	2.399	0.046	1.000	205916	1.02		112		
D 11 13C4-PFHpA										
367.00 > 322.00	2.452	2.437	0.015		6193648	47.1		94.3	501821	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.452	2.440	0.012	1.000	126956	1.00		100	1482	
D 10 18O2 PFHxS										
403.00 > 84.00	2.467	2.455	0.012		9048832	44.8		94.7	421933	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.829	2.811	0.018	1.000	156234	1.09		109	2009	
413.00 > 169.00	2.821	2.811	0.010	0.997	86502		1.81(0.90-1.10)	109	3726	
D 14 13C4 PFOA										
417.00 > 372.00	2.821	2.811	0.010		6819396	50.0		99.9	449229	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.829	2.819	0.010	1.000	155602	0.9312		97.8		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.101	3.154	-0.053	1.000	153711	0.9653		104	2225	
499.00 > 99.00	3.206	3.154	0.052	1.034	33768		4.55(0.90-1.10)	104	2442	
D 19 13C5 PFNA										
468.00 > 423.00	3.206	3.197	0.009		5284368	48.3		96.6	667010	
D 17 13C4 PFOS										
503.00 > 80.00	3.206	3.197	0.009		6998315	44.9		94.0	296248	
20 Perfluorononanoic acid										
463.00 > 419.00	3.215	3.198	0.017	1.000	103453	1.00		99.7	1584	
D 21 13C8 FOSA										
506.00 > 78.00	3.487	3.481	0.006		11413682	45.5		91.0	500156	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.487	3.484	0.003	1.000	202005	0.9820		98.2	13642	
D 23 13C2 PFDA										
515.00 > 470.00	3.571	3.561	0.010		4694685	46.8		93.7	229767	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.571	3.562	0.009	1.000	94938	1.02		102	2688	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.893	3.881	0.012	1.000	81066	0.9109		94.5		
D 27 13C2 PFUnA										
565.00 > 520.00	3.910	3.900	0.010		3736242	47.6		95.3	305895	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.910	3.900	0.010	1.000	73688	0.9591		95.9	1824	
D 30 13C2 PFDoA										
615.00 > 570.00	4.210	4.195	0.015		3679078	47.6		95.1	293286	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.210	4.200	0.010	1.000	67208	0.9564		95.6	716	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.485	4.471	0.014	1.000	62850	0.9046		90.5	1953	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.731	4.718	0.013		8073104	47.3		94.6	1649808	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.731	4.721	0.010	1.000	130108	0.99		99.4	401	
713.00 > 169.00	4.731	4.721	0.010	1.000	24192		5.38(0.00-0.00)	99.4	4944	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.158	5.143	0.015		4453082	47.2		94.4	286043	
35 Perfluorohexadecanoic acid										M
813.00 > 769.00	5.169	5.148	0.021	1.000	118495	0.9865		98.6	362	M
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.558	5.537	0.021	1.000	81153	1.02		102	279	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00022 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:27:49 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_005.d

Injection Date: 14-Nov-2016 11:49:56 Instrument ID: A8_N

Lims ID: IC L2

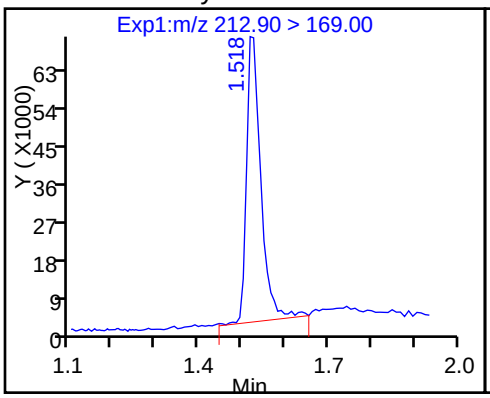
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5

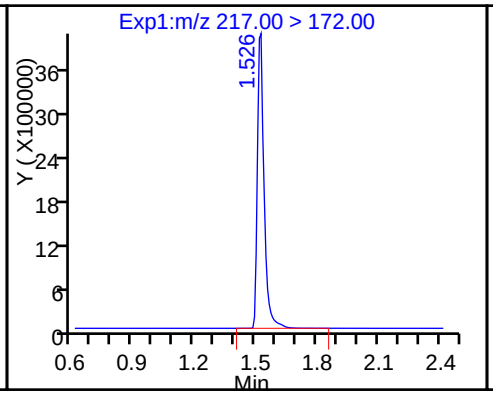
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

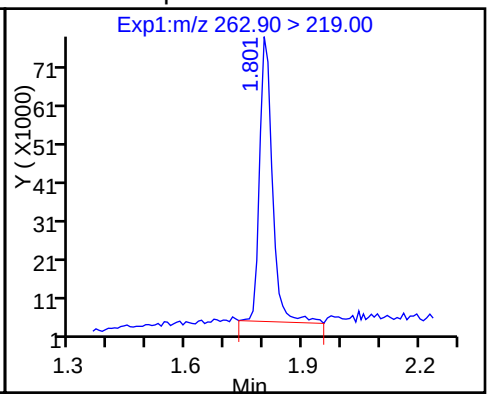
1 Perfluorobutyric acid



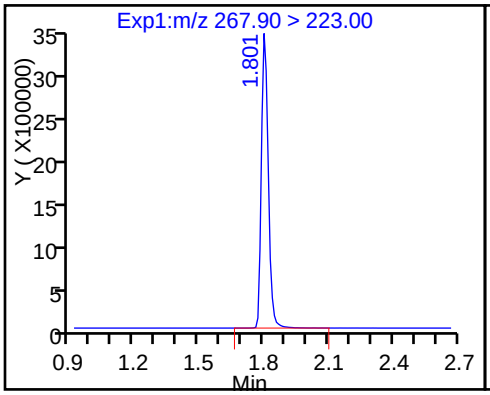
D 2 13C4 PFBA



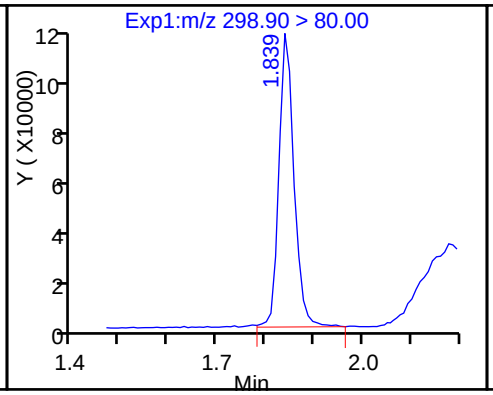
3 Perfluoropentanoic acid



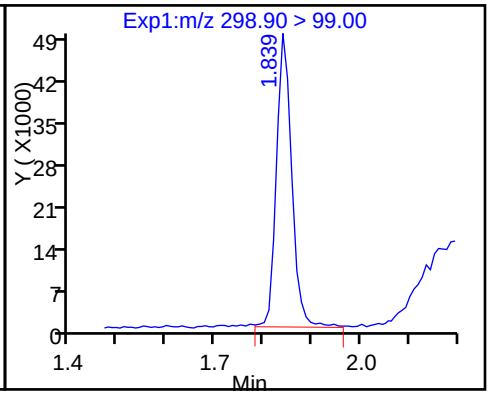
D 4 13C5-PFPeA



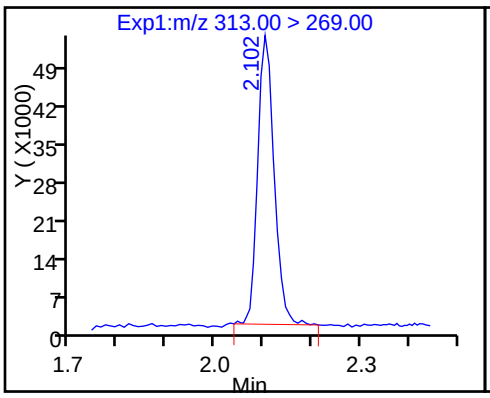
5 Perfluorobutanesulfonic acid



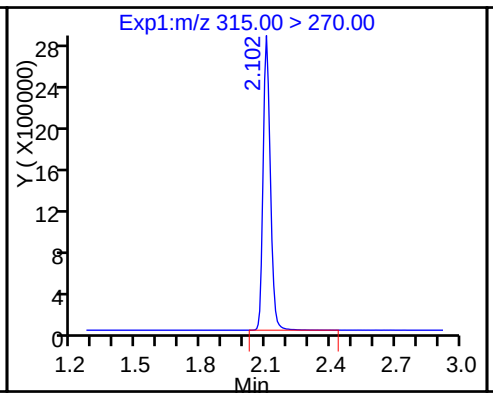
5 Perfluorobutanesulfonic acid



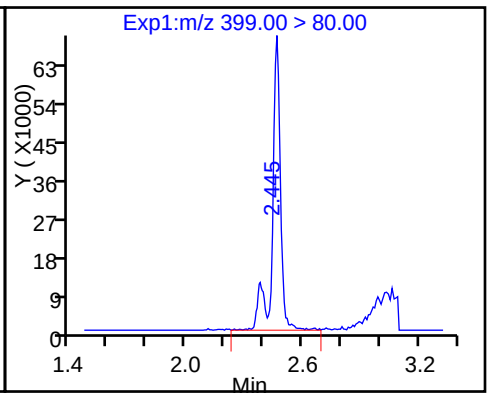
7 Perfluorohexanoic acid



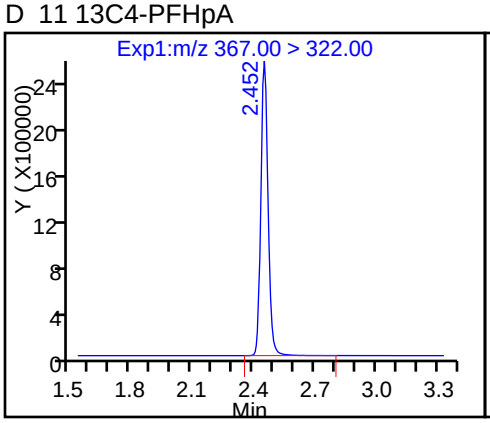
D 6 13C2 PFHxA



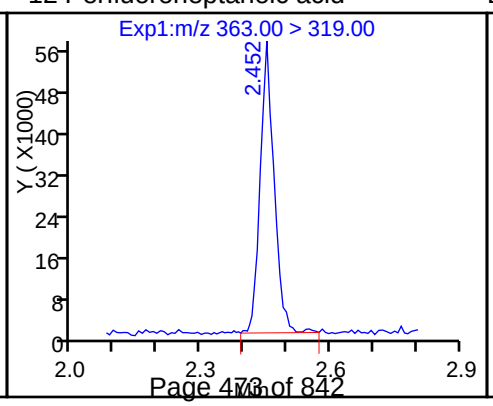
9 Perfluorohexanesulfonic acid



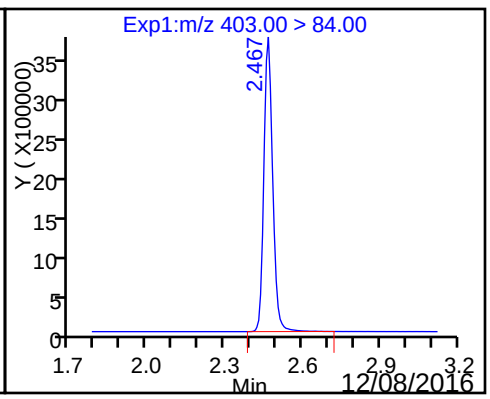
D 11 13C4-PFHpA



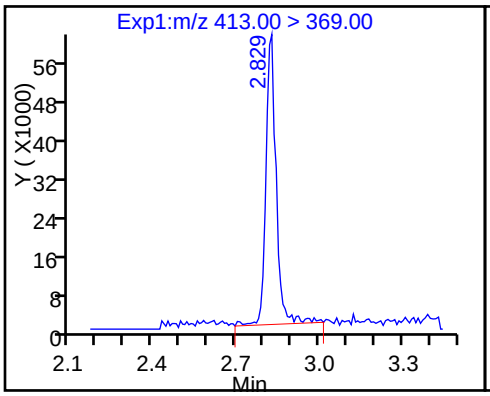
12 Perfluoroheptanoic acid



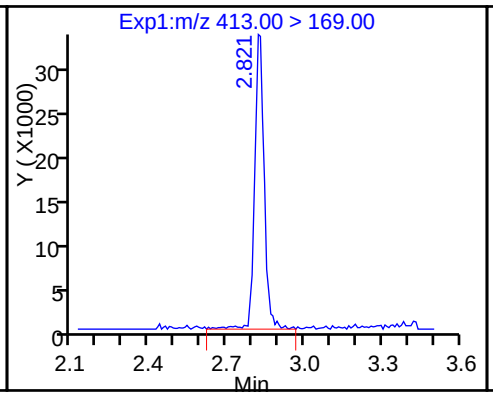
D 10 18O2 PFHxS



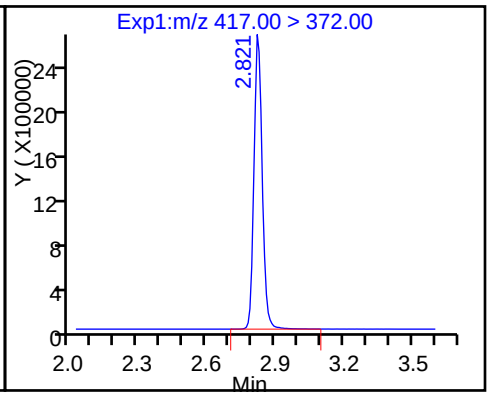
15 Perfluorooctanoic acid



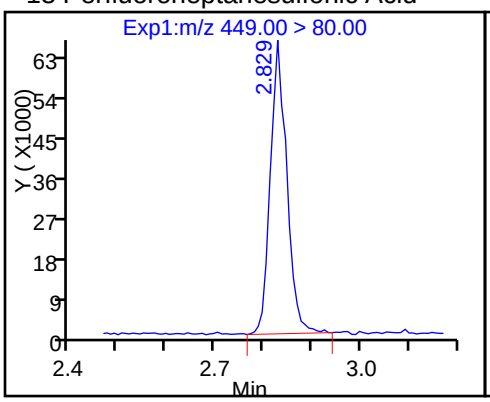
15 Perfluorooctanoic acid



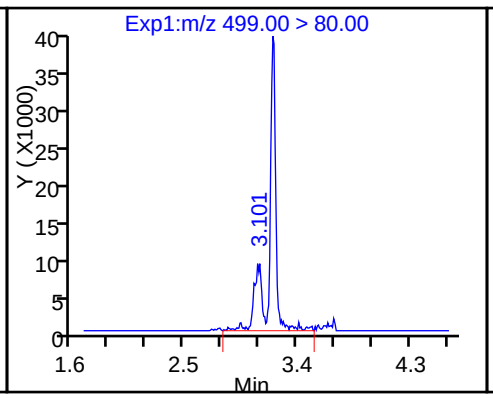
D 14 13C4 PFOA



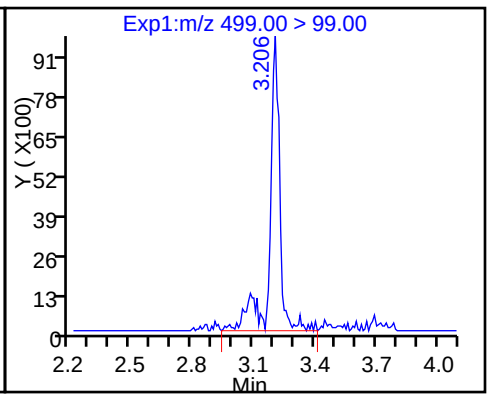
13 Perfluoroheptanesulfonic Acid



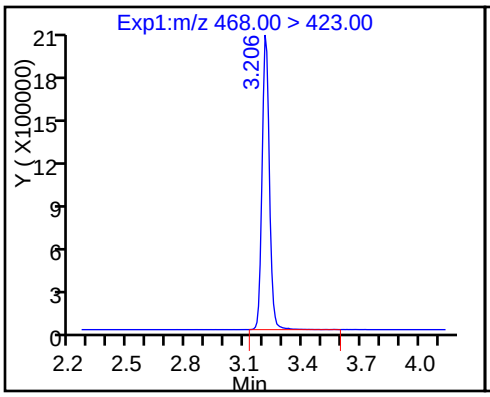
18 Perfluorooctane sulfonic acid



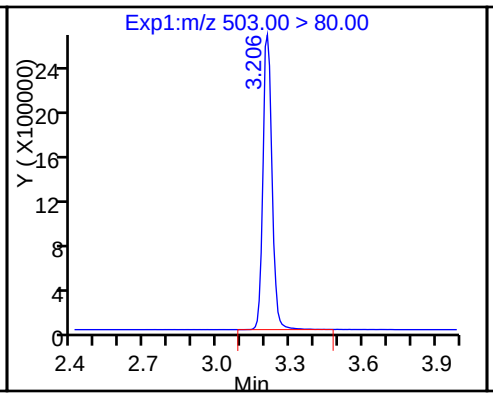
18 Perfluorooctane sulfonic acid



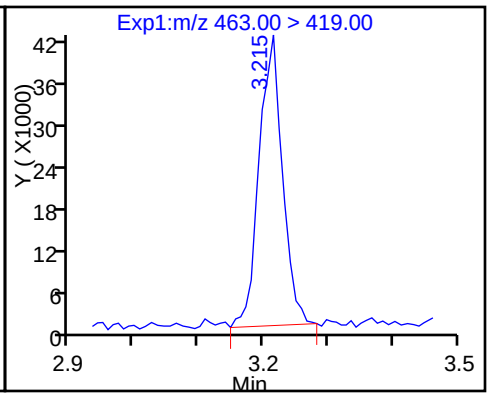
D 19 13C5 PFNA



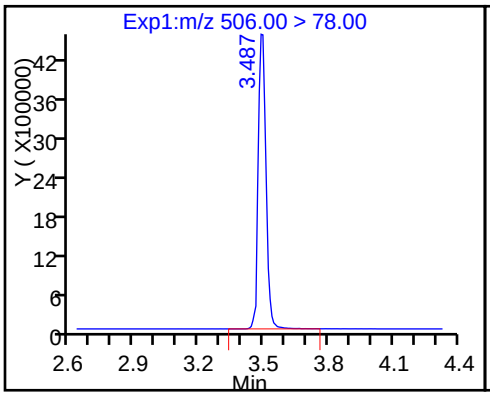
D 17 13C4 PFOS



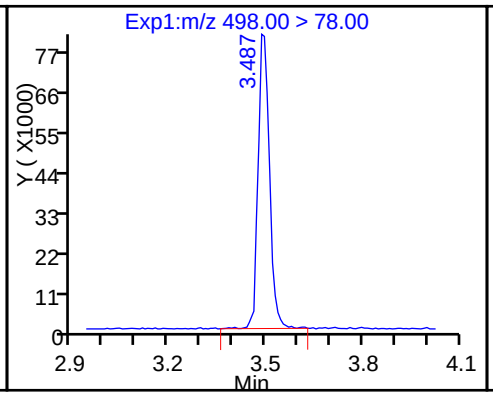
20 Perfluorononanoic acid



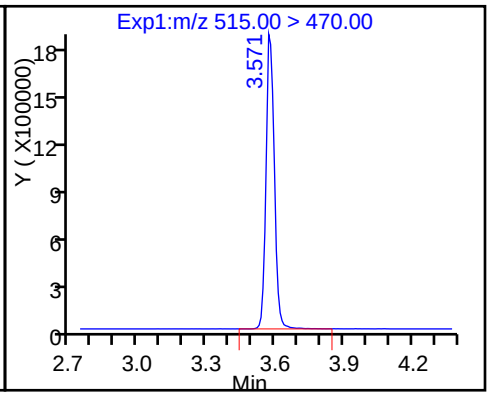
D 21 13C8 FOSA



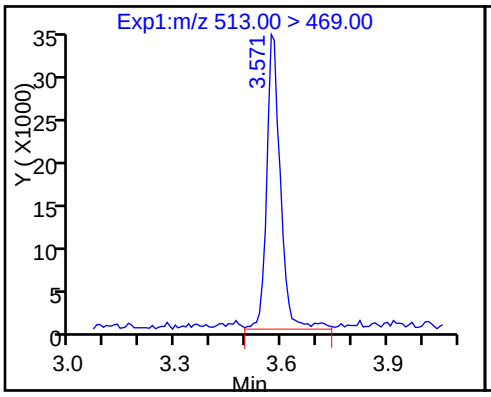
22 Perfluorooctane Sulfonamide



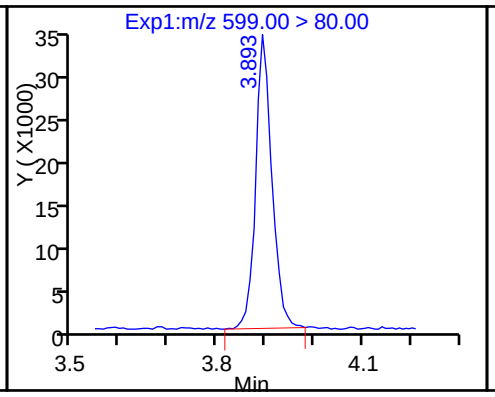
D 23 13C2 PFDA



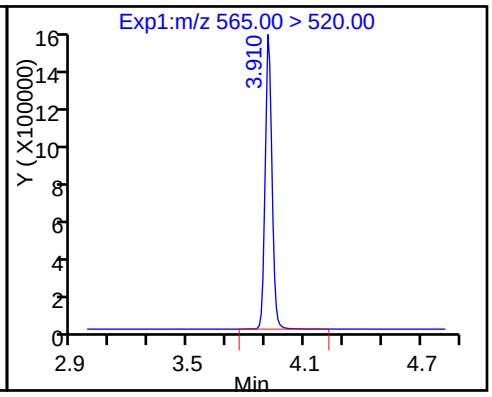
24 Perfluorodecanoic acid



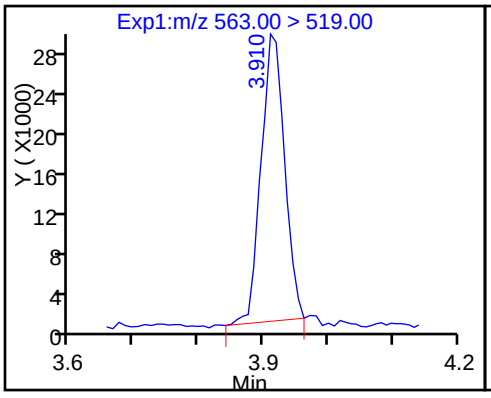
26 Perfluorodecane Sulfonic acid



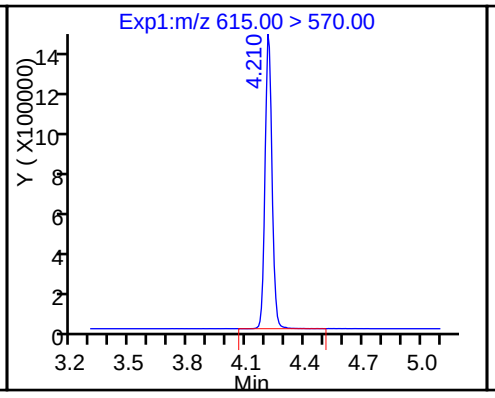
D 27 13C2 PFUnA



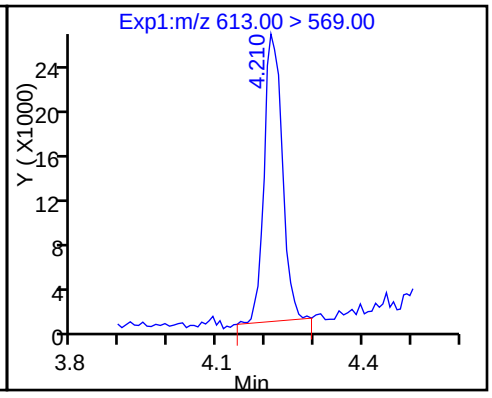
28 Perfluoroundecanoic acid



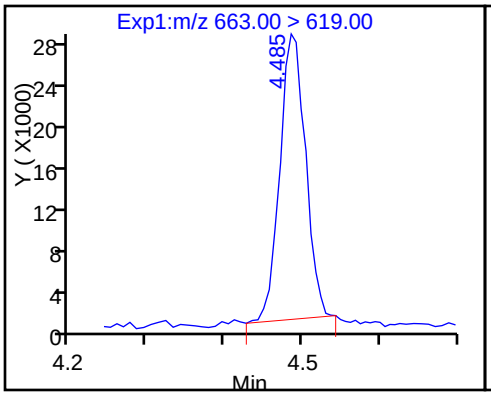
D 30 13C2 PFDoA



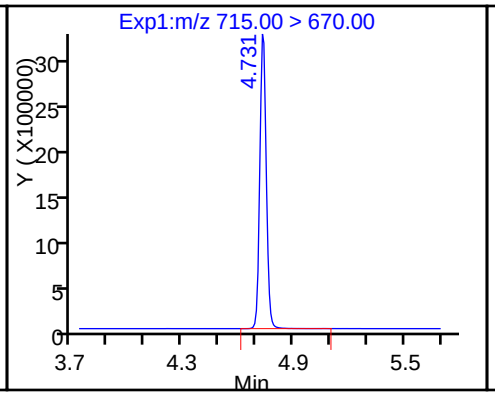
29 Perfluorododecanoic acid



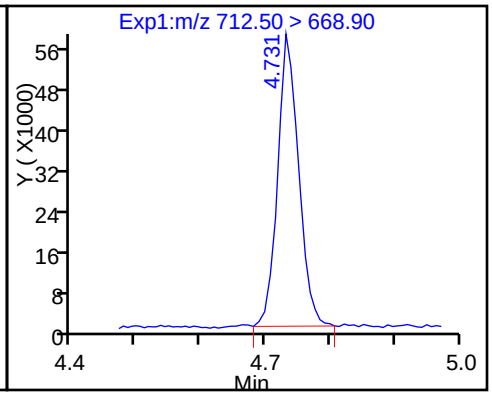
31 Perfluorotridecanoic acid



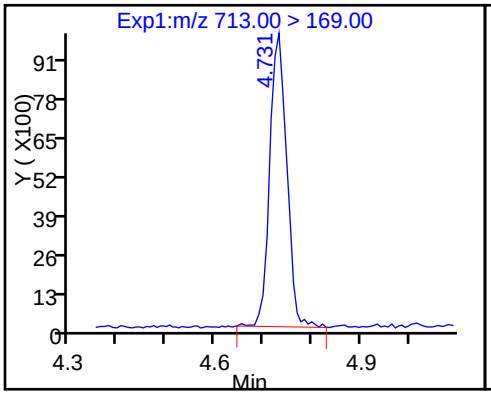
D 32 13C2-PFTeDA



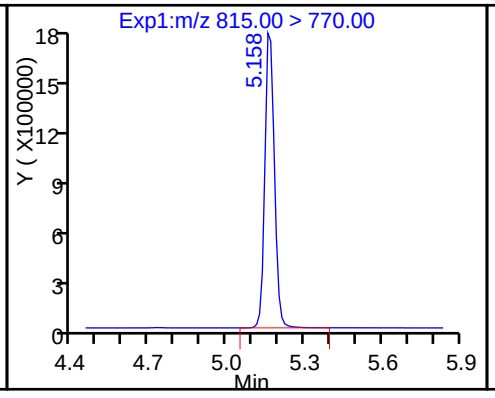
33 Perfluorotetradecanoic acid



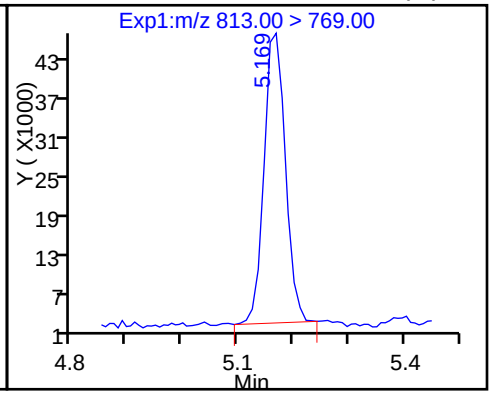
33 Perfluorotetradecanoic acid



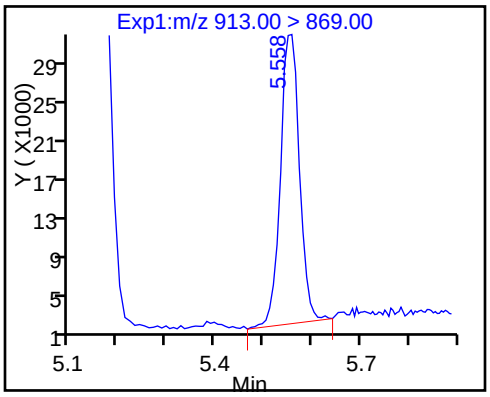
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid (M)



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

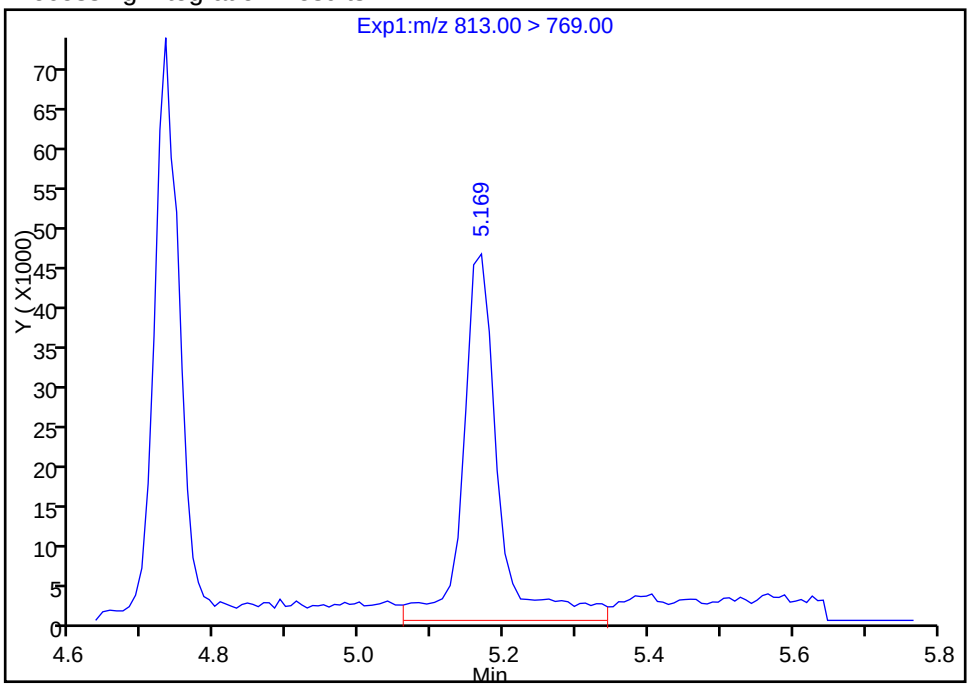
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_005.d
Injection Date: 14-Nov-2016 11:49:56 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

35 Perfluorohexadecanoic acid, CAS: 67905-19-5

Signal: 1

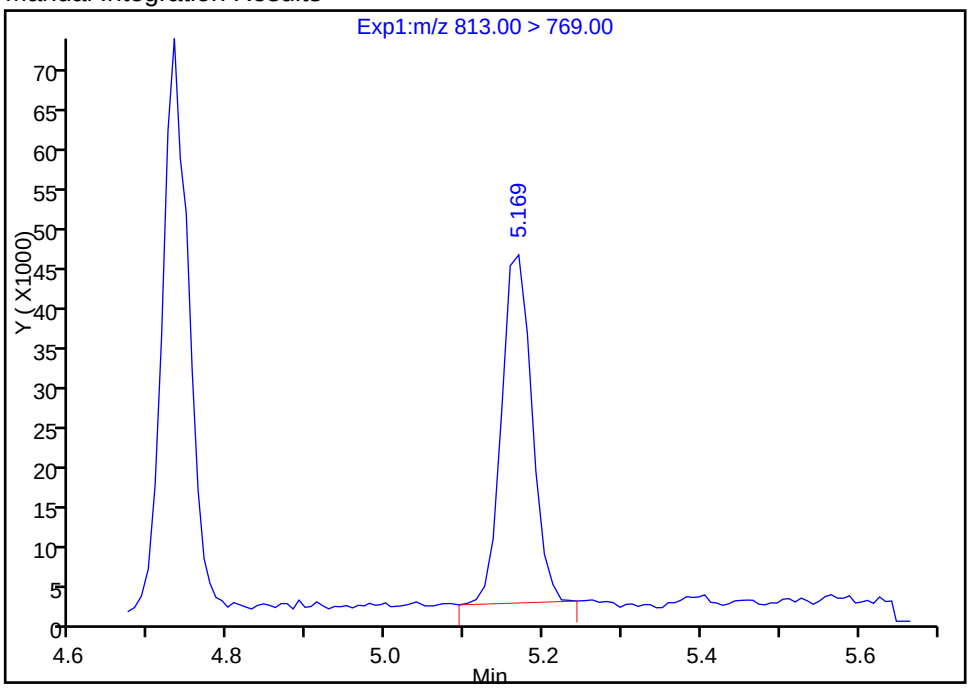
Processing Integration Results

RT: 5.17
Area: 157243
Amount: 1.076056
Amount Units: ng/ml



Manual Integration Results

RT: 5.17
Area: 118495
Amount: 0.986468
Amount Units: ng/ml



Reviewer: chandrasenas, 14-Nov-2016 16:05:49
Audit Action: Manually Integrated Audit Reason: Baseline

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 14-Nov-2016 11:57:25 ALS Bottle#: 39 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 17-Nov-2016 13:13:37 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: phomsophat Date: 17-Nov-2016 13:13:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.518	1.517	0.001	1.000	1065307	5.18		104	10477	
D 2 13C4 PFBA										
217.00 > 172.00	1.518	1.517	0.001		11823267	59.8		120	1001468	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.791	1.795	-0.004	1.000	1003791	4.95		99.1	13312	
D 4 13C5-PFPeA										
267.90 > 223.00	1.791	1.795	-0.004		9749845	61.0		122	1421161	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.830	1.833	-0.003	1.000	1776071	4.84		110		
298.90 > 99.00	1.830	1.833	-0.003	1.000	717629		2.47(0.00-0.00)	110		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.094	2.094	0.0	1.000	830262	4.98		99.6	16884	
D 6 13C2 PFHxA										
315.00 > 270.00	2.094	2.094	0.0		8819643	60.7		121	767294	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.379	2.399	-0.020	1.000	1183129	4.62		101		
D 11 13C4-PFHpA										
367.00 > 322.00	2.443	2.437	0.006		8157939	62.1		124	614076	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.443	2.440	0.003	1.000	815572	4.88		97.7	8530	
D 10 18O2 PFHxS										
403.00 > 84.00	2.458	2.455	0.003		11441433	56.6		120	649292	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.805	2.811	-0.006	1.000	883601	4.95		99.0	15701	
413.00 > 169.00	2.805	2.811	-0.006	1.000	508541		1.74(0.90-1.10)	99.0	20219	
D 14 13C4 PFOA										
417.00 > 372.00	2.813	2.811	0.002		8502278	62.3		125	541304	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.821	2.819	0.002	1.000	1090716	5.02		105		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.198	3.154	0.044	1.000	937530	4.53		97.6	129936	
499.00 > 99.00	3.198	3.154	0.044	1.000	217317		4.31(0.90-1.10)	97.6	17339	
D 19 13C5 PFNA										
468.00 > 423.00	3.198	3.197	0.001		6806053	62.2		124	306182	
D 17 13C4 PFOS										
503.00 > 80.00	3.198	3.197	0.001		9098857	58.4		122	421314	
20 Perfluorononanoic acid										
463.00 > 419.00	3.198	3.198	0.0	1.000	653846	4.89		97.8	10035	
D 21 13C8 FOSA										
506.00 > 78.00	3.480	3.481	-0.001		15286472	61.0		122	731922	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.480	3.484	-0.004	1.000	1455748	5.28		106	83271	
D 23 13C2 PFDA										
515.00 > 470.00	3.564	3.561	0.003		6169615	61.6		123	293648	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.564	3.562	0.002	1.000	600149	4.90		98.0	17392	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.885	3.881	0.004	1.000	571908	4.94		103		
D 27 13C2 PFUnA										
565.00 > 520.00	3.902	3.900	0.002		4942276	63.0		126	290109	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.902	3.900	0.002	1.000	477157	4.70		93.9	14597	
D 30 13C2 PFDoA										
615.00 > 570.00	4.190	4.195	-0.005		4768854	61.7		123	253572	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.197	4.200	-0.003	1.000	452538	4.97		99.4	5153	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.470	4.471	-0.001	1.000	454838	5.05		101	15513	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.714	4.718	-0.004		10604178	62.1		124	2171425	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.721	4.721	0.0	1.000	837693	4.94		98.8	4954	
713.00 > 169.00	4.714	4.721	-0.007	0.998	145834		5.74(0.00-0.00)	98.8	29824	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.145	5.143	0.002		5732841	60.8		122	352561	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.145	5.148	-0.003	1.000	561675	4.96		99.2	1554	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.539	5.537	0.002	1.000	560518	5.46		109	1516	

Reagents:

LCPFC-L3_00019 Amount Added: 1.00 Units: mL

Report Date: 17-Nov-2016 13:13:39 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_006.d

Injection Date: 14-Nov-2016 11:57:25 Instrument ID: A8_N

Lims ID: IC L3

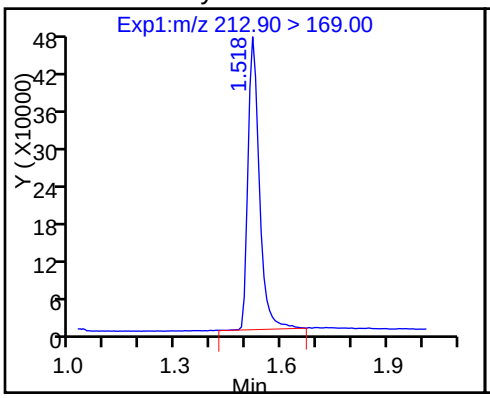
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 39 Worklist Smp#: 6

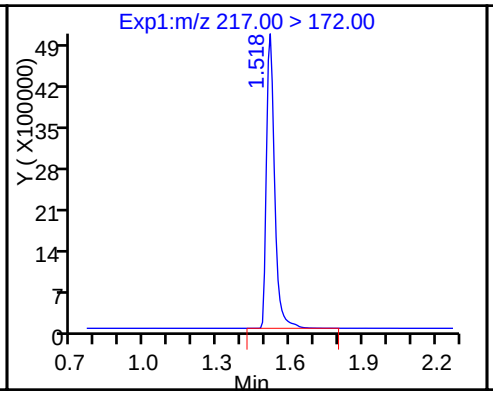
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

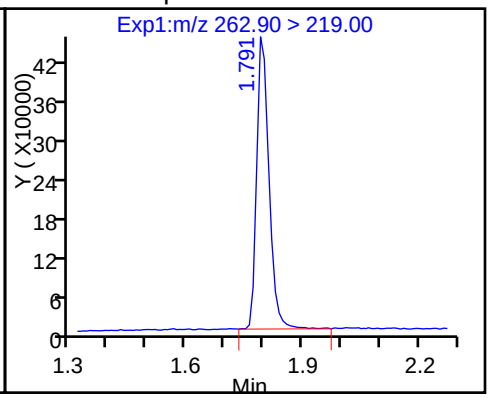
1 Perfluorobutyric acid



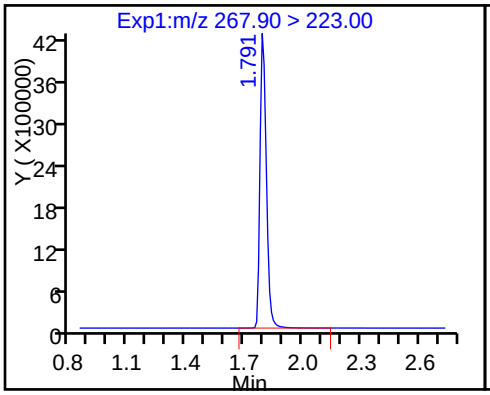
D 2 13C4 PFBA



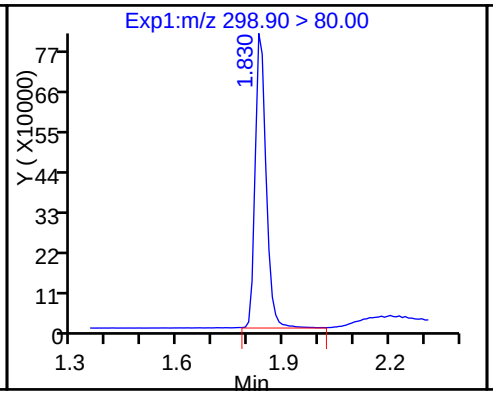
3 Perfluoropentanoic acid



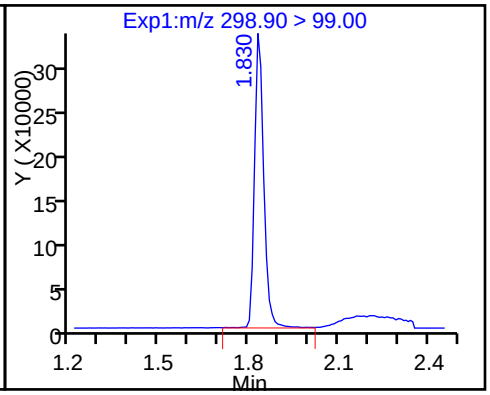
D 4 13C5-PFPeA



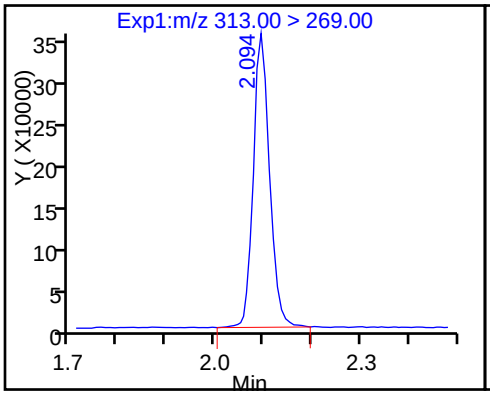
5 Perfluorobutanesulfonic acid



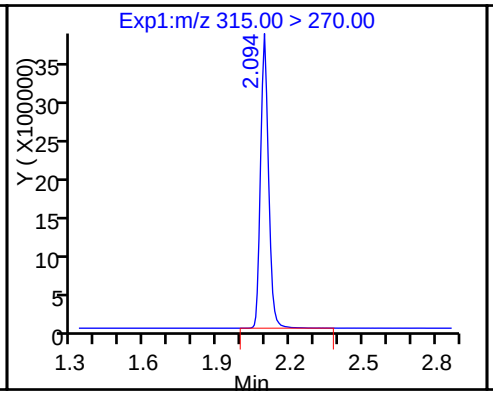
5 Perfluorobutanesulfonic acid



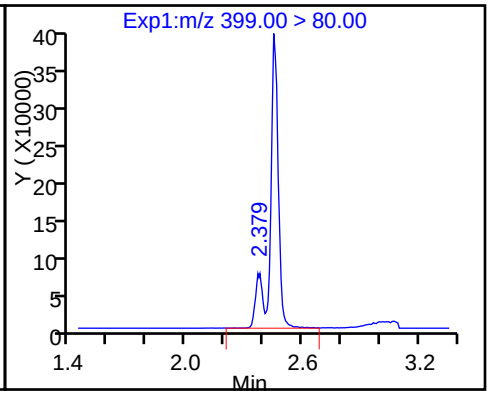
7 Perfluorohexanoic acid



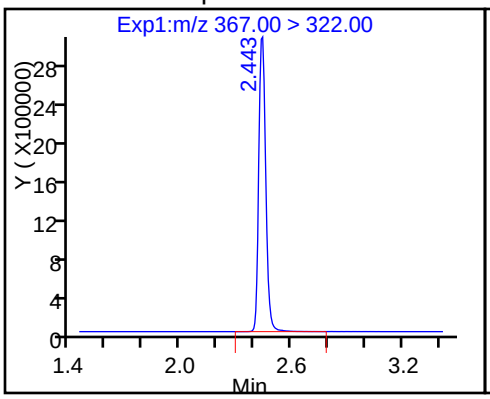
D 6 13C2 PFHxA



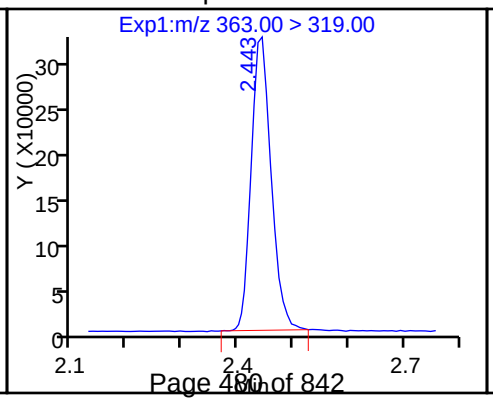
9 Perfluorohexanesulfonic acid



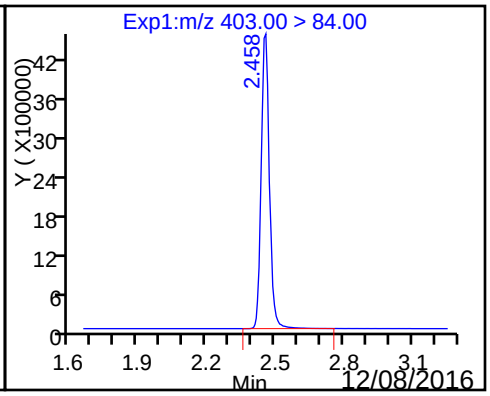
D 11 13C4-PFHpA



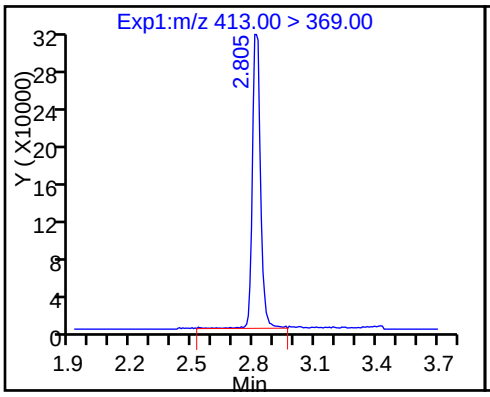
12 Perfluoroheptanoic acid



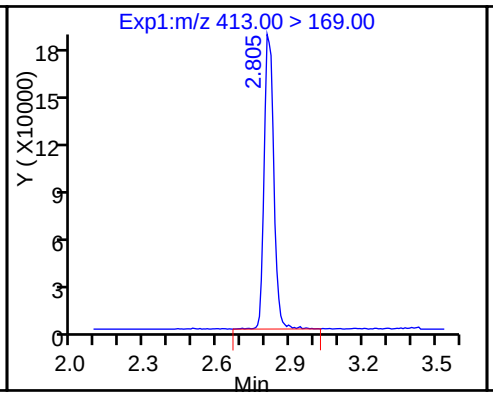
D 10 18O2 PFHxS



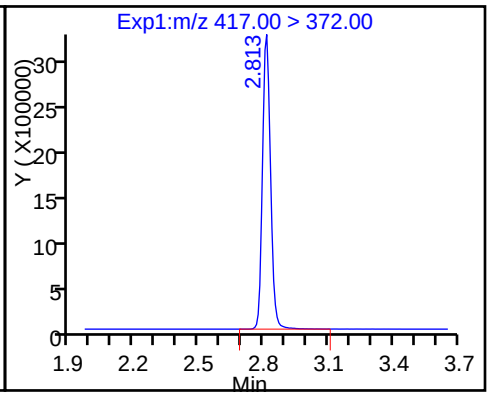
15 Perfluorooctanoic acid



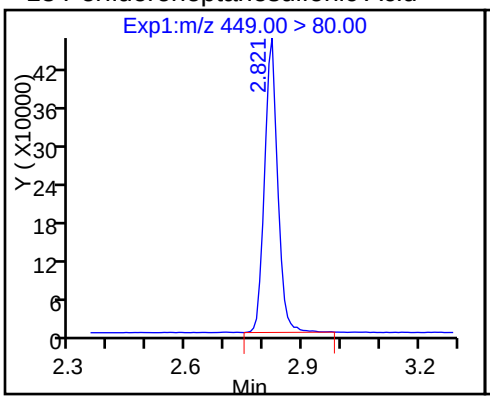
15 Perfluorooctanoic acid



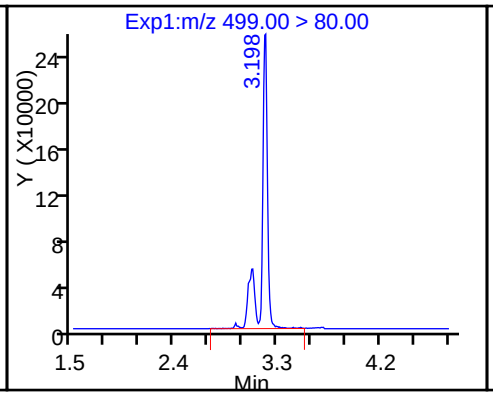
D 14 13C4 PFOA



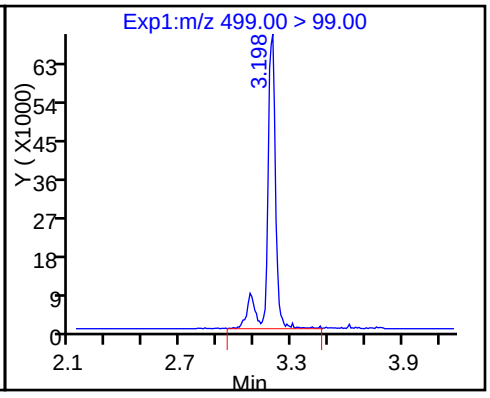
13 Perfluoroheptanesulfonic Acid



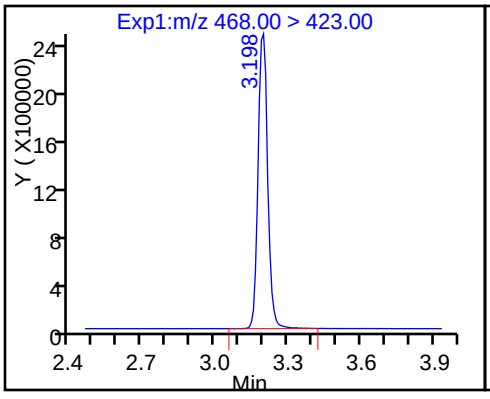
18 Perfluorooctane sulfonic acid



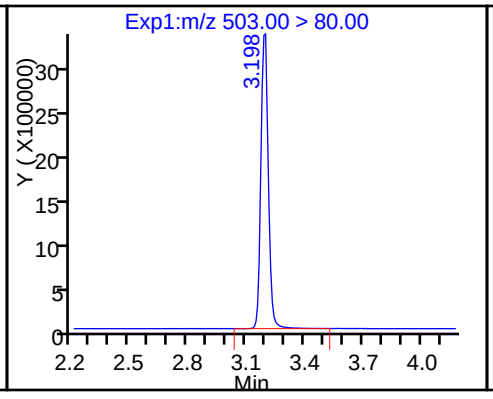
18 Perfluorooctane sulfonic acid



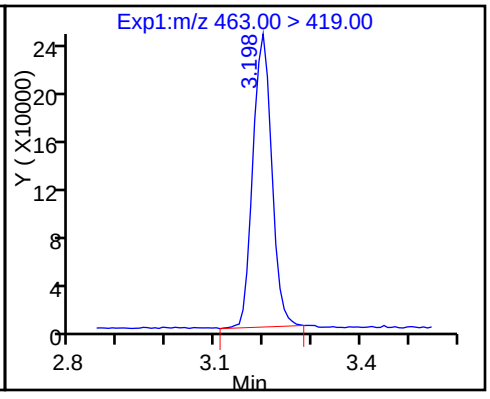
D 19 13C5 PFNA



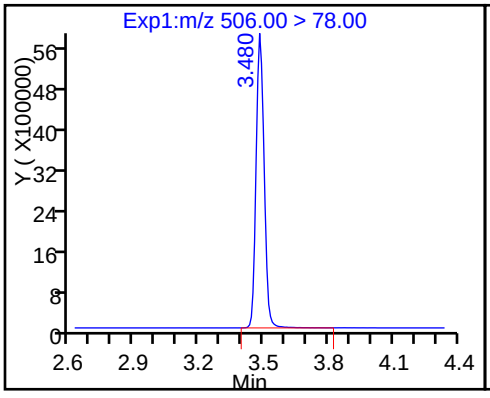
D 17 13C4 PFOS



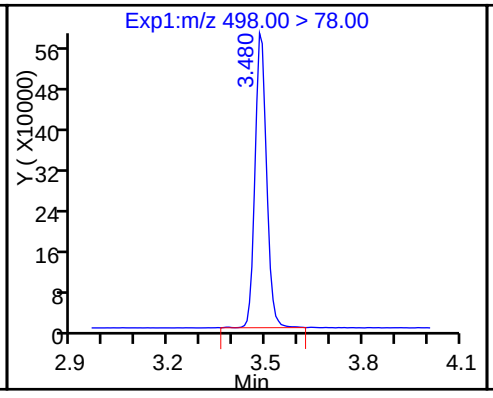
20 Perfluorononanoic acid



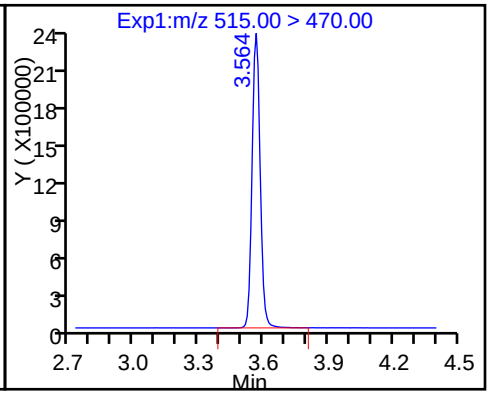
D 21 13C8 FOSA



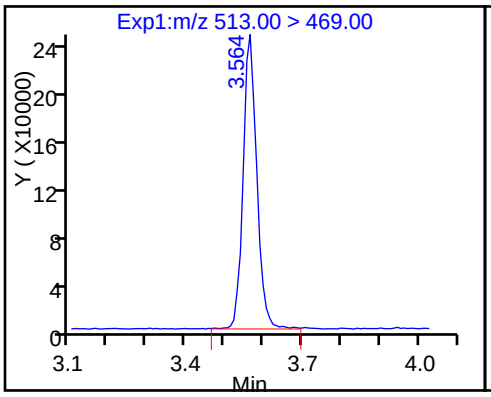
22 Perfluorooctane Sulfonamide



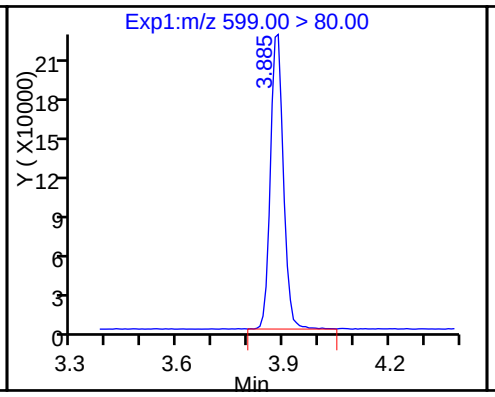
D 23 13C2 PFDA



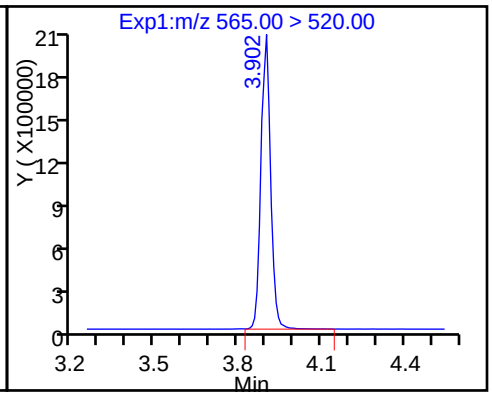
24 Perfluorodecanoic acid



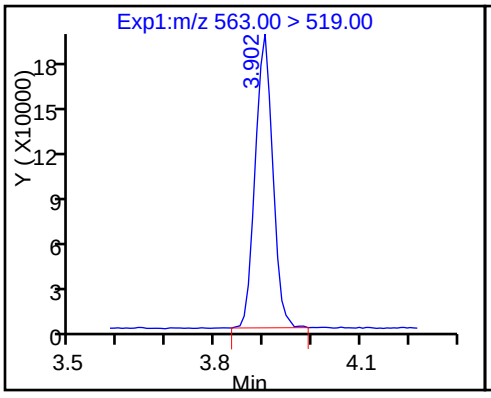
26 Perfluorodecane Sulfonic acid



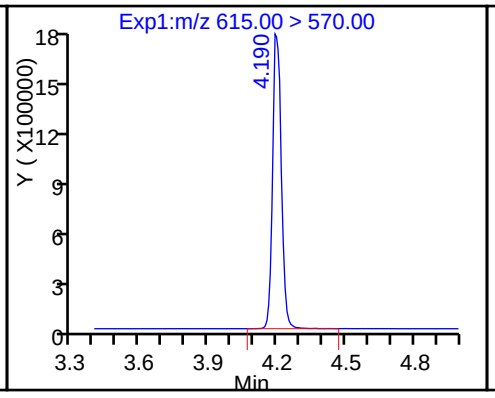
D 27 13C2 PFUnA



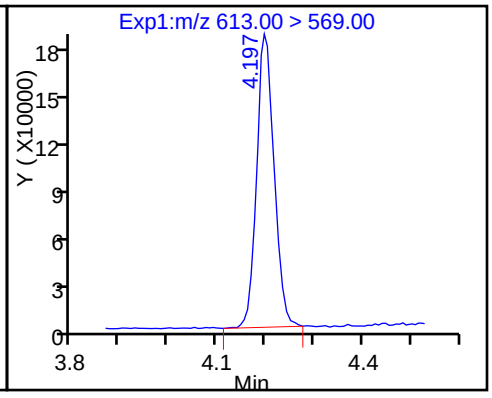
28 Perfluoroundecanoic acid



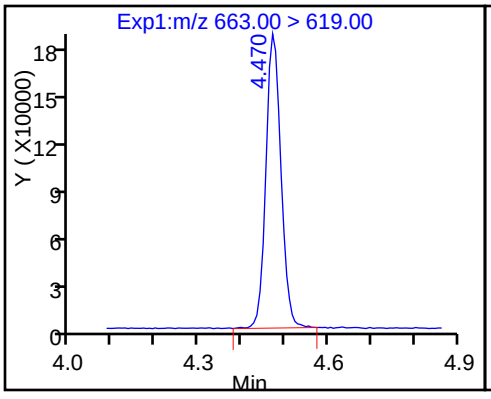
D 30 13C2 PFDoA



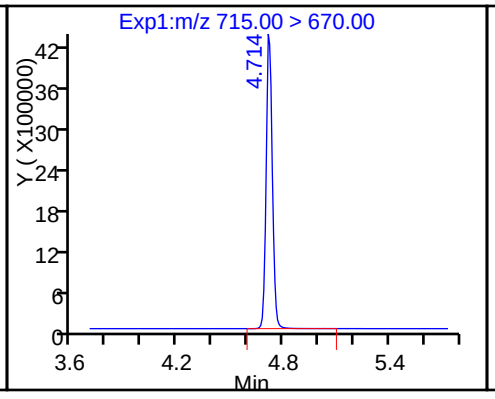
29 Perfluorododecanoic acid



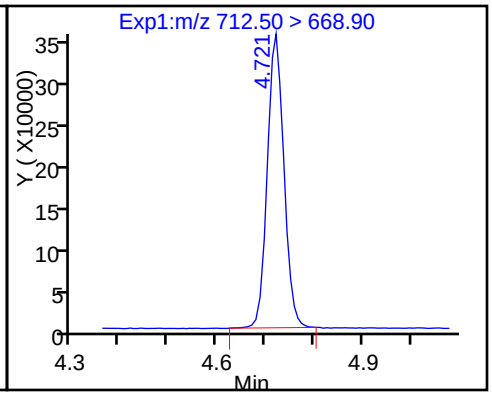
31 Perfluorotridecanoic acid



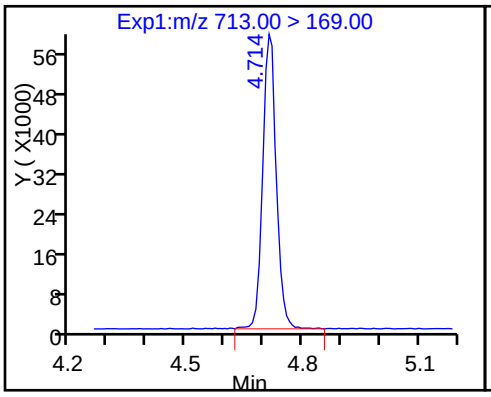
D 32 13C2-PFTeDA



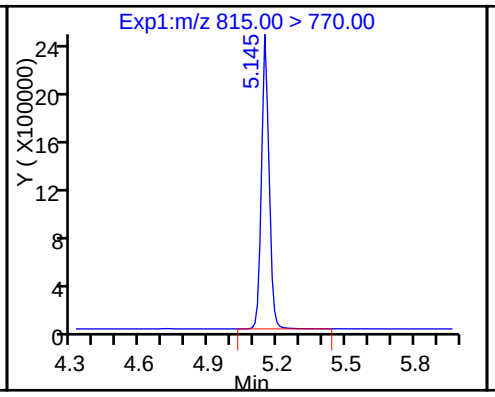
33 Perfluorotetradecanoic acid



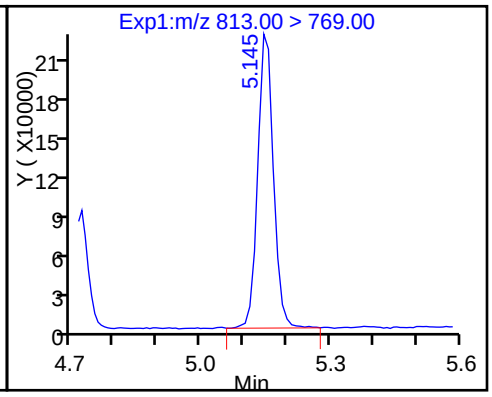
33 Perfluorotetradecanoic acid



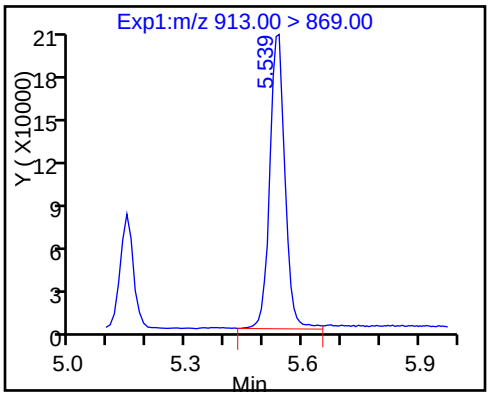
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_007.d
Lims ID: IC L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 14-Nov-2016 12:04:54 ALS Bottle#: 40 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:27:54 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: chandrasenas Date: 14-Nov-2016 16:06:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.518	1.517	0.001	1.000	3907232	21.4		107	47789	
D 2 13C4 PFBA										
217.00 > 172.00	1.518	1.517	0.001		10475703	53.0		106	1473630	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.791	1.795	-0.004	1.000	3501981	20.3		101	59357	
D 4 13C5-PFPeA										
267.90 > 223.00	1.791	1.795	-0.004		8319267	52.0		104	1850292	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.829	1.833	-0.004	1.000	6294518	19.3		109		
298.90 > 99.00	1.829	1.833	-0.004	1.000	2581223		2.44(0.00-0.00)	109		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.087	2.094	-0.007	1.000	3035352	20.8		104	78981	
D 6 13C2 PFHxA										
315.00 > 270.00	2.087	2.094	-0.007		7739058	53.3		107	390246	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.371	2.399	-0.028	1.000	4211405	18.5		102		
D 11 13C4-PFHpA										
367.00 > 322.00	2.432	2.437	-0.005		6983820	53.1		106	449557	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.432	2.440	-0.008	1.000	2904421	20.3		102	32522	
D 10 18O2 PFHxS										
403.00 > 84.00	2.447	2.455	-0.008		10160165	50.3		106	590111	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.808	2.811	-0.003	1.000	3032598	20.1		101	48976	
413.00 > 169.00	2.808	2.811	-0.003	1.000	1831110		1.66(0.90-1.10)	101	67633	
D 14 13C4 PFOA										
417.00 > 372.00	2.808	2.811	-0.003		7179751	52.6		105	545390	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.816	2.819	-0.003	1.000	3759299	20.0		105		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.185	3.154	0.031	1.000	3393561	18.9		102	7093	
499.00 > 99.00	3.079	3.154	-0.075	0.967	770905		4.40(0.90-1.10)	102	6095	
D 19 13C5 PFNA										
468.00 > 423.00	3.194	3.197	-0.003		5673546	51.9		104	423095	
D 17 13C4 PFOS										
503.00 > 80.00	3.194	3.197	-0.003		7878720	50.6		106	334482	
20 Perfluorononanoic acid										
463.00 > 419.00	3.194	3.198	-0.004	1.000	2380645	21.4		107	35836	
D 21 13C8 FOSA										
506.00 > 78.00	3.475	3.481	-0.006		13373430	53.3		107	513088	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.484	3.484	0.0	1.000	5169777	21.4		107	231466	
D 23 13C2 PFDA										
515.00 > 470.00	3.560	3.561	-0.001		5223539	52.1		104	333651	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.560	3.562	-0.002	1.000	2071411	20.0		99.9	59414	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.872	3.881	-0.009	1.000	2005394	20.0		104		
D 27 13C2 PFUnA										
565.00 > 520.00	3.889	3.900	-0.011		4160080	53.0		106	339403	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.889	3.900	-0.011	1.000	1738635	20.3		102	49951	
D 30 13C2 PFDoA										
615.00 > 570.00	4.186	4.195	-0.009		3967844	51.3		103	304418	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.193	4.200	-0.007	1.000	1574822	20.8		104	16453	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.466	4.471	-0.005	1.000	1582837	21.1		106	70018	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.715	4.718	-0.003		8828960	51.7		103	594035	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.715	4.721	-0.006	1.000	2941630	20.8		104	19812	
713.00 > 169.00	4.708	4.721	-0.013	0.998	515194		5.71(0.00-0.00)	104	73663	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.135	5.143	-0.008		4792086	50.8		102	325975	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.135	5.148	-0.013	1.000	1774997	20.3		101	5920	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.525	5.537	-0.012	1.000	1452122	17.0		85.0	4623	

Reagents:

LCPFC-L4_00022 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:27:54 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_007.d

Injection Date: 14-Nov-2016 12:04:54 Instrument ID: A8_N

Lims ID: IC L4

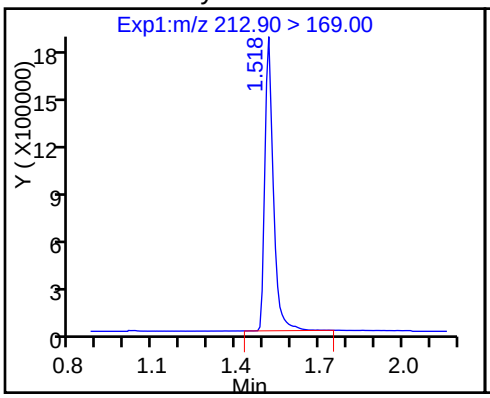
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7

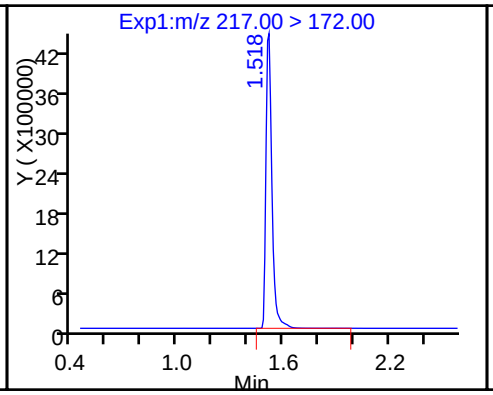
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

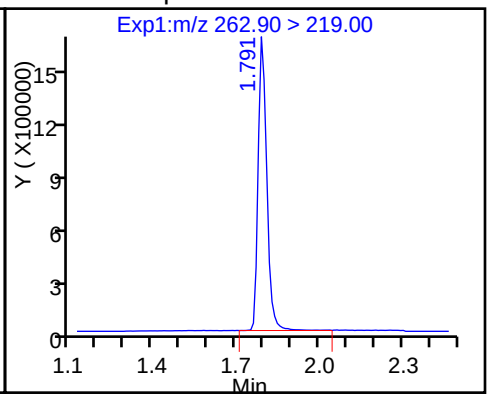
1 Perfluorobutyric acid



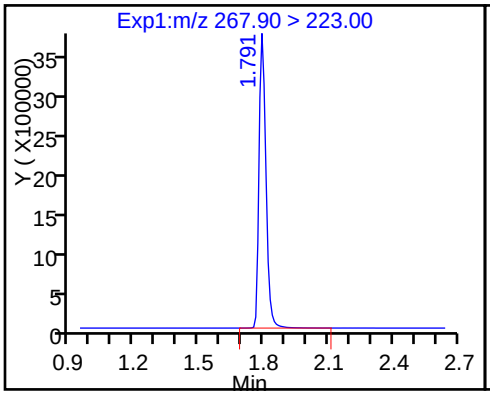
D 2 13C4 PFBA



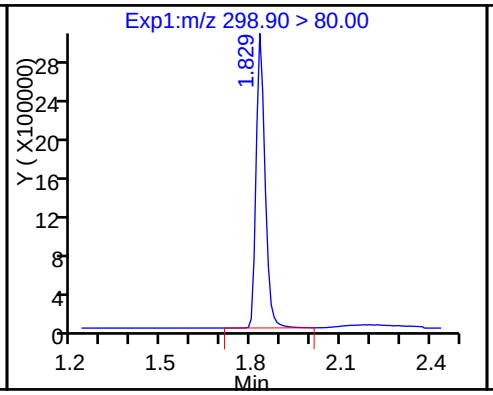
3 Perfluoropentanoic acid



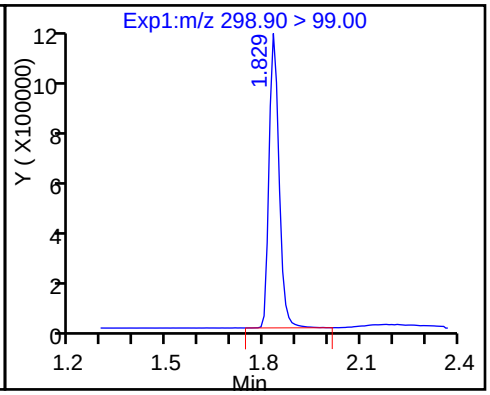
D 4 13C5-PFPeA



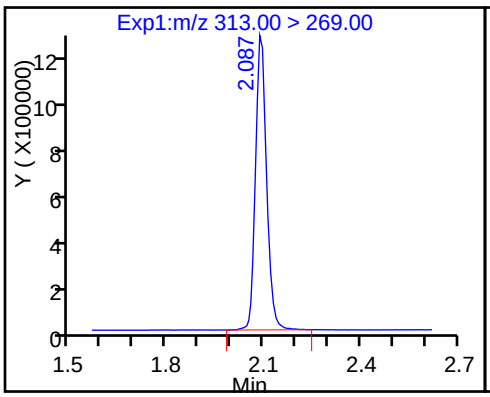
5 Perfluorobutanesulfonic acid



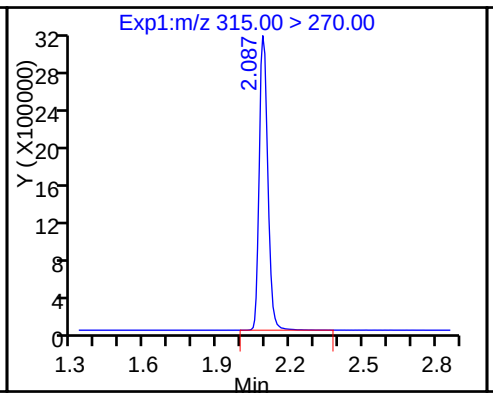
5 Perfluorobutanesulfonic acid



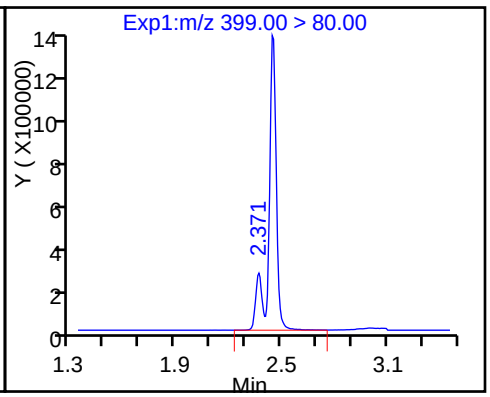
7 Perfluorohexanoic acid



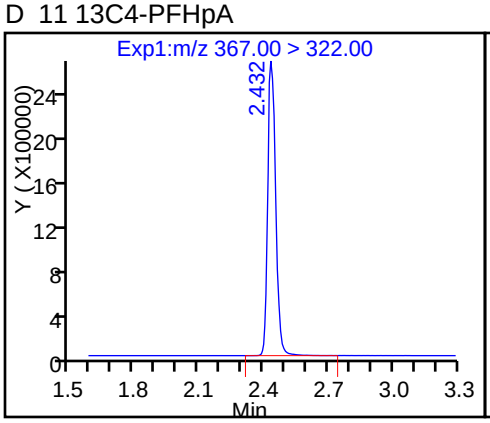
D 6 13C2 PFHxA



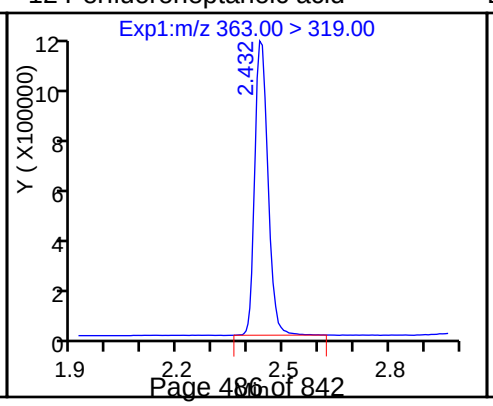
9 Perfluorohexanesulfonic acid



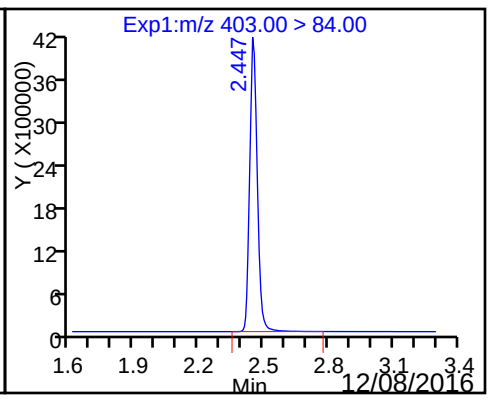
D 11 13C4-PFHpA



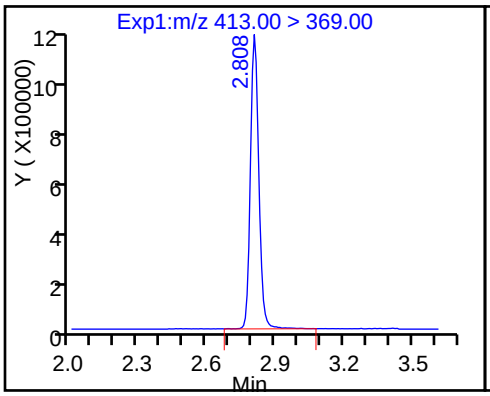
12 Perfluoroheptanoic acid



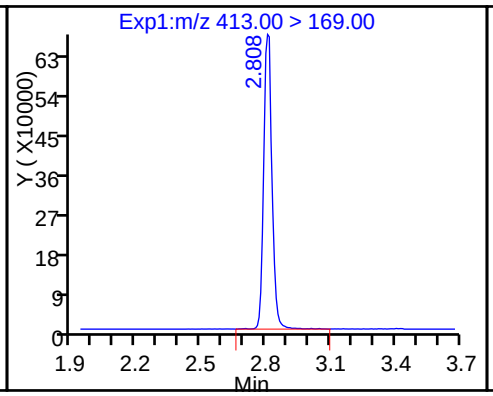
D 10 18O2 PFHxS



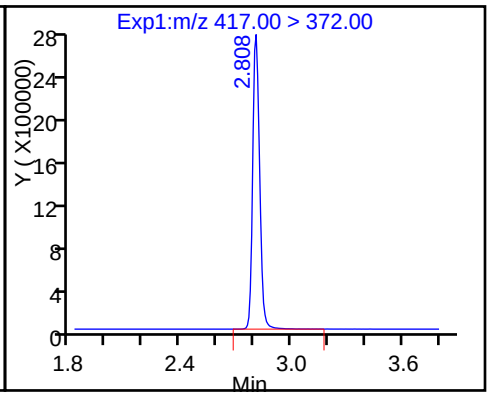
15 Perfluorooctanoic acid



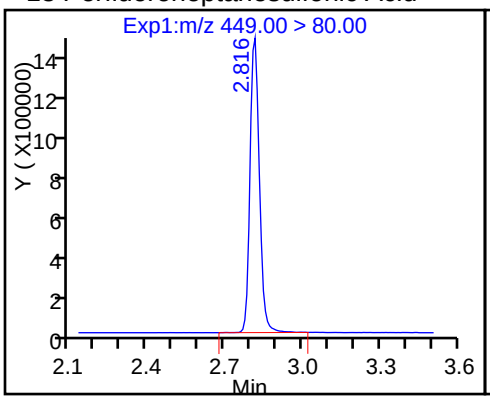
15 Perfluorooctanoic acid



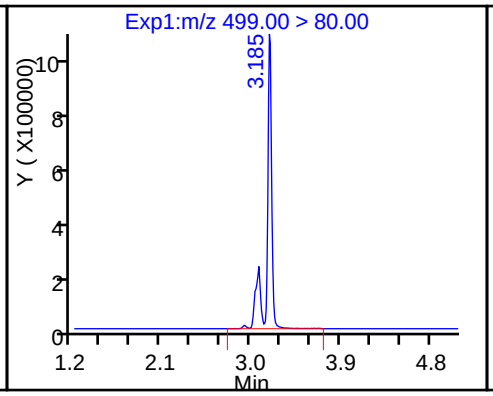
D 14 13C4 PFOA



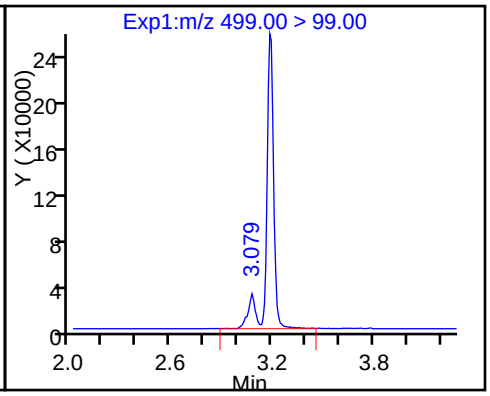
13 Perfluoroheptanesulfonic Acid



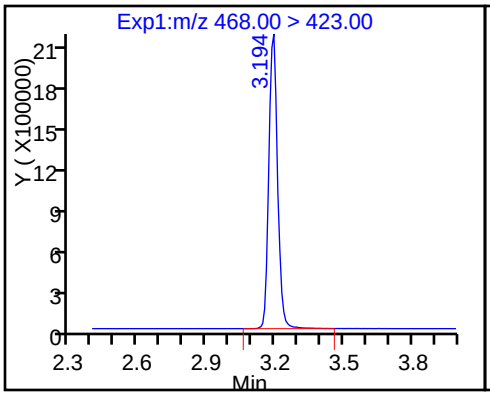
18 Perfluorooctane sulfonic acid



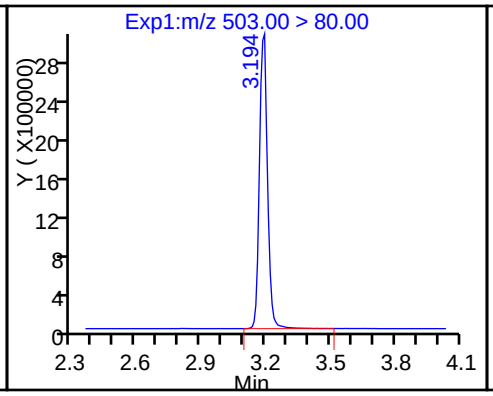
18 Perfluorooctane sulfonic acid



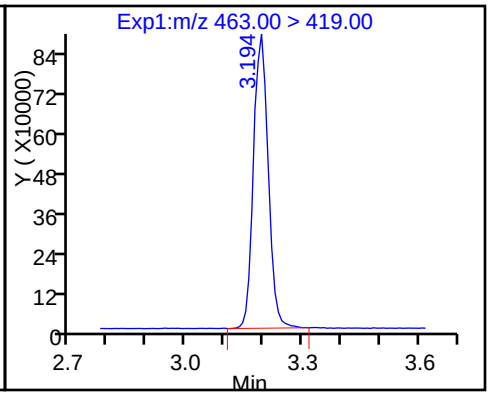
D 19 13C5 PFNA



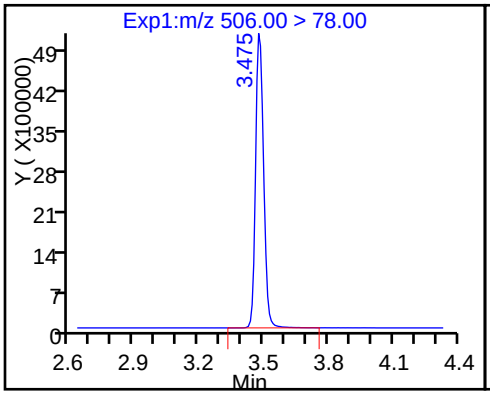
D 17 13C4 PFOS



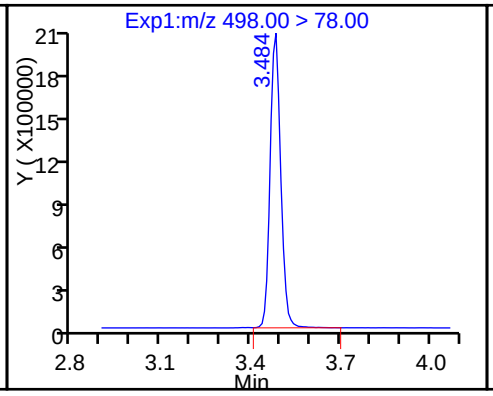
20 Perfluorononanoic acid



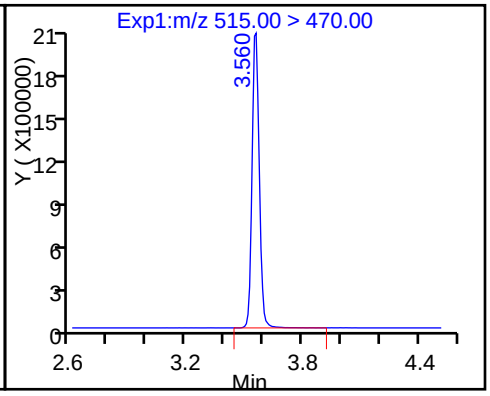
D 21 13C8 FOSA



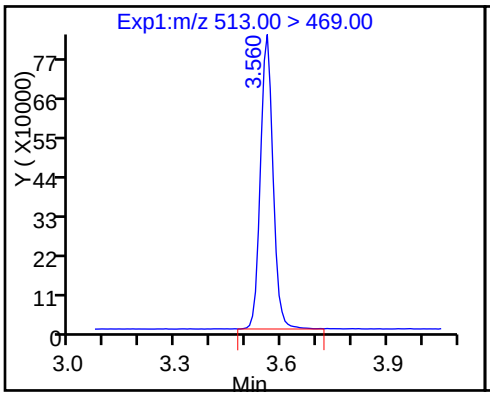
22 Perfluorooctane Sulfonamide



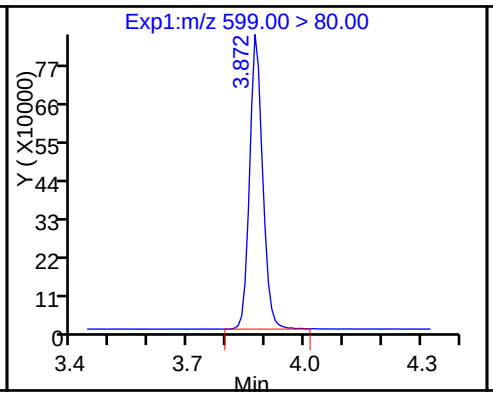
D 23 13C2 PFDA



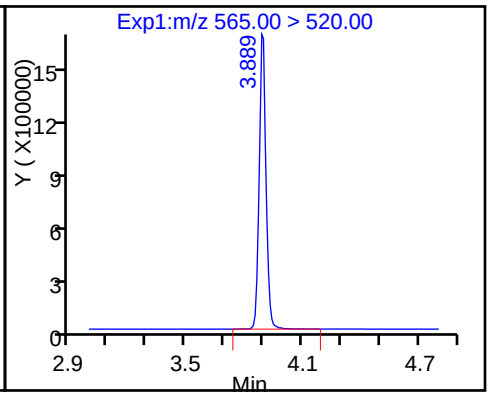
24 Perfluorodecanoic acid



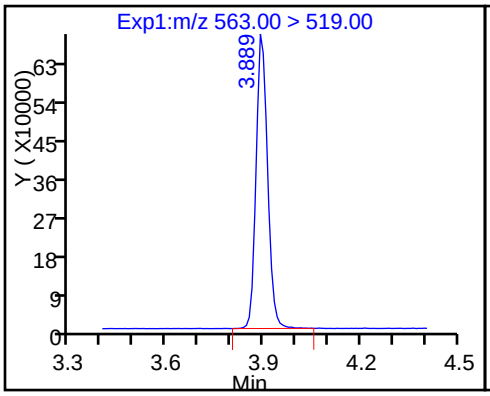
26 Perfluorodecane Sulfonic acid



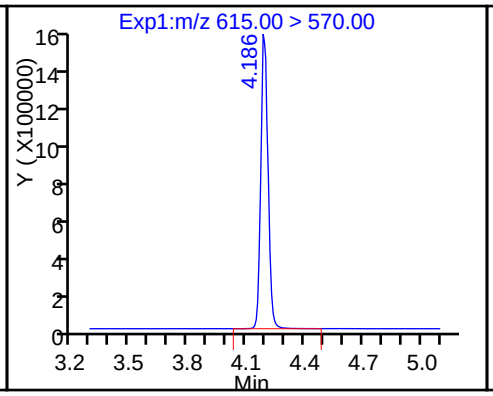
D 27 13C2 PFUnA



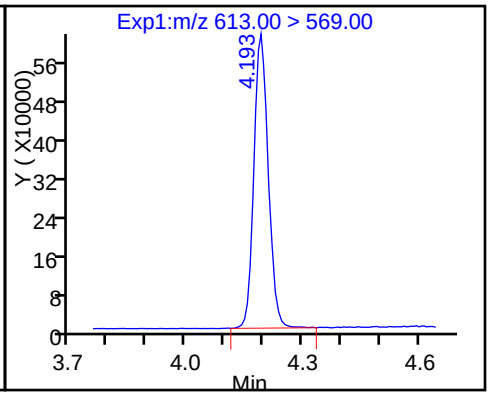
28 Perfluoroundecanoic acid



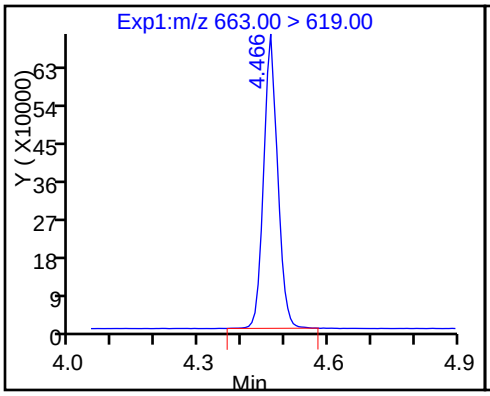
D 30 13C2 PFDoA



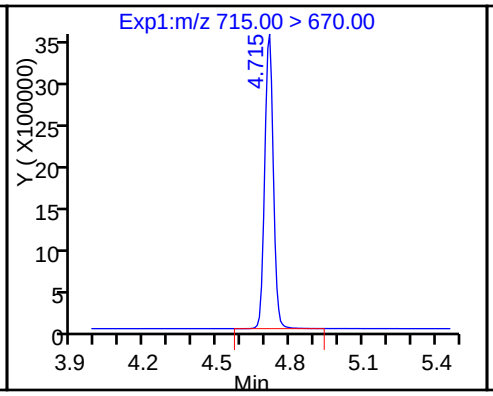
29 Perfluorododecanoic acid



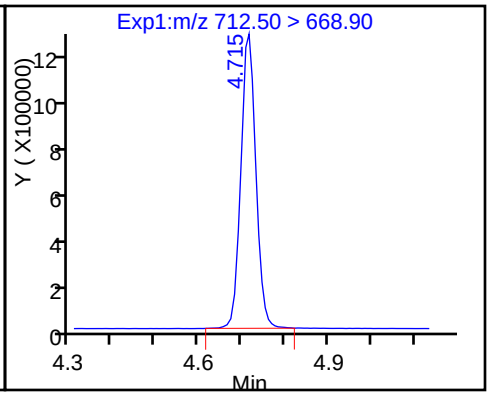
31 Perfluorotridecanoic acid



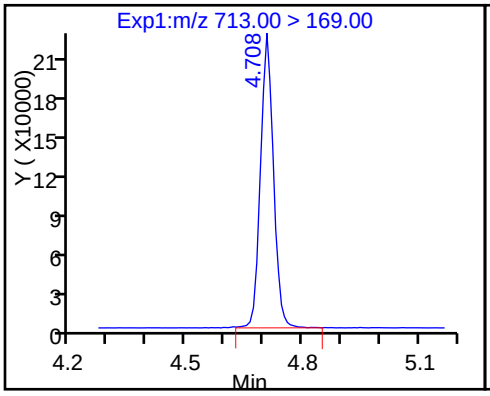
D 32 13C2-PFTeDA



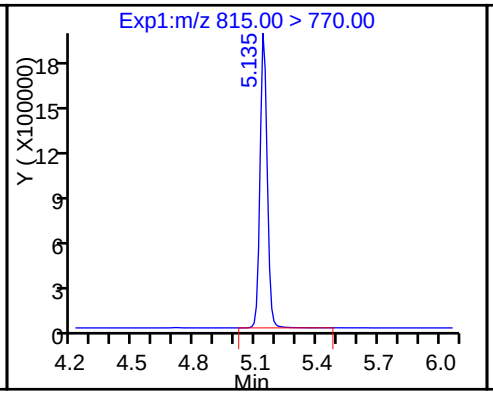
33 Perfluorotetradecanoic acid



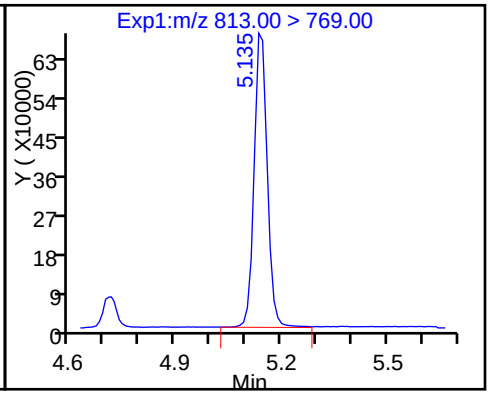
33 Perfluorotetradecanoic acid



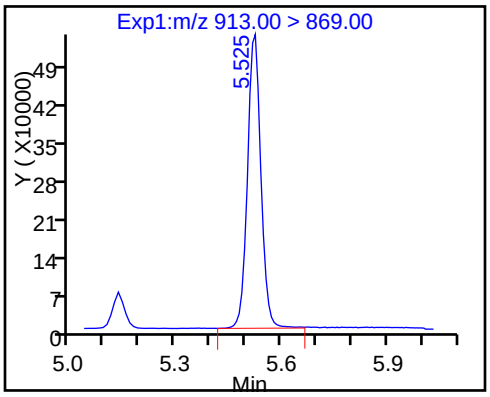
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 14-Nov-2016 12:12:25 ALS Bottle#: 41 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:27:56 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: chandrasenas Date: 14-Nov-2016 15:39:44

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.518	1.517	0.001	1.000	7771826	50.0		100	86807	
D 2 13C4 PFBA										
217.00 > 172.00	1.510	1.517	-0.007		8936233	45.2		90.4	954930	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.791	1.795	-0.004	1.000	7062509	48.1		96.1	102855	
D 4 13C5-PFPeA										
267.90 > 223.00	1.791	1.795	-0.004		7071703	44.2		88.5	1016626	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.830	1.833	-0.003	1.000	12278449	43.4		98.1		
298.90 > 99.00	1.830	1.833	-0.003	1.000	5384801		2.28(0.00-0.00)	98.1		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.087	2.094	-0.007	1.000	6072771	49.5		99.0	165020	
D 6 13C2 PFHxA										
315.00 > 270.00	2.087	2.094	-0.007		6495105	44.7		89.5	419639	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.367	2.399	-0.032	1.000	8438680	42.7		93.8		
D 11 13C4-PFHpA										
367.00 > 322.00	2.424	2.437	-0.013		5856487	44.6		89.1	450078	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.431	2.440	-0.009	1.000	5965596	49.8		99.5	60799	
D 10 18O2 PFHxS										
403.00 > 84.00	2.447	2.455	-0.008		8829789	43.7		92.4	513531	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.799	2.811	-0.012	1.000	6192971	49.8		99.6	124641	
413.00 > 169.00	2.807	2.811	-0.004	1.003	3666686		1.69(0.90-1.10)	99.6	175902	
D 14 13C4 PFOA										
417.00 > 372.00	2.799	2.811	-0.012		5919095	43.4		86.7	463237	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.807	2.819	-0.012	1.000	7582180	47.1		99.1		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.159	3.154	0.005	1.000	6812886	44.5		95.8	208650	
499.00 > 99.00	3.183	3.154	0.029	1.008	1555533		4.38(0.90-1.10)	95.8	175141	
D 19 13C5 PFNA										
468.00 > 423.00	3.183	3.197	-0.014		4896384	44.8		89.5	359972	
D 17 13C4 PFOS										
503.00 > 80.00	3.183	3.197	-0.014		6735234	43.3		90.5	218887	
20 Perfluorononanoic acid										
463.00 > 419.00	3.183	3.198	-0.015	1.000	4898420	50.9		102	76624	
D 21 13C8 FOSA										
506.00 > 78.00	3.482	3.481	0.001		11457517	45.7		91.4	611144	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.482	3.484	-0.002	1.000	10339396	50.1		100	280778	
D 23 13C2 PFDA										
515.00 > 470.00	3.550	3.561	-0.011		4460035	44.5		89.0	194514	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.550	3.562	-0.012	1.000	4246788	48.0		96.0	95669	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.870	3.881	-0.011	1.000	4149841	48.5		101		
D 27 13C2 PFUnA										
565.00 > 520.00	3.887	3.900	-0.013		3412926	43.5		87.0	270686	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.887	3.900	-0.013	1.000	3374586	48.1		96.2	98248	
D 30 13C2 PFDoA										
615.00 > 570.00	4.185	4.195	-0.010		3408241	44.1		88.1	228100	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.192	4.200	-0.008	1.000	3155550	48.5		97.0	42825	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.457	4.471	-0.014	1.000	3235045	50.3		101	108475	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.707	4.718	-0.011		7480844	43.8		87.7	588353	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.707	4.721	-0.014	1.000	5813985	48.0		95.9	58161	
713.00 > 169.00	4.698	4.721	-0.023	0.998	985591		5.90(0.00-0.00)	95.9	133361	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.124	5.143	-0.019		4190109	44.4		88.9	273450	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.135	5.148	-0.013	1.000	3758175	50.7		101	12695	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.516	5.537	-0.021	1.000	4223490	57.6		115	15577	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:27:56 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_008.d

Injection Date: 14-Nov-2016 12:12:25 Instrument ID: A8_N

Lims ID: IC L5

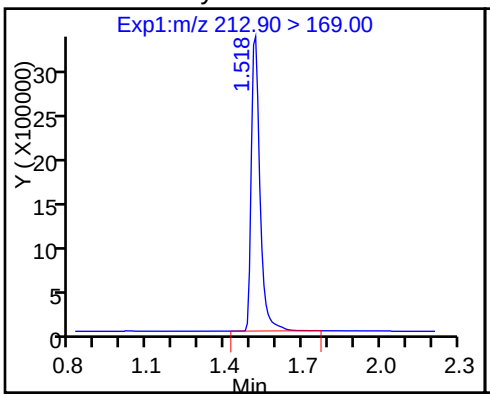
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 8

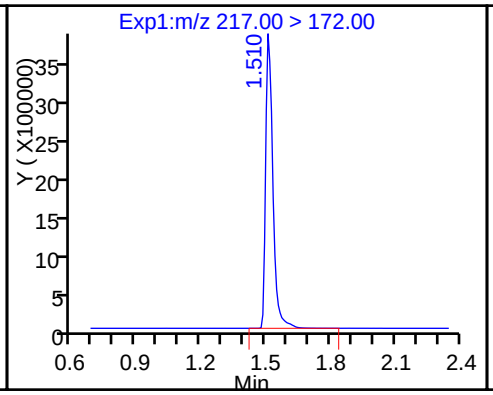
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

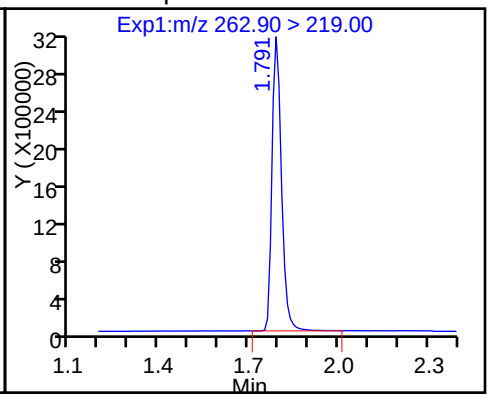
1 Perfluorobutyric acid



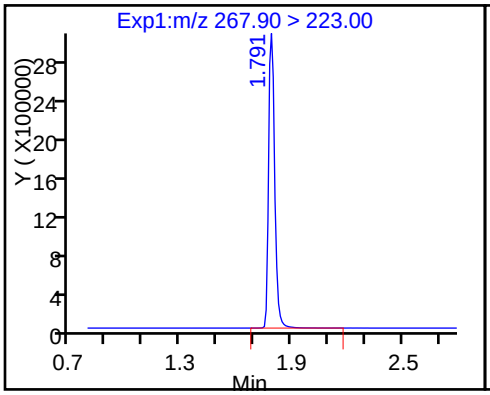
D 2 13C4 PFBA



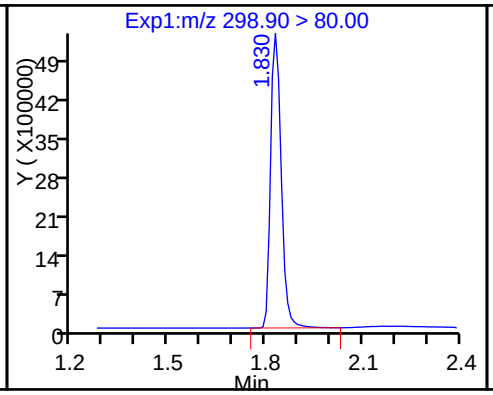
3 Perfluoropentanoic acid



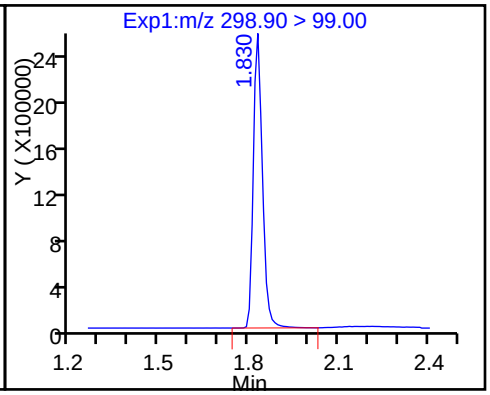
D 4 13C5-PFPeA



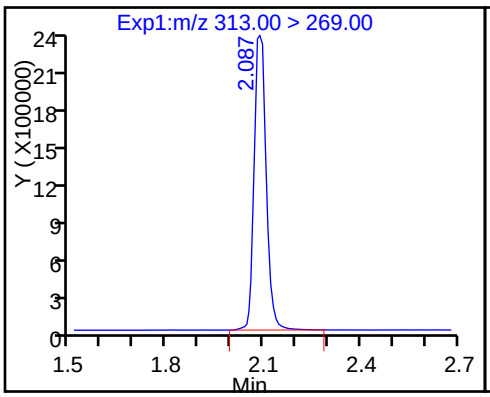
5 Perfluorobutanesulfonic acid



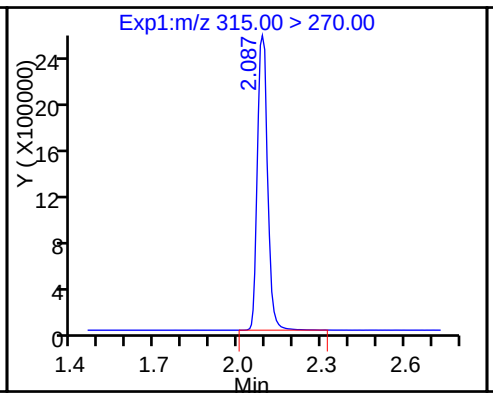
5 Perfluorobutanesulfonic acid



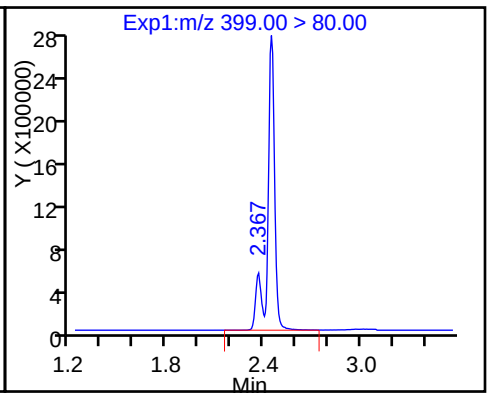
7 Perfluorohexanoic acid



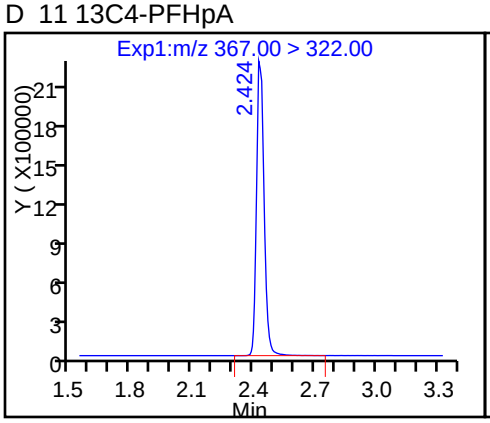
D 6 13C2 PFHxA



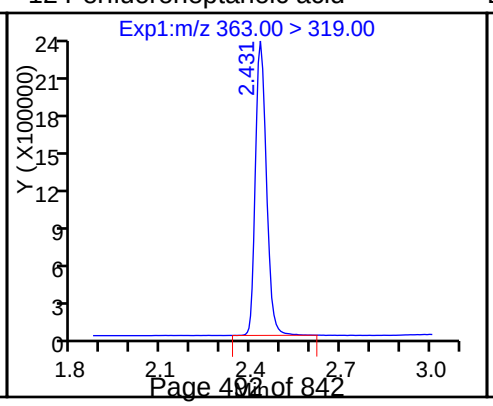
9 Perfluorohexanesulfonic acid



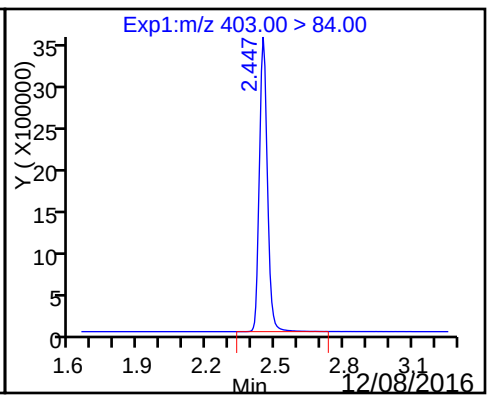
D 11 13C4-PFHpA



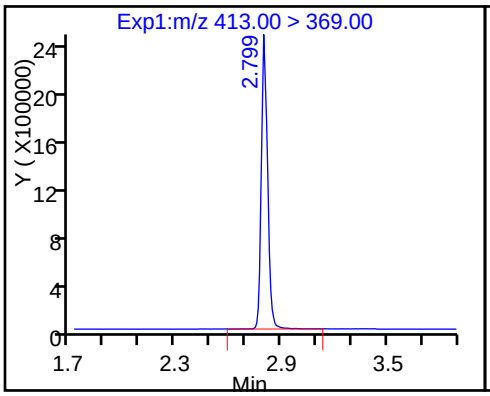
12 Perfluoroheptanoic acid



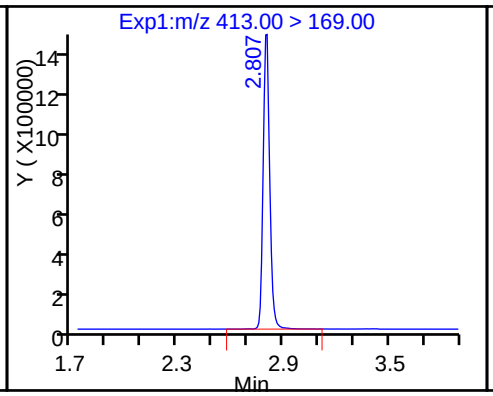
D 10 18O2 PFHxS



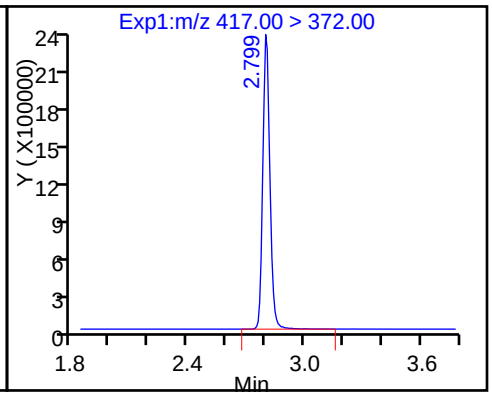
15 Perfluorooctanoic acid



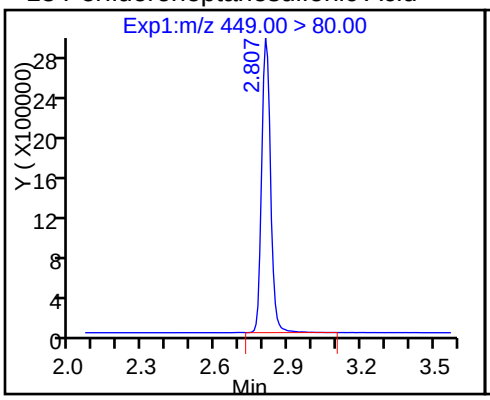
15 Perfluorooctanoic acid



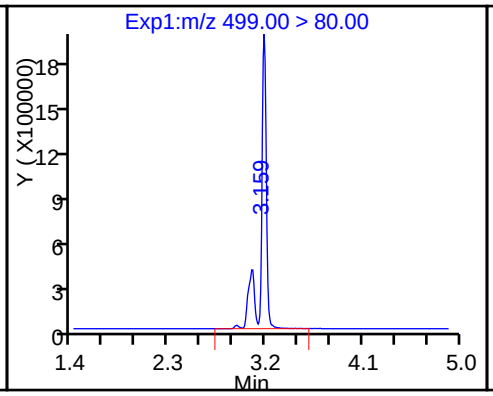
D 14 13C4 PFOA



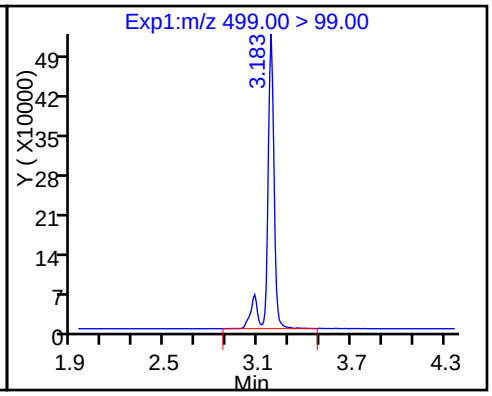
13 Perfluoroheptanesulfonic Acid



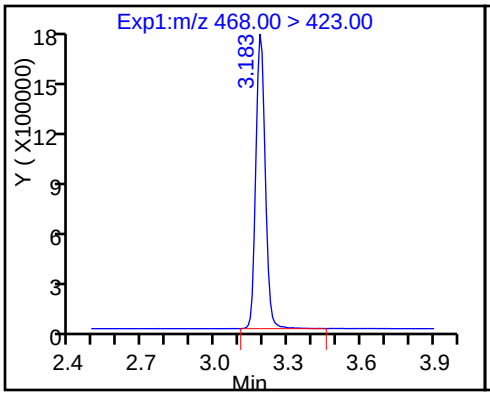
18 Perfluorooctane sulfonic acid



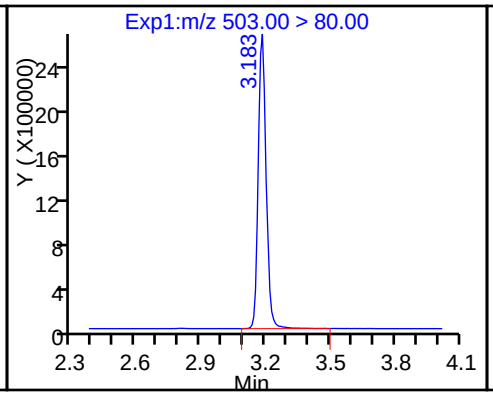
18 Perfluorooctane sulfonic acid



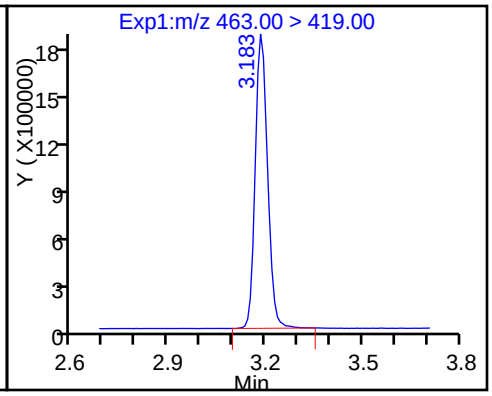
D 19 13C5 PFNA



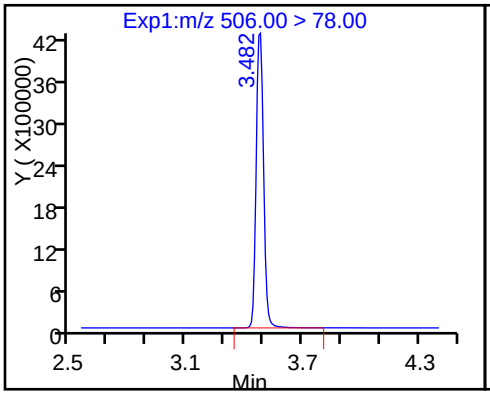
D 17 13C4 PFOS



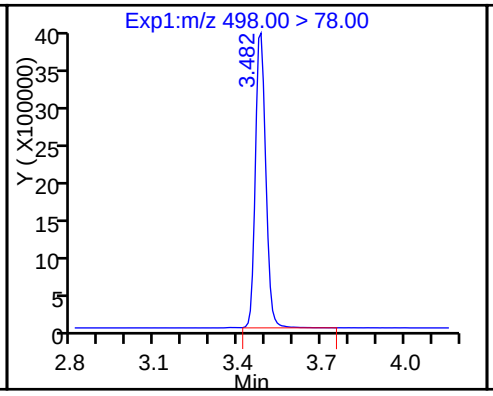
20 Perfluorononanoic acid



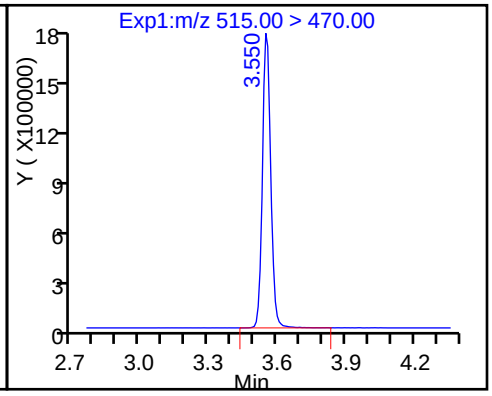
D 21 13C8 FOSA



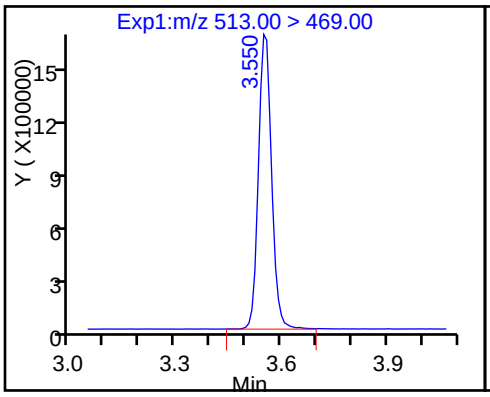
22 Perfluorooctane Sulfonamide



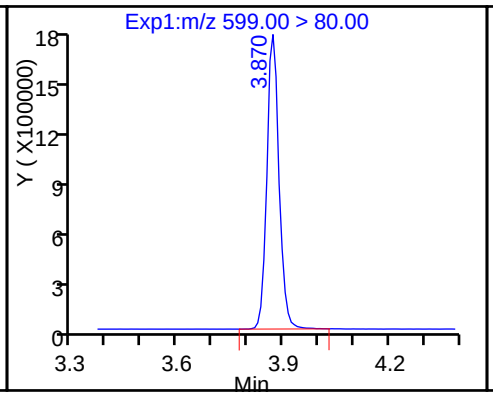
D 23 13C2 PFDA



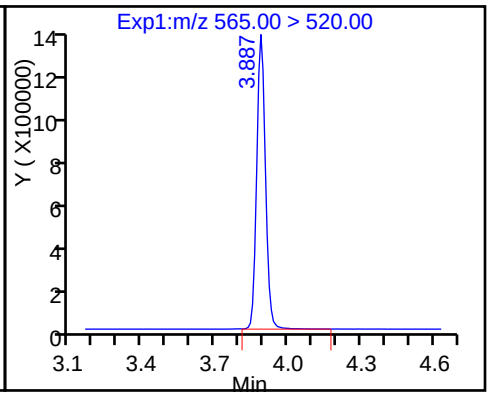
24 Perfluorodecanoic acid



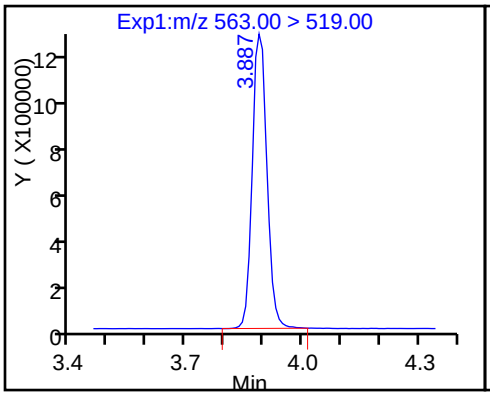
26 Perfluorodecane Sulfonic acid



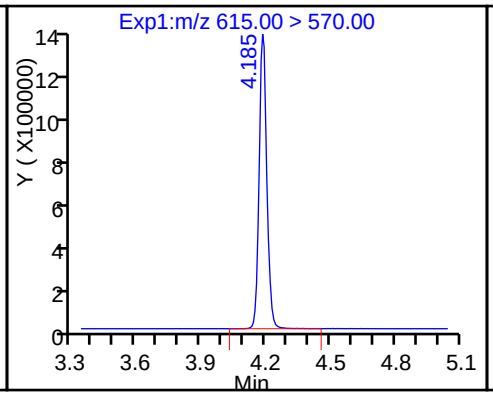
D 27 13C2 PFUnA



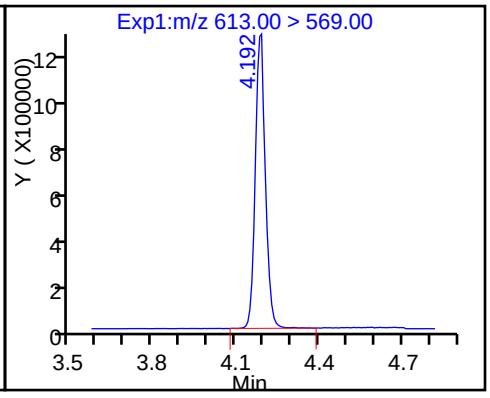
28 Perfluoroundecanoic acid



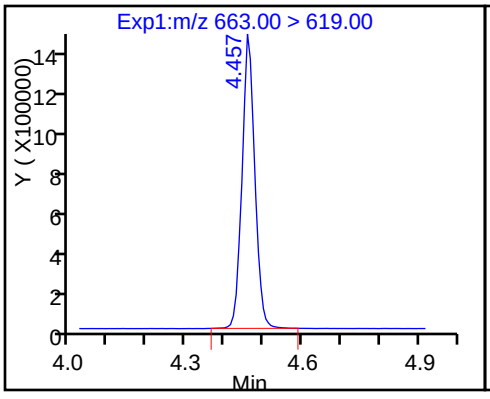
D 30 13C2 PFDoA



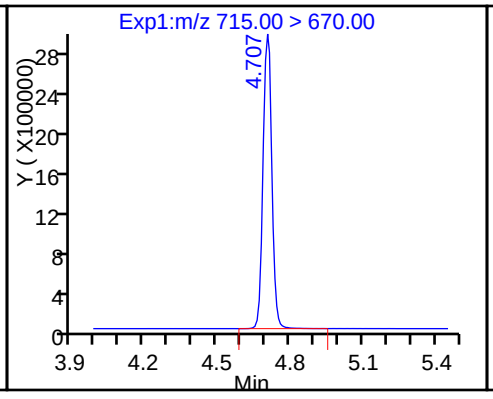
29 Perfluorododecanoic acid



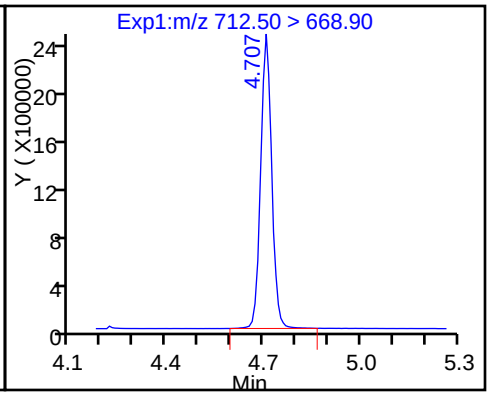
31 Perfluorotridecanoic acid



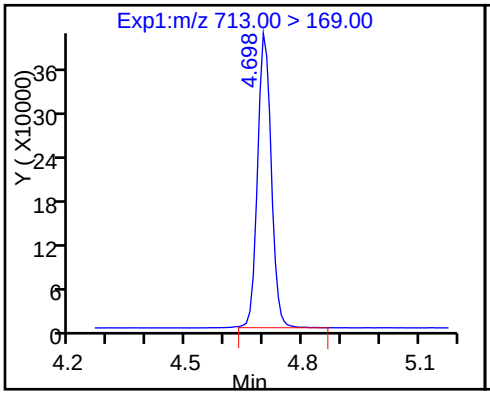
D 32 13C2-PFTeDA



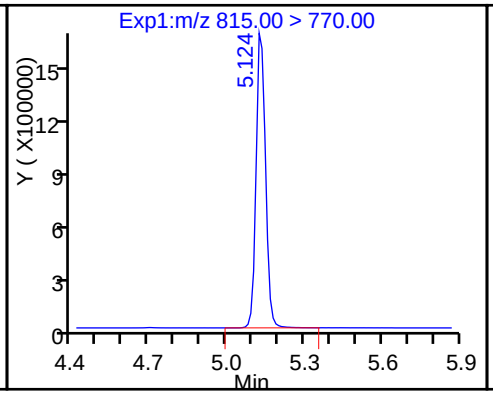
33 Perfluorotetradecanoic acid



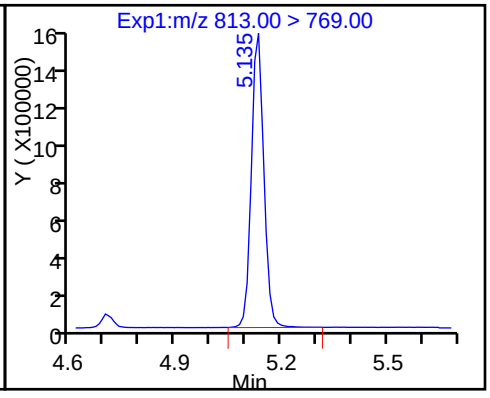
33 Perfluorotetradecanoic acid



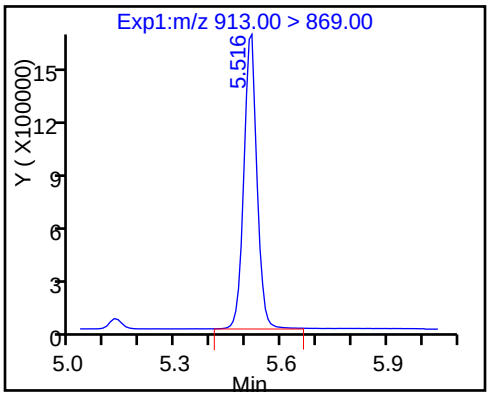
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 14-Nov-2016 12:19:54 ALS Bottle#: 42 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:27:58 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: phomsophat Date: 14-Nov-2016 15:52:37

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.513	1.517	-0.004	1.000	28517516	172.9		86.5	327944	
D 2 13C4 PFBA										
217.00 > 172.00	1.513	1.517	-0.004		9479214	48.0		95.9	972555	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.794	1.795	-0.001	1.000	25429167	162.6		81.3	335006	
D 4 13C5-PFPeA										
267.90 > 223.00	1.794	1.795	-0.001		7527340	47.1		94.2	796412	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.832	1.833	-0.001	1.000	39816824	137.3		77.7		
298.90 > 99.00	1.832	1.833	-0.001	1.000	21172722		1.88(0.00-0.00)	77.7		
7 Perfluorohexanoic acid										
313.00 > 269.00	2.091	2.094	-0.003	1.000	24432332	180.4		90.2	458911	
D 6 13C2 PFHxA										
315.00 > 270.00	2.091	2.094	-0.003		7168880	49.4		98.8	705829	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.449	2.399	0.050	1.000	33642968	166.2		91.3		
D 11 13C4-PFHpA										
367.00 > 322.00	2.424	2.437	-0.013		5867935	44.7		89.3	1088807	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.433	2.440	-0.007	1.000	22836127	190.1		95.1	171572	
D 10 18O2 PFHxS										
403.00 > 84.00	2.449	2.455	-0.006		9040925	44.7		94.6	484076	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.802	2.811	-0.009	1.000	22813929	183.5		91.8	423543	
413.00 > 169.00	2.802	2.811	-0.009	1.000	14561936		1.57(0.90-1.10)	91.8	520096	
D 14 13C4 PFOA										
417.00 > 372.00	2.802	2.811	-0.009		5919540	43.4		86.7	424440	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.810	2.819	-0.009	1.000	29561540	171.2		89.9		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.072	3.154	-0.082	1.000	30706189	186.6		101	172227	
499.00 > 99.00	3.186	3.154	0.032	1.037	7287188		4.21(0.90-1.10)	101	1187568	
D 19 13C5 PFNA										
468.00 > 423.00	3.186	3.197	-0.011		4871116	44.5		89.1	435081	
D 17 13C4 PFOS										
503.00 > 80.00	3.186	3.197	-0.011		7230705	46.4		97.1	93395	
20 Perfluorononanoic acid										
463.00 > 419.00	3.186	3.198	-0.012	1.000	18895041	197.5		98.7	192774	
D 21 13C8 FOSA										
506.00 > 78.00	3.477	3.481	-0.004		12110421	48.3		96.6	402693	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.485	3.484	0.001	1.000	37527381	171.9		86.0	1040263	
D 23 13C2 PFDA										
515.00 > 470.00	3.544	3.561	-0.017		4758777	47.5		95.0	434125	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.553	3.562	-0.009	1.000	18150490	192.2		96.1	271902	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.866	3.881	-0.015	1.000	18106699	196.9		102		
D 27 13C2 PFUnA										
565.00 > 520.00	3.892	3.900	-0.008		3497235	44.6		89.2	272305	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.892	3.900	-0.008	1.000	14053548	195.4		97.7	359377	
D 30 13C2 PFDoA										
615.00 > 570.00	4.184	4.195	-0.011		3768909	48.7		97.5	301614	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.184	4.200	-0.016	1.000	13972115	194.1		97.1	167808	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.457	4.471	-0.014	1.000	14492441	203.6		102	402234	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.706	4.718	-0.012		8037332	47.1		94.2	1060901	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.706	4.721	-0.015	1.000	24410873	182.1		91.0	332236	
713.00 > 169.00	4.698	4.721	-0.023	0.998	4738699		5.15(0.00-0.00)	91.0	622800	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.126	5.143	-0.017		4708207	49.9		99.9	386143	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.126	5.148	-0.022	1.000	16210200	199.1		99.6	51124	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.510	5.537	-0.027	1.000	16086225	198.3		99.2	52268	

Reagents:

LCPFC-L6_00019 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:27:58 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_009.d

Injection Date: 14-Nov-2016 12:19:54 Instrument ID: A8_N

Lims ID: IC L6

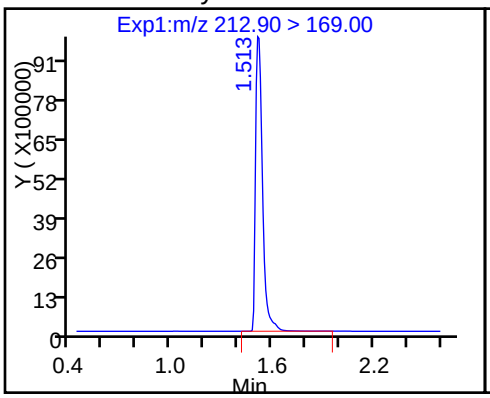
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 42 Worklist Smp#: 9

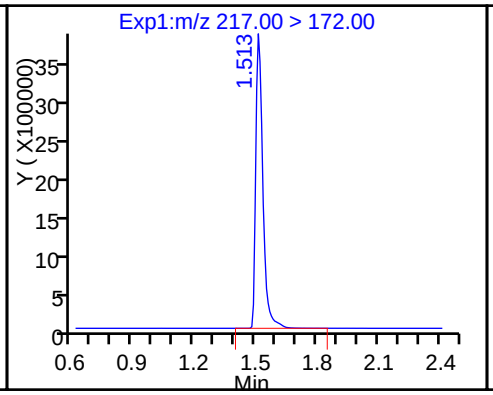
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

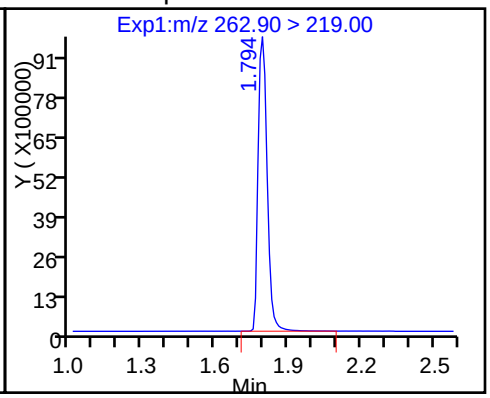
1 Perfluorobutyric acid



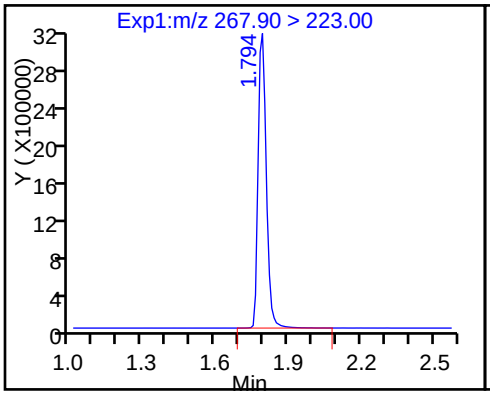
D 2 13C4 PFBA



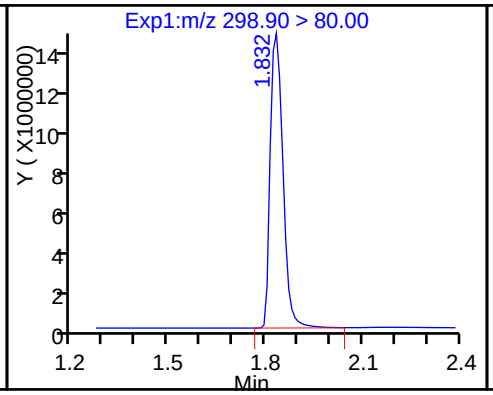
3 Perfluoropentanoic acid



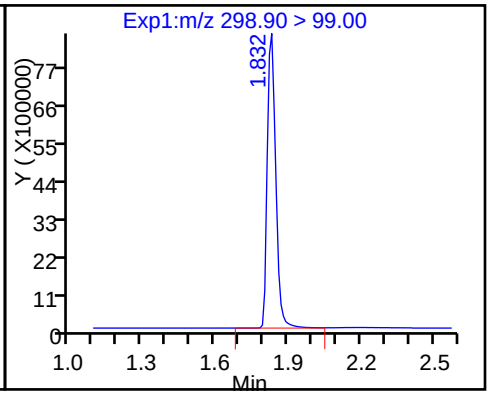
D 4 13C5-PFPeA



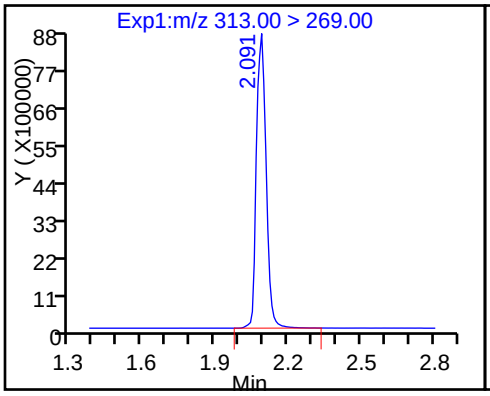
5 Perfluorobutanesulfonic acid



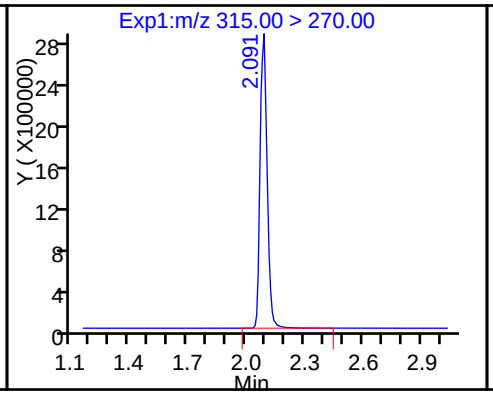
5 Perfluorobutanesulfonic acid



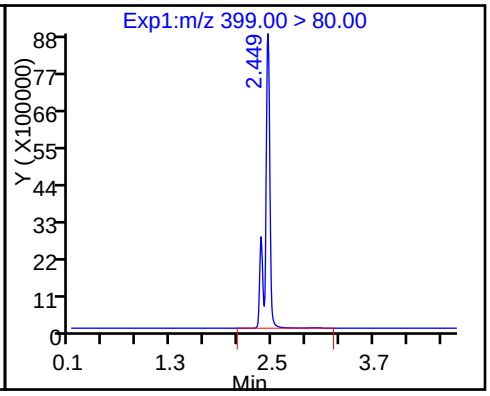
7 Perfluorohexanoic acid



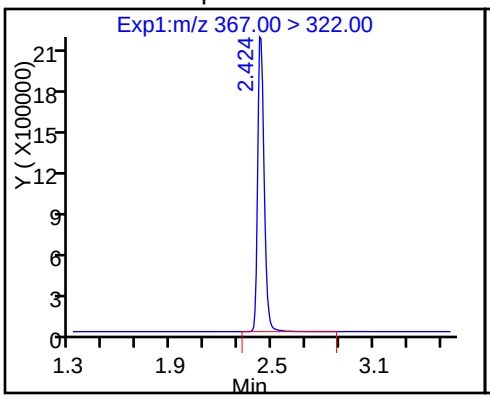
D 6 13C2 PFHxA



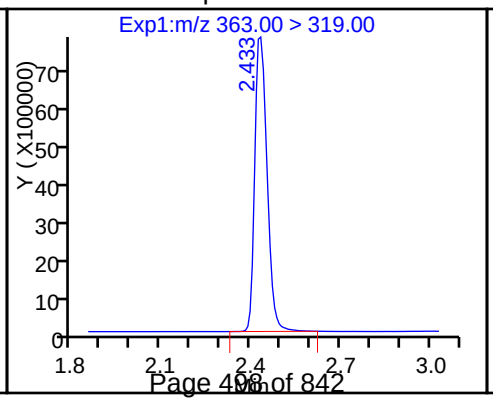
9 Perfluorohexanesulfonic acid



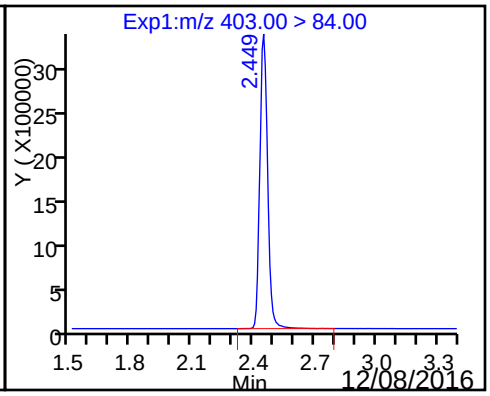
D 11 13C4-PFHpA



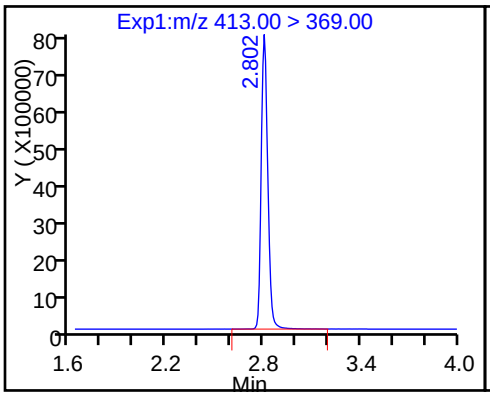
12 Perfluoroheptanoic acid



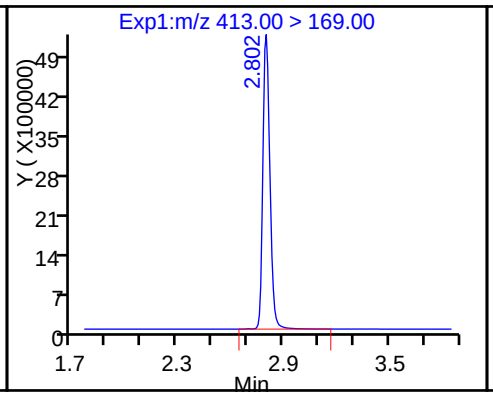
D 10 18O2 PFHxS



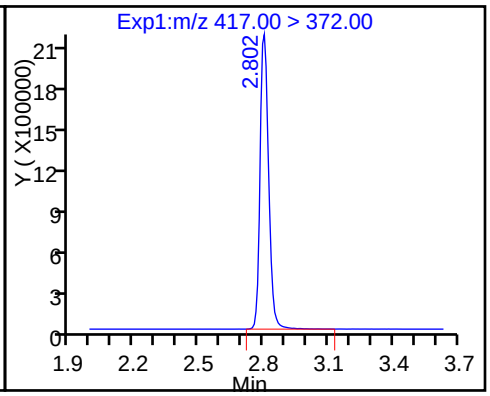
15 Perfluorooctanoic acid



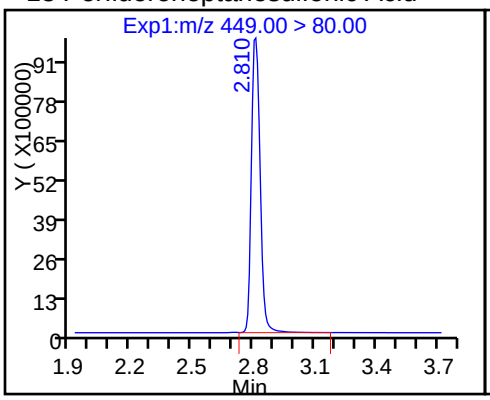
15 Perfluorooctanoic acid



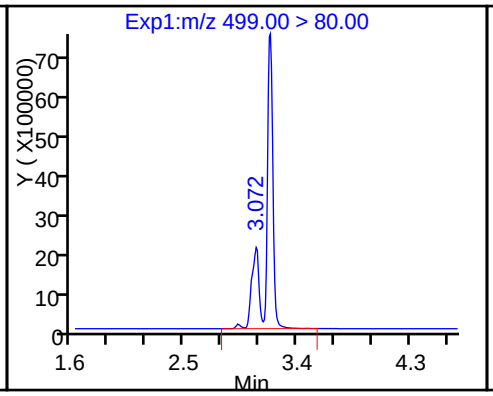
D 14 13C4 PFOA



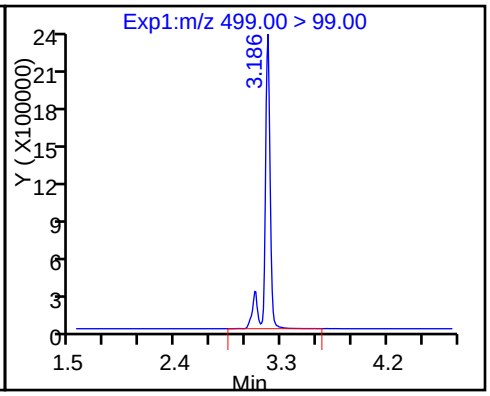
13 Perfluoroheptanesulfonic Acid



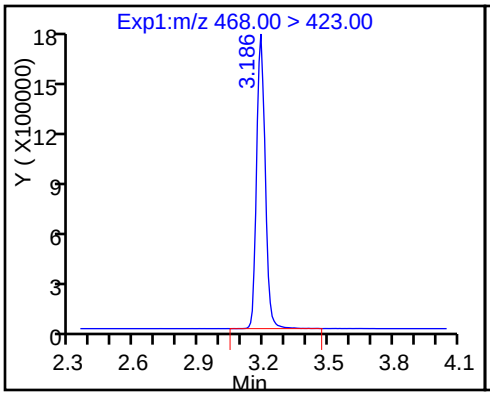
18 Perfluorooctane sulfonic acid



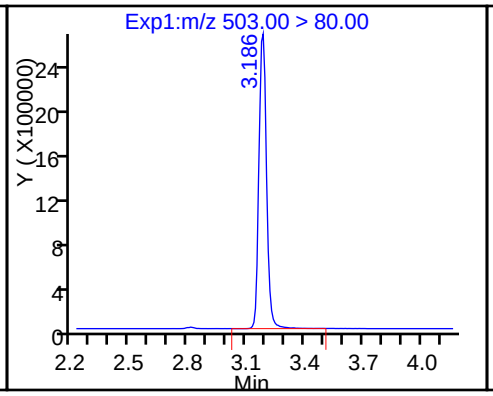
18 Perfluorooctane sulfonic acid



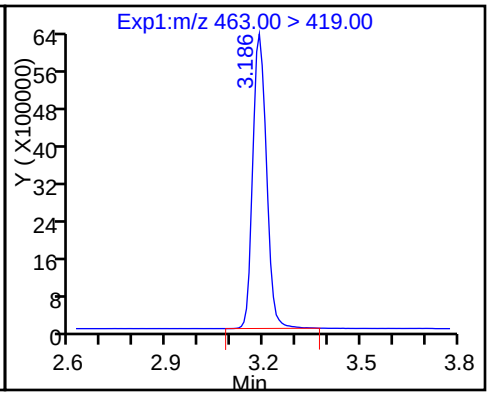
D 19 13C5 PFNA



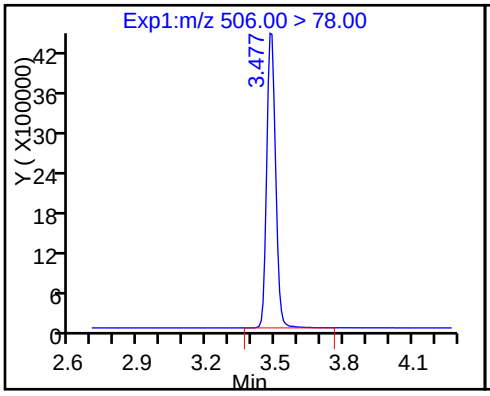
D 17 13C4 PFOS



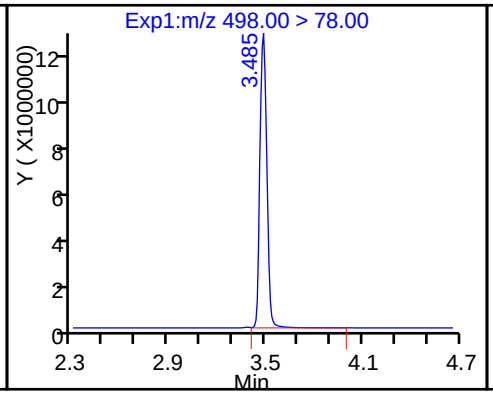
20 Perfluorononanoic acid



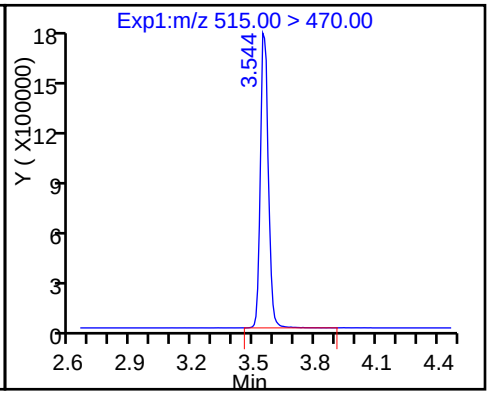
D 21 13C8 FOSA



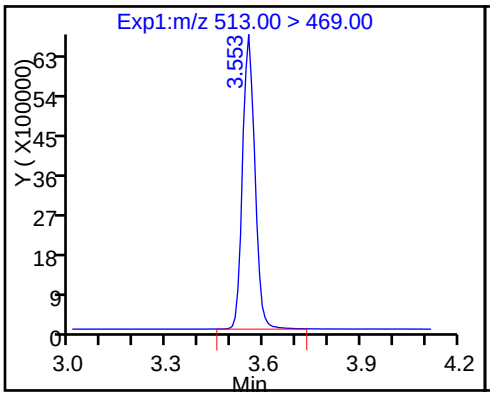
22 Perfluorooctane Sulfonamide



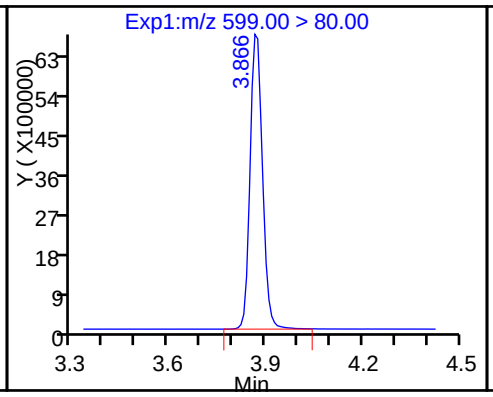
D 23 13C2 PFDA



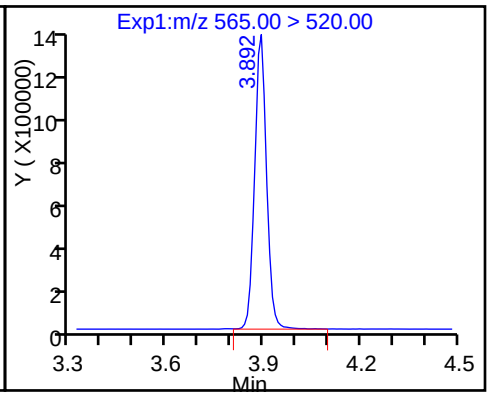
24 Perfluorodecanoic acid



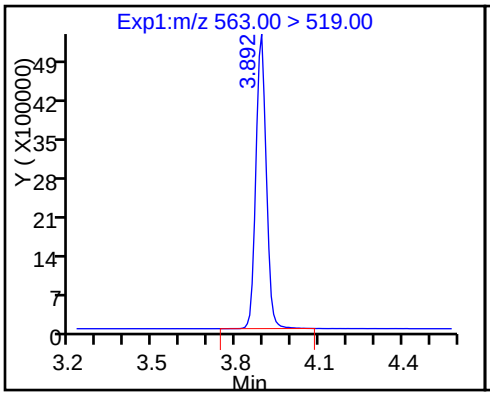
26 Perfluorodecane Sulfonic acid



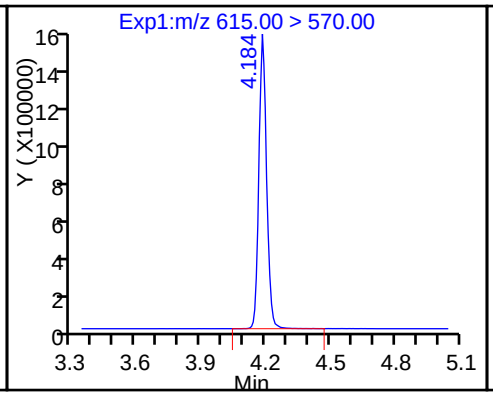
D 27 13C2 PFUnA



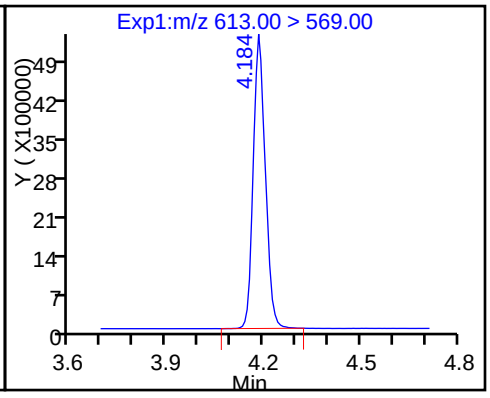
28 Perfluoroundecanoic acid



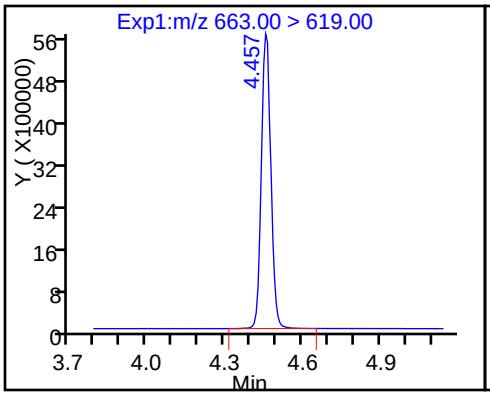
D 30 13C2 PFDoA



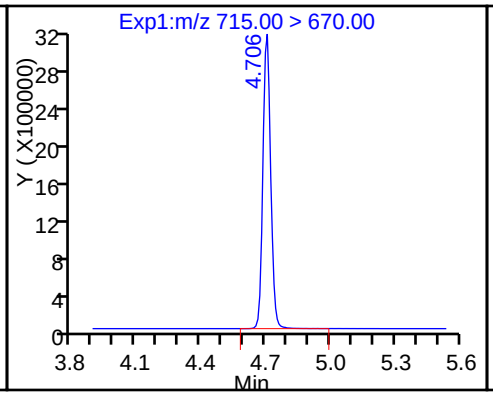
29 Perfluorododecanoic acid



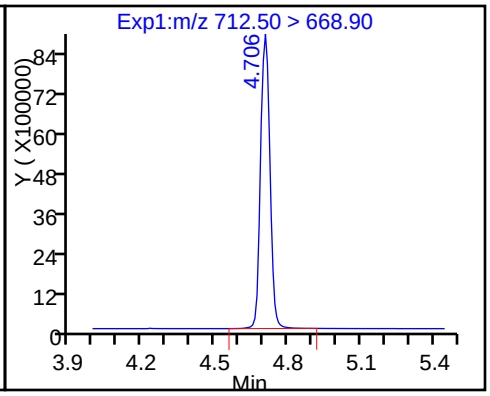
31 Perfluorotridecanoic acid



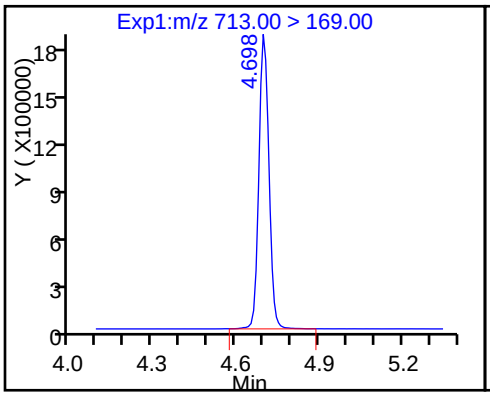
D 32 13C2-PFTeDA



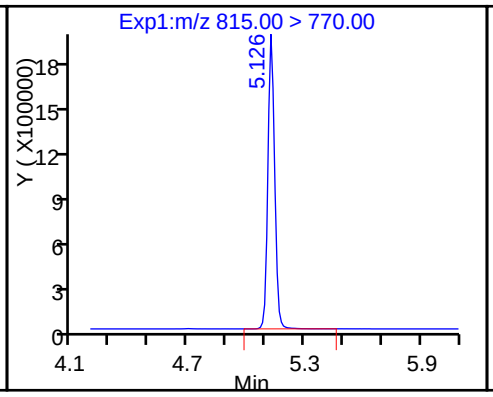
33 Perfluorotetradecanoic acid



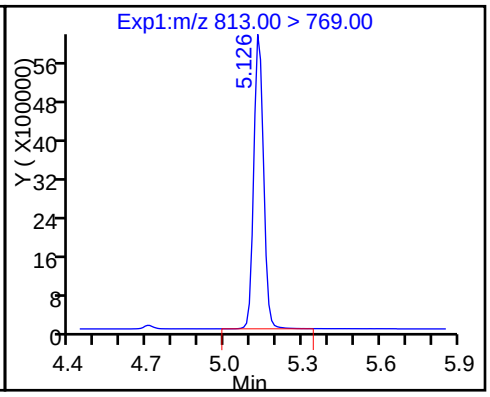
33 Perfluorotetradecanoic acid



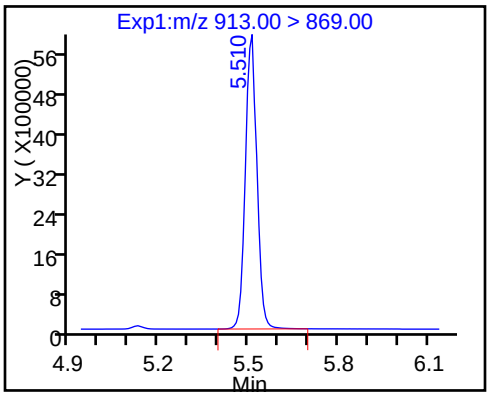
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_013.d
Lims ID: IC L1 Add-on
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 14-Nov-2016 12:49:53 ALS Bottle#: 46 Worklist Smp#: 13
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:28:57 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: chandrasenas Date: 14-Nov-2016 16:20:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.766	2.760	0.006		2186782	41.7		87.8		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.774	2.760	0.014	1.000	19214	0.4892		103		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.531	3.520	0.011	1.000	18194	0.4360		91.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.531	3.520	0.011		2373160	43.5		90.8		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.696	3.689	0.007		2080071	47.8		95.7		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.707	3.695	0.012	1.003	17150	0.4703		94.1		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.868	3.857	0.011		2379328	48.3		96.6		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.876	3.865	0.011	1.002	16888	0.4496		89.9		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.963	3.964	-0.001		2776398	45.8		91.6		
54 MeFOSA										
512.00 > 169.00	3.973	3.972	0.001	1.000	23888	0.4939		98.8		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.154	4.148	0.006		2505838	45.8		91.6		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.161	4.155	0.006	1.000	21666	0.4904		98.1		

Reagents:

LCPFC2-L1_00002 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:28:57 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_013.d

Injection Date: 14-Nov-2016 12:49:53 Instrument ID: A8_N

Lims ID: IC L1 Add-on

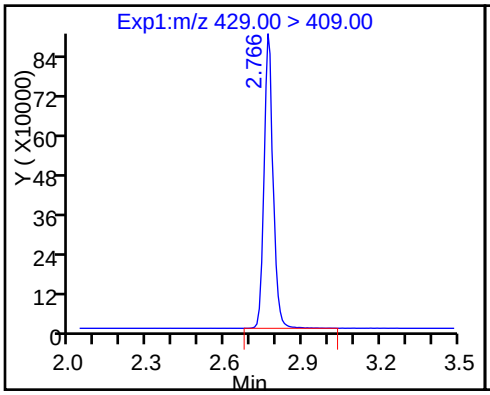
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 46 Worklist Smp#: 13

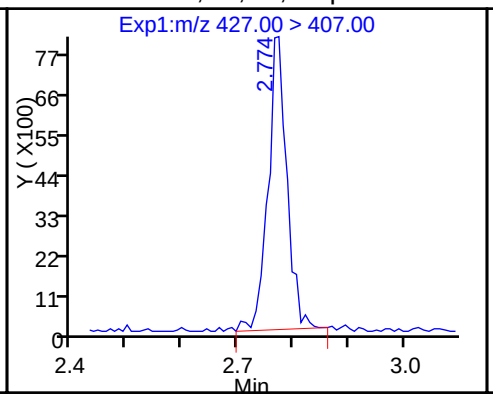
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

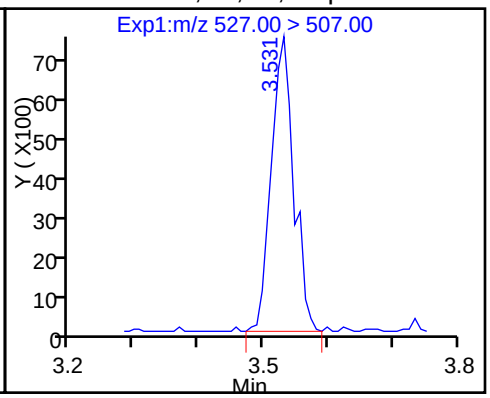
D 47 M2-6:2FTS



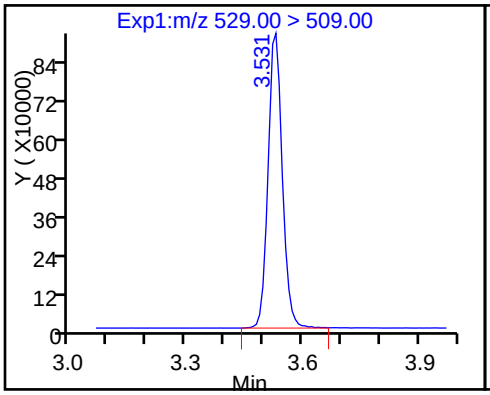
48 Sodium 1H,1H,2H,2H-perfluorooctane



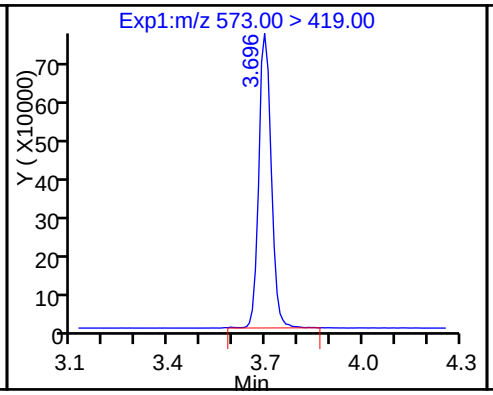
43 Sodium 1H,1H,2H,2H-perfluorooctane



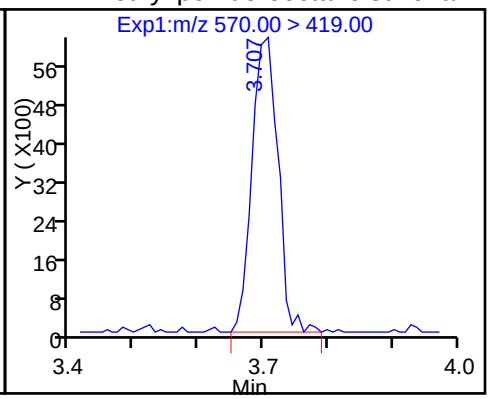
D 42 M2-8:2FTS



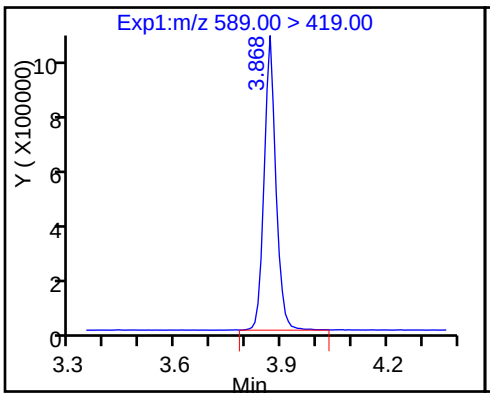
D 45 d3-NMeFOSAA



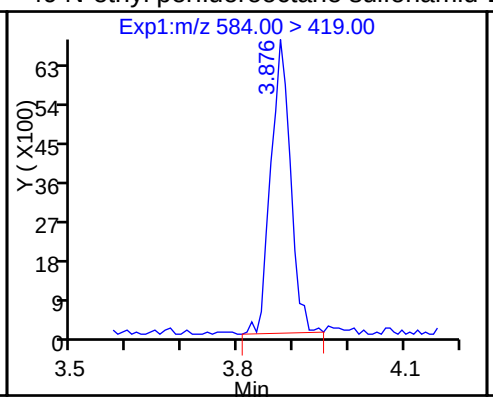
44 N-methyl perfluorooctane sulfonami



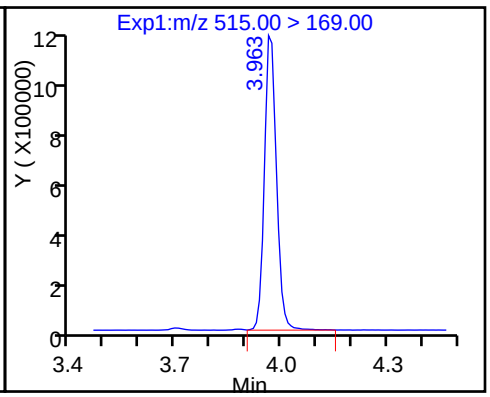
D 46 d5-NEtFOSAA



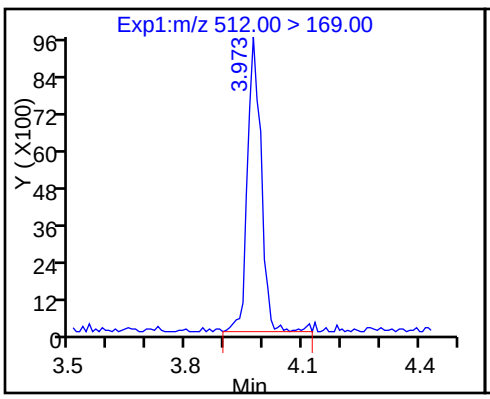
49 N-ethyl perfluorooctane sulfonamid



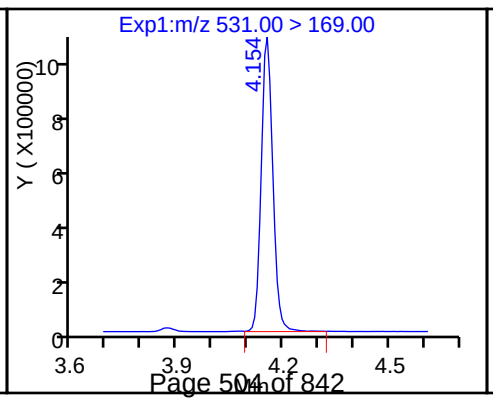
D 52 d-N-MeFOSA-M



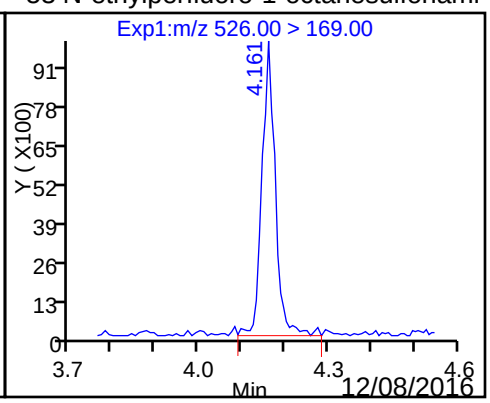
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_014.d
Lims ID: IC L2 Add-on
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 14-Nov-2016 12:57:21 ALS Bottle#: 47 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:28:58 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: chandrasenas Date: 14-Nov-2016 16:21:23

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.766	2.760	0.006		2135389	40.7		85.8		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.758	2.760	-0.002	1.000	36364	0.9481		100		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.523	3.520	0.003	1.000	37291	0.9389		98.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.523	3.520	0.003		2258760	41.4		86.4		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.696	3.689	0.007		2049410	47.1		94.2		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.696	3.695	0.001	1.000	31177	0.8677		86.8		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.859	3.857	0.002		2227255	45.2		90.4		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.868	3.865	0.003	1.002	35264	1.00		100		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.963	3.964	-0.001		2863079	47.3		94.5		
54 MeFOSA										
512.00 > 169.00	3.973	3.972	0.001	1.000	45683	0.9160		91.6		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.147	4.148	-0.001		2521340	46.1		92.2		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.154	4.155	-0.001	1.000	39458	0.8877		88.8		

Reagents:

LCPFC2-L2_00002 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:28:59 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_014.d

Injection Date: 14-Nov-2016 12:57:21 Instrument ID: A8_N

Lims ID: IC L2 Add-on

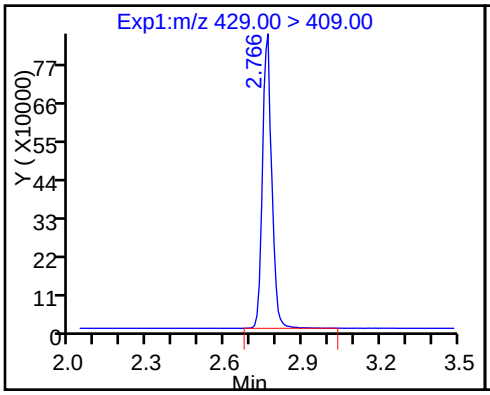
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 47 Worklist Smp#: 14

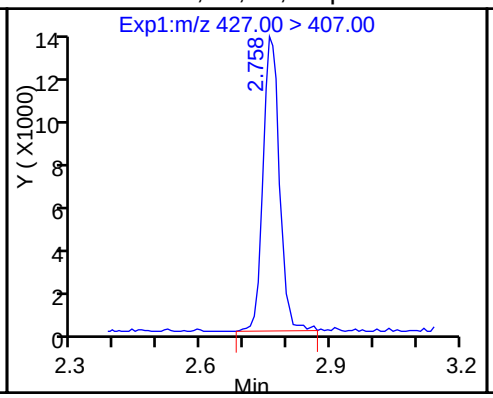
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

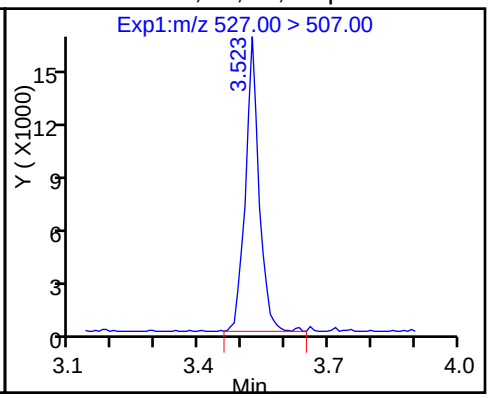
D 47 M2-6:2FTS



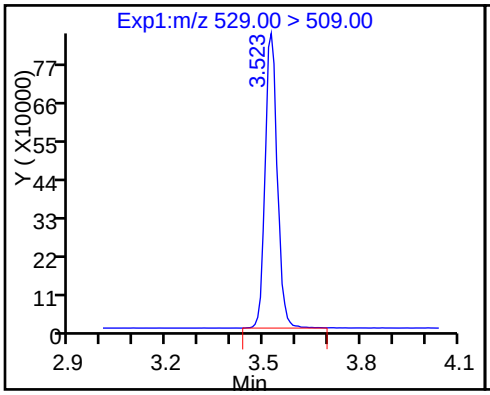
48 Sodium 1H,1H,2H,2H-perfluorooctane



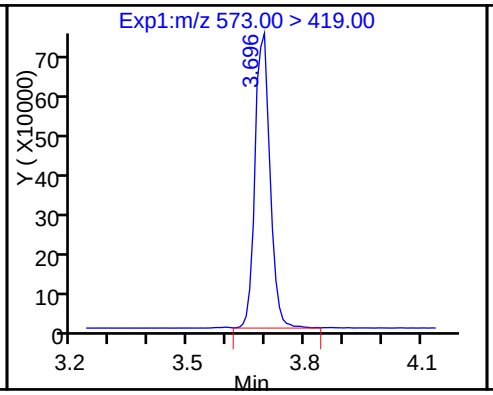
43 Sodium 1H,1H,2H,2H-perfluorooctane



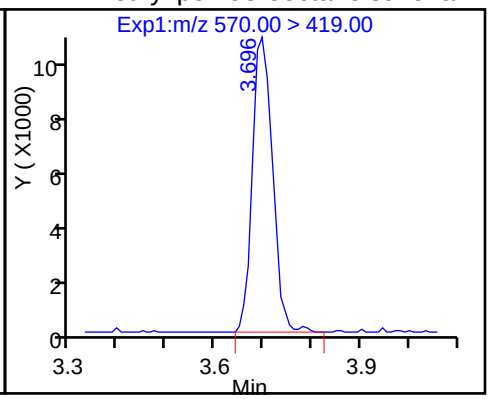
D 42 M2-8:2FTS



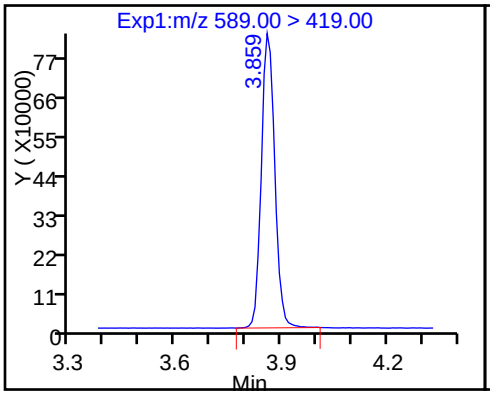
D 45 d3-NMeFOSAA



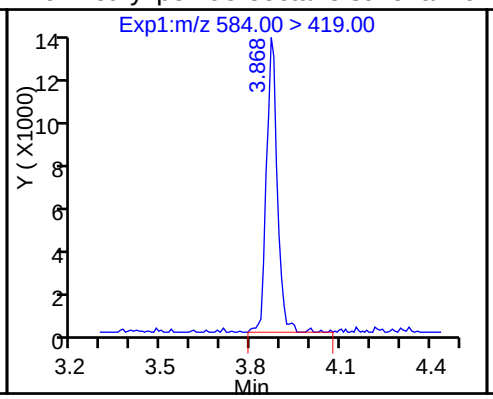
44 N-methyl perfluorooctane sulfonami



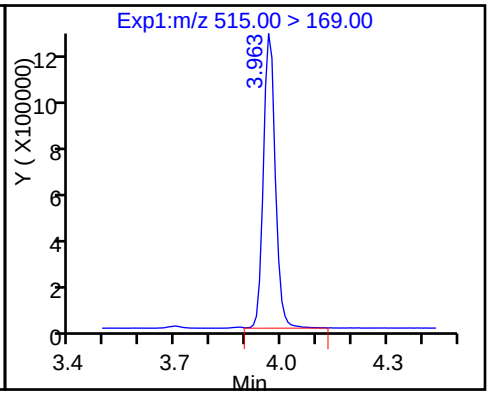
D 46 d5-NEtFOSAA



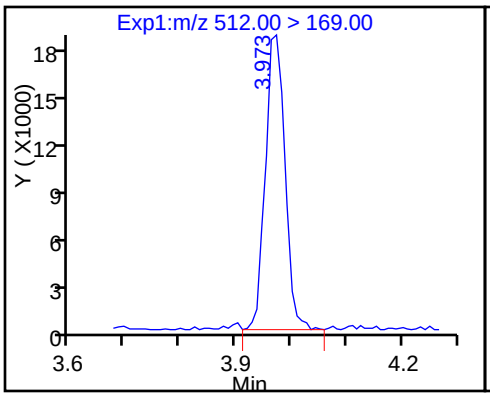
49 N-ethyl perfluorooctane sulfonamid



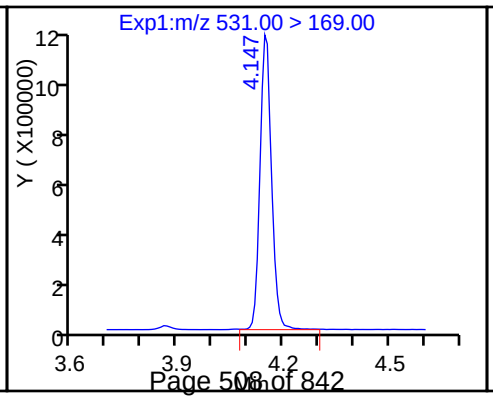
D 52 d-N-MeFOSA-M



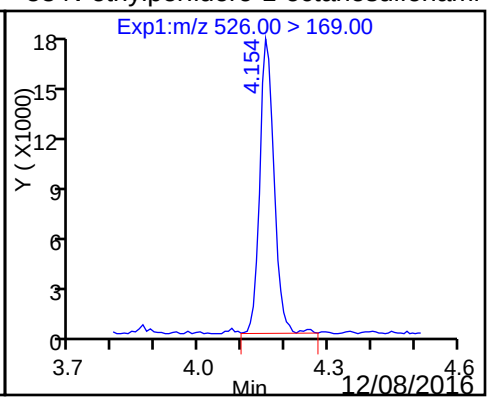
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_015.d
Lims ID: IC L3 Add-on
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 14-Nov-2016 13:04:50 ALS Bottle#: 48 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:29:00 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: chandrasenas Date: 14-Nov-2016 16:22:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.760	2.760	0.0		2271427	43.3		91.2		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.760	2.760	0.0	1.000	162096	3.97		83.8		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.524	3.520	0.004	1.000	176239	4.26		88.9		
D 42 M2-8:2FTS										
529.00 > 509.00	3.524	3.520	0.004		2354945	43.2		90.1		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.689	3.689	0.0		2044718	47.0		94.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.699	3.695	0.004	1.003	154205	4.30		86.0		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.861	3.857	0.004		2391408	48.5		97.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.861	3.865	-0.004	1.000	149588	3.96		79.2		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.965	3.964	0.001		2883849	47.6		95.2		
54 MeFOSA										
512.00 > 169.00	3.975	3.972	0.003	1.000	206706	4.11		82.3		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.148	4.148	0.0		2612591	47.8		95.5		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.155	4.155	0.0	1.000	192199	4.17		83.5		

Reagents:

LCPFC2-L3_00002 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:29:00 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_015.d

Injection Date: 14-Nov-2016 13:04:50 Instrument ID: A8_N

Lims ID: IC L3 Add-on

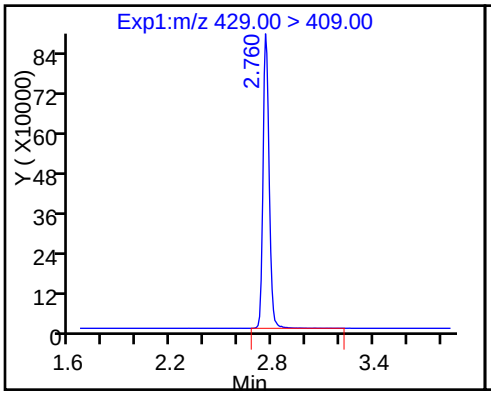
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 48 Worklist Smp#: 15

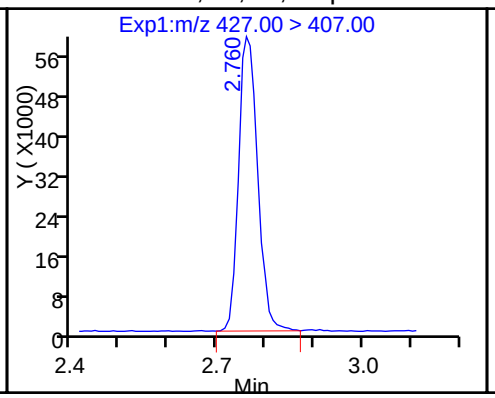
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

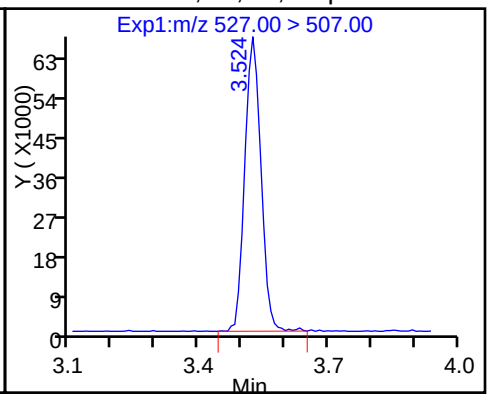
D 47 M2-6:2FTS



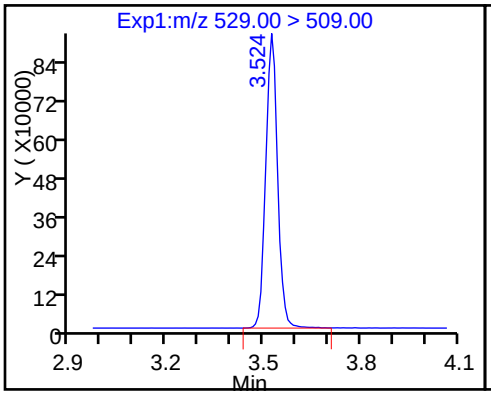
48 Sodium 1H,1H,2H,2H-perfluorooctane



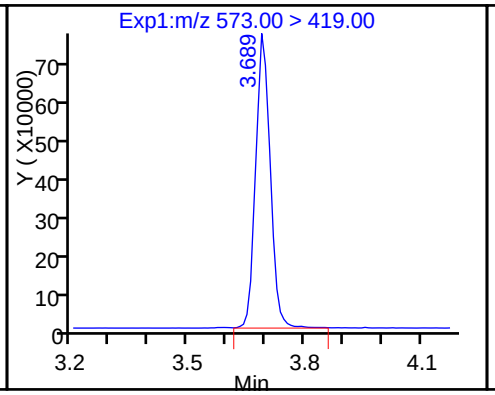
43 Sodium 1H,1H,2H,2H-perfluorooctane



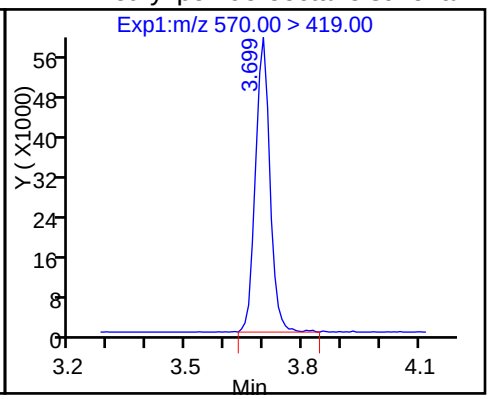
D 42 M2-8:2FTS



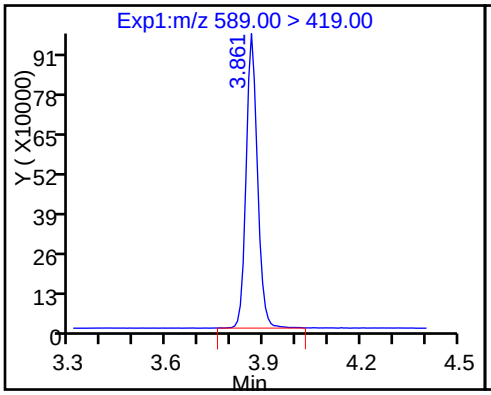
D 45 d3-NMeFOSAA



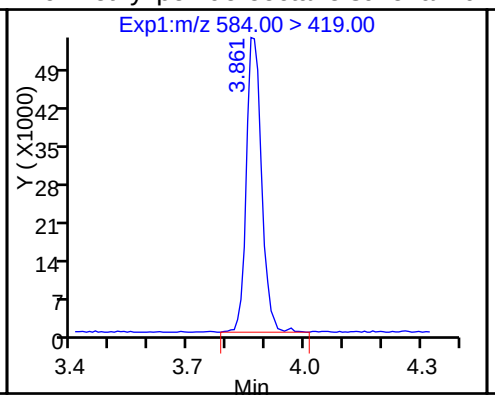
44 N-methyl perfluorooctane sulfonami



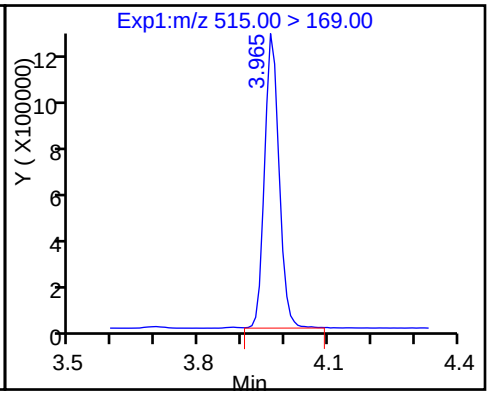
D 46 d5-NEtFOSAA



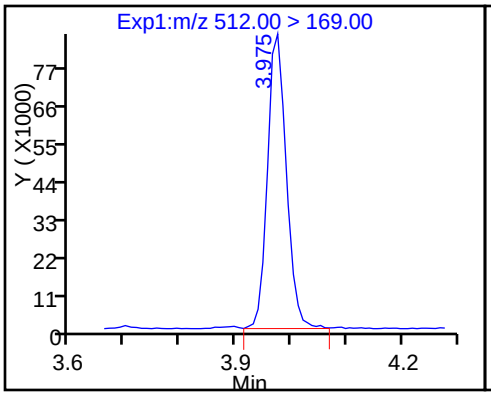
49 N-ethyl perfluorooctane sulfonamid



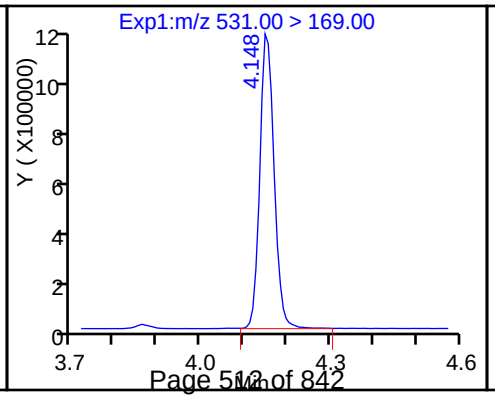
D 52 d-N-MeFOSA-M



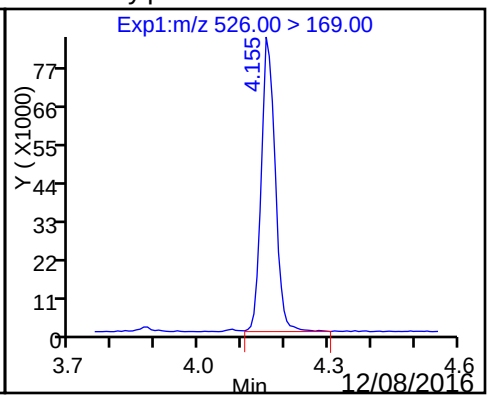
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_016.d
Lims ID: IC L4 Add-on
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 14-Nov-2016 13:12:21 ALS Bottle#: 49 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:29:01 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: chandrasenas Date: 14-Nov-2016 16:19:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.758	2.760	-0.002		3167233	60.4		127		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.758	2.760	-0.002	1.000	1142424	20.1		106		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.514	3.520	-0.006	0.998	1223686	22.0		115		
D 42 M2-8:2FTS										
529.00 > 509.00	3.522	3.520	0.002		3169967	58.1		121		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.686	3.689	-0.003		2740100	63.0		126		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.696	3.695	0.001	1.003	1050550	21.9		109		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.850	3.857	-0.007		3009967	61.1		122		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.859	3.865	-0.006	1.002	1061824	22.3		112		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.963	3.964	-0.001		3736883	61.7		123		
54 MeFOSA										
512.00 > 169.00	3.972	3.972	0.0	1.000	1428691	21.9		110		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.146	4.148	-0.002		3396758	62.1		124		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.154	4.155	-0.001	1.000	1320019	22.0		110		

Reagents:

LCPFC2-L4_00003 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:29:02 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_016.d

Injection Date: 14-Nov-2016 13:12:21 Instrument ID: A8_N

Lims ID: IC L4 Add-on

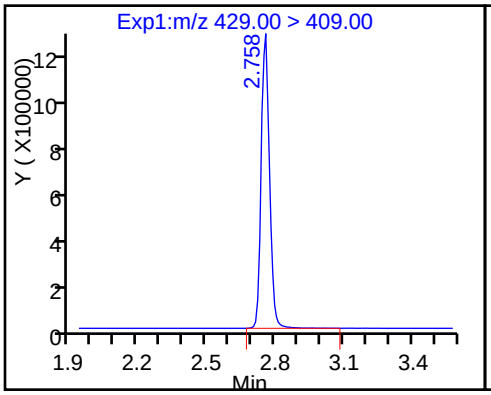
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 49 Worklist Smp#: 16

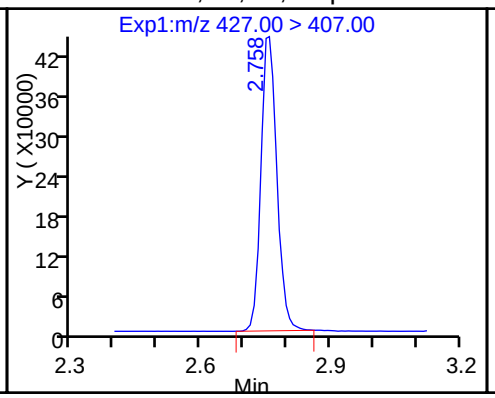
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

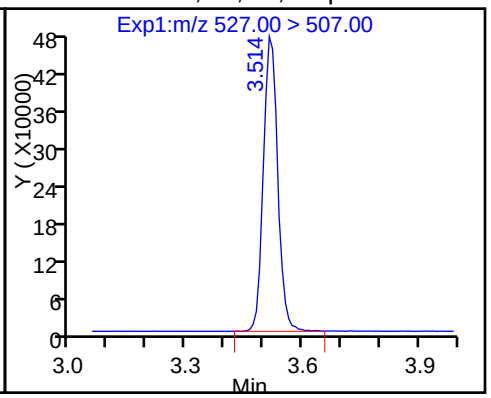
D 47 M2-6:2FTS



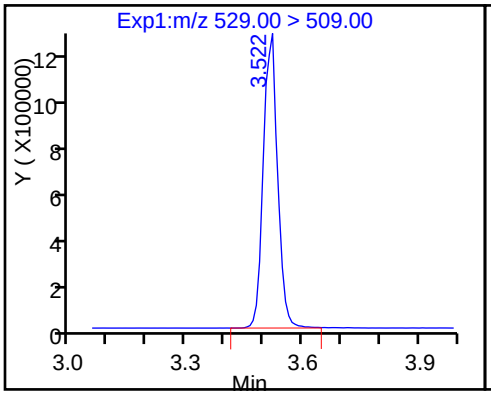
48 Sodium 1H,1H,2H,2H-perfluorooctane



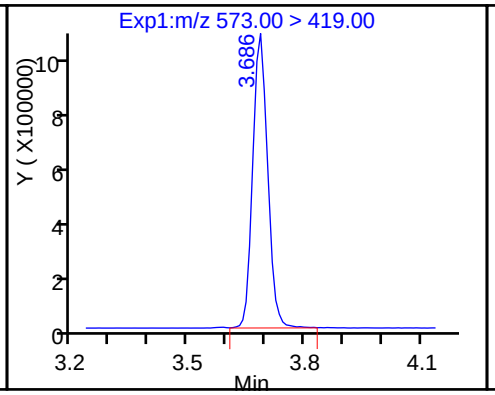
43 Sodium 1H,1H,2H,2H-perfluorooctane



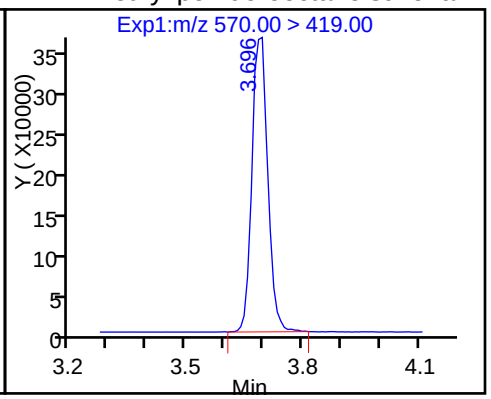
D 42 M2-8:2FTS



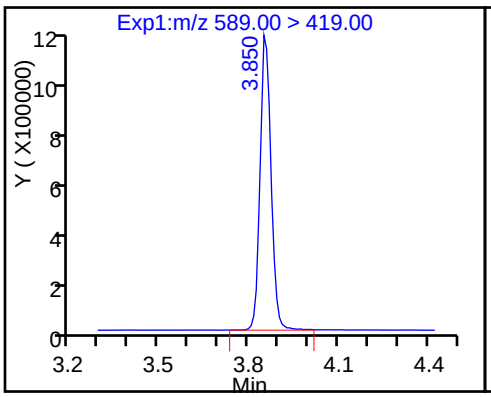
D 45 d3-NMeFOSAA



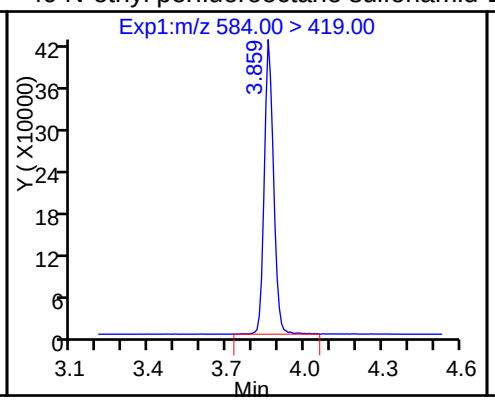
44 N-methyl perfluorooctane sulfonami



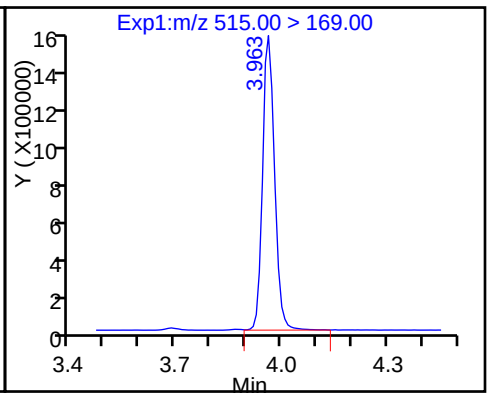
D 46 d5-NEtFOSAA



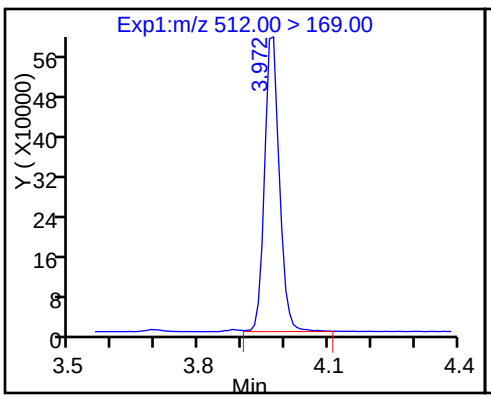
49 N-ethyl perfluorooctane sulfonamid



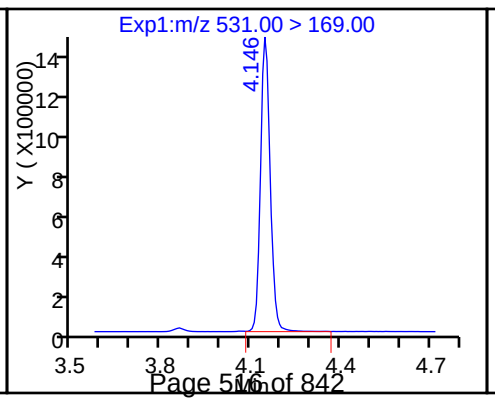
D 52 d-N-MeFOSA-M



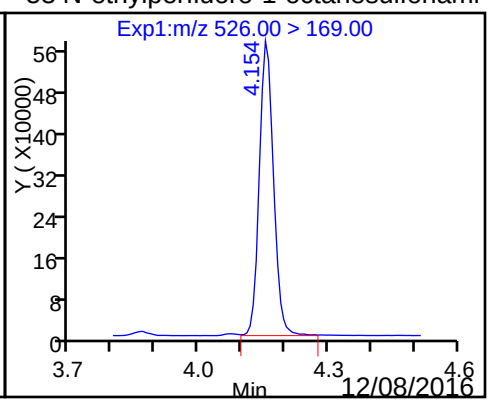
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_017.d
Lims ID: IC L5 Add-on
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 14-Nov-2016 13:19:51 ALS Bottle#: 50 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:29:03 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: chandrasenas Date: 14-Nov-2016 16:23:52

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.758	2.760	-0.002		2110736	40.3		84.8		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.758	2.760	-0.002	1.000	2043932	53.9		114		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.514	3.520	-0.006	1.000	2156480	54.6		114		
D 42 M2-8:2FTS										
529.00 > 509.00	3.514	3.520	-0.006		2246539	41.2		85.9		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.686	3.689	-0.003		1736199	39.9		79.8		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.686	3.695	-0.009	1.000	1848003	60.7		121		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.850	3.857	-0.007		2030246	41.2		82.4		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.868	3.865	0.003	1.005	1881272	58.7		117		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.963	3.964	-0.001		2514383	41.5		83.0		
54 MeFOSA										
512.00 > 169.00	3.972	3.972	0.0	1.000	2557821	58.4		117		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.146	4.148	-0.002		2302830	42.1		84.2		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.154	4.155	-0.001	1.000	2393631	59.0		118		

Reagents:

LCPFC2-L5_00002 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:29:03 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_017.d

Injection Date: 14-Nov-2016 13:19:51 Instrument ID: A8_N

Lims ID: IC L5 Add-on

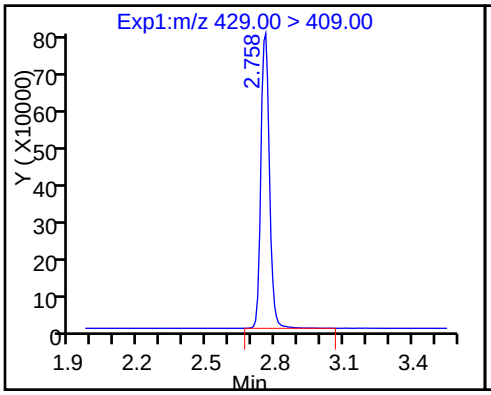
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 50 Worklist Smp#: 17

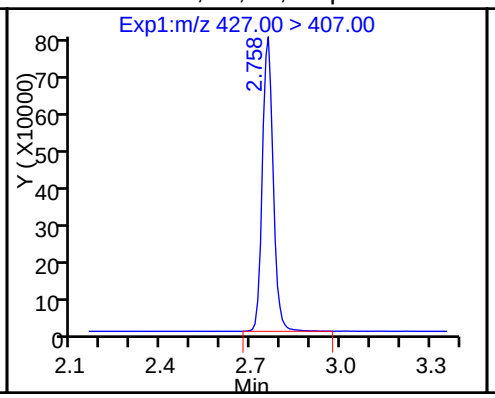
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

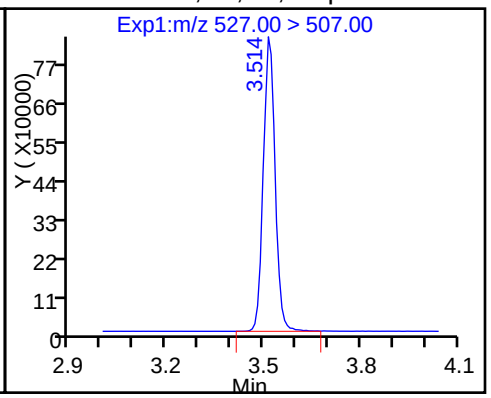
D 47 M2-6:2FTS



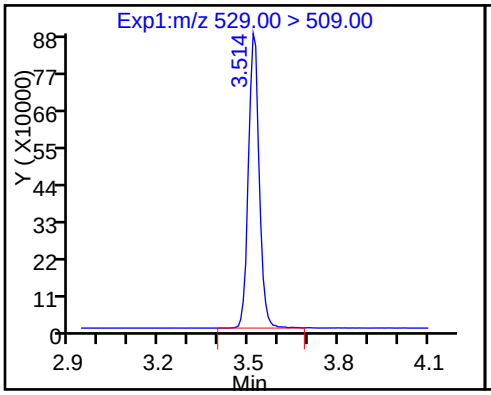
48 Sodium 1H,1H,2H,2H-perfluorooctane



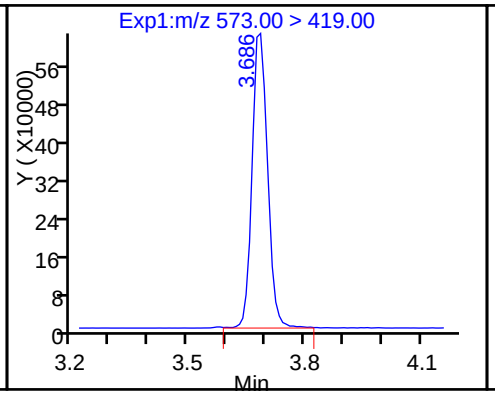
43 Sodium 1H,1H,2H,2H-perfluorooctane



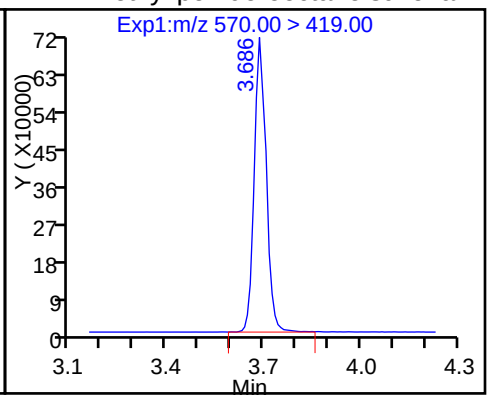
D 42 M2-8:2FTS



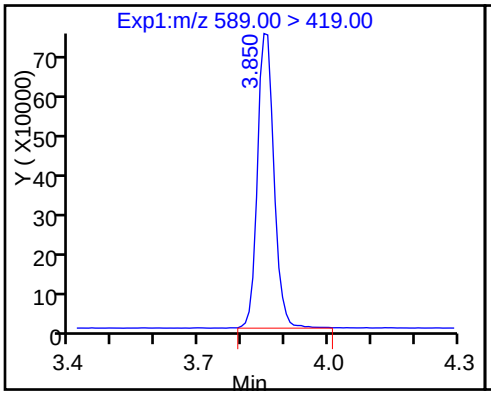
D 45 d3-NMeFOSAA



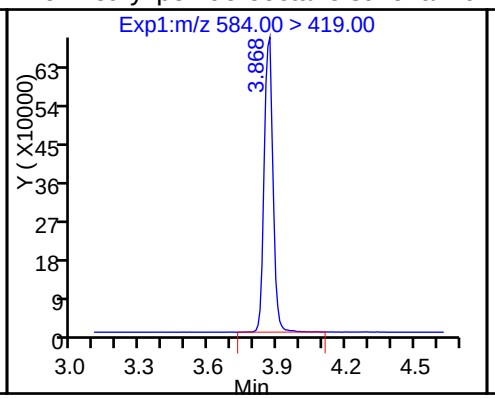
44 N-methyl perfluorooctane sulfonami



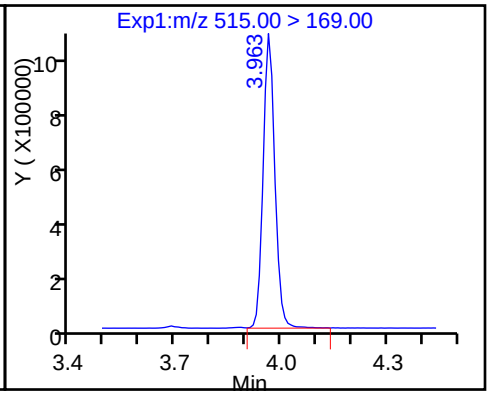
D 46 d5-NEtFOSAA



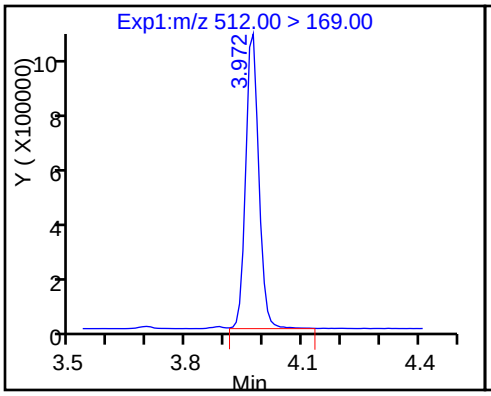
49 N-ethyl perfluorooctane sulfonamid



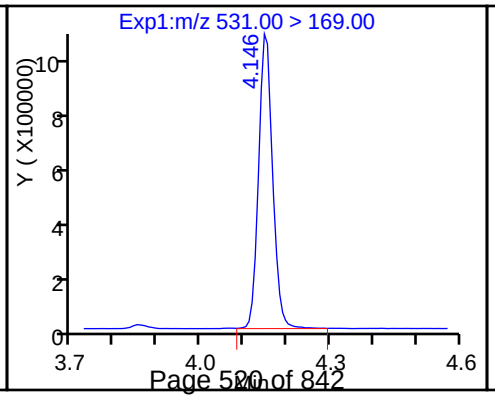
D 52 d-N-MeFOSA-M



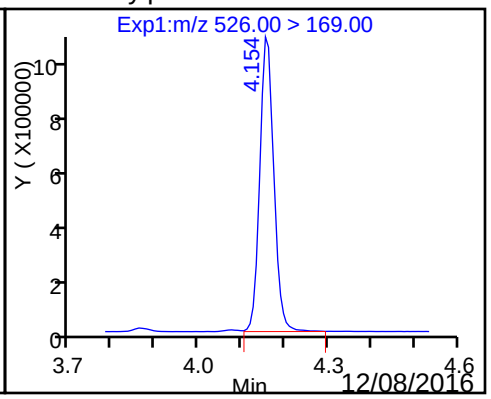
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d
Lims ID: IC L6 Add-on
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 14-Nov-2016 13:27:19 ALS Bottle#: 51 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:29:05 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: chandrasenas Date: 14-Nov-2016 16:24:16

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 47 M2-6:2FTS										
429.00 > 409.00	2.750	2.760	-0.010		3069884	58.6		123		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.750	2.760	-0.010	1.000	9756112	176.9		93.3		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.515	3.520	-0.005	1.002	10344377	179.3		93.6		
D 42 M2-8:2FTS										
529.00 > 509.00	3.507	3.520	-0.013		3281047	60.1		126		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.678	3.689	-0.011		2396215	55.1		110		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.688	3.695	-0.007	1.003	8600829	204.7		102		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.852	3.857	-0.005		2746746	55.7		111		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.860	3.865	-0.005	1.002	8801345	202.9		101		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.964	3.964	0.0		3402541	56.2		112		
54 MeFOSA										
512.00 > 169.00	3.964	3.972	-0.008	1.000	11946092	201.6		101		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.148	4.148	0.0		3069915	56.1		112		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.156	4.155	0.001	1.000	10993287	203.1		102		

Reagents:

LCPFC2-L6_00002 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:29:05 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Injection Date: 14-Nov-2016 13:27:19 Instrument ID: A8_N

Lims ID: IC L6 Add-on

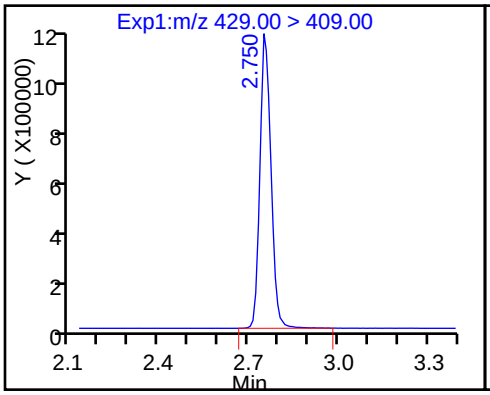
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 51 Worklist Smp#: 18

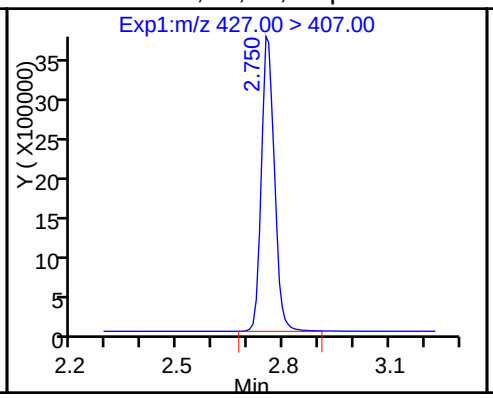
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

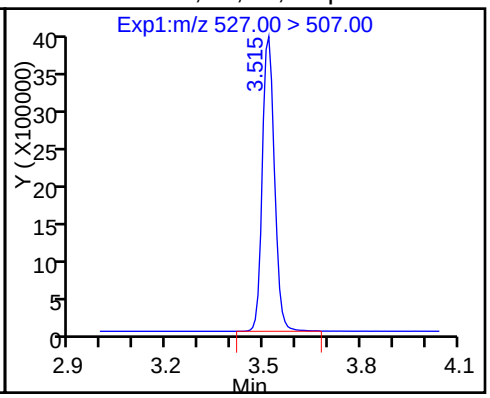
D 47 M2-6:2FTS



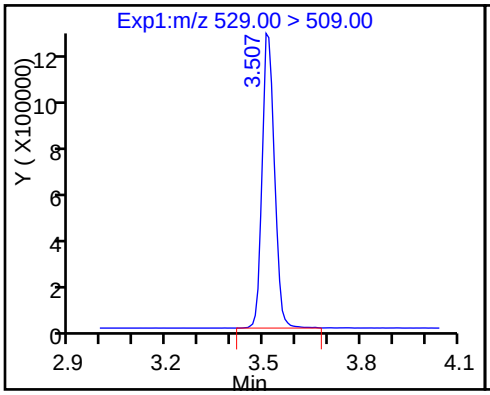
48 Sodium 1H,1H,2H,2H-perfluorooctane



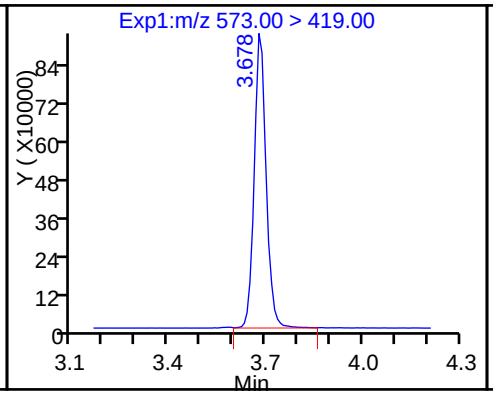
43 Sodium 1H,1H,2H,2H-perfluorooctane



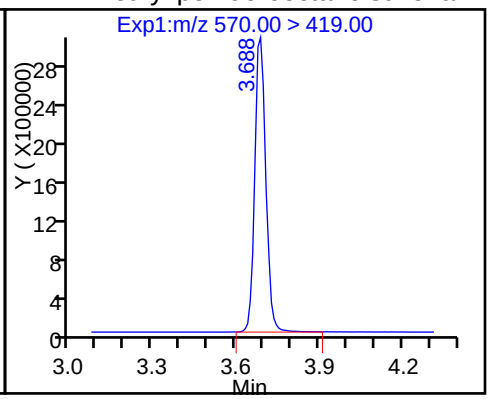
D 42 M2-8:2FTS



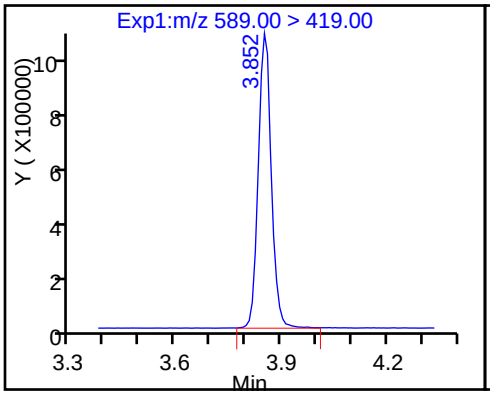
D 45 d3-NMeFOSAA



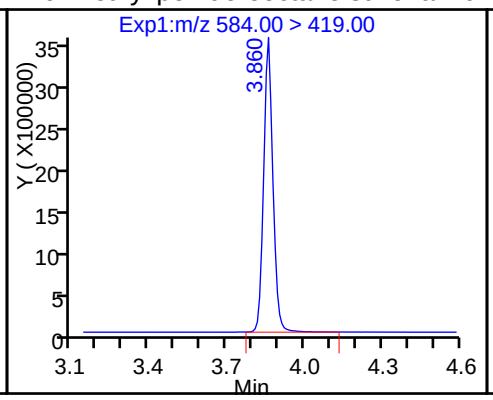
44 N-methyl perfluorooctane sulfonami



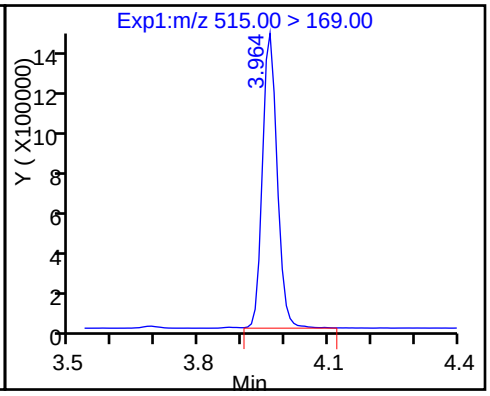
D 46 d5-NEtFOSAA



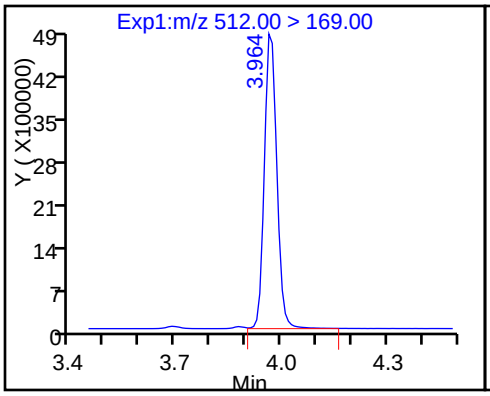
49 N-ethyl perfluorooctane sulfonamid



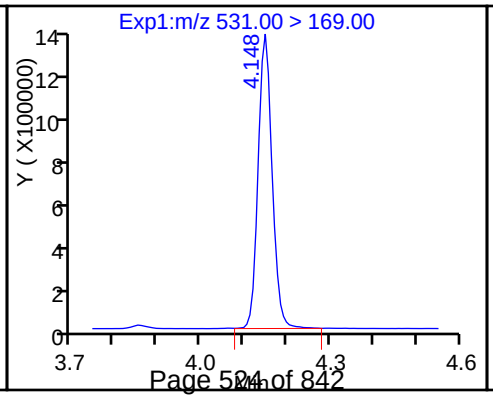
D 52 d-N-MeFOSA-M



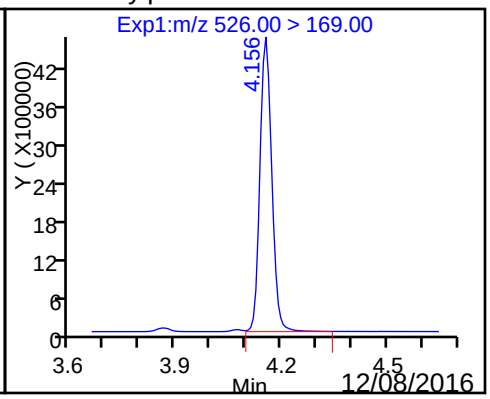
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-140382/4	02DEC2016A_004.d
Level 2	IC 320-140382/14	02DEC2016A_014.d
Level 3	IC 320-140382/5	02DEC2016A_005.d
Level 4	IC 320-140382/15	02DEC2016A_015.d
Level 5	IC 320-140382/6	02DEC2016A_006.d
Level 6	IC 320-140382/16	02DEC2016A_016.d
Level 7	IC 320-140382/7	02DEC2016A_007.d
Level 8	IC 320-140382/17	02DEC2016A_017.d
Level 9	IC 320-140382/8	02DEC2016A_008.d
Level 10	IC 320-140382/18	02DEC2016A_018.d
Level 11	IC 320-140382/9	02DEC2016A_009.d
Level 12	IC 320-140382/19	02DEC2016A_019.d
Level 13	IC 320-140382/10	02DEC2016A_010.d
Level 14	IC 320-140382/20	02DEC2016A_020.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)	1.630 1.610		1.622 +++++		1.622		1.614		1.614		1.367 - 1.867	1.619
Perfluoropentanoic acid (PFPeA)	1.944 1.910		1.916 +++++		1.926		1.916		1.916		1.670 - 2.170	1.921
Perfluorobutanesulfonic acid (PFBS)	1.983 1.949		1.964 +++++		1.964		1.954		1.945		1.781 - 2.141	1.960
Perfluorohexanoic acid (PFHxA)	2.281 2.225		2.239 +++++		2.247		2.239		2.226		1.991 - 2.491	2.243
Perfluoroheptanoic acid (PFHpA)	2.648 2.578		2.604 +++++		2.600		2.593		2.593		2.350 - 2.850	2.603
Perfluorohexanesulfonic acid (PFHxS)	+++++ 2.601		2.619 2.598		2.616		2.608		2.608		2.365 - 2.865	2.608
6:2FTS		+++++ 2.904		2.920 +++++		2.910		2.914		2.919	2.663 - 3.163	2.913
Perfluorooctanoic acid (PFOA)	+++++ 2.958		2.993 2.967		2.981		2.982		2.972		2.734 - 3.234	2.976
Perfluoroheptanesulfonic Acid (PFHpS)	3.032 2.966		2.993 +++++		2.989		2.982		2.972		2.736 - 3.236	2.989
Perfluorooctane Sulfonate (PFOS)	+++++ 3.340		3.380 3.345		3.366		3.362		3.352		3.116 - 3.616	3.358
Perfluorononanoic acid (PFNA)	3.416 3.348		3.380 +++++		3.383		3.371		3.361		3.123 - 3.623	3.377
Perfluorooctane Sulfonamide (FOSA)	3.686 3.643		3.657 +++++		3.652		3.648		3.648		3.406 - 3.906	3.656
8:2FTS		3.668 3.667		3.684 +++++		3.673		3.678		3.674	3.424 - 3.924	3.674

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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

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)	3.786 3.721		3.746 +++++		3.740		3.738		3.727		3.488 - 3.988	3.743
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		3.851 3.832		3.857 3.849		3.847		3.843		3.847	3.597 - 4.097	3.847
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		4.020 4.009		4.026 4.018		4.015		4.011		4.016	3.766 - 4.266	4.016
Perfluorodecanesulfonic acid (PFDS)	4.096 4.028		4.061 4.028		4.046		4.048		4.039		3.799 - 4.299	4.049
Perfluoroundecanoic acid (PFUnA)	4.120 4.054		4.086 +++++		4.071		4.065		4.056		3.821 - 4.321	4.075
MeFOSA		4.115 4.102		4.114 4.118		4.104		4.112		4.108	3.860 - 4.360	4.110
N-EtFOSA-M		4.293 4.296		4.301 4.309		4.297		4.302		4.295	4.049 - 4.549	4.299
Perfluorododecanoic acid (PFDoA)	4.420 4.343		4.381 +++++		4.376		4.365		4.354		4.120 - 4.620	4.373
Perfluorotridecanoic Acid (PFTriA)	4.681 4.613		4.653 +++++		4.637		4.631		4.629		4.386 - 4.886	4.641
Perfluorotetradecanoic acid (PFTeA)	4.935 4.864		4.893 +++++		4.888		4.883		4.867		4.634 - 5.134	4.888
Perfluoro-n-hexadecanoic acid (PFHxDA)	5.370 5.290		5.334 +++++		5.326		5.315		5.306		5.070 - 5.570	5.324
Perfluoro-n-octadecanoic acid (PFODA)	5.784 5.688		5.738 5.682		5.726		5.717		5.702		5.470 - 5.970	5.720
13C4 PFBA	1.630 1.602		1.614 1.609		1.622		1.614		1.614		1.365 - 1.865	1.615
13C5-PFPeA	1.944 1.910		1.916 +++++		1.916		1.916		1.916		1.668 - 2.168	1.920
13C2 PFHxA	2.281 2.225		2.239 +++++		2.239		2.231		2.226		1.989 - 2.489	2.240
13C4-PFHpA	2.641 2.578		2.604 +++++		2.600		2.593		2.593		2.349 - 2.849	2.602
18O2 PFHxS	2.656 2.594		2.619 2.598		2.616		2.608		2.608		2.364 - 2.864	2.614
M2-6:2FTS		2.925 2.912		2.912 2.917		2.918		2.906		2.911	2.665 - 3.165	2.914
13C4 PFOA	3.032 2.966		2.993 2.958		2.989		2.974		2.972		2.734 - 3.234	2.983
13C4 PFOS	3.416 3.340		3.371 3.345		3.366		3.362		3.352		3.115 - 3.615	3.365
13C5 PFNA	3.425 3.355		3.380 +++++		3.375		3.371		3.361		3.124 - 3.624	3.378
13C8 FOSA	3.686 3.634		3.648 +++++		3.652		3.648		3.648		3.401 - 3.901	3.653

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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

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		3.678 3.667		3.684 3.676		3.673		3.678		3.674	3.426 - 3.926	3.676
13C2 PFDA	3.786 3.710		3.746 +++++		3.740		3.738		3.727		3.488 - 3.988	3.741
d3-NMeFOSAA		3.843 3.824		3.848 3.841		3.838		3.843		3.839	3.589 - 4.089	3.839
d5-NEtFOSAA		4.011 4.000		4.017 4.009		4.006		4.011		4.007	3.759 - 4.259	4.009
13C2 PFUnA	4.120 4.045		4.078 +++++		4.079		4.065		4.056		3.820 - 4.320	4.074
d-N-MeFOSA-M		4.108 4.102		4.106 4.110		4.104		4.104		4.100	3.855 - 4.355	4.105
d-N-EtFOSA-M		4.293 4.286		4.292 4.299		4.287		4.293		4.285	4.040 - 4.540	4.291
13C2 PFDoA	4.420 4.343		4.381 +++++		4.376		4.365		4.354		4.120 - 4.620	4.373
13C2-PFTeDA	4.935 4.855		4.893 4.860		4.880		4.883		4.867		4.632 - 5.132	4.882
13C2-PFHxDA	5.370 5.290		5.334 5.300		5.326		5.315		5.306		5.070 - 5.570	5.320

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

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-140382/4	02DEC2016A_004.d
Level 2	IC 320-140382/14	02DEC2016A_014.d
Level 3	IC 320-140382/5	02DEC2016A_005.d
Level 4	IC 320-140382/15	02DEC2016A_015.d
Level 5	IC 320-140382/6	02DEC2016A_006.d
Level 6	IC 320-140382/16	02DEC2016A_016.d
Level 7	IC 320-140382/7	02DEC2016A_007.d
Level 8	IC 320-140382/17	02DEC2016A_017.d
Level 9	IC 320-140382/8	02DEC2016A_008.d
Level 10	IC 320-140382/18	02DEC2016A_018.d
Level 11	IC 320-140382/9	02DEC2016A_009.d
Level 12	IC 320-140382/19	02DEC2016A_019.d
Level 13	IC 320-140382/10	02DEC2016A_010.d
Level 14	IC 320-140382/20	02DEC2016A_020.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	315621 417432 329797 296657		338632 378720 305244		Ave		340300.229				12.7		50.0			
13C5-PFPeA	252783 331097 252000 +++++		264694 302516 218073		Ave		270193.930				14.9		50.0			
13C2 PFHxA	230991 294886 230866 +++++		246623 269968 205545		Ave		246479.820				12.9		50.0			
13C4-PFHpA	202776 256831 196027 +++++		215578 228495 163352		Ave		210510.050				15.0		50.0			
18O2 PFHxS	293951 366456 304899 239385		310687 347463 254328		Ave		302452.643				15.1		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.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

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		124739 140185 117602 164705		120558 166448 140694	Ave		139275.699				14.4		50.0			
13C4 PFOA	223843 294113 211325 144514		246973 252700 162409		Ave		219410.943				23.8		50.0			
13C4 PFOS	227748 298992 246737 190884		263387 280702 203865		Ave		244616.441				16.2		50.0			
13C5 PFNA	167208 216529 165500 +++++		188629 194611 136179		Ave		178109.173				15.7		50.0			
13C8 FOSA	366949 471533 404926 +++++		431176 451020 359915		Ave		414252.957				10.9		50.0			
M2-8:2FTS		117628 124671 122166 166617		108840 154273 140315	Ave		133501.446				15.7		50.0			
13C2 PFDA	151221 196057 159286 +++++		168367 182254 139218		Ave		166066.990				12.5		50.0			
d3-NMeFOSAA		77601 82804 68846 79183		72124 99067 80331	Ave		79993.7857				12.1		50.0			
d5-NEtFOSAA		89291 89787 77393 89956		82682 104841 89500	Ave		89064.1286				9.5		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.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

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	122340 154918 114588 +++++		133394 138267 91167		Ave		125779.243				17.4		50.0			
d-N-MeFOSA-M		93620 107246 99342 124175		103638 117800 98551	Ave		106338.894				10.4		50.0			
d-N-EtFOSA-M		86581 104104 97144 118377		100979 112224 93938	Ave		101906.806				10.6		50.0			
13C2 PFDoA	108677 140992 109985 +++++		119003 126396 96377		Ave		116904.873				13.3		50.0			
13C2-PFTeDA	221880 299085 231293 207930		259139 271923 202045		Ave		241899.200				14.8		50.0			
13C2-PFHxDA	113226 160713 124217 120034		135127 148580 110713		Ave		130372.880				14.3		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

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)	287036 219376	371759	298633 +++++	294183	387562	AveID		0.8853				10.0		35.0			
Perfluoropentanoic acid (PFPeA)	321460 171488	327954	290628 +++++	249486	336046	AveID		1.0408				15.3		35.0			
Perfluorobutanesulfonic acid (PFBS)	481176 291824	642971	500216 +++++	491581	668327	AveID		1.6135				15.6		50.0			
Perfluorohexanoic acid (PFHxA)	235306 166899	274051	236370 +++++	217418	291709	AveID		0.9559				8.0		35.0			
Perfluoroheptanoic acid (PFHpA)	233630 146715	250282	216223 +++++	204959	259601	AveID		1.0342				8.4		35.0			
Perfluorohexanesulfonic acid (PFHxS)	+++++ 251770	380131	376003 213929	323081	406797	AveID		1.0596				10.2		35.0			
6:2FTS	103949	+++++ 105654	152954	93245 +++++	118849	AveID		0.8391				14.3		35.0			
Perfluorooctanoic acid (PFOA)	+++++ 148950	280154	290666 118726	218968	312182	AveID		1.0203				12.7		35.0			
Perfluoroheptanesulfonic Acid (PFHpS)	277206 199679	364908	299283 +++++	279830	372775	AveID		1.1690				9.7		50.0			
Perfluorooctane Sulfonate (PFOS)	+++++ 225419	309544	275533 216190	265826	316788	AveID		1.0873				3.0		35.0			
Perfluorononanoic acid (PFNA)	170148 126022	200322	184877 +++++	164187	217102	AveID		0.9912				3.7		35.0			
Perfluorooctane Sulfonamide (FOSA)	360690 255544	468609	403791 +++++	379917	474054	AveID		0.9353				12.5		35.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

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	90169	91935 101586	146110	98719 +++++	120115	AveID		0.8444				13.7		35.0			
Perfluorodecanoic acid (PFDA)	155778 128074	183568	159778 +++++	151623	187771	AveID		0.9693				4.2		35.0			
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	57976	61790 68867	91493	59295 71812	73940	AveID		0.8686				13.5		35.0			
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	56792	60032 70327	94072	56004 70891	70934	AveID		0.7671				14.6		35.0			
Perfluorodecanesulfonic acid (PFDS)	138425 126426	189172	156537 107269	162158	201706	AveID		0.6271				6.9		50.0			
Perfluoroundecanoic acid (PFUnA)	152116 89994	145410	148792 +++++	111549	152861	AveID		1.0596				9.9		35.0			
MeFOSA	72052	74554 79073	106455	73327 89254	96734	AveID		0.7963				13.8		35.0			
N-EtFOSA-M	73147	71070 82751	109355	78846 88734	100899	AveID		0.8497				14.4		35.0			
Perfluorododecanoic acid (PFDoA)	109058 88491	122257	109023 +++++	101710	133861	AveID		0.9465				3.6		35.0			
Perfluorotridecanoic Acid (PFTriA)	109674 92748	141902	126175 +++++	114082	147998	AveID		1.0402				5.1		50.0			
Perfluorotetradecanoic acid (PFTeA)	228612 159620	259265	237250 +++++	206027	270118	AveID		1.9323				8.3		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	267566 93727	142551	218894 +++++	113089	160135	L1ID	0.8109	0.9850							0.9990		0.9900
Perfluoro-n-octadecanoic acid (PFODA)	80380 68360	72886	118037 77747	107852	105867	AveID		0.7863				19.0		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.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-140382/4	02DEC2016A_004.d
Level 2	IC 320-140382/14	02DEC2016A_014.d
Level 3	IC 320-140382/5	02DEC2016A_005.d
Level 4	IC 320-140382/15	02DEC2016A_015.d
Level 5	IC 320-140382/6	02DEC2016A_006.d
Level 6	IC 320-140382/16	02DEC2016A_016.d
Level 7	IC 320-140382/7	02DEC2016A_007.d
Level 8	IC 320-140382/17	02DEC2016A_017.d
Level 9	IC 320-140382/8	02DEC2016A_008.d
Level 10	IC 320-140382/18	02DEC2016A_018.d
Level 11	IC 320-140382/9	02DEC2016A_009.d
Level 12	IC 320-140382/19	02DEC2016A_019.d
Level 13	IC 320-140382/10	02DEC2016A_010.d
Level 14	IC 320-140382/20	02DEC2016A_020.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	15781027 15262180	18935985	16931601 14832847	16489860	20871580	50.0 50.0	50.0	50.0 50.0	50.0	50.0
13C5-PFPeA	Ave	12639170 10903650	15125796	13234715 +++++	12600012	16554836	50.0 50.0	50.0	50.0 +++++	50.0	50.0
13C2 PFHxA	Ave	11549542 10277273	13498378	12331127 +++++	11543313	14744313	50.0 50.0	50.0	50.0 +++++	50.0	50.0
13C4-PFHpA	Ave	10138817 8167611	11424765	10778897 +++++	9801352	12841573	50.0 50.0	50.0	50.0 +++++	50.0	50.0
18O2 PFHxS	Ave	13903865 12029706	16435009	14695505 11322930	14421709	17333346	47.3 47.3	47.3	47.3 47.3	47.3	47.3
M2-6:2FTS	Ave	 6658764	5925112 6682949	 7906261	5726516 7823475	 5586093	 47.5	47.5 47.5	 47.5	47.5 47.5	 47.5
13C4 PFOA	Ave	11192131 8120442	12634984	12348635 7225722	10566267	14705649	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.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

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	10886366 9744748	13417569	12589922 9124233	11794026	14291797	47.8 47.8	47.8	47.8 47.8	47.8	47.8
13C5 PFNA	Ave	8360391 6808930	9730546	9431435 +++++	8274989	10826461	50.0 50.0	50.0	50.0 +++++	50.0	50.0
13C8 FOSA	Ave	18347473 17995728	22550983	21558794 +++++	20246280	23576629	50.0 50.0	50.0	50.0 +++++	50.0	50.0
M2-8:2FTS	Ave	5971752	5634375 6721067	7389674	5213436 7980965	5851766	47.9	47.9 47.9	47.9	47.9 47.9	47.9
13C2 PFDA	Ave	7561029 6960897	9112679	8418346 +++++	7964307	9802839	50.0 50.0	50.0	50.0 +++++	50.0	50.0
d3-NMeFOSAA	Ave	4140205	3880040 4016571	4953346	3606216 3959155	3442292	50.0	50.0 50.0	50.0	50.0 50.0	50.0
d5-NEtFOSAA	Ave	4489327	4464530 4474975	5242030	4134123 4497788	3869672	50.0	50.0 50.0	50.0	50.0 50.0	50.0
13C2 PFUnA	Ave	6117015 4558330	6913372	6669716 +++++	5729423	7745917	50.0 50.0	50.0	50.0 +++++	50.0	50.0
d-N-MeFOSA-M	Ave	5362314	4681022 4927555	5889991	5181881 6208758	4967092	50.0	50.0 50.0	50.0	50.0 50.0	50.0
d-N-EtFOSA-M	Ave	5205212	4329074 4696896	5611197	5048951 5918873	4857179	50.0	50.0 50.0	50.0	50.0 50.0	50.0
13C2 PFDoA	Ave	5433841 4818858	6319787	5950161 +++++	5499233	7049582	50.0 50.0	50.0	50.0 +++++	50.0	50.0
13C2-PFTeDA	Ave	11093975 10102255	13596161	12956938 10396514	11564641	14954236	50.0 50.0	50.0	50.0 50.0	50.0	50.0
13C2-PFHxDA	Ave	5661315 5535655	7428976	6756331 6001714	6210852	8035665	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.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

Curve Type Legend:
Ave = Average

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	IC 320-140382/4	02DEC2016A_004.d
Level 2	IC 320-140382/14	02DEC2016A_014.d
Level 3	IC 320-140382/5	02DEC2016A_005.d
Level 4	IC 320-140382/15	02DEC2016A_015.d
Level 5	IC 320-140382/6	02DEC2016A_006.d
Level 6	IC 320-140382/16	02DEC2016A_016.d
Level 7	IC 320-140382/7	02DEC2016A_007.d
Level 8	IC 320-140382/17	02DEC2016A_017.d
Level 9	IC 320-140382/8	02DEC2016A_008.d
Level 10	IC 320-140382/18	02DEC2016A_018.d
Level 11	IC 320-140382/9	02DEC2016A_009.d
Level 12	IC 320-140382/19	02DEC2016A_019.d
Level 13	IC 320-140382/10	02DEC2016A_010.d
Level 14	IC 320-140382/20	02DEC2016A_020.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	143518 43875101	7435187	298633 +++++	14709131	1937809	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluoropentanoic acid (PFPeA)		AveID	160730 34297516	6559082	290628 +++++	12474289	1680231	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluorobutanesulfonic acid (PFBS)		AveID	212680 51594571	11367724	442191 +++++	21727893	2954006	0.442 177	17.7	0.884 +++++	44.2	4.42
Perfluorohexanoic acid (PFHxA)		AveID	117653 33379792	5481010	236370 +++++	10870881	1458544	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluoroheptanoic acid (PFHpA)		AveID	116815 29343029	5005633	216223 +++++	10247953	1298003	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluorohexanesulfonic acid (PFHxS)		AveID	+++++ 45822208	6918390	342163 77870104	14700167	1850926	+++++ 182	18.2	0.910 364	45.5	4.55
6:2FTS		AveID	492719	+++++ 20031946	2900008	88396 +++++	5633441	4.74	+++++ 190	19.0	0.948 +++++	47.4

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

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	+++++ 29789966	5603089	290666 47490545	10948383	1560911	+++++ 200	20.0	1.00 400	50.0	5.00
Perfluoroheptanesulfonic Acid (PFHpS)		AveID	131950 38018954	6947857	284917 +++++	13319919	1774408	0.476 190	19.0	0.952 +++++	47.6	4.76
Perfluorooctane Sulfonate (PFOS)		AveID	+++++ 41837729	5745134	255695 80249842	12334342	1469896	+++++ 186	18.6	0.928 371	46.4	4.64
Perfluorononanoic acid (PFNA)		AveID	85074 25204338	4006430	184877 +++++	8209339	1085508	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluorooctane Sulfonamide (FOSA)		AveID	180345 51108754	9372172	403791 +++++	18995833	2370271	0.500 200	20.0	1.00 +++++	50.0	5.00
8:2FTS		AveID	431909	44037 19463965	2799477	94573 +++++	5753486	4.79	0.479 192	19.2	0.958 +++++	47.9
Perfluorodecanoic acid (PFDA)		AveID	77889 25614867	3671358	159778 +++++	7581125	938853	0.500 200	20.0	1.00 +++++	50.0	5.00
N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		AveID	289882	30895 13773335	1829869	59295 28724886	3696988	5.00	0.500 200	20.0	1.00 400	50.0
N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		AveID	283960	30016 14065497	1881436	56004 28356327	3546696	5.00	0.500 200	20.0	1.00 400	50.0
Perfluorodecanesulfonic acid (PFDS)		AveID	66721 24374906	3647236	150902 41362935	7816007	972225	0.482 193	19.3	0.964 386	48.2	4.82
Perfluoroundecanoic acid (PFUnA)		AveID	76058 17998762	2908196	148792 +++++	5577456	764307	0.500 200	20.0	1.00 +++++	50.0	5.00
MeFOSA		AveID	360259	37277 15814534	2129108	73327 35701676	4836683	5.00	0.500 200	20.0	1.00 400	50.0
N-EtFOSA-M		AveID	365734	35535 16550291	2187091	78846 35493503	5044937	5.00	0.500 200	20.0	1.00 400	50.0

RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1 Analy Batch No.: 140382

SDG No.:

Instrument ID: A8_N GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 12/02/2016 10:29 Calibration End Date: 12/02/2016 12:29 Calibration ID: 26849

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	54529 17698276	2445148	109023 +++++	5085511	669306	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluorotridecanoic Acid (PFTriA)		AveID	54837 18549592	2838032	126175 +++++	5704096	739992	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluorotetradecanoic acid (PFTeA)		AveID	114306 31923969	5185293	237250 +++++	10301361	1350591	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluoro-n-hexadecanoic acid (PFHxDA)		L1ID	133783 18745470	2851018	218894 +++++	5654463	800676	0.500 200	20.0	1.00 +++++	50.0	5.00
Perfluoro-n-octadecanoic acid (PFODA)		AveID	40190 13671969	1457725	118037 31098706	5392609	529337	0.500 200	20.0	1.00 400	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_N\20161202-37450.b\02DEC2016A_004.d
Lims ID: IC L1
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 02-Dec-2016 10:29:38 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:51:29 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:37:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.630	1.615	0.015		15781027	46.4		92.7	1736709	
1 Perfluorobutyric acid										
212.90 > 169.00	1.630	1.617	0.013	1.000	143518	0.5136		103	1140	
D 4 13C5-PFPeA										
267.90 > 223.00	1.944	1.918	0.026		12639170	46.8		93.6	942300	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.944	1.920	0.024	1.000	160730	0.6109		122	1551	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.983	1.961	0.022	1.000	212680	0.4484		101		
298.90 > 99.00	1.983	1.961	0.022	1.000	94809		2.24(0.00-0.00)	101		
D 6 13C2 PFHxA										
315.00 > 270.00	2.281	2.239	0.042		11549542	46.9		93.7	865664	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.281	2.241	0.040	1.000	117653	0.5329		107	3266	
D 11 13C4-PFHpA										
367.00 > 322.00	2.641	2.599	0.042		10138817	48.2		96.3	926585	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.648	2.600	0.048	1.000	116815	0.5570		111	2490	
D 10 18O2 PFHxS										
403.00 > 84.00	2.656	2.614	0.042		13903865	46.0		97.2	1297944	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.656	2.615	0.041	1.000	196748	0.6317		139		
15 Perfluorooctanoic acid										
413.00 > 369.00	3.032	2.984	0.048	1.000	158739	0.6950		139	1573	
413.00 > 169.00	3.032	2.984	0.048	1.000	89616		1.77(0.90-1.10)	139	8158	
D 14 13C4 PFOA										
417.00 > 372.00	3.032	2.984	0.048		11192131	51.0		102	1037140	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	3.032	2.986	0.046	1.000	131950	0.4956		104		
D 17 13C4 PFOS										
503.00 > 80.00	3.416	3.365	0.051		10886366	44.5		93.1	481501	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.416	3.366	0.050	1.000	120361	0.4860		105	16520	
499.00 > 99.00	3.425	3.366	0.059	1.003	28366		4.24(0.90-1.10)	105	2029	
20 Perfluorononanoic acid										
463.00 > 419.00	3.416	3.373	0.043	1.000	85074	0.5133		103	1441	
D 19 13C5 PFNA										
468.00 > 423.00	3.425	3.374	0.051		8360391	46.9		93.9	601596	
D 21 13C8 FOSA										
506.00 > 78.00	3.686	3.651	0.035		18347473	44.3		88.6	659525	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.686	3.656	0.030	1.000	180345	0.5254		105	13418	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.786	3.738	0.048	1.000	77889	0.5314		106	2050	
D 23 13C2 PFDA										
515.00 > 470.00	3.786	3.738	0.048		7561029	45.5		91.1	167715	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	4.096	4.049	0.047	1.000	66721	0.4671		96.9		
D 27 13C2 PFUnA										
565.00 > 520.00	4.120	4.070	0.050		6117015	48.6		97.3	398481	
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.120	4.071	0.049	1.000	76058	0.5867		117	2233	
D 30 13C2 PFDoA										
615.00 > 570.00	4.420	4.370	0.050		5433841	46.5		93.0	245704	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.420	4.370	0.050	1.000	54529	0.5301		106	74.3	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.681	4.636	0.045	1.000	54837	0.4851		97.0	81.1	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.935	4.882	0.053		11093975	45.9		91.7	599425	
33 Perfluorotetradecanoic acid										M
712.50 > 668.90	4.935	4.884	0.051	1.000	114306	0.5443		109	74.0	
713.00 > 169.00	4.918	4.884	0.034	0.997	21224		5.39(0.00-0.00)	109	2088	M
D 34 13C2-PFHxDA										
815.00 > 770.00	5.370	5.320	0.050		5661315	43.4		86.8	129845	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.370	5.320	0.050	1.000	133783	0.4265		85.3	239	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.784	5.720	0.064	1.000	40190	0.4703		94.1	105	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L1_00021 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:51:29 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_004.d

Injection Date: 02-Dec-2016 10:29:38 Instrument ID: A8_N

Lims ID: IC L1

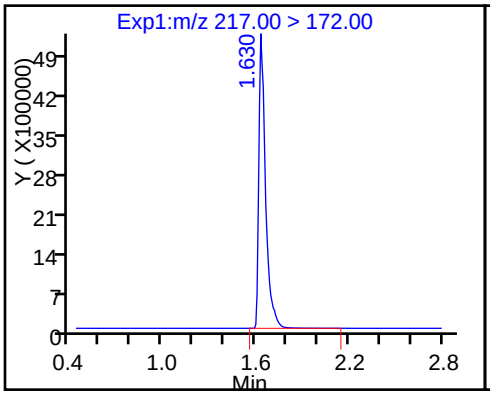
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4

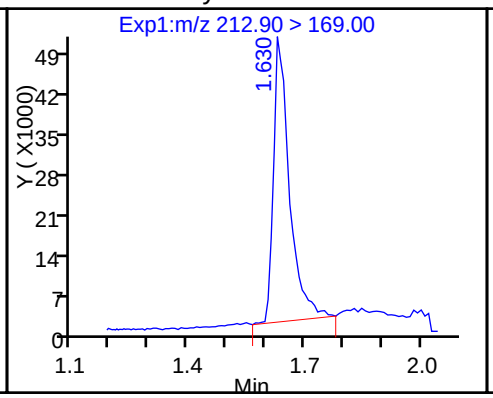
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

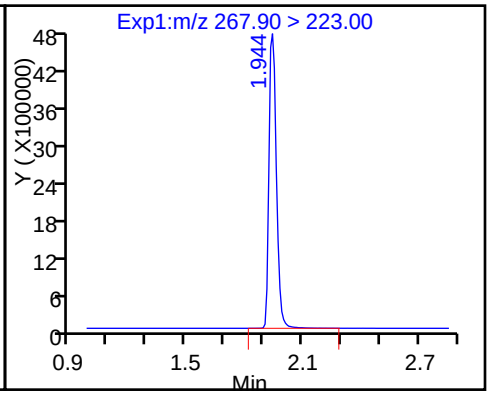
D 2 13C4 PFBA



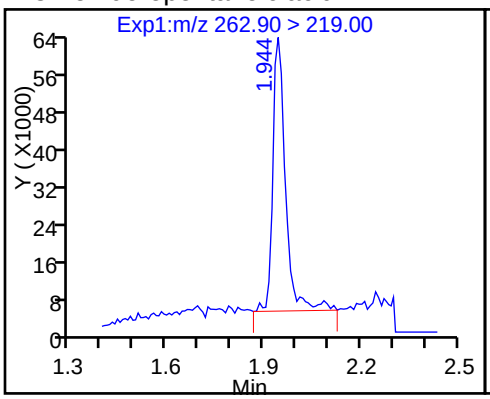
1 Perfluorobutyric acid



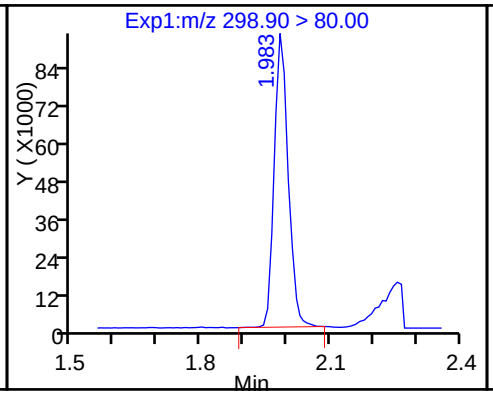
D 4 13C5-PFPeA



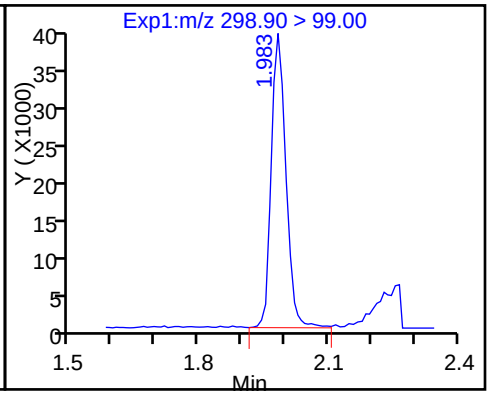
3 Perfluoropentanoic acid



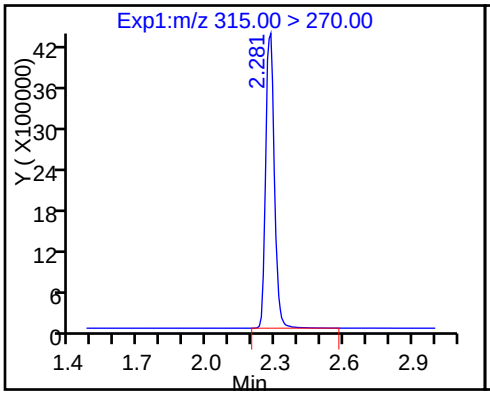
5 Perfluorobutanesulfonic acid



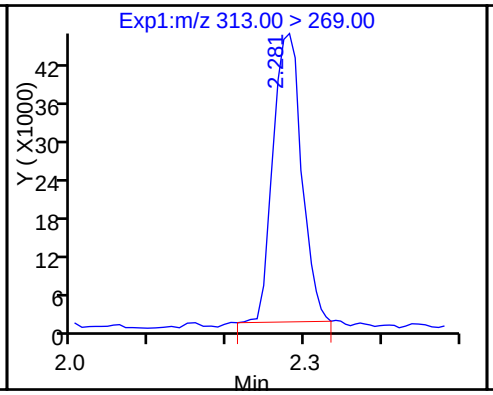
5 Perfluorobutanesulfonic acid



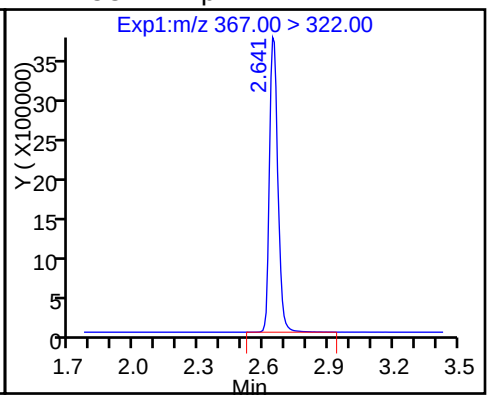
D 6 13C2 PFHxA



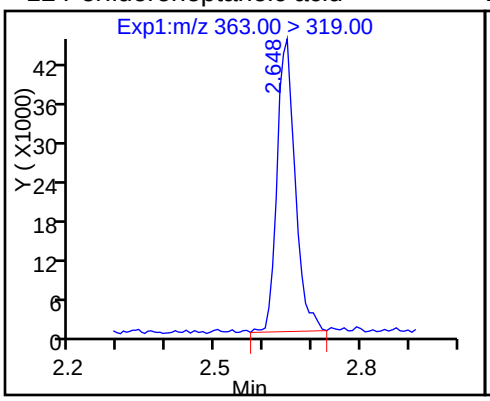
7 Perfluorohexanoic acid



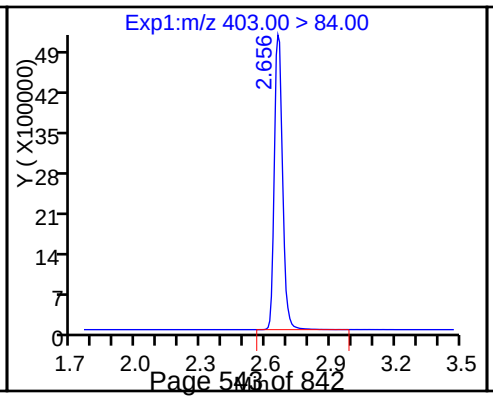
D 11 13C4-PFHpA



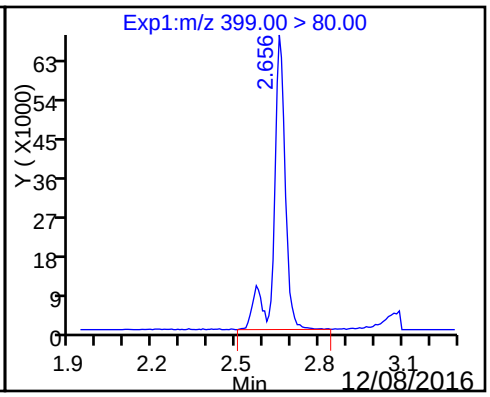
12 Perfluoroheptanoic acid



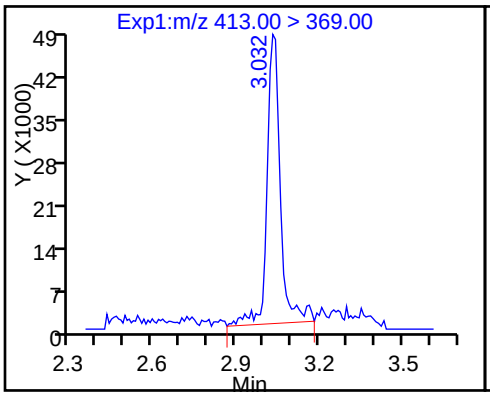
D 10 18O2 PFHxS



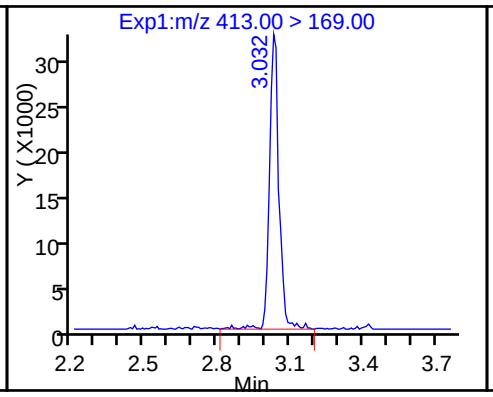
9 Perfluorohexanesulfonic acid



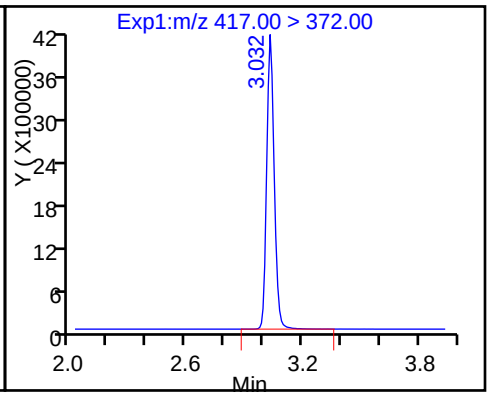
15 Perfluorooctanoic acid



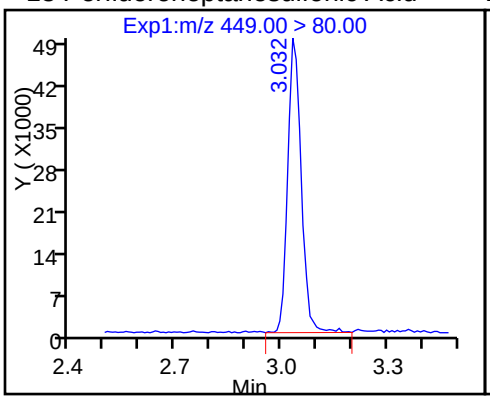
15 Perfluorooctanoic acid



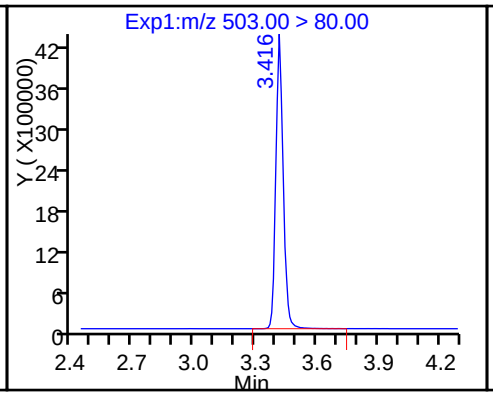
D 14 13C4 PFOA



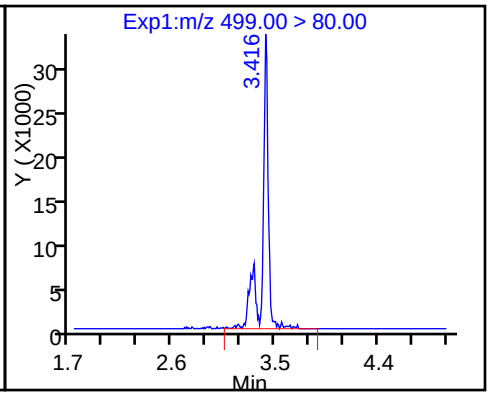
13 Perfluoroheptanesulfonic Acid



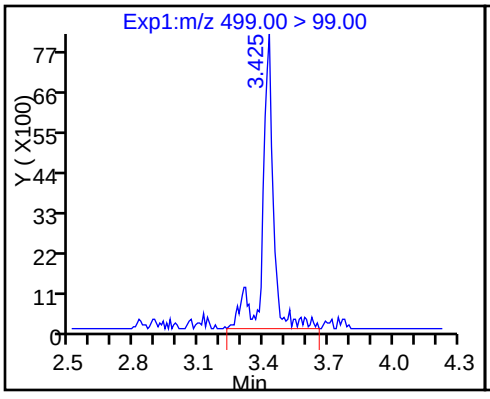
D 17 13C4 PFOS



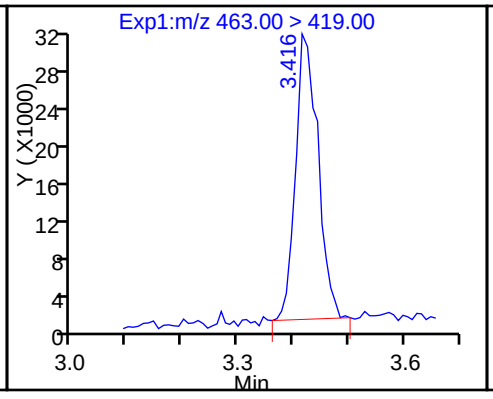
18 Perfluorooctane sulfonic acid



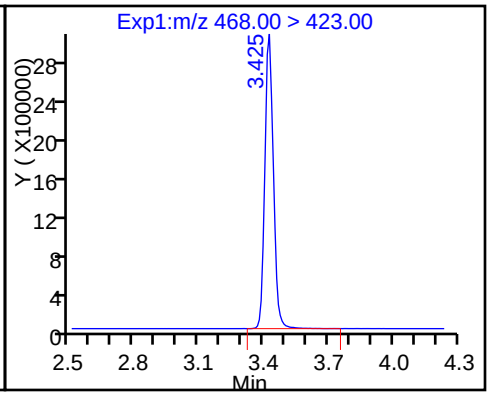
18 Perfluorooctane sulfonic acid



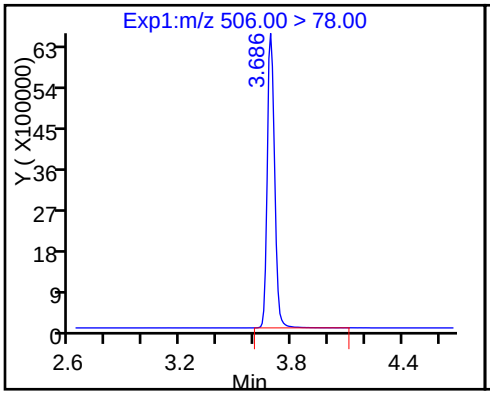
20 Perfluorononanoic acid



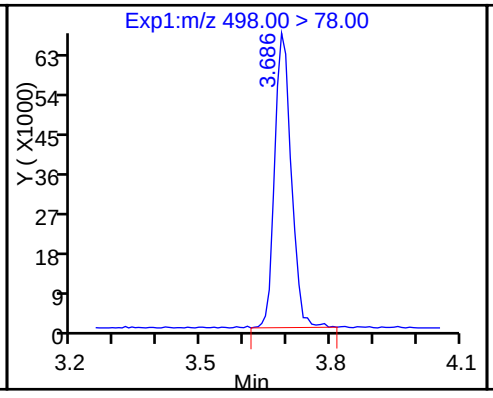
D 19 13C5 PFNA



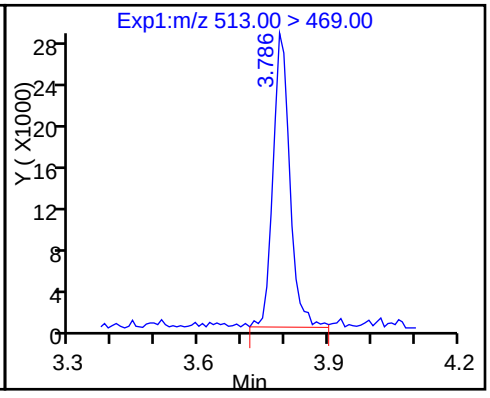
D 21 13C8 FOSA



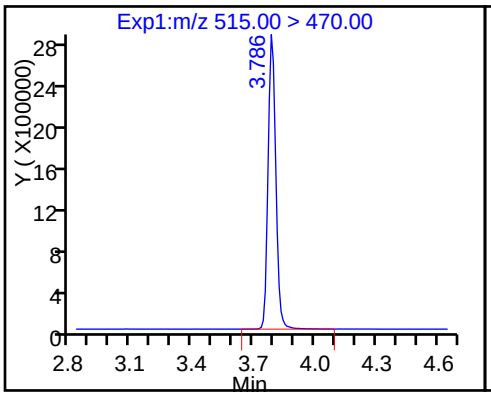
22 Perfluorooctane Sulfonamide



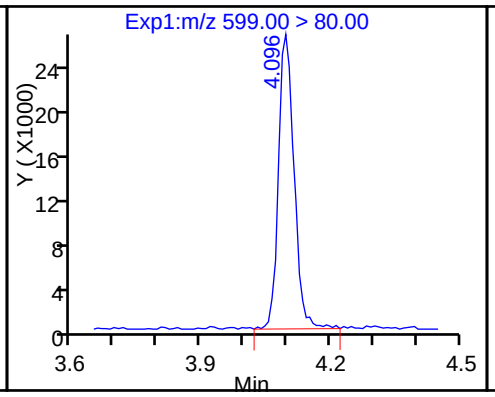
24 Perfluorodecanoic acid



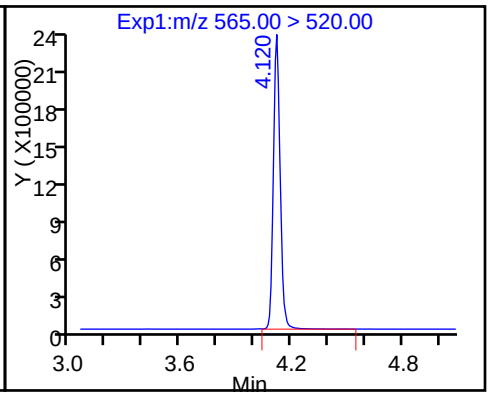
D 23 13C2 PFDA



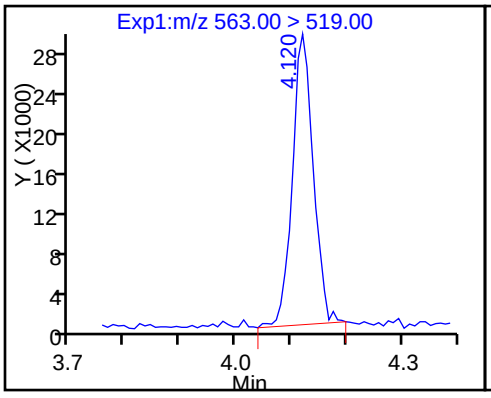
26 Perfluorodecane Sulfonic acid



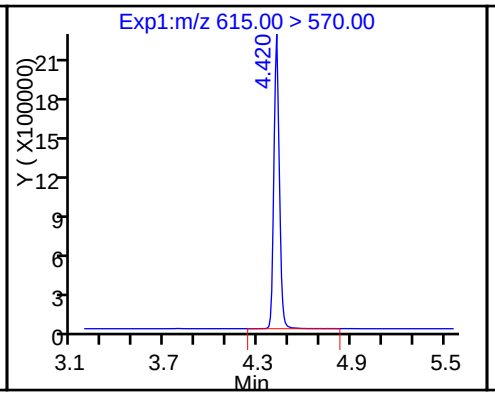
D 27 13C2 PFUnA



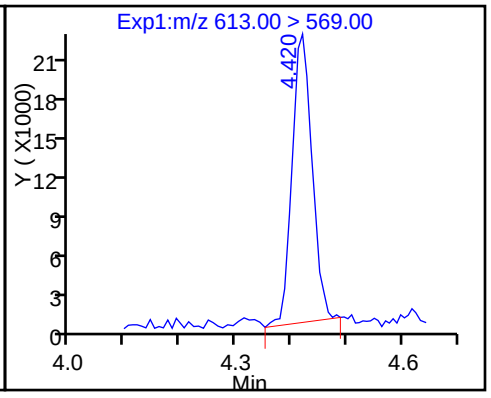
28 Perfluoroundecanoic acid



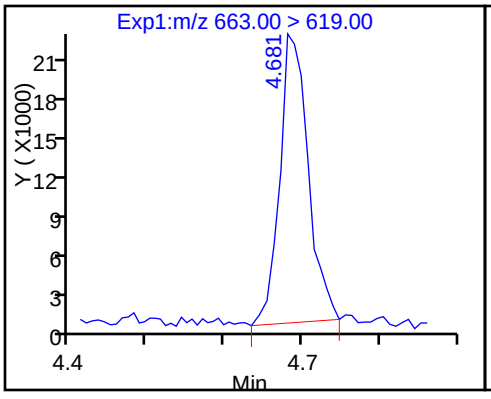
D 30 13C2 PFDoA



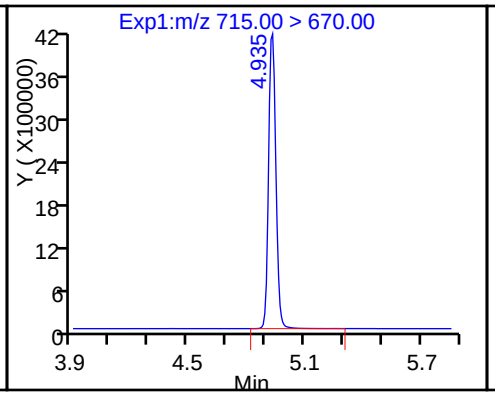
29 Perfluorododecanoic acid



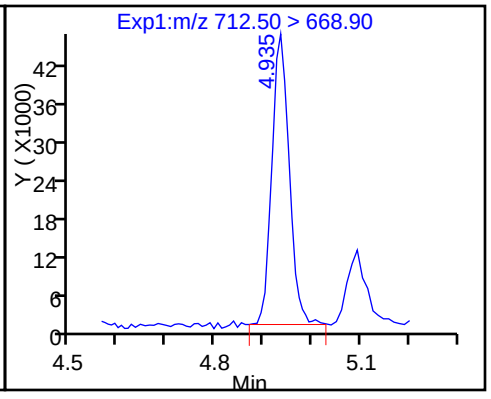
31 Perfluorotridecanoic acid



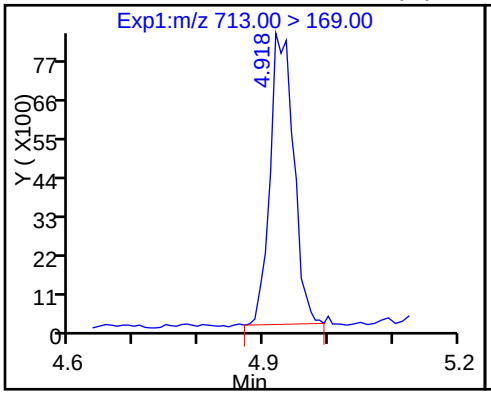
D 32 13C2-PFTeDA



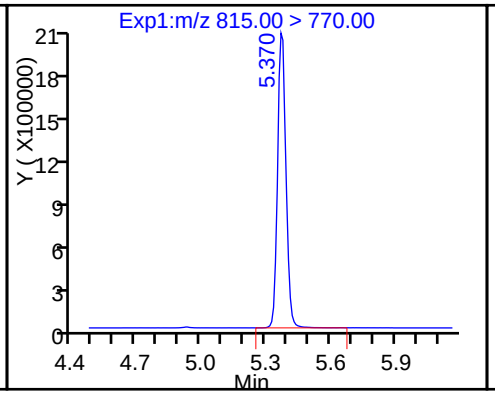
33 Perfluorotetradecanoic acid



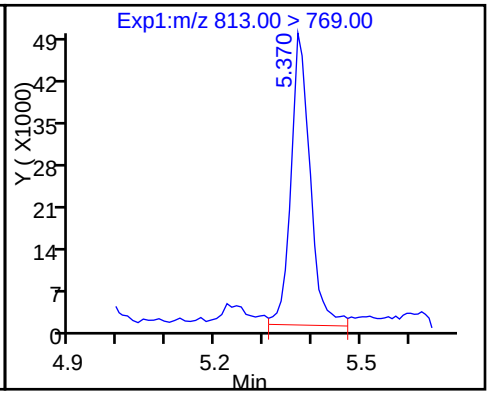
33 Perfluorotetradecanoic acid (M)



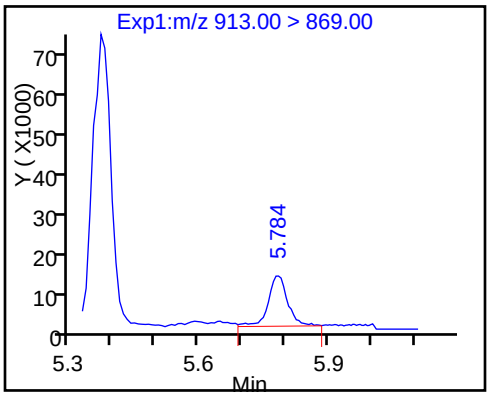
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

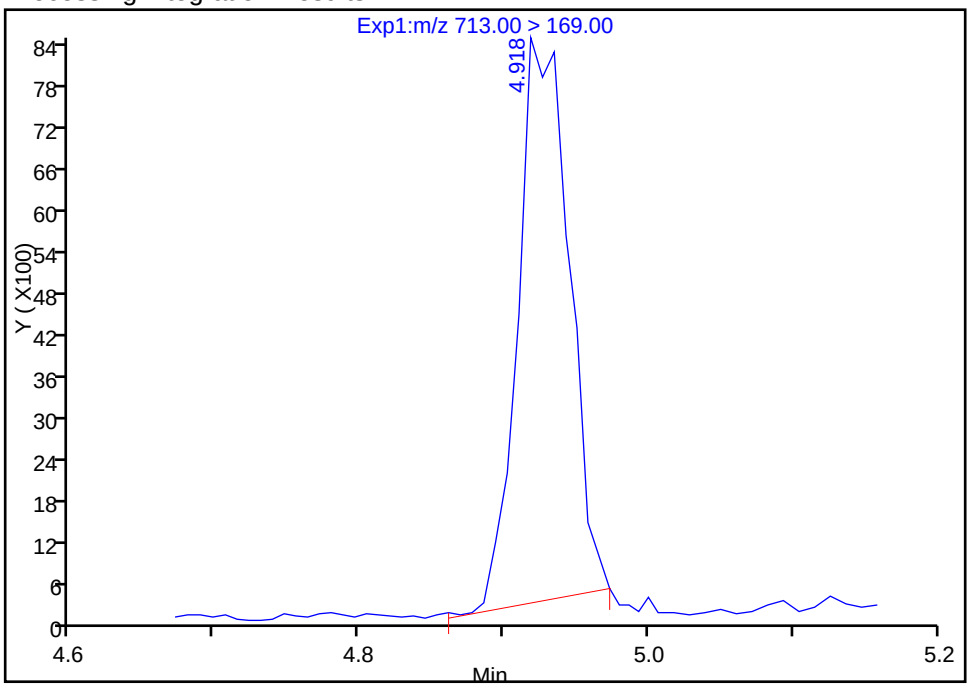
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_004.d
Injection Date: 02-Dec-2016 10:29:38 Instrument ID: A8_N
Lims ID: IC L1
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 37 Worklist Smp#: 4
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

33 Perfluorotetradecanoic acid, CAS: 376-06-7

Signal: 2

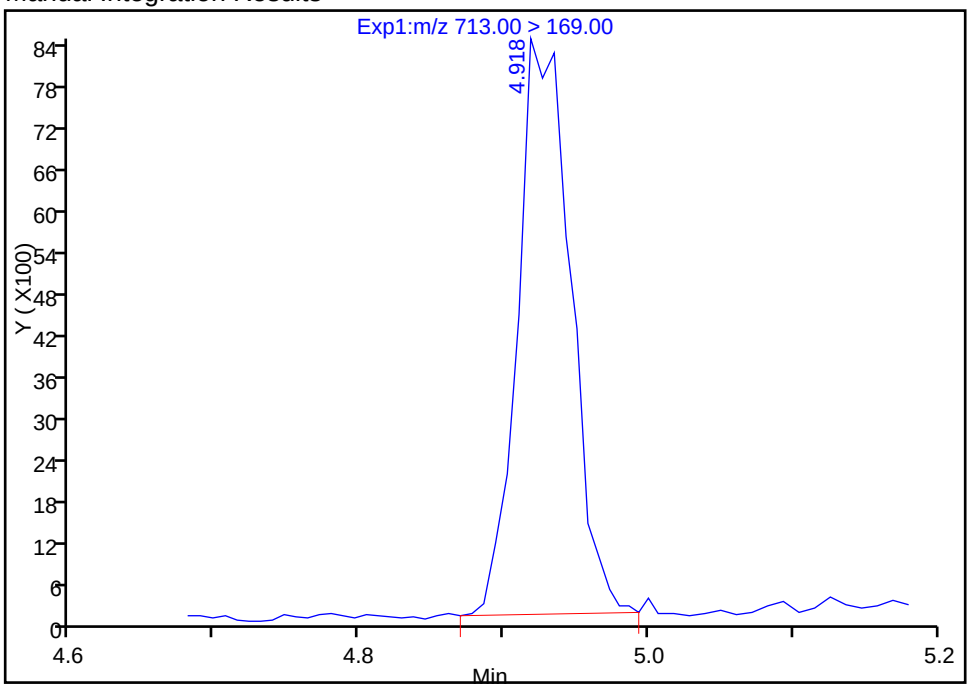
Processing Integration Results

RT: 4.92
Area: 20090
Amount: 0.574454
Amount Units: ng/ml



Manual Integration Results

RT: 4.92
Area: 21224
Amount: 0.544327
Amount Units: ng/ml



Reviewer: chandrasenas, 02-Dec-2016 13:37:48
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_005.d
Lims ID: IC L2
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 02-Dec-2016 10:37:07 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:51:31 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:38:35

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.614	1.615	-0.001		16931601	49.8		99.5	861260	
1 Perfluorobutyric acid										
212.90 > 169.00	1.622	1.617	0.005	1.000	298633	1.00		99.6	2205	
D 4 13C5-PFPeA										
267.90 > 223.00	1.916	1.918	-0.002		13234715	49.0		98.0	1668802	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.916	1.920	-0.004	1.000	290628	1.05		105	2905	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.964	1.961	0.003	1.000	442191	0.8821		99.8		
298.90 > 99.00	1.954	1.961	-0.007	0.995	183888		2.40(0.00-0.00)	99.8		
D 6 13C2 PFHxA										
315.00 > 270.00	2.239	2.239	0.0		12331127	50.0		100	1160245	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.239	2.241	-0.002	1.000	236370	1.00		100	7007	
D 11 13C4-PFHpA										
367.00 > 322.00	2.604	2.599	0.005		10778897	51.2		102	1033732	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.604	2.600	0.004	1.000	216223	0.9699		97.0	3288	
D 10 18O2 PFHxS										
403.00 > 84.00	2.619	2.614	0.005		14695505	48.6		103	816827	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.619	2.615	0.004	1.000	342163	1.04		114		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.993	2.984	0.009	1.000	290666	1.15		115	3791	
413.00 > 169.00	2.993	2.984	0.009	1.000	166261		1.75(0.90-1.10)	115	12537	
D 14 13C4 PFOA										
417.00 > 372.00	2.993	2.984	0.009		12348635	56.3		113	1464087	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.993	2.986	0.007	1.000	284917	0.9254		97.2		
D 17 13C4 PFOS										
503.00 > 80.00	3.371	3.365	0.006		12589922	51.5		108	793078	
18 Perfluorooctane sulfonic acid										M
499.00 > 80.00	3.380	3.366	0.014	1.000	255695	0.8928		96.2	33794	
499.00 > 99.00	3.371	3.366	0.005	0.997	58595		4.36(0.90-1.10)	96.2	6167	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.380	3.373	0.007	1.000	184877	0.9888		98.9	3375	
D 19 13C5 PFNA										
468.00 > 423.00	3.380	3.374	0.006		9431435	53.0		106	1129875	
D 21 13C8 FOSA										
506.00 > 78.00	3.648	3.651	-0.003		21558794	52.0		104	974406	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.657	3.656	0.001	1.000	403791	1.00		100	30165	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.746	3.738	0.008	1.000	159778	0.9790		97.9	5715	
D 23 13C2 PFDA										
515.00 > 470.00	3.746	3.738	0.008		8418346	50.7		101	248297	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	4.061	4.049	0.012	1.000	150902	0.9136		94.8		
D 27 13C2 PFUnA										
565.00 > 520.00	4.078	4.070	0.008		6669716	53.0		106	287118	
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.086	4.071	0.015	1.000	148792	1.05		105	3690	
D 30 13C2 PFDoA										
615.00 > 570.00	4.381	4.370	0.011		5950161	50.9		102	144810	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.381	4.370	0.011	1.000	109023	0.9679		96.8	130	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.653	4.636	0.017	1.000	126175	1.02		102	142	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.893	4.882	0.011		12956938	53.6		107	632063	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.893	4.884	0.009	1.000	237250	1.03		103	104	
713.00 > 169.00	4.885	4.884	0.001	0.998	41035		5.78(0.00-0.00)	103	4184	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.334	5.320	0.014		6756331	51.8		104	147007	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.334	5.320	0.014	1.000	218894	1.04		104	287	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.738	5.720	0.018	1.000	118037	1.26		126	233	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L2_00022 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:51:31 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_005.d

Injection Date: 02-Dec-2016 10:37:07 Instrument ID: A8_N

Lims ID: IC L2

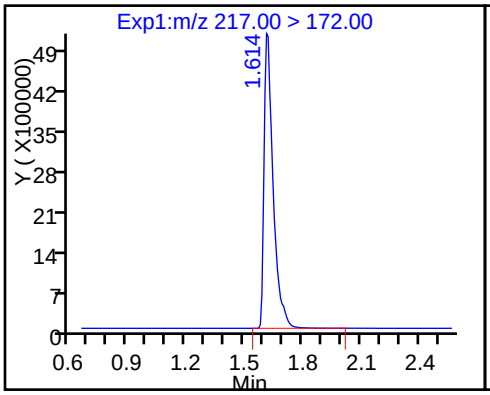
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5

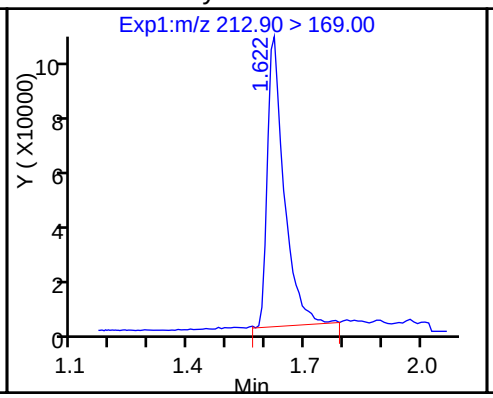
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

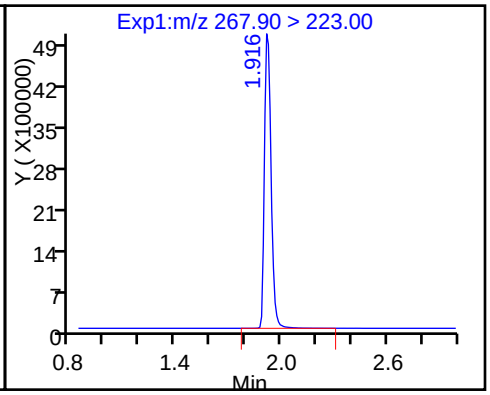
D 2 13C4 PFBA



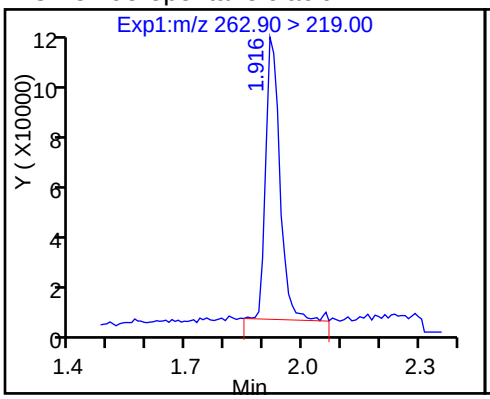
1 Perfluorobutyric acid



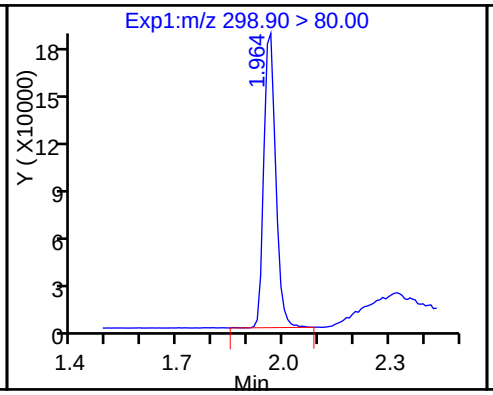
D 4 13C5-PFPeA



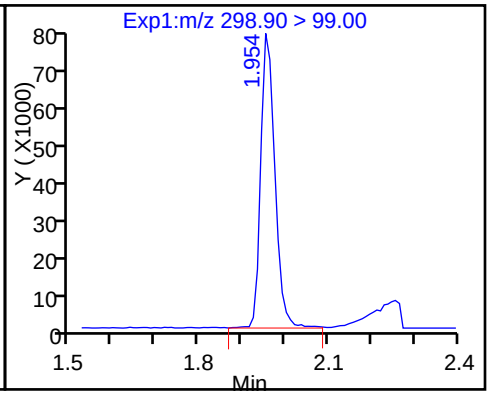
3 Perfluoropentanoic acid



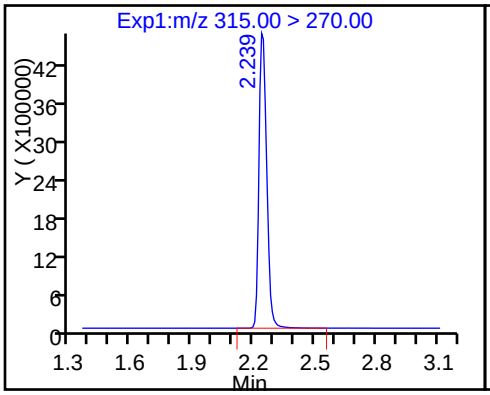
5 Perfluorobutanesulfonic acid



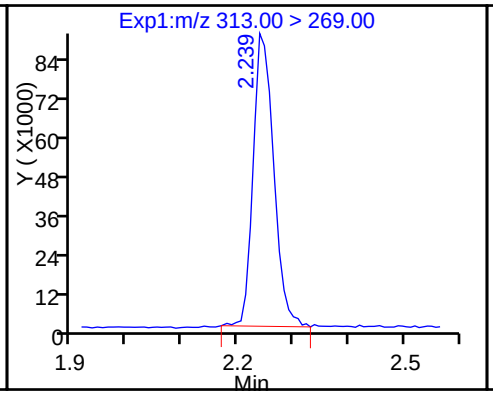
5 Perfluorobutanesulfonic acid



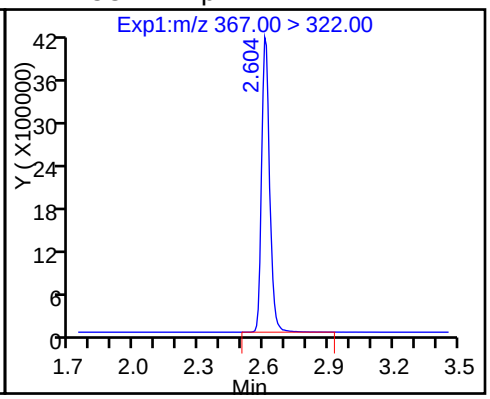
D 6 13C2 PFHxA



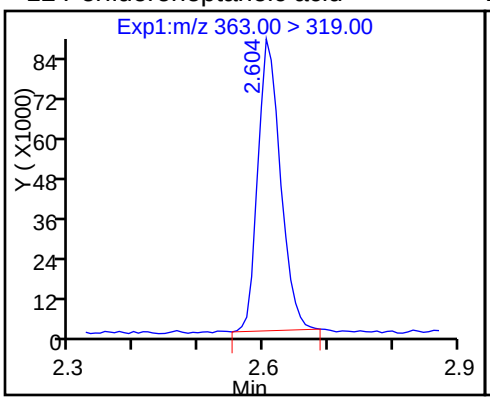
7 Perfluorohexanoic acid



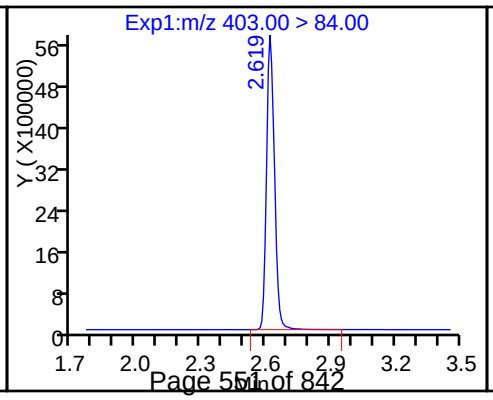
D 11 13C4-PFHpA



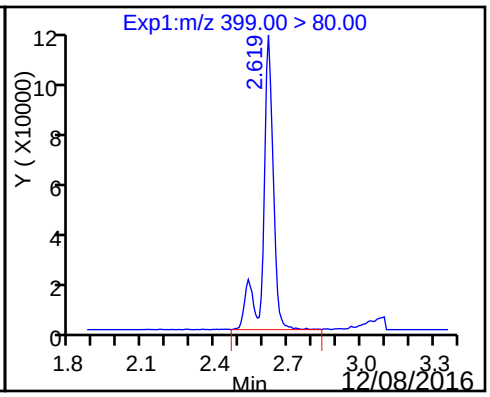
12 Perfluoroheptanoic acid



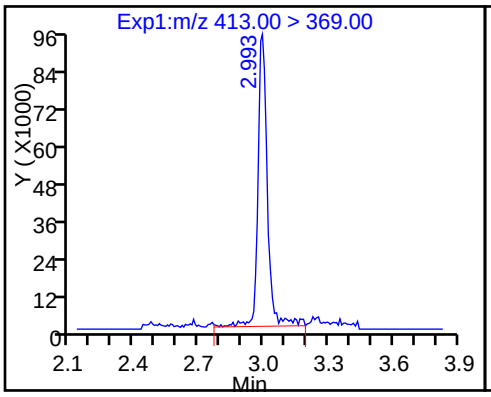
D 10 18O2 PFHxS



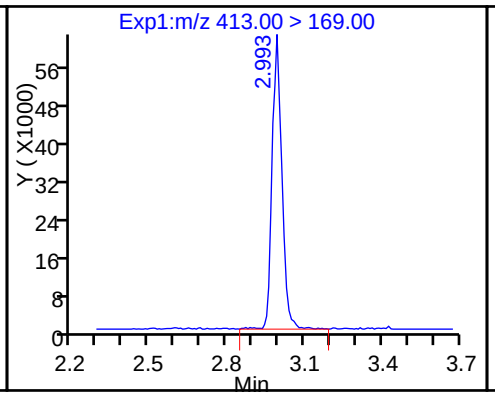
9 Perfluorohexanesulfonic acid



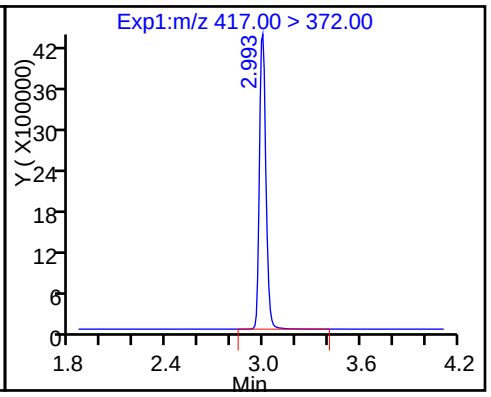
15 Perfluorooctanoic acid



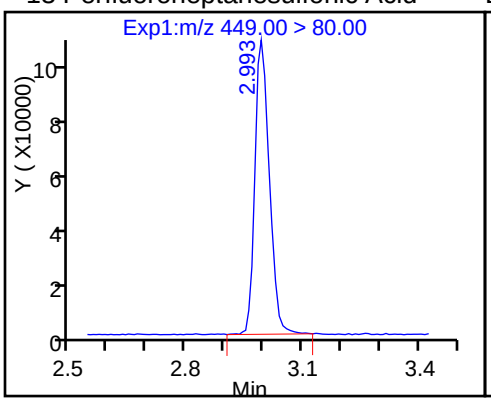
15 Perfluorooctanoic acid



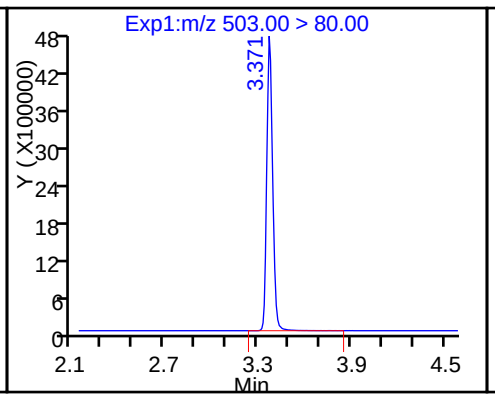
D 14 13C4 PFOA



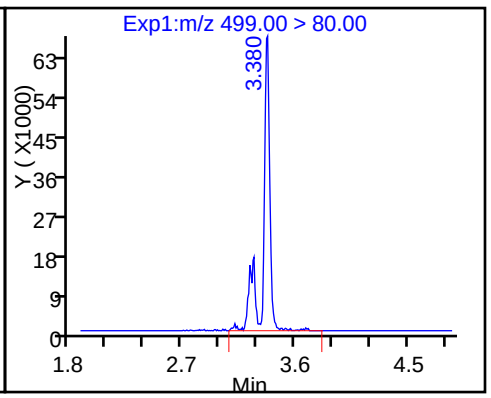
13 Perfluoroheptanesulfonic Acid



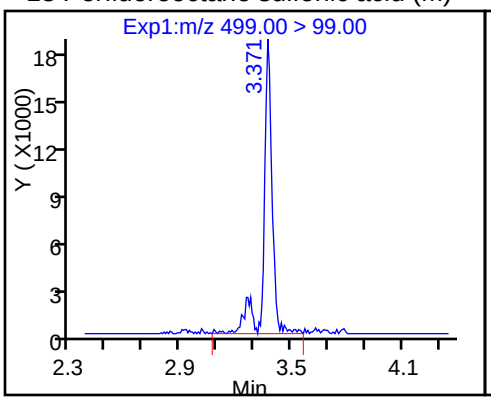
D 17 13C4 PFOS



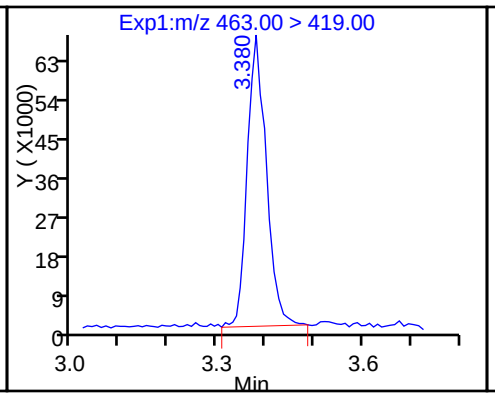
18 Perfluorooctane sulfonic acid



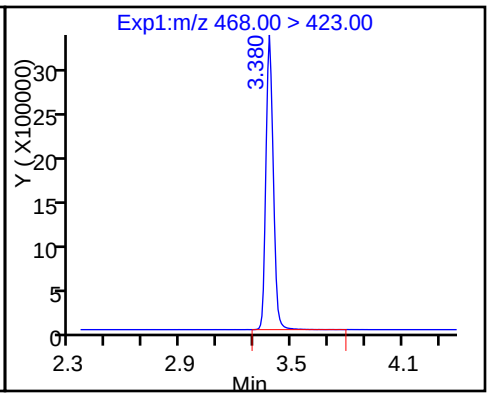
18 Perfluorooctane sulfonic acid (M)



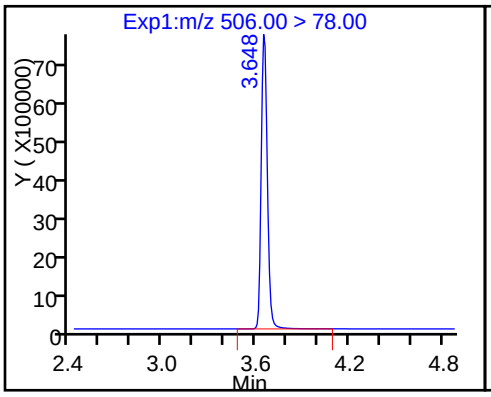
20 Perfluorononanoic acid



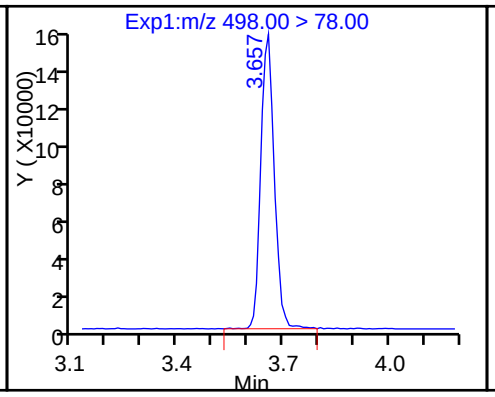
D 19 13C5 PFNA



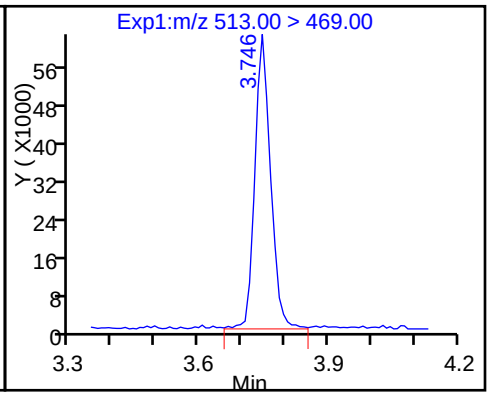
D 21 13C8 FOSA



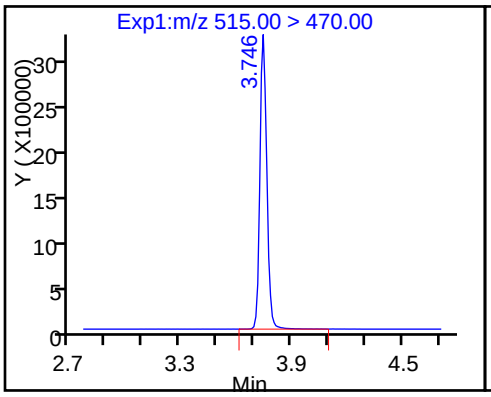
22 Perfluorooctane Sulfonamide



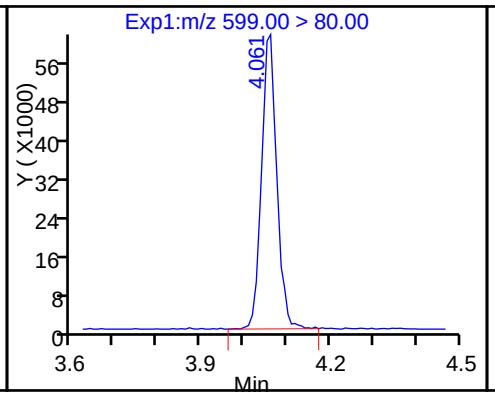
24 Perfluorodecanoic acid



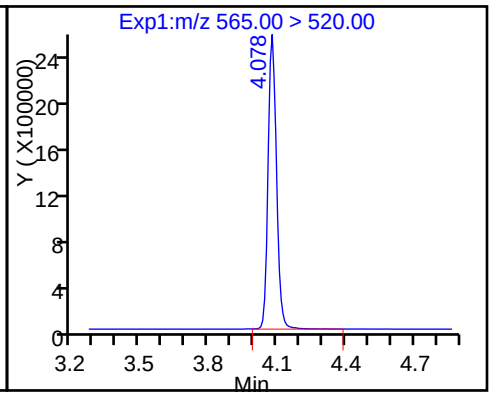
D 23 13C2 PFDA



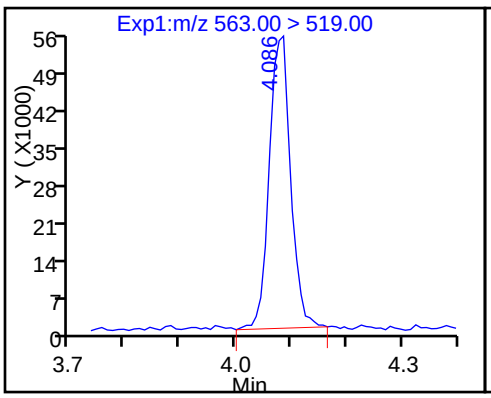
26 Perfluorodecane Sulfonic acid



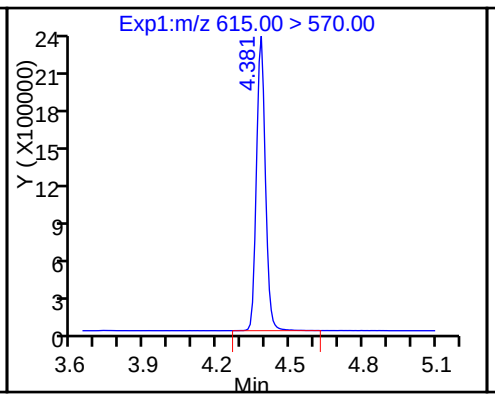
D 27 13C2 PFUnA



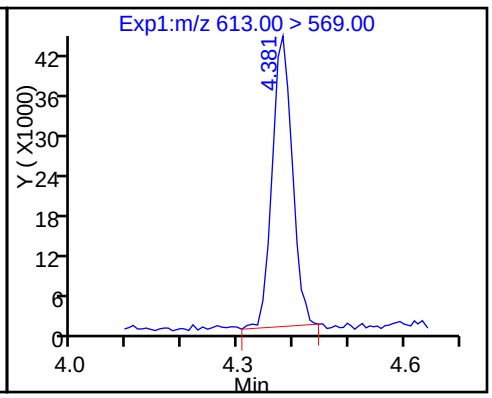
28 Perfluoroundecanoic acid



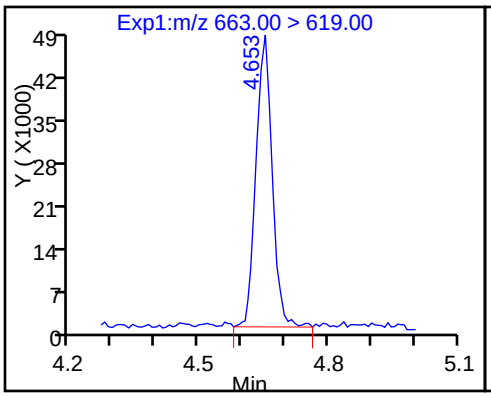
D 30 13C2 PFDoA



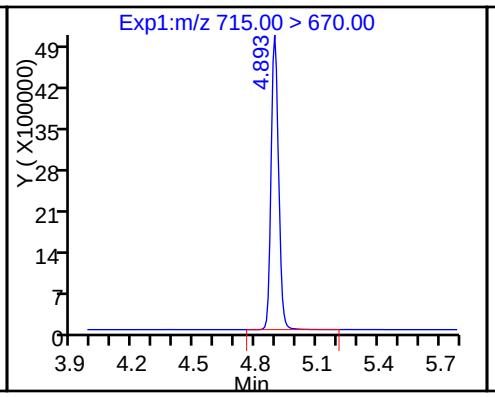
29 Perfluorododecanoic acid



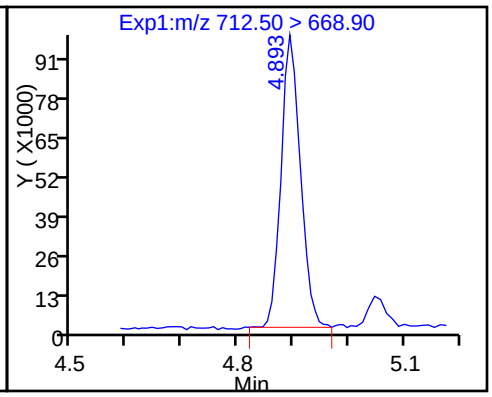
31 Perfluorotridecanoic acid



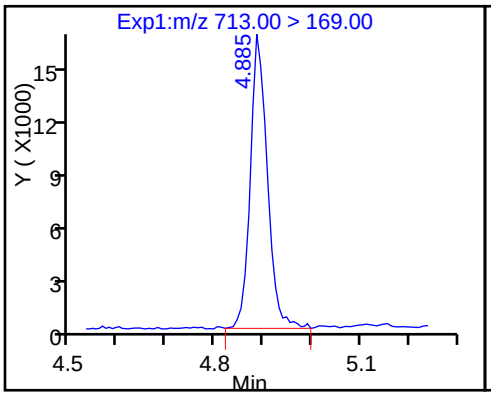
D 32 13C2-PFTeDA



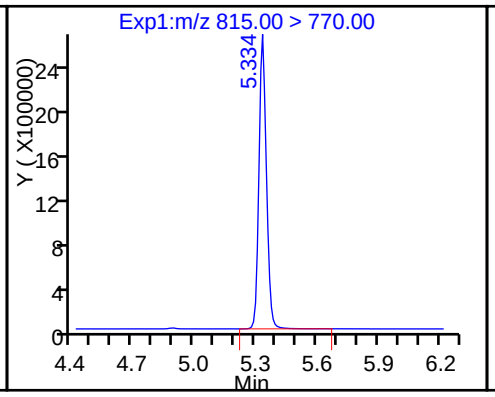
33 Perfluorotetradecanoic acid



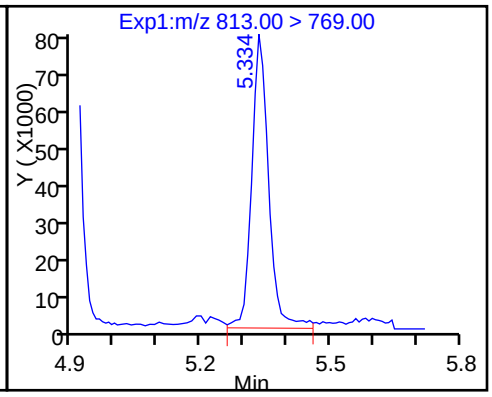
33 Perfluorotetradecanoic acid



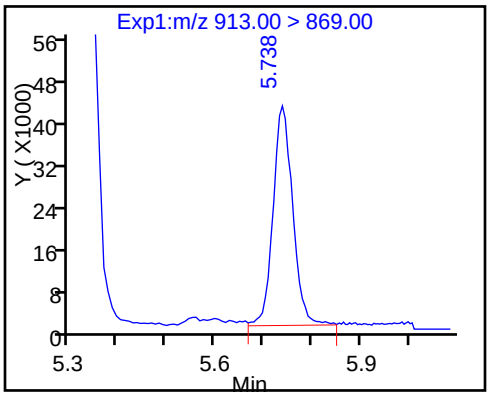
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

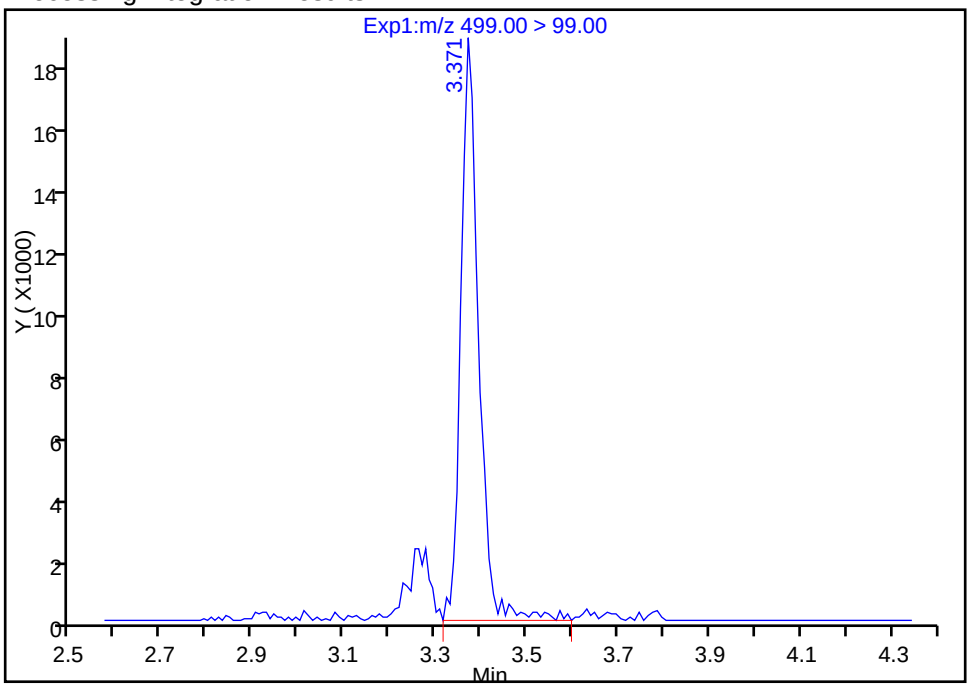
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_005.d
Injection Date: 02-Dec-2016 10:37:07 Instrument ID: A8_N
Lims ID: IC L2
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

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

Signal: 2

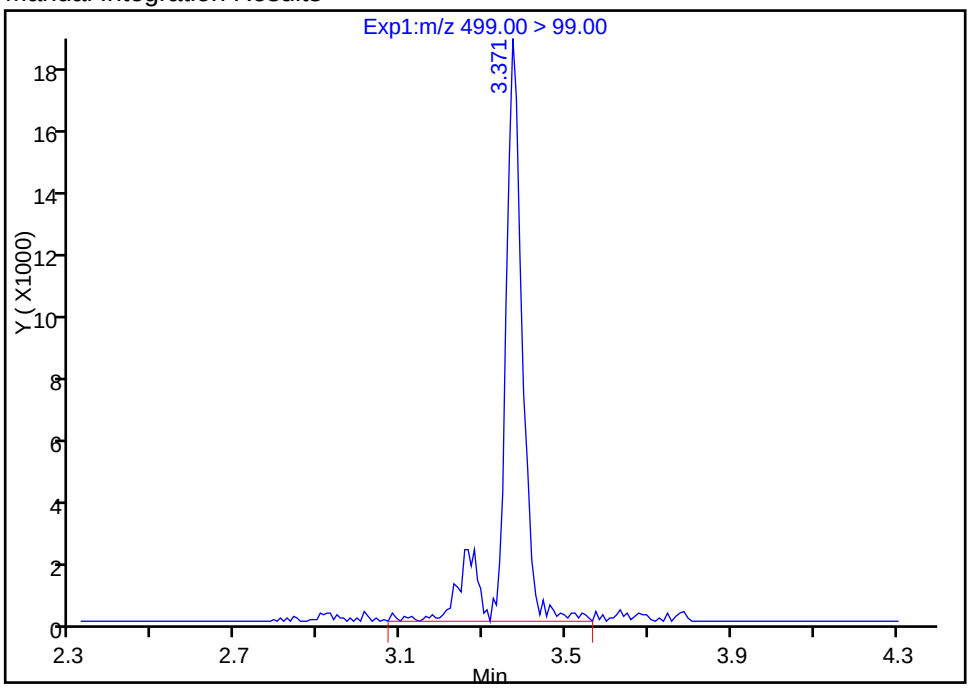
Processing Integration Results

RT: 3.37
Area: 50423
Amount: 0.892814
Amount Units: ng/ml



Manual Integration Results

RT: 3.37
Area: 58595
Amount: 0.892814
Amount Units: ng/ml



Reviewer: chandrasenas, 02-Dec-2016 13:38:35
Audit Action: Manually Integrated Audit Reason: Isomers

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_006.d
Lims ID: IC L3
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 02-Dec-2016 10:44:37 ALS Bottle#: 39 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:51:32 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:38:56

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.622	1.615	0.007		20871580	61.3		123	1270902	
1 Perfluorobutyric acid										
212.90 > 169.00	1.622	1.617	0.005	1.000	1937809	5.24		105	16704	
D 4 13C5-PFPeA										
267.90 > 223.00	1.916	1.918	-0.002		16554836	61.3		123	1251857	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.926	1.920	0.006	1.000	1680231	4.88		97.5	18184	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.964	1.961	0.003	1.000	2954006	5.00		113		
298.90 > 99.00	1.955	1.961	-0.007	0.995	1239873		2.38(0.00-0.00)	113		
D 6 13C2 PFHxA										
315.00 > 270.00	2.239	2.239	-0.001		14744313	59.8		120	1821555	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.247	2.241	0.006	1.000	1458544	5.17		103	41938	
D 11 13C4-PFHpA										
367.00 > 322.00	2.600	2.599	0.001		12841573	61.0		122	826915	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.600	2.600	0.0	1.000	1298003	4.89		97.7	25441	
D 10 18O2 PFHxS										
403.00 > 84.00	2.616	2.614	0.002		17333346	57.3		121	1088243	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.616	2.615	0.001	1.000	1850926	4.77		105		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.981	2.984	-0.003	1.000	1560911	5.20		104	22497	
413.00 > 169.00	2.989	2.984	0.005	1.003	958311		1.63(0.90-1.10)	104	88434	
D 14 13C4 PFOA										
417.00 > 372.00	2.989	2.984	0.005		14705649	67.0		134	862824	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.989	2.986	0.003	1.000	1774408	5.08		107		
D 17 13C4 PFOS										
503.00 > 80.00	3.366	3.365	0.001		14291797	58.4		122	925059	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.366	3.366	0.0	1.000	1469896	4.52		97.4	134789	
499.00 > 99.00	3.366	3.366	0.0	1.000	312360		4.71(0.90-1.10)	97.4	26246	
20 Perfluorononanoic acid										
463.00 > 419.00	3.383	3.373	0.010	1.000	1085508	5.06		101	19854	
D 19 13C5 PFNA										
468.00 > 423.00	3.375	3.374	0.001		10826461	60.8		122	367418	
D 21 13C8 FOSA										
506.00 > 78.00	3.652	3.651	0.001		23576629	56.9		114	722968	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.652	3.656	-0.004	1.000	2370271	5.37		107	305013	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.740	3.738	0.002	1.000	938853	4.94		98.8	39325	
D 23 13C2 PFDA										
515.00 > 470.00	3.740	3.738	0.002		9802839	59.0		118	248176	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	4.046	4.049	-0.003	1.000	972225	5.18		108		
D 27 13C2 PFUnA										
565.00 > 520.00	4.079	4.070	0.009		7745917	61.6		123	312996	
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.071	4.071	0.0	1.000	764307	4.66		93.1	21162	
D 30 13C2 PFDoA										
615.00 > 570.00	4.376	4.370	0.006		7049582	60.3		121	194268	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.376	4.370	0.006	1.000	669306	5.02		100	638	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.637	4.636	0.001	1.000	739992	5.05		101	761	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.880	4.882	-0.002		14954236	61.8		124	563118	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.888	4.884	0.004	1.000	1350591	4.96		99.1	554	
713.00 > 169.00	4.880	4.884	-0.004	0.998	220454		6.13(0.00-0.00)	99.1	17882	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.326	5.320	0.006		8035665	61.6		123	159038	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.326	5.320	0.006	1.000	800676	4.94		98.8	999	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.726	5.720	0.006	1.000	529337	4.77		95.5	857	

Reagents:

LCPFC-L3_00019 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:51:33 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_006.d

Injection Date: 02-Dec-2016 10:44:37 Instrument ID: A8_N

Lims ID: IC L3

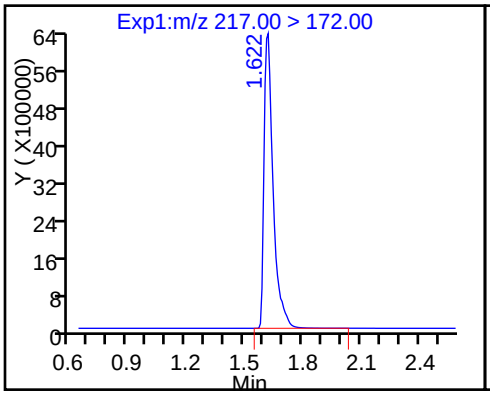
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 39 Worklist Smp#: 6

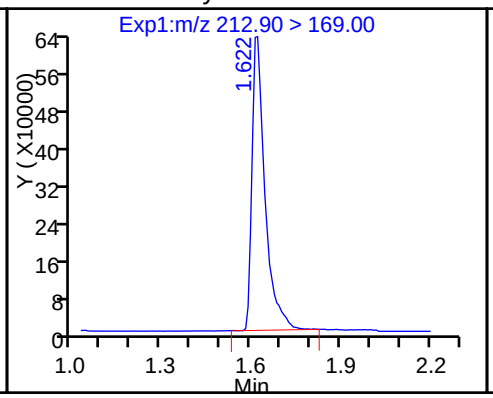
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

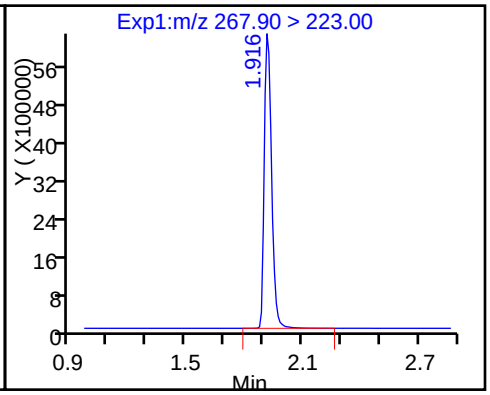
D 2 13C4 PFBA



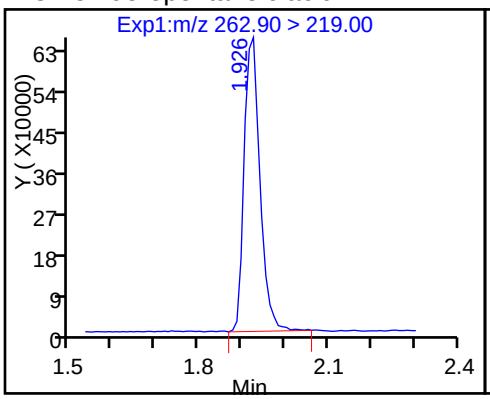
1 Perfluorobutyric acid



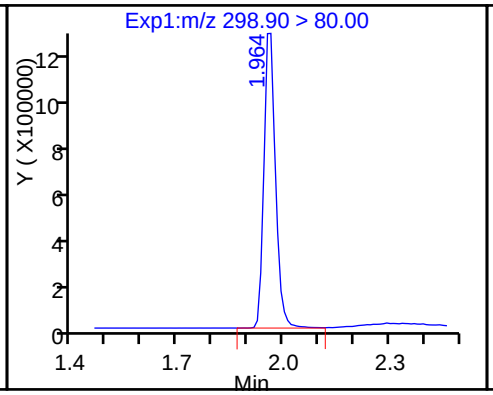
D 4 13C5-PFPeA



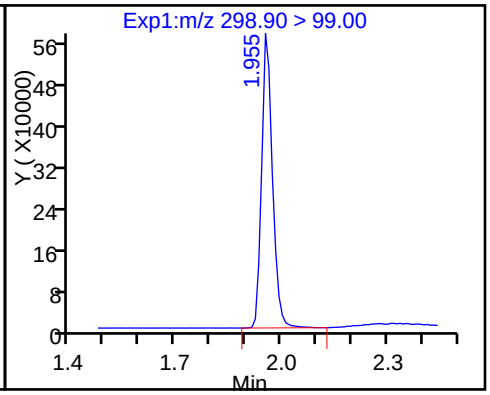
3 Perfluoropentanoic acid



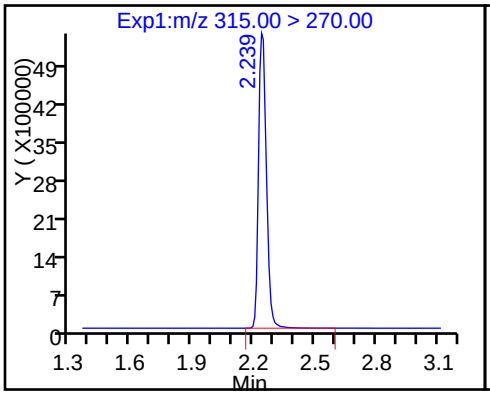
5 Perfluorobutanesulfonic acid



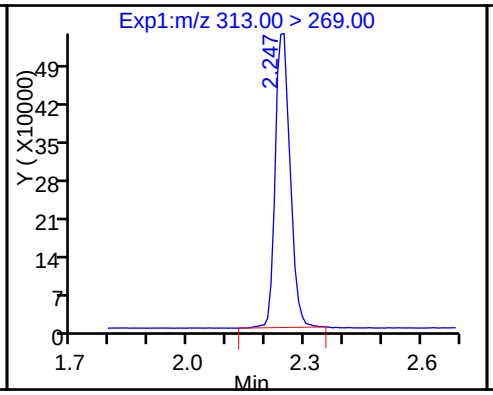
5 Perfluorobutanesulfonic acid



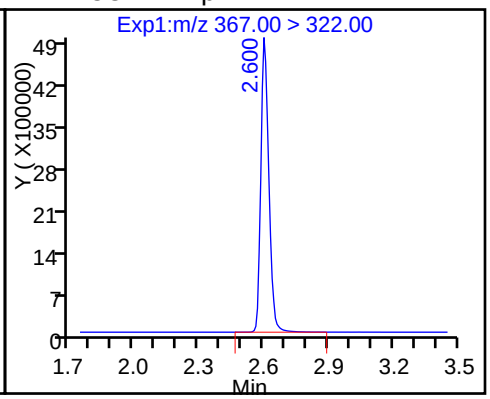
D 6 13C2 PFHxA



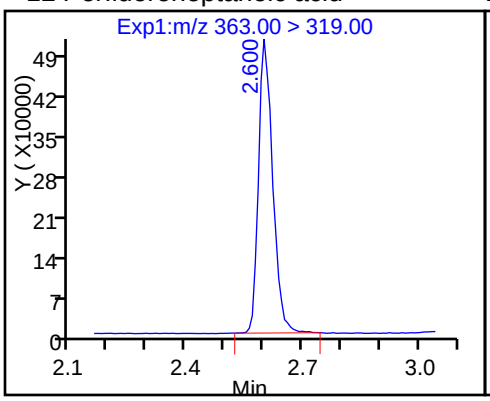
7 Perfluorohexanoic acid



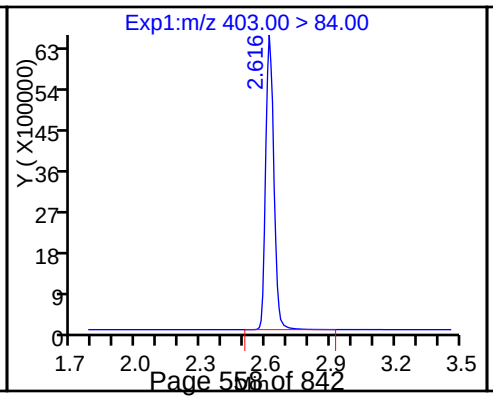
D 11 13C4-PFHpA



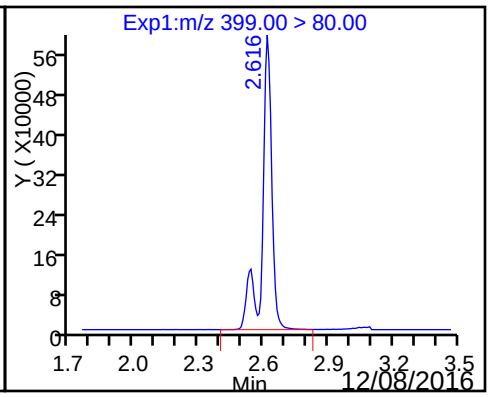
12 Perfluoroheptanoic acid



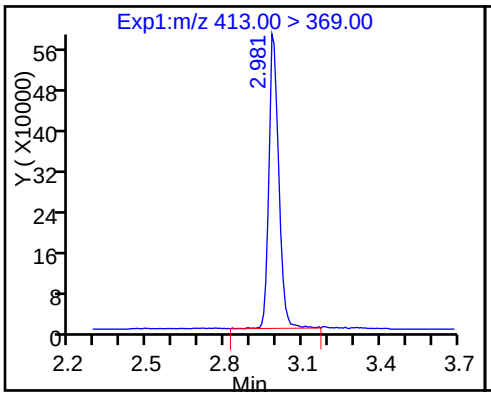
D 10 18O2 PFHxS



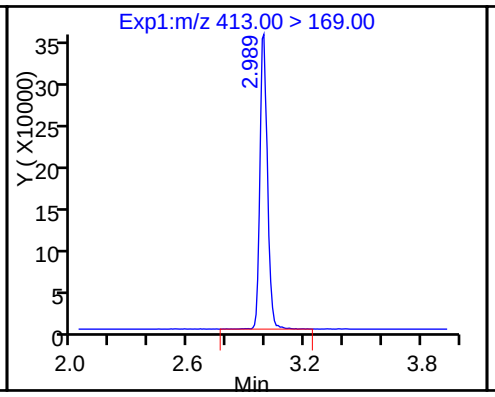
9 Perfluorohexanesulfonic acid



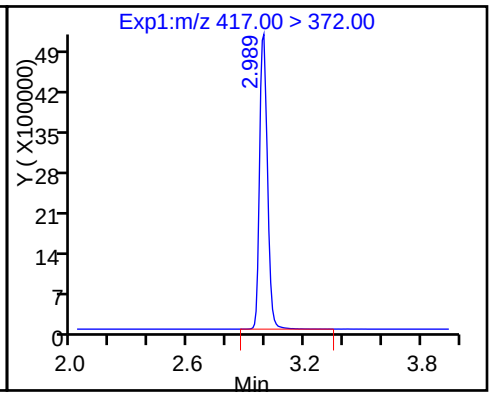
15 Perfluorooctanoic acid



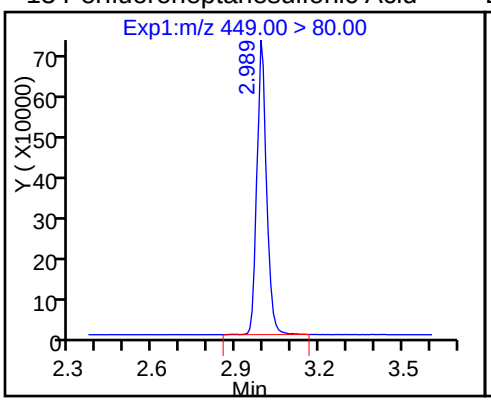
15 Perfluorooctanoic acid



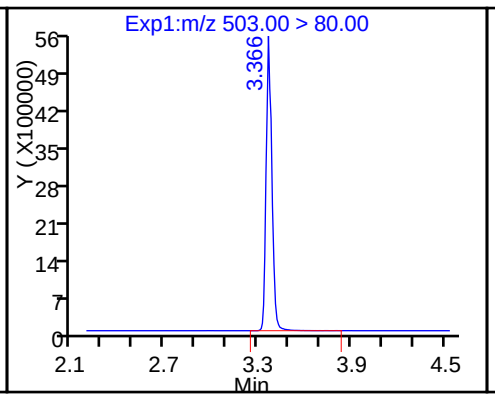
D 14 13C4 PFOA



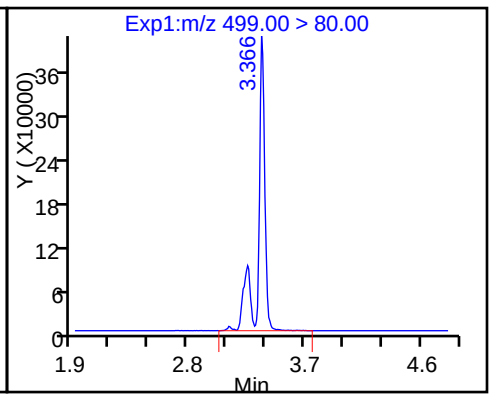
13 Perfluoroheptanesulfonic Acid



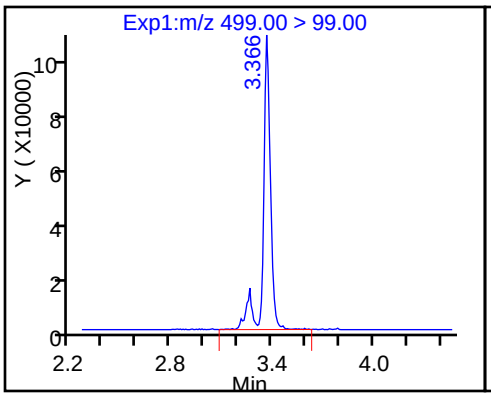
D 17 13C4 PFOS



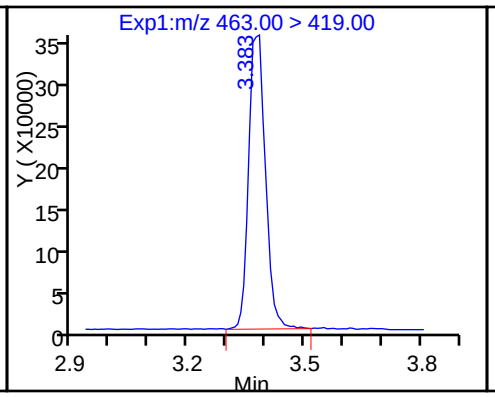
18 Perfluorooctane sulfonic acid



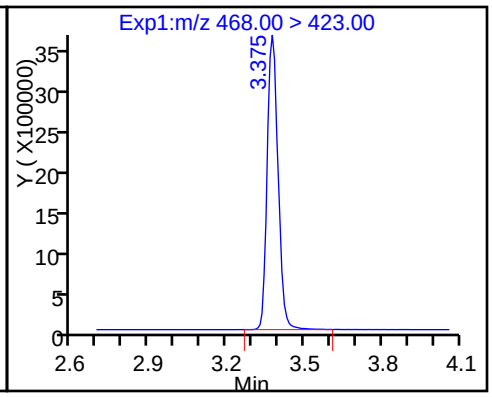
18 Perfluorooctane sulfonic acid



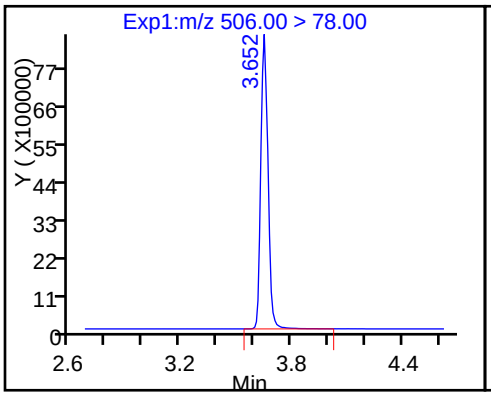
20 Perfluorononanoic acid



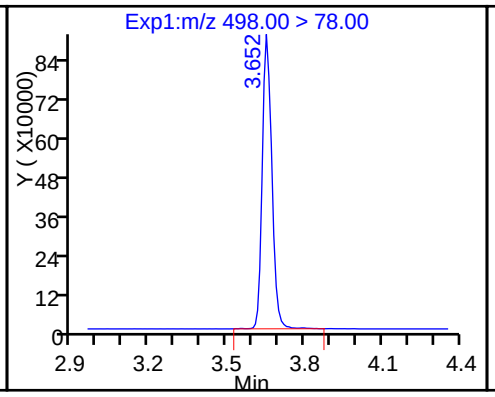
D 19 13C5 PFNA



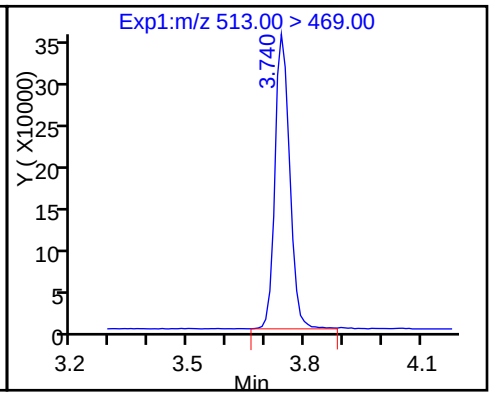
D 21 13C8 FOSA



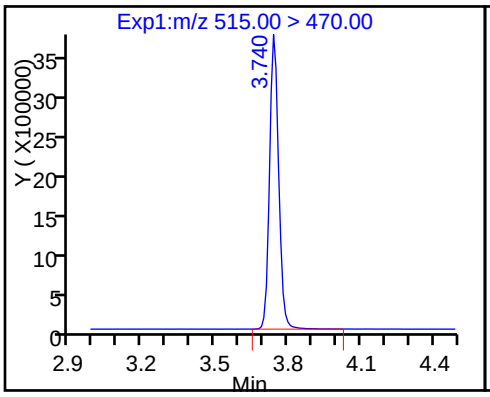
22 Perfluorooctane Sulfonamide



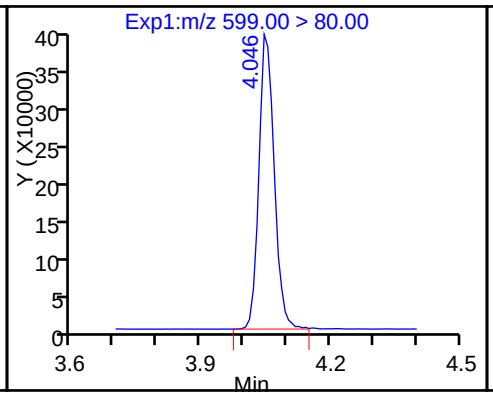
24 Perfluorodecanoic acid



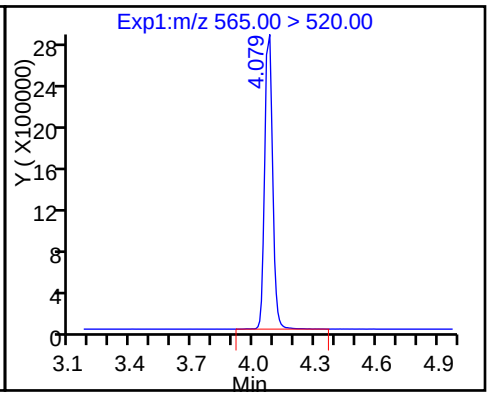
D 23 13C2 PFDA



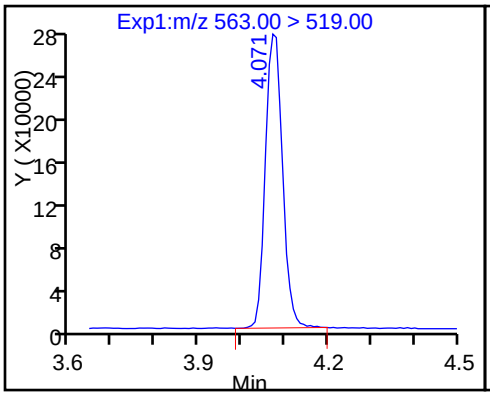
26 Perfluorodecane Sulfonic acid



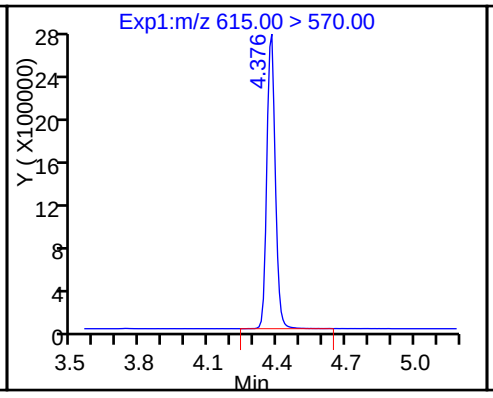
D 27 13C2 PFUnA



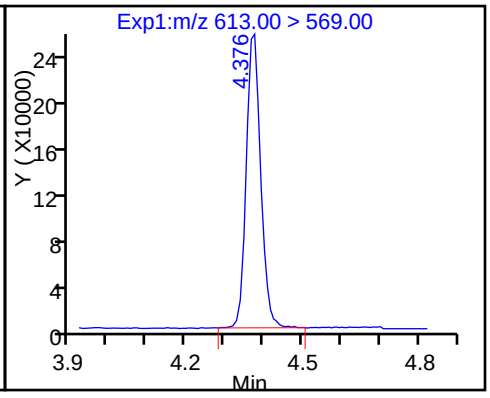
28 Perfluoroundecanoic acid



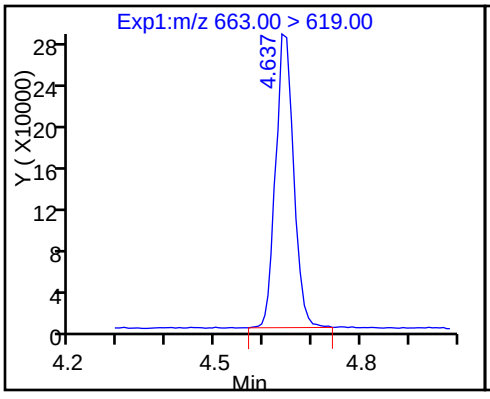
D 30 13C2 PFDoA



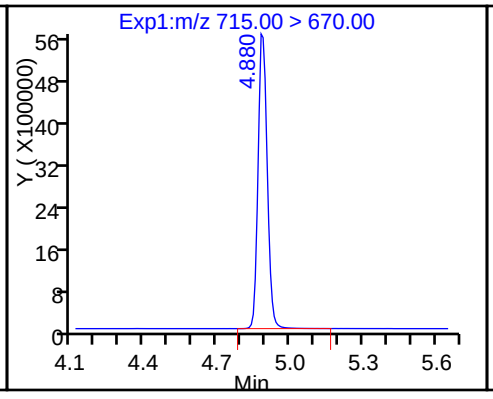
29 Perfluorododecanoic acid



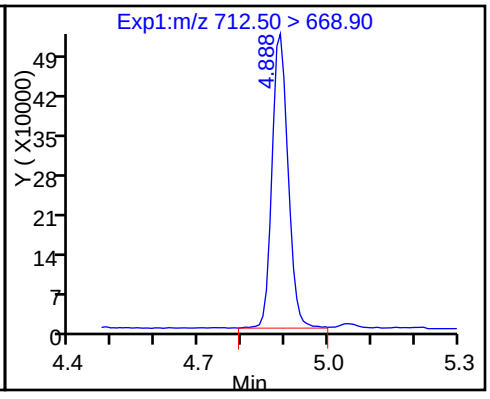
31 Perfluorotridecanoic acid



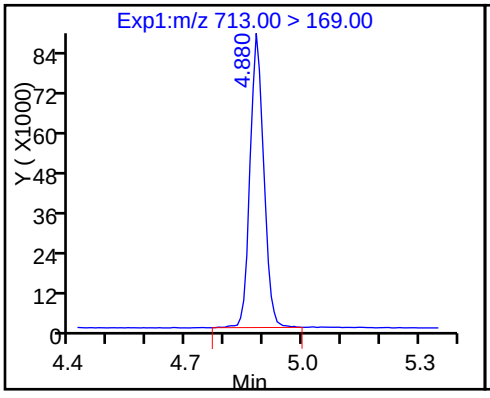
D 32 13C2-PFTeDA



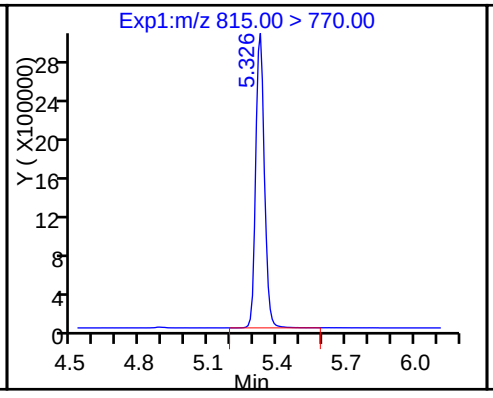
33 Perfluorotetradecanoic acid



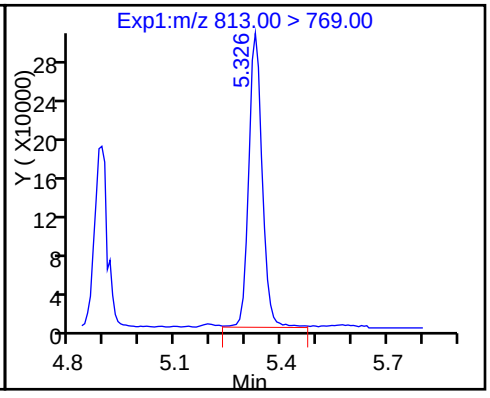
33 Perfluorotetradecanoic acid



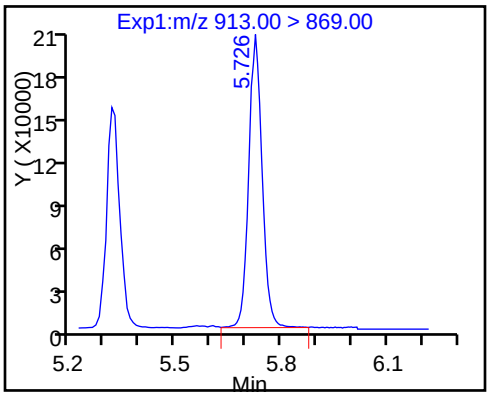
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_007.d
Lims ID: IC L4
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 02-Dec-2016 10:52:06 ALS Bottle#: 40 Worklist Smp#: 7
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:51:34 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:36:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.614	1.615	-0.001		18935985	55.6		111	1406021	
1 Perfluorobutyric acid										
212.90 > 169.00	1.614	1.617	-0.003	1.000	7435187	22.2		111	60389	
D 4 13C5-PFPeA										
267.90 > 223.00	1.916	1.918	-0.002		15125796	56.0		112	1182515	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.916	1.920	-0.004	1.000	6559082	20.8		104	50558	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.954	1.961	-0.007	1.000	11367724	20.3		115		
298.90 > 99.00	1.954	1.961	-0.007	1.000	4784706		2.38(0.00-0.00)	115		
D 6 13C2 PFHxA										
315.00 > 270.00	2.231	2.239	-0.008		13498378	54.8		110	1276286	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.239	2.241	-0.002	1.000	5481010	21.2		106	245929	
D 11 13C4-PFHpA										
367.00 > 322.00	2.593	2.599	-0.006		11424765	54.3		109	4354289	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.593	2.600	-0.007	1.000	5005633	21.2		106	82737	
D 10 18O2 PFHxS										
403.00 > 84.00	2.608	2.614	-0.006		16435009	54.3		115	2029890	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.608	2.615	-0.007	1.000	6918390	18.8		103		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.982	2.984	-0.002	1.000	5603089	21.7		109	76131	
413.00 > 169.00	2.974	2.984	-0.010	0.997	3413139		1.64(0.90-1.10)	109	244664	
D 14 13C4 PFOA										
417.00 > 372.00	2.974	2.984	-0.010		12634984	57.6		115	1129431	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.982	2.986	-0.004	1.000	6947857	21.2		111		
D 17 13C4 PFOS										
503.00 > 80.00	3.362	3.365	-0.003		13417569	54.9		115	370037	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.362	3.366	-0.004	1.000	5745134	18.8		101	258473	
499.00 > 99.00	3.362	3.366	-0.004	1.000	1279643		4.49(0.90-1.10)	101	205142	
20 Perfluorononanoic acid										
463.00 > 419.00	3.371	3.373	-0.002	1.000	4006430	20.8		104	50680	
D 19 13C5 PFNA										
468.00 > 423.00	3.371	3.374	-0.003		9730546	54.6		109	1069619	
D 21 13C8 FOSA										
506.00 > 78.00	3.648	3.651	-0.003		22550983	54.4		109	565745	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.648	3.656	-0.008	1.000	9372172	22.2		111	355431	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.738	3.738	0.0	1.000	3671358	20.8		104	97996	
D 23 13C2 PFDA										
515.00 > 470.00	3.738	3.738	0.0		9112679	54.9		110	235961	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	4.048	4.049	-0.001	1.000	3647236	20.7		107		
D 27 13C2 PFUnA										
565.00 > 520.00	4.065	4.070	-0.005		6913372	55.0		110	380701	
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.065	4.071	-0.006	1.000	2908196	19.8		99.2	75091	
D 30 13C2 PFDoA										
615.00 > 570.00	4.365	4.370	-0.005		6319787	54.1		108	160074	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.365	4.370	-0.005	1.000	2445148	20.4		102	2507	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.631	4.636	-0.005	1.000	2838032	21.6		108	3011	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.883	4.882	0.001		13596161	56.2		112	754431	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.883	4.884	-0.001	1.000	5185293	21.2		106	2202	
713.00 > 169.00	4.875	4.884	-0.009	0.998	789160		6.57(0.00-0.00)	106	63701	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.315	5.320	-0.005		7428976	57.0		114	148527	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.315	5.320	-0.005	1.000	2851018	22.1		110	3329	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.717	5.720	-0.003	1.000	1457725	14.7		73.3	2373	

Reagents:

LCPFC-L4_00022 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:51:35 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_007.d

Injection Date: 02-Dec-2016 10:52:06 Instrument ID: A8_N

Lims ID: IC L4

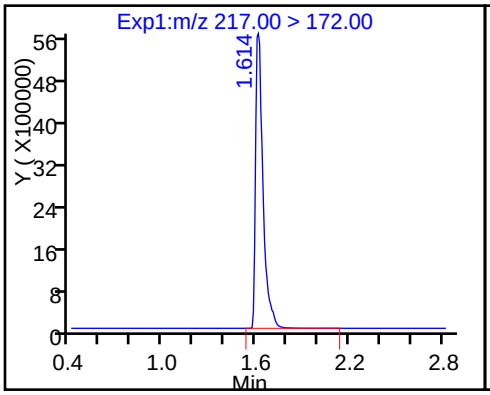
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 40 Worklist Smp#: 7

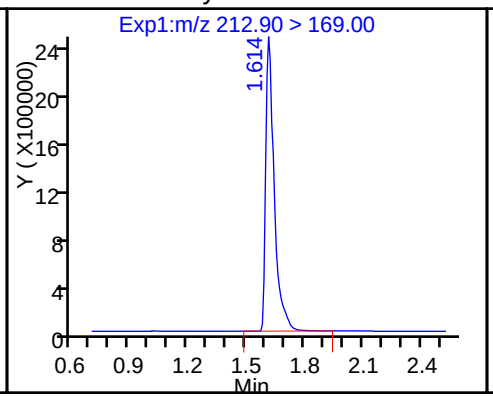
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

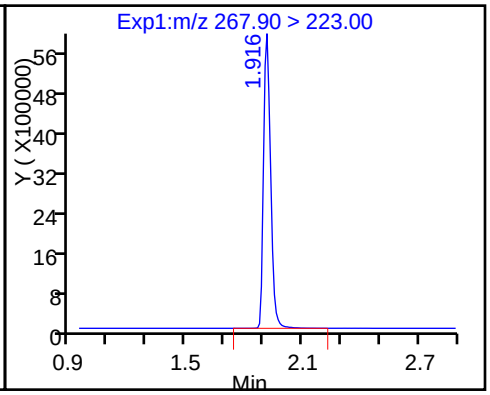
D 2 13C4 PFBA



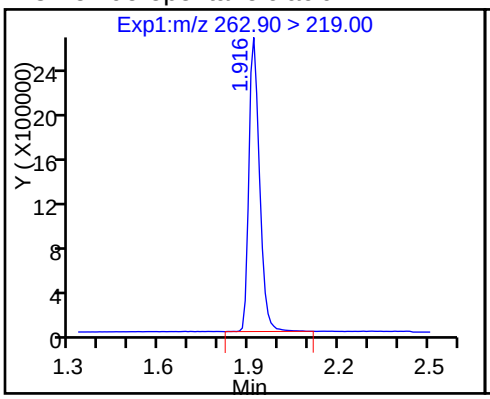
1 Perfluorobutyric acid



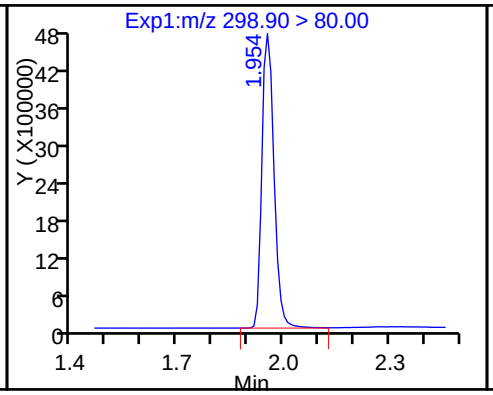
D 4 13C5-PFPeA



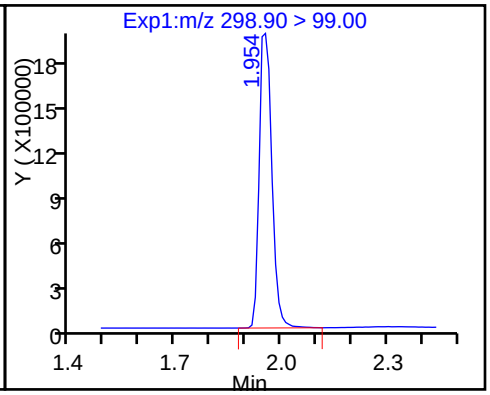
3 Perfluoropentanoic acid



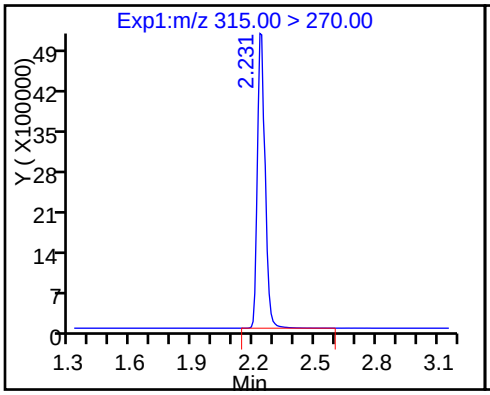
5 Perfluorobutanesulfonic acid



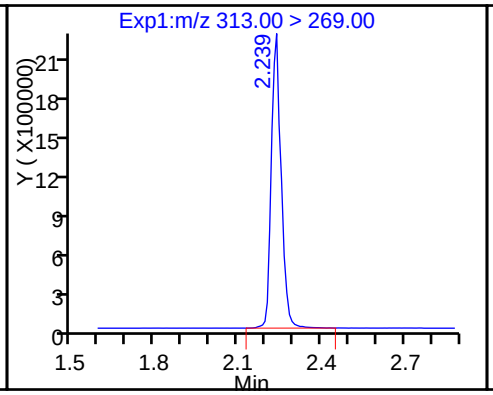
5 Perfluorobutanesulfonic acid



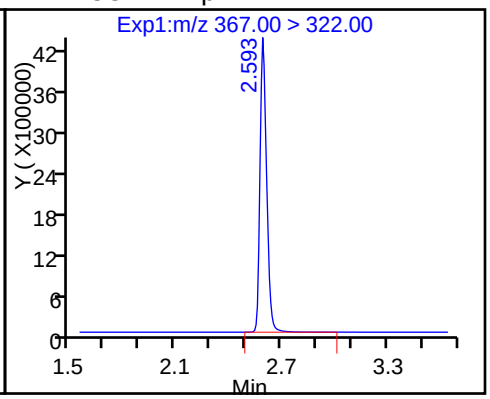
D 6 13C2 PFHxA



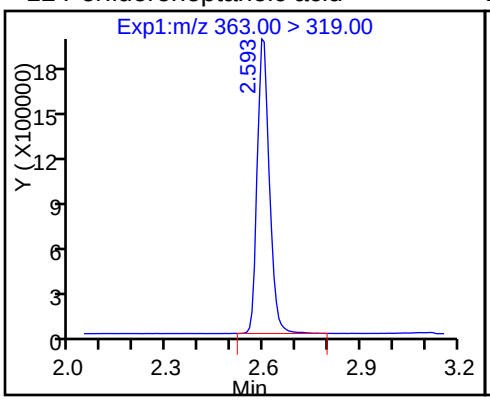
7 Perfluorohexanoic acid



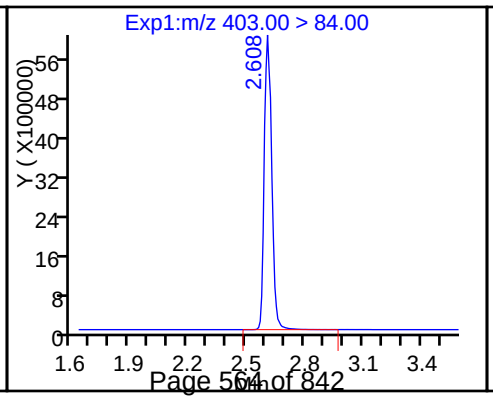
D 11 13C4-PFHpA



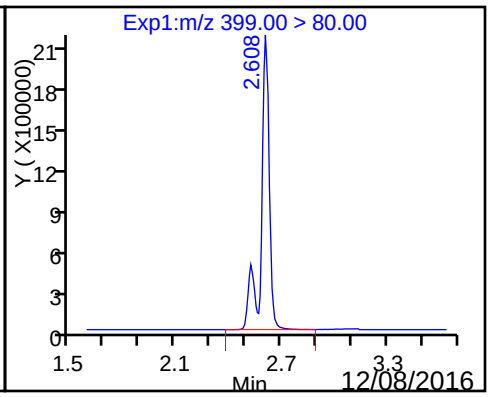
12 Perfluoroheptanoic acid



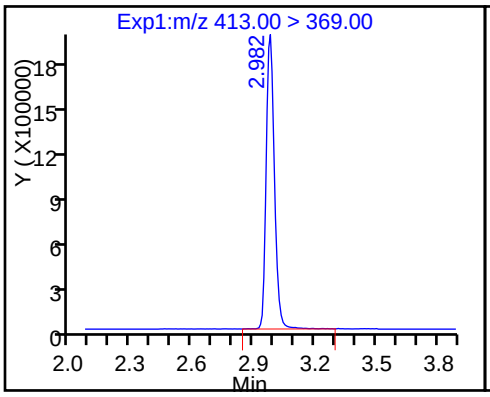
D 10 18O2 PFHxS



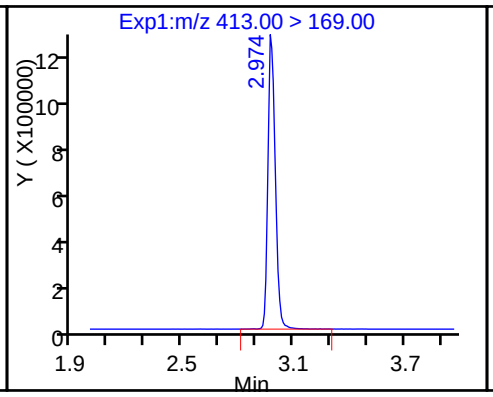
9 Perfluorohexanesulfonic acid



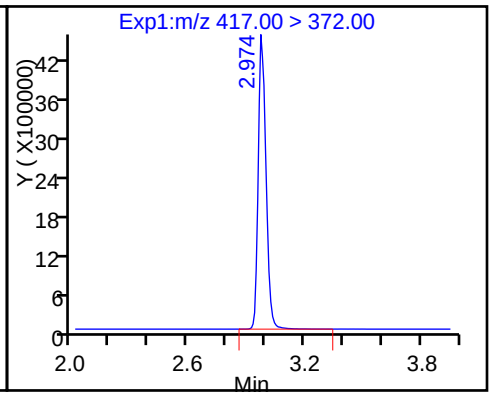
15 Perfluorooctanoic acid



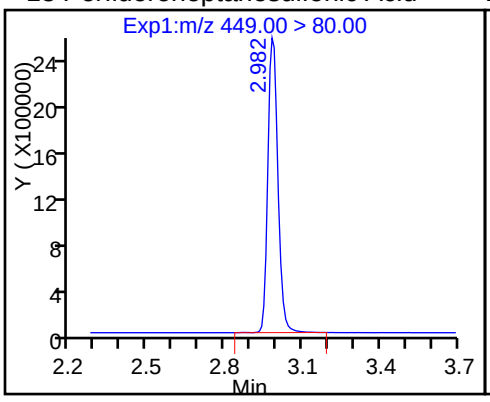
15 Perfluorooctanoic acid



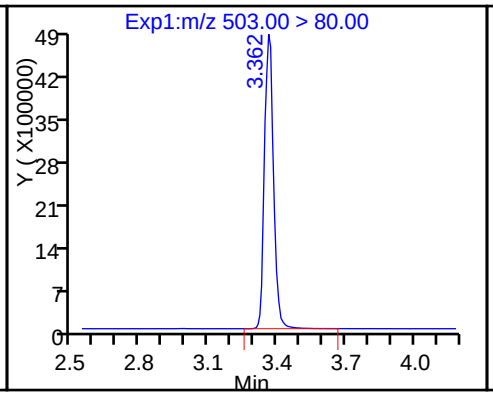
D 14 13C4 PFOA



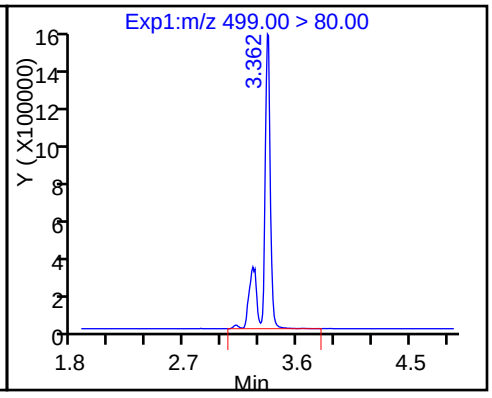
13 Perfluoroheptanesulfonic Acid



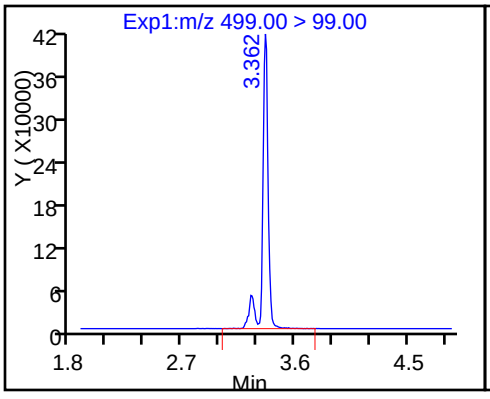
D 17 13C4 PFOS



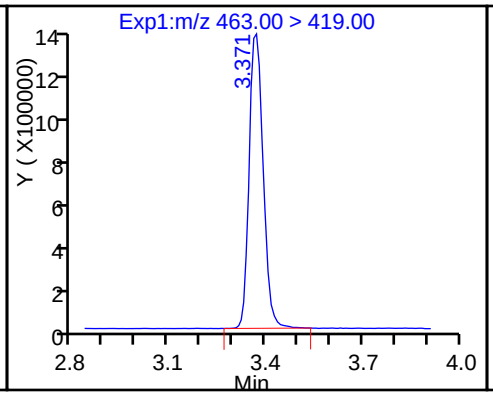
18 Perfluorooctane sulfonic acid



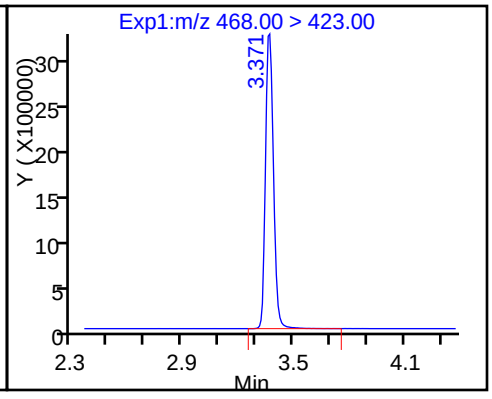
18 Perfluorooctane sulfonic acid



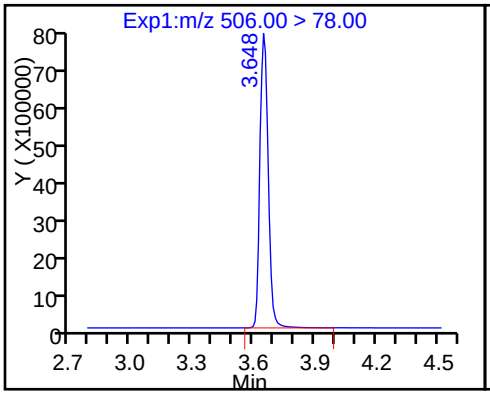
20 Perfluorononanoic acid



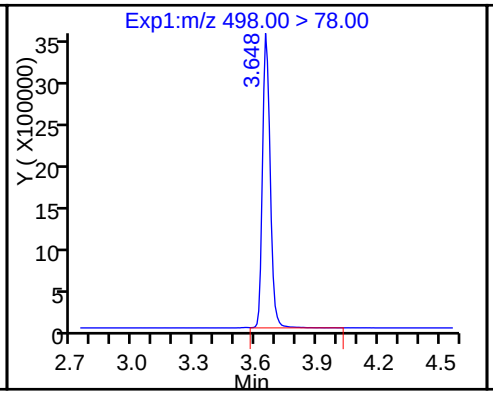
D 19 13C5 PFNA



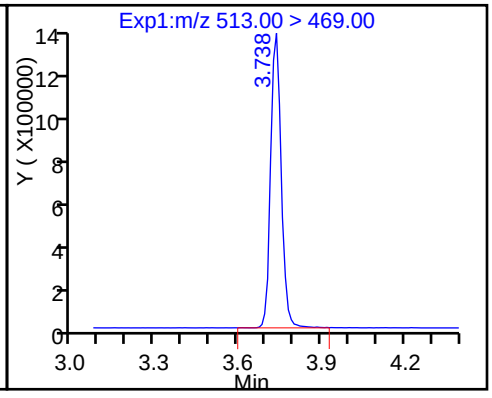
D 21 13C8 FOSA



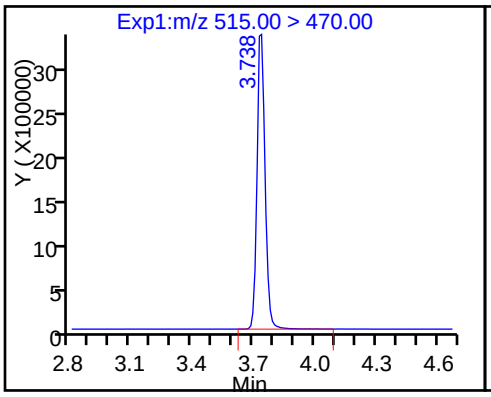
22 Perfluorooctane Sulfonamide



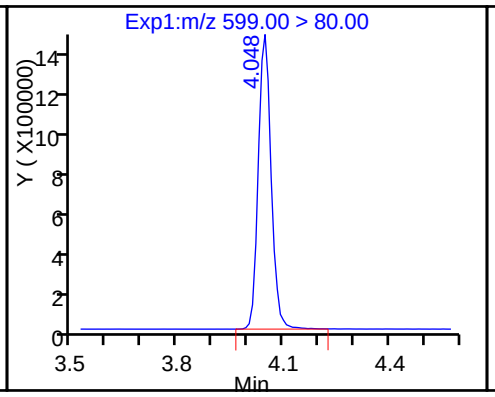
24 Perfluorodecanoic acid



D 23 13C2 PFDA



26 Perfluorodecane Sulfonic acid



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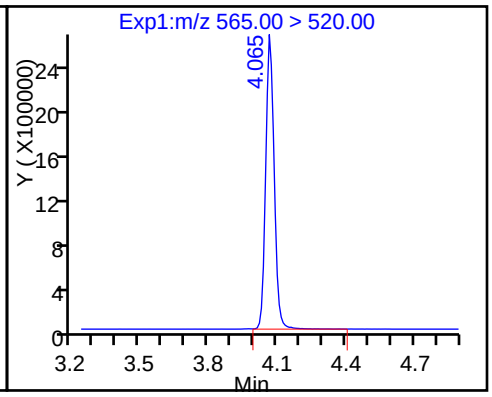
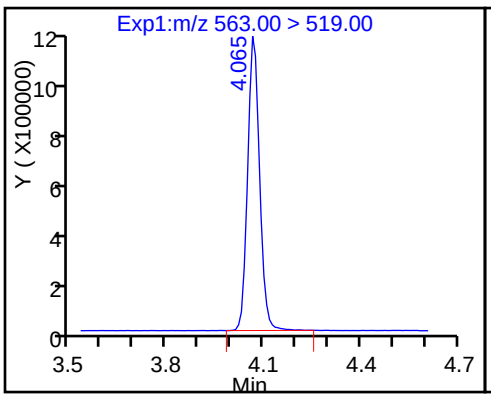
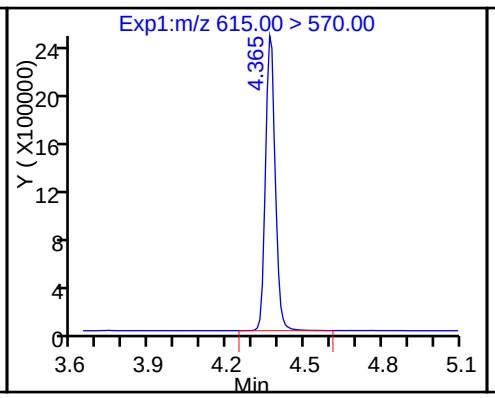


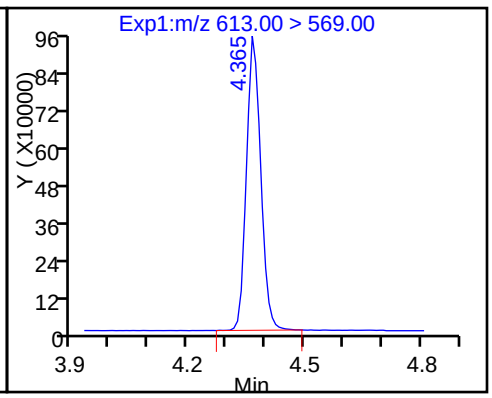
28 Perfluoroundecanoic acid



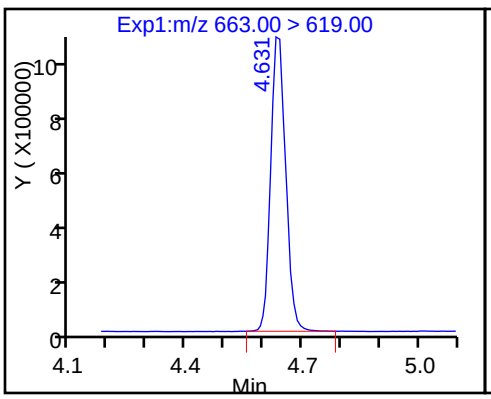
D 30 13C2 PFDoA



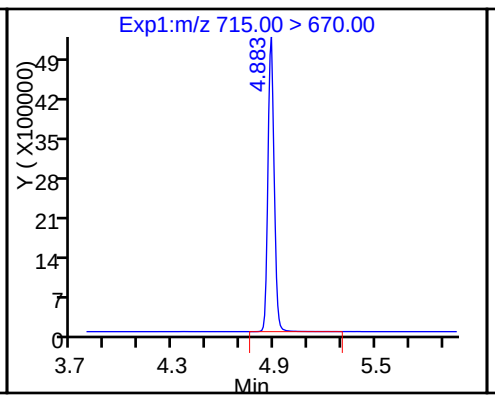
29 Perfluorododecanoic acid



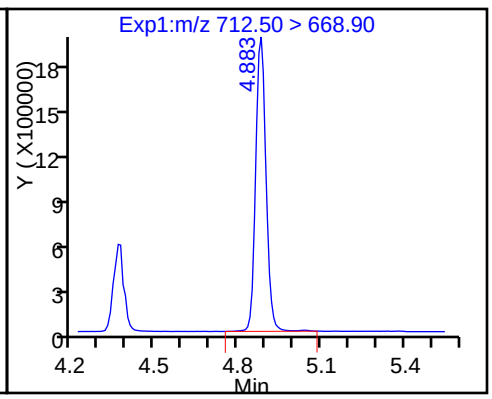
31 Perfluorotridecanoic acid



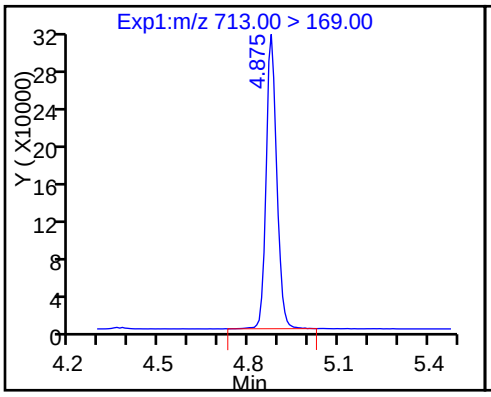
D 32 13C2-PFTeDA



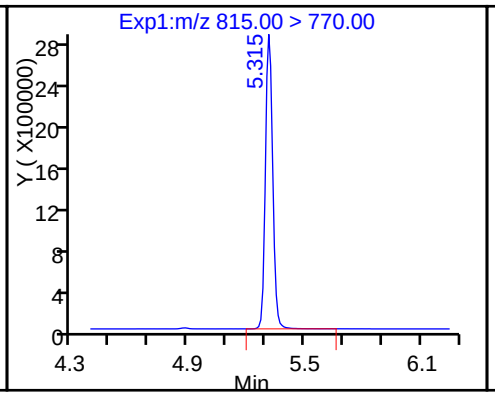
33 Perfluorotetradecanoic acid



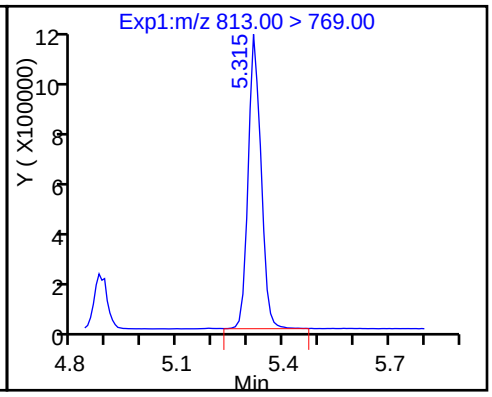
33 Perfluorotetradecanoic acid



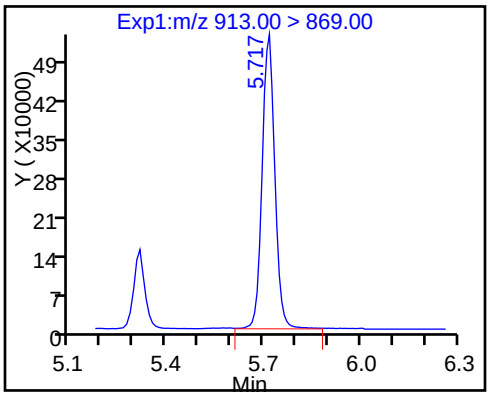
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



Report Date: 02-Dec-2016 14:51:36 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_008.d
Lims ID: IC L5
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 02-Dec-2016 10:59:32 ALS Bottle#: 41 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:51:36 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:39:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.614	1.615	-0.001		16489860	48.5		96.9	1638772	
1 Perfluorobutyric acid										
212.90 > 169.00	1.614	1.617	-0.003	1.000	14709131	50.4		101	160438	
D 4 13C5-PFPeA										
267.90 > 223.00	1.916	1.918	-0.002		12600012	46.6		93.3	943576	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.916	1.920	-0.004	1.000	12474289	47.6		95.1	93266	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.945	1.961	-0.016	1.000	21727893	44.2		99.9		
298.90 > 99.00	1.945	1.961	-0.016	1.000	10461832		2.08(0.00-0.00)	99.9		
D 6 13C2 PFHxA										
315.00 > 270.00	2.226	2.239	-0.013		11543313	46.8		93.7	1429849	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.226	2.241	-0.015	1.000	10870881	49.3		98.5	324820	
D 11 13C4-PFHpA										
367.00 > 322.00	2.593	2.599	-0.006		9801352	46.6		93.1	1194438	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.593	2.600	-0.007	1.000	10247953	50.6		101	131961	
D 10 18O2 PFHxS										
403.00 > 84.00	2.608	2.614	-0.006		14421709	47.7		101	804399	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.608	2.615	-0.007	1.000	14700167	45.5		100		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.972	2.984	-0.012	1.000	10948383	50.8		102	135691	
413.00 > 169.00	2.972	2.984	-0.012	1.000	6763939		1.62(0.90-1.10)	102	350881	
D 14 13C4 PFOA										
417.00 > 372.00	2.972	2.984	-0.012		10566267	48.2		96.3	1210292	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.972	2.986	-0.014	1.000	13319919	46.2		97.0		
D 17 13C4 PFOS										
503.00 > 80.00	3.352	3.365	-0.013		11794026	48.2		101	334101	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.352	3.366	-0.014	1.000	12334342	46.0		99.1	3198173	
499.00 > 99.00	3.352	3.366	-0.014	1.000	2699806		4.57(0.90-1.10)	99.1	276987	
20 Perfluorononanoic acid										
463.00 > 419.00	3.361	3.373	-0.012	1.000	8209339	50.0		100	106298	
D 19 13C5 PFNA										
468.00 > 423.00	3.361	3.374	-0.013		8274989	46.5		92.9	464531	
D 21 13C8 FOSA										
506.00 > 78.00	3.648	3.651	-0.003		20246280	48.9		97.7	412589	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.648	3.656	-0.008	1.000	18995833	50.2		100	525604	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.727	3.738	-0.011	1.000	7581125	49.1		98.2	195732	
D 23 13C2 PFDA										
515.00 > 470.00	3.727	3.738	-0.011		7964307	48.0		95.9	183252	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	4.039	4.049	-0.010	1.000	7816007	50.5		105		
D 27 13C2 PFUnA										
565.00 > 520.00	4.056	4.070	-0.014		5729423	45.6		91.1	366101	
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.056	4.071	-0.015	1.000	5577456	45.9		91.9	89442	
D 30 13C2 PFDoA										
615.00 > 570.00	4.354	4.370	-0.016		5499233	47.0		94.1	178583	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.354	4.370	-0.016	1.000	5085511	48.8		97.7	5770	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.629	4.636	-0.007	1.000	5704096	49.9		99.7	5914	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.867	4.882	-0.015		11564641	47.8		95.6	896262	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.867	4.884	-0.017	1.000	10301361	48.5		96.9	4268	
713.00 > 169.00	4.867	4.884	-0.017	1.000	1659281		6.21(0.00-0.00)	96.9	129903	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.306	5.320	-0.014		6210852	47.6		95.3	147641	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.306	5.320	-0.014	1.000	5654463	51.4		103	6481	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.702	5.720	-0.018	1.000	5392609	62.4		125	9388	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:51:36 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_008.d

Injection Date: 02-Dec-2016 10:59:32 Instrument ID: A8_N

Lims ID: IC L5

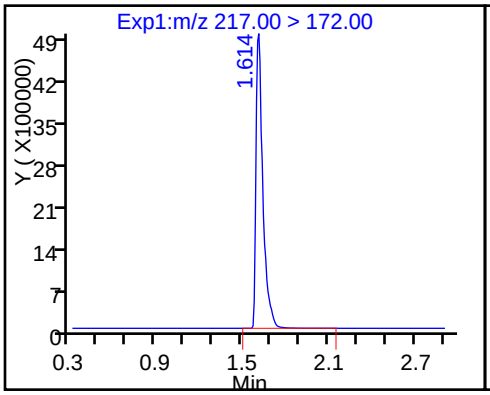
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 8

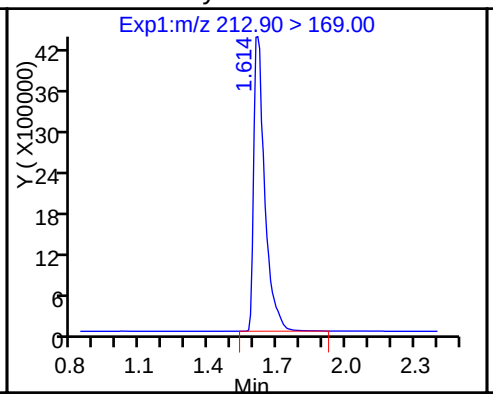
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

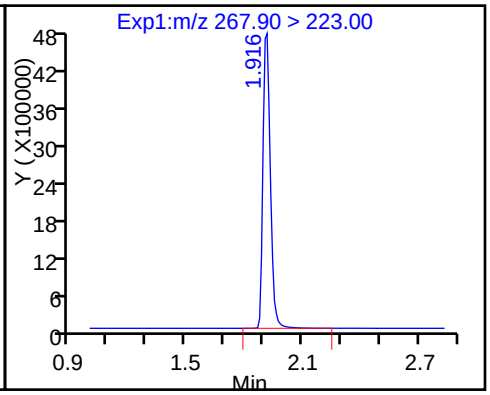
D 2 13C4 PFBA



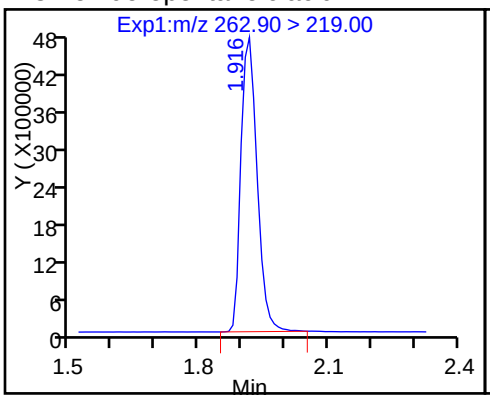
1 Perfluorobutyric acid



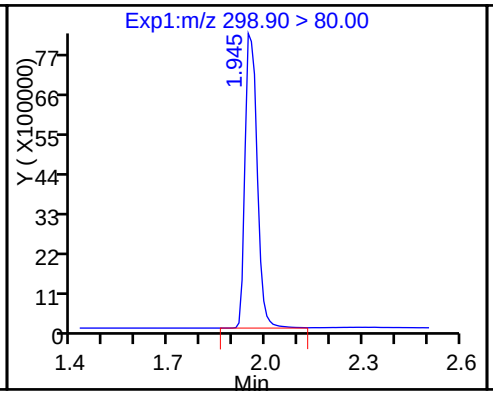
D 4 13C5-PFPeA



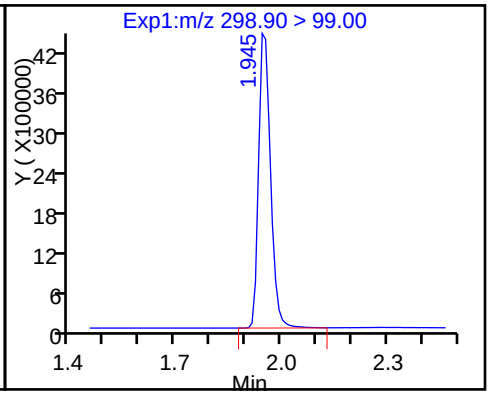
3 Perfluoropentanoic acid



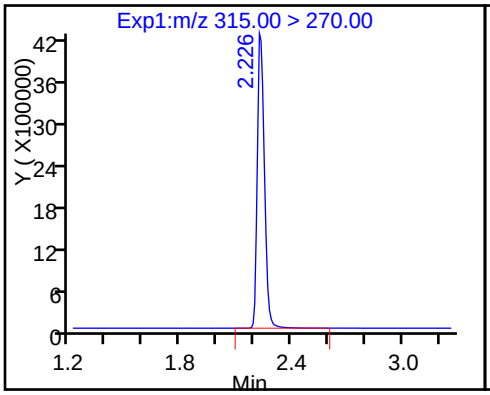
5 Perfluorobutanesulfonic acid



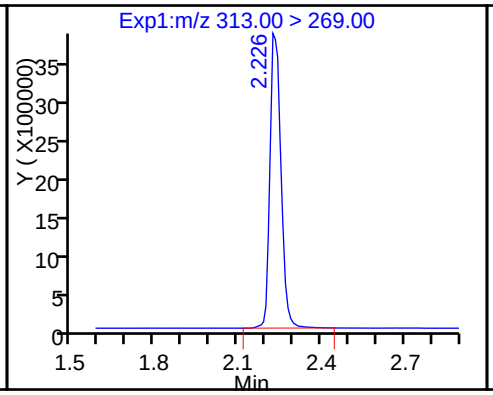
5 Perfluorobutanesulfonic acid



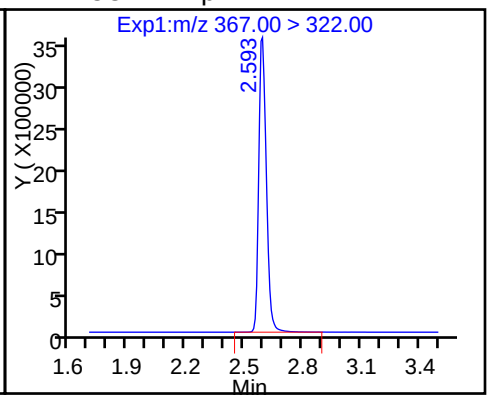
D 6 13C2 PFHxA



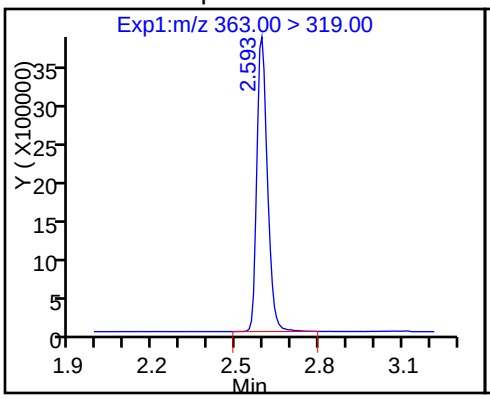
7 Perfluorohexanoic acid



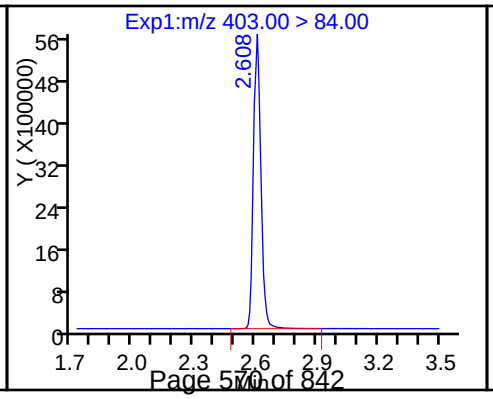
D 11 13C4-PFHpA



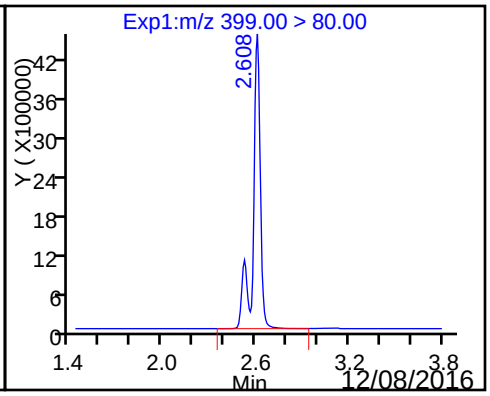
12 Perfluoroheptanoic acid



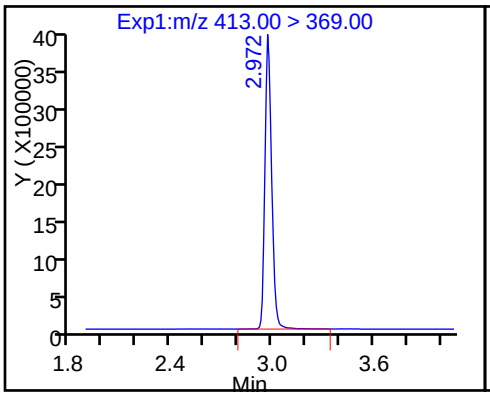
D 10 18O2 PFHxS



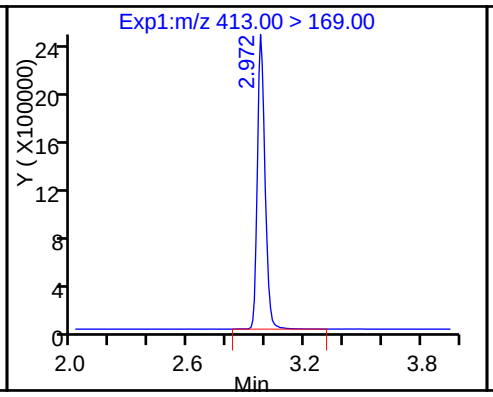
9 Perfluorohexanesulfonic acid



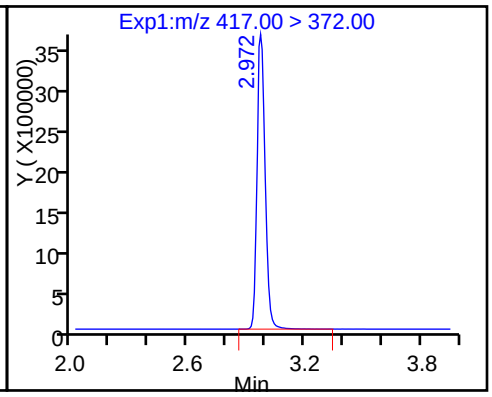
15 Perfluorooctanoic acid



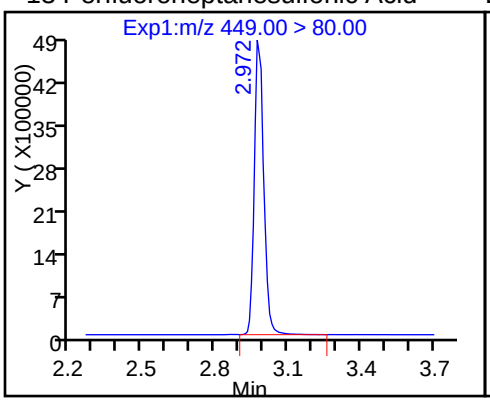
15 Perfluorooctanoic acid



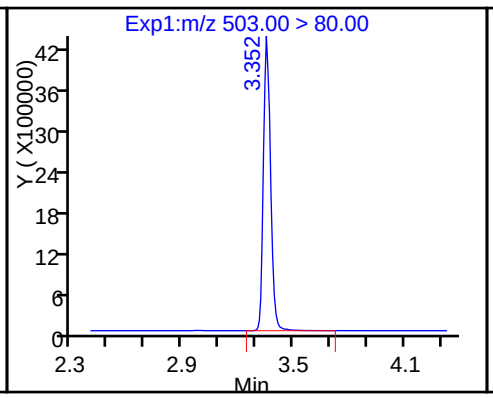
D 14 13C4 PFOA



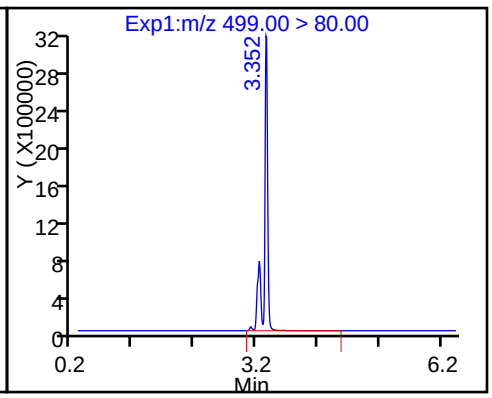
13 Perfluoroheptanesulfonic Acid



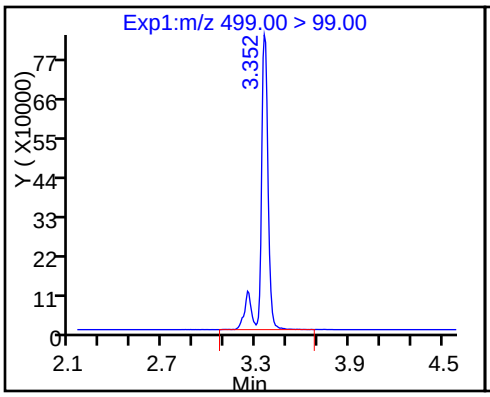
D 17 13C4 PFOS



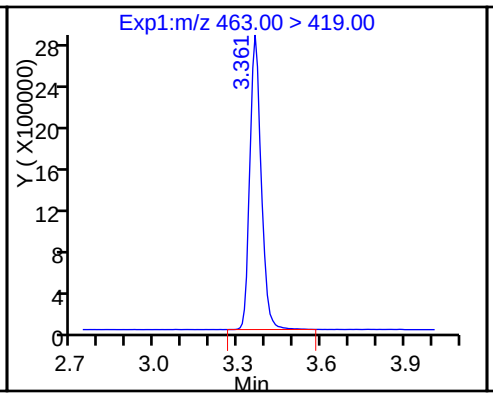
18 Perfluorooctane sulfonic acid



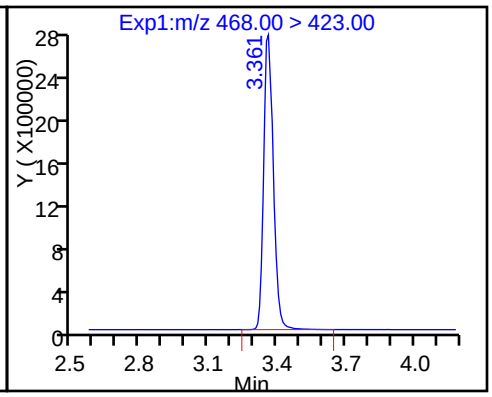
18 Perfluorooctane sulfonic acid



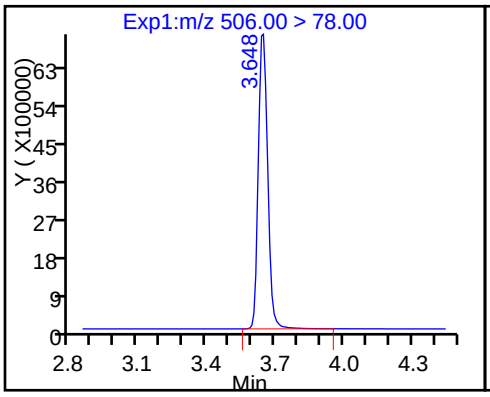
20 Perfluorononanoic acid



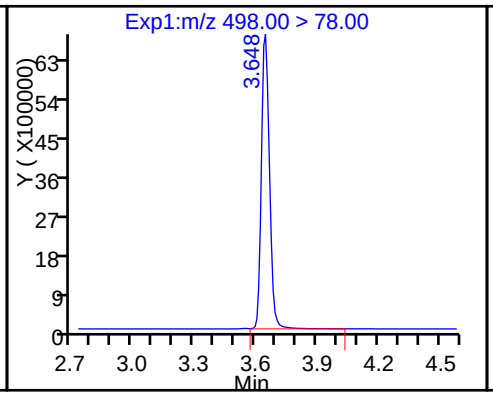
D 19 13C5 PFNA



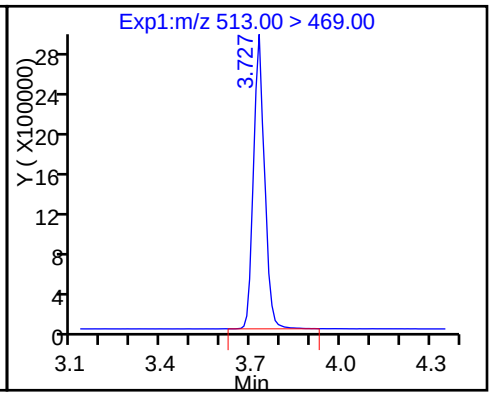
D 21 13C8 FOSA



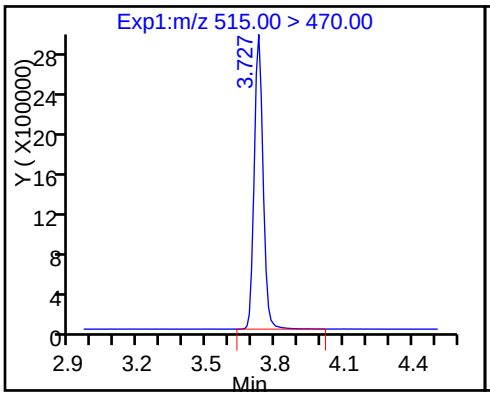
22 Perfluorooctane Sulfonamide



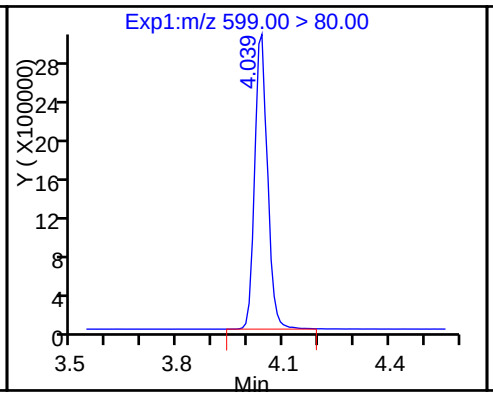
24 Perfluorodecanoic acid



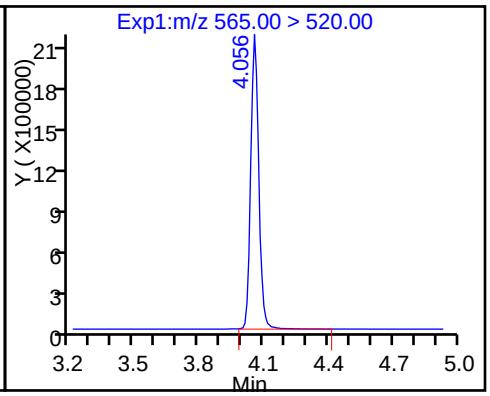
D 23 13C2 PFDA



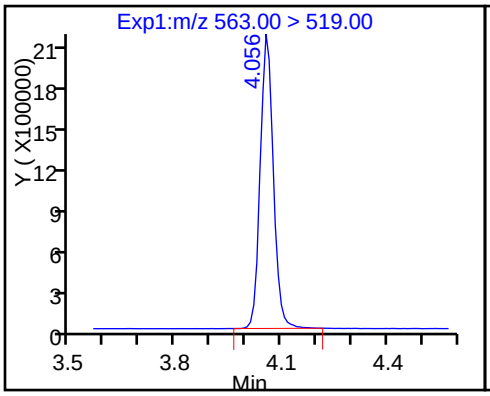
26 Perfluorodecane Sulfonic acid



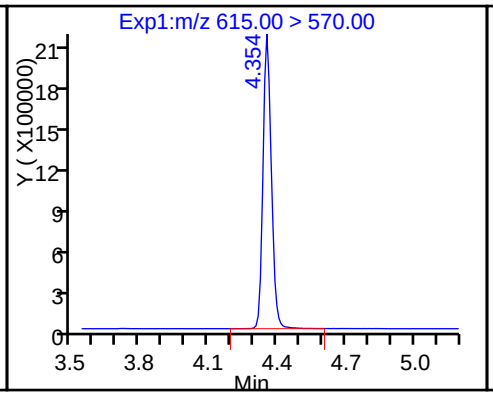
D 27 13C2 PFUnA



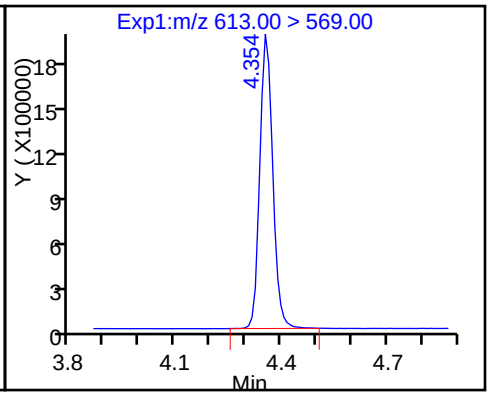
28 Perfluoroundecanoic acid



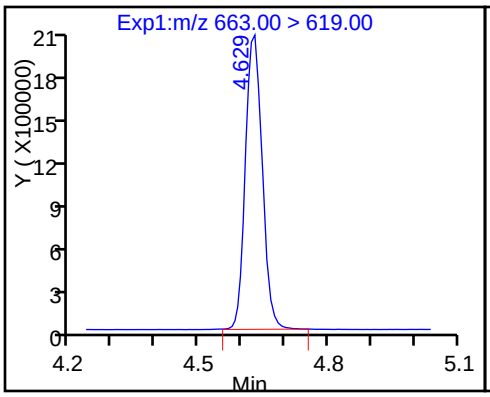
D 30 13C2 PFDoA



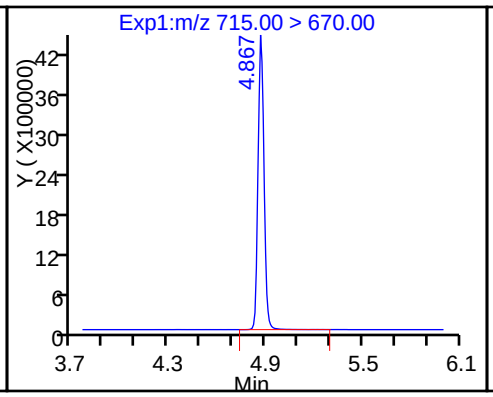
29 Perfluorododecanoic acid



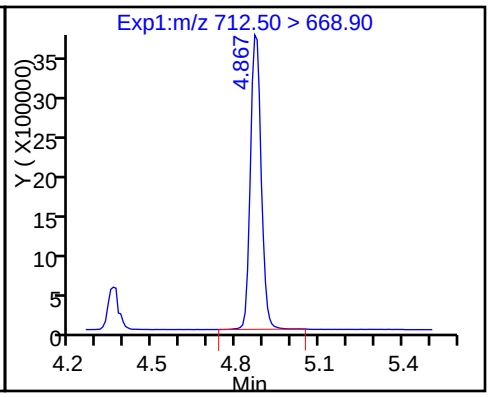
31 Perfluorotridecanoic acid



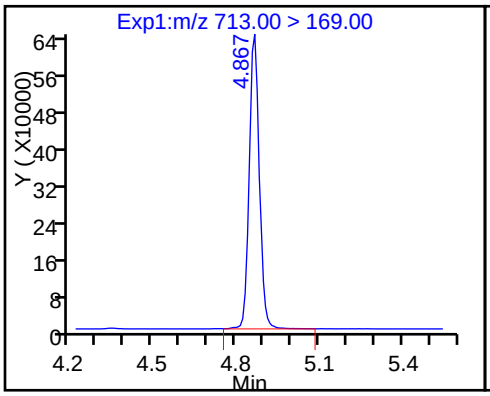
D 32 13C2-PFTeDA



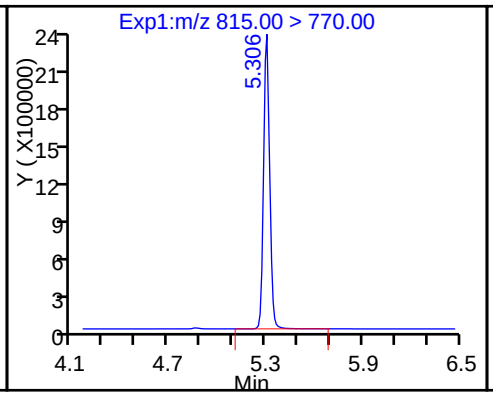
33 Perfluorotetradecanoic acid



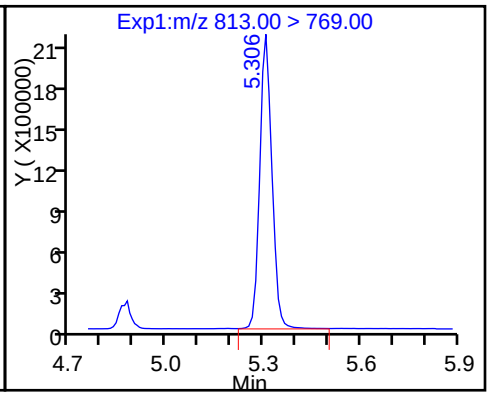
33 Perfluorotetradecanoic acid



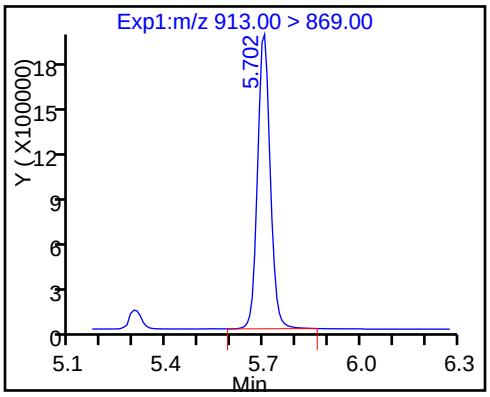
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_009.d
Lims ID: IC L6
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 02-Dec-2016 11:07:02 ALS Bottle#: 42 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:51:37 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:41:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.602	1.615	-0.013		15262180	44.8		89.7	765913	
1 Perfluorobutyric acid										
212.90 > 169.00	1.610	1.617	-0.007	1.000	43875101	162.4		81.2	412834	
D 4 13C5-PFPeA										
267.90 > 223.00	1.910	1.918	-0.008		10903650	40.4		80.7	1365253	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.910	1.920	-0.010	1.000	34297516	151.1		75.6	270259	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.949	1.961	-0.012	1.000	51594571	125.7		71.1		
298.90 > 99.00	1.939	1.961	-0.022	0.995	28882906		1.79(0.00-0.00)	71.1		
D 6 13C2 PFHxA										
315.00 > 270.00	2.225	2.239	-0.014		10277273	41.7		83.4	928195	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.225	2.241	-0.016	1.000	33379792	169.9		84.9	455453	
D 11 13C4-PFHpA										
367.00 > 322.00	2.578	2.599	-0.021		8167611	38.8		77.6	1010737	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.578	2.600	-0.022	1.000	29343029	173.7		86.8	246277	
D 10 18O2 PFHxS										
403.00 > 84.00	2.594	2.614	-0.020		12029706	39.8		84.1	822262	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.601	2.615	-0.014	1.000	45822208	170.0		93.4		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.958	2.984	-0.026	1.000	29789966	179.8		89.9	348106	
413.00 > 169.00	2.966	2.984	-0.018	1.003	20146226		1.48(0.90-1.10)	89.9	805973	
D 14 13C4 PFOA										
417.00 > 372.00	2.966	2.984	-0.018		8120442	37.0		74.0	869612	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.966	2.986	-0.020	1.000	38018954	159.5		83.8		
D 17 13C4 PFOS										
503.00 > 80.00	3.340	3.365	-0.025		9744748	39.8		83.3	81434	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.340	3.366	-0.026	1.000	41837729	188.7		102	8979223	
499.00 > 99.00	3.340	3.366	-0.026	1.000	9665788		4.33(0.90-1.10)	102	925115	
20 Perfluorononanoic acid										
463.00 > 419.00	3.348	3.373	-0.025	1.000	25204338	186.7		93.4	245903	
D 19 13C5 PFNA										
468.00 > 423.00	3.355	3.374	-0.019		6808930	38.2		76.5	557624	
D 21 13C8 FOSA										
506.00 > 78.00	3.634	3.651	-0.017		17995728	43.4		86.9	430609	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.643	3.656	-0.013	1.000	51108754	151.8		75.9	319115	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.721	3.738	-0.017	1.000	25614867	189.8		94.9	333805	
D 23 13C2 PFDA										
515.00 > 470.00	3.710	3.738	-0.028		6960897	41.9		83.8	168207	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	4.028	4.049	-0.021	1.000	24374906	190.6		98.9		
D 27 13C2 PFUnA										
565.00 > 520.00	4.045	4.070	-0.025		4558330	36.2		72.5	316100	
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.054	4.071	-0.017	1.000	17998762	186.3		93.2	327205	
D 30 13C2 PFDoA										
615.00 > 570.00	4.343	4.370	-0.027		4818858	41.2		82.4	222562	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.343	4.370	-0.027	1.000	17698276	194.0		97.0	23046	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.613	4.636	-0.023	1.000	18549592	185.0		92.5	33008	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.855	4.882	-0.027		10102255	41.8		83.5	643461	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.864	4.884	-0.020	1.000	31923969	171.4		85.7	17512	
713.00 > 169.00	4.855	4.884	-0.029	0.998	6059732		5.27(0.00-0.00)	85.7	373056	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.290	5.320	-0.030		5535655	42.5		84.9	147627	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.290	5.320	-0.030	1.000	18745470	196.6		98.3	24259	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.688	5.720	-0.032	1.000	13671969	180.4		90.2	26246	

Reagents:

LCPFC-L6_00019 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:51:38 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_009.d

Injection Date: 02-Dec-2016 11:07:02 Instrument ID: A8_N

Lims ID: IC L6

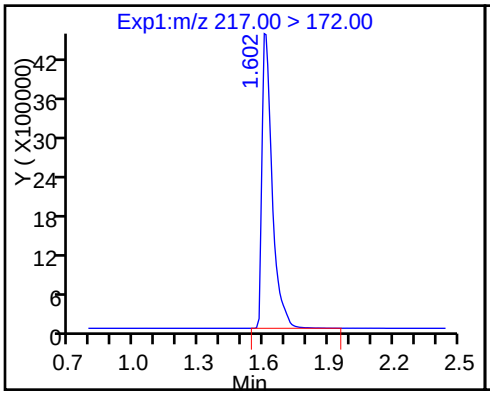
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 42 Worklist Smp#: 9

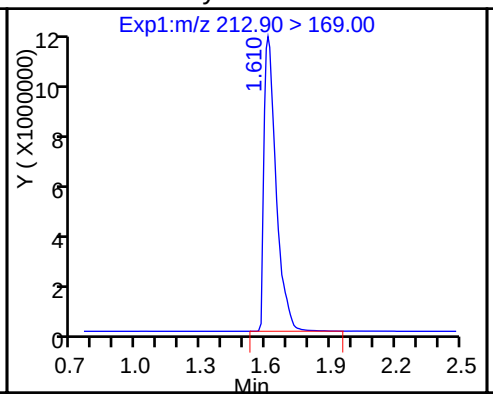
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

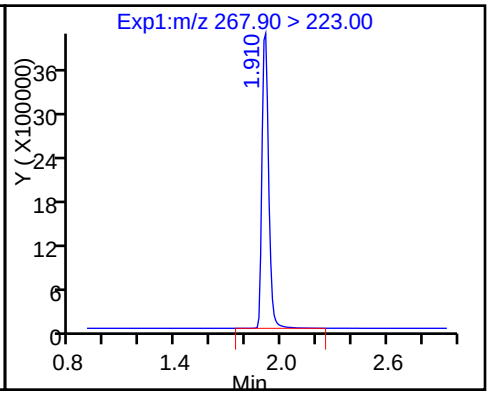
D 2 13C4 PFBA



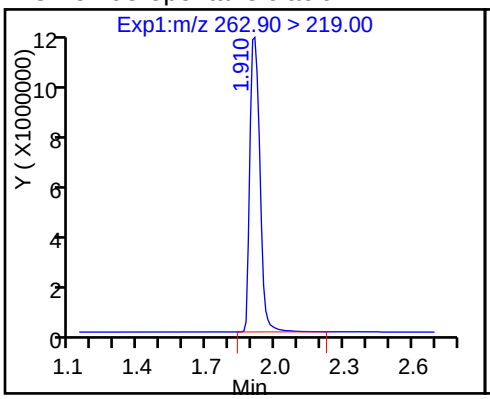
1 Perfluorobutyric acid



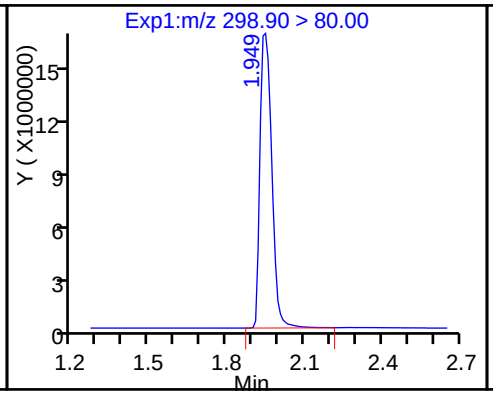
D 4 13C5-PFPeA



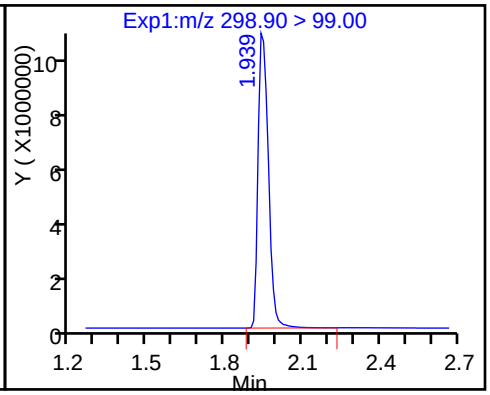
3 Perfluoropentanoic acid



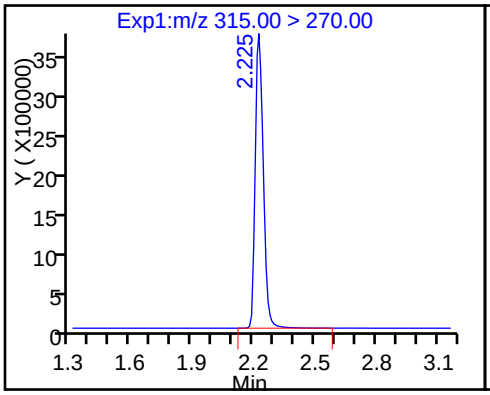
5 Perfluorobutanesulfonic acid



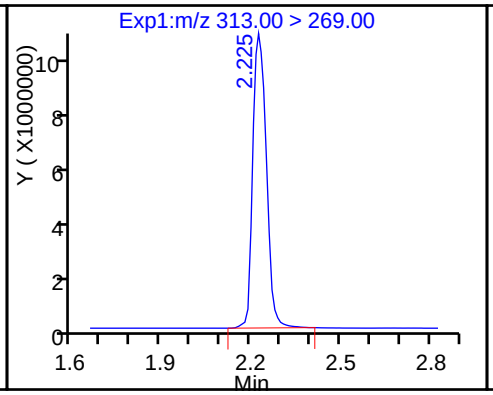
5 Perfluorobutanesulfonic acid



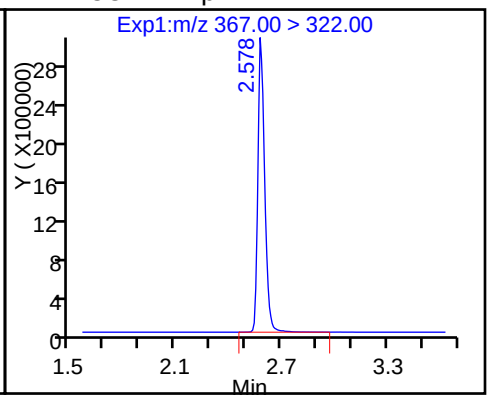
D 6 13C2 PFHxA



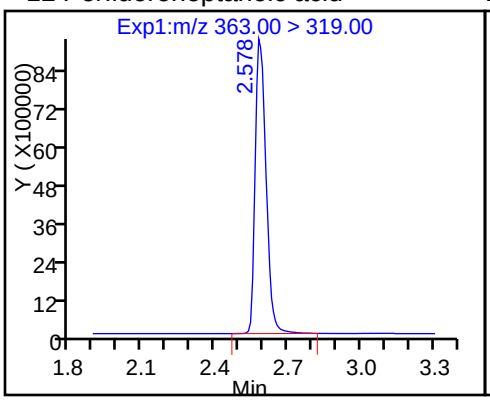
7 Perfluorohexanoic acid



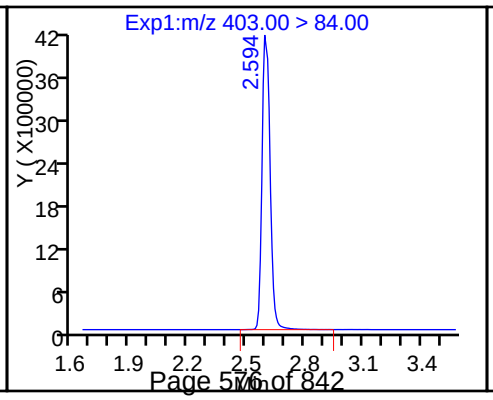
D 11 13C4-PFHpA



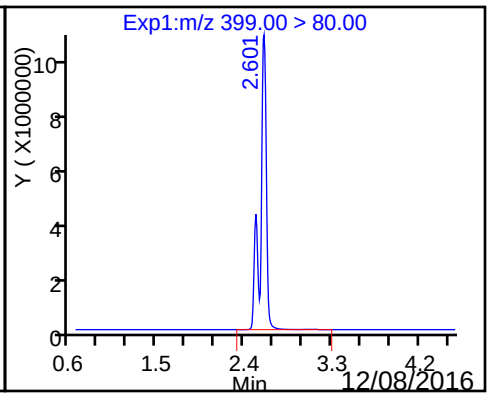
12 Perfluoroheptanoic acid



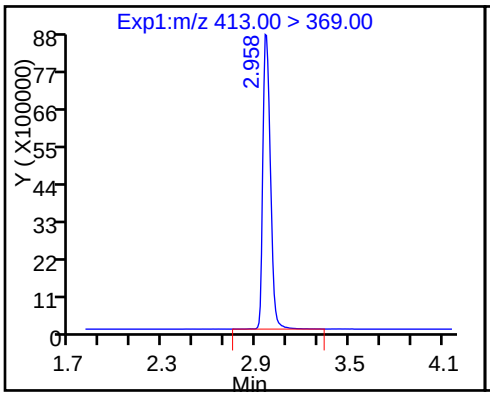
D 10 18O2 PFHxS



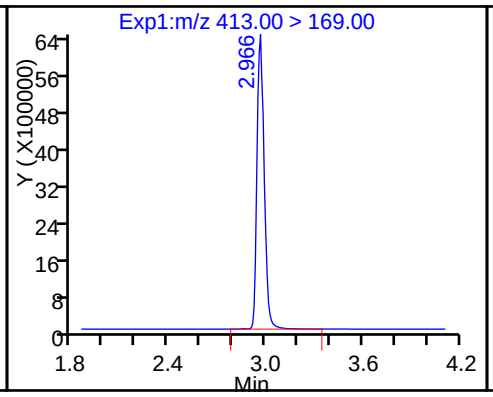
9 Perfluorohexanesulfonic acid



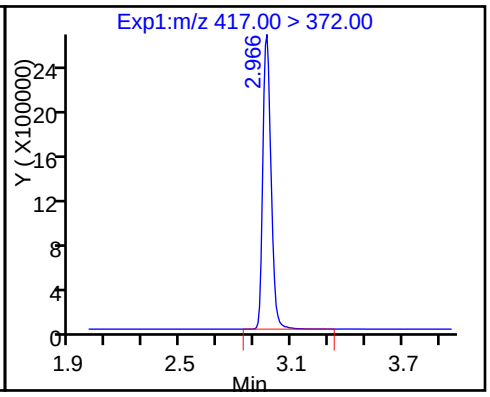
15 Perfluorooctanoic acid



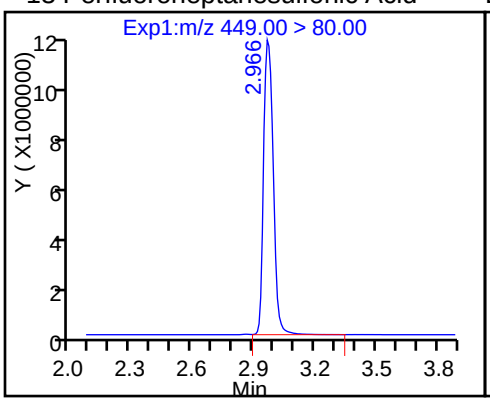
15 Perfluorooctanoic acid



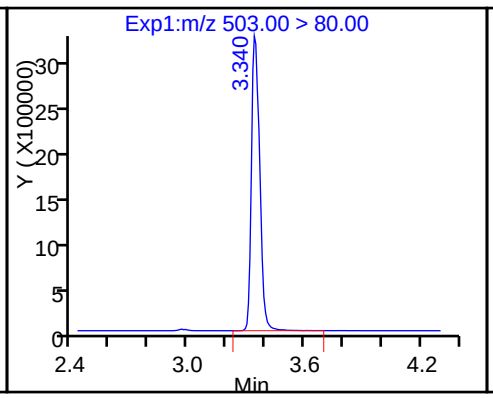
D 14 13C4 PFOA



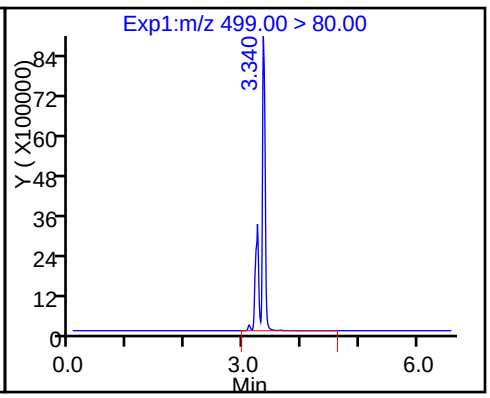
13 Perfluoroheptanesulfonic Acid



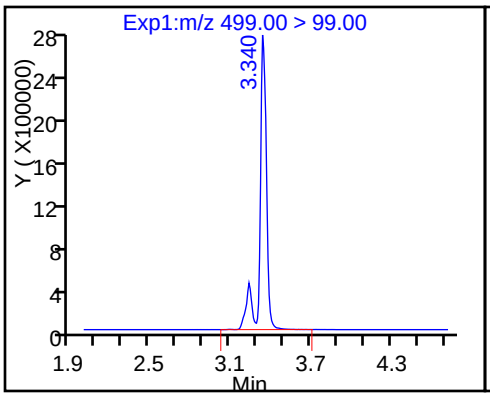
D 17 13C4 PFOS



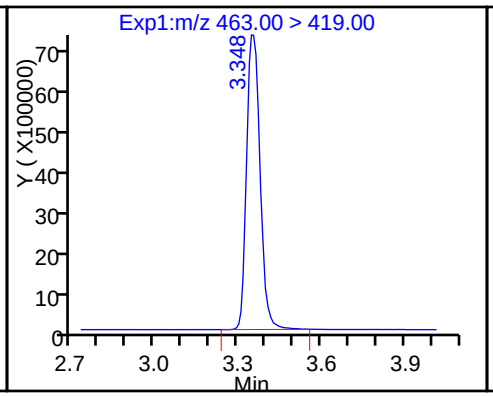
18 Perfluorooctane sulfonic acid



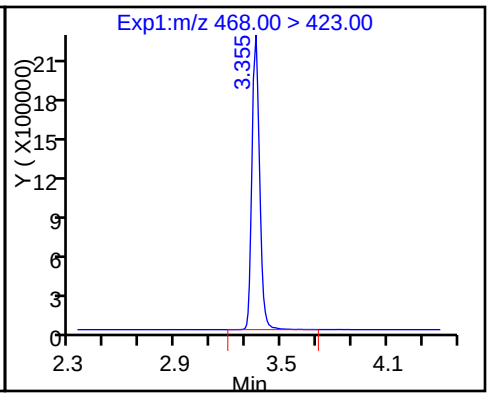
18 Perfluorooctane sulfonic acid



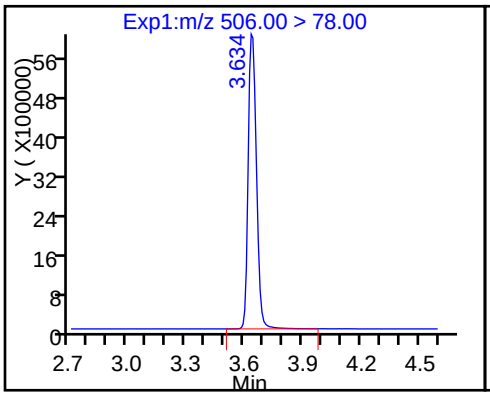
20 Perfluorononanoic acid



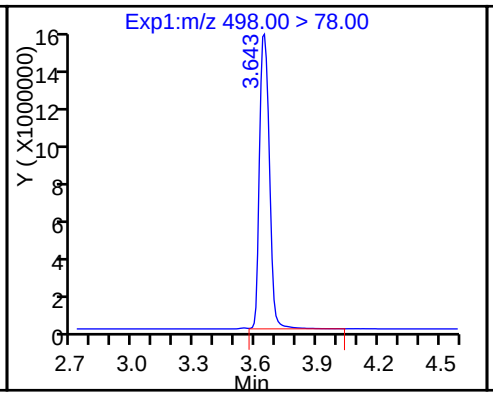
D 19 13C5 PFNA



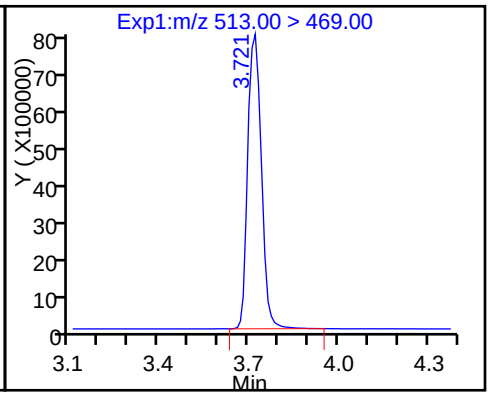
D 21 13C8 FOSA



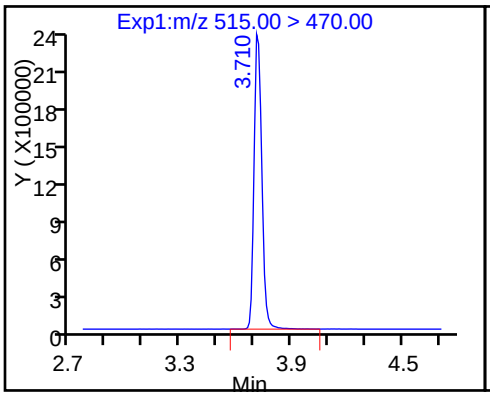
22 Perfluorooctane Sulfonamide



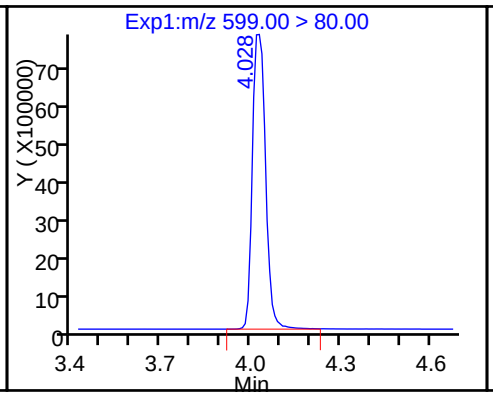
24 Perfluorodecanoic acid



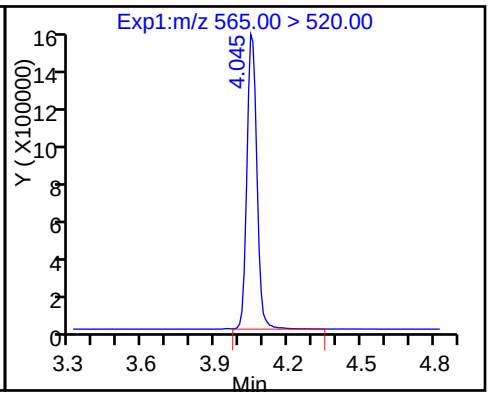
D 23 13C2 PFDA



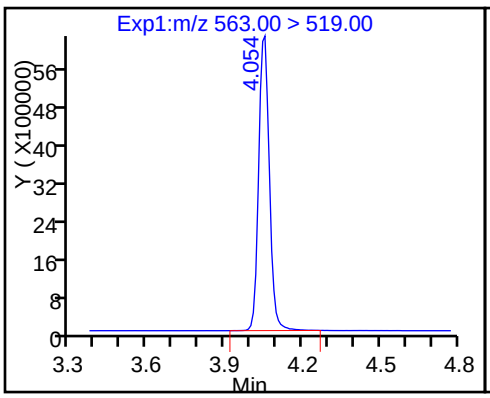
26 Perfluorodecane Sulfonic acid



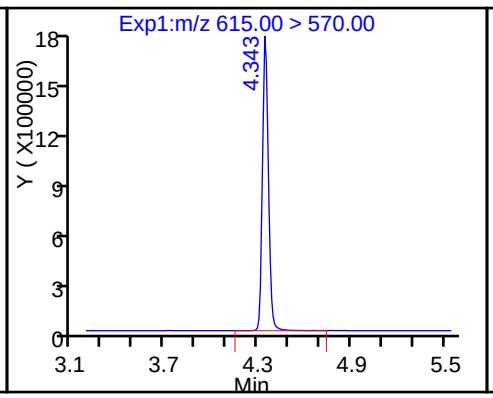
D 27 13C2 PFUnA



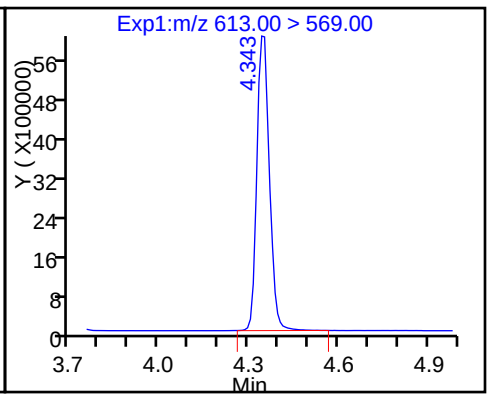
28 Perfluoroundecanoic acid



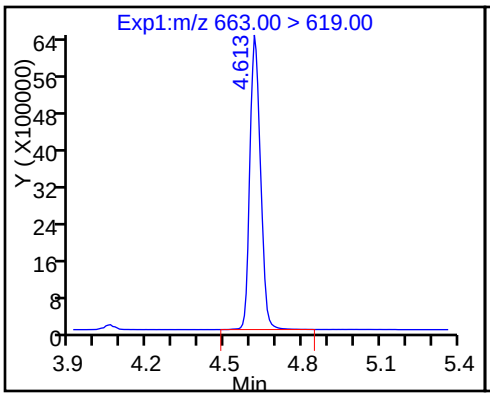
D 30 13C2 PFDoA



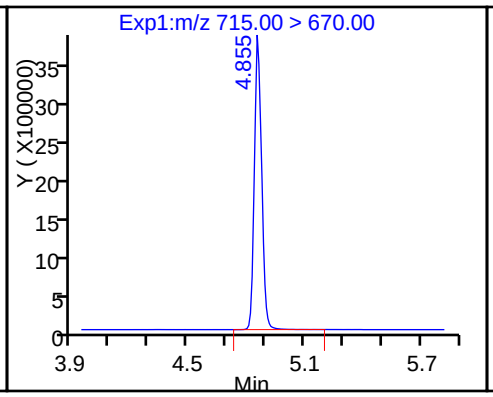
29 Perfluorododecanoic acid



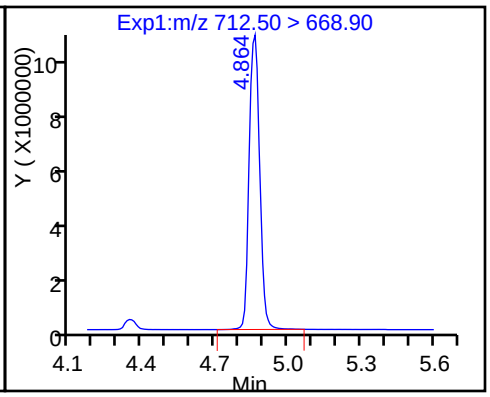
31 Perfluorotridecanoic acid



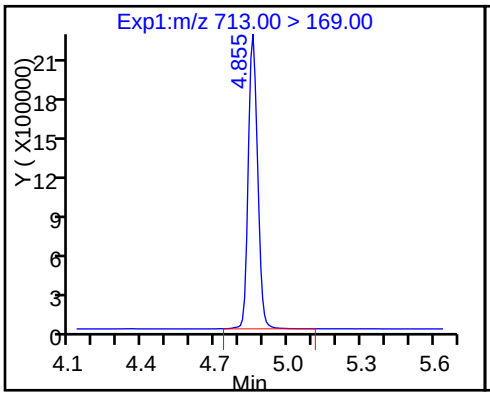
D 32 13C2-PFTeDA



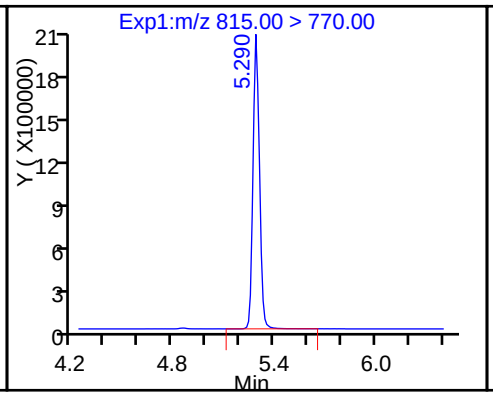
33 Perfluorotetradecanoic acid



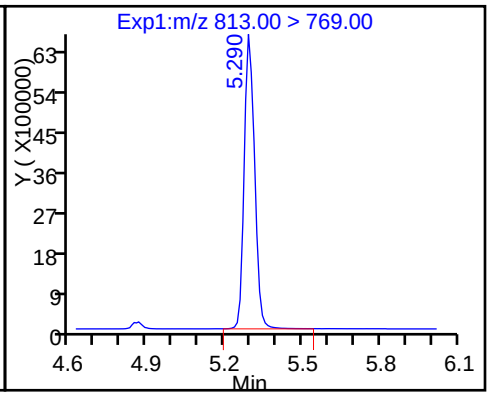
33 Perfluorotetradecanoic acid



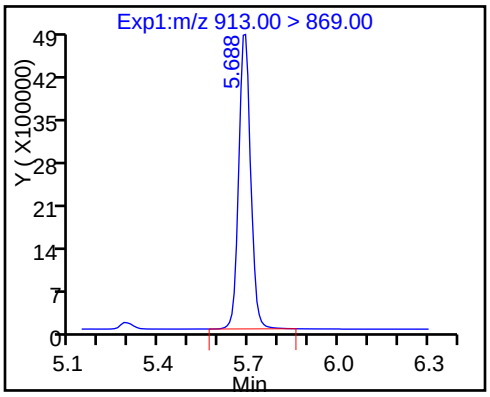
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_010.d
Lims ID: IC L7
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 02-Dec-2016 11:14:32 ALS Bottle#: 43 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L7_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:51:39 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:42:13

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.609	1.615	-0.006		14832847	43.6		87.2	714054	
1 Perfluorobutyric acid										
212.90 > 169.00	1.609	1.617	-0.008	1.000	69781585	265.7		66.4	349641	
D 4 13C5-PFPeA										
267.90 > 223.00	1.910	1.918	-0.008		10386976	38.4		76.9	960901	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.910	1.920	-0.010	1.000	50360659	232.9		58.2	296264	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.968	1.961	0.007	1.000	41429650	107.3		30.3		
298.90 > 99.00	1.948	1.961	-0.013	0.990	44560969		0.93(0.00-0.00)	30.3		
D 6 13C2 PFHxA										
315.00 > 270.00	2.230	2.239	-0.009		9976646	40.5		81.0	859246	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.230	2.241	-0.011	1.000	51025463	267.5		66.9	759942	
D 11 13C4-PFHpA										
367.00 > 322.00	2.581	2.599	-0.019		7479568	35.5		71.1	874763	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.581	2.600	-0.020	1.000	45359019	293.2		73.3	320883	
D 10 18O2 PFHxS										
403.00 > 84.00	2.598	2.614	-0.016		11322930	37.4		79.1	1230464	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.598	2.615	-0.017	1.000	77870104	307.0		84.3		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.967	2.984	-0.017	1.000	47490545	322.1		80.5	2406009	
413.00 > 169.00	2.967	2.984	-0.017	1.000	33779619		1.41(0.90-1.10)	80.5	3107357	
D 14 13C4 PFOA										
417.00 > 372.00	2.958	2.984	-0.026		7225722	32.9		65.9	438119	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.967	2.986	-0.019	1.000	59371135	266.1		69.9		
D 17 13C4 PFOS										
503.00 > 80.00	3.345	3.365	-0.020		9124233	37.3		78.0	67315	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.345	3.366	-0.021	1.000	80249842	386.6		104	13058140	
499.00 > 99.00	3.345	3.366	-0.021	1.000	19443677		4.13(0.90-1.10)	104	690162	
20 Perfluorononanoic acid										
463.00 > 419.00	3.353	3.373	-0.020	1.000	41884345	335.5		83.9	392400	
D 19 13C5 PFNA										
468.00 > 423.00	3.353	3.374	-0.021		6297115	35.4		70.7	371230	
D 21 13C8 FOSA										
506.00 > 78.00	3.642	3.651	-0.009		18384094	44.4		88.8	592069	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.660	3.656	0.004	1.000	73164187	212.7		53.2	145203	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.709	3.738	-0.029	1.000	42979124	313.4		78.4	353734	
D 23 13C2 PFDA										
515.00 > 470.00	3.720	3.738	-0.018		7073000	42.6		85.2	160460	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	4.028	4.049	-0.021	1.000	41362935	345.5		89.6		
D 27 13C2 PFUnA										
565.00 > 520.00	4.045	4.070	-0.025		4373854	34.8		69.5	211760	
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.045	4.071	-0.026	1.000	31200994	336.6		84.2	378305	
D 30 13C2 PFDoA										
615.00 > 570.00	4.353	4.370	-0.017		5148784	44.0		88.1	149077	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.353	4.370	-0.017	1.000	32927149	337.8		84.5	44886	
31 Perfluorotridecanoic acid										M
663.00 > 619.00	4.610	4.636	-0.026	1.000	34277350	320.0		80.0	59163	M
D 32 13C2-PFTeDA										
715.00 > 670.00	4.860	4.882	-0.022		10396514	43.0		86.0	969333	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.860	4.884	-0.024	1.000	50372831	253.2		63.3	26628	
713.00 > 169.00	4.851	4.884	-0.033	0.998	12426058		4.05(0.00-0.00)	63.3	473842	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.300	5.320	-0.020		6001714	46.0		92.1	121116	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.300	5.320	-0.020	1.000	35113710	345.4		86.3	34228	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.682	5.720	-0.038	1.000	31098706	384.1		96.0	54097	

QC Flag Legend

Review Flags

M - Manually Integrated

Reagents:

LCPFC-L7_00019 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:51:39 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_010.d

Injection Date: 02-Dec-2016 11:14:32 Instrument ID: A8_N

Lims ID: IC L7

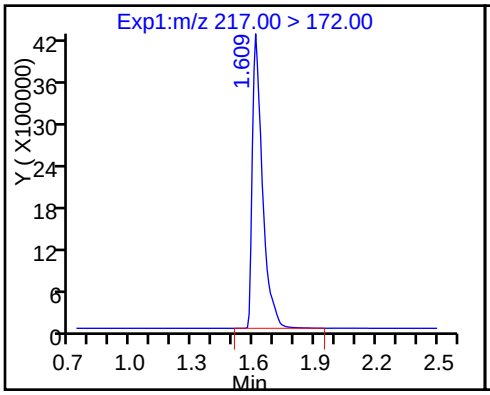
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 43 Worklist Smp#: 10

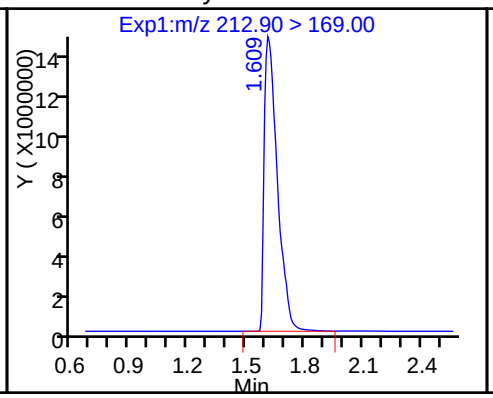
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

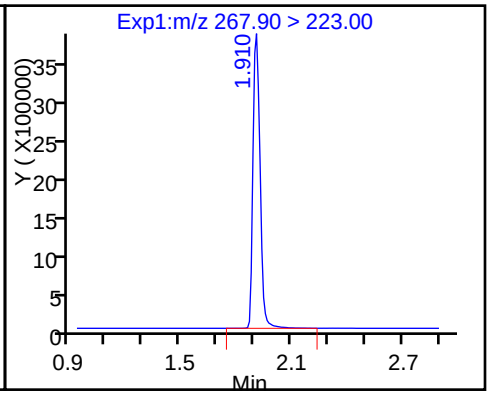
D 2 13C4 PFBA



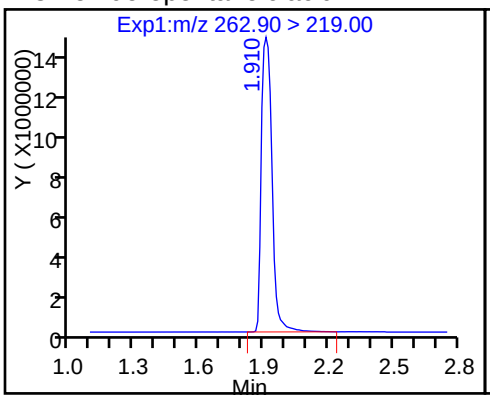
1 Perfluorobutyric acid



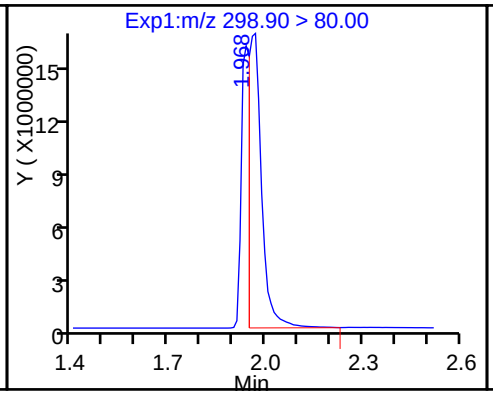
D 4 13C5-PFPeA



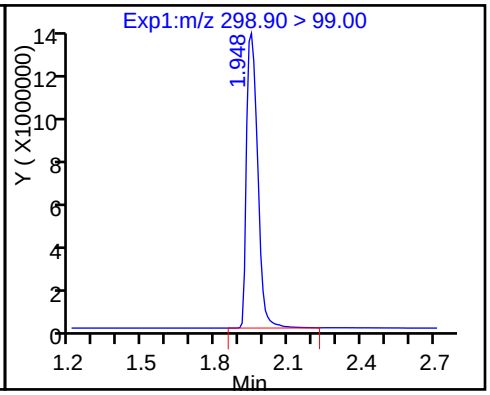
3 Perfluoropentanoic acid



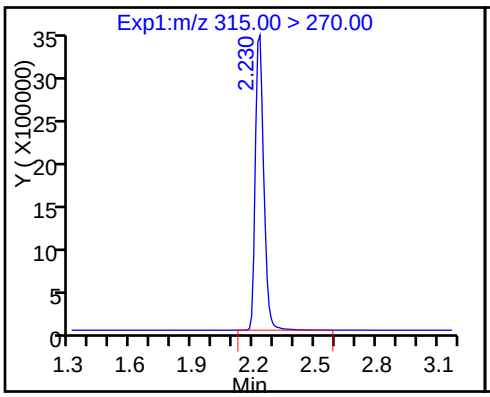
5 Perfluorobutanesulfonic acid



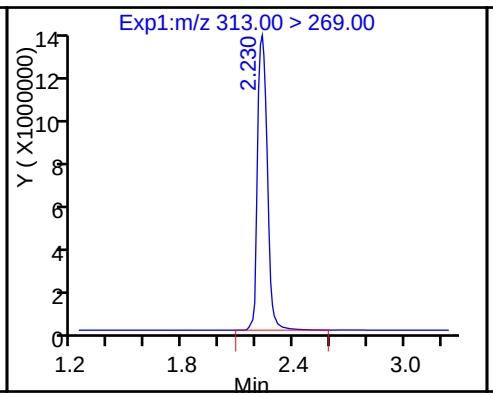
5 Perfluorobutanesulfonic acid



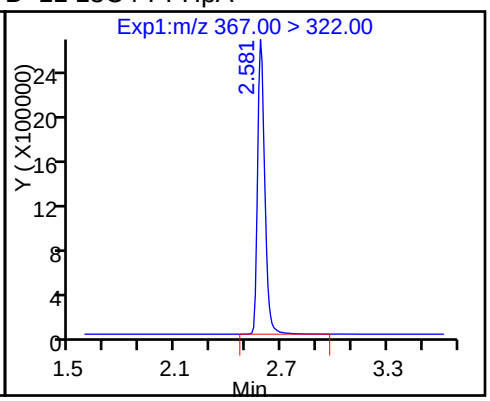
D 6 13C2 PFHxA



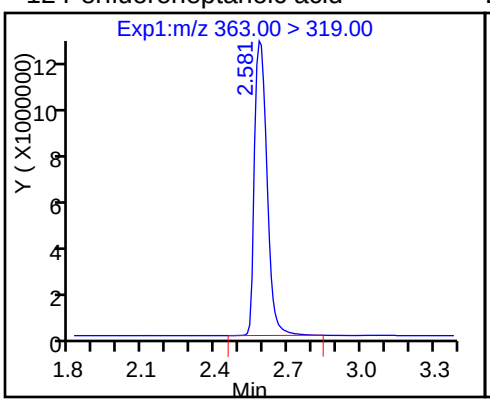
7 Perfluorohexanoic acid



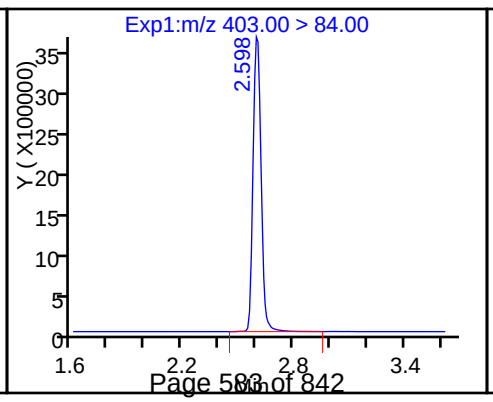
D 11 13C4-PFHpA



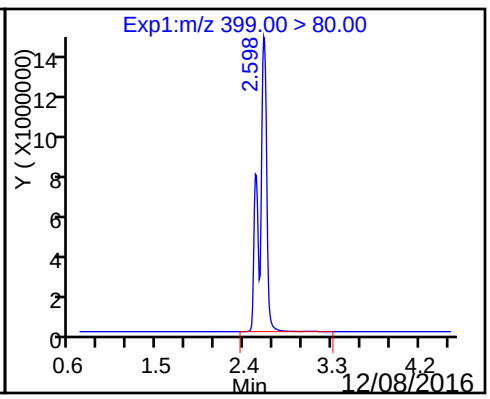
12 Perfluoroheptanoic acid



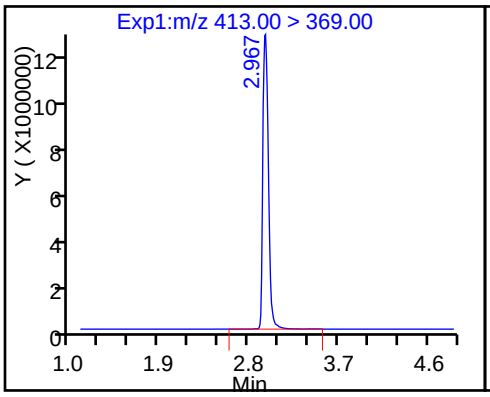
D 10 18O2 PFHxS



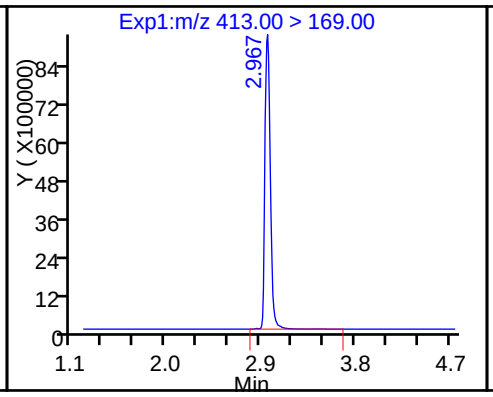
9 Perfluorohexanesulfonic acid



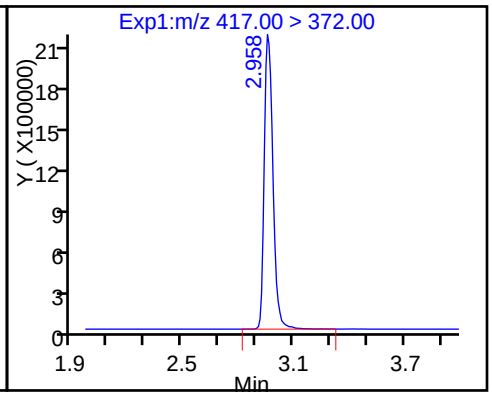
15 Perfluorooctanoic acid



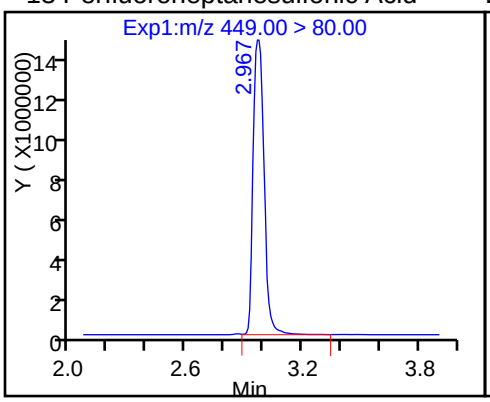
15 Perfluorooctanoic acid



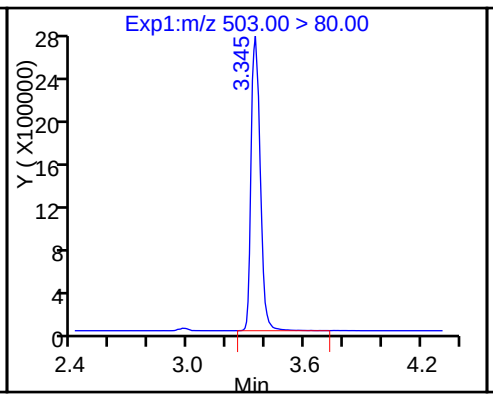
D 14 13C4 PFOA



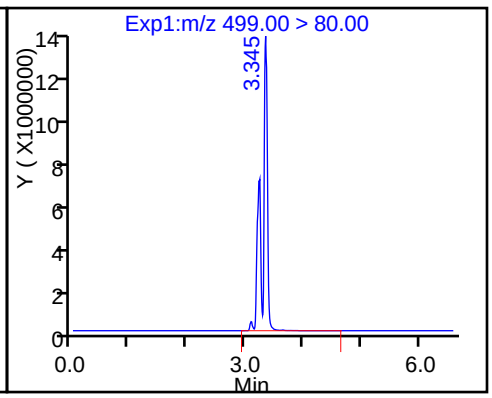
13 Perfluoroheptanesulfonic Acid



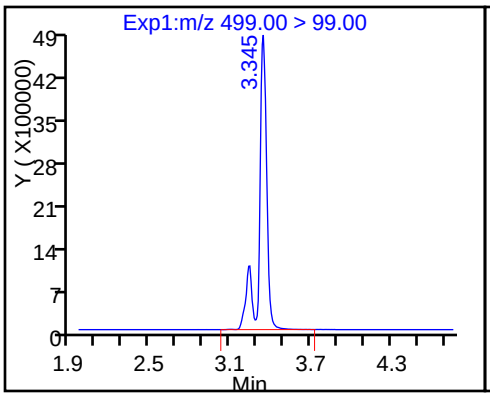
D 17 13C4 PFOS



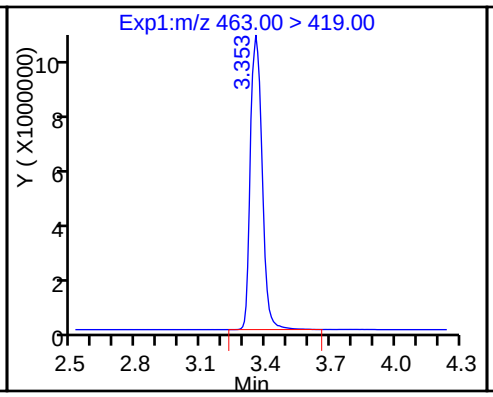
18 Perfluorooctane sulfonic acid



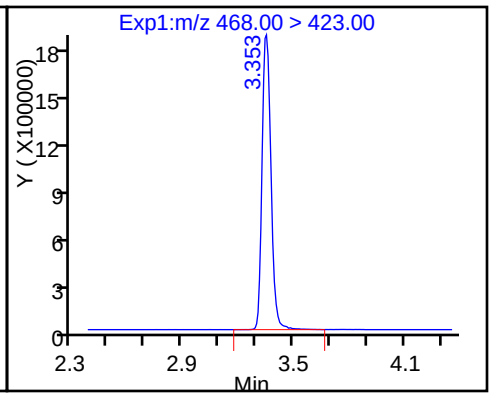
18 Perfluorooctane sulfonic acid



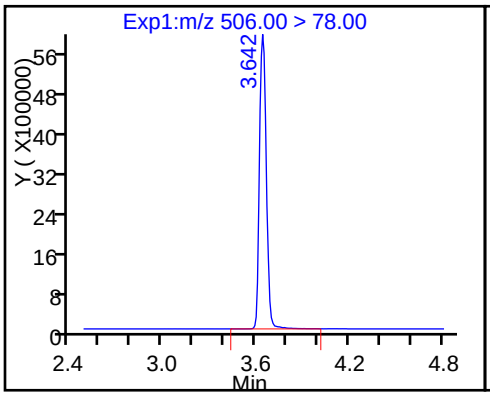
20 Perfluorononanoic acid



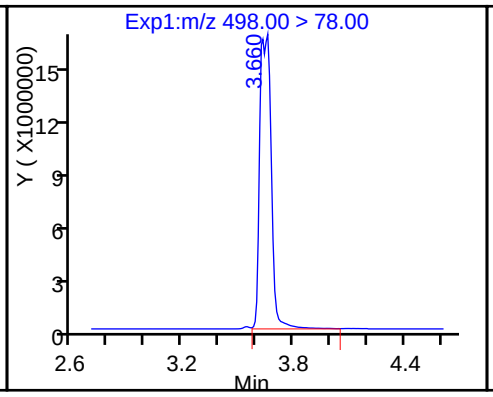
D 19 13C5 PFNA



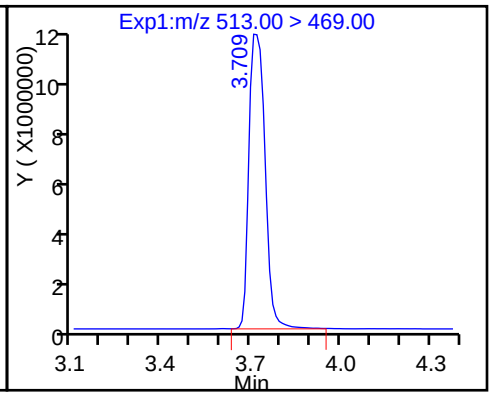
D 21 13C8 FOSA



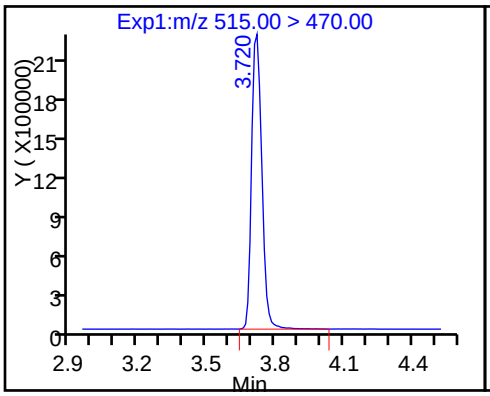
22 Perfluorooctane Sulfonamide



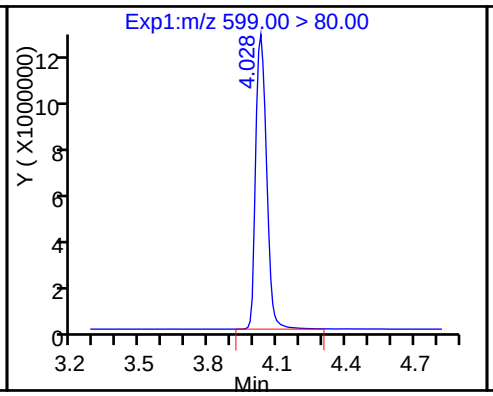
24 Perfluorodecanoic acid



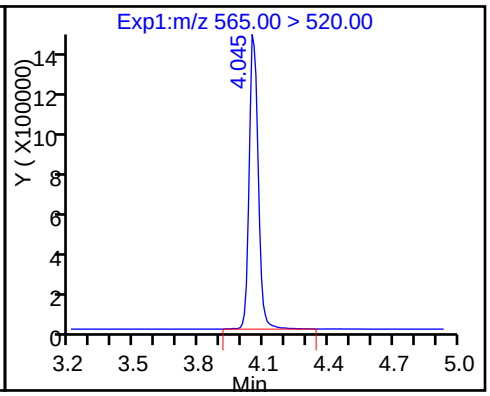
D 23 13C2 PFDA



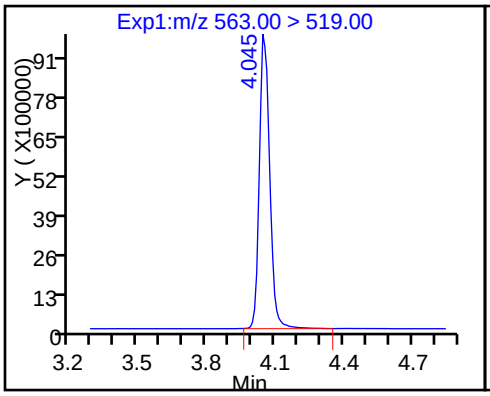
26 Perfluorodecane Sulfonic acid



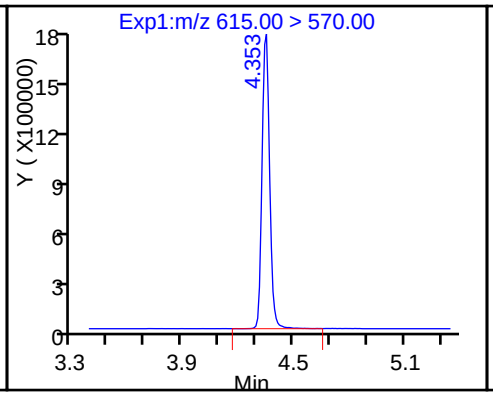
D 27 13C2 PFUnA



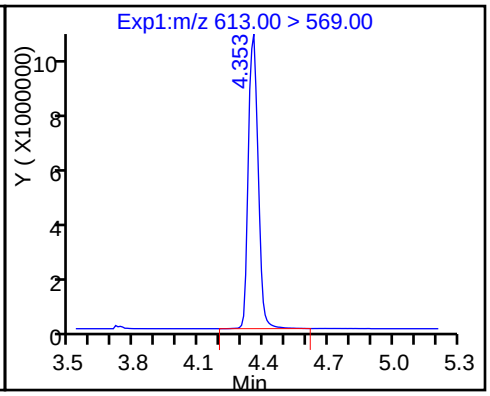
28 Perfluoroundecanoic acid



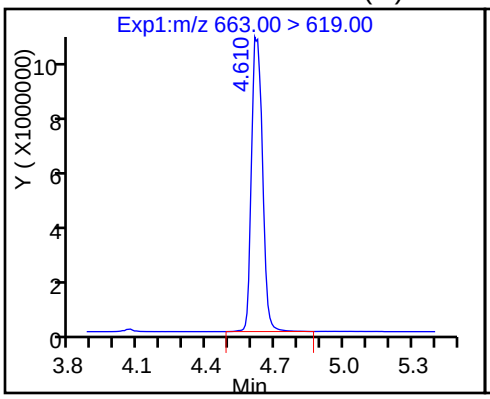
D 30 13C2 PFDoA



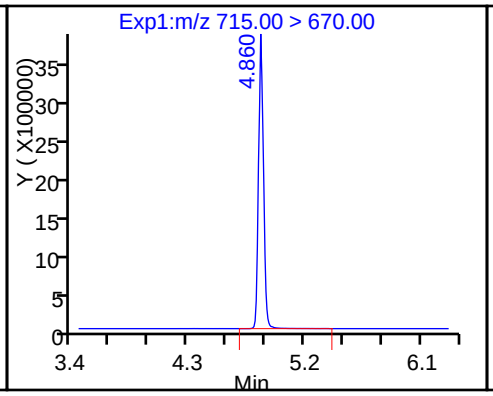
29 Perfluorododecanoic acid



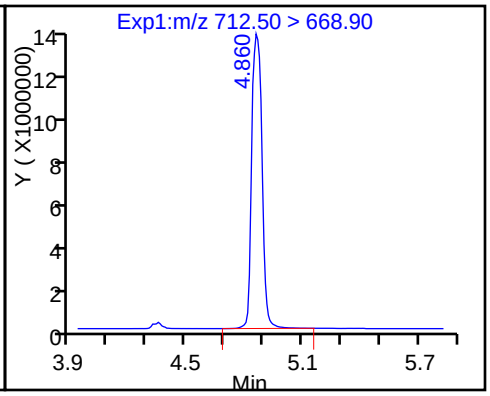
31 Perfluorotridecanoic acid (M)



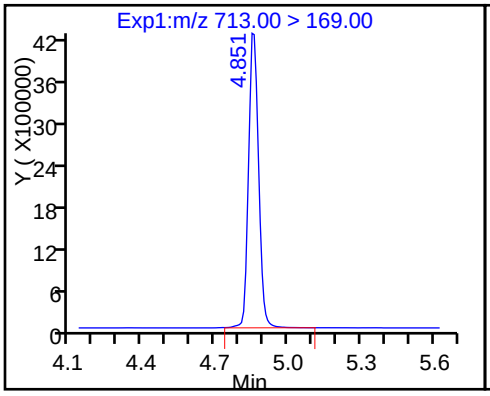
D 32 13C2-PFTeDA



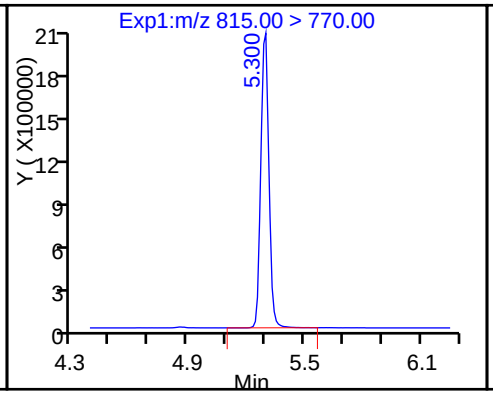
33 Perfluorotetradecanoic acid



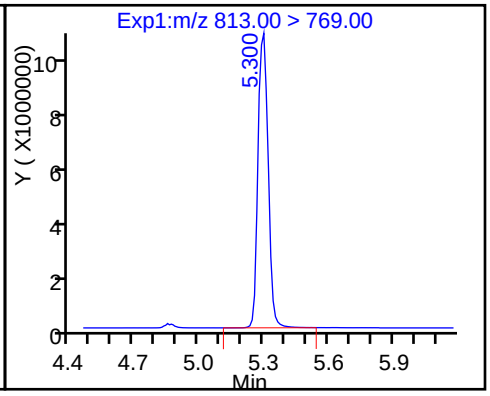
33 Perfluorotetradecanoic acid



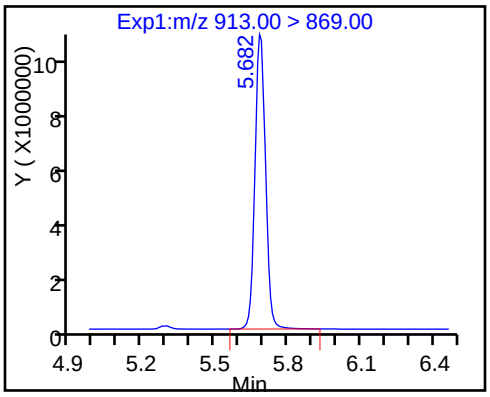
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



TestAmerica Sacramento

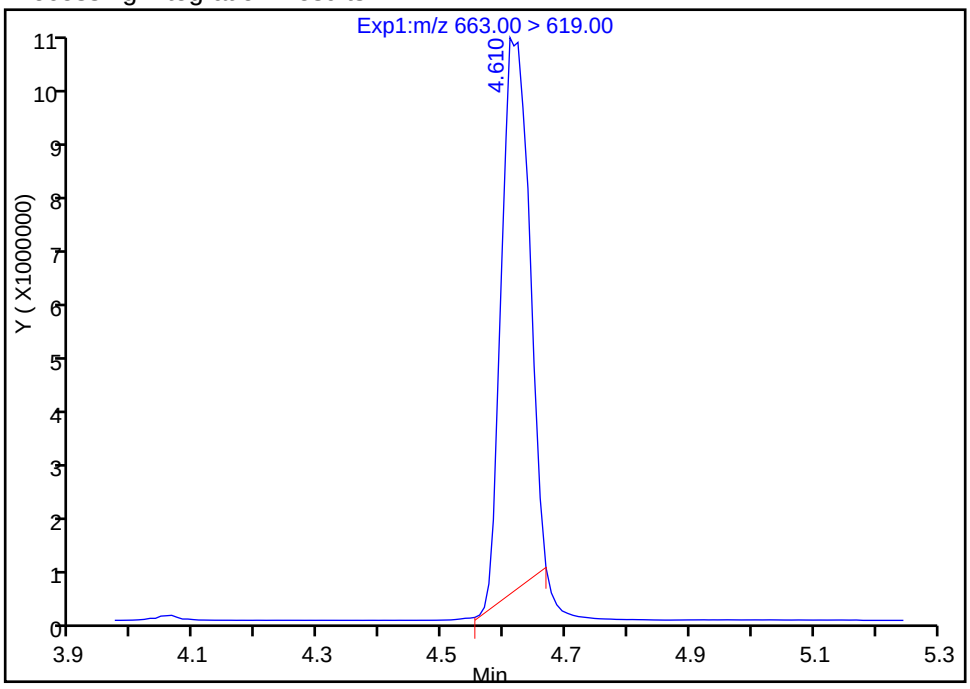
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_010.d
Injection Date: 02-Dec-2016 11:14:32 Instrument ID: A8_N
Lims ID: IC L7
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 43 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

31 Perfluorotridecanoic acid, CAS: 72629-94-8

Signal: 1

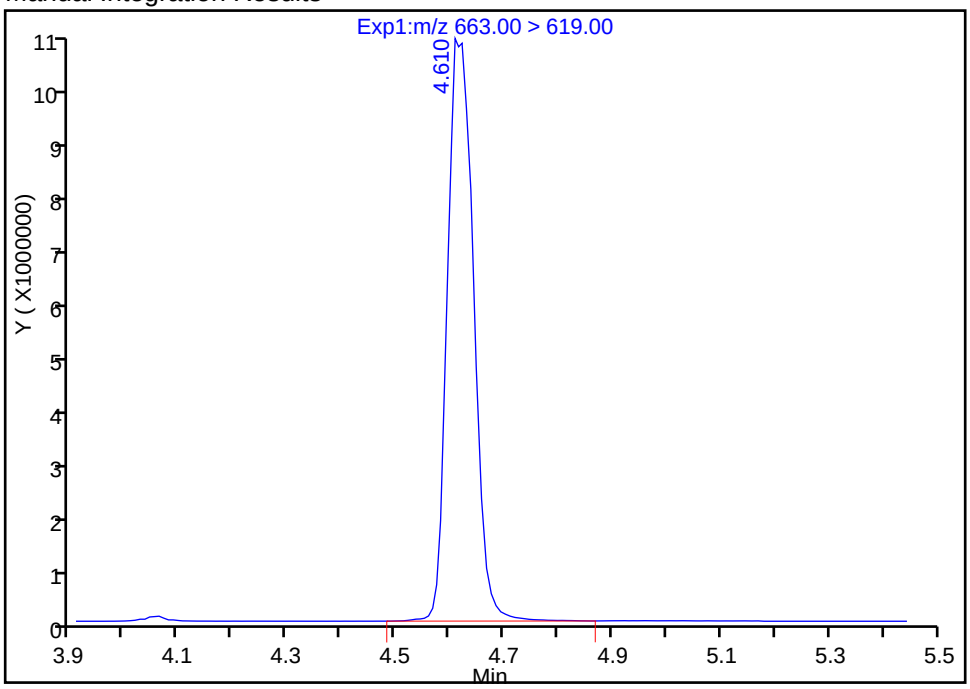
Processing Integration Results

RT: 4.61
Area: 30068675
Amount: 293.1955
Amount Units: ng/ml



Manual Integration Results

RT: 4.61
Area: 34277350
Amount: 319.9934
Amount Units: ng/ml



Reviewer: chandrasenas, 02-Dec-2016 13:42:13
Audit Action: Manually Integrated Audit Reason: Incomplete Integration

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_014.d
Lims ID: IC L1 Add-on
Client ID:
Sample Type: IC Calib Level: 1
Inject. Date: 02-Dec-2016 11:44:30 ALS Bottle#: 46 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L1 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:52:41 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:56:57

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.909	2.913	-0.004	1.000	51838	0.4953		104		
D 47 M2-6:2FTS										
429.00 > 409.00	2.925	2.915	0.010		5925112	42.5		89.6		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.668	3.674	-0.006	0.997	44037	0.4434		92.6		
D 42 M2-8:2FTS										
529.00 > 509.00	3.678	3.676	0.002		5634375	42.2		88.1		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.843	3.839	0.004		3880040	48.5		97.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.851	3.847	0.004	1.002	30895	0.4583		91.7		
D 46 d5-NEtFOSAA										
589.00 > 419.00	4.011	4.009	0.002		4464530	50.1		100		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	4.020	4.016	0.004	1.002	30016	0.4382		87.6		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.108	4.105	0.003		4681022	44.0		88.0		
54 MeFOSA										
512.00 > 169.00	4.115	4.110	0.005	1.000	37277	0.5000		100		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.293	4.290	0.003		4329074	42.5		85.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.293	4.299	-0.006	1.000	35535	0.4830		96.6		

Reagents:

LCPFC2-L1_00002 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:52:41 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_014.d

Injection Date: 02-Dec-2016 11:44:30 Instrument ID: A8_N

Lims ID: IC L1 Add-on

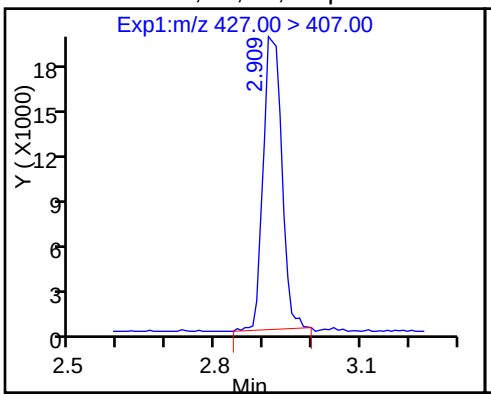
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 46 Worklist Smp#: 14

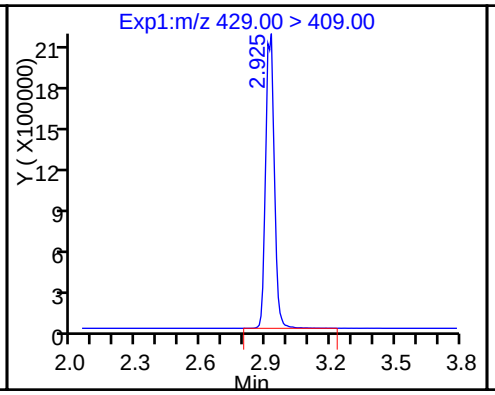
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

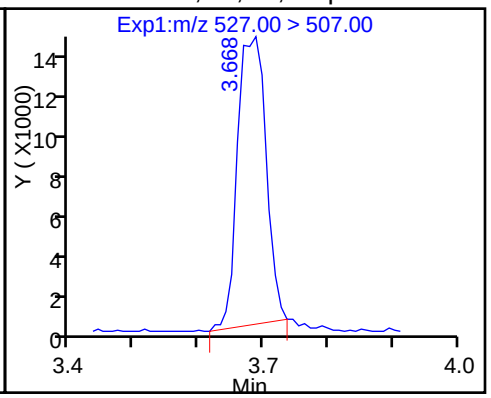
48 Sodium 1H,1H,2H,2H-perfluorooctane



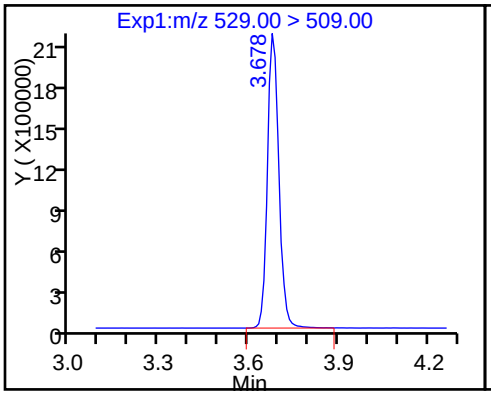
D 47 M2-6:2FTS



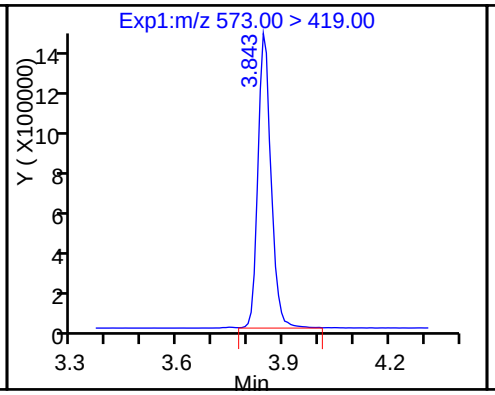
43 Sodium 1H,1H,2H,2H-perfluorooctane



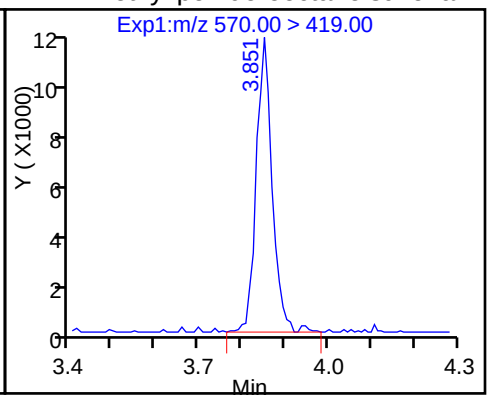
D 42 M2-8:2FTS



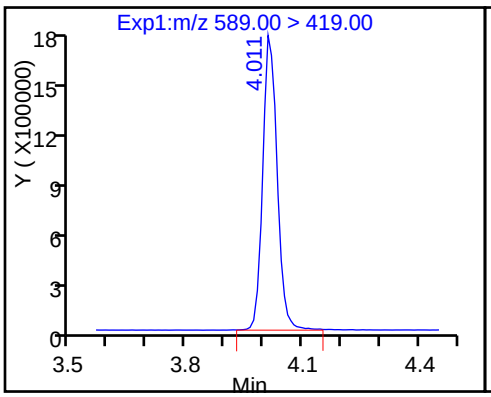
D 45 d3-NMeFOSAA



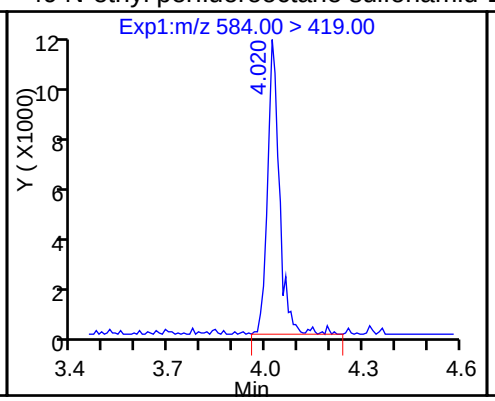
44 N-methyl perfluorooctane sulfonami



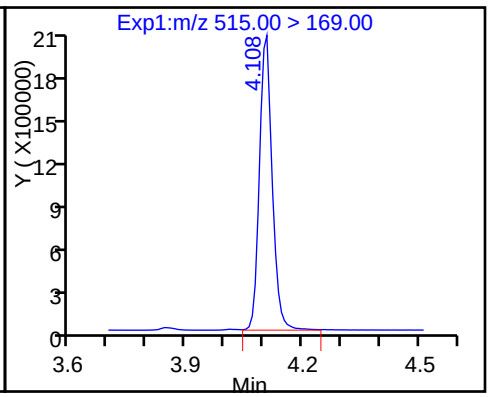
D 46 d5-NEtFOSAA



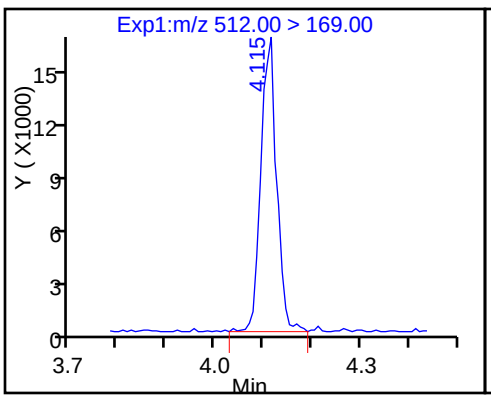
49 N-ethyl perfluorooctane sulfonamid



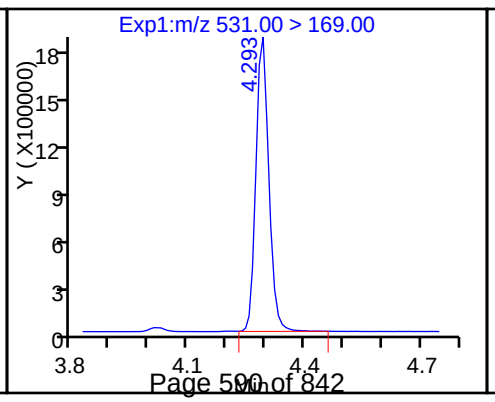
D 52 d-N-MeFOSA-M



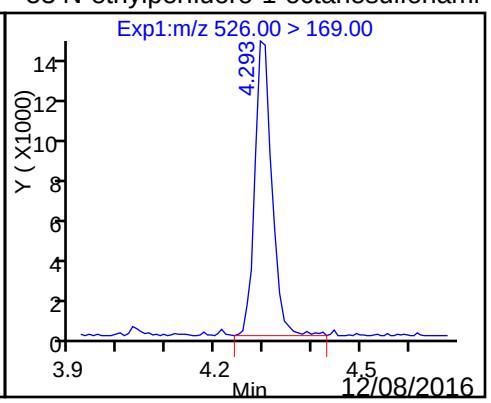
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_015.d
Lims ID: IC L2 Add-on
Client ID:
Sample Type: IC Calib Level: 2
Inject. Date: 02-Dec-2016 11:52:00 ALS Bottle#: 47 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L2 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:52:42 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:57:07

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.920	2.913	0.007	1.000	88396	0.8738		92.2		
D 47 M2-6:2FTS										
429.00 > 409.00	2.912	2.915	-0.003		5726516	41.1		86.6		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.684	3.674	0.010	1.000	94573	1.03		107		
D 42 M2-8:2FTS										
529.00 > 509.00	3.684	3.676	0.008		5213436	39.1		81.5		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.848	3.839	0.009		3606216	45.1		90.2		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.857	3.847	0.010	1.002	59295	0.9465		94.6		
D 46 d5-NEtFOSAA										
589.00 > 419.00	4.017	4.009	0.008		4134123	46.4		92.8		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	4.026	4.016	0.010	1.002	56004	0.8830		88.3		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.106	4.105	0.001		5181881	48.7		97.5		
54 MeFOSA										
512.00 > 169.00	4.114	4.110	0.004	1.000	73327	0.8885		88.8		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.292	4.290	0.002		5048951	49.5		99.1		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.301	4.299	0.002	1.000	78846	0.9189		91.9		

Reagents:

LCPFC2-L2_00002 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:52:43 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_015.d

Injection Date: 02-Dec-2016 11:52:00 Instrument ID: A8_N

Lims ID: IC L2 Add-on

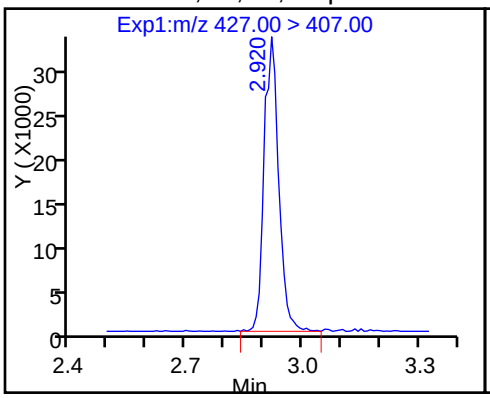
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 47 Worklist Smp#: 15

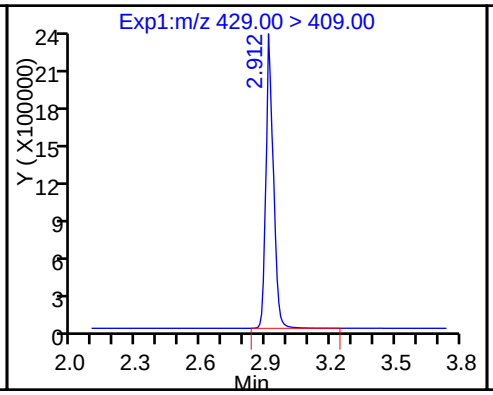
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

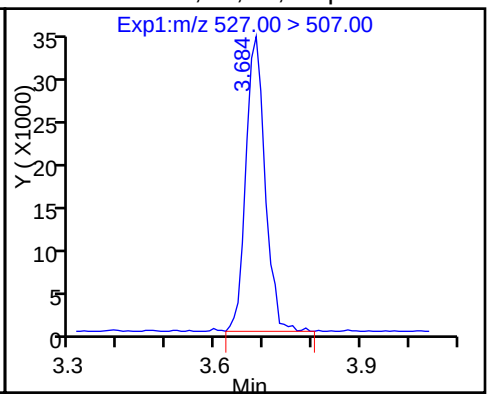
48 Sodium 1H,1H,2H,2H-perfluorooctane



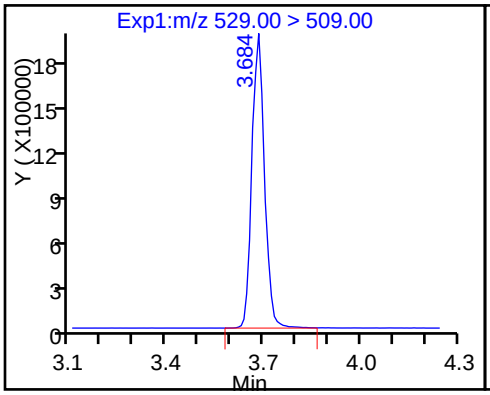
D 47 M2-6:2FTS



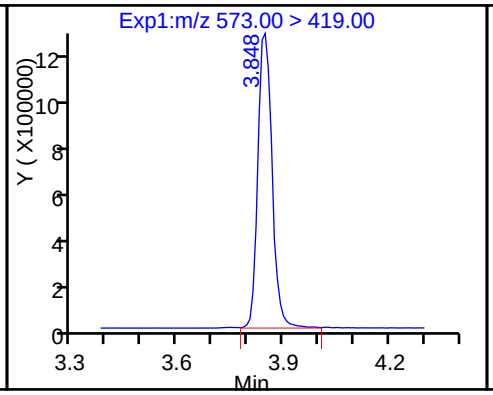
43 Sodium 1H,1H,2H,2H-perfluorooctane



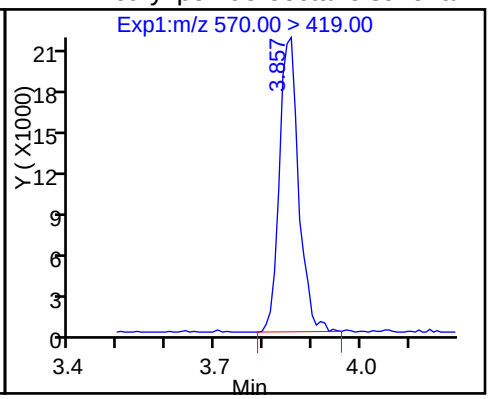
D 42 M2-8:2FTS



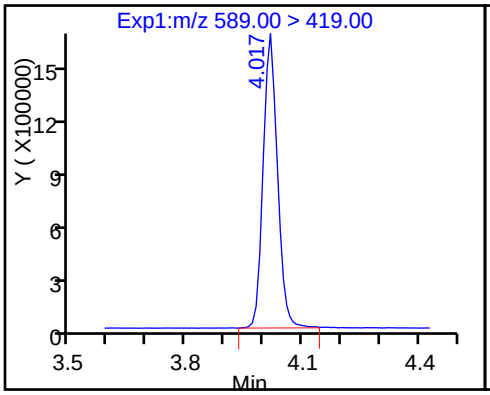
D 45 d3-NMeFOSAA



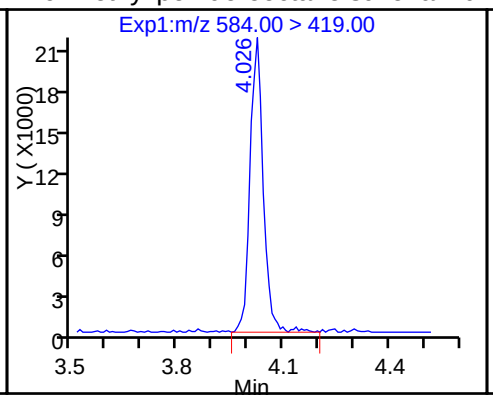
44 N-methyl perfluorooctane sulfonami



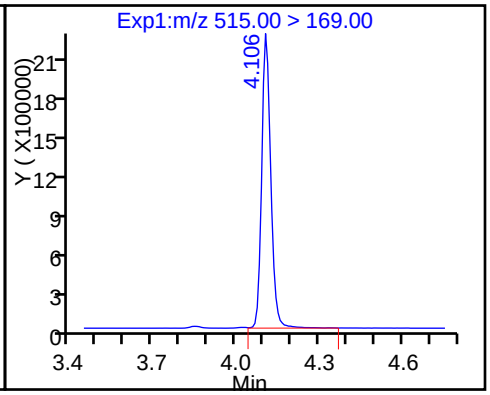
D 46 d5-NEtFOSAA



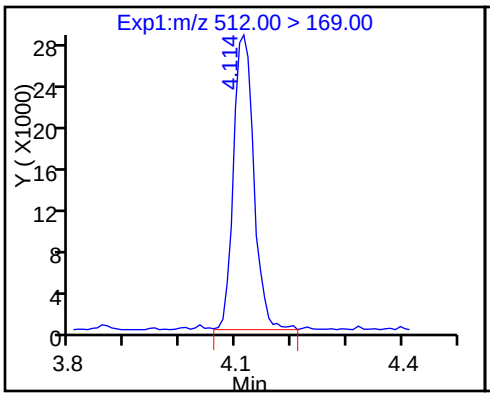
49 N-ethyl perfluorooctane sulfonamid



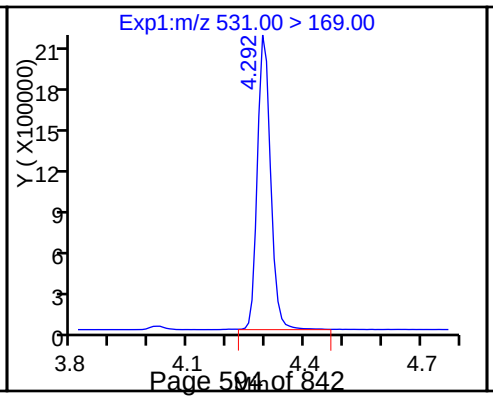
D 52 d-N-MeFOSA-M



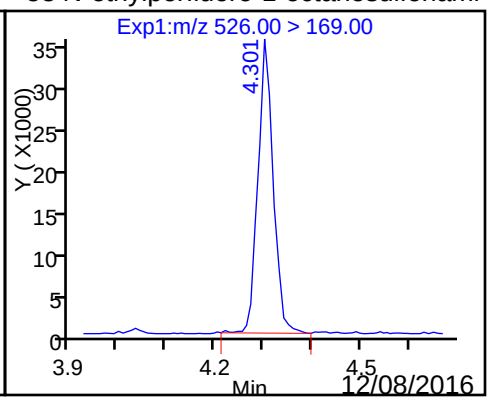
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_016.d
Lims ID: IC L3 Add-on
Client ID:
Sample Type: IC Calib Level: 3
Inject. Date: 02-Dec-2016 11:59:31 ALS Bottle#: 48 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L3 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:52:44 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:57:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.910	2.913	-0.003	1.000	492719	4.19		88.4		
D 47 M2-6:2FTS										
429.00 > 409.00	2.918	2.915	0.003		6658764	47.8		101		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.673	3.674	-0.001	1.000	431909	4.10		85.7		
D 42 M2-8:2FTS										
529.00 > 509.00	3.673	3.676	-0.003		5971752	44.7		93.4		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.838	3.839	-0.001		4140205	51.8		104		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.847	3.847	0.0	1.002	289882	4.03		80.6		
D 46 d5-NEtFOSAA										
589.00 > 419.00	4.006	4.009	-0.003		4489327	50.4		101		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	4.015	4.016	-0.001	1.002	283960	4.12		82.5		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.104	4.105	-0.001		5362314	50.4		101		
54 MeFOSA										
512.00 > 169.00	4.104	4.110	-0.006	1.000	360259	4.22		84.4		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.287	4.290	-0.003		5205212	51.1		102		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.297	4.299	-0.002	1.000	365734	4.13		82.7		

Reagents:

LCPFC2-L3_00002 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:52:44 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_016.d

Injection Date: 02-Dec-2016 11:59:31 Instrument ID: A8_N

Lims ID: IC L3 Add-on

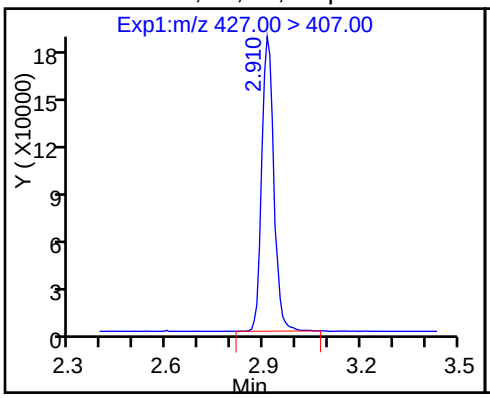
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 48 Worklist Smp#: 16

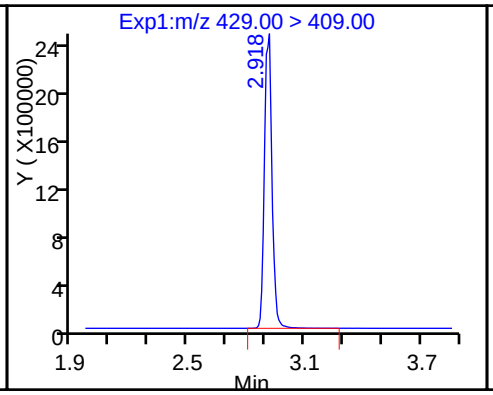
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

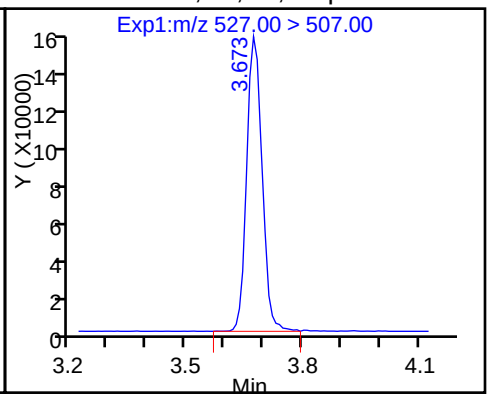
48 Sodium 1H,1H,2H,2H-perfluorooctane



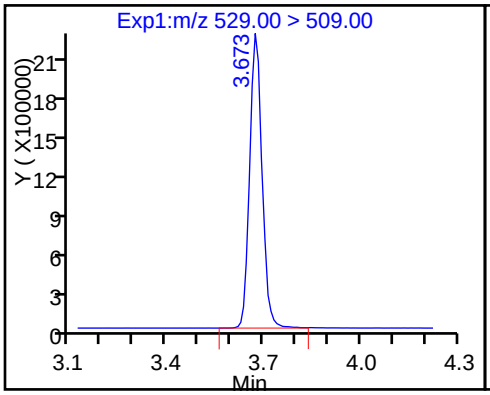
D 47 M2-6:2FTS



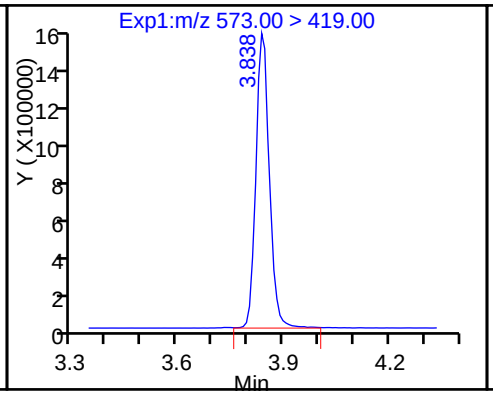
43 Sodium 1H,1H,2H,2H-perfluorooctane



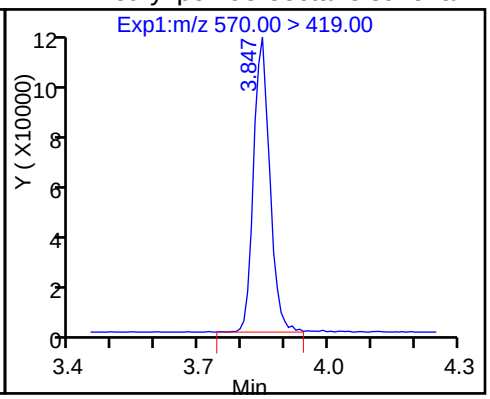
D 42 M2-8:2FTS



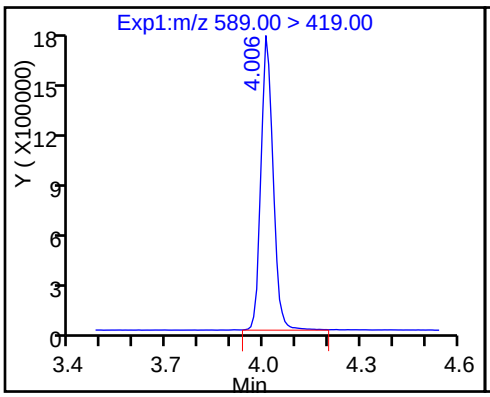
D 45 d3-NMeFOSAA



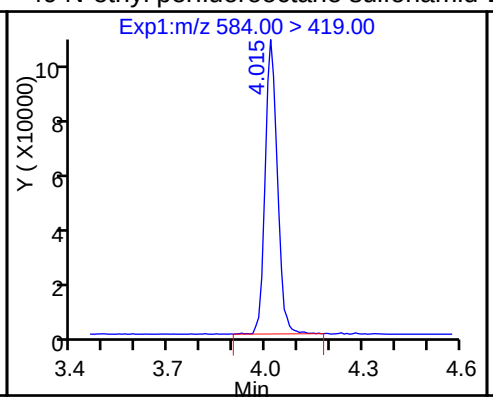
44 N-methyl perfluorooctane sulfonami



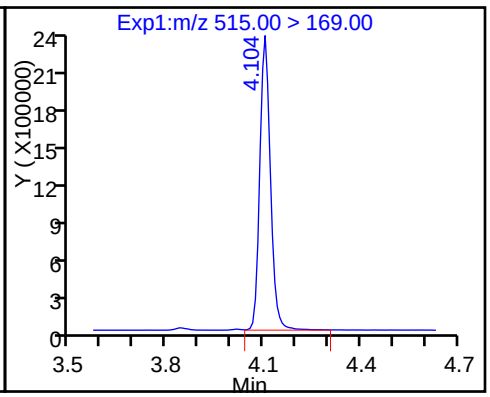
D 46 d5-NEtFOSAA



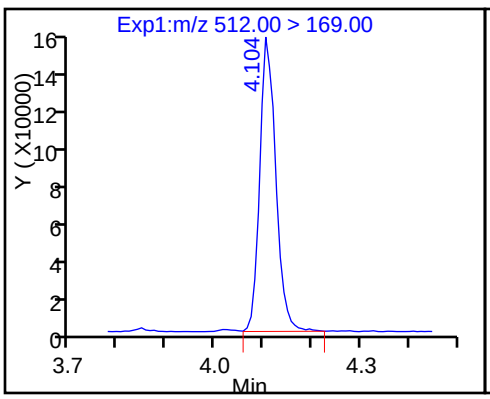
49 N-ethyl perfluorooctane sulfonamid



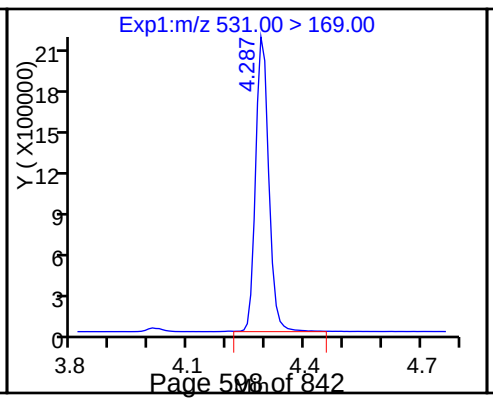
D 52 d-N-MeFOSA-M



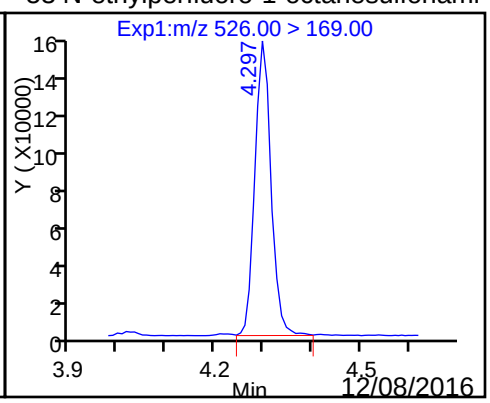
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_017.d
Lims ID: IC L4 Add-on
Client ID:
Sample Type: IC Calib Level: 4
Inject. Date: 02-Dec-2016 12:07:00 ALS Bottle#: 49 Worklist Smp#: 17
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L4 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:52:46 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:56:04

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.914	2.913	0.001	1.000	2900008	20.8		110		
D 47 M2-6:2FTS										
429.00 > 409.00	2.906	2.915	-0.009		7906261	56.8		120		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.678	3.674	0.004	1.000	2799477	21.5		112		
D 42 M2-8:2FTS										
529.00 > 509.00	3.678	3.676	0.002		7389674	55.4		116		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.843	3.839	0.004		4953346	61.9		124		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.843	3.847	-0.004	1.000	1829869	21.3		106		
D 46 d5-NEtFOSAA										
589.00 > 419.00	4.011	4.009	0.002		5242030	58.9		118		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	4.011	4.016	-0.005	1.000	1881436	23.4		117		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.104	4.105	-0.001		5889991	55.4		111		
54 MeFOSA										
512.00 > 169.00	4.112	4.110	0.002	1.000	2129108	22.7		113		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.293	4.290	0.003		5611197	55.1		110		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.302	4.299	0.003	1.000	2187091	22.9		115		

Reagents:

LCPFC2-L4_00003 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:52:46 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_017.d

Injection Date: 02-Dec-2016 12:07:00 Instrument ID: A8_N

Lims ID: IC L4 Add-on

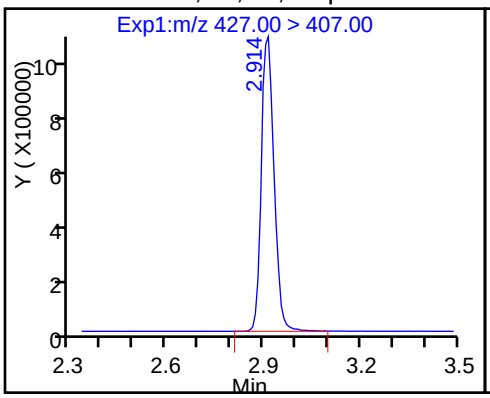
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 49 Worklist Smp#: 17

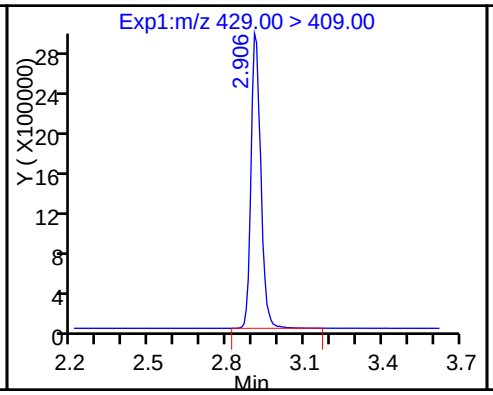
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

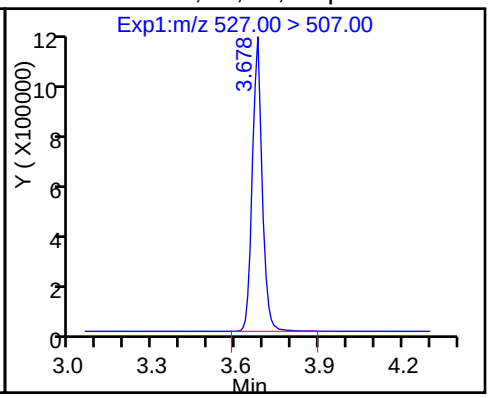
48 Sodium 1H,1H,2H,2H-perfluorooctande



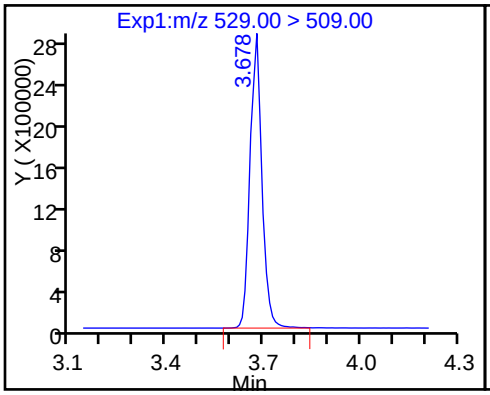
D 47 M2-6:2FTS



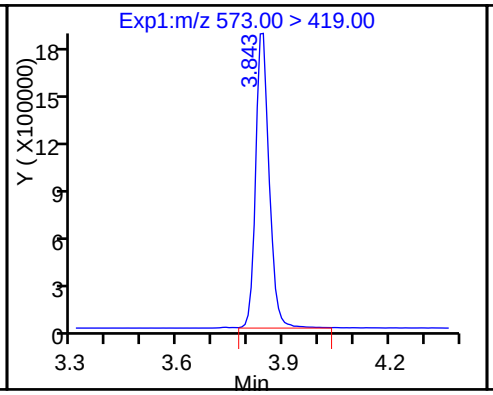
43 Sodium 1H,1H,2H,2H-perfluorooctane



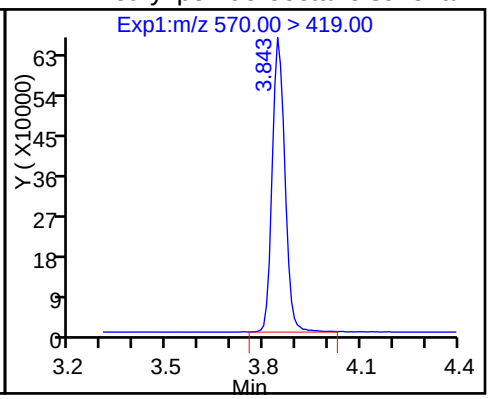
D 42 M2-8:2FTS



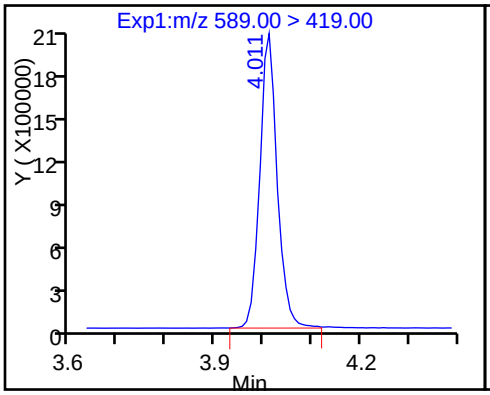
D 45 d3-NMeFOSAA



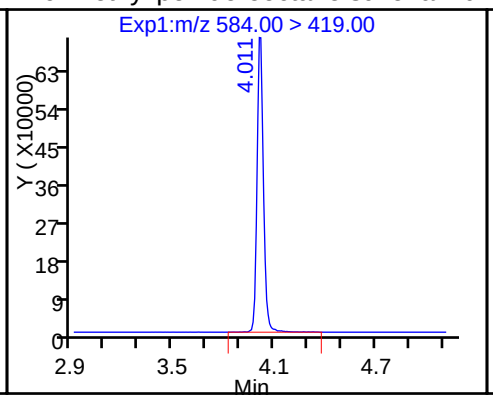
44 N-methyl perfluorooctane sulfonami



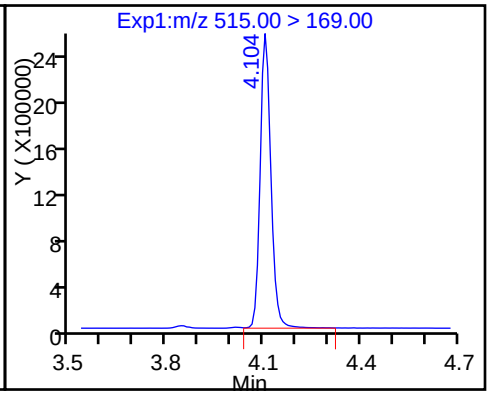
D 46 d5-NEtFOSAA



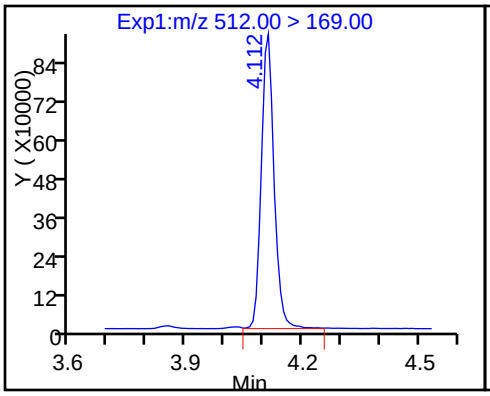
49 N-ethyl perfluorooctane sulfonamid



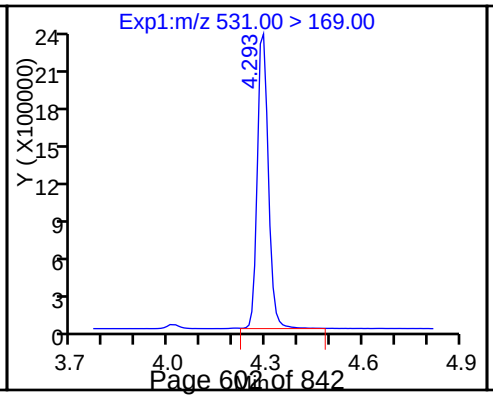
D 52 d-N-MeFOSA-M



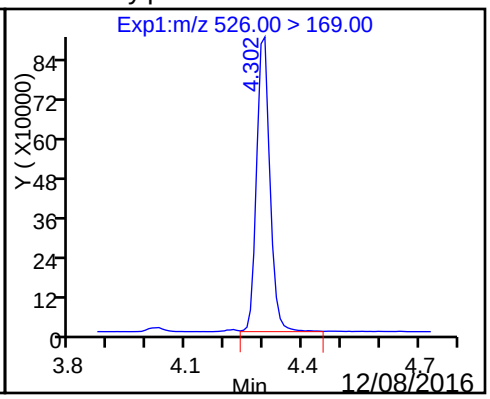
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_018.d
Lims ID: IC L5 Add-on
Client ID:
Sample Type: IC Calib Level: 5
Inject. Date: 02-Dec-2016 12:14:30 ALS Bottle#: 50 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L5 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:52:47 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:57:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.919	2.913	0.006	1.000	5633441	57.1		120		
D 47 M2-6:2FTS										
429.00 > 409.00	2.911	2.915	-0.004		5586093	40.1		84.4		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.674	3.674	0.0	1.000	5753486	55.8		116		
D 42 M2-8:2FTS										
529.00 > 509.00	3.674	3.676	-0.002		5851766	43.8		91.5		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.839	3.839	0.0		3442292	43.0		86.1		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.847	3.847	0.0	1.002	3696988	61.8		124		
D 46 d5-NEtFOSAA										
589.00 > 419.00	4.007	4.009	-0.002		3869672	43.4		86.9		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	4.016	4.016	0.0	1.002	3546696	59.7		119		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.100	4.105	-0.005		4967092	46.7		93.4		
54 MeFOSA										
512.00 > 169.00	4.108	4.110	-0.002	1.000	4836683	61.1		122		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.285	4.290	-0.005		4857179	47.7		95.3		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.295	4.299	-0.004	1.000	5044937	61.1		122		

Reagents:

LCPFC2-L5_00002 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:52:48 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_018.d

Injection Date: 02-Dec-2016 12:14:30 Instrument ID: A8_N

Lims ID: IC L5 Add-on

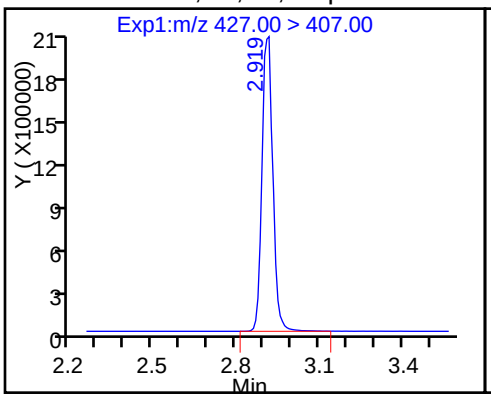
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 50 Worklist Smp#: 18

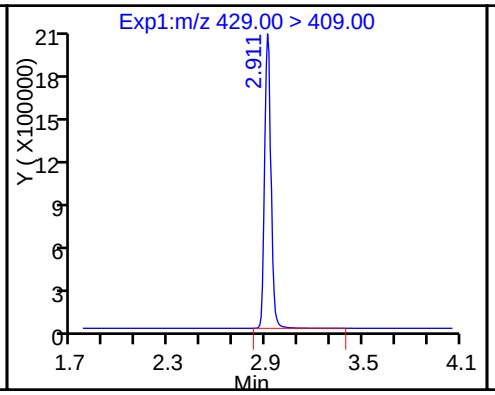
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

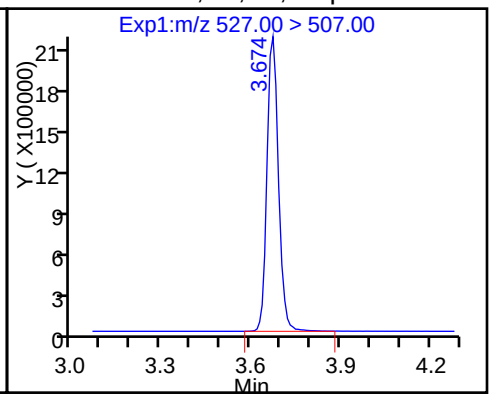
48 Sodium 1H,1H,2H,2H-perfluorooctane



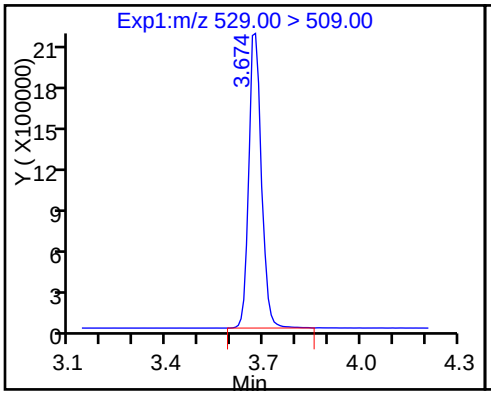
D 47 M2-6:2FTS



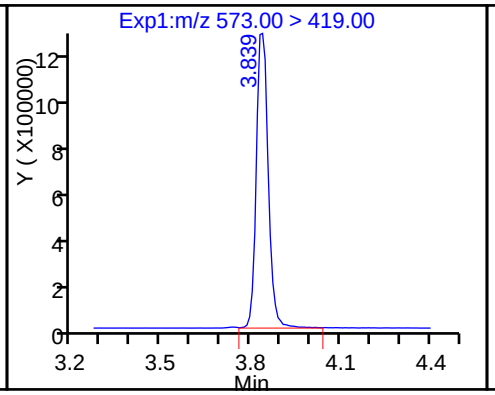
43 Sodium 1H,1H,2H,2H-perfluorooctane



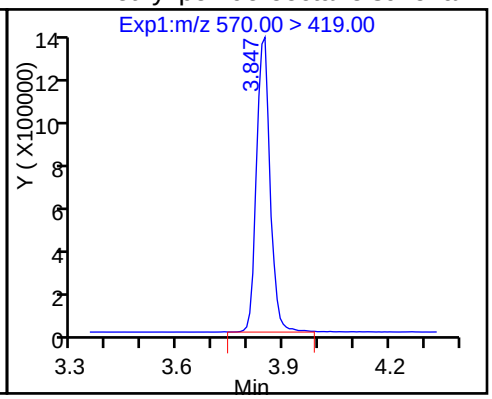
D 42 M2-8:2FTS



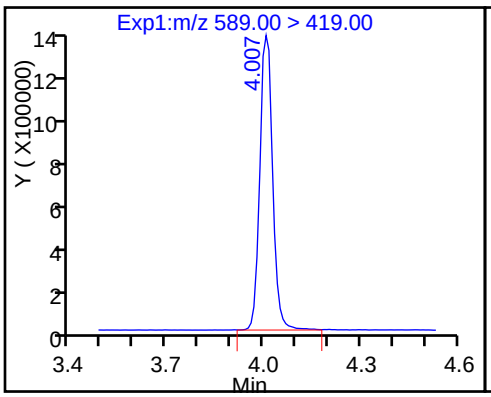
D 45 d3-NMeFOSAA



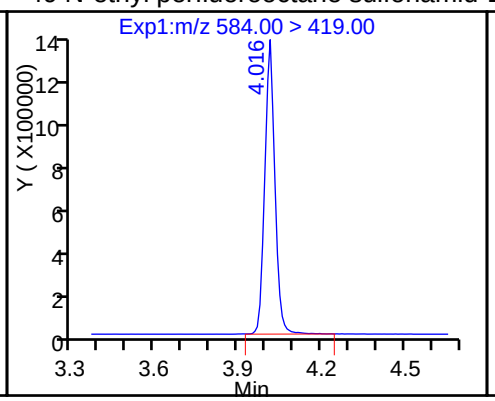
44 N-methyl perfluorooctane sulfonami



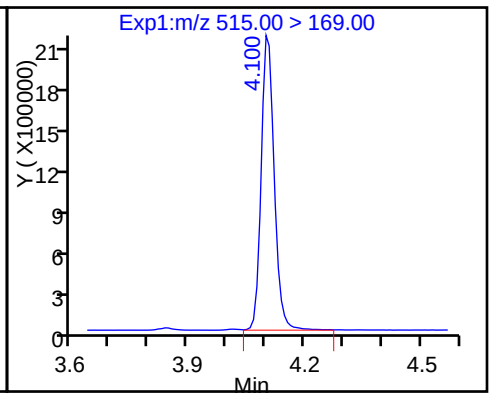
D 46 d5-NEtFOSAA



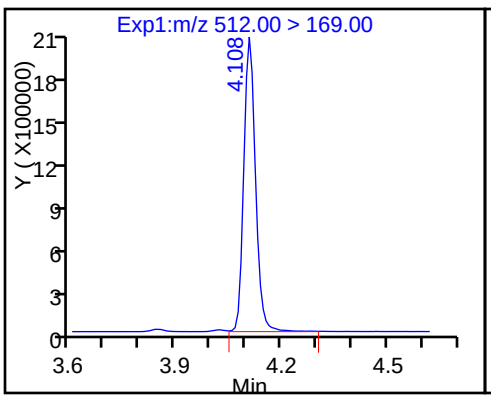
49 N-ethyl perfluorooctane sulfonamid



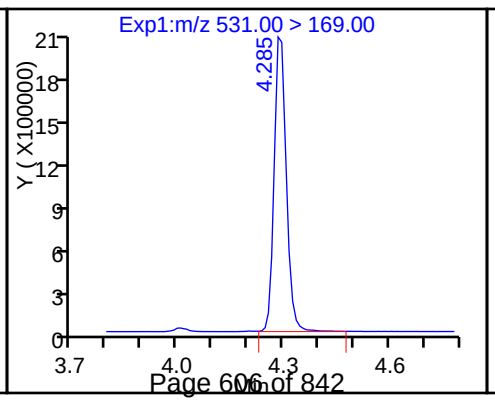
D 52 d-N-MeFOSA-M



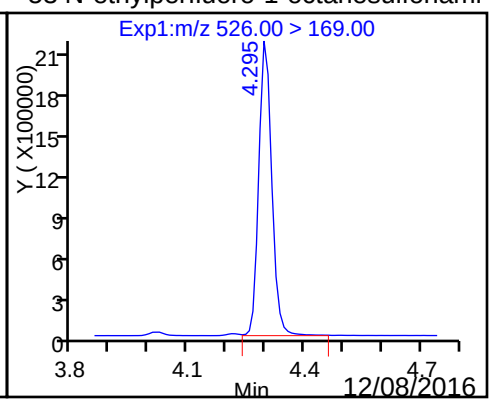
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_019.d
Lims ID: IC L6 Add-on
Client ID:
Sample Type: IC Calib Level: 6
Inject. Date: 02-Dec-2016 12:22:00 ALS Bottle#: 51 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L6 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:52:49 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:57:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.904	2.913	-0.009	1.000	20031946	169.7		89.5		
D 47 M2-6:2FTS										
429.00 > 409.00	2.912	2.915	-0.003		6682949	48.0		101		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.667	3.674	-0.007	1.000	19463965	164.3		85.7		
D 42 M2-8:2FTS										
529.00 > 509.00	3.667	3.676	-0.009		6721067	50.3		105		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.824	3.839	-0.015		4016571	50.2		100		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.832	3.847	-0.015	1.002	13773335	197.4		98.7		
D 46 d5-NEtFOSAA										
589.00 > 419.00	4.000	4.009	-0.009		4474975	50.2		100		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	4.009	4.016	-0.007	1.002	14065497	204.9		102		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.102	4.105	-0.003		4927555	46.3		92.7		
54 MeFOSA										
512.00 > 169.00	4.102	4.110	-0.008	1.000	15814534	201.5		101		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.286	4.290	-0.004		4696896	46.1		92.2		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.296	4.299	-0.003	1.000	16550291	207.3		104		

Reagents:

LCPFC2-L6_00002 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:52:49 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_019.d

Injection Date: 02-Dec-2016 12:22:00 Instrument ID: A8_N

Lims ID: IC L6 Add-on

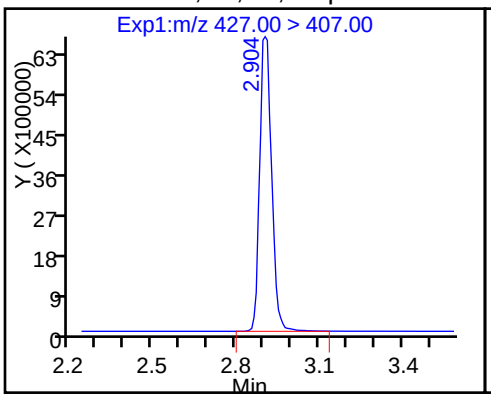
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 51 Worklist Smp#: 19

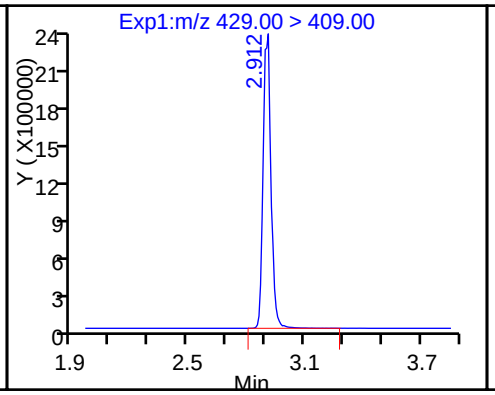
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

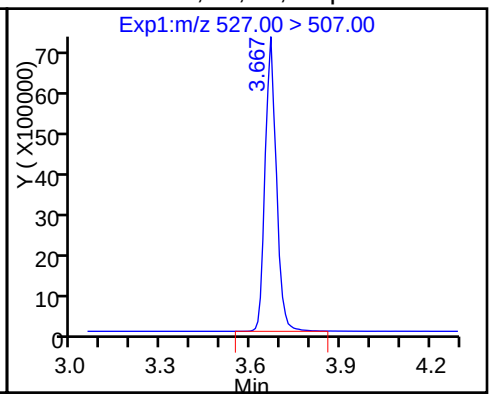
48 Sodium 1H,1H,2H,2H-perfluorooctane



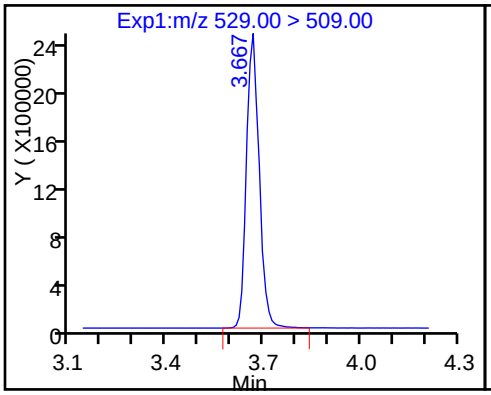
D 47 M2-6:2FTS



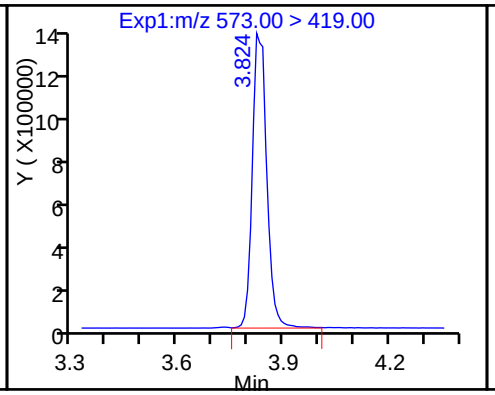
43 Sodium 1H,1H,2H,2H-perfluorooctane



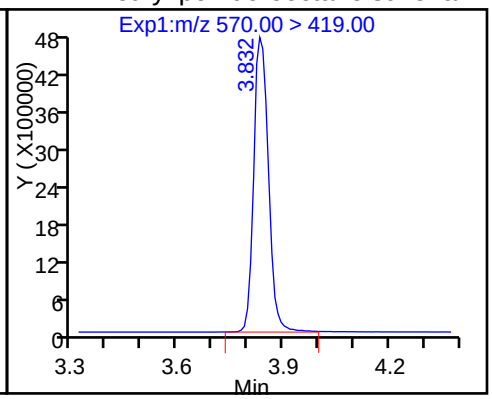
D 42 M2-8:2FTS



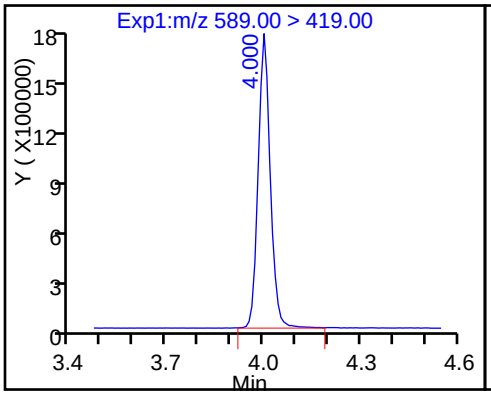
D 45 d3-NMeFOSAA



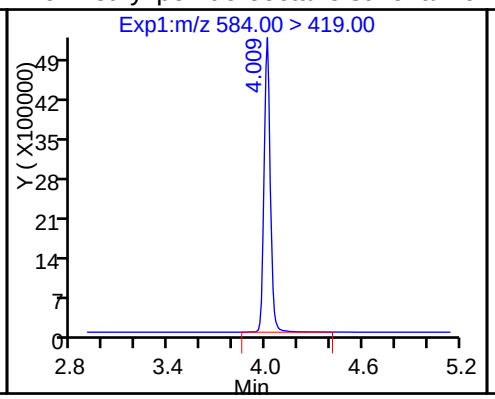
44 N-methyl perfluorooctane sulfonami



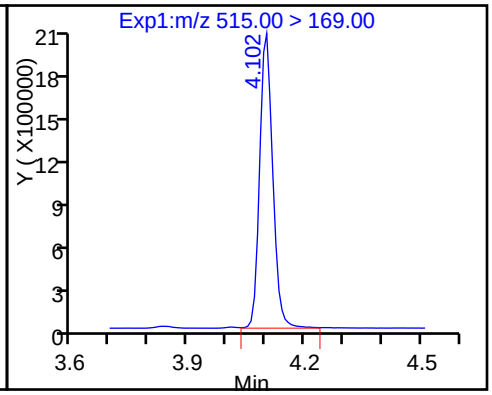
D 46 d5-NEtFOSAA



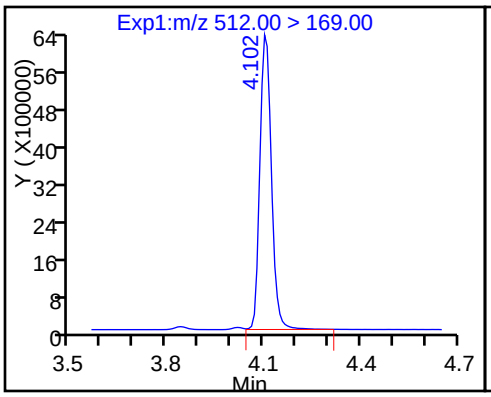
49 N-ethyl perfluorooctane sulfonamid



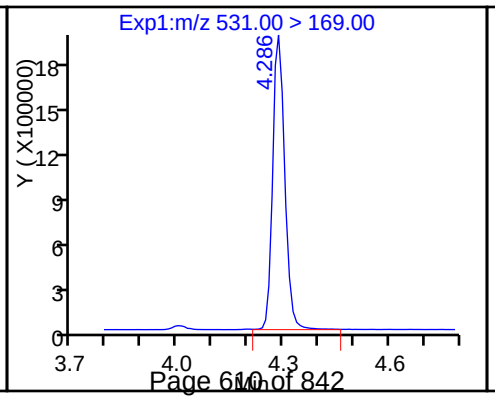
D 52 d-N-MeFOSA-M



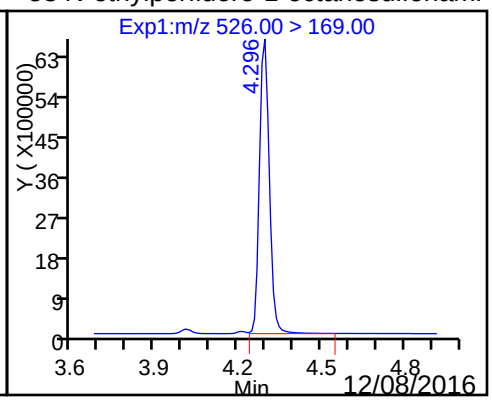
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d
Lims ID: IC L7 Add-on
Client ID:
Sample Type: IC Calib Level: 7
Inject. Date: 02-Dec-2016 12:29:29 ALS Bottle#: 52 Worklist Smp#: 20
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: L7 ADD ON
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub3

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:52:50 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 13:58:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.917	2.913	0.004	1.000	37224925	269.4		71.0		
D 47 M2-6:2FTS										
429.00 > 409.00	2.917	2.915	0.002		7823475	56.2		118		
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.676	3.674	0.002	1.000	37119838	263.9		68.9		
D 42 M2-8:2FTS										
529.00 > 509.00	3.676	3.676	0.0		7980965	59.8		125		
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.841	3.839	0.002		3959155	49.5		99.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.849	3.847	0.002	1.002	28724886	417.6		104		
D 46 d5-NEtFOSAA										
589.00 > 419.00	4.009	4.009	0.0		4497788	50.5		101		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	4.018	4.016	0.002	1.002	28356327	410.9		103		
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.110	4.105	0.005		6208758	58.4		117		
54 MeFOSA										
512.00 > 169.00	4.118	4.110	0.008	1.000	35701676	361.0		90.3		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.299	4.290	0.009		5918873	58.1		116		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.309	4.299	0.010	1.000	35493503	352.9		88.2		

Reagents:

LCPFC2-L7_00002 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 14:52:50 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Injection Date: 02-Dec-2016 12:29:29 Instrument ID: A8_N

Lims ID: IC L7 Add-on

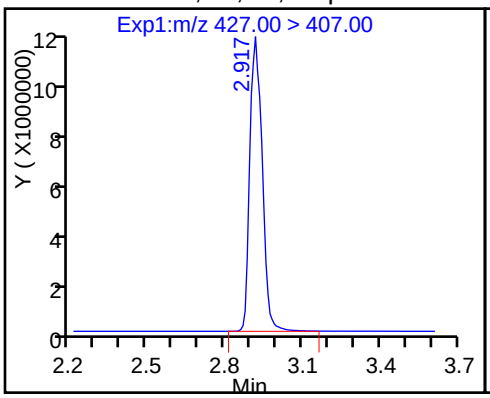
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 52 Worklist Smp#: 20

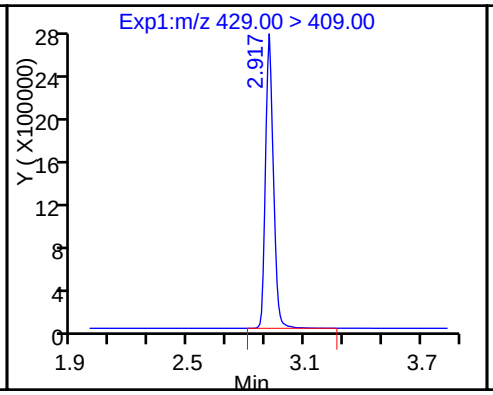
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

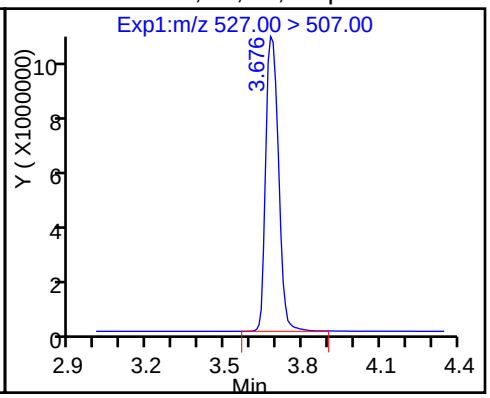
48 Sodium 1H,1H,2H,2H-perfluorooctane



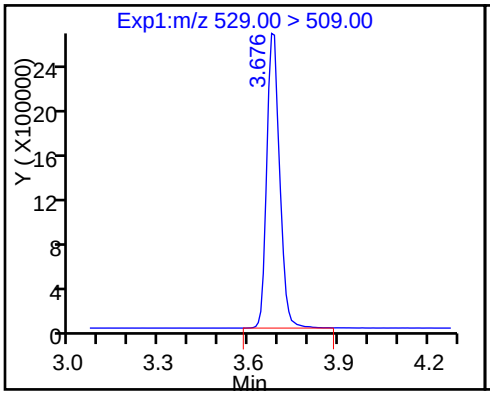
D 47 M2-6:2FTS



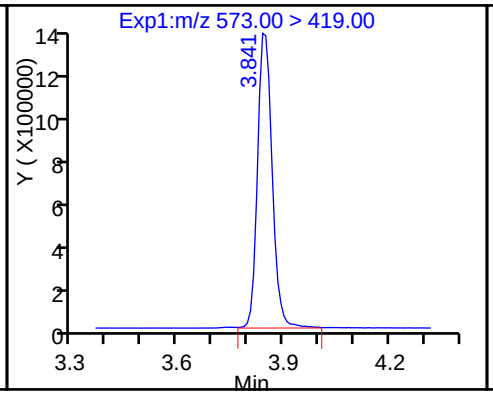
43 Sodium 1H,1H,2H,2H-perfluorooctane



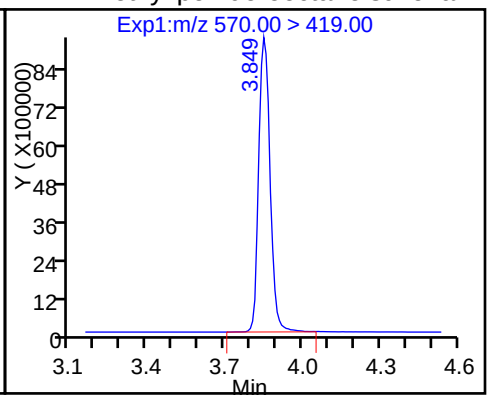
D 42 M2-8:2FTS



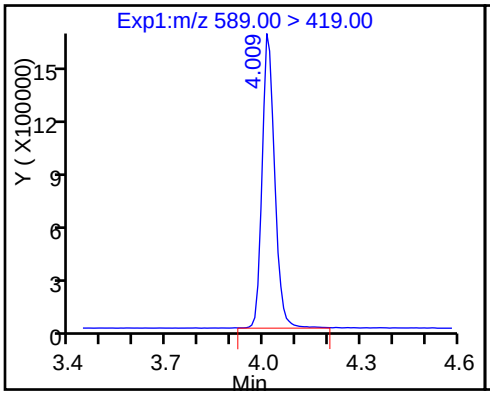
D 45 d3-NMeFOSAA



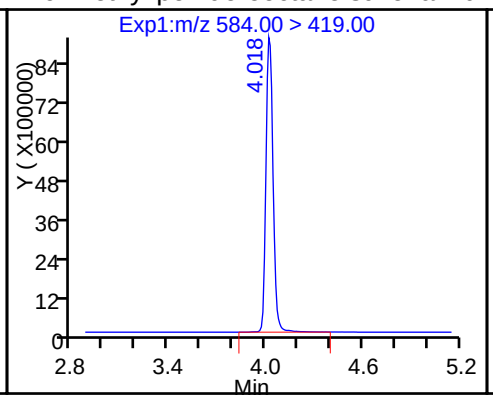
44 N-methyl perfluorooctane sulfonami



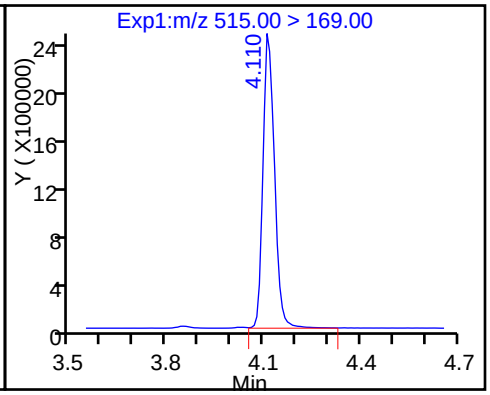
D 46 d5-NEtFOSAA



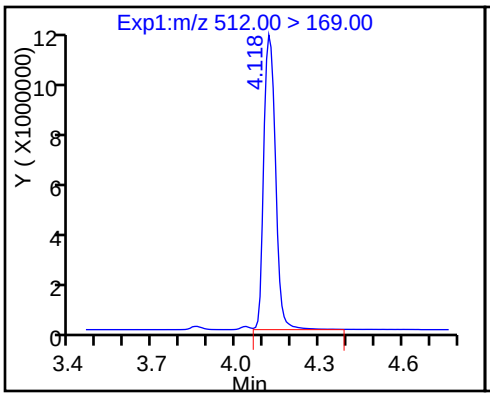
49 N-ethyl perfluorooctane sulfonamid



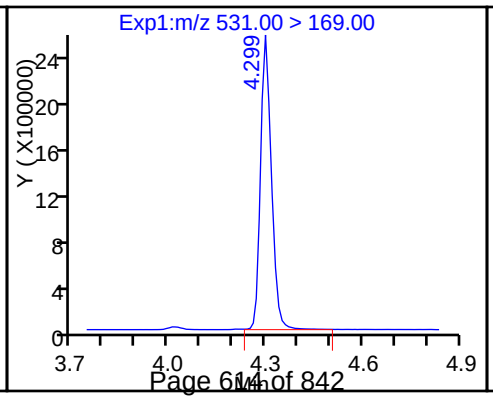
D 52 d-N-MeFOSA-M



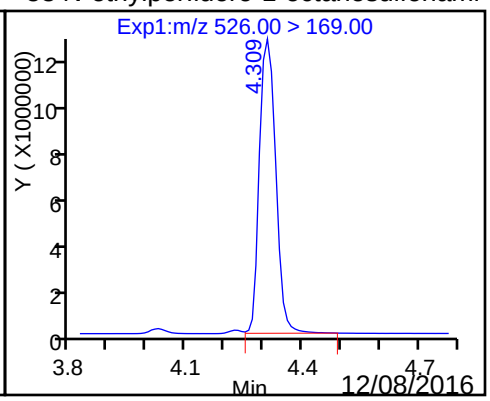
54 MeFOSA



D 51 d-N-EtFOSA-M



53 N-ethylperfluoro-1-octanesulfonami



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Lab Sample ID: ICV 320-137684/11 Calibration Date: 11/14/2016 12:34

Instrument ID: A8_N Calib Start Date: 11/14/2016 11:42

GC Column: Acquity ID: 2.10(mm) Calib End Date: 11/14/2016 13:27

Lab File ID: 14NOV2016A_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8697	0.9540		54.8	50.0	9.7	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.039	1.079		51.9	50.0	3.9	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.517	1.593		46.5	44.3	5.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9448	1.069		56.6	50.0	13.2	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.023	1.157		56.5	50.0	13.0	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.059	1.079		48.1	47.3	1.9	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.050	1.112		53.0	50.0	5.9	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.141	1.152		48.1	47.6	1.0	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9823	1.086		55.3	50.0	10.6	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.088	1.032		45.3	47.8	-5.1	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9011	0.9585		53.2	50.0	6.4	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9922	1.021		51.5	50.0	2.9	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6079	0.6646		52.8	48.3	9.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.028	1.057		51.4	50.0	2.8	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9550	1.009		52.8	50.0	5.7	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9443	1.048		55.5	50.0	11.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.779	1.879		52.8	50.0	5.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.171		53.8	50.0	7.7	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.076	1.405		65.3	50.0	30.5*	25.0
13C4 PFBA	Ave	197654	212837		53.8	50.0	7.7	50.0
13C5-PFPeA	Ave	159887	168015		52.5	50.0	5.1	50.0
13C2 PFHxA	Ave	145191	149038		51.3	50.0	2.6	50.0
13C4-PFHpA	Ave	131410	140045		53.3	50.0	6.6	50.0
18O2 PFHxS	Ave	202083	220444		51.6	47.3	9.1	50.0
13C4 PFOA	Ave	136481	143610		52.6	50.0	5.2	50.0
13C4 PFOS	Ave	155727	169673		52.1	47.8	9.0	50.0
13C5 PFNA	Ave	109384	112819		51.6	50.0	3.1	50.0
13C8 FOSA	Ave	250790	266530		53.1	50.0	6.3	50.0
13C2 PFDA	Ave	100216	101416		50.6	50.0	1.2	50.0
13C2 PFUnA	Ave	78435	82651		52.7	50.0	5.4	50.0
13C2 PFDoA	Ave	77339	81937		53.0	50.0	5.9	50.0
13C2-PFTeDA	Ave	170624	179744		52.7	50.0	5.3	50.0
13C2-PFHxDA	Ave	94300	97063		51.5	50.0	2.9	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_011.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 14-Nov-2016 12:34:53 ALS Bottle#: 44 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 14-Nov-2016 16:30:25 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK014

First Level Reviewer: chandrasenas Date: 14-Nov-2016 16:18:03

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.518	1.517	0.001	1.000	10152701	54.8			109973	
D 2 13C4 PFBA										
217.00 > 172.00	1.518	1.517	0.001		10641827	53.8		108	2210929	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.791	1.795	-0.004	1.000	9066177	51.9			127920	
D 4 13C5-PFPeA										
267.90 > 223.00	1.791	1.795	-0.004		8400738	52.5		105	948441	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.829	1.833	-0.004	1.000	15534302	46.5				
298.90 > 99.00	1.829	1.833	-0.004	1.000	6966484		2.23(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.084	2.094	-0.010	1.000	7969006	56.6			155092	
D 6 13C2 PFHxA										
315.00 > 270.00	2.084	2.094	-0.010		7451918	51.3		103	729045	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.445	2.399	0.046	1.000	11239116	48.1				
D 11 13C4-PFHpA										
367.00 > 322.00	2.423	2.437	-0.014		7002238	53.3		107	546754	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.430	2.440	-0.010	1.000	8099215	56.5			89814	
D 10 18O2 PFHxS										
403.00 > 84.00	2.445	2.455	-0.010		10427000	51.6		109	1325058	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.796	2.811	-0.015	1.000	7985804	53.0			176141	
413.00 > 169.00	2.796	2.811	-0.015	1.000	4795897		1.67(0.90-1.10)		187277	
D 14 13C4 PFOA										
417.00 > 372.00	2.796	2.811	-0.015		7180498	52.6		105	557496	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.804	2.819	-0.015	1.000	9308070	48.1				
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.180	3.154	0.026	1.000	8359643	45.3			1552927	
499.00 > 99.00	3.172	3.154	0.018	0.997	1998187		4.18(0.90-1.10)		152636	
D 19 13C5 PFNA										
468.00 > 423.00	3.180	3.197	-0.017		5640939	51.6		103	664302	
D 17 13C4 PFOS										
503.00 > 80.00	3.180	3.197	-0.017		8110393	52.1		109	192299	
20 Perfluorononanoic acid										
463.00 > 419.00	3.180	3.198	-0.018	1.000	6127980	55.3			77807	
D 21 13C8 FOSA										
506.00 > 78.00	3.478	3.481	-0.003		13326506	53.1		106	854551	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.478	3.484	-0.006	1.000	12773309	53.2			323249	
D 23 13C2 PFDA										
515.00 > 470.00	3.546	3.561	-0.015		5070805	50.6		101	216928	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.546	3.562	-0.016	1.000	5177594	51.5			142131	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.857	3.881	-0.024	1.000	5440579	52.8				
D 27 13C2 PFUnA										
565.00 > 520.00	3.883	3.900	-0.017		4132567	52.7		105	325281	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.883	3.900	-0.017	1.000	4368220	51.4			76042	
D 30 13C2 PFDoA										
615.00 > 570.00	4.174	4.195	-0.021		4096857	53.0		106	255880	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.181	4.200	-0.019	1.000	4133854	52.8			48899	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.447	4.471	-0.024	1.000	4292165	55.5			105715	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.695	4.718	-0.023		8987224	52.7		105	1247069	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.695	4.721	-0.026	1.000	7696924	52.8			147236	
713.00 > 169.00	4.687	4.721	-0.034	0.998	1332392		5.78(0.00-0.00)		182857	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.111	5.143	-0.032		4853129	51.5		103	382142	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.122	5.148	-0.026	1.000	4797279	53.8			16625	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.491	5.537	-0.046	1.000	5754295	65.3			18133	

Reagents:

LCPFCIC_00019 Amount Added: 1.00 Units: mL

Report Date: 14-Nov-2016 16:30:26 Chrom Revision: 2.2 17-Oct-2016 09:27:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_011.d

Injection Date: 14-Nov-2016 12:34:53 Instrument ID: A8_N

Lims ID: ICV

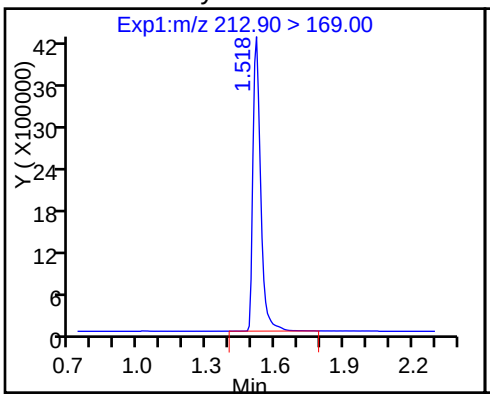
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 44 Worklist Smp#: 11

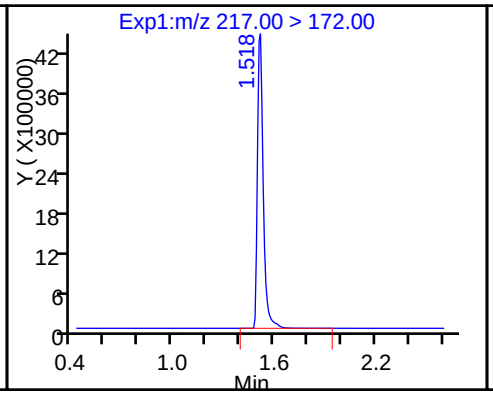
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

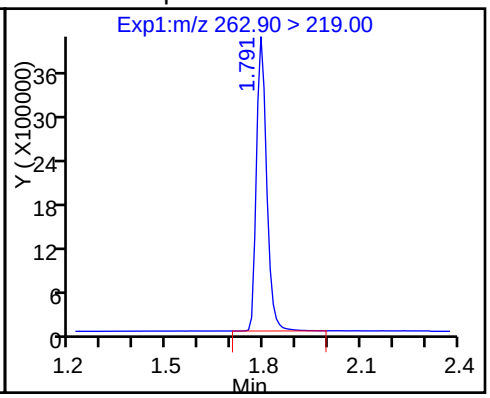
1 Perfluorobutyric acid



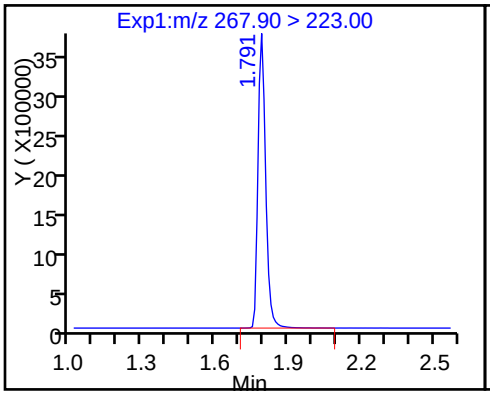
D 2 13C4 PFBA



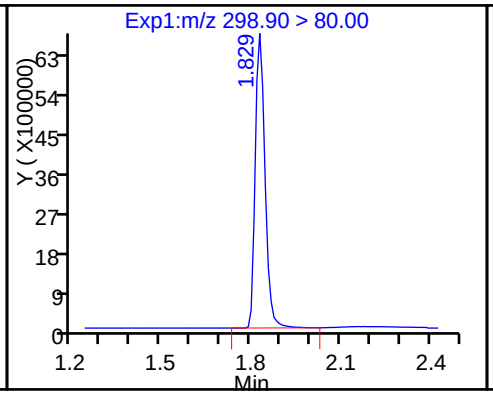
3 Perfluoropentanoic acid



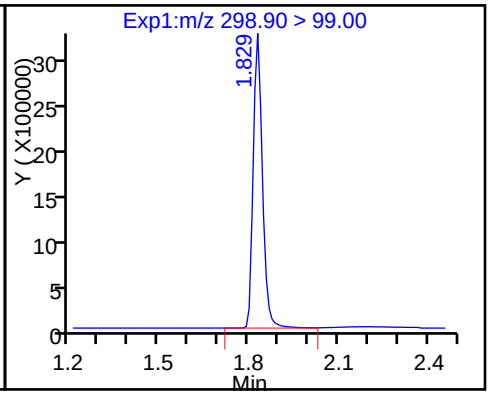
D 4 13C5-PFPeA



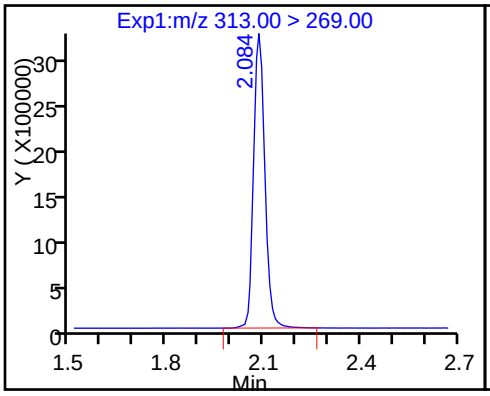
5 Perfluorobutanesulfonic acid



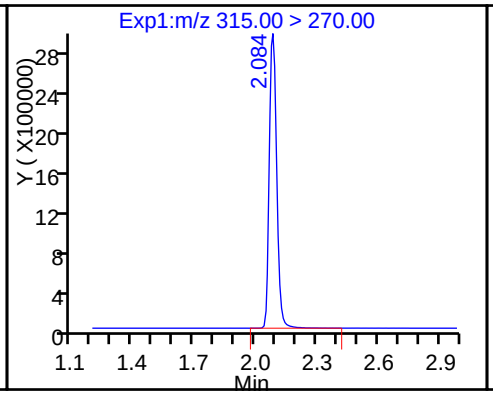
5 Perfluorobutanesulfonic acid



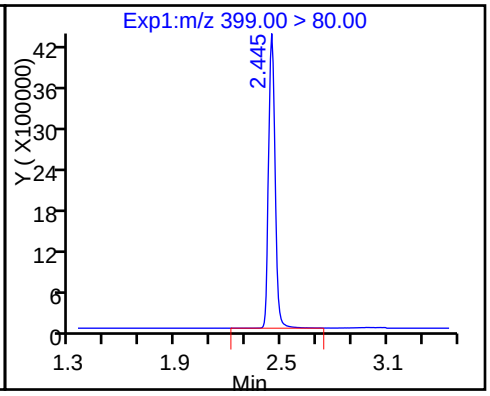
7 Perfluorohexanoic acid



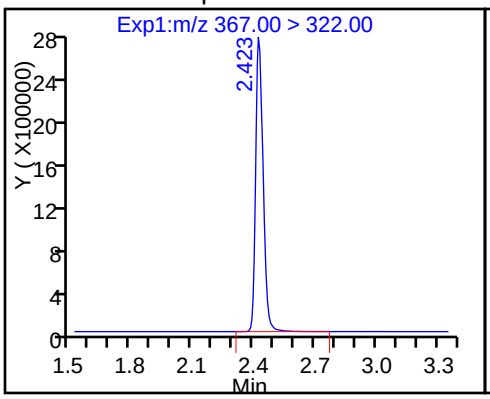
D 6 13C2 PFHxA



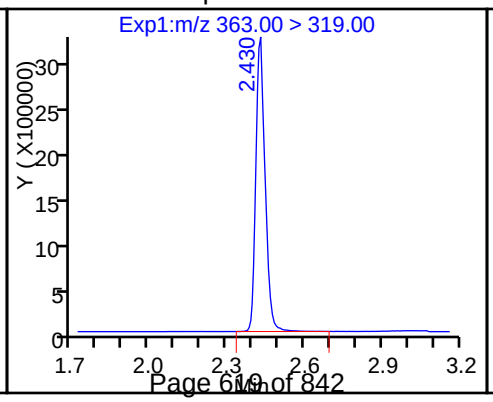
9 Perfluorohexanesulfonic acid



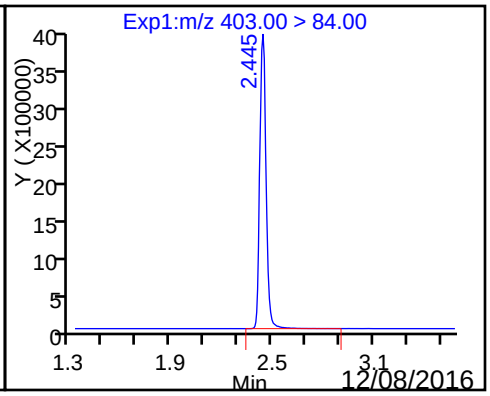
D 11 13C4-PFHpA



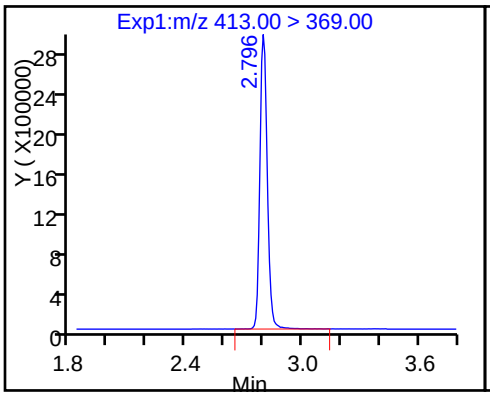
12 Perfluoroheptanoic acid



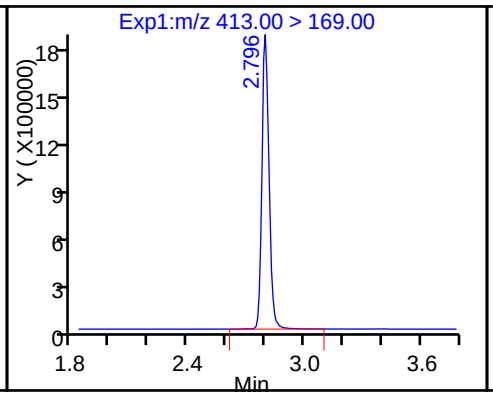
D 10 18O2 PFHxS



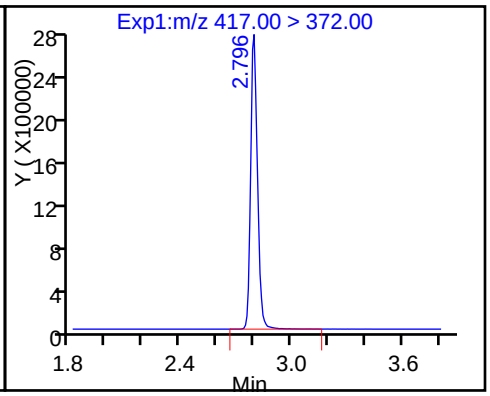
15 Perfluorooctanoic acid



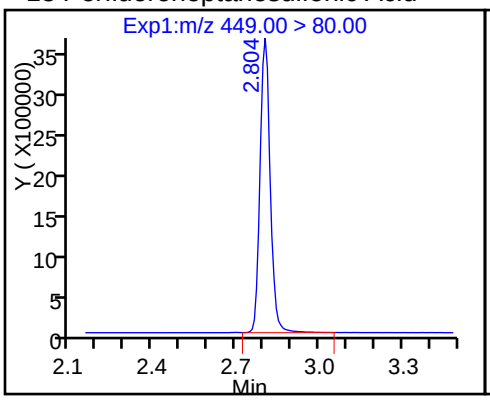
15 Perfluorooctanoic acid



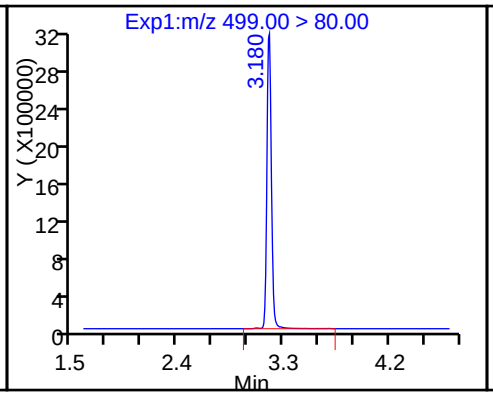
D 14 13C4 PFOA



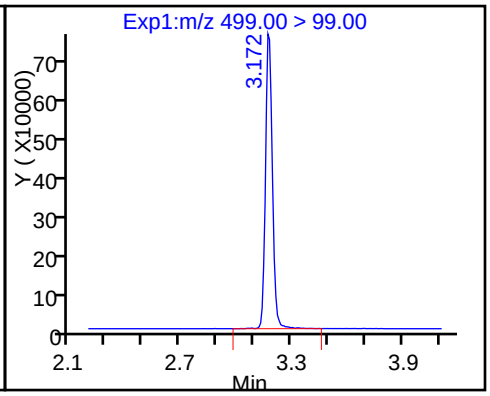
13 Perfluoroheptanesulfonic Acid



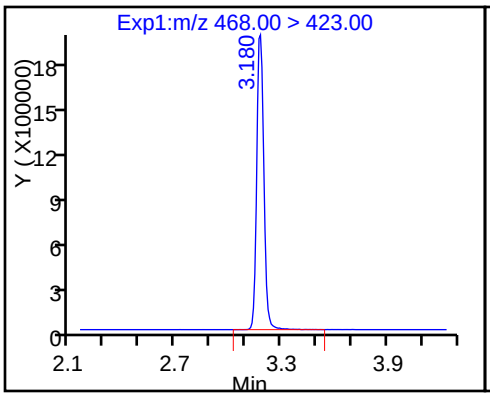
18 Perfluorooctane sulfonic acid



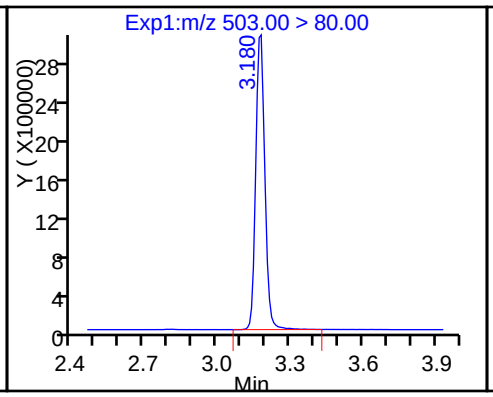
18 Perfluorooctane sulfonic acid



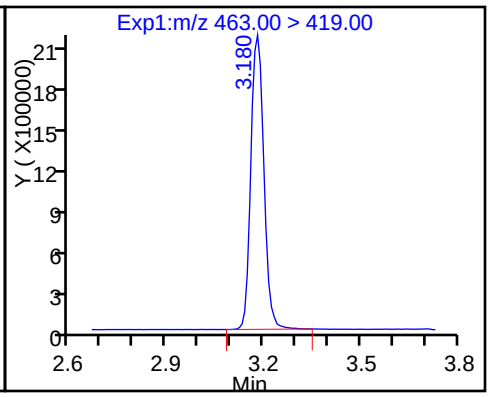
D 19 13C5 PFNA



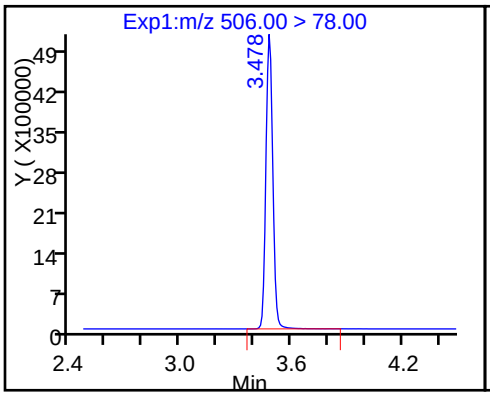
D 17 13C4 PFOS



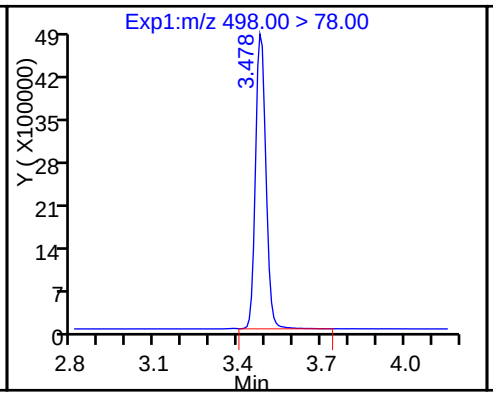
20 Perfluorononanoic acid



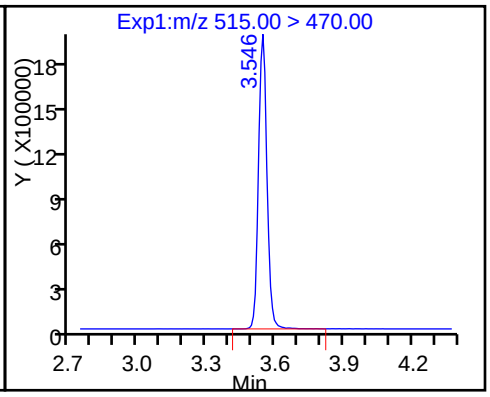
D 21 13C8 FOSA



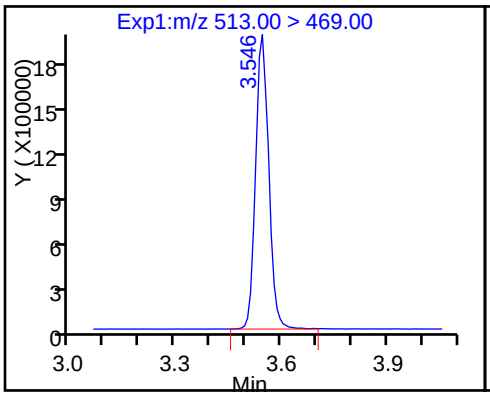
22 Perfluorooctane Sulfonamide



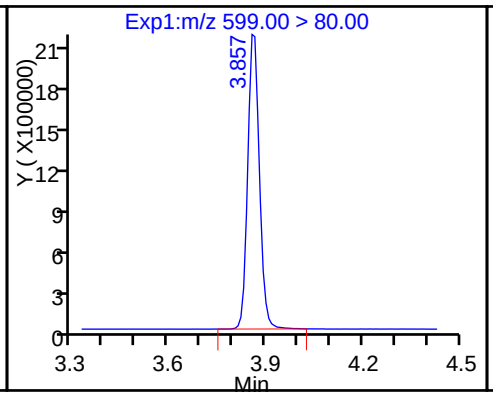
D 23 13C2 PFDA



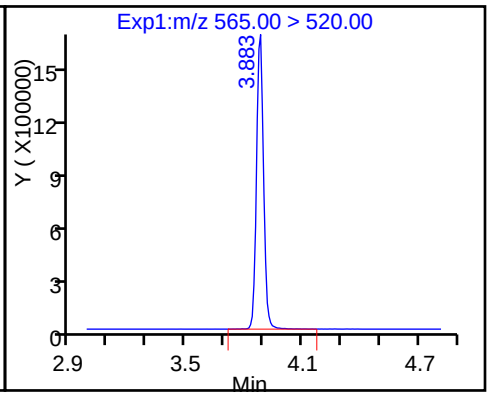
24 Perfluorodecanoic acid



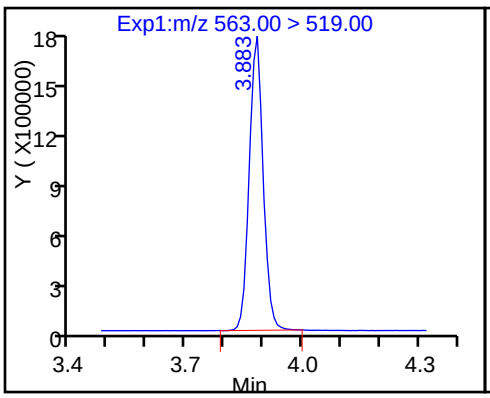
26 Perfluorodecane Sulfonic acid



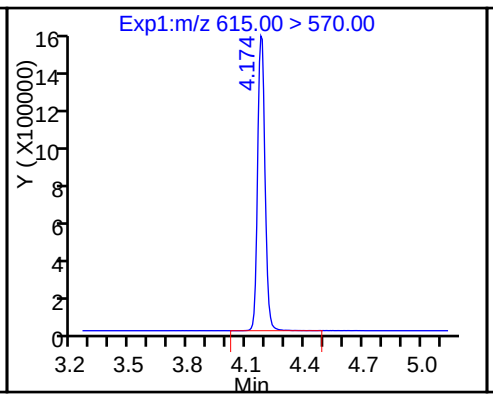
D 27 13C2 PFUnA



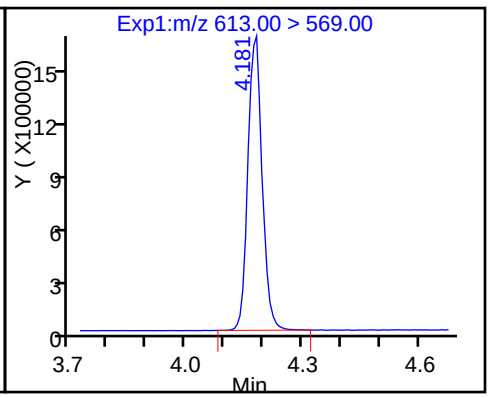
28 Perfluoroundecanoic acid



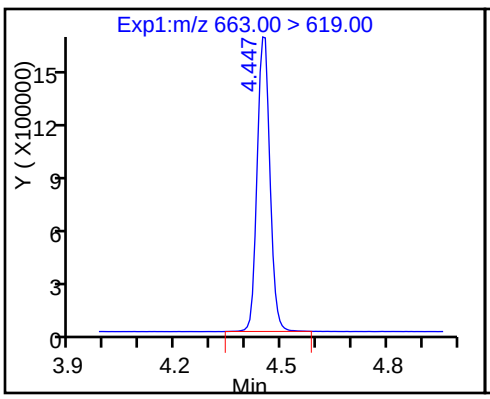
D 30 13C2 PFDoA



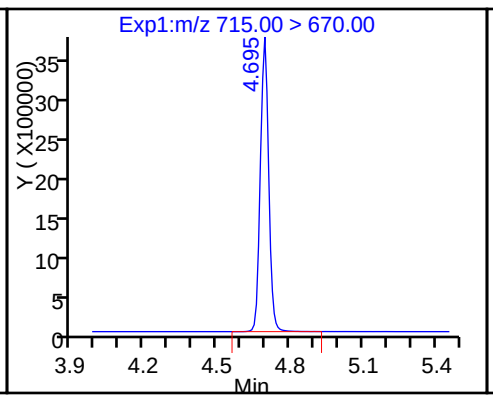
29 Perfluorododecanoic acid



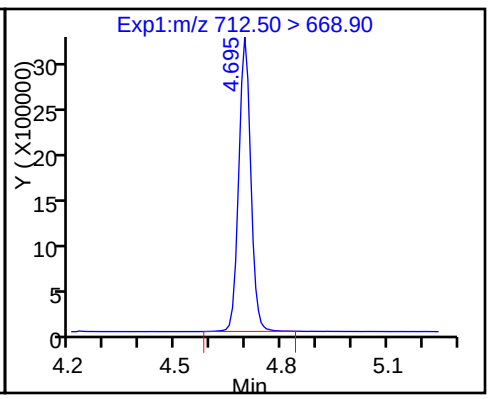
31 Perfluorotridecanoic acid



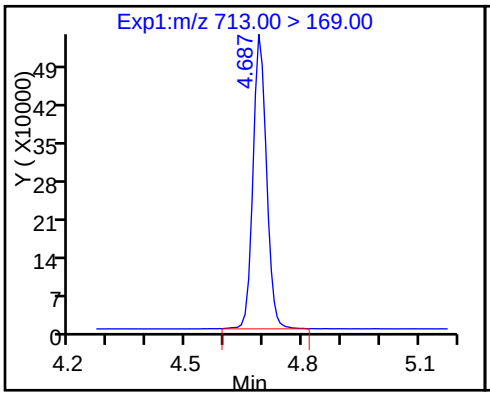
D 32 13C2-PFTeDA



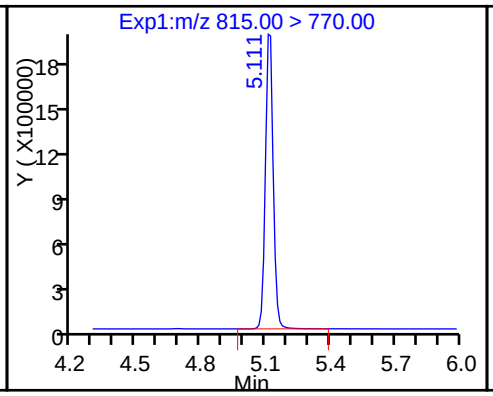
33 Perfluorotetradecanoic acid



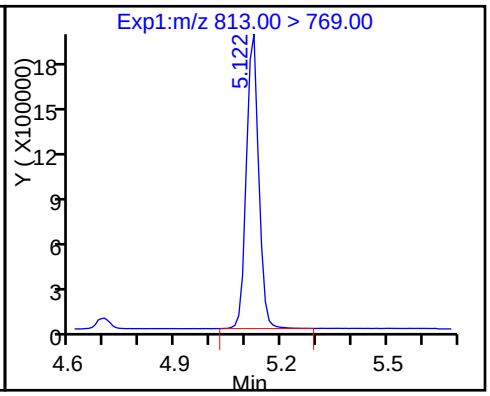
33 Perfluorotetradecanoic acid



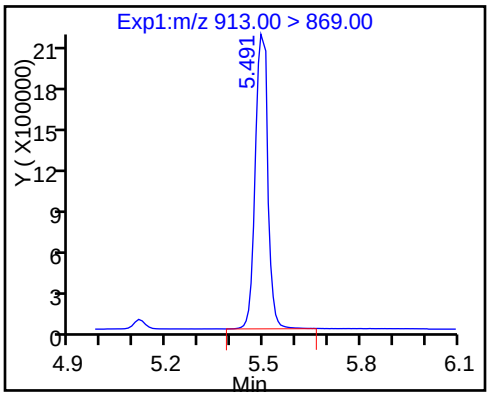
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Lab Sample ID: CCV 320-138811/2 Calibration Date: 11/20/2016 17:25

Instrument ID: A8_N Calib Start Date: 11/14/2016 11:42

GC Column: Acquity ID: 2.10(mm) Calib End Date: 11/14/2016 13:27

Lab File ID: 20NOV2016C_003.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8697	0.8374		0.963	1.00	-3.7	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.039	1.116		1.07	1.00	7.4	50.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.517	1.486		0.866	0.884	-2.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9448	0.9217		0.976	1.00	-2.4	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.023	1.179		1.15	1.00	15.2	50.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.059	1.185		1.02	0.910	11.8	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.050	1.195		1.14	1.00	13.8	50.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.141	1.191		0.994	0.952	4.4	50.0
Perfluorononanoic acid (PFNA)	AveID	0.9823	1.073		1.09	1.00	9.2	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.088	1.143		0.975	0.928	5.1	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9011	0.8771		0.973	1.00	-2.7	50.0
Perfluorodecanoic acid (PFDA)	AveID	0.9922	0.9762		0.984	1.00	-1.6	50.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6079	0.6320		1.00	0.964	4.0	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.028	1.079		1.05	1.00	5.0	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9550	1.136		1.19	1.00	19.0	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9443	0.9234		0.978	1.00	-2.2	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.779	1.646		0.925	1.00	-7.5	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.727		1.10	1.00	9.5	50.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.076	1.253		1.16	1.00	16.4	50.0
13C4 PFBA	Ave	197654	176118		44.6	50.0	-10.9	50.0
13C5-PFPeA	Ave	159887	143427		44.9	50.0	-10.3	50.0
13C2 PFHxA	Ave	145191	136383		47.0	50.0	-6.1	50.0
13C4-PFHpA	Ave	131410	119248		45.4	50.0	-9.3	50.0
18O2 PFHxS	Ave	202083	170837		40.0	47.3	-15.5	50.0
13C4 PFOA	Ave	136481	123233		45.1	50.0	-9.7	50.0
13C4 PFOS	Ave	155727	111871		34.3	47.8	-28.2	50.0
13C5 PFNA	Ave	109384	96932		44.3	50.0	-11.4	50.0
13C8 FOSA	Ave	250790	208191		41.5	50.0	-17.0	50.0
13C2 PFDA	Ave	100216	87495		43.7	50.0	-12.7	50.0
13C2 PFUnA	Ave	78435	70811		45.1	50.0	-9.7	50.0
13C2 PFDoA	Ave	77339	70524		45.6	50.0	-8.8	50.0
13C2-PFTeDA	Ave	170624	157319		46.1	50.0	-7.8	50.0
13C2-PFHxDA	Ave	94300	90102		47.8	50.0	-4.5	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37096.b\20NOV2016C_003.d
Lims ID: CCV L2
Client ID:
Sample Type: CCVL
Inject. Date: 20-Nov-2016 17:25:19 ALS Bottle#: 38 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L2
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37096.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 22-Nov-2016 17:05:23 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK032

First Level Reviewer: chandrasenas Date: 21-Nov-2016 12:08:36

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.502	1.493	0.009	1.000	147484	0.9628		96.3	2636	
D 2 13C4 PFBA										
217.00 > 172.00	1.502	1.493	0.009		8805924	44.6		89.1	1041950	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.772	1.762	0.010	1.000	159998	1.07		107	2127	
D 4 13C5-PFPeA										
267.90 > 223.00	1.772	1.762	0.010		7171357	44.9		89.7	756565	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.810	1.800	0.010	1.000	224463	0.8661		98.0		
298.90 > 99.00	1.810	1.800	0.010	1.000	96038		2.34(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.066	2.046	0.020	1.000	125705	0.9755		97.6	3780	
D 6 13C2 PFHxA										
315.00 > 270.00	2.060	2.046	0.014		6819138	47.0		93.9	467058	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.404	2.389	0.015	1.000	140615	1.15		115	898	
D 11 13C4-PFHpA										
367.00 > 322.00	2.404	2.389	0.015		5962380	45.4		90.7	494699	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.419	2.400	0.019	1.000	184157	1.02		112		
D 10 18O2 PFHxS										
403.00 > 84.00	2.419	2.405	0.014		8080596	40.0		84.5	688436	
D 14 13C4 PFOA										
417.00 > 372.00	2.768	2.754	0.014		6161673	45.1		90.3	403937	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.775	2.754	0.021	1.000	147312	1.14		114	1847	
413.00 > 169.00	2.768	2.754	0.014	0.997	85888		1.72(0.90-1.10)		4982	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.783	2.754	0.029	1.000	126885	0.99		104		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.152	3.121	0.031	1.000	118671	0.9754		105	8423	
499.00 > 99.00	3.152	3.121	0.031	1.000	27994		4.24(0.90-1.10)		2067	
D 19 13C5 PFNA										
468.00 > 423.00	3.152	3.129	0.023		4846588	44.3		88.6	365586	
D 17 13C4 PFOS										
503.00 > 80.00	3.144	3.129	0.015		5347451	34.3		71.8	243686	
20 Perfluorononanoic acid										
463.00 > 419.00	3.144	3.129	0.015	1.000	103970	1.09		109	426	
D 21 13C8 FOSA										
506.00 > 78.00	3.474	3.460	0.014		10409546	41.5		83.0	832885	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.474	3.468	0.006	1.000	182611	0.9734		97.3	18388	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.516	3.492	0.024	1.000	85408	0.9838		98.4	3674	
D 23 13C2 PFDA										
515.00 > 470.00	3.508	3.492	0.016		4374751	43.7		87.3	423362	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.827	3.802	0.025	1.000	68157	1.00		104		
D 27 13C2 PFUnA										
565.00 > 520.00	3.844	3.819	0.025		3540562	45.1		90.3	301224	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.844	3.819	0.025	1.000	76431	1.05		105	2295	
D 30 13C2 PFDoA										
615.00 > 570.00	4.134	4.113	0.021		3526201	45.6		91.2	241722	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.134	4.113	0.021	1.000	80127	1.19		119	367	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.406	4.380	0.026	1.000	65120	0.9779		97.8	2207	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.644	4.614	0.030		7865970	46.1		92.2	755833	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.644	4.614	0.030	1.000	116055	0.9252		92.5	2743	
713.00 > 169.00	4.644	4.614	0.030	1.000	20734		5.60(0.00-0.00)		9709	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.058	5.026	0.032		4505095	47.8		95.5	378036	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.058	5.026	0.032	1.000	121827	1.10		110	726	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.414	5.383	0.031	1.000	88358	1.16		116	412	

Reagents:

LCPFC-L2_00022 Amount Added: 1.00 Units: mL

Report Date: 22-Nov-2016 17:05:24 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37096.b\20NOV2016C_003.d

Injection Date: 20-Nov-2016 17:25:19 Instrument ID: A8_N

Lims ID: CCV L2

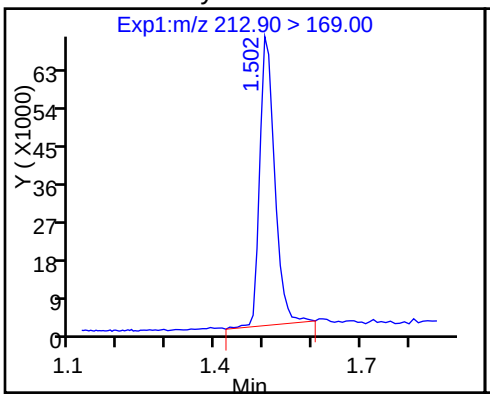
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 38 Worklist Smp#: 2

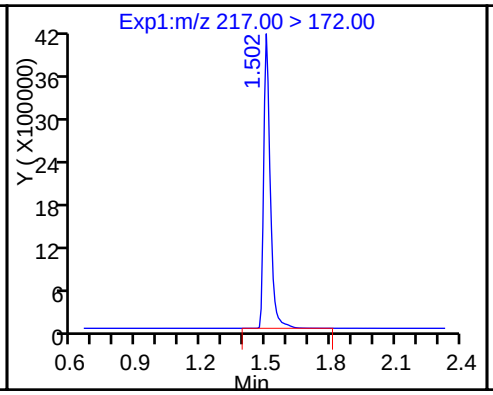
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

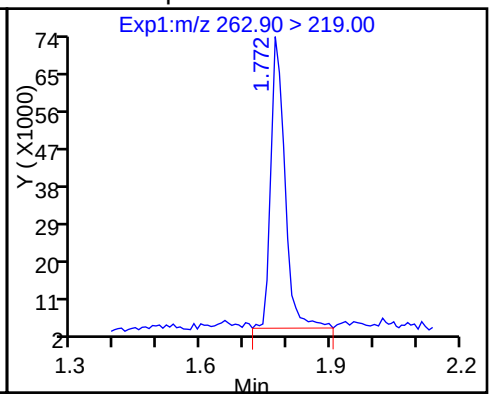
1 Perfluorobutyric acid



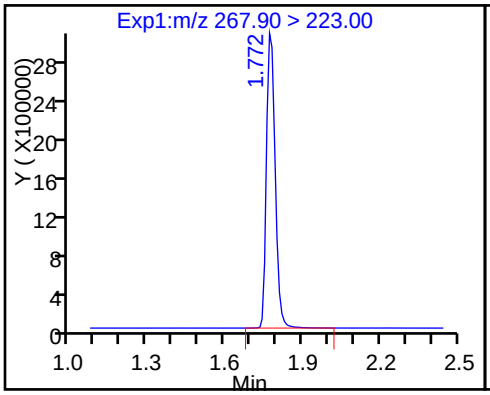
D 2 13C4 PFBA



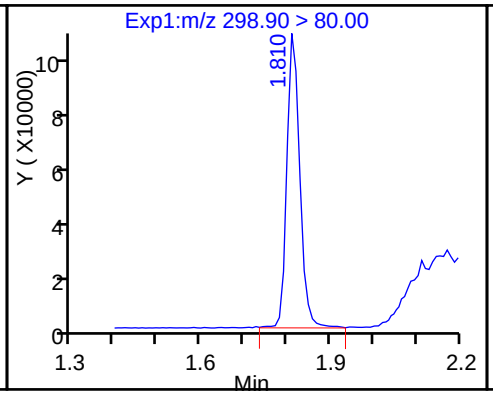
3 Perfluoropentanoic acid



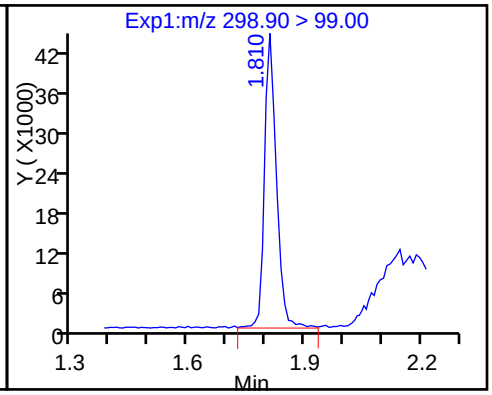
D 4 13C5-PFPeA



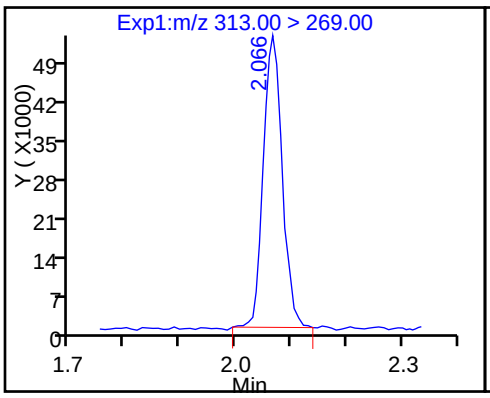
5 Perfluorobutanesulfonic acid



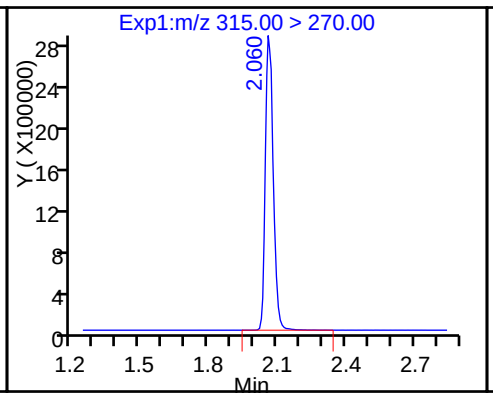
5 Perfluorobutanesulfonic acid



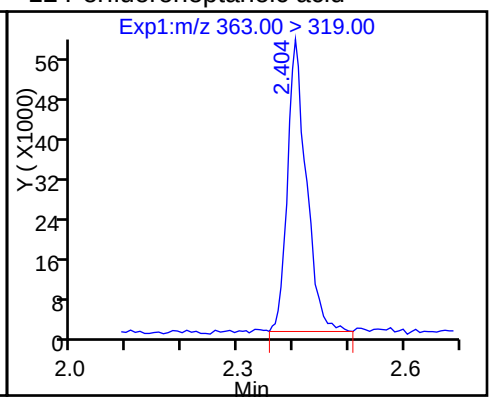
7 Perfluorohexanoic acid



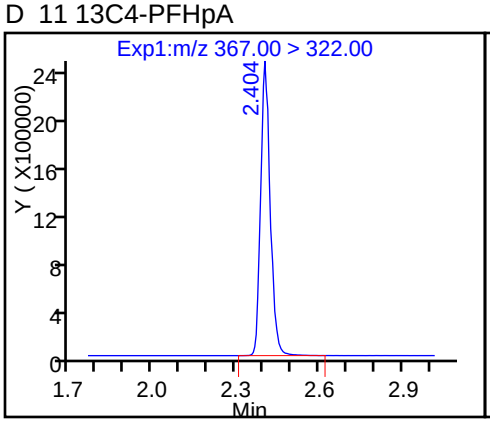
D 6 13C2 PFHxA



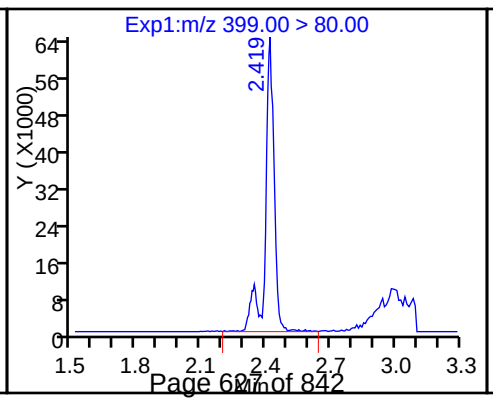
12 Perfluoroheptanoic acid



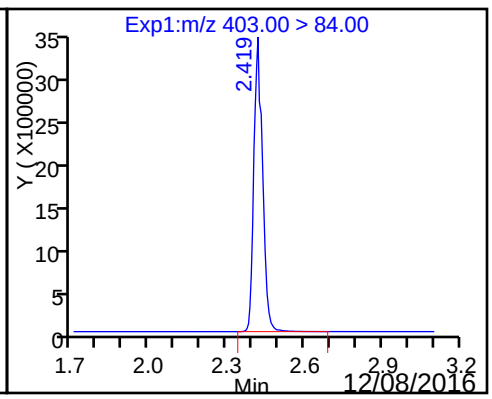
D 11 13C4-PFHpA



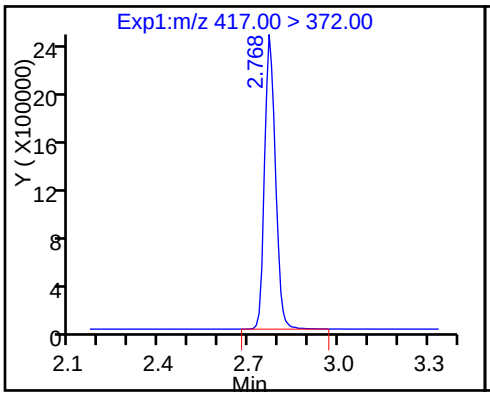
9 Perfluorohexanesulfonic acid



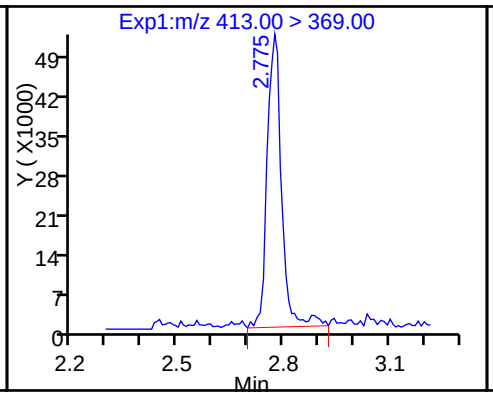
D 10 18O2 PFHxS



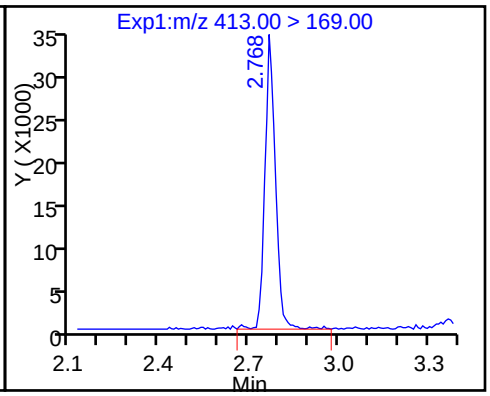
D 14 13C4 PFOA



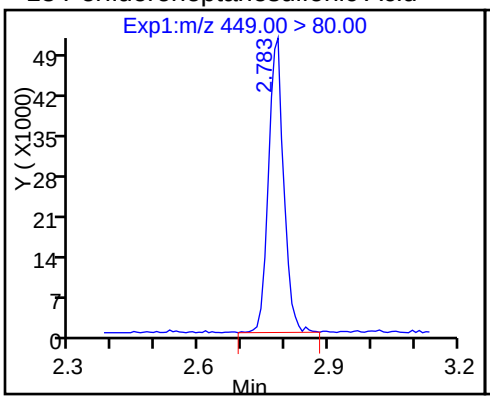
15 Perfluorooctanoic acid



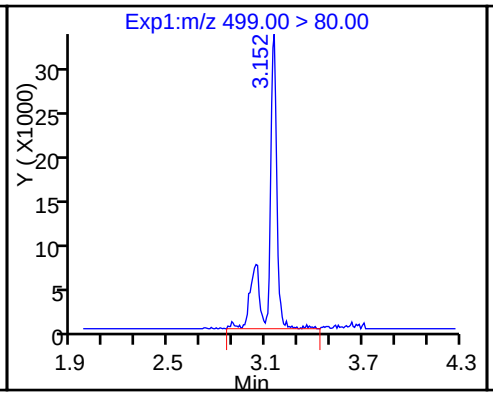
15 Perfluorooctanoic acid



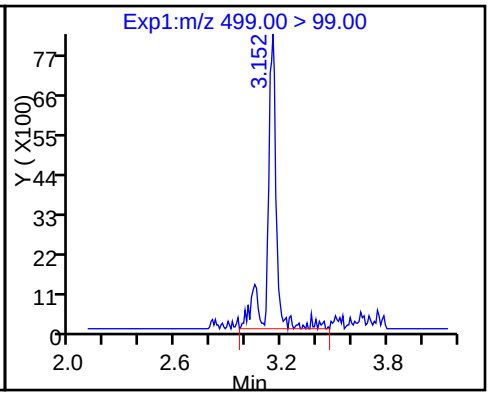
13 Perfluoroheptanesulfonic Acid



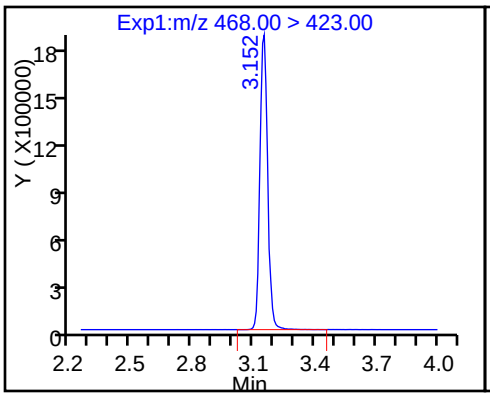
18 Perfluorooctane sulfonic acid



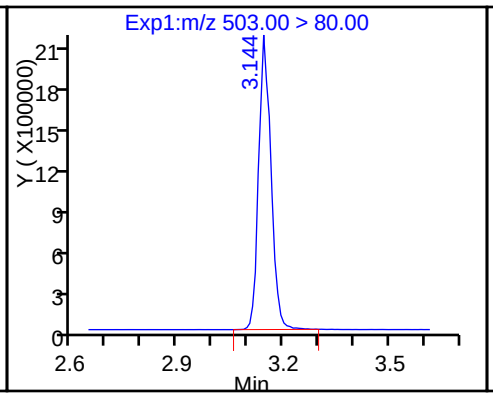
18 Perfluorooctane sulfonic acid



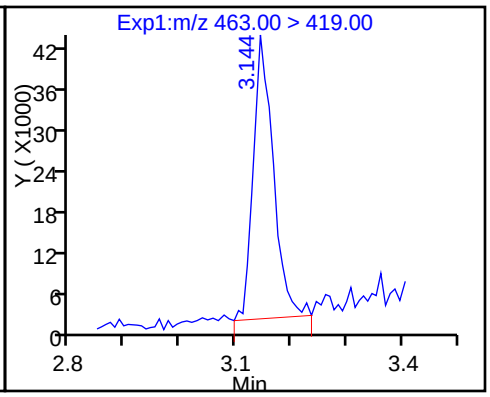
D 19 13C5 PFNA



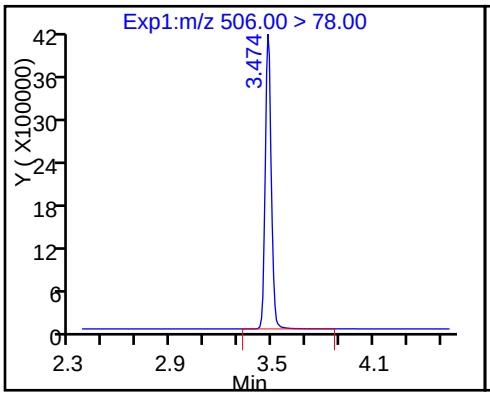
D 17 13C4 PFOS



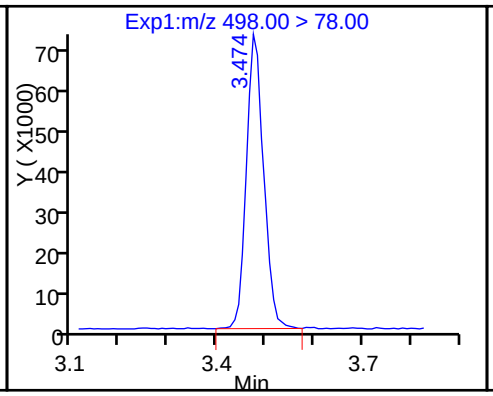
20 Perfluorononanoic acid



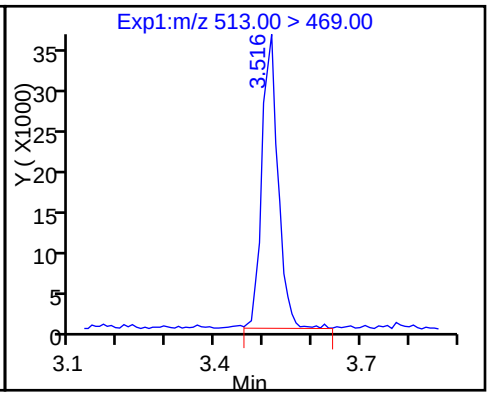
D 21 13C8 FOSA



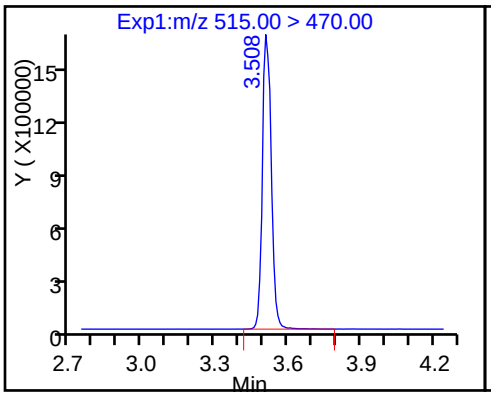
22 Perfluorooctane Sulfonamide



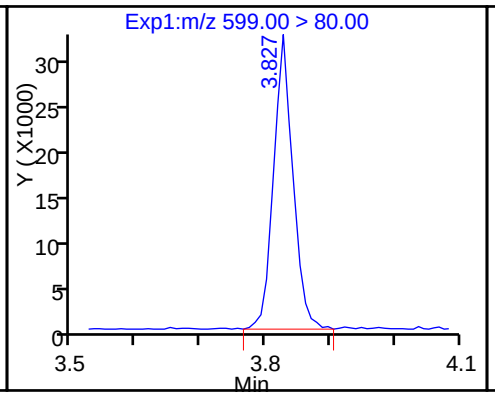
24 Perfluorodecanoic acid



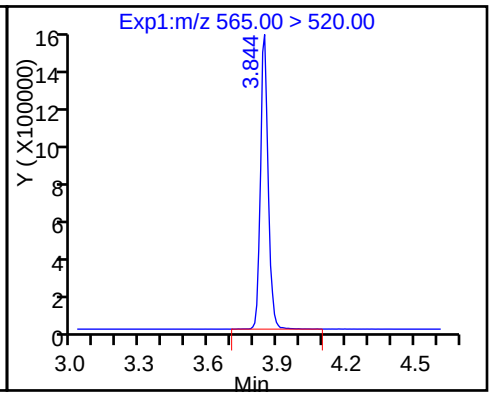
D 23 13C2 PFDA



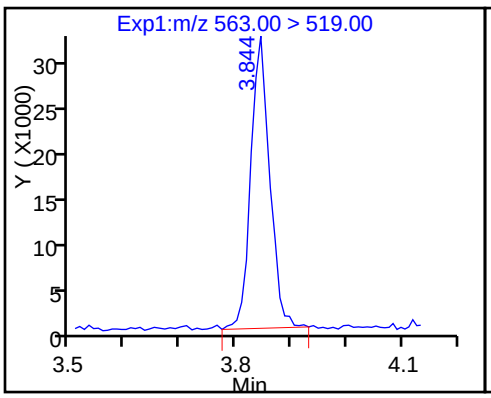
26 Perfluorodecane Sulfonic acid



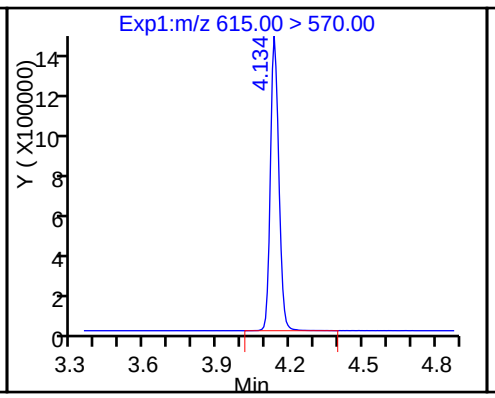
D 27 13C2 PFUnA



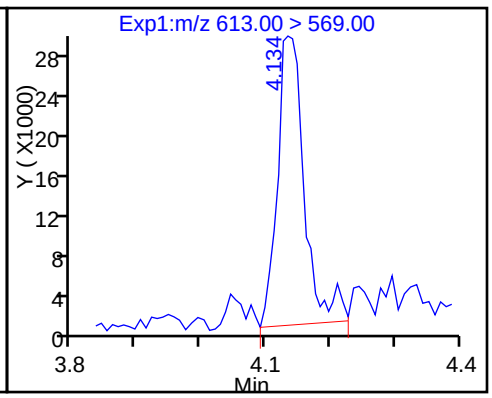
28 Perfluoroundecanoic acid



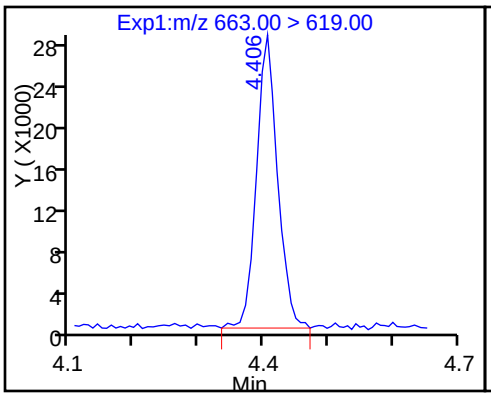
D 30 13C2 PFDoA



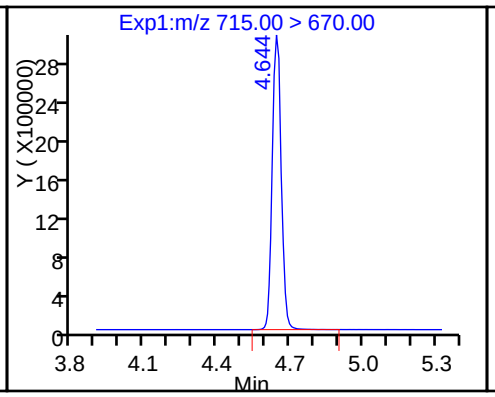
29 Perfluorododecanoic acid



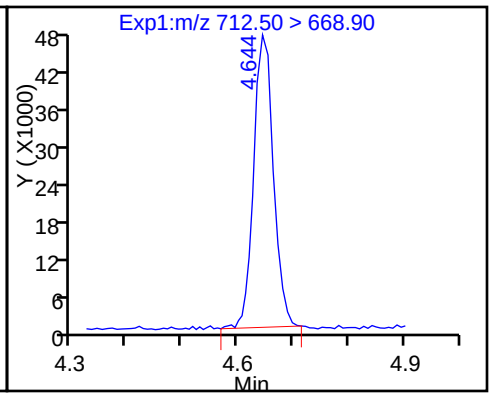
31 Perfluorotridecanoic acid



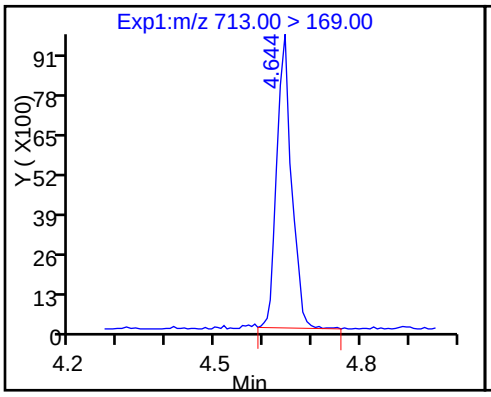
D 32 13C2-PFTeDA



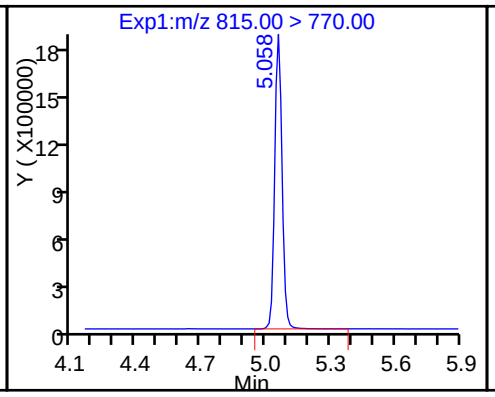
33 Perfluorotetradecanoic acid



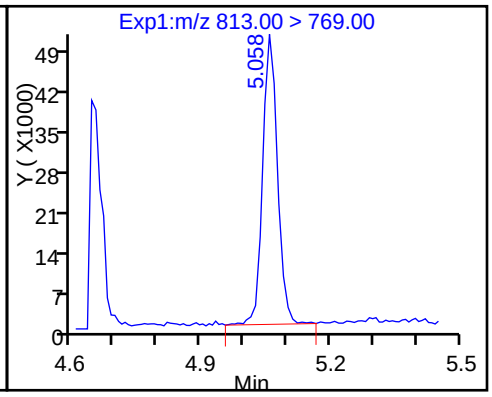
33 Perfluorotetradecanoic acid



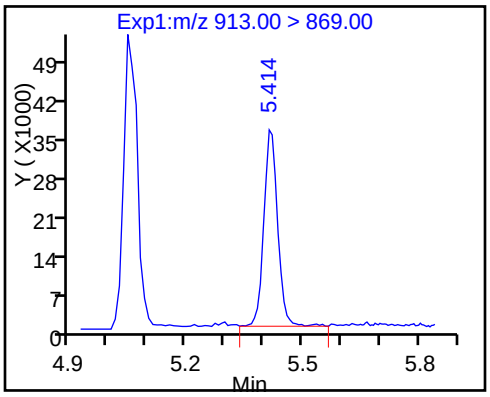
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Lab Sample ID: CCV 320-138814/2 Calibration Date: 11/20/2016 20:48

Instrument ID: A8_N Calib Start Date: 11/14/2016 11:42

GC Column: Acquity ID: 2.10(mm) Calib End Date: 11/14/2016 13:27

Lab File ID: 20NOV2016D_002.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8697	0.8775		50.4	50.0	0.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.039	1.010		48.6	50.0	-2.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.517	1.615		47.1	44.2	6.5	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9448	0.996		52.7	50.0	5.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.023	1.016		49.6	50.0	-0.7	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.059	1.005		43.2	45.5	-5.1	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.141	1.250		52.1	47.6	9.5	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.050	1.007		48.0	50.0	-4.1	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9823	0.997		50.8	50.0	1.5	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.088	1.031		44.0	46.4	-5.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9011	0.9236		51.2	50.0	2.5	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9922	0.9919		50.0	50.0	-0.0	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6079	0.6370		50.5	48.2	4.8	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.028	0.9639		46.9	50.0	-6.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9550	0.9505		49.8	50.0	-0.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9443	0.9451		50.0	50.0	0.0	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.779	1.608		45.2	50.0	-9.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.307		60.2	50.0	20.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.076	1.232		57.3	50.0	14.5	25.0
13C4 PFBA	Ave	197654	146883		37.2	50.0	-25.7	50.0
13C5-PFPeA	Ave	159887	120140		37.6	50.0	-24.9	50.0
13C2 PFHxA	Ave	145191	107243		36.9	50.0	-26.1	50.0
13C4-PFHpA	Ave	131410	95383		36.3	50.0	-27.4	50.0
18O2 PFHxS	Ave	202083	135816		31.8	47.3	-32.8	50.0
13C4 PFOA	Ave	136481	96758		35.4	50.0	-29.1	50.0
13C4 PFOS	Ave	155727	98159		30.1	47.8	-37.0	50.0
13C5 PFNA	Ave	109384	75621		34.6	50.0	-30.9	50.0
13C8 FOSA	Ave	250790	170035		33.9	50.0	-32.2	50.0
13C2 PFDA	Ave	100216	69337		34.6	50.0	-30.8	50.0
13C2 PFUnA	Ave	78435	56563		36.1	50.0	-27.9	50.0
13C2 PFDoA	Ave	77339	52677		34.1	50.0	-31.9	50.0
13C2-PFTeDA	Ave	170624	109296		32.0	50.0	-35.9	50.0
13C2-PFHxDA	Ave	94300	74027		39.3	50.0	-21.5	50.0

FORM VII 537 (Modified)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_002.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 20-Nov-2016 20:48:16 ALS Bottle#: 41 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 15:03:41 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 15:03:41

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.493	1.493	0.0	1.000	6444212	50.4		101	74484	
D 2 13C4 PFBA										
217.00 > 172.00	1.493	1.493	0.0		7344165	37.2		74.3	663213	
D 4 13C5-PFPeA										
267.90 > 223.00	1.752	1.752	0.0		6006983	37.6		75.1	860108	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.762	1.762	0.0	1.000	6067432	48.6		97.2	72289	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.791	1.791	0.0	1.000	9697459	47.1		106		
298.90 > 99.00	1.791	1.791	0.0	1.000	4062071		2.39(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.040	2.040	0.0	1.000	5342038	52.7		105	211663	
D 6 13C2 PFHxA										
315.00 > 270.00	2.040	2.040	0.0		5362158	36.9		73.9	336412	
D 11 13C4-PFHpA										
367.00 > 322.00	2.366	2.366	0.0		4769133	36.3		72.6	322826	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.372	2.372	0.0	1.000	4845355	49.6		99.3	35527	
D 10 18O2 PFHxS										
403.00 > 84.00	2.382	2.382	0.0		6424085	31.8		67.2	534126	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.387	2.387	0.0	1.000	6210088	43.2		94.9		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.733	2.733	0.0	1.000	4873041	48.0		95.9	115647	
413.00 > 169.00	2.724	2.733	-0.009	0.997	3012840		1.62(0.90-1.10)		117442	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.733	2.733	0.0	1.000	5839288	52.1		110		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.733	2.733	0.0		4837897	35.4		70.9	299705	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.096	3.096	0.0	1.000	4695529	44.0		94.8	455188	
499.00 > 99.00	3.096	3.096	0.0	1.000	1102784		4.26(0.90-1.10)		126597	
20 Perfluorononanoic acid										
463.00 > 419.00	3.096	3.096	0.0	1.000	3770251	50.8		102	32756	
D 19 13C5 PFNA										
468.00 > 423.00	3.096	3.096	0.0		3781027	34.6		69.1	242453	
D 17 13C4 PFOS										
503.00 > 80.00	3.096	3.096	0.0		4691990	30.1		63.0	227891	
D 21 13C8 FOSA										
506.00 > 78.00	3.458	3.458	0.0		8501762	33.9		67.8	422505	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.458	3.458	0.0	1.000	7852212	51.2		102	427989	
D 23 13C2 PFDA										
515.00 > 470.00	3.465	3.465	0.0		3466859	34.6		69.2	230230	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.465	3.465	0.0	1.000	3438847	50.0		100.0	109294	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.782	3.782	0.0	1.000	3013591	50.5		105		
D 27 13C2 PFUnA										
565.00 > 520.00	3.800	3.800	0.0		2828127	36.1		72.1	371765	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.800	3.800	0.0	1.000	2726152	46.9		93.8	76914	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.091	4.091	0.0	1.000	2503375	49.8		99.5	52459	
D 30 13C2 PFDoA										
615.00 > 570.00	4.091	4.091	0.0		2633836	34.1		68.1	157508	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.352	4.352	0.0	1.000	2489248	50.0		100	82827	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.586	4.586	0.0	1.000	4236325	45.2		90.4	134826	
713.00 > 169.00	4.586	4.586	0.0	1.000	739952		5.73(0.00-0.00)		160308	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.586	4.586	0.0		5464787	32.0		64.1	455209	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	4.990	4.990	0.0	1.000	3442320	60.2		120	73786	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.990	4.990	0.0		3701372	39.3		78.5	490356	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.344	5.344	0.0	1.000	3245904	57.3		115	36508	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 23-Nov-2016 15:03:42 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_002.d

Injection Date: 20-Nov-2016 20:48:16 Instrument ID: A8_N

Lims ID: CCV L5

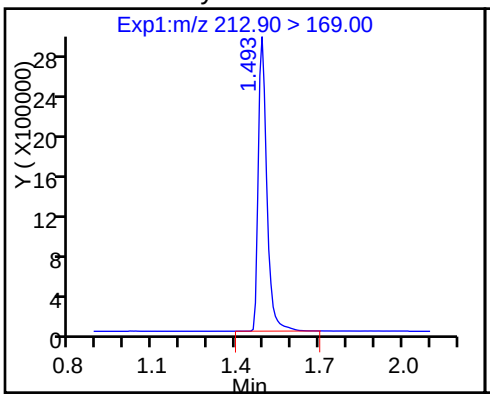
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 2

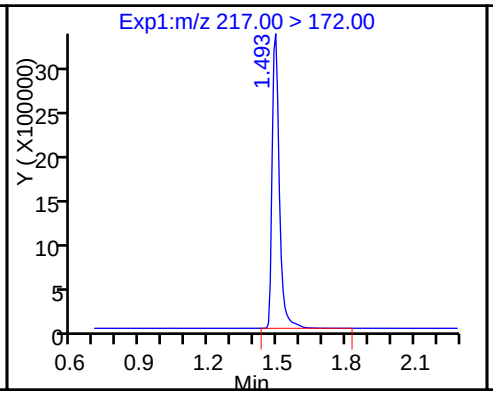
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

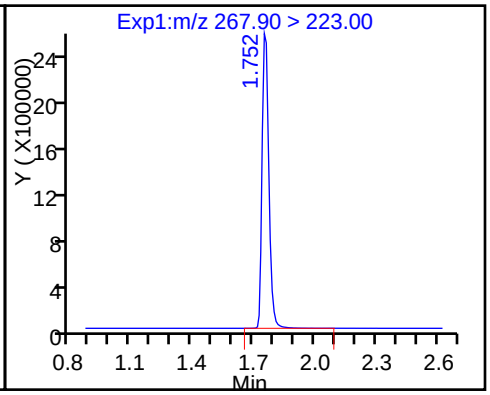
1 Perfluorobutyric acid



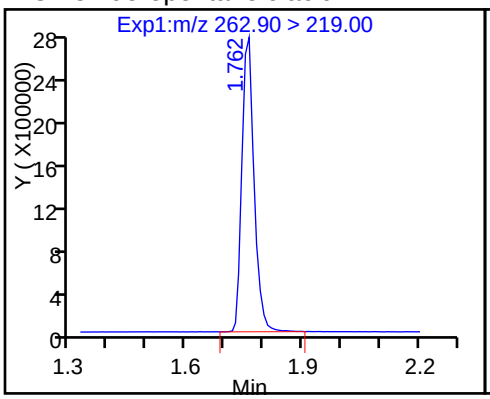
D 2 13C4 PFBA



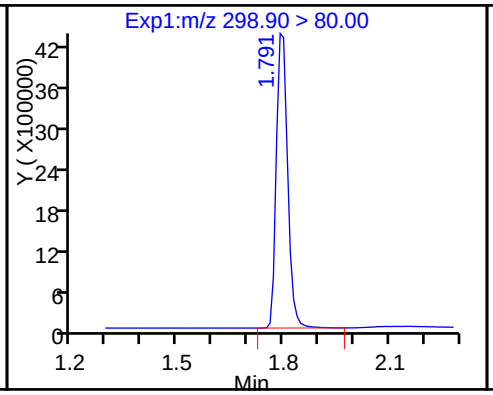
D 4 13C5-PFPeA



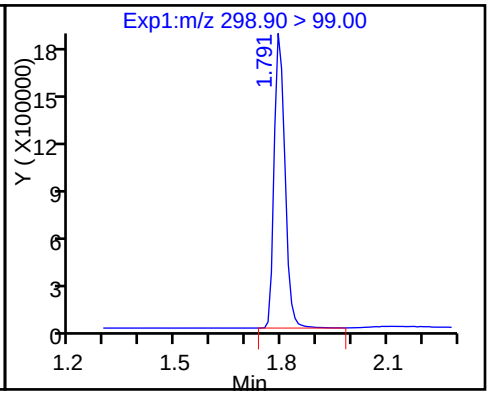
3 Perfluoropentanoic acid



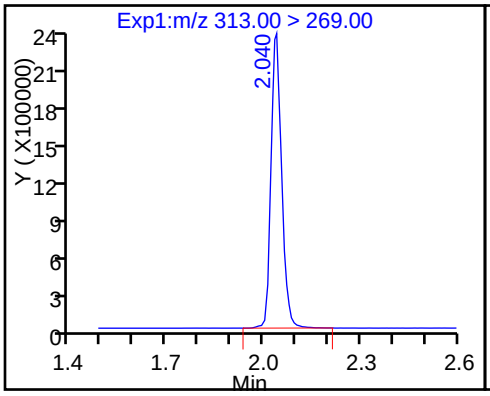
5 Perfluorobutanesulfonic acid



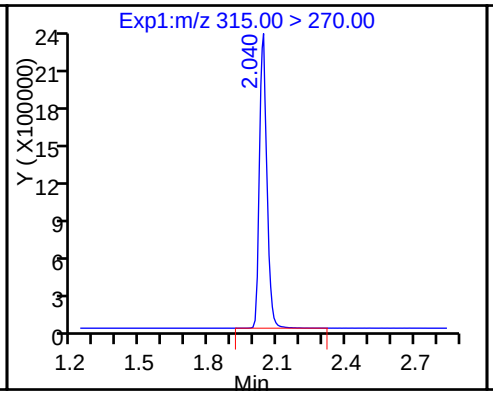
5 Perfluorobutanesulfonic acid



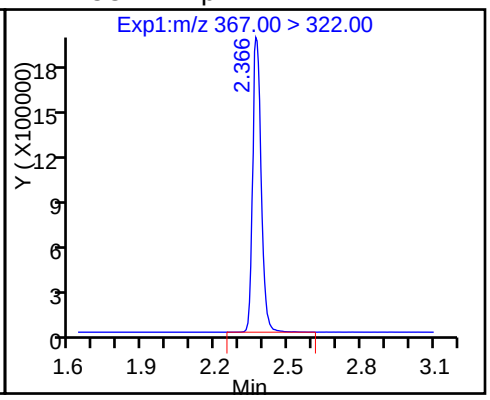
7 Perfluorohexanoic acid



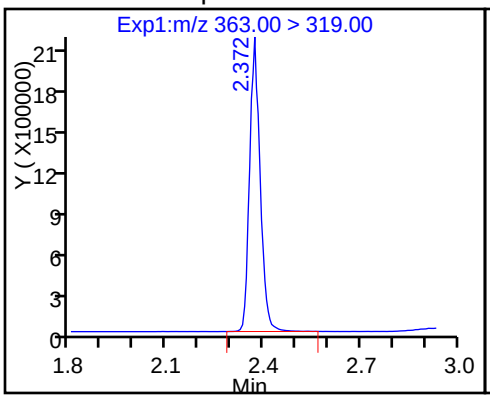
D 6 13C2 PFHxA



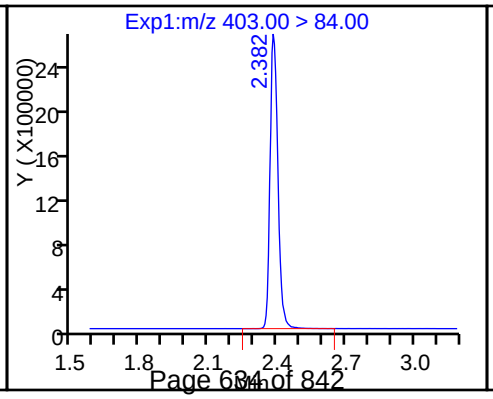
D 11 13C4-PFHpA



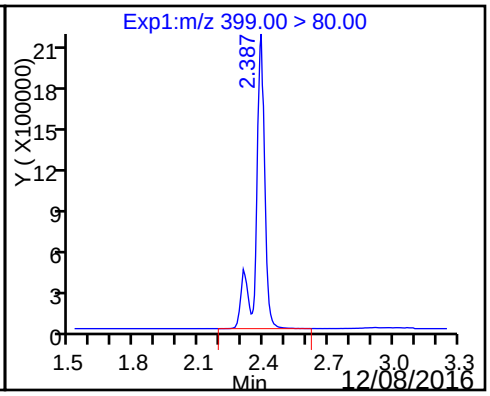
12 Perfluoroheptanoic acid



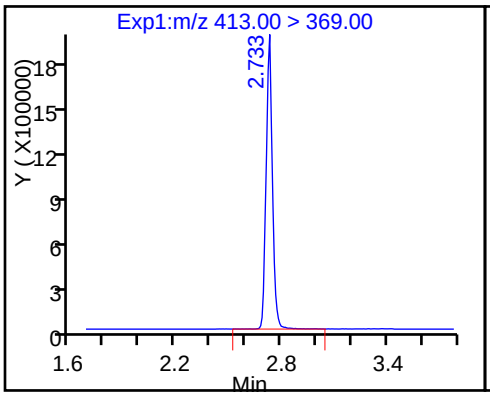
D 10 18O2 PFHxS



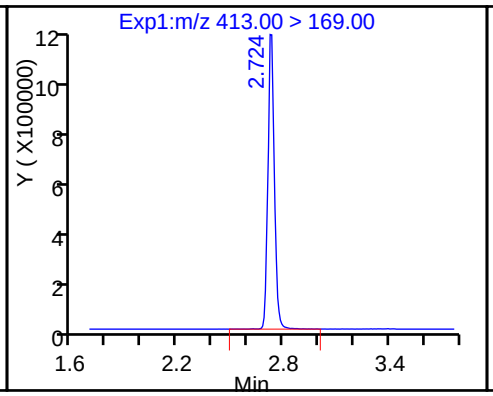
9 Perfluorohexanesulfonic acid



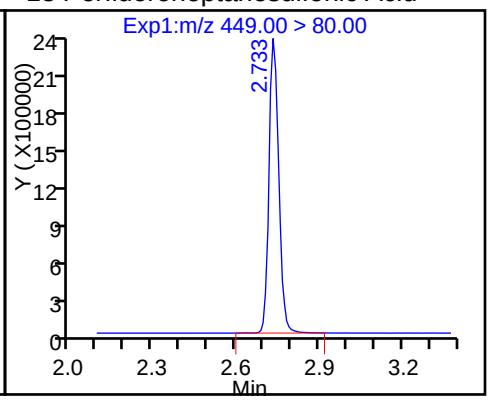
15 Perfluorooctanoic acid



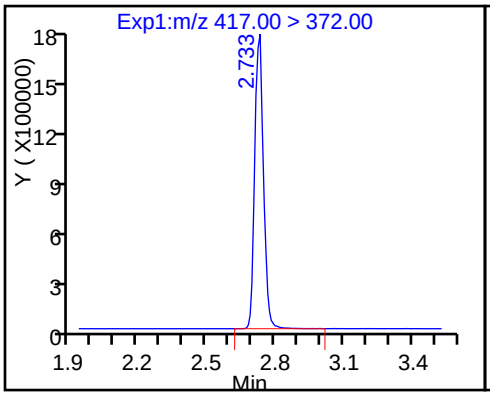
15 Perfluorooctanoic acid



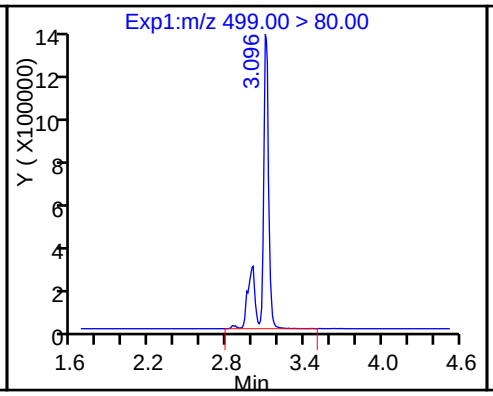
13 Perfluoroheptanesulfonic Acid



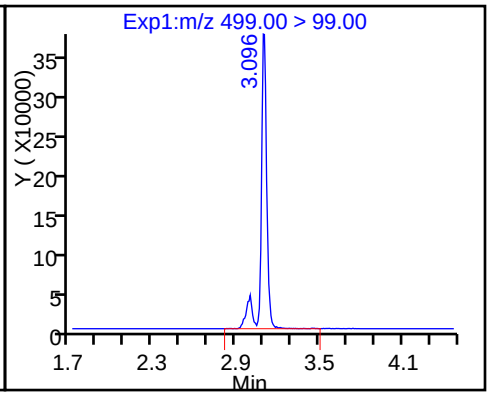
D 14 13C4 PFOA



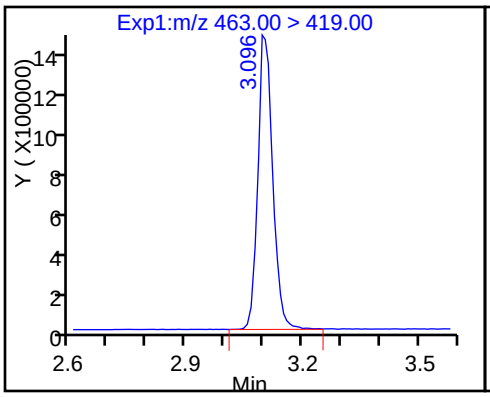
18 Perfluorooctane sulfonic acid



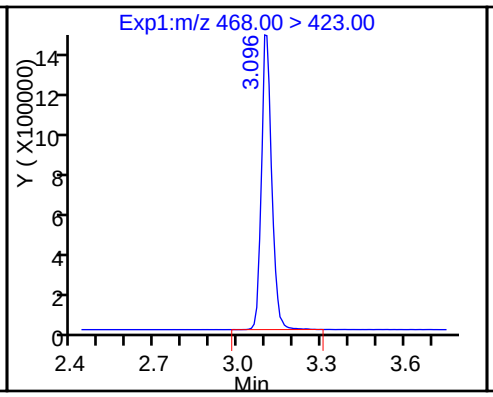
18 Perfluorooctane sulfonic acid



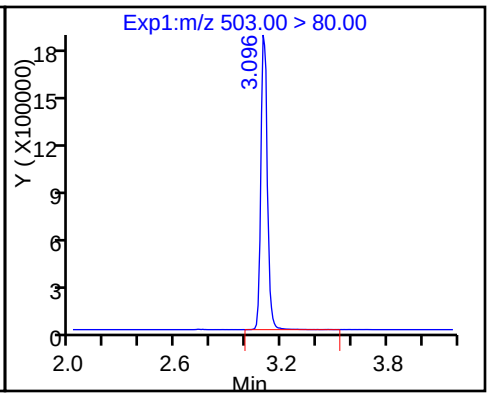
20 Perfluorononanoic acid



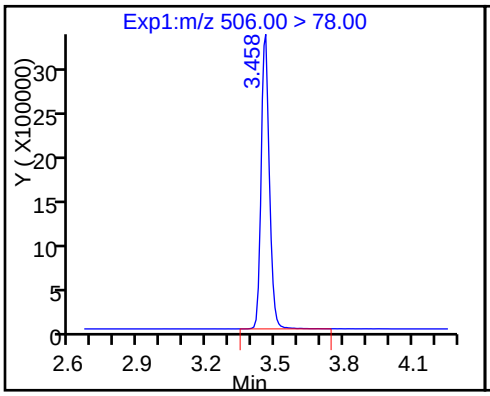
D 19 13C5 PFNA



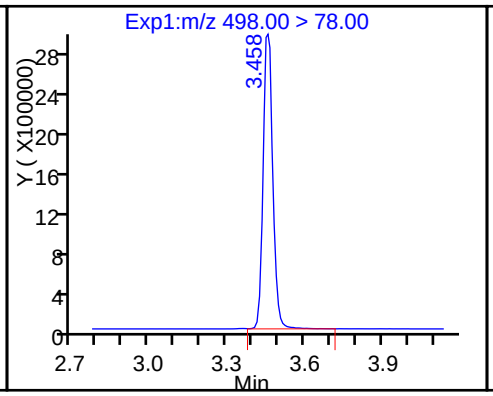
D 17 13C4 PFOS



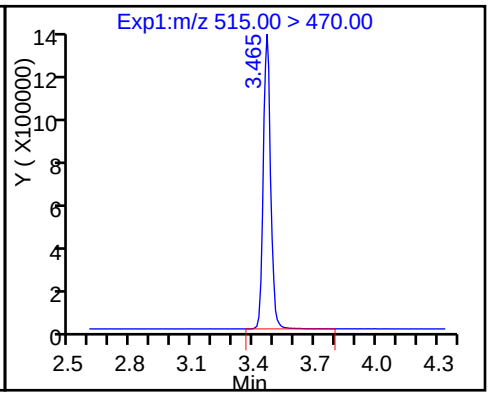
D 21 13C8 FOSA



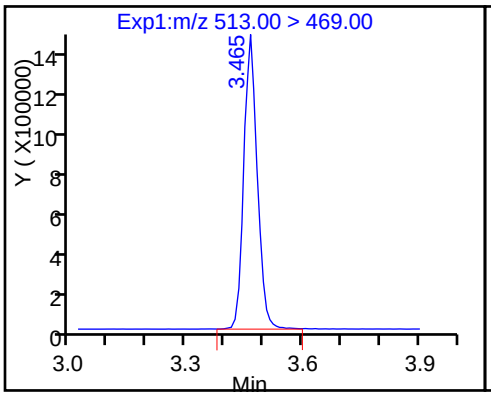
22 Perfluorooctane Sulfonamide



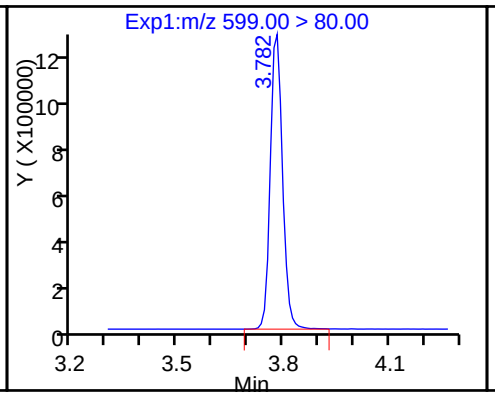
D 23 13C2 PFDA



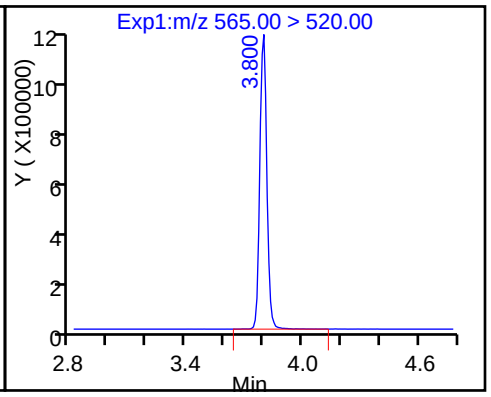
24 Perfluorodecanoic acid



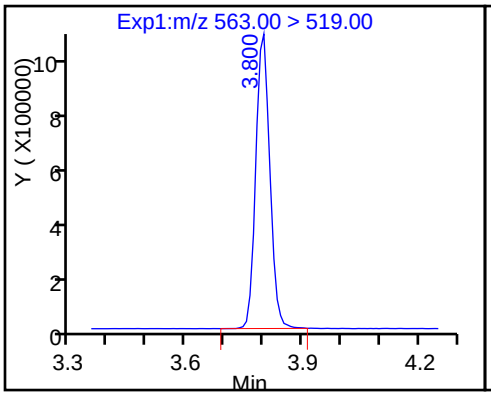
26 Perfluorodecane Sulfonic acid



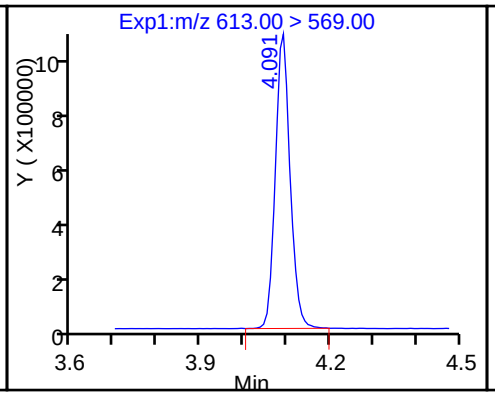
D 27 13C2 PFUnA



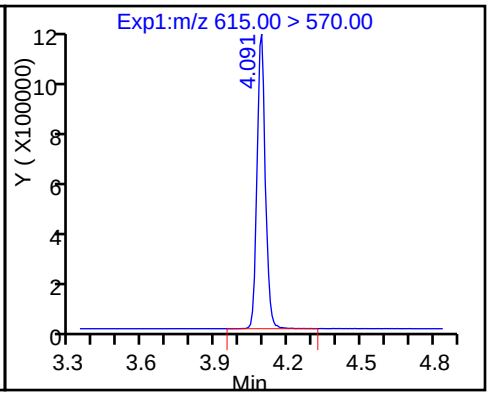
28 Perfluoroundecanoic acid



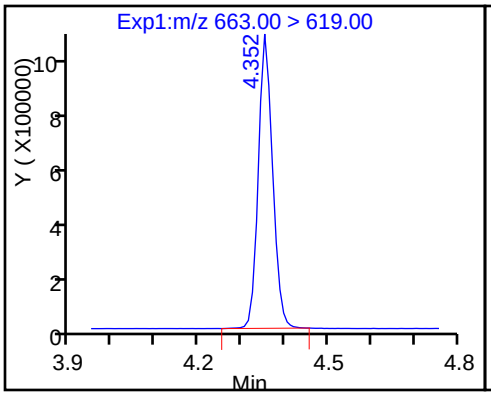
29 Perfluorododecanoic acid



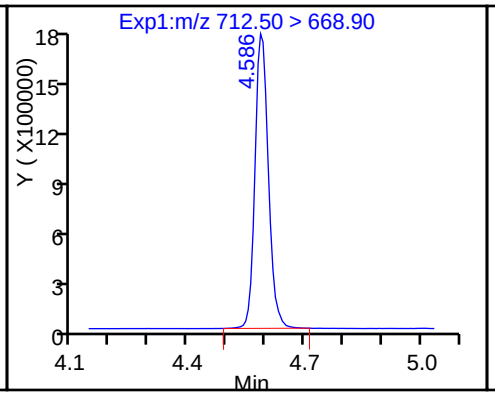
D 30 13C2 PFDoA



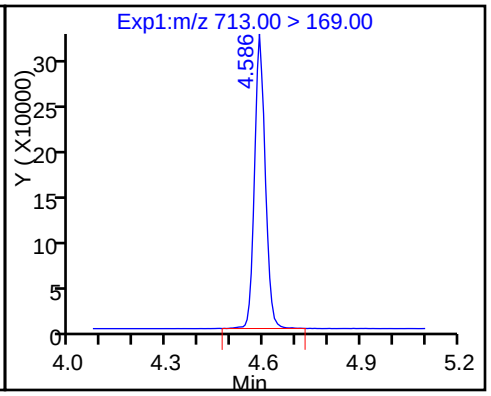
31 Perfluorotridecanoic acid



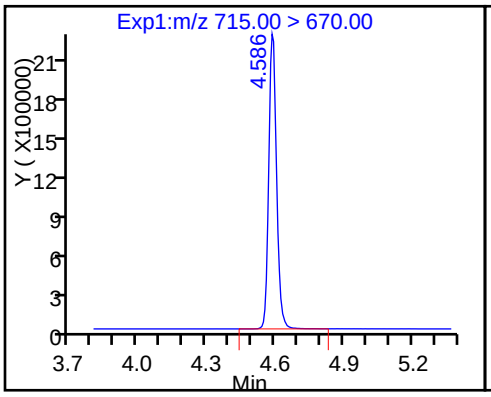
33 Perfluorotetradecanoic acid



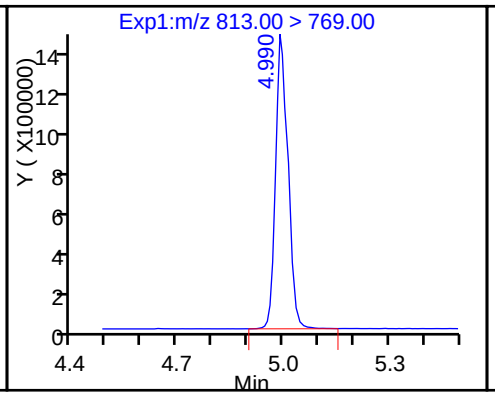
33 Perfluorotetradecanoic acid



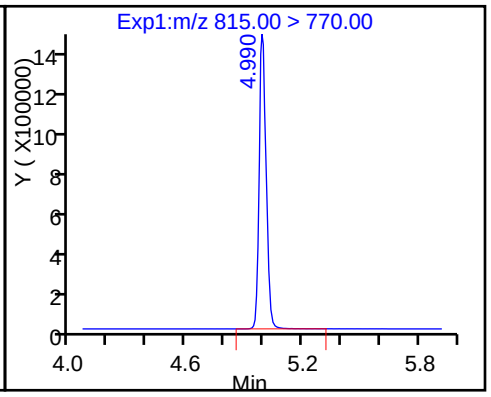
D 32 13C2-PFTeDA



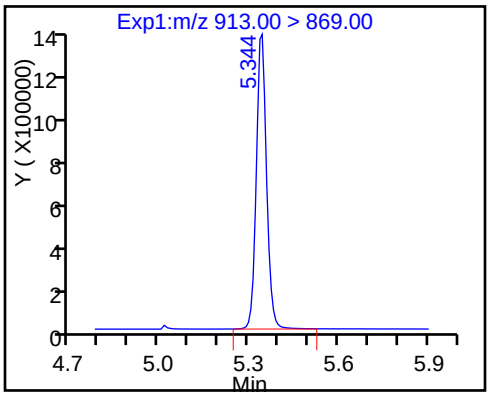
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Lab Sample ID: CCV 320-138814/11 Calibration Date: 11/20/2016 21:55

Instrument ID: A8_N Calib Start Date: 11/14/2016 11:42

GC Column: Acquity ID: 2.10(mm) Calib End Date: 11/14/2016 13:27

Lab File ID: 20NOV2016D_011.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8697	0.8611		49.5	50.0	-1.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.039	0.9825		47.3	50.0	-5.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.517	1.662		48.4	44.2	9.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9448	0.9182		48.6	50.0	-2.8	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.023	1.013		49.5	50.0	-1.0	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.059	1.010		43.4	45.5	-4.6	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.141	1.158		48.3	47.6	1.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.050	1.050		50.0	50.0	-0.0	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.088	1.044		44.5	46.4	-4.0	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9823	1.038		52.8	50.0	5.7	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9011	0.8902		49.4	50.0	-1.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9922	0.9746		49.1	50.0	-1.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6079	0.6245		49.5	48.2	2.7	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.028	1.026		49.9	50.0	-0.2	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9550	0.9408		49.3	50.0	-1.5	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9443	0.9684		51.3	50.0	2.6	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.779	1.566		44.0	50.0	-12.0	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.347		62.0	50.0	24.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.076	1.263		58.7	50.0	17.4	25.0
13C4 PFBA	Ave	197654	147972		37.4	50.0	-25.1	50.0
13C5-PFPeA	Ave	159887	121453		38.0	50.0	-24.0	50.0
13C2 PFHxA	Ave	145191	112651		38.8	50.0	-22.4	50.0
13C4-PFHpA	Ave	131410	92113		35.0	50.0	-29.9	50.0
18O2 PFHxS	Ave	202083	131666		30.8	47.3	-34.8	50.0
13C4 PFOA	Ave	136481	91520		33.5	50.0	-32.9	50.0
13C4 PFOS	Ave	155727	97020		29.8	47.8	-37.7	50.0
13C5 PFNA	Ave	109384	74345		34.0	50.0	-32.0	50.0
13C8 FOSA	Ave	250790	172784		34.4	50.0	-31.1	50.0
13C2 PFDA	Ave	100216	67411		33.6	50.0	-32.7	50.0
13C2 PFUnA	Ave	78435	53896		34.4	50.0	-31.3	50.0
13C2 PFDoA	Ave	77339	52252		33.8	50.0	-32.4	50.0
13C2-PFTeDA	Ave	170624	108402		31.8	50.0	-36.5	50.0
13C2-PFHxDA	Ave	94300	75144		39.8	50.0	-20.3	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_011.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 20-Nov-2016 21:55:50 ALS Bottle#: 41 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 15:44:42 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 15:41:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.493	1.493	0.0	1.000	6370903	49.5		99.0	68094	
D 2 13C4 PFBA										
217.00 > 172.00	1.493	1.493	0.0		7398624	37.4		74.9	570248	
D 4 13C5-PFPeA										
267.90 > 223.00	1.752	1.752	0.0		6072628	38.0		76.0	1322600	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.762	1.762	0.0	1.000	5966031	47.3		94.6	96268	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.800	1.791	0.009	1.000	9673076	48.4		110		
298.90 > 99.00	1.800	1.791	0.009	1.000	4126410		2.34(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.040	2.040	0.0	1.000	5171656	48.6		97.2	155288	
D 6 13C2 PFHxA										
315.00 > 270.00	2.040	2.040	0.0		5632546	38.8		77.6	354772	
D 11 13C4-PFHpA										
367.00 > 322.00	2.372	2.366	0.006		4605647	35.0		70.1	483226	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.372	2.372	0.0	1.000	4666043	49.5		99.0	25659	
D 10 18O2 PFHxS										
403.00 > 84.00	2.387	2.382	0.005		6227795	30.8		65.2	586774	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.387	2.387	0.0	1.000	6051452	43.4		95.4		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.733	2.733	0.0	1.000	4803453	50.0		100.0	92519	
413.00 > 169.00	2.733	2.733	0.0	1.000	2790757		1.72(0.90-1.10)		132269	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.733	2.733	0.0	1.000	5345959	48.3		101		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.733	2.733	0.0		4575982	33.5		67.1	327407	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.104	3.096	0.008	1.000	4699369	44.5		96.0	333294	
499.00 > 99.00	3.104	3.096	0.008	1.000	1037758		4.53(0.90-1.10)		113067	
20 Perfluorononanoic acid										
463.00 > 419.00	3.111	3.096	0.015	1.000	3858640	52.8		106	37604	
D 19 13C5 PFNA										
468.00 > 423.00	3.111	3.096	0.015		3717256	34.0		68.0	248180	
D 17 13C4 PFOS										
503.00 > 80.00	3.104	3.096	0.008		4637571	29.8		62.3	175411	
D 21 13C8 FOSA										
506.00 > 78.00	3.458	3.458	0.0		8639220	34.4		68.9	502754	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.458	3.458	0.0	1.000	7690266	49.4		98.8	207653	
D 23 13C2 PFDA										
515.00 > 470.00	3.466	3.465	0.001		3370546	33.6		67.3	214814	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.474	3.465	0.009	1.000	3284946	49.1		98.2	156664	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.782	3.782	0.0	1.000	2920463	49.5		103		
D 27 13C2 PFUnA										
565.00 > 520.00	3.800	3.800	0.0		2694817	34.4		68.7	151637	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.800	3.800	0.0	1.000	2764031	49.9		99.8	84982	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.090	4.091	-0.001	1.000	2457839	49.3		98.5	60305	
D 30 13C2 PFDoA										
615.00 > 570.00	4.090	4.091	-0.001		2612613	33.8		67.6	215076	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.351	4.352	-0.001	1.000	2530150	51.3		103	91788	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.586	4.586	0.0	1.000	4090556	44.0		88.0	114812	
713.00 > 169.00	4.586	4.586	0.0	1.000	729063		5.61(0.00-0.00)		153970	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.593	4.586	0.007		5420097	31.8		63.5	559436	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	4.997	4.990	0.007	1.000	3519672	62.0		124	92329	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.990	4.990	0.0		3757206	39.8		79.7	522298	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.337	5.344	-0.007	1.000	3300316	58.7		117	35104	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 23-Nov-2016 15:44:43 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_011.d

Injection Date: 20-Nov-2016 21:55:50 Instrument ID: A8_N

Lims ID: CCV L5

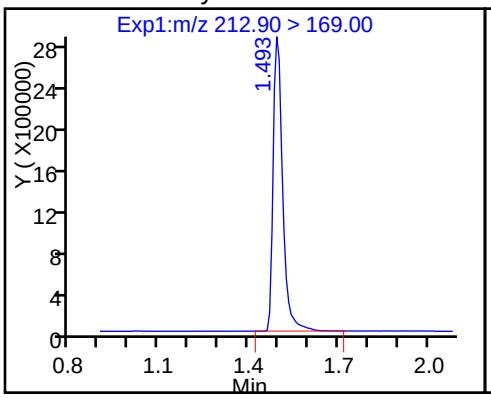
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 11

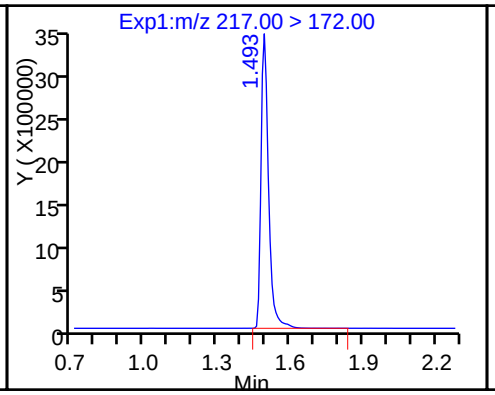
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

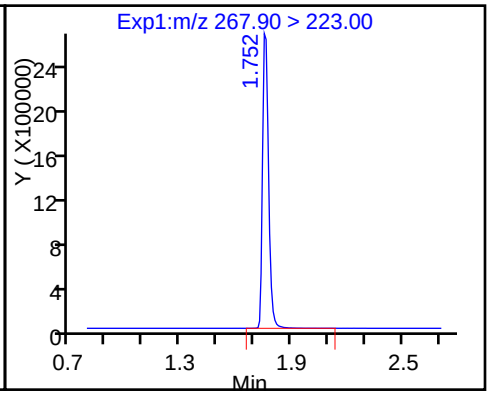
1 Perfluorobutyric acid



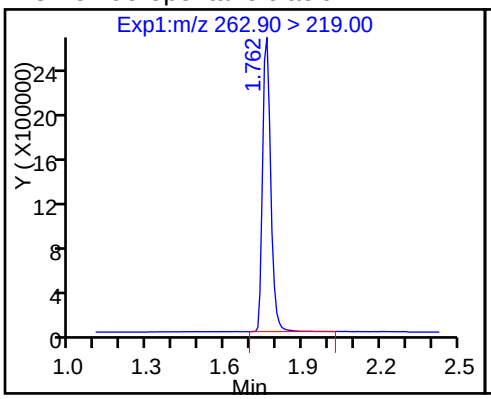
D 2 13C4 PFBA



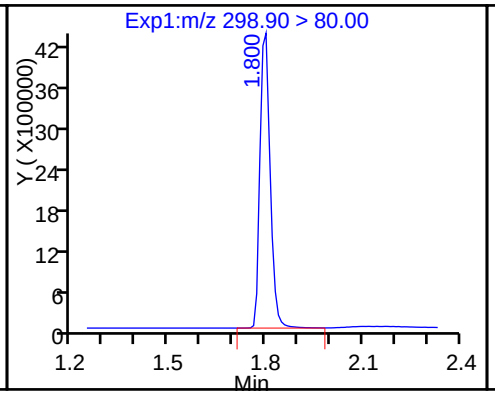
D 4 13C5-PFPeA



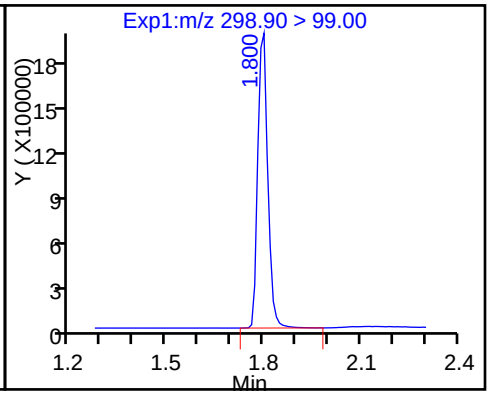
3 Perfluoropentanoic acid



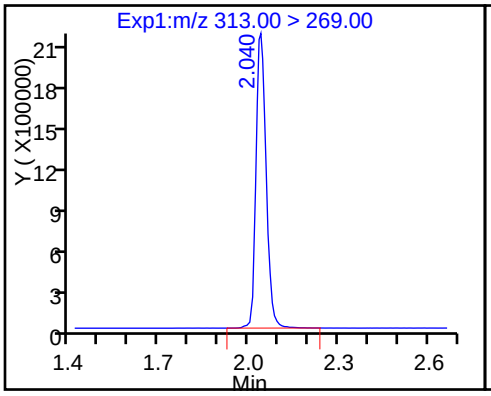
5 Perfluorobutanesulfonic acid



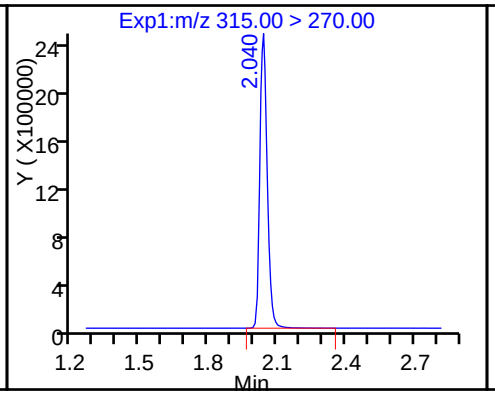
5 Perfluorobutanesulfonic acid



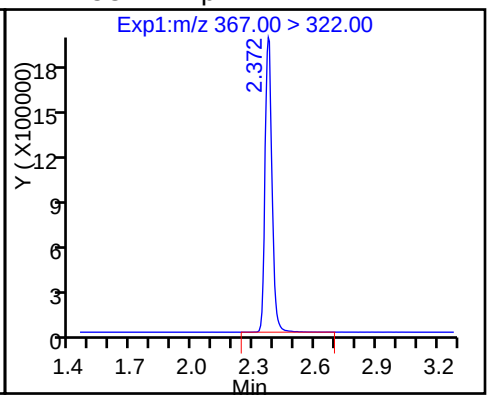
7 Perfluorohexanoic acid



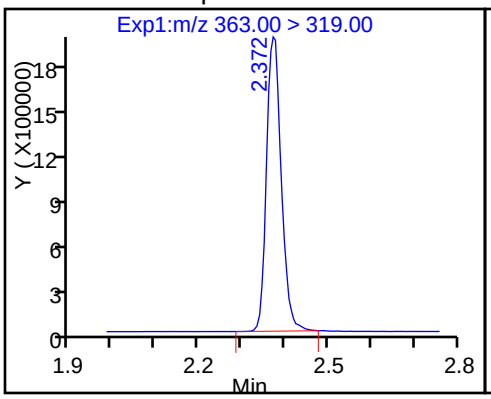
D 6 13C2 PFHxA



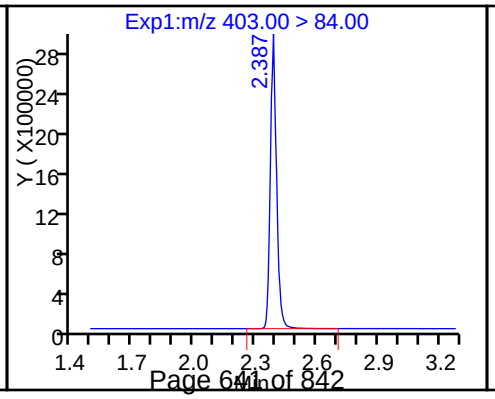
D 11 13C4-PFHpA



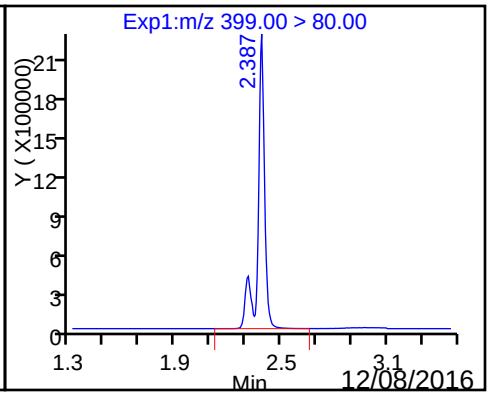
12 Perfluoroheptanoic acid



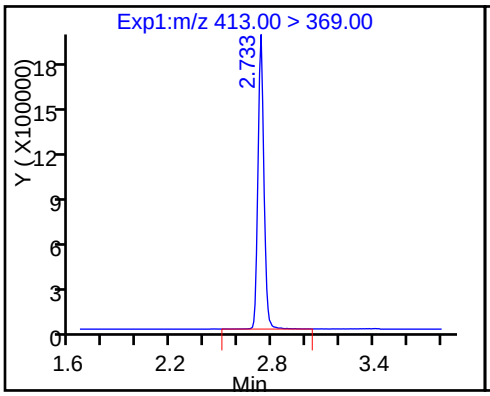
D 10 18O2 PFHxS



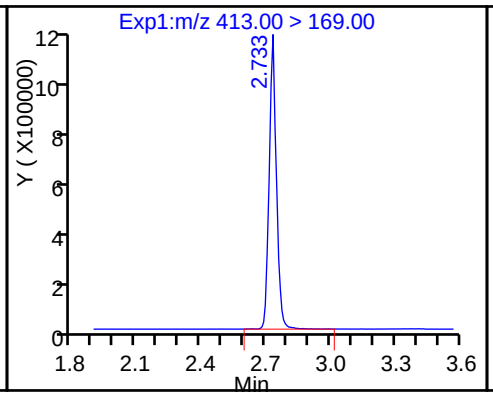
9 Perfluorohexanesulfonic acid



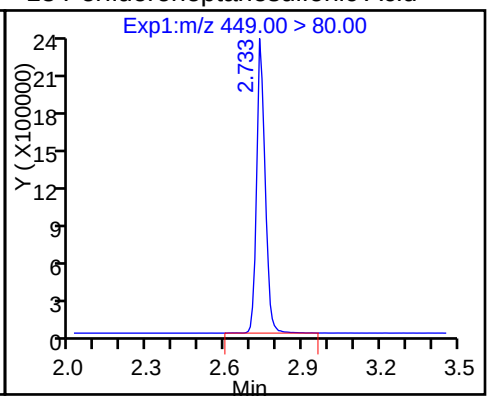
15 Perfluorooctanoic acid



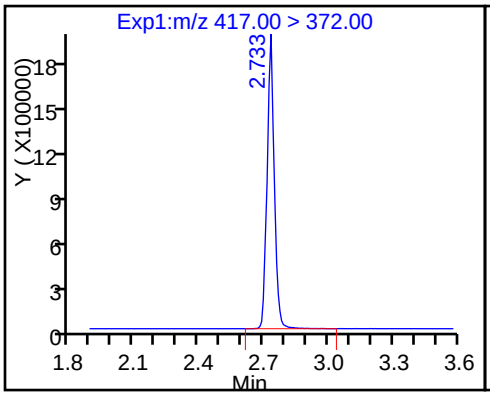
15 Perfluorooctanoic acid



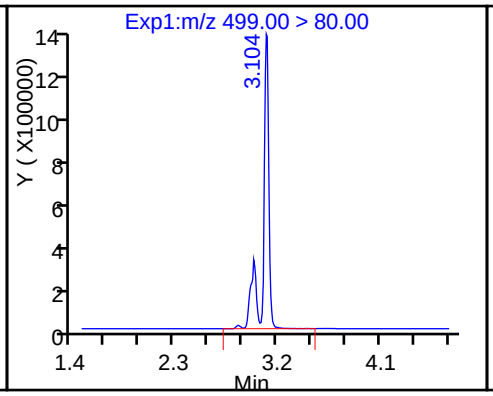
13 Perfluoroheptanesulfonic Acid



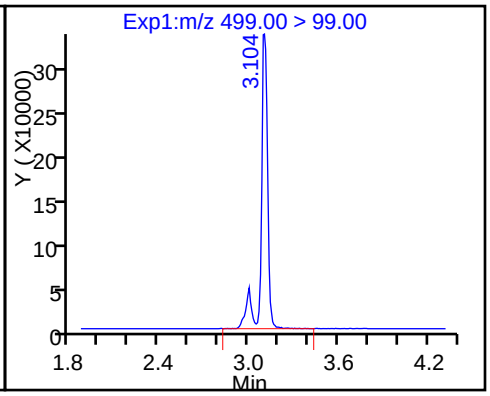
D 14 13C4 PFOA



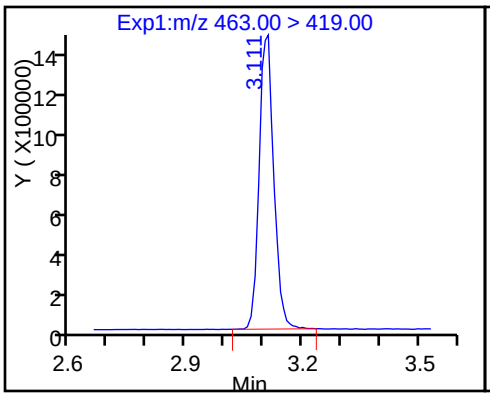
18 Perfluorooctane sulfonic acid



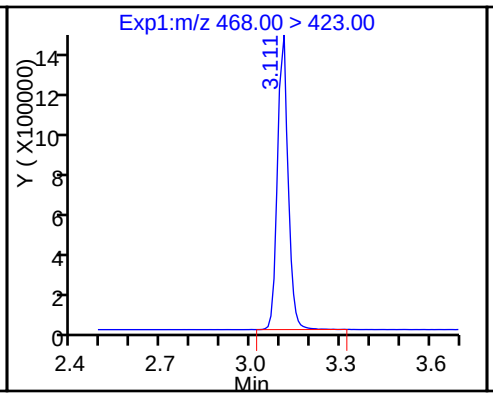
18 Perfluorooctane sulfonic acid



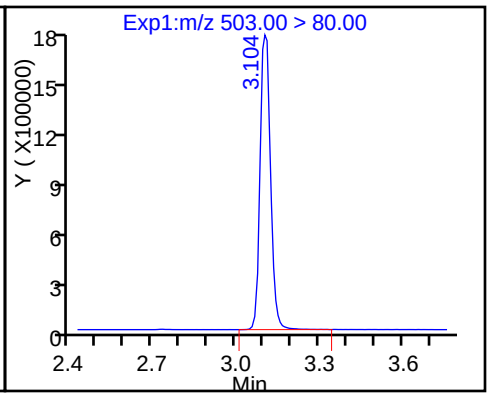
20 Perfluorononanoic acid



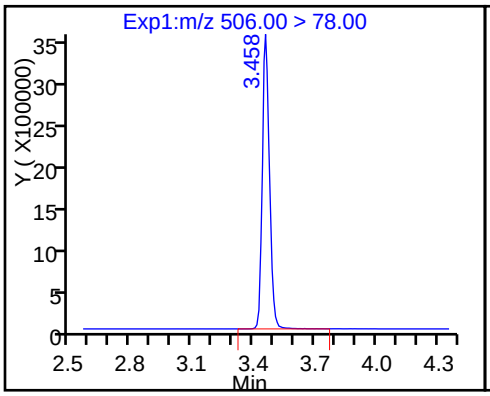
D 19 13C5 PFNA



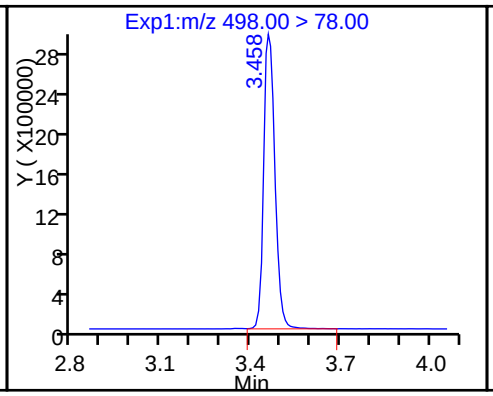
D 17 13C4 PFOS



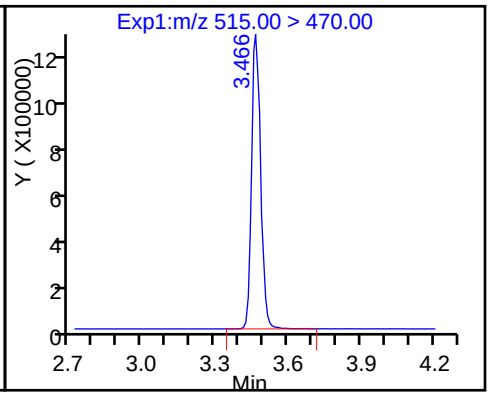
D 21 13C8 FOSA



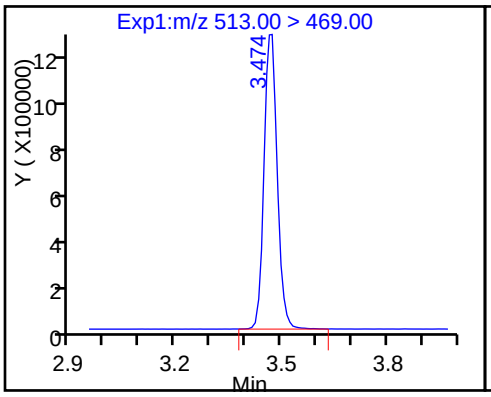
22 Perfluorooctane Sulfonamide



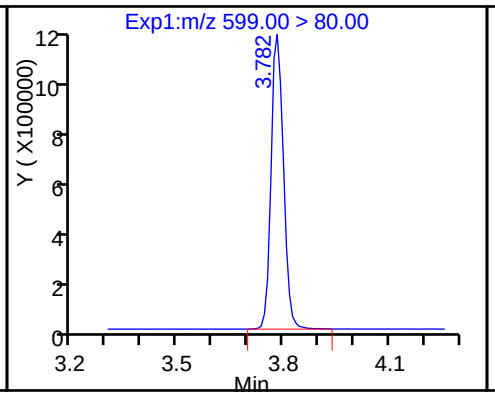
D 23 13C2 PFDA



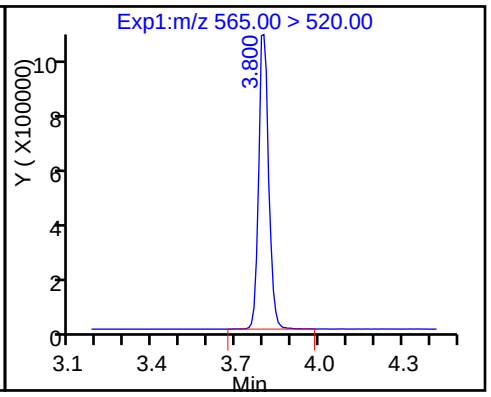
24 Perfluorodecanoic acid



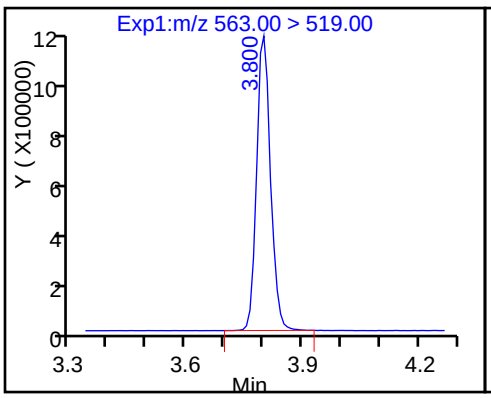
26 Perfluorodecane Sulfonic acid



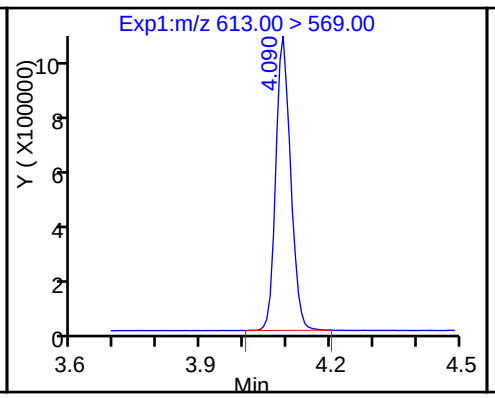
D 27 13C2 PFUnA



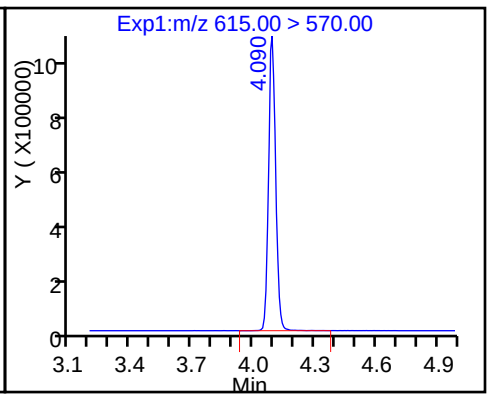
28 Perfluoroundecanoic acid



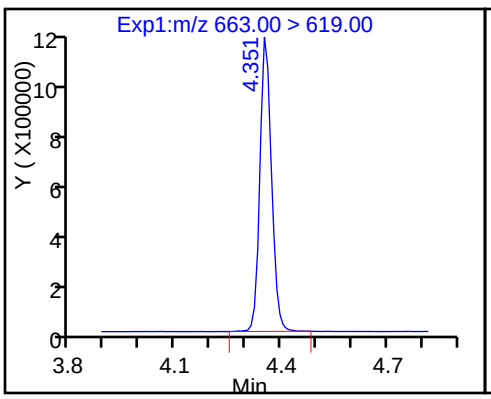
29 Perfluorododecanoic acid



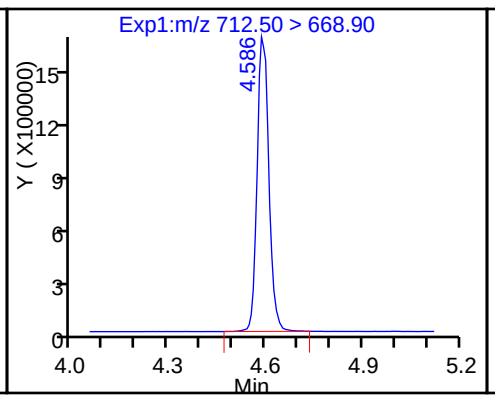
D 30 13C2 PFDoA



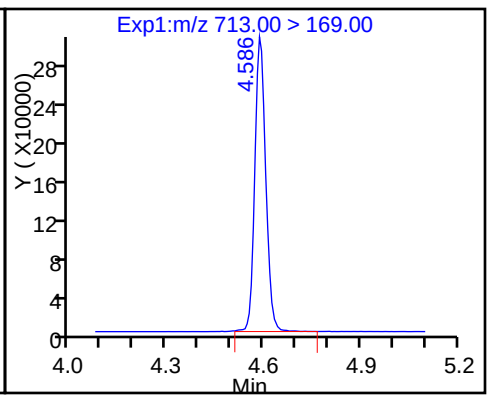
31 Perfluorotridecanoic acid



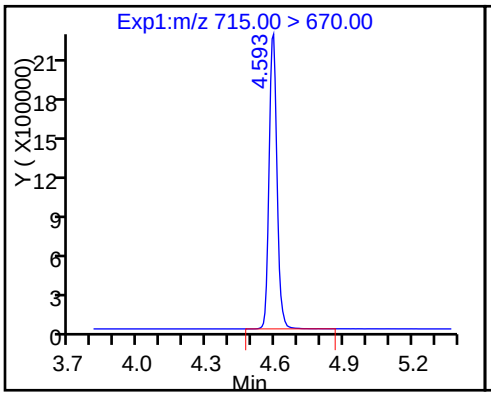
33 Perfluorotetradecanoic acid



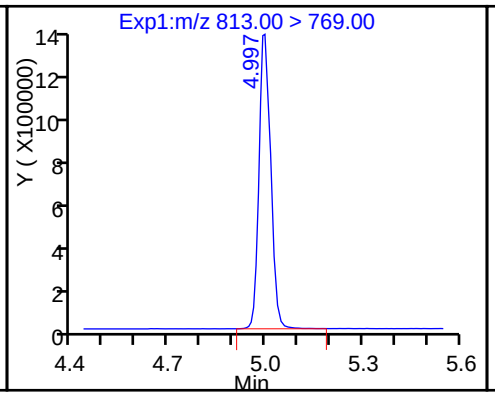
33 Perfluorotetradecanoic acid



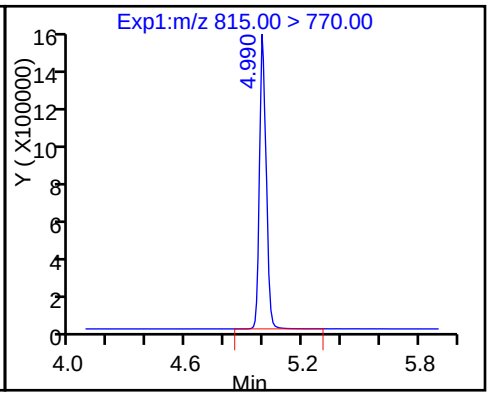
D 32 13C2-PFTeDA



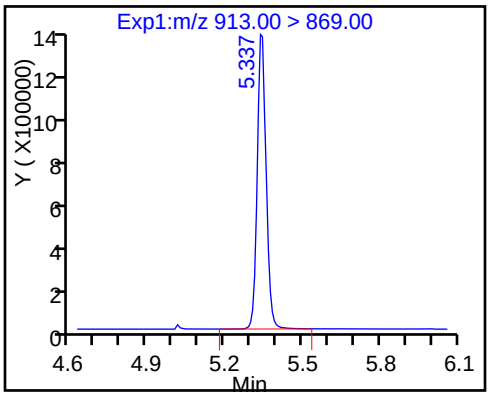
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Lab Sample ID: CCV 320-138814/22 Calibration Date: 11/20/2016 23:18

Instrument ID: A8_N Calib Start Date: 11/14/2016 11:42

GC Column: Acquity ID: 2.10(mm) Calib End Date: 11/14/2016 13:27

Lab File ID: 20NOV2016D_022.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8697	0.8557		49.2	50.0	-1.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.039	0.995		47.9	50.0	-4.2	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.517	1.595		46.5	44.2	5.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9448	0.9183		48.6	50.0	-2.8	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.023	1.030		50.3	50.0	0.6	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.059	1.014		43.5	45.5	-4.3	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.050	0.9813		46.7	50.0	-6.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.141	1.187		49.5	47.6	4.0	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9823	1.000		50.9	50.0	1.8	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.088	1.053		44.9	46.4	-3.2	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9922	0.9804		49.4	50.0	-1.2	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9011	0.8792		48.8	50.0	-2.4	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6079	0.5817		46.1	48.2	-4.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.028	0.9666		47.0	50.0	-6.0	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9550	0.9459		49.5	50.0	-0.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.9443	0.9432		49.9	50.0	-0.1	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.779	1.676		47.1	50.0	-5.8	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.340		61.7	50.0	23.4	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	1.076	1.282		59.6	50.0	19.2	25.0
13C4 PFBA	Ave	197654	144753		36.6	50.0	-26.8	50.0
13C5-PFPeA	Ave	159887	120780		37.8	50.0	-24.5	50.0
13C2 PFHxA	Ave	145191	106709		36.7	50.0	-26.5	50.0
13C4-PFHpA	Ave	131410	89963		34.2	50.0	-31.5	50.0
18O2 PFHxS	Ave	202083	134562		31.5	47.3	-33.4	50.0
13C4 PFOA	Ave	136481	98036		35.9	50.0	-28.2	50.0
13C4 PFOS	Ave	155727	98098		30.1	47.8	-37.0	50.0
13C5 PFNA	Ave	109384	75085		34.3	50.0	-31.4	50.0
13C8 FOSA	Ave	250790	169990		33.9	50.0	-32.2	50.0
13C2 PFDA	Ave	100216	66347		33.1	50.0	-33.8	50.0
13C2 PFUnA	Ave	78435	51818		33.0	50.0	-33.9	50.0
13C2 PFDoA	Ave	77339	50070		32.4	50.0	-35.3	50.0
13C2-PFTeDA	Ave	170624	108432		31.8	50.0	-36.4	50.0
13C2-PFHxDA	Ave	94300	73838		39.2	50.0	-21.7	50.0

Report Date: 23-Nov-2016 16:23:50 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_022.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 20-Nov-2016 23:18:21 ALS Bottle#: 41 Worklist Smp#: 22
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 16:23:49 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 16:23:49

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.493	1.493	0.0	1.000	6192921	49.2		98.4	60637	
D 2 13C4 PFBA										
217.00 > 172.00	1.493	1.493	0.0		7237625	36.6		73.2	653704	
D 4 13C5-PFPeA										
267.90 > 223.00	1.752	1.752	0.0		6039008	37.8		75.5	877046	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.752	1.762	-0.010	1.000	6009353	47.9		95.8	64936	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.791	1.791	0.0	1.000	9484998	46.5		105		
298.90 > 99.00	1.791	1.791	0.0	1.000	4107442		2.31(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.034	2.040	-0.006	1.000	4899606	48.6		97.2	151941	
D 6 13C2 PFHxA										
315.00 > 270.00	2.034	2.040	-0.006		5335453	36.7		73.5	475486	
D 11 13C4-PFHpA										
367.00 > 322.00	2.366	2.366	0.0		4498158	34.2		68.5	319272	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.366	2.372	-0.006	1.000	4633345	50.3		101	33465	
D 10 18O2 PFHxS										
403.00 > 84.00	2.382	2.382	0.0		6364805	31.5		66.6	456255	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.382	2.387	-0.005	1.000	6205731	43.5		95.7		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.724	2.733	-0.009	1.000	4810293	46.7		93.5	97278	
413.00 > 169.00	2.724	2.733	-0.009	1.000	2865130		1.68(0.90-1.10)		123600	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.733	2.733	0.0	1.000	5541113	49.5		104		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.724	2.733	-0.009		4901816	35.9		71.8	227918	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.104	3.096	0.008	1.000	4791963	44.9		96.8	350000	
499.00 > 99.00	3.104	3.096	0.008	1.000	1094661		4.38(0.90-1.10)		366148	
20 Perfluorononanoic acid										
463.00 > 419.00	3.104	3.096	0.008	1.000	3755684	50.9		102	44240	
D 19 13C5 PFNA										
468.00 > 423.00	3.104	3.096	0.008		3754258	34.3		68.6	292317	
D 17 13C4 PFOS										
503.00 > 80.00	3.104	3.096	0.008		4689095	30.1		63.0	186358	
D 21 13C8 FOSA										
506.00 > 78.00	3.451	3.458	-0.007		8499488	33.9		67.8	848414	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.458	3.458	0.0	1.000	7472892	48.8		97.6	300024	
D 23 13C2 PFDA										
515.00 > 470.00	3.458	3.465	-0.007		3317331	33.1		66.2	213897	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.458	3.465	-0.007	1.000	3252194	49.4		98.8	123191	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.774	3.782	-0.008	1.000	2750558	46.1		95.7		
D 27 13C2 PFUnA										
565.00 > 520.00	3.792	3.800	-0.008		2590898	33.0		66.1	204301	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.792	3.800	-0.008	1.000	2504329	47.0		94.0	77749	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.084	4.091	-0.007	1.000	2368129	49.5		99.1	57534	
D 30 13C2 PFDoA										
615.00 > 570.00	4.084	4.091	-0.007		2503504	32.4		64.7	201406	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.352	4.352	0.0	1.000	2361282	49.9		99.9	78661	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.586	4.586	0.0	1.000	4196312	47.1		94.2	122514	
713.00 > 169.00	4.586	4.586	0.0	1.000	739930		5.67(0.00-0.00)		159602	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.586	4.586	0.0		5421612	31.8		63.6	1128468	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	4.990	4.990	0.0	1.000	3354136	61.7		123	106071	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.990	4.990	0.0		3691918	39.2		78.3	367948	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.337	5.344	-0.007	1.000	3210569	59.6		119	39896	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 23-Nov-2016 16:23:50 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_022.d

Injection Date: 20-Nov-2016 23:18:21 Instrument ID: A8_N

Lims ID: CCV L5

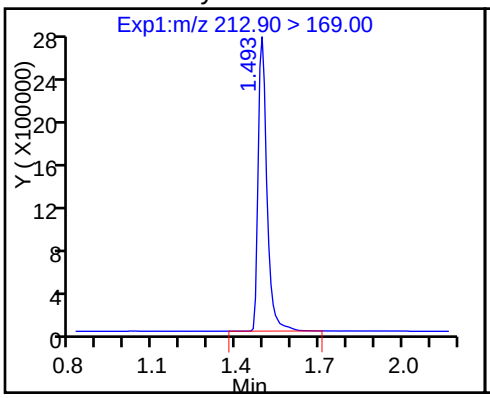
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 22

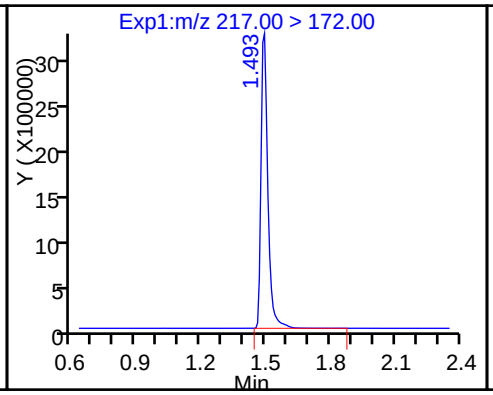
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

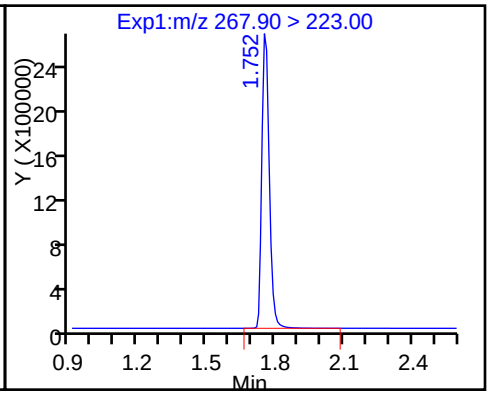
1 Perfluorobutyric acid



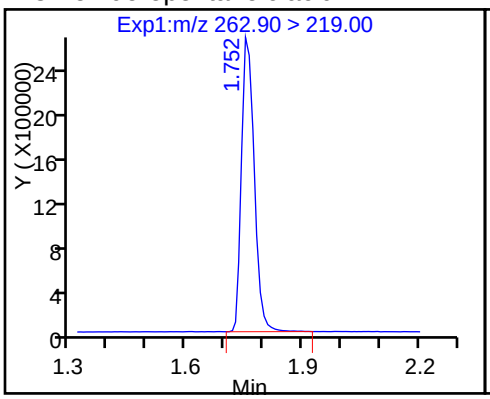
D 2 13C4 PFBA



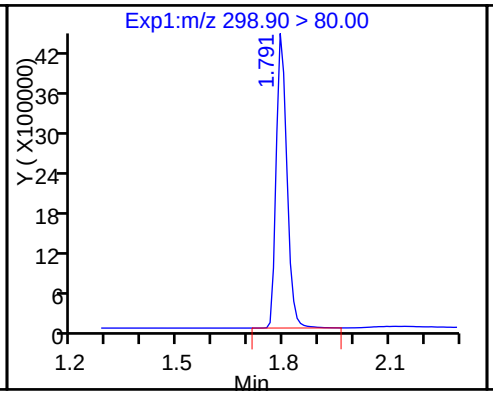
D 4 13C5-PFPeA



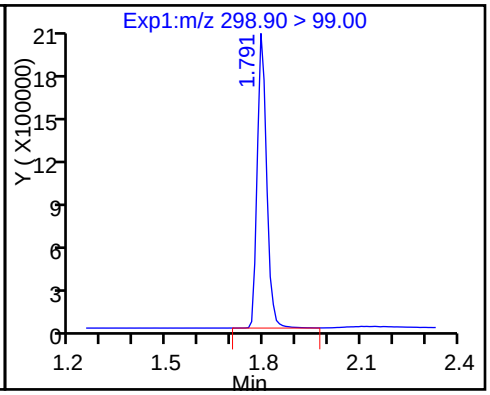
3 Perfluoropentanoic acid



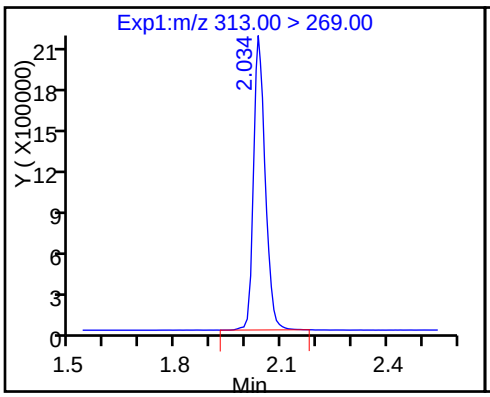
5 Perfluorobutanesulfonic acid



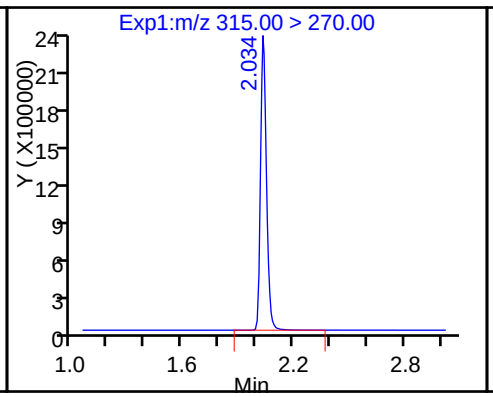
5 Perfluorobutanesulfonic acid



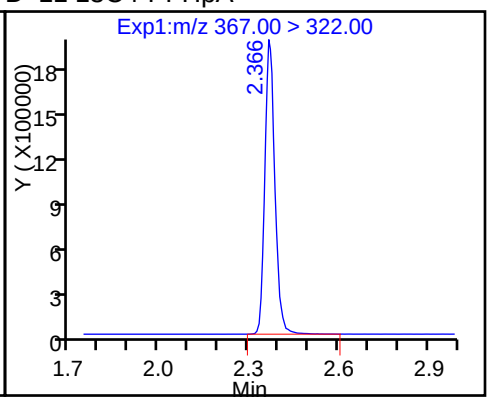
7 Perfluorohexanoic acid



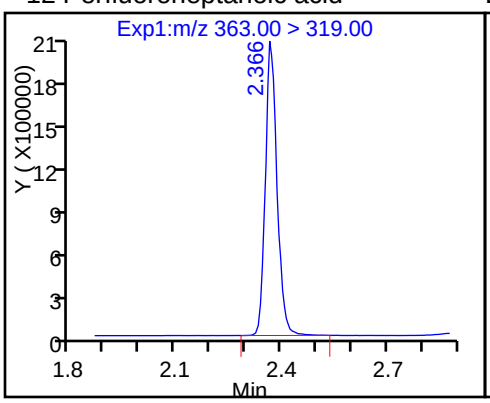
D 6 13C2 PFHxA



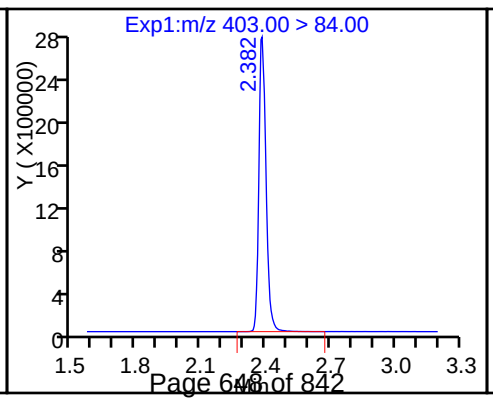
D 11 13C4-PFHpA



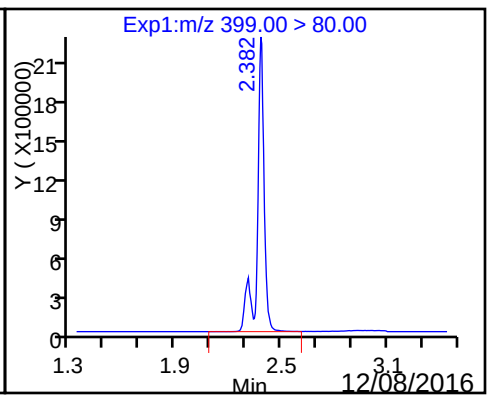
12 Perfluoroheptanoic acid



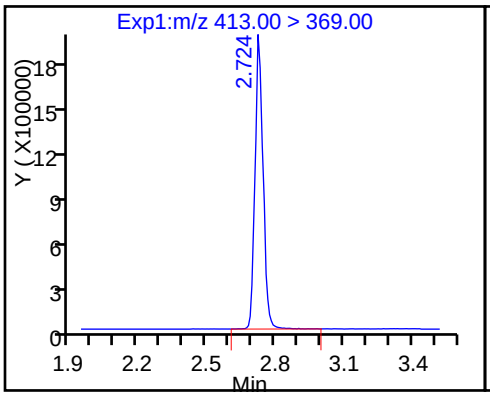
D 10 18O2 PFHxS



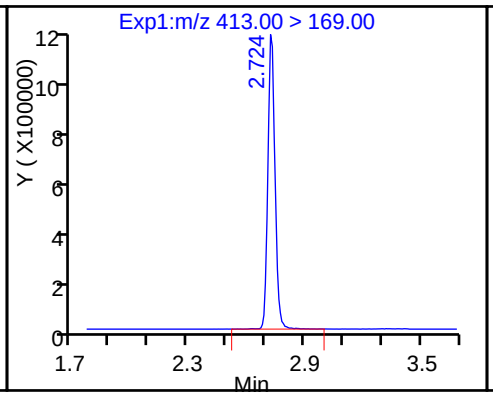
9 Perfluorohexanesulfonic acid



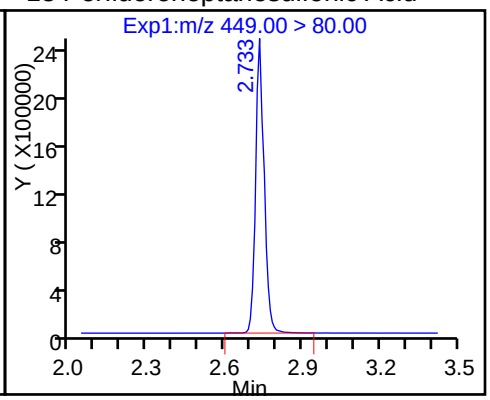
15 Perfluorooctanoic acid



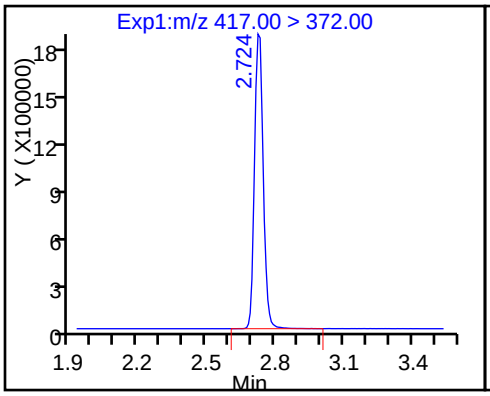
15 Perfluorooctanoic acid



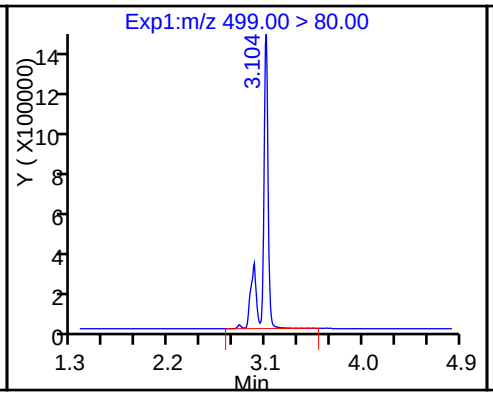
13 Perfluoroheptanesulfonic Acid



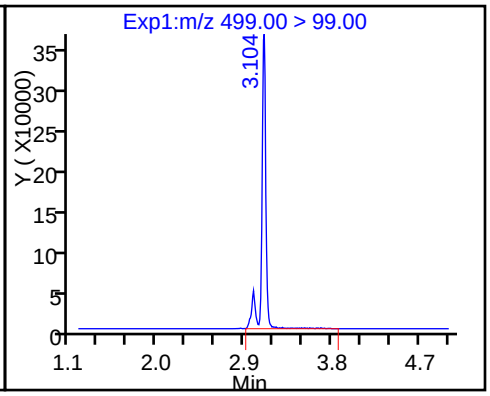
D 14 13C4 PFOA



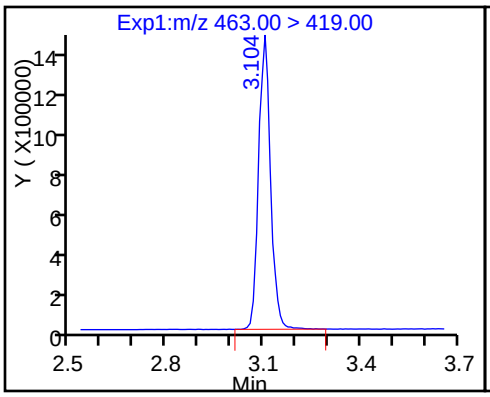
18 Perfluorooctane sulfonic acid



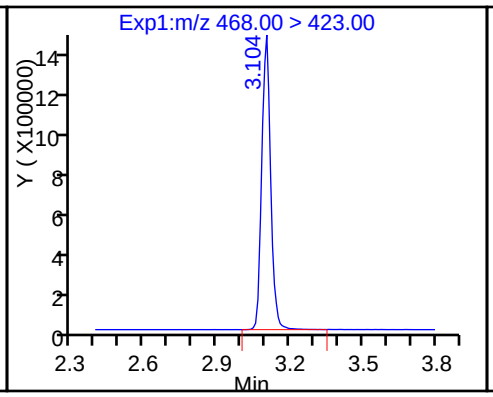
18 Perfluorooctane sulfonic acid



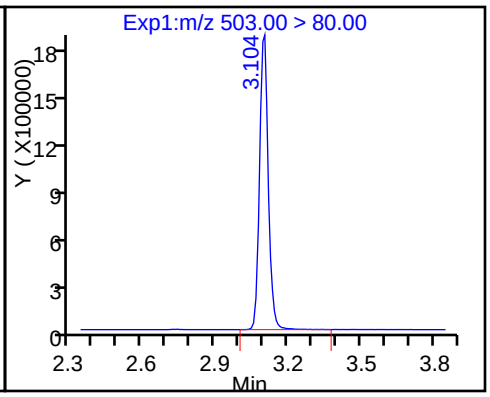
20 Perfluorononanoic acid



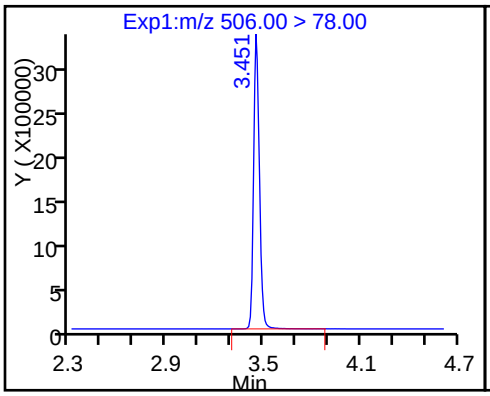
D 19 13C5 PFNA



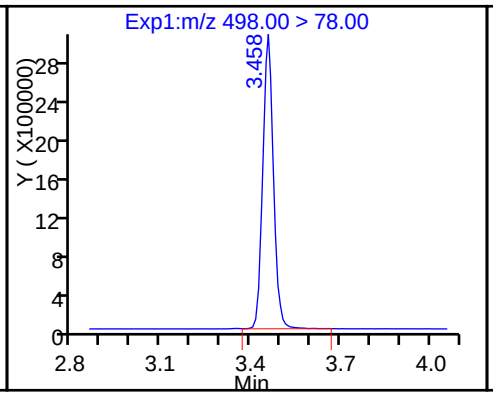
D 17 13C4 PFOS



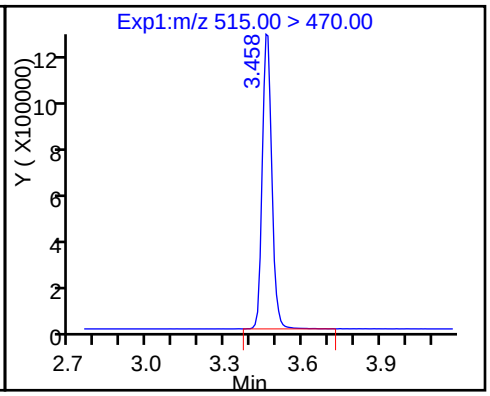
D 21 13C8 FOSA



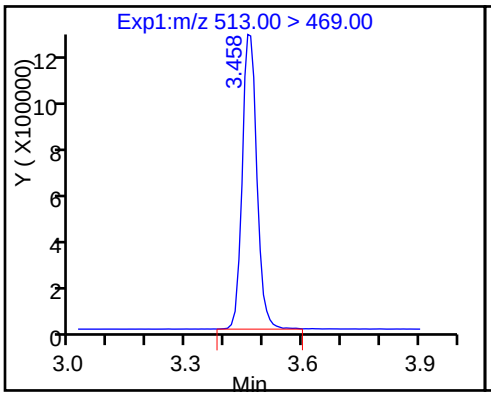
22 Perfluorooctane Sulfonamide



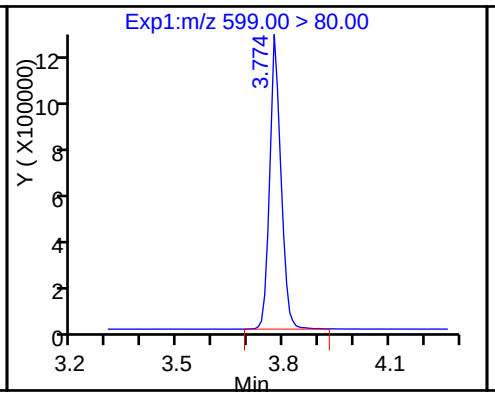
D 23 13C2 PFDA



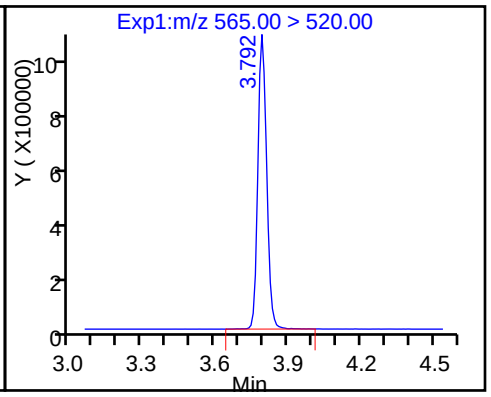
24 Perfluorodecanoic acid



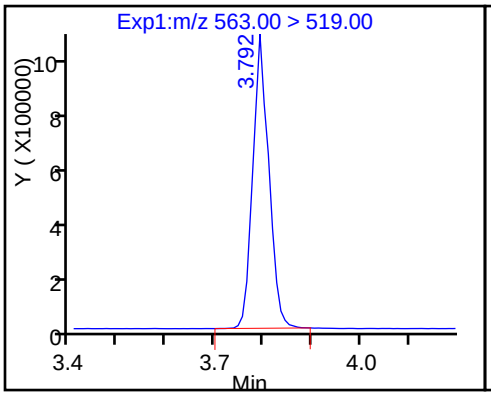
26 Perfluorodecane Sulfonic acid



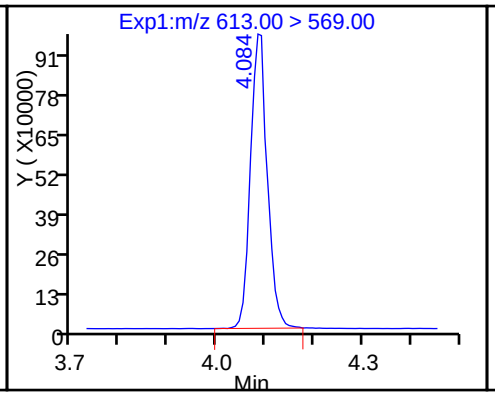
D 27 13C2 PFUnA



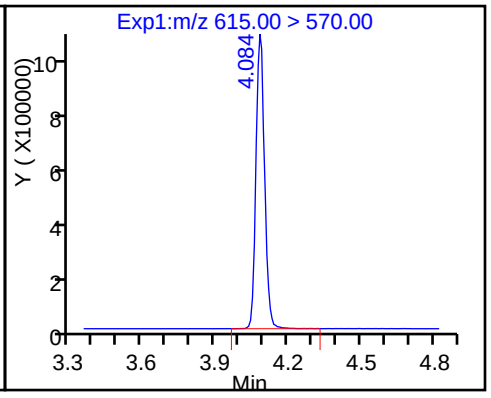
28 Perfluoroundecanoic acid



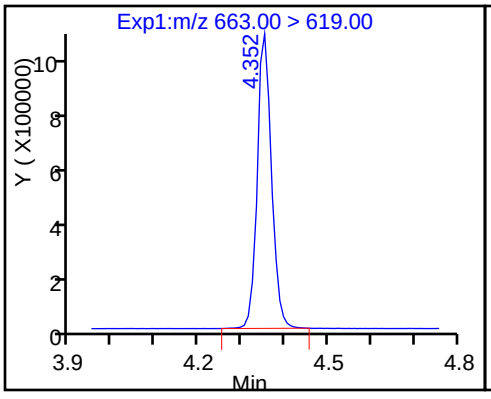
29 Perfluorododecanoic acid



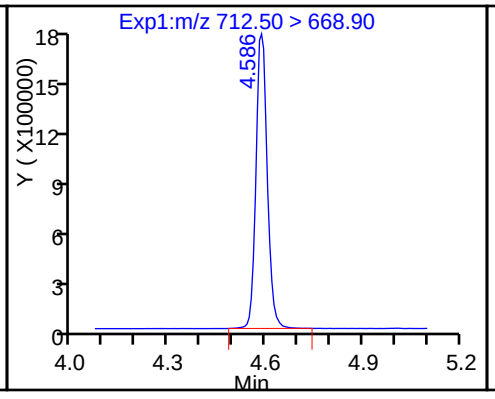
D 30 13C2 PFDoA



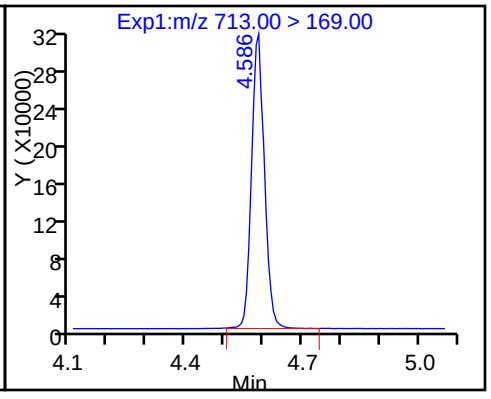
31 Perfluorotridecanoic acid



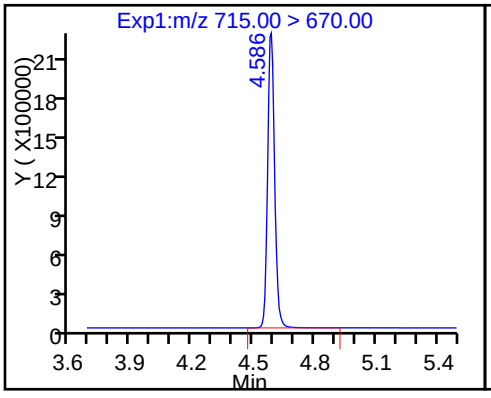
33 Perfluorotetradecanoic acid



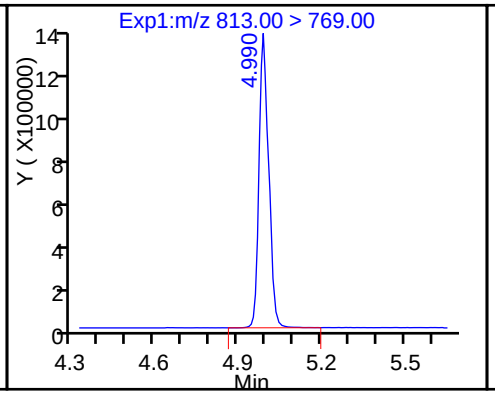
33 Perfluorotetradecanoic acid



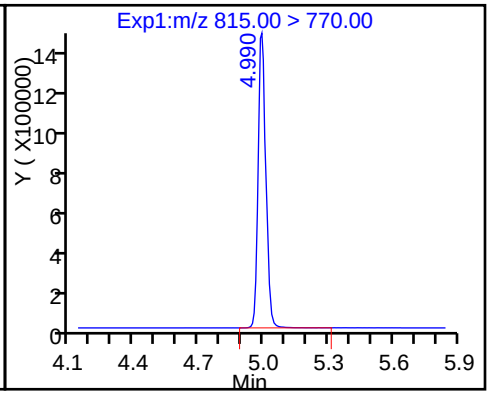
D 32 13C2-PFTeDA



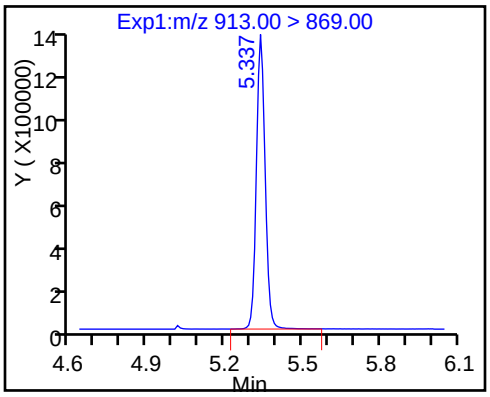
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Lab Sample ID: ICV 320-140382/12 Calibration Date: 12/02/2016 11:29

Instrument ID: A8_N Calib Start Date: 12/02/2016 10:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/02/2016 12:29

Lab File ID: 02DEC2016A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8853	0.8586		48.5	50.0	-3.0	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.041	0.9596		46.1	50.0	-7.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.613	1.563		42.9	44.3	-3.1	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9559	0.9142		47.8	50.0	-4.4	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.034	0.9597		46.4	50.0	-7.2	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.060	0.9737		43.4	47.3	-8.1	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.020	0.9852		48.3	50.0	-3.4	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.169	1.153		47.0	47.6	-1.4	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.087	0.9062		39.8	47.8	-16.7	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9912	0.9578		48.3	50.0	-3.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9353	0.9322		49.8	50.0	-0.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9693	0.9099		46.9	50.0	-6.1	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6271	0.5941		45.7	48.3	-5.3	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.060	0.9368		44.2	50.0	-11.6	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9465	0.8975		47.4	50.0	-5.2	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.040	0.9223		44.3	50.0	-11.3	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.932	1.845		47.7	50.0	-4.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		1.014		50.7	50.0	1.3	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7915	1.026		65.3	50.0	29.6*	25.0
13C4 PFBA	Ave	340300	315108		46.3	50.0	-7.4	50.0
13C5-PFPeA	Ave	270194	250588		46.4	50.0	-7.3	50.0
13C2 PFHxA	Ave	246480	226803		46.0	50.0	-8.0	50.0
13C4-PFHpA	Ave	210510	197868		47.0	50.0	-6.0	50.0
18O2 PFHxS	Ave	302453	298386		46.7	47.3	-1.3	50.0
13C4 PFOA	Ave	219411	208024		47.4	50.0	-5.2	50.0
13C4 PFOS	Ave	244616	241692		47.2	47.8	-1.2	50.0
13C5 PFNA	Ave	178109	162087		45.5	50.0	-9.0	50.0
13C8 FOSA	Ave	414253	389267		47.0	50.0	-6.0	50.0
13C2 PFDA	Ave	166067	160722		48.4	50.0	-3.2	50.0
13C2 PFUnA	Ave	125779	115580		45.9	50.0	-8.1	50.0
13C2 PFDoA	Ave	116905	110755		47.4	50.0	-5.3	50.0
13C2-PFTeDA	Ave	241899	239157		49.4	50.0	-1.1	50.0
13C2-PFHxDA	Ave	130373	130244		50.0	50.0	-0.1	50.0

Report Date: 02-Dec-2016 16:10:34 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_012.d
Lims ID: ICV
Client ID:
Sample Type: ICV
Inject. Date: 02-Dec-2016 11:29:31 ALS Bottle#: 44 Worklist Smp#: 12
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: ICV_b
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist:

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 16:10:33 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK025

First Level Reviewer: barnettj Date: 02-Dec-2016 16:10:33

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.598	1.615	-0.017		15755416	46.3		92.6	1226463	
1 Perfluorobutyric acid										
212.90 > 169.00	1.606	1.617	-0.011	1.000	13527367	48.5			149480	
D 4 13C5-PFPeA										
267.90 > 223.00	1.897	1.918	-0.021		12529404	46.4		92.7	998019	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.897	1.920	-0.023	1.000	12023152	46.1			109623	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.936	1.961	-0.025	1.000	20638621	42.9				
298.90 > 99.00	1.936	1.961	-0.025	1.000	9604105		2.15(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.213	2.239	-0.026		11340128	46.0		92.0	872752	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.213	2.241	-0.028	1.000	10367089	47.8			388218	
D 11 13C4-PFHpA										
367.00 > 322.00	2.566	2.599	-0.033		9893393	47.0		94.0	1263133	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.573	2.600	-0.027	1.000	9494636	46.4			159398	
D 10 18O2 PFHxS										
403.00 > 84.00	2.589	2.614	-0.025		14113680	46.7		98.7	888579	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.589	2.615	-0.026	1.000	13727834	43.4				
15 Perfluorooctanoic acid										
413.00 > 369.00	2.951	2.984	-0.033	1.000	10247185	48.3			136835	
413.00 > 169.00	2.943	2.984	-0.041	0.997	6439506		1.59(0.90-1.10)		319423	
D 14 13C4 PFOA										
417.00 > 372.00	2.951	2.984	-0.033		10401182	47.4		94.8	602068	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.960	2.986	-0.026	1.000	13266199	47.0				
D 17 13C4 PFOS										
503.00 > 80.00	3.329	3.365	-0.036		11552855	47.2		98.8	248324	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.329	3.366	-0.037	1.000	10458074	39.8			1887102	
499.00 > 99.00	3.329	3.366	-0.037	1.000	2551302		4.10(0.90-1.10)		466085	
20 Perfluorononanoic acid										
463.00 > 419.00	3.336	3.373	-0.037	1.000	7761968	48.3			97406	
D 19 13C5 PFNA										
468.00 > 423.00	3.336	3.374	-0.038		8104346	45.5		91.0	462400	
D 21 13C8 FOSA										
506.00 > 78.00	3.633	3.651	-0.018		19463355	47.0		94.0	341722	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.633	3.656	-0.023	1.000	18143701	49.8			283379	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.698	3.738	-0.040	1.000	7312192	46.9			156765	
D 23 13C2 PFDA										
515.00 > 470.00	3.698	3.738	-0.040		8036093	48.4		96.8	321643	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	4.010	4.049	-0.039	1.000	6928568	45.7				
D 27 13C2 PFUnA										
565.00 > 520.00	4.029	4.070	-0.041		5778978	45.9		91.9	312840	
28 Perfluoroundecanoic acid										
563.00 > 519.00	4.029	4.071	-0.042	1.000	5413472	44.2			130245	
D 30 13C2 PFDoA										
615.00 > 570.00	4.330	4.370	-0.040		5537768	47.4		94.7	163474	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.330	4.370	-0.040	1.000	4970310	47.4			6635	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.600	4.636	-0.036	1.000	5107276	44.3			7225	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.837	4.882	-0.045		11957860	49.4		98.9	638807	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.837	4.884	-0.047	1.000	10218574	47.7			5085	
713.00 > 169.00	4.837	4.884	-0.047	1.000	1568084		6.52(0.00-0.00)		100324	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.274	5.320	-0.046		6512177	50.0		99.9	123170	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.274	5.320	-0.046	1.000	5617133	50.7			6502	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.664	5.720	-0.056	1.000	5682438	65.3			7600	

Reagents:

LCPFCIC_00020 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 16:10:34 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_012.d

Injection Date: 02-Dec-2016 11:29:31 Instrument ID: A8_N

Lims ID: ICV

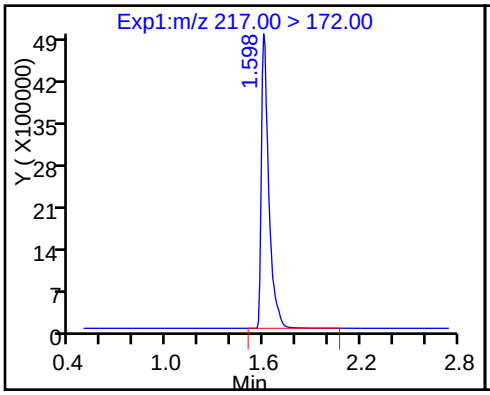
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 44 Worklist Smp#: 12

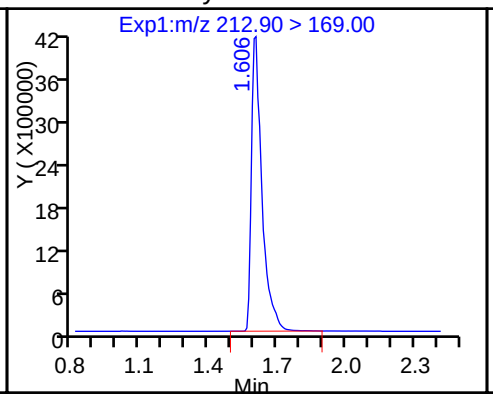
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

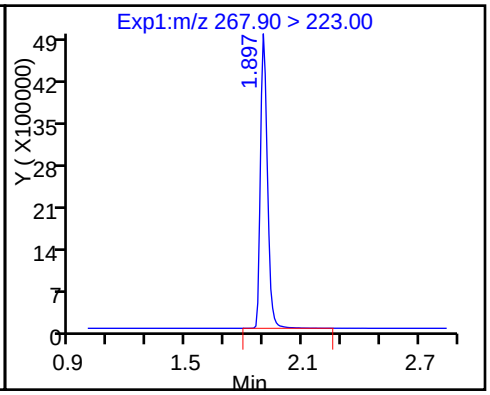
D 2 13C4 PFBA



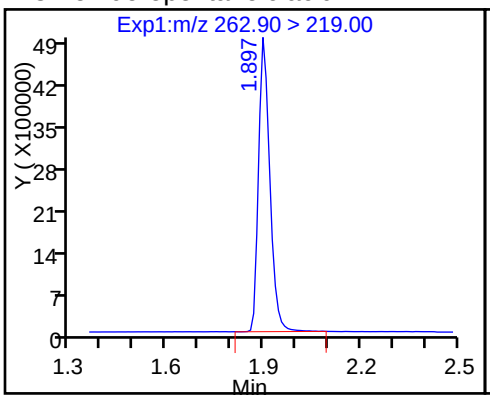
1 Perfluorobutyric acid



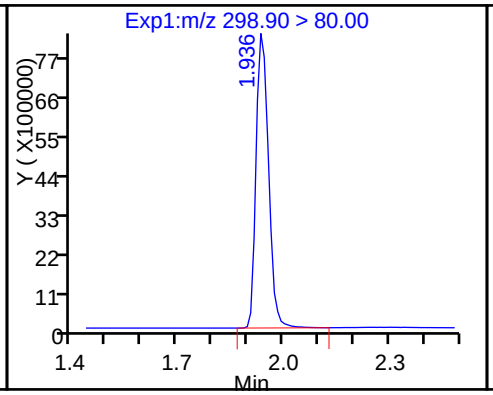
D 4 13C5-PFPeA



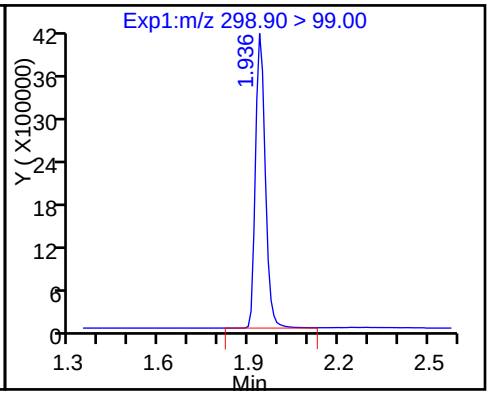
3 Perfluoropentanoic acid



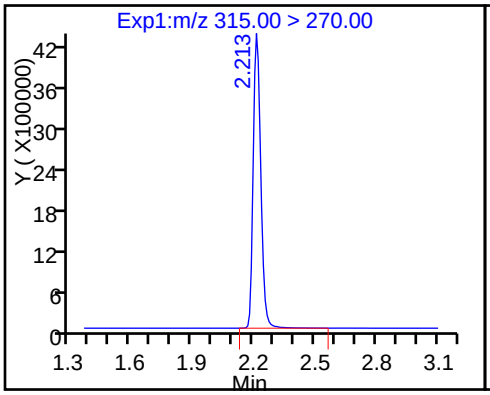
5 Perfluorobutanesulfonic acid



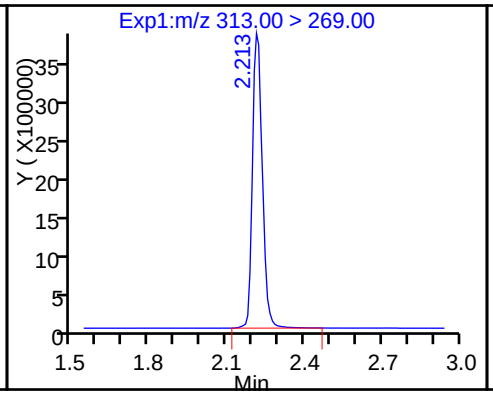
5 Perfluorobutanesulfonic acid



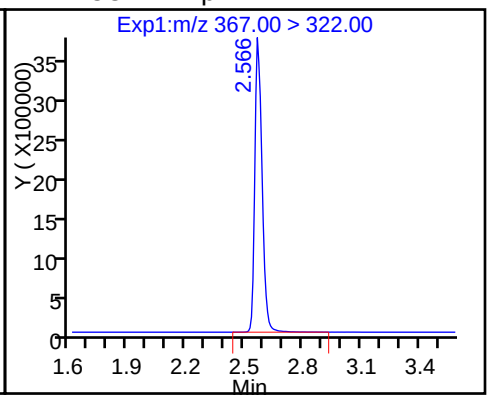
D 6 13C2 PFHxA



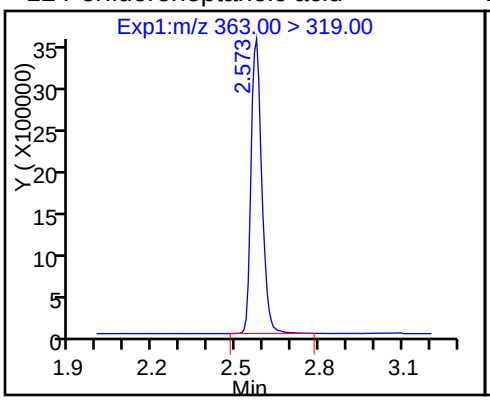
7 Perfluorohexanoic acid



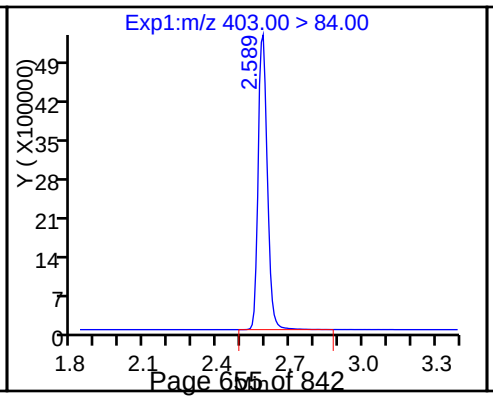
D 11 13C4-PFHpA



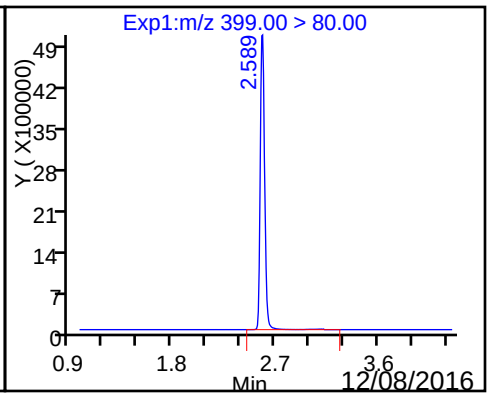
12 Perfluoroheptanoic acid



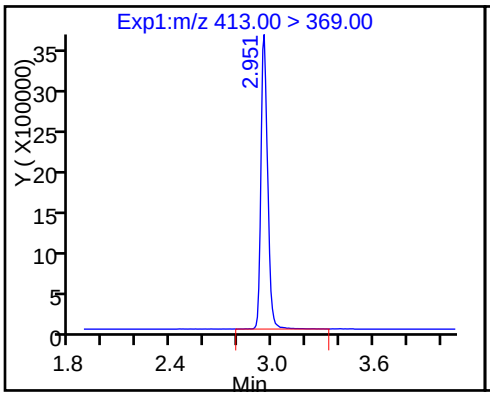
D 10 18O2 PFHxS



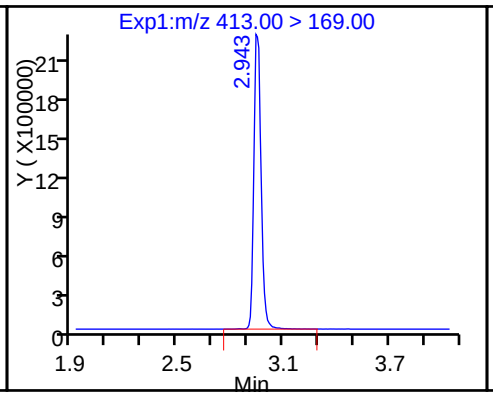
9 Perfluorohexanesulfonic acid



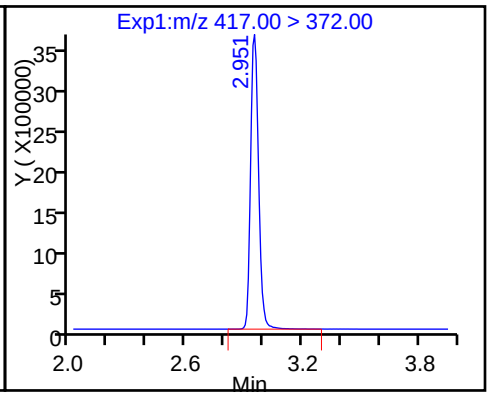
15 Perfluorooctanoic acid



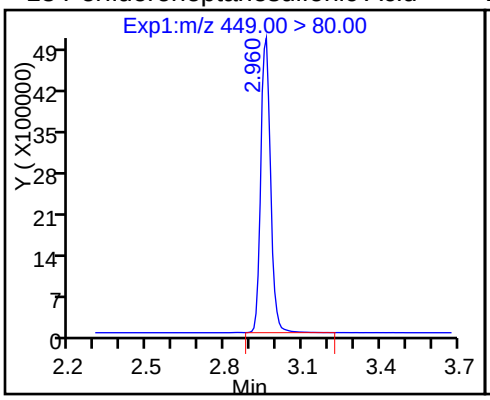
15 Perfluorooctanoic acid



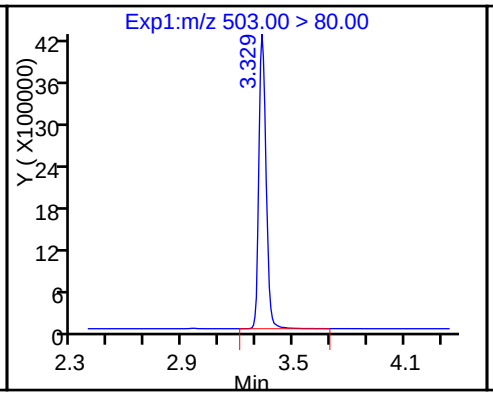
D 14 13C4 PFOA



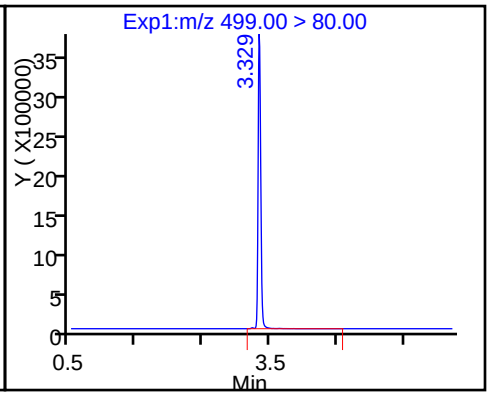
13 Perfluoroheptanesulfonic Acid



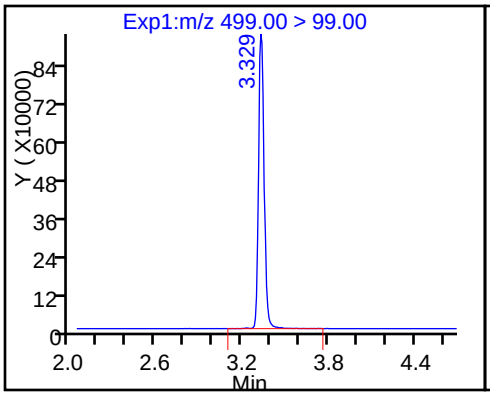
D 17 13C4 PFOS



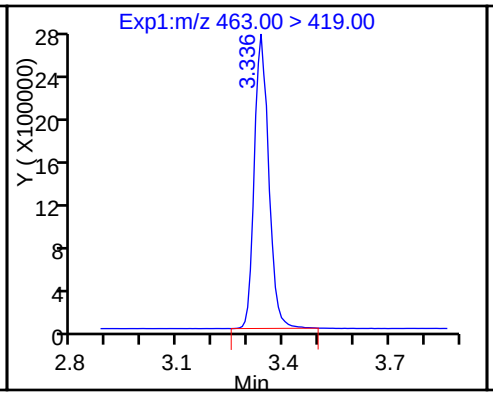
18 Perfluorooctane sulfonic acid



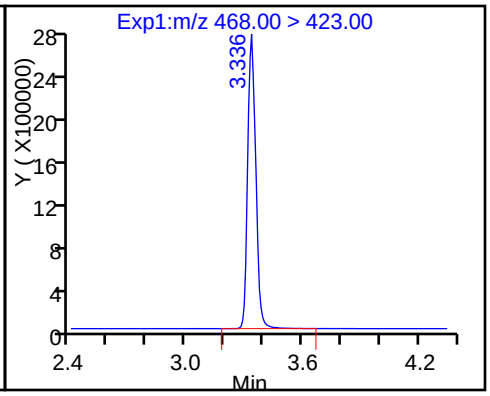
18 Perfluorooctane sulfonic acid



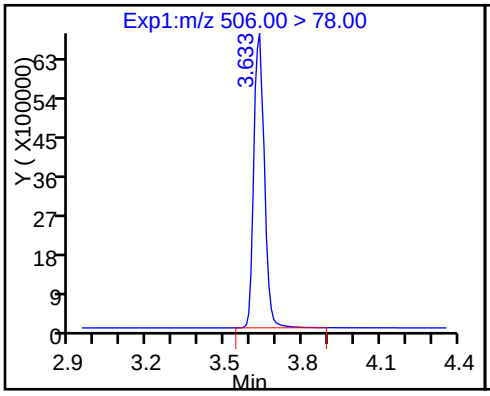
20 Perfluorononanoic acid



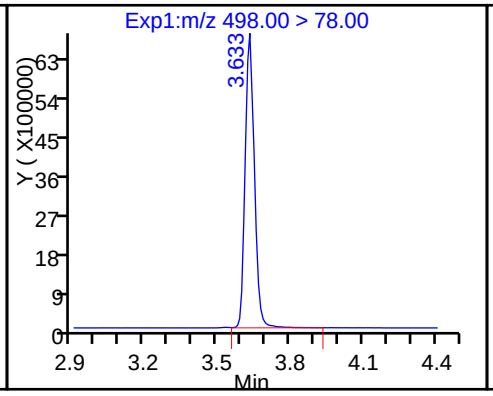
D 19 13C5 PFNA



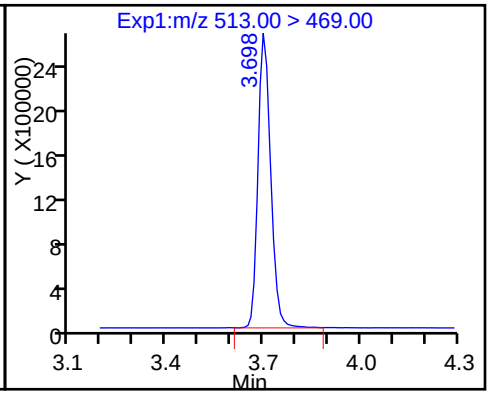
D 21 13C8 FOSA



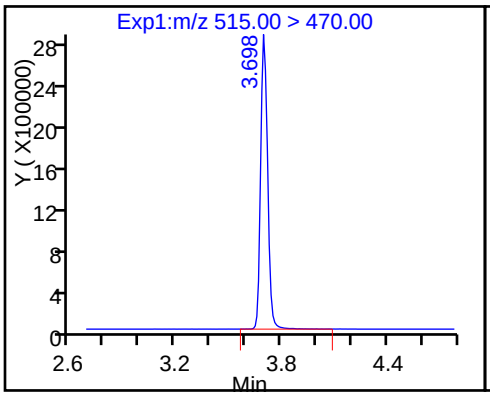
22 Perfluorooctane Sulfonamide



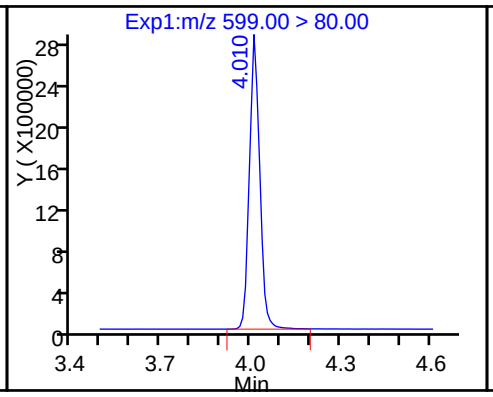
24 Perfluorodecanoic acid



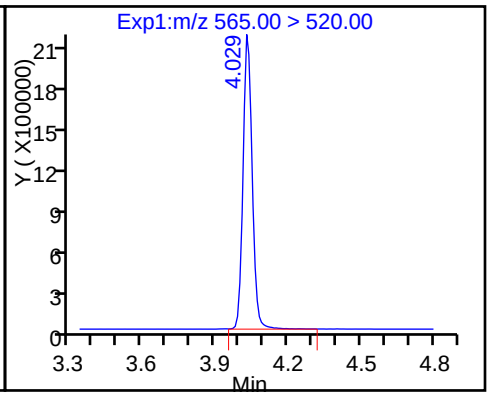
D 23 13C2 PFDA



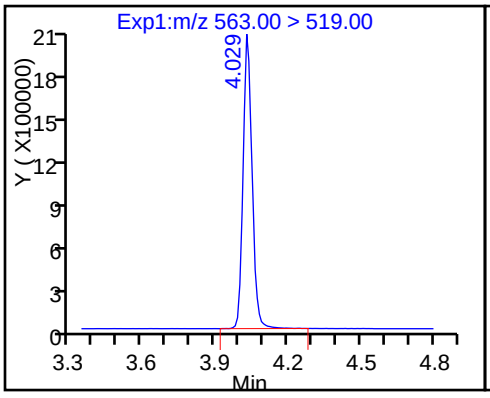
26 Perfluorodecane Sulfonic acid



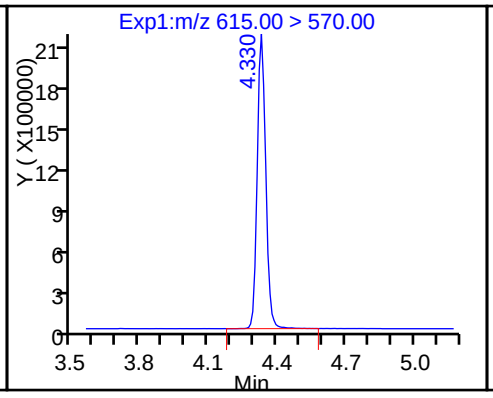
D 27 13C2 PFUnA



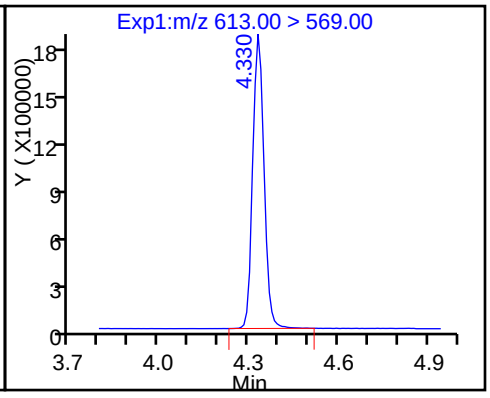
28 Perfluoroundecanoic acid



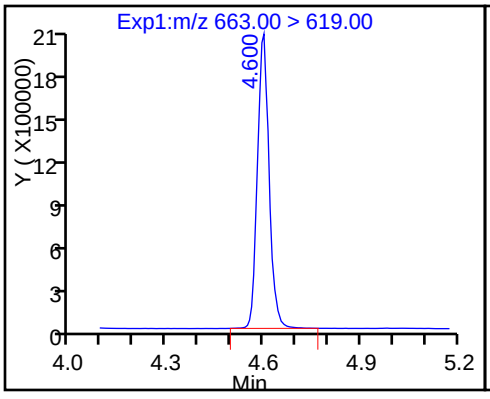
D 30 13C2 PFDoA



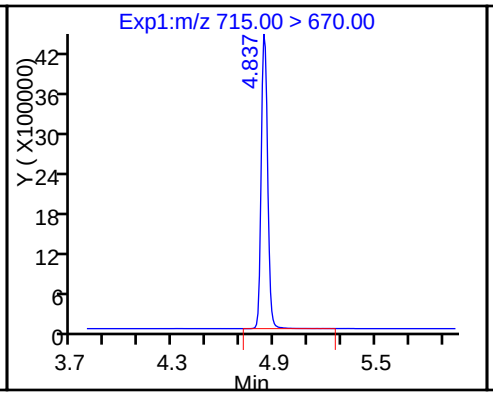
29 Perfluorododecanoic acid



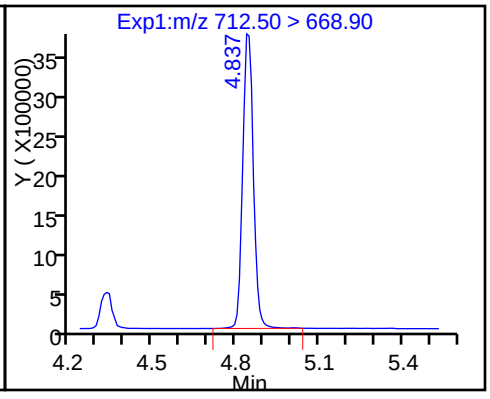
31 Perfluorotridecanoic acid



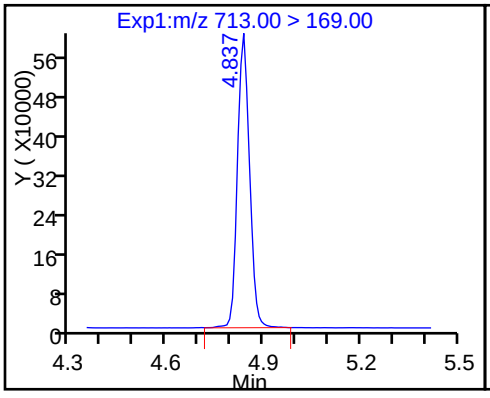
D 32 13C2-PFTeDA



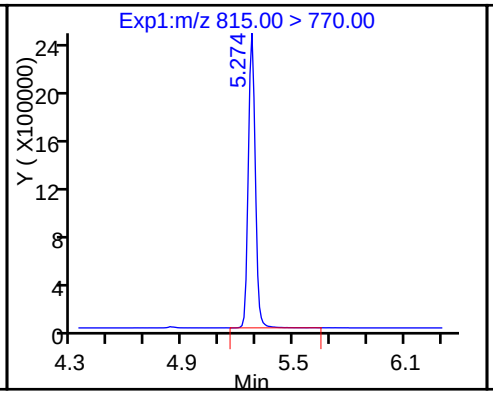
33 Perfluorotetradecanoic acid



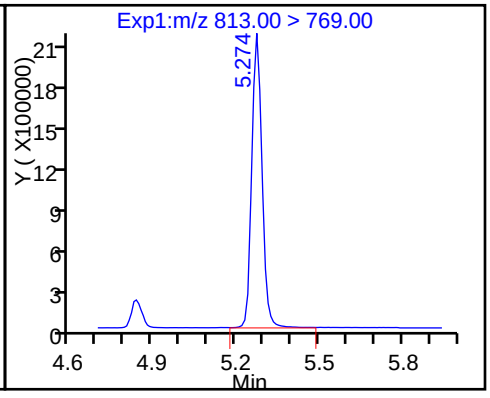
33 Perfluorotetradecanoic acid



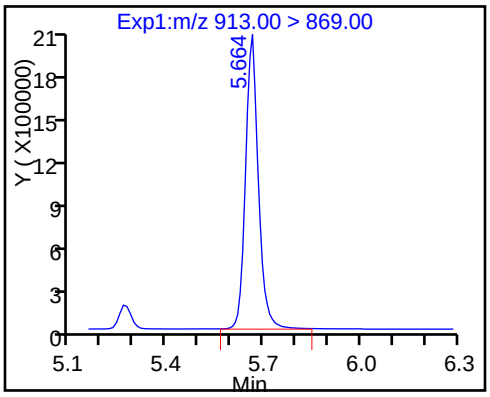
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Lab Sample ID: CCV 320-140382/33 Calibration Date: 12/02/2016 14:07

Instrument ID: A8_N Calib Start Date: 12/02/2016 10:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/02/2016 12:29

Lab File ID: 02DEC2016B_010.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8853	0.8758		49.5	50.0	-1.1	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.041	1.005		48.3	50.0	-3.4	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.613	1.603		43.9	44.2	-0.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9559	0.9174		48.0	50.0	-4.0	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.034	1.049		50.7	50.0	1.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.060	1.043		44.8	45.5	-1.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.169	1.180		48.1	47.6	1.0	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.020	1.039		50.9	50.0	1.8	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.087	1.085		46.3	46.4	-0.2	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9912	1.021		51.5	50.0	3.0	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9353	0.9330		49.9	50.0	-0.3	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9693	0.9515		49.1	50.0	-1.8	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6271	0.6724		51.7	48.2	7.2	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.060	0.9696		45.8	50.0	-8.5	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9465	0.9177		48.5	50.0	-3.0	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.040	0.9138		43.9	50.0	-12.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.932	1.787		46.2	50.0	-7.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9916		49.5	50.0	-1.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7915	1.066		67.8	50.0	34.7*	25.0
13C4 PFBA	Ave	340300	335757		49.3	50.0	-1.3	50.0
13C5-PFPeA	Ave	270194	250425		46.3	50.0	-7.3	50.0
13C2 PFHxA	Ave	246480	227356		46.1	50.0	-7.8	50.0
13C4-PFHpA	Ave	210510	191867		45.6	50.0	-8.9	50.0
18O2 PFHxS	Ave	302453	308064		48.2	47.3	1.9	50.0
13C4 PFOA	Ave	219411	210600		48.0	50.0	-4.0	50.0
13C4 PFOS	Ave	244616	241592		47.2	47.8	-1.2	50.0
13C5 PFNA	Ave	178109	156864		44.0	50.0	-11.9	50.0
13C8 FOSA	Ave	414253	386173		46.6	50.0	-6.8	50.0
13C2 PFDA	Ave	166067	158308		47.7	50.0	-4.7	50.0
13C2 PFUnA	Ave	125779	115394		45.9	50.0	-8.3	50.0
13C2 PFDoA	Ave	116905	108732		46.5	50.0	-7.0	50.0
13C2-PFTeDA	Ave	241899	215271		44.5	50.0	-11.0	50.0
13C2-PFHxDA	Ave	130373	117574		45.1	50.0	-9.8	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_010.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 02-Dec-2016 14:07:05 ALS Bottle#: 41 Worklist Smp#: 33
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 15:04:48 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 15:04:48

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.582	1.615	-0.033		16787846	49.3		98.7	1327509	
1 Perfluorobutyric acid										
212.90 > 169.00	1.582	1.617	-0.035	1.000	14702345	49.5		98.9	166796	
D 4 13C5-PFPeA										
267.90 > 223.00	1.868	1.918	-0.050		12521264	46.3		92.7	1675930	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.868	1.920	-0.052	1.000	12586784	48.3		96.6	88011	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.906	1.961	-0.055	1.000	21833339	43.9		99.4		
298.90 > 99.00	1.906	1.961	-0.055	1.000	10244154		2.13(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.172	2.239	-0.067		11367780	46.1		92.2	1514548	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.172	2.241	-0.069	1.000	10429102	48.0		96.0	270544	
D 11 13C4-PFHpA										
367.00 > 322.00	2.526	2.599	-0.073		9593340	45.6		91.1	892349	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.526	2.600	-0.074	1.000	10065809	50.7		101	140348	
D 10 18O2 PFHxS										
403.00 > 84.00	2.541	2.614	-0.073		14571442	48.2		102	1423708	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.541	2.615	-0.074	1.000	14622567	44.8		98.5		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.900	2.984	-0.084	1.000	10938486	50.9		102	392497	
413.00 > 169.00	2.900	2.984	-0.084	1.000	6667737		1.64(0.90-1.10)		410935	
D 14 13C4 PFOA										
417.00 > 372.00	2.892	2.984	-0.092		10529992	48.0		96.0	906338	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.900	2.986	-0.086	1.000	13574840	48.1		101		
D 17 13C4 PFOS										
503.00 > 80.00	3.274	3.365	-0.091		11548097	47.2		98.8	254963	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.274	3.366	-0.092	1.000	12164104	46.3		99.8	28493	
499.00 > 99.00	3.274	3.366	-0.092	1.000	2727438		4.46(0.90-1.10)		291526	
20 Perfluorononanoic acid										
463.00 > 419.00	3.281	3.373	-0.092	1.000	8006257	51.5		103	97570	
D 19 13C5 PFNA										
468.00 > 423.00	3.281	3.374	-0.093		7843210	44.0		88.1	317462	
D 21 13C8 FOSA										
506.00 > 78.00	3.590	3.651	-0.061		19308659	46.6		93.2	639742	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.598	3.656	-0.058	1.000	18014002	49.9		99.7	389523	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.640	3.738	-0.098	1.000	7531221	49.1		98.2	219436	
D 23 13C2 PFDA										
515.00 > 470.00	3.640	3.738	-0.098		7915378	47.7		95.3	186307	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.952	4.049	-0.097	1.000	7830349	51.7		107		
D 27 13C2 PFUnA										
565.00 > 520.00	3.969	4.070	-0.101		5769711	45.9		91.7	281625	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.969	4.071	-0.102	1.000	5594487	45.8		91.5	104753	
D 30 13C2 PFDoA										
615.00 > 570.00	4.262	4.370	-0.108		5436616	46.5		93.0	179792	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.270	4.370	-0.100	1.000	4989134	48.5		97.0	81181	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.529	4.636	-0.107	1.000	4967689	43.9		87.8	10121	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.776	4.882	-0.106		10763542	44.5		89.0	582824	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.767	4.884	-0.117	1.000	9716718	46.2		92.5	4110	
713.00 > 169.00	4.767	4.884	-0.117	1.000	1605923		6.05(0.00-0.00)		157680	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.191	5.320	-0.129		5878718	45.1		90.2	102017	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.191	5.320	-0.129	1.000	5390790	49.5		99.0	4857	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.577	5.720	-0.143	1.000	5794530	67.8		136	8072	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 02-Dec-2016 15:04:49 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_010.d

Injection Date: 02-Dec-2016 14:07:05 Instrument ID: A8_N

Lims ID: CCV L5

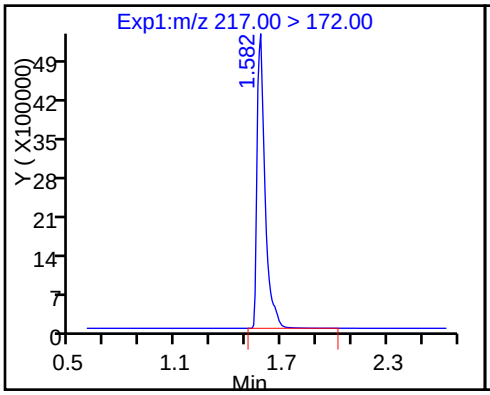
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 33

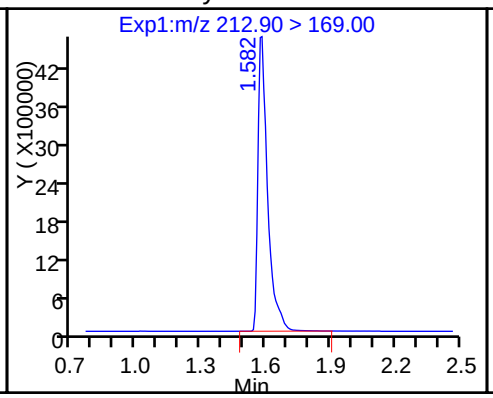
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

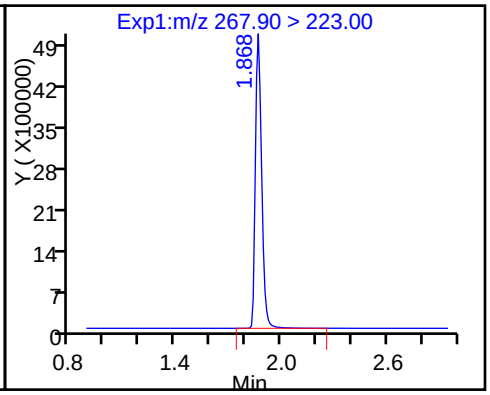
D 2 13C4 PFBA



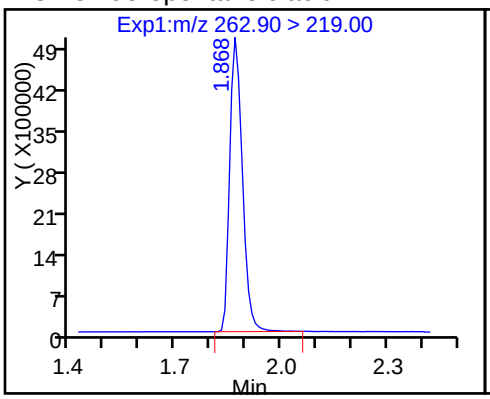
1 Perfluorobutyric acid



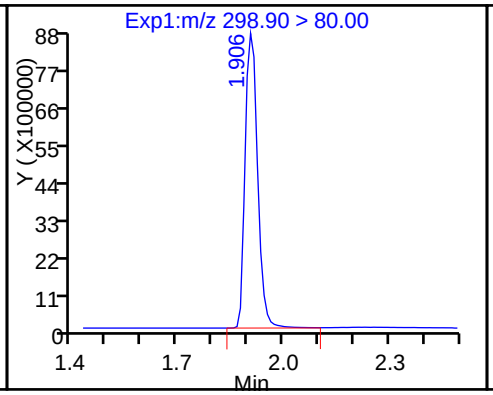
D 4 13C5-PFPeA



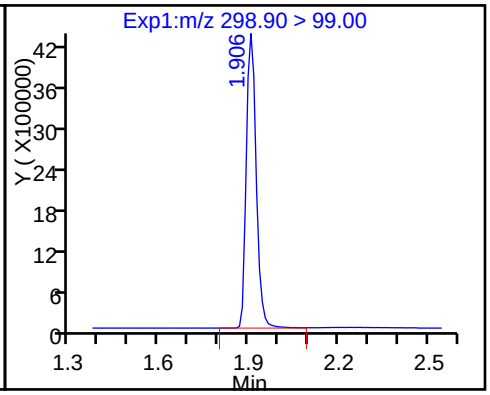
3 Perfluoropentanoic acid



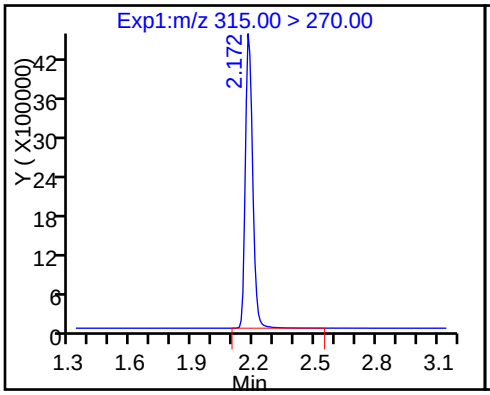
5 Perfluorobutanesulfonic acid



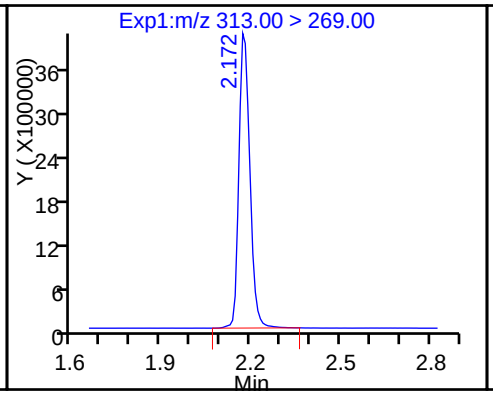
5 Perfluorobutanesulfonic acid



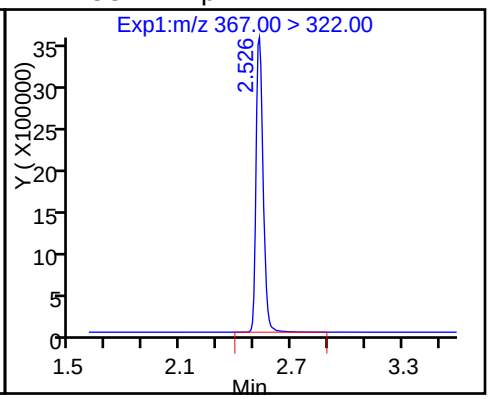
D 6 13C2 PFHxA



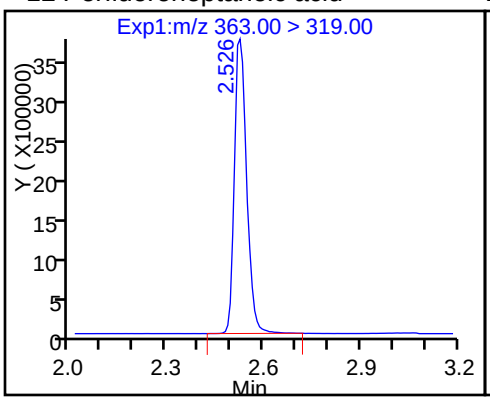
7 Perfluorohexanoic acid



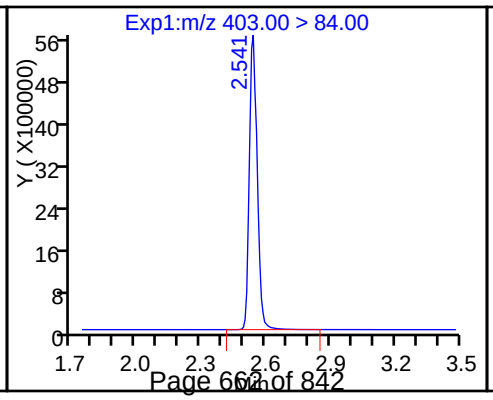
D 11 13C4-PFHpA



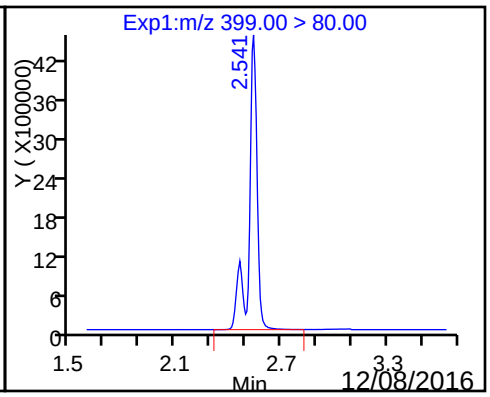
12 Perfluoroheptanoic acid



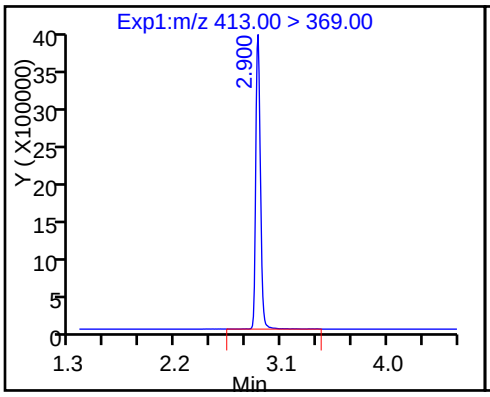
D 10 18O2 PFHxS



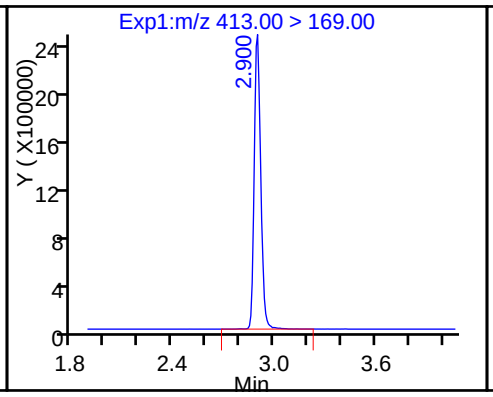
9 Perfluorohexanesulfonic acid



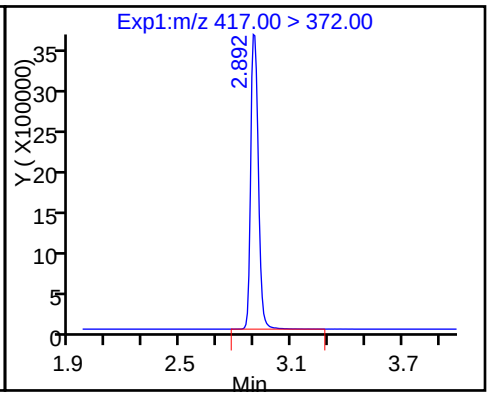
15 Perfluorooctanoic acid



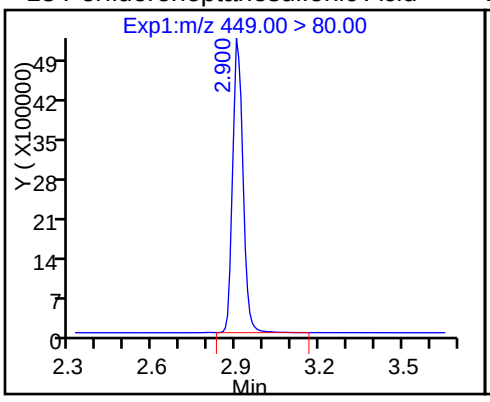
15 Perfluorooctanoic acid



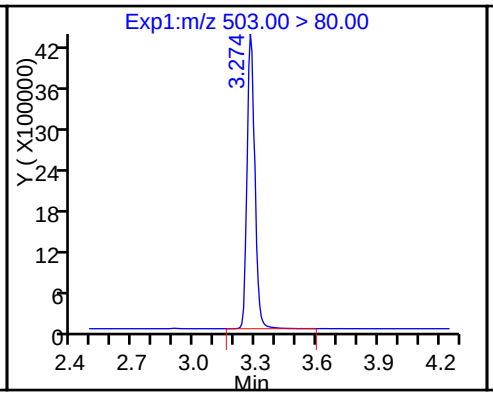
D 14 13C4 PFOA



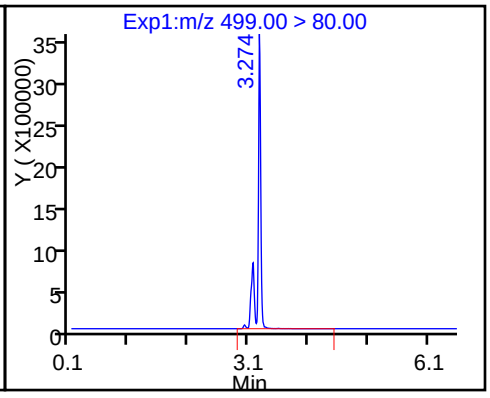
13 Perfluoroheptanesulfonic Acid



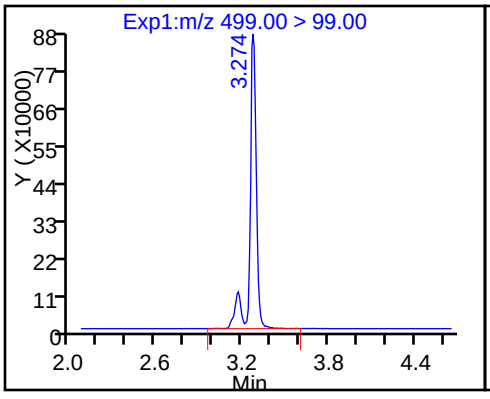
D 17 13C4 PFOS



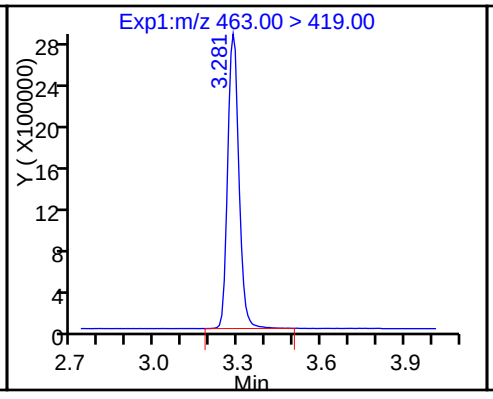
18 Perfluorooctane sulfonic acid



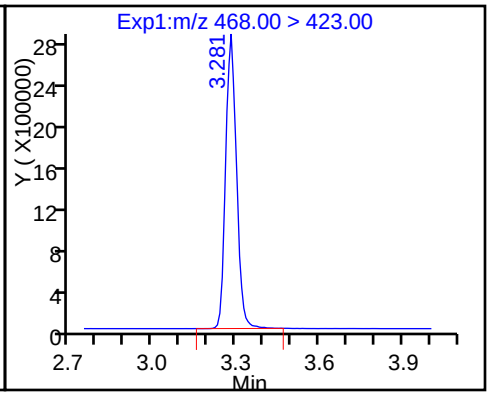
18 Perfluorooctane sulfonic acid



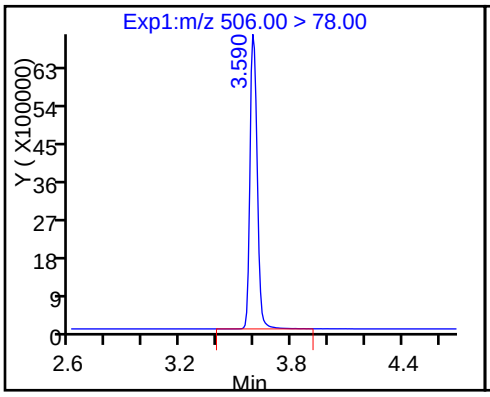
20 Perfluorononanoic acid



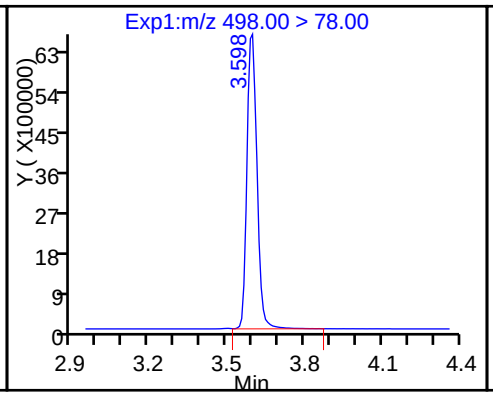
D 19 13C5 PFNA



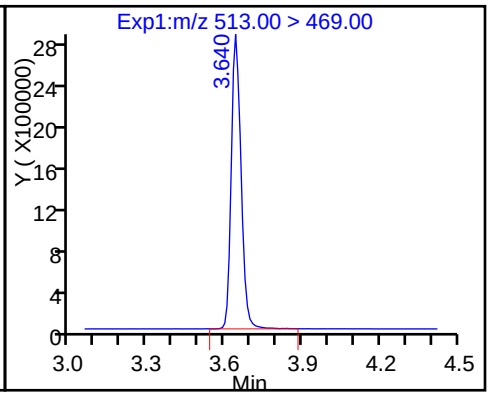
D 21 13C8 FOSA



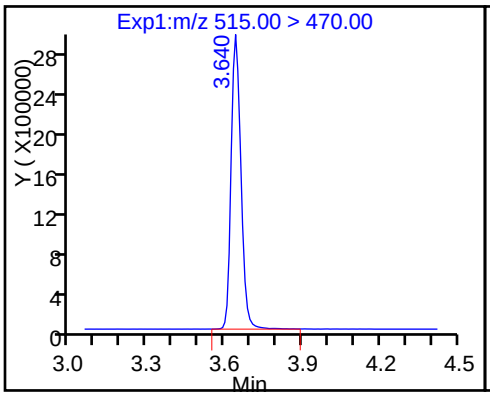
22 Perfluorooctane Sulfonamide



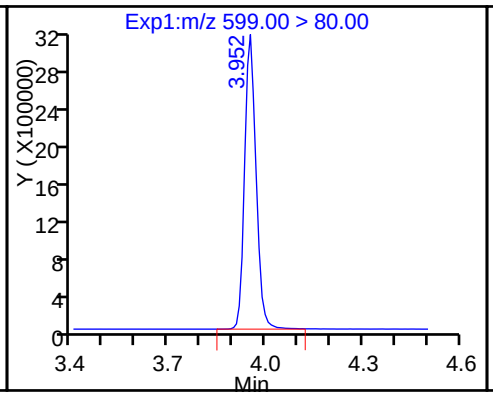
24 Perfluorodecanoic acid



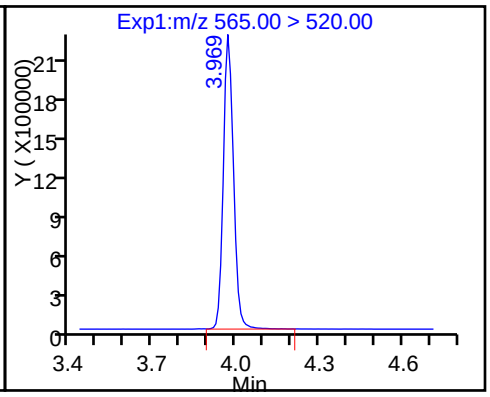
D 23 13C2 PFDA



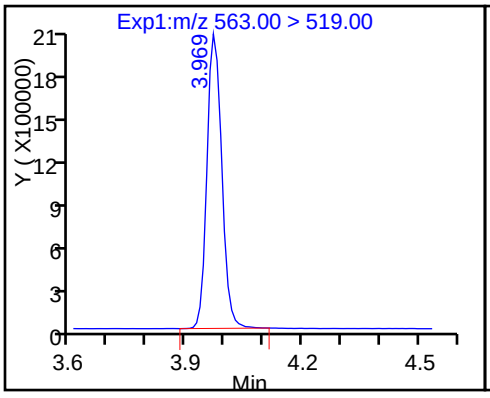
26 Perfluorodecane Sulfonic acid



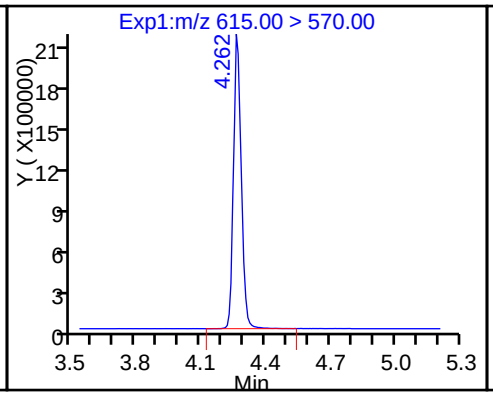
D 27 13C2 PFUnA



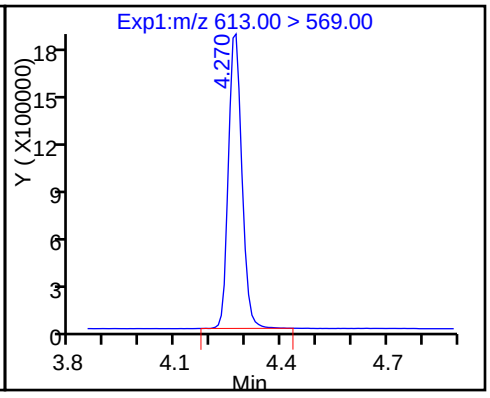
28 Perfluoroundecanoic acid



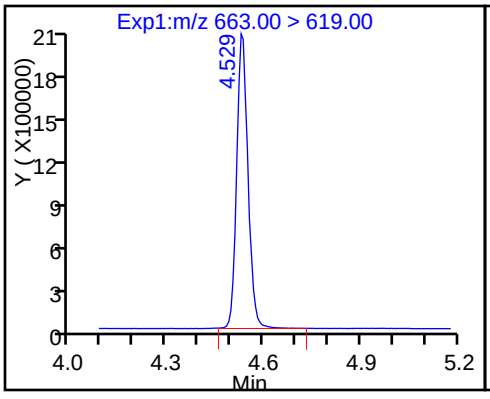
D 30 13C2 PFDoA



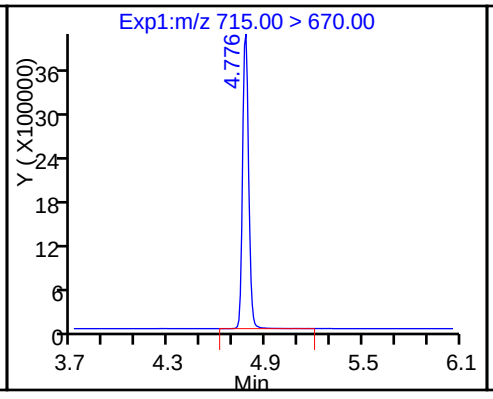
29 Perfluorododecanoic acid



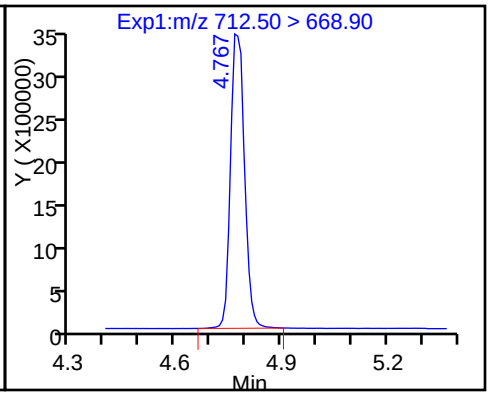
31 Perfluorotridecanoic acid



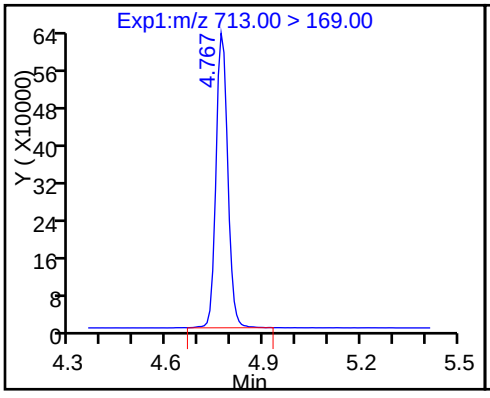
D 32 13C2-PFTeDA



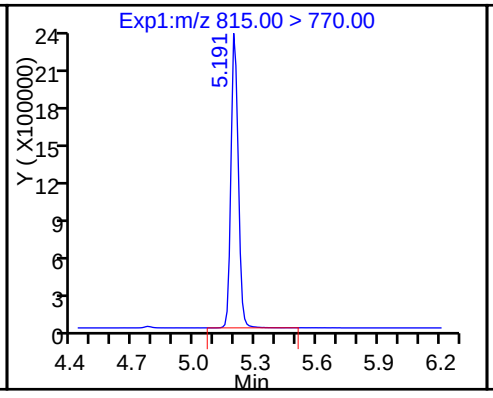
33 Perfluorotetradecanoic acid



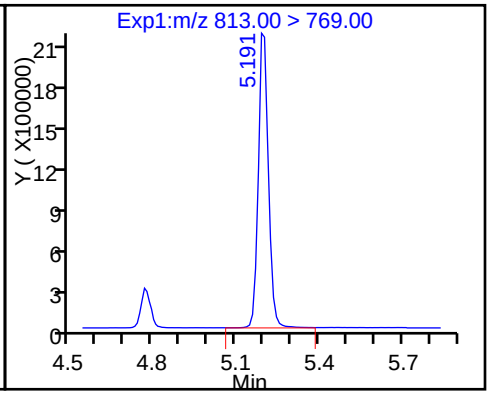
33 Perfluorotetradecanoic acid



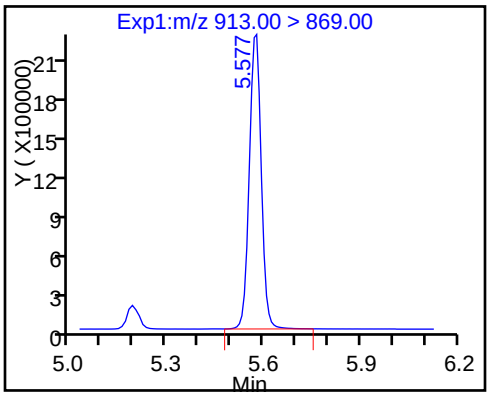
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Lab Sample ID: CCV 320-140429/2 Calibration Date: 12/02/2016 14:37

Instrument ID: A8_N Calib Start Date: 12/02/2016 10:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/02/2016 12:29

Lab File ID: 02DEC2016B_014.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8853	0.8936		50.5	50.0	0.9	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.041	0.9928		47.7	50.0	-4.6	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.613	1.603		43.9	44.2	-0.6	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9559	0.9446		49.4	50.0	-1.2	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.034	1.038		50.2	50.0	0.4	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.060	1.067		45.8	45.5	0.7	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.020	1.035		50.7	50.0	1.5	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.169	1.172		47.7	47.6	0.2	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.087	1.084		46.3	46.4	-0.3	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9912	0.9755		49.2	50.0	-1.6	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9353	0.9066		48.5	50.0	-3.1	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9693	0.9463		48.8	50.0	-2.4	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6271	0.6643		51.1	48.2	5.9	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.060	0.9661		45.6	50.0	-8.8	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9465	0.9288		49.1	50.0	-1.9	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.040	0.9649		46.4	50.0	-7.2	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.932	1.864		48.2	50.0	-3.5	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9713		48.5	50.0	-3.0	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7915	1.043		66.3	50.0	31.7*	25.0
13C4 PFBA	Ave	340300	339545		49.9	50.0	-0.2	50.0
13C5-PFPeA	Ave	270194	261302		48.4	50.0	-3.3	50.0
13C2 PFHxA	Ave	246480	229526		46.6	50.0	-6.9	50.0
13C4-PFHpA	Ave	210510	202011		48.0	50.0	-4.0	50.0
18O2 PFHxS	Ave	302453	317474		49.6	47.3	5.0	50.0
13C4 PFOA	Ave	219411	216146		49.3	50.0	-1.5	50.0
13C4 PFOS	Ave	244616	251364		49.1	47.8	2.8	50.0
13C5 PFNA	Ave	178109	169399		47.6	50.0	-4.9	50.0
13C8 FOSA	Ave	414253	402881		48.6	50.0	-2.7	50.0
13C2 PFDA	Ave	166067	161124		48.5	50.0	-3.0	50.0
13C2 PFUnA	Ave	125779	118770		47.2	50.0	-5.6	50.0
13C2 PFDoA	Ave	116905	109471		46.8	50.0	-6.4	50.0
13C2-PFTeDA	Ave	241899	223925		46.3	50.0	-7.4	50.0
13C2-PFHxDA	Ave	130373	118805		45.6	50.0	-8.9	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016B_014.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 02-Dec-2016 14:37:03 ALS Bottle#: 41 Worklist Smp#: 2
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 04-Dec-2016 18:06:11 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK025

First Level Reviewer: chandrasenas Date: 04-Dec-2016 18:06:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.574	1.574	0.0	1.000	15171458	50.5		101	155330	
D 2 13C4 PFBA										
217.00 > 172.00	1.574	1.574	0.0		16977232	49.9		99.8	2771435	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.868	1.868	0.0	1.000	12970874	47.7		95.4	120574	
D 4 13C5-PFPeA										
267.90 > 223.00	1.868	1.868	0.0		13065075	48.4		96.7	2568563	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.907	1.907	0.0	1.000	22493915	43.9		99.4		
298.90 > 99.00	1.907	1.907	0.0	1.000	10590632		2.12(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.173	2.173	0.0	1.000	10840520	49.4		98.8	348131	
D 6 13C2 PFHxA										
315.00 > 270.00	2.173	2.173	0.0		11476282	46.6		93.1	919645	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.519	2.519	0.0	1.000	10487509	50.2		100	129458	
D 11 13C4-PFHpA										
367.00 > 322.00	2.519	2.519	0.0		10100555	48.0		96.0	962415	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.534	2.534	0.0	1.000	15406543	45.8		101		
D 10 18O2 PFHxS										
403.00 > 84.00	2.534	2.534	0.0		15016500	49.6		105	1172460	
D 14 13C4 PFOA										
417.00 > 372.00	2.886	2.886	0.0		10807294	49.3		98.5	772353	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.894	2.894	0.0	1.000	11190759	50.7		101	205894	
413.00 > 169.00	2.894	2.894	0.0	1.000	6841143		1.64(0.90-1.10)		311496	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.902	2.902	0.0	1.000	14021365	47.7		100		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.267	3.267	0.0	1.000	12644938	46.3		99.7	53281	
499.00 > 99.00	3.267	3.267	0.0	1.000	2940349		4.30(0.90-1.10)		339746	
D 17 13C4 PFOS										
503.00 > 80.00	3.267	3.267	0.0		12015188	49.1		103	275554	
20 Perfluorononanoic acid										
463.00 > 419.00	3.275	3.275	0.0	1.000	8262291	49.2		98.4	153747	
D 19 13C5 PFNA										
468.00 > 423.00	3.275	3.275	0.0		8469930	47.6		95.1	605451	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.589	3.589	0.0	1.000	18261930	48.5		96.9	733539	
D 21 13C8 FOSA										
506.00 > 78.00	3.589	3.589	0.0		20144056	48.6		97.3	630987	
D 23 13C2 PFDA										
515.00 > 470.00	3.631	3.631	0.0		8056201	48.5		97.0	192938	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.631	3.631	0.0	1.000	7623608	48.8		97.6	194009	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.941	3.941	0.0	1.000	8048082	51.1		106		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.959	3.959	0.0	1.000	5737327	45.6		91.2	103207	
D 27 13C2 PFUnA										
565.00 > 520.00	3.967	3.967	0.0		5938511	47.2		94.4	310740	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.259	4.259	0.0	1.000	5083644	49.1		98.1	71841	
D 30 13C2 PFDoA										
615.00 > 570.00	4.259	4.259	0.0		5473570	46.8		93.6	186491	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.520	4.520	0.0	1.000	5281655	46.4		92.8	6905	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.772	4.772	0.0	1.000	10203271	48.2		96.5	4031	
713.00 > 169.00	4.763	4.772	-0.009	0.998	1624426		6.28(0.00-0.00)		120314	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.772	4.772	0.0		11196256	46.3		92.6	372028	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.184	5.184	0.0		5940244	45.6		91.1	99394	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.194	5.194	0.0	1.000	5316696	48.5		97.0	3968	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.562	5.562	0.0	1.000	5707122	66.3		133	7784	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 04-Dec-2016 18:06:12 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016B_014.d

Injection Date: 02-Dec-2016 14:37:03 Instrument ID: A8_N

Lims ID: CCV L5

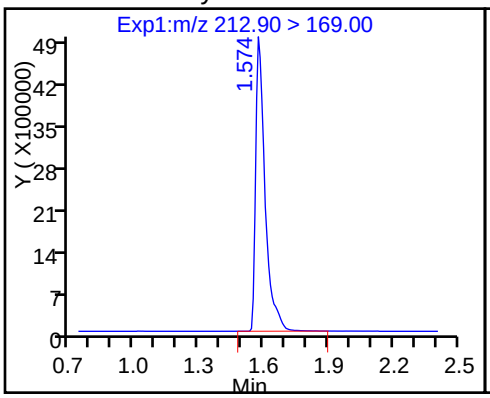
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 2

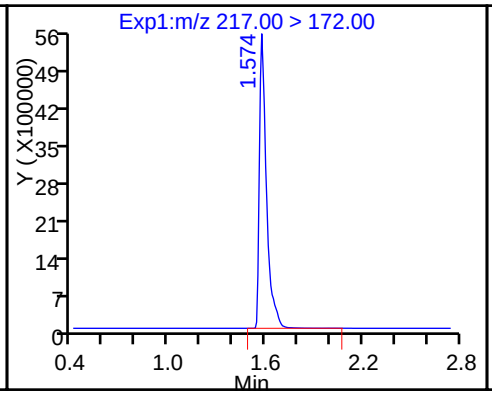
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

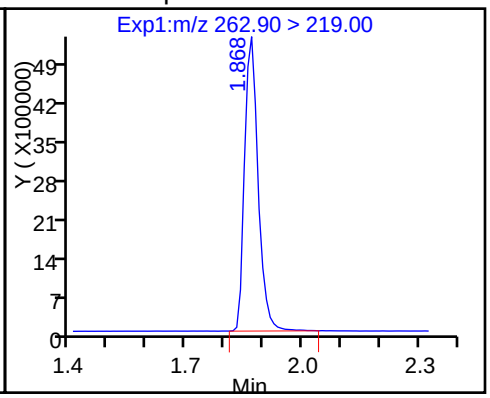
1 Perfluorobutyric acid



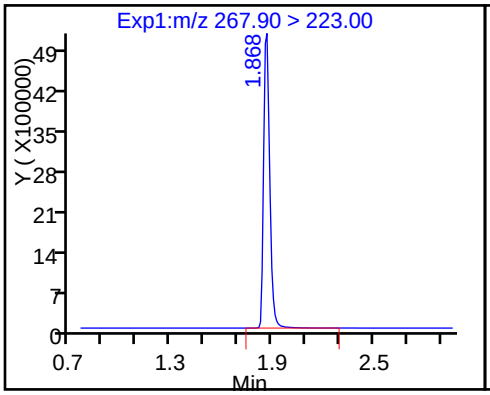
D 2 13C4 PFBA



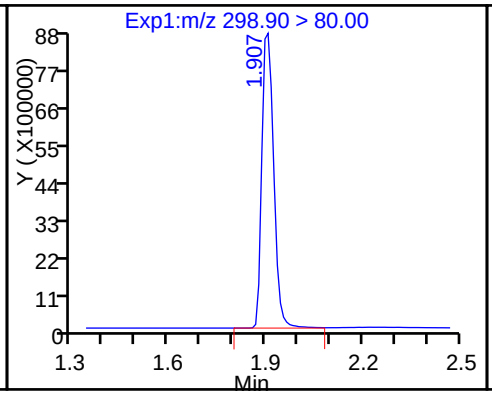
3 Perfluoropentanoic acid



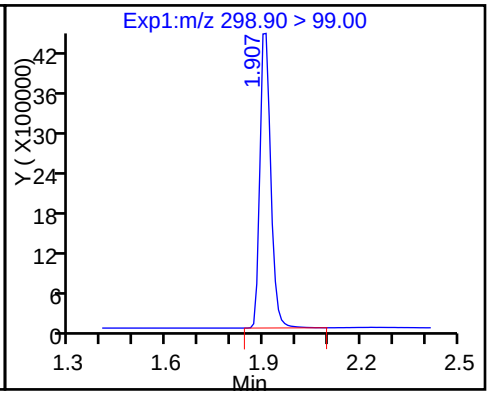
D 4 13C5-PFPeA



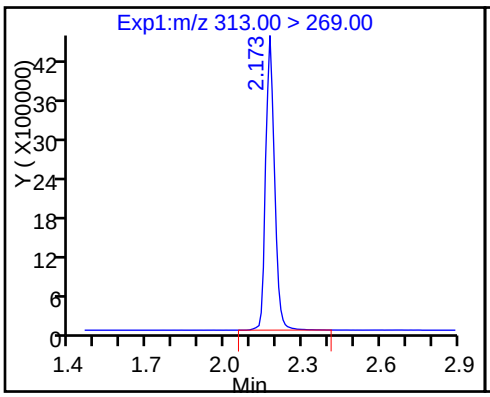
5 Perfluorobutanesulfonic acid



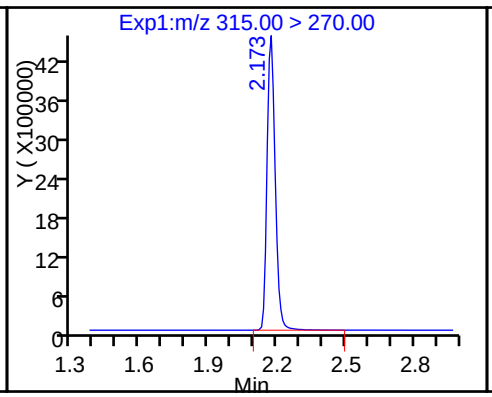
5 Perfluorobutanesulfonic acid



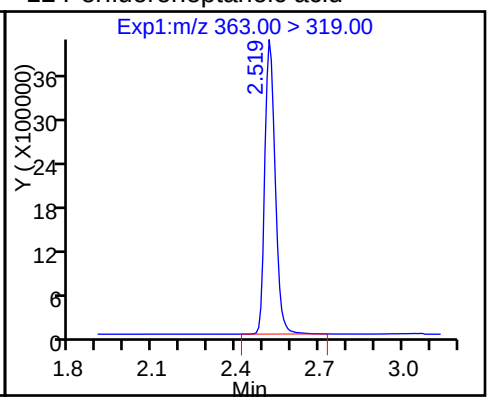
7 Perfluorohexanoic acid



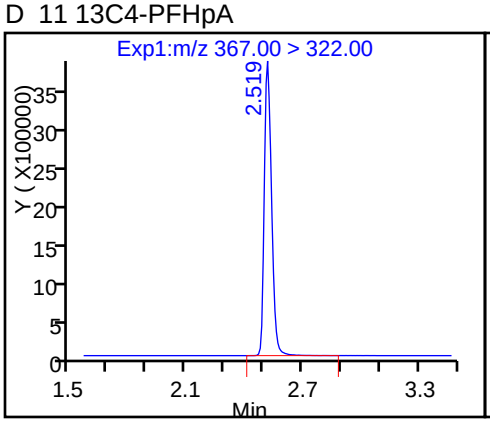
D 6 13C2 PFHxA



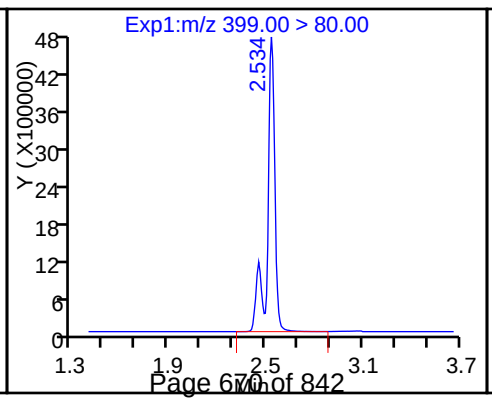
12 Perfluoroheptanoic acid



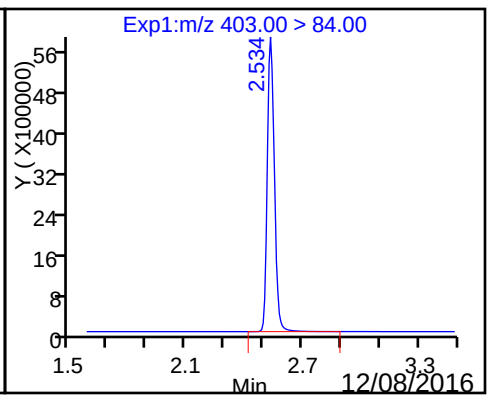
D 11 13C4-PFHpA



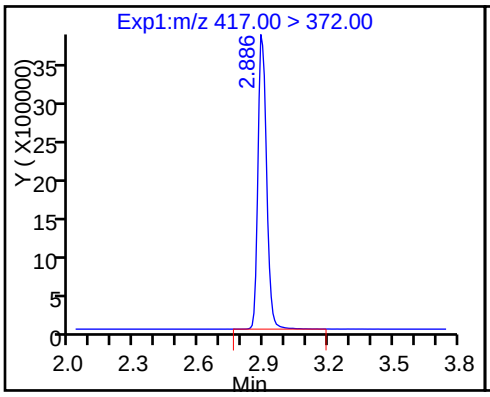
9 Perfluorohexanesulfonic acid



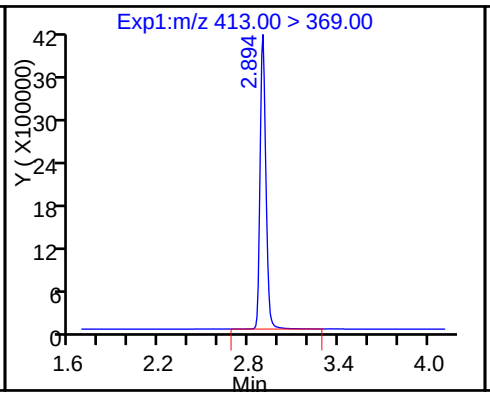
D 10 18O2 PFHxS



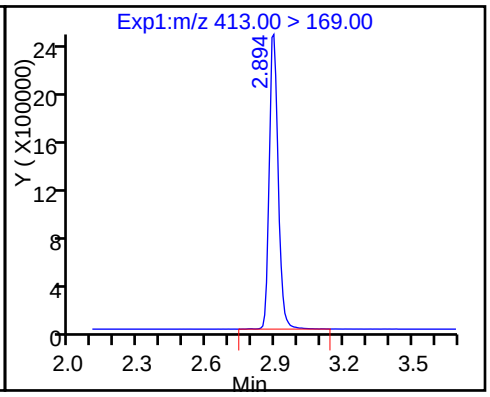
D 14 13C4 PFOA



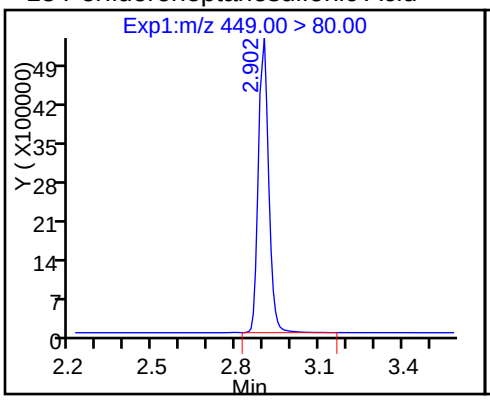
15 Perfluorooctanoic acid



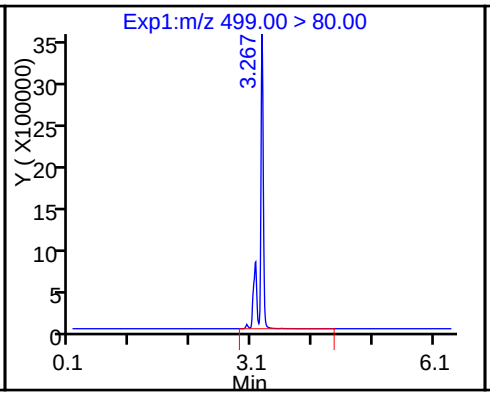
15 Perfluorooctanoic acid



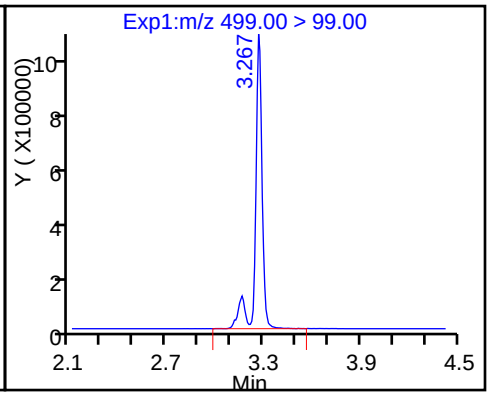
13 Perfluoroheptanesulfonic Acid



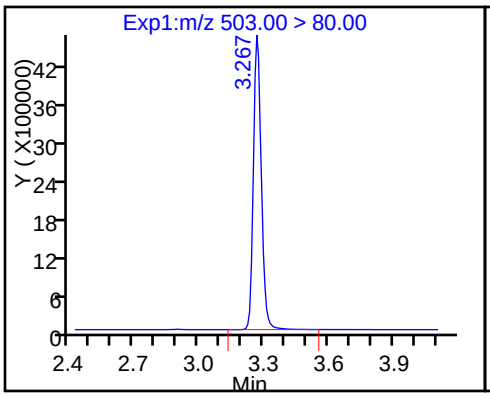
18 Perfluorooctane sulfonic acid



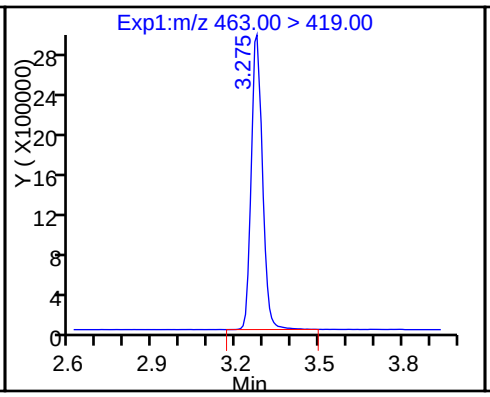
18 Perfluorooctane sulfonic acid



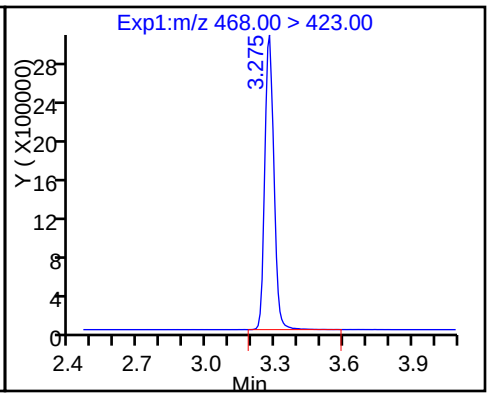
D 17 13C4 PFOS



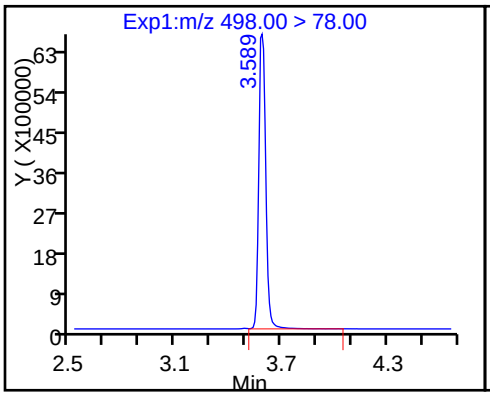
20 Perfluorononanoic acid



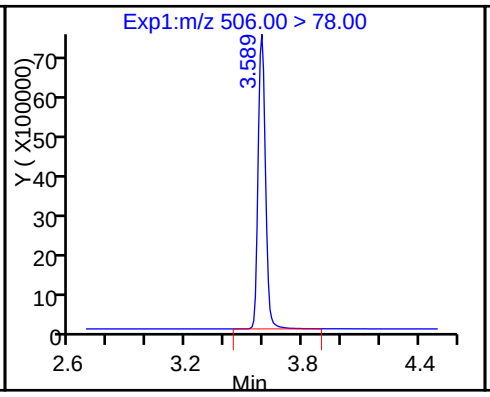
D 19 13C5 PFNA



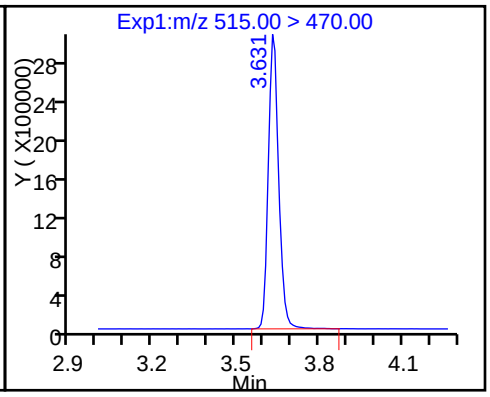
22 Perfluorooctane Sulfonamide



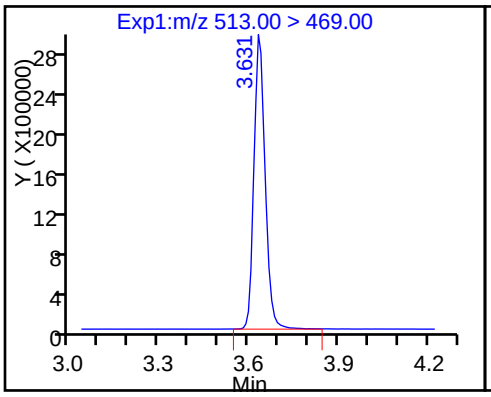
D 21 13C8 FOSA



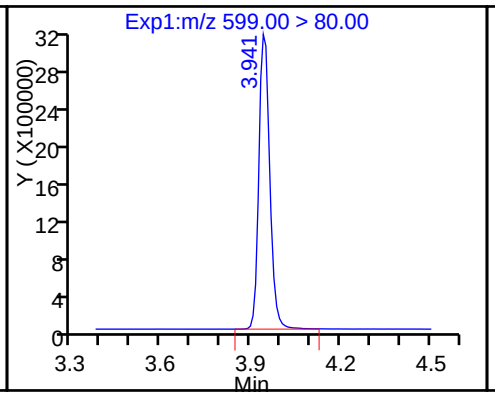
D 23 13C2 PFDA



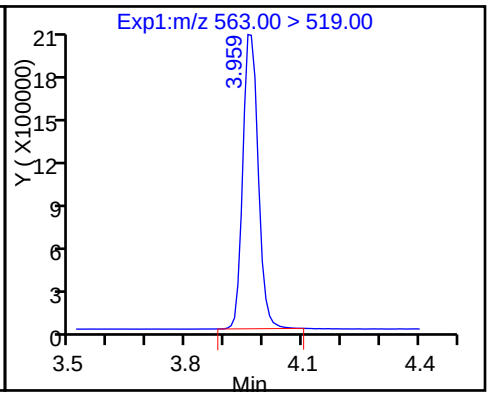
24 Perfluorodecanoic acid



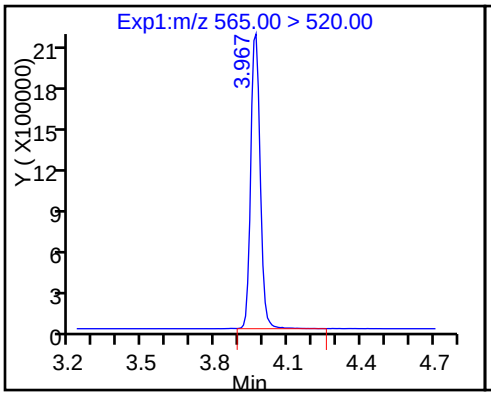
26 Perfluorodecane Sulfonic acid



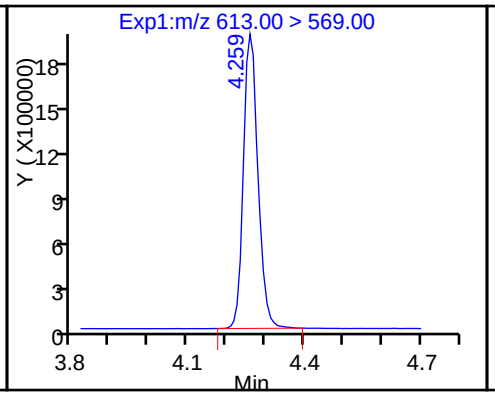
28 Perfluoroundecanoic acid



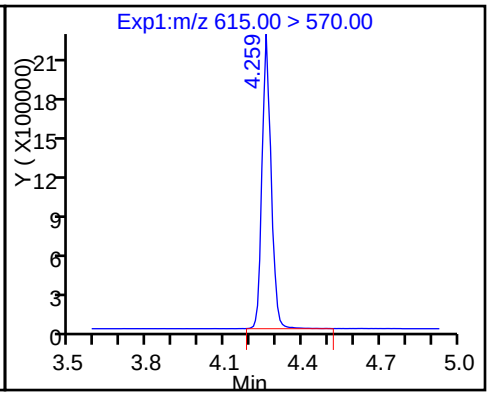
D 27 13C2 PFUnA



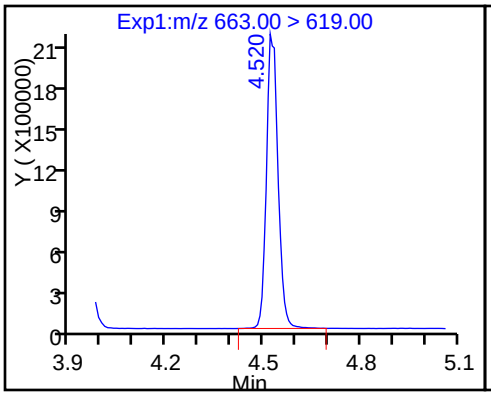
29 Perfluorododecanoic acid



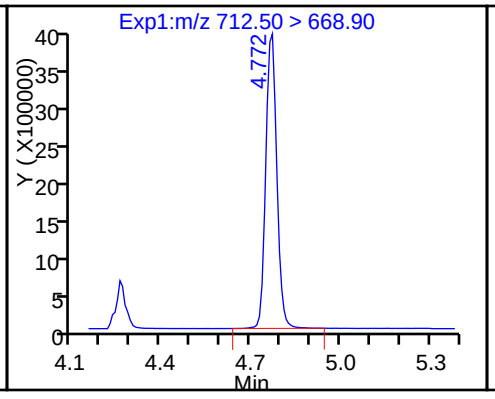
D 30 13C2 PFDoA



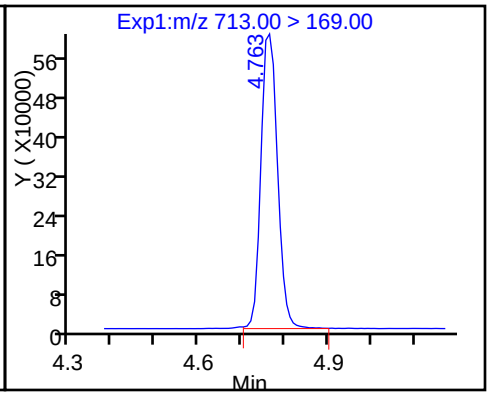
31 Perfluorotridecanoic acid



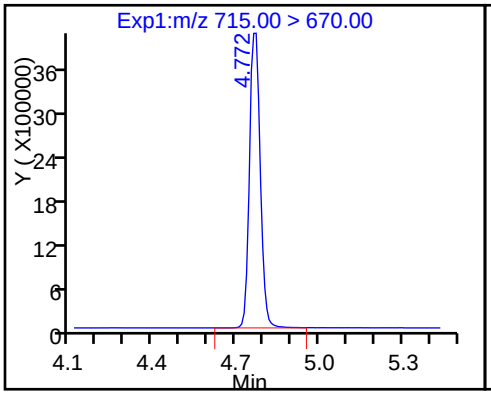
33 Perfluorotetradecanoic acid



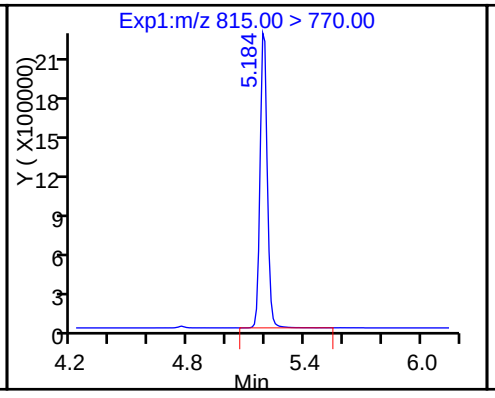
33 Perfluorotetradecanoic acid



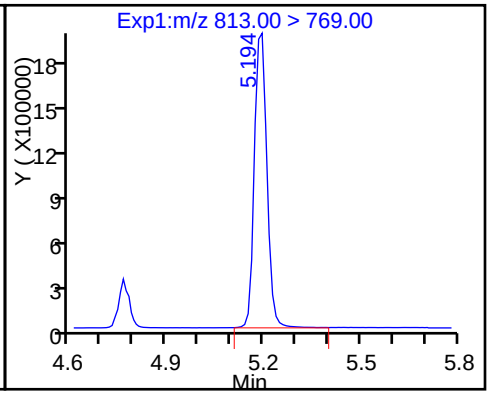
D 32 13C2-PFTeDA



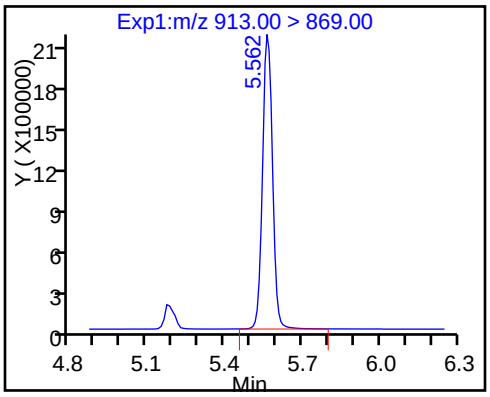
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Lab Sample ID: CCV 320-140429/16 Calibration Date: 12/02/2016 16:22

Instrument ID: A8_N Calib Start Date: 12/02/2016 10:29

GC Column: Acquity ID: 2.10(mm) Calib End Date: 12/02/2016 12:29

Lab File ID: 02DEC2016C_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	0.8853	0.8804		49.7	50.0	-0.6	25.0
Perfluoropentanoic acid (PFPeA)	AveID	1.041	0.9809		47.1	50.0	-5.8	25.0
Perfluorobutanesulfonic acid (PFBS)	AveID	1.613	1.597		43.7	44.2	-1.0	25.0
Perfluorohexanoic acid (PFHxA)	AveID	0.9559	0.9395		49.1	50.0	-1.7	25.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.034	1.019		49.3	50.0	-1.5	25.0
Perfluorohexanesulfonic acid (PFHxS)	AveID	1.060	1.063		45.6	45.5	0.3	25.0
Perfluoroheptanesulfonic Acid (PFHpS)	AveID	1.169	1.129		46.0	47.6	-3.4	25.0
Perfluorooctanoic acid (PFOA)	AveID	1.020	1.019		49.9	50.0	-0.1	25.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.087	1.065		45.5	46.4	-2.0	25.0
Perfluorononanoic acid (PFNA)	AveID	0.9912	0.996		50.2	50.0	0.4	25.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.9353	0.9267		49.5	50.0	-0.9	25.0
Perfluorodecanoic acid (PFDA)	AveID	0.9693	0.9593		49.5	50.0	-1.0	25.0
Perfluorodecanesulfonic acid (PFDS)	AveID	0.6271	0.6357		48.9	48.2	1.4	25.0
Perfluoroundecanoic acid (PFUnA)	AveID	1.060	0.9840		46.4	50.0	-7.1	25.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9465	0.9295		49.1	50.0	-1.8	25.0
Perfluorotridecanoic Acid (PFTriA)	AveID	1.040	0.9397		45.2	50.0	-9.7	25.0
Perfluorotetradecanoic acid (PFTeA)	AveID	1.932	1.767		45.7	50.0	-8.6	25.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	L1ID		0.9637		48.1	50.0	-3.8	25.0
Perfluoro-n-octadecanoic acid (PFODA)	AveID	0.7915	1.054		67.0	50.0	33.2*	25.0
13C4 PFBA	Ave	340300	332191		48.8	50.0	-2.4	50.0
13C5-PFPeA	Ave	270194	252615		46.7	50.0	-6.5	50.0
13C2 PFHxA	Ave	246480	228018		46.3	50.0	-7.5	50.0
13C4-PFHpA	Ave	210510	196748		46.7	50.0	-6.5	50.0
18O2 PFHxS	Ave	302453	307137		48.0	47.3	1.5	50.0
13C4 PFOA	Ave	219411	211412		48.2	50.0	-3.6	50.0
13C4 PFOS	Ave	244616	252256		49.3	47.8	3.1	50.0
13C5 PFNA	Ave	178109	159978		44.9	50.0	-10.2	50.0
13C8 FOSA	Ave	414253	392650		47.4	50.0	-5.2	50.0
13C2 PFDA	Ave	166067	151711		45.7	50.0	-8.6	50.0
13C2 PFUnA	Ave	125779	110399		43.9	50.0	-12.2	50.0
13C2 PFDoA	Ave	116905	109030		46.6	50.0	-6.7	50.0
13C2-PFTeDA	Ave	241899	217472		45.0	50.0	-10.1	50.0
13C2-PFHxDA	Ave	130373	114036		43.7	50.0	-12.5	50.0

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_012.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 02-Dec-2016 16:22:13 ALS Bottle#: 41 Worklist Smp#: 16
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: CCV L5
Misc. Info.: Plate: 1 Rack: 1
Operator ID: A8-PC\A8 Instrument ID: A8_N
Sublist: chrom-A8_N*sub1

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 04-Dec-2016 18:06:22 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK025

First Level Reviewer: chandrasenas Date: 04-Dec-2016 18:06:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.574	1.574	0.0	1.000	14622963	49.7		99.4	136701	
D 2 13C4 PFBA										
217.00 > 172.00	1.574	1.574	0.0		16609540	48.8		97.6	1760564	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.859	1.868	-0.009	1.000	12389685	47.1		94.2	143388	
D 4 13C5-PFPeA										
267.90 > 223.00	1.859	1.868	-0.009		12630763	46.7		93.5	1231239	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.907	1.907	0.0	1.000	21678790	43.7		99.0		
298.90 > 99.00	1.897	1.907	-0.010	0.995	10208437		2.12(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.171	2.173	-0.003	1.000	10711219	49.1		98.3	288186	
D 6 13C2 PFHxA										
315.00 > 270.00	2.171	2.173	-0.003		11400916	46.3		92.5	2220908	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.516	2.519	-0.003	1.000	10025294	49.3		98.5	148580	
D 11 13C4-PFHpA										
367.00 > 322.00	2.516	2.519	-0.003		9837421	46.7		93.5	979084	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.532	2.534	-0.002	1.000	14850728	45.6		100		
D 10 18O2 PFHxS										
403.00 > 84.00	2.532	2.534	-0.002		14527568	48.0		102	761217	
D 14 13C4 PFOA										
417.00 > 372.00	2.890	2.886	0.004		10570593	48.2		96.4	786274	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.890	2.894	-0.004	1.000	10770410	49.9		99.9	198921	
413.00 > 169.00	2.890	2.894	-0.004	1.000	6718323		1.60(0.90-1.10)		592810	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.890	2.902	-0.012	1.000	13560651	46.0		96.6		
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.265	3.267	-0.002	1.000	12467043	45.5		98.0	3525927	
499.00 > 99.00	3.265	3.267	-0.002	1.000	2716230		4.59(0.90-1.10)		228232	
D 17 13C4 PFOS										
503.00 > 80.00	3.265	3.267	-0.002		12057843	49.3		103	232224	
20 Perfluorononanoic acid										
463.00 > 419.00	3.272	3.275	-0.003	1.000	7963240	50.2		100	144737	
D 19 13C5 PFNA										
468.00 > 423.00	3.265	3.275	-0.010		7998877	44.9		89.8	353617	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.587	3.589	-0.002	1.000	18194106	49.5		99.1	536694	
D 21 13C8 FOSA										
506.00 > 78.00	3.587	3.589	-0.002		19632521	47.4		94.8	564736	
D 23 13C2 PFDA										
515.00 > 470.00	3.629	3.631	-0.002		7585560	45.7		91.4	208800	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.629	3.631	-0.002	1.000	7277017	49.5		99.0	199518	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.938	3.941	-0.003	1.000	7729327	48.9		101		
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.956	3.959	-0.003	1.000	5431519	46.4		92.9	112110	
D 27 13C2 PFUnA										
565.00 > 520.00	3.956	3.967	-0.011		5519927	43.9		87.8	528013	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.255	4.259	-0.004	1.000	5067396	49.1		98.2	77314	
D 30 13C2 PFDoA										
615.00 > 570.00	4.246	4.259	-0.013		5451503	46.6		93.3	157285	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.521	4.520	0.001	1.000	5122725	45.2		90.3	11584	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.757	4.772	-0.015	1.000	9633033	45.7		91.4	4134	
713.00 > 169.00	4.748	4.772	-0.024	0.998	1613548		5.97(0.00-0.00)		215079	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.757	4.772	-0.015		10873598	45.0		89.9	570141	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.173	5.184	-0.011		5701819	43.7		87.5	107923	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.184	5.194	-0.010	1.000	5253333	48.1		96.2	4932	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.545	5.562	-0.017	1.000	5747404	67.0		134	6736	

Reagents:

LCPFC-L5_00020 Amount Added: 1.00 Units: mL

Report Date: 04-Dec-2016 18:06:23 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b\02DEC2016C_012.d

Injection Date: 02-Dec-2016 16:22:13 Instrument ID: A8_N

Lims ID: CCV L5

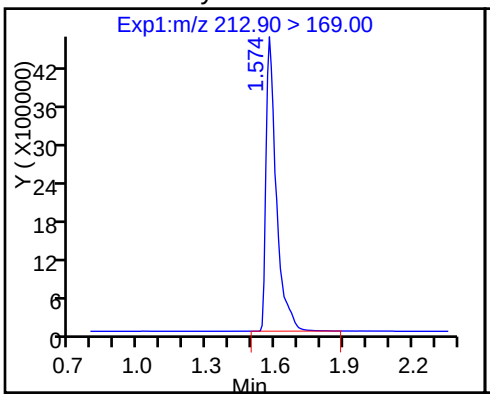
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 41 Worklist Smp#: 16

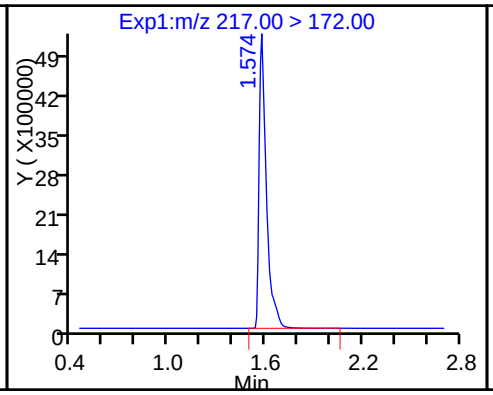
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

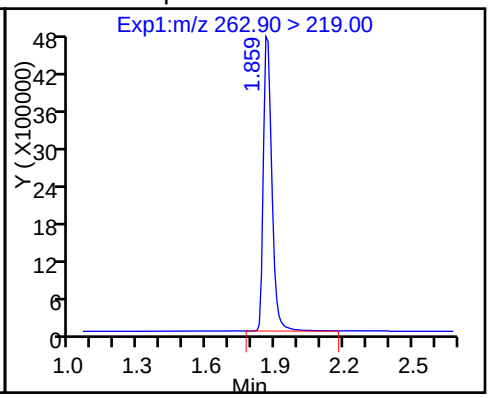
1 Perfluorobutyric acid



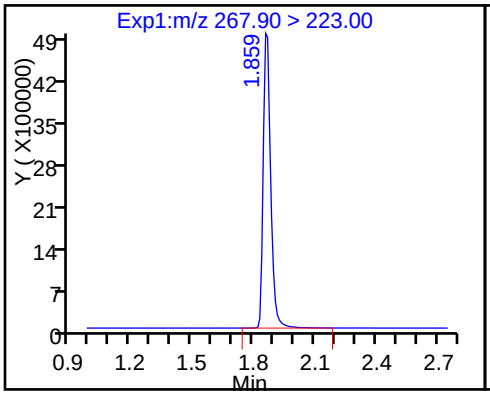
D 2 13C4 PFBA



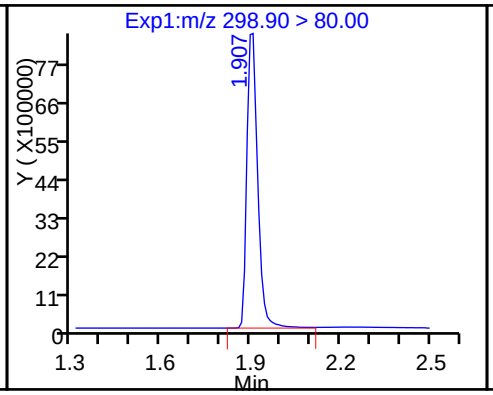
3 Perfluoropentanoic acid



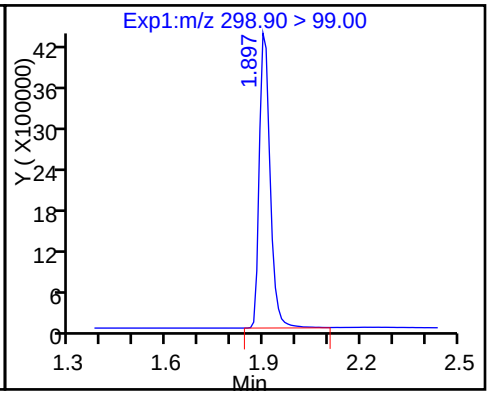
D 4 13C5-PFPeA



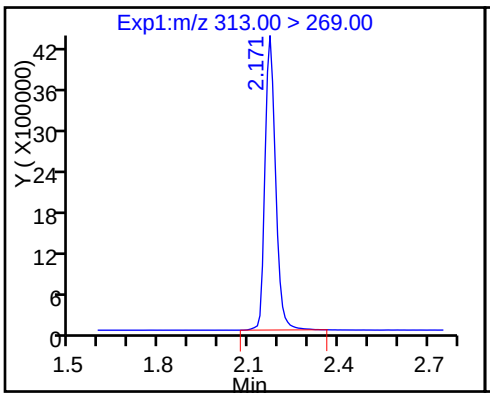
5 Perfluorobutanesulfonic acid



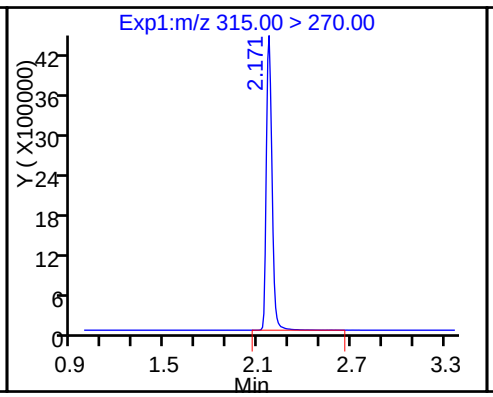
5 Perfluorobutanesulfonic acid



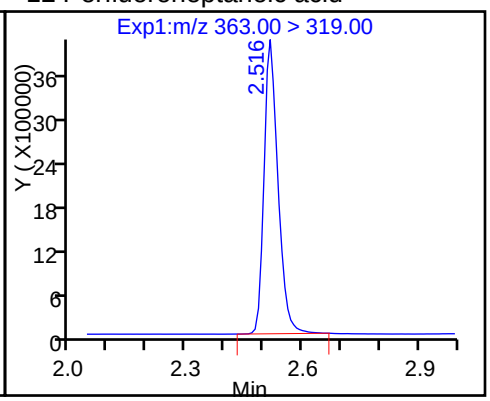
7 Perfluorohexanoic acid



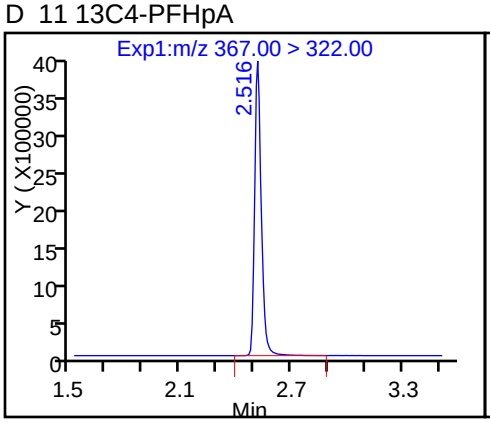
D 6 13C2 PFHxA



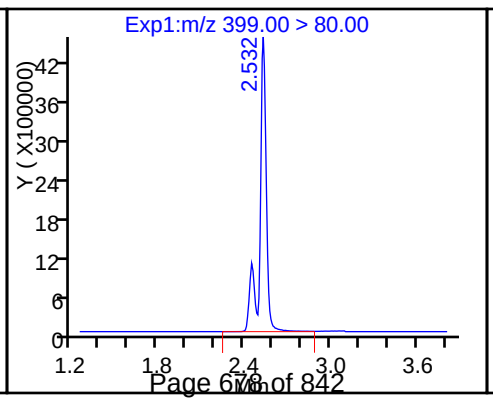
12 Perfluoroheptanoic acid



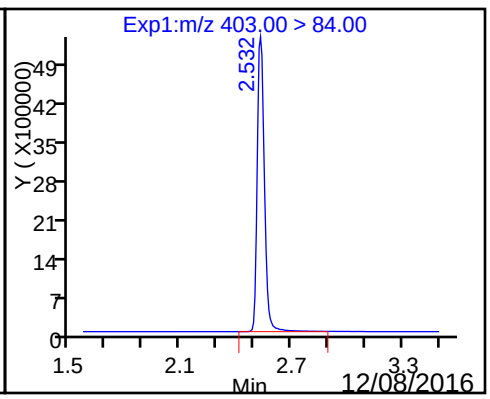
D 11 13C4-PFHpA



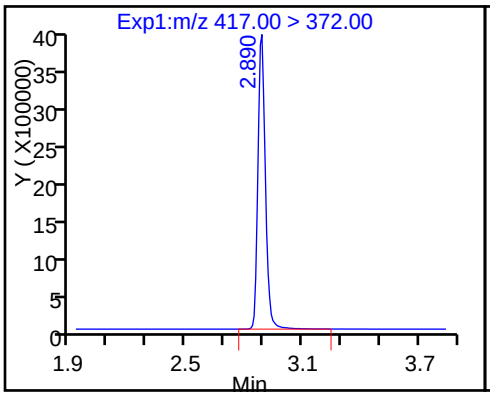
9 Perfluorohexanesulfonic acid



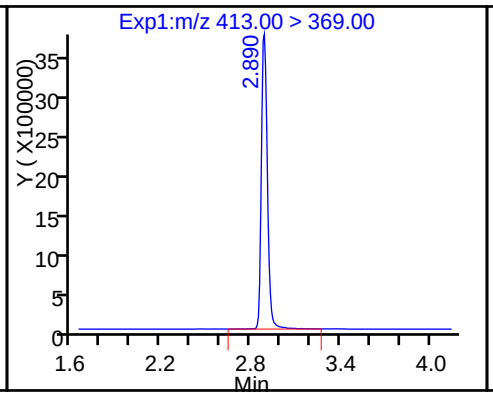
D 10 18O2 PFHxS



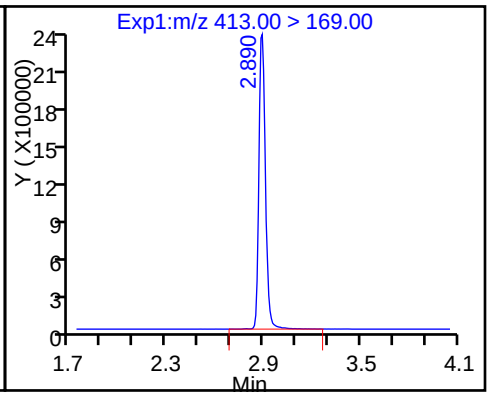
D 14 13C4 PFOA



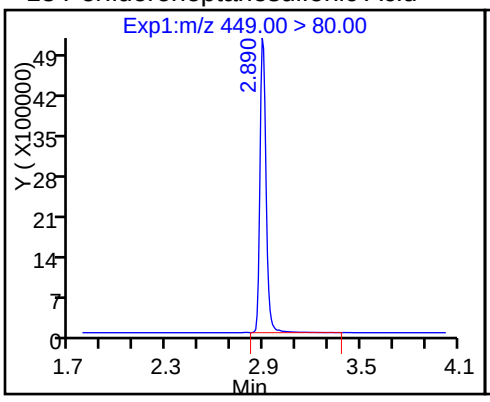
15 Perfluorooctanoic acid



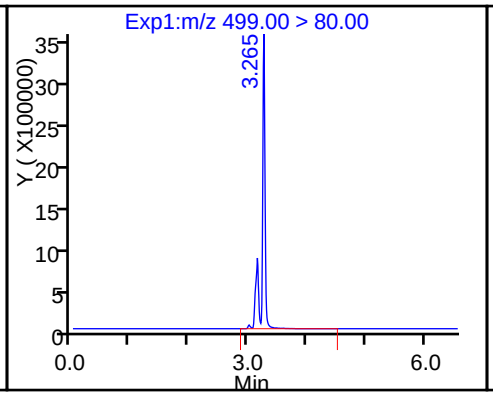
15 Perfluorooctanoic acid



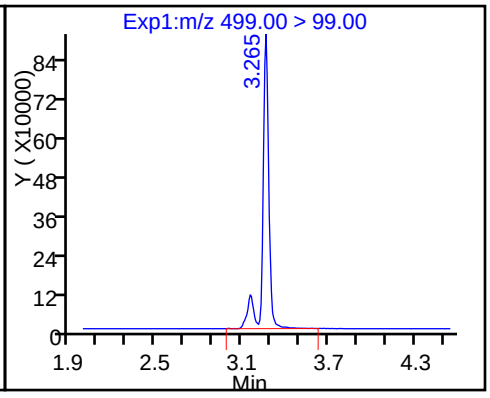
13 Perfluoroheptanesulfonic Acid



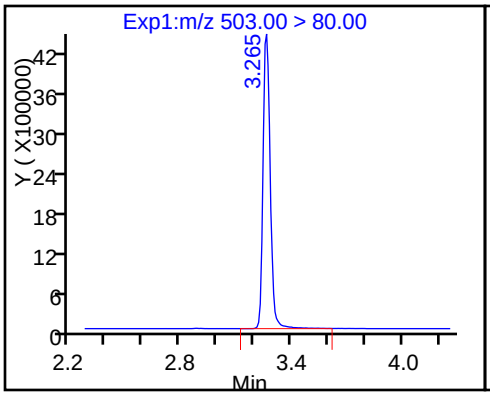
18 Perfluorooctane sulfonic acid



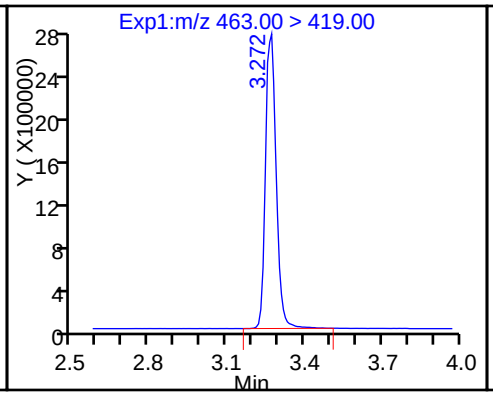
18 Perfluorooctane sulfonic acid



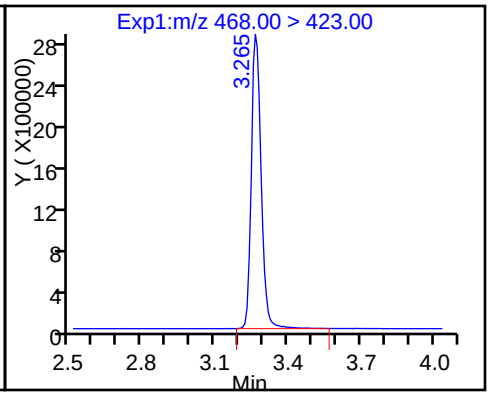
D 17 13C4 PFOS



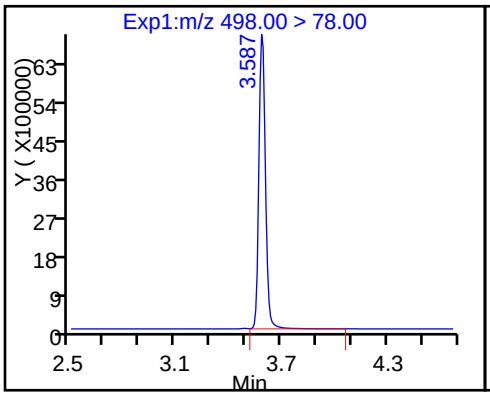
20 Perfluorononanoic acid



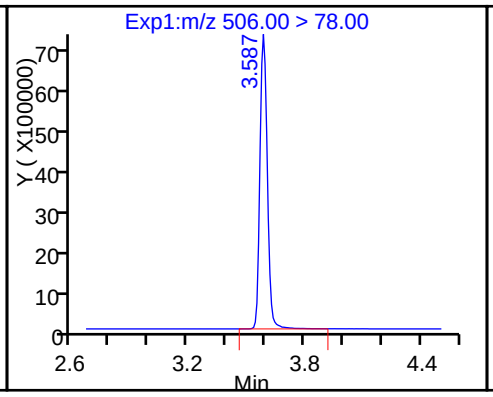
D 19 13C5 PFNA



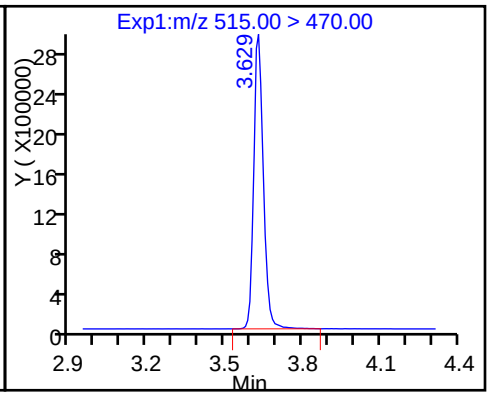
22 Perfluorooctane Sulfonamide



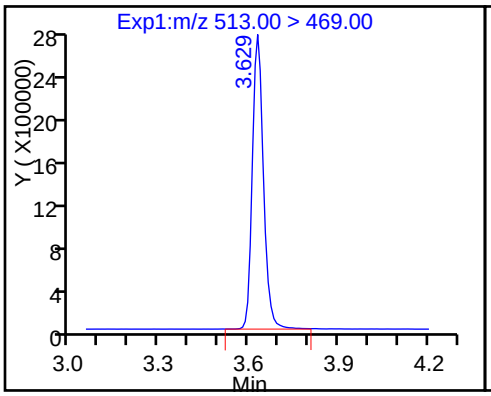
D 21 13C8 FOSA



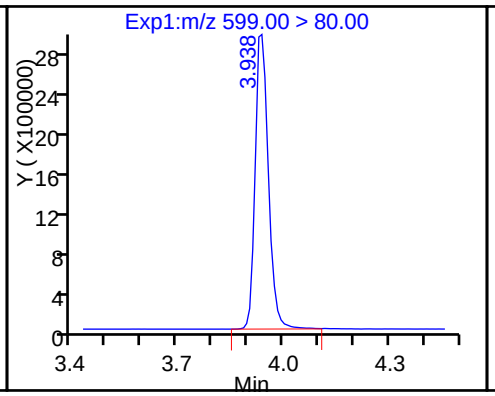
D 23 13C2 PFDA



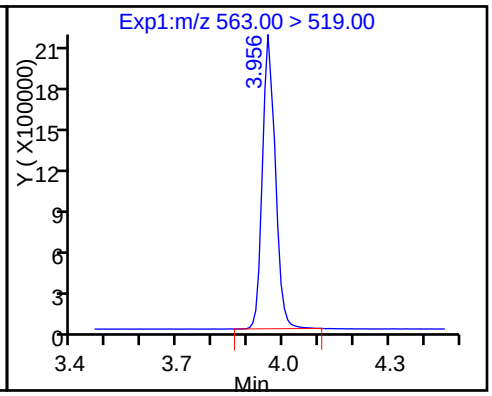
24 Perfluorodecanoic acid



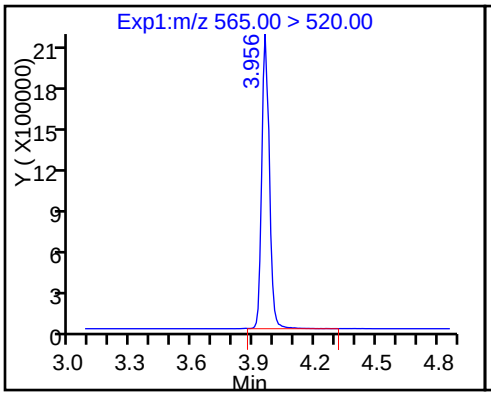
26 Perfluorodecane Sulfonic acid



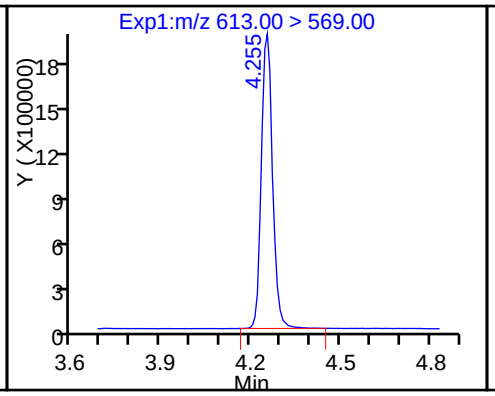
28 Perfluoroundecanoic acid



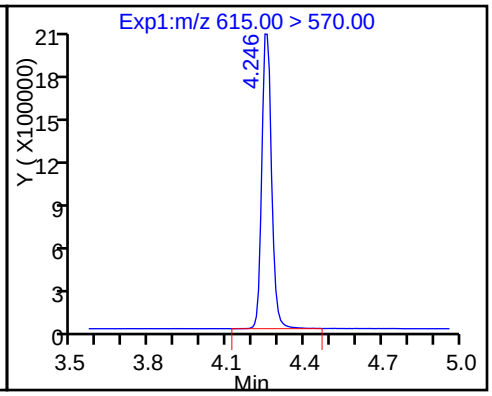
D 27 13C2 PFUnA



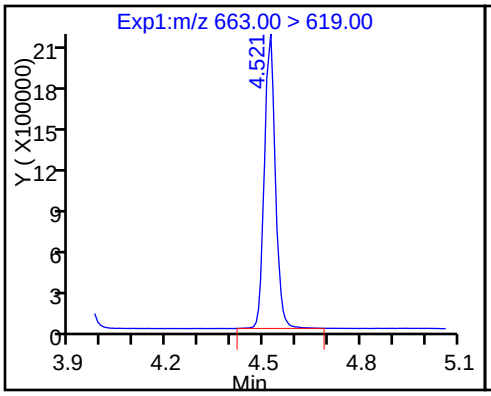
29 Perfluorododecanoic acid



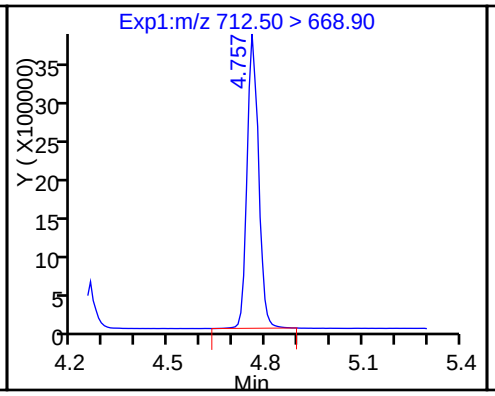
D 30 13C2 PFDoA



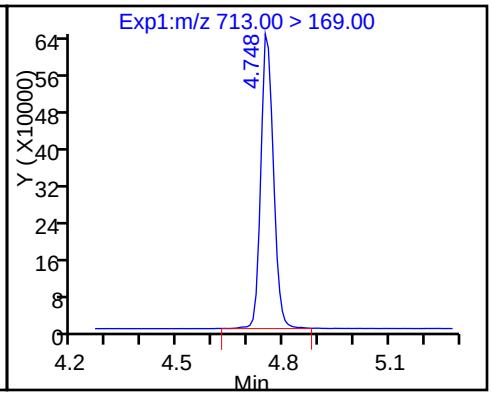
31 Perfluorotridecanoic acid



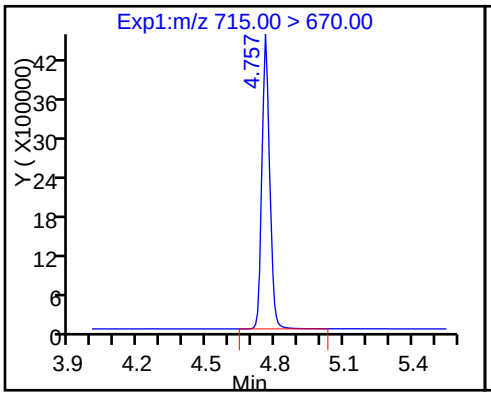
33 Perfluorotetradecanoic acid



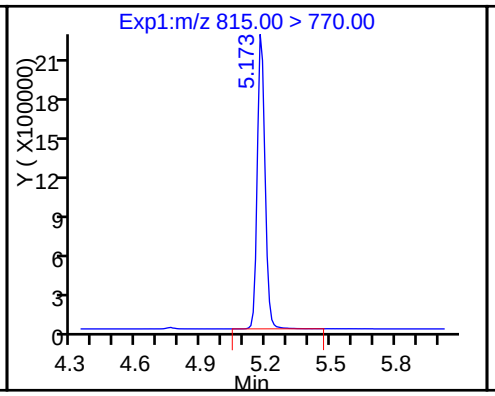
33 Perfluorotetradecanoic acid



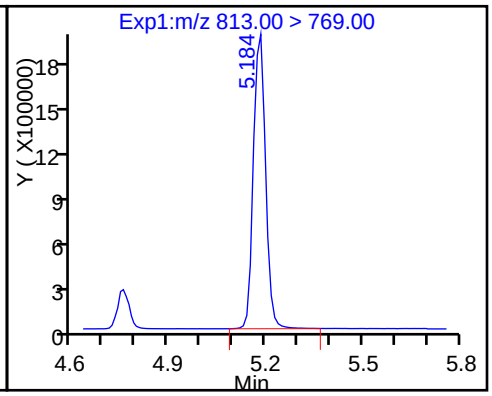
D 32 13C2-PFTeDA



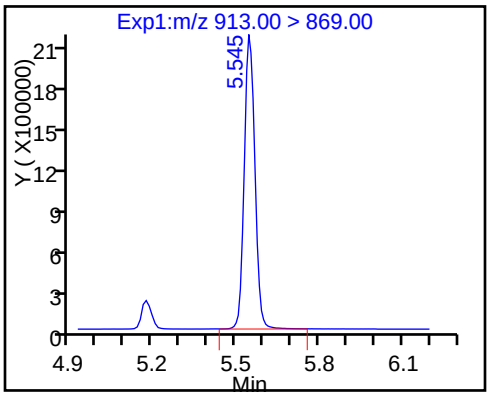
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-138217/1-A

Matrix: Water Lab File ID: 20NOV2016D_014.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 11/17/2016 08:49

Sample wt/vol: 250(mL) Date Analyzed: 11/20/2016 22:18

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

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

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

Analysis Batch No.: 138814 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0020	U	0.0025	0.0020	0.00075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0030	U	0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0020	U	0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	117		25-150
STL00991	13C4 PFOS	105		25-150
STL00994	18O2 PFHxS	108		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_014.d
Lims ID: MB 320-138217/1-A
Client ID:
Sample Type: MB
Inject. Date: 20-Nov-2016 22:18:19 ALS Bottle#: 19 Worklist Smp#: 14
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-138217/1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 15:44:42 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 15:45:53

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.518	1.493	0.025	1.000	16834	0.0834			85.2	
D 2 13C4 PFBA										
217.00 > 172.00	1.494	1.493	0.001		11607551	58.7		117	875052	
D 4 13C5-PFPeA										
267.90 > 223.00	1.762	1.752	0.010		9940960	62.2		124	876893	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.752	1.762	-0.010	1.000	16171	0.0783			151	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.800	1.791	0.009	1.000	7644	0.0230				
298.90 > 99.00	1.800	1.791	0.009	1.000	3037		2.52(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.042	2.040	0.002	1.000	9521	0.0577			321	
D 6 13C2 PFHxA										
315.00 > 270.00	2.042	2.040	0.002		8737716	60.2		120	539994	
D 11 13C4-PFHpA										
367.00 > 322.00	2.378	2.366	0.012		8048972	61.3		123	1124682	
D 10 18O2 PFHxS										
403.00 > 84.00	2.388	2.382	0.006		10345810	51.2		108	441420	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.388	2.387	0.001	1.000	41175	0.1777				
D 47 M2-6:2FTS										
429.00 > 409.00	2.706	2.704	0.002		2694	0.0514		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.690	2.713	-0.023	1.000	2339	NR				
D 14 13C4 PFOA										
417.00 > 372.00	2.734	2.733	0.001		7963295	58.3		117	319311	
20 Perfluorononanoic acid										
463.00 > 419.00	3.105	3.096	0.009	1.000	4026	0.0307			38.7	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 19 13C5 PFNA										
468.00 > 423.00	3.113	3.096	0.017		6669569	61.0		122	523276	
D 17 13C4 PFOS										
503.00 > 80.00	3.113	3.096	0.017		7794723	50.1		105	292678	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.445	3.456	-0.011	0.994	914	NR				
D 42 M2-8:2FTS										
529.00 > 509.00	3.467	3.456	0.011		2024	0.0371		0.0		
D 21 13C8 FOSA										
506.00 > 78.00	3.460	3.458	0.002		4427865	17.7		35.3	176957	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.460	3.458	0.002	1.000	13959	0.1749			564	
D 23 13C2 PFDA										
515.00 > 470.00	3.475	3.465	0.010		5704782	56.9		114	400480	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.475	3.465	0.010	1.000	6318	0.0558			171	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.618	3.623	-0.005		5293	0.1217		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.627	3.632	-0.005	1.002	1366	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.774	3.782	-0.008	1.000	2749	0.0277				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.801	3.789	0.012		8912	0.1808		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.801	3.798	0.003	1.000	2542	NR				
D 27 13C2 PFUnA										
565.00 > 520.00	3.801	3.800	0.001		4580673	58.4		117	239059	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.810	3.800	0.010	1.000	15506	0.1646			429	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.957	3.963	-0.006		2904	0.0479		0.0		
54 MeFOSA										
512.00 > 169.00	3.871	3.972	-0.101	1.000	1231	NR				
29 Perfluorododecanoic acid										
613.00 > 569.00	4.099	4.091	0.008	1.000	14245	0.1730			313	
D 30 13C2 PFDoA										
615.00 > 570.00	4.091	4.091	0.0		4310655	55.7		111	197439	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.156	4.153	0.003		3142	0.0574		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.156	4.161	-0.005	1.000	553	NR				
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.363	4.352	0.011	1.000	17333	0.2129			672	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.594	4.586	0.008	1.000	26012	0.1696			677	
713.00 > 169.00	4.588	4.586	0.002	0.999	7254		3.59(0.00-0.00)		1455	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 32 13C2-PFTeDA										
715.00 > 670.00	4.594	4.586	0.008		10228588	59.9		120	631633	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	4.998	4.990	0.008	1.000	76586	0.3162			1563	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.998	4.990	0.008		6237366	66.1		132	828326	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.352	5.344	0.008	1.000	6181	0.0666			33.8	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 23-Nov-2016 15:45:54 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_014.d

Injection Date: 20-Nov-2016 22:18:19 Instrument ID: A8_N

Lims ID: MB 320-138217/1-A

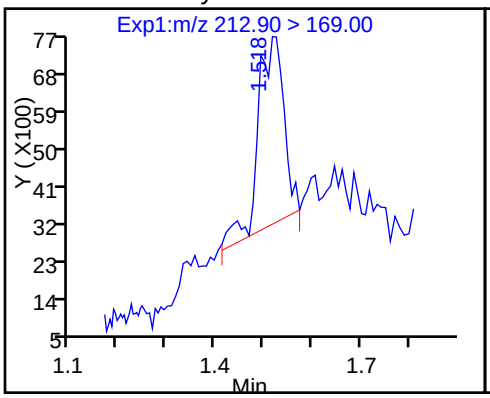
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 19 Worklist Smp#: 14

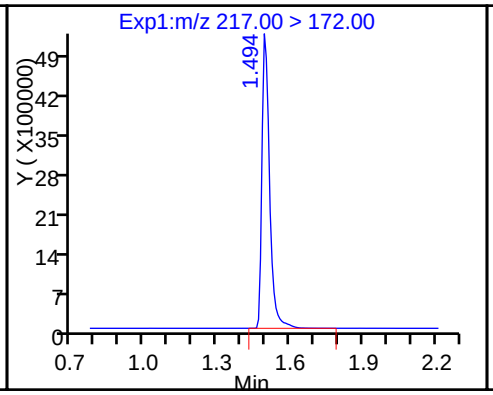
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

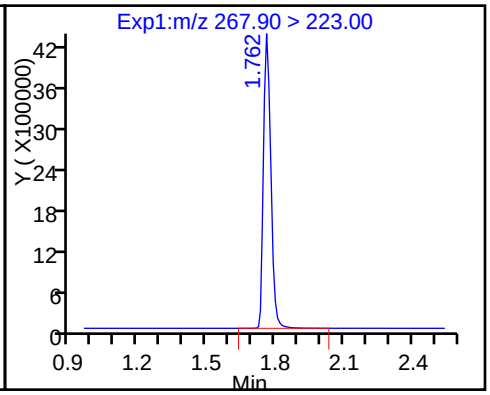
1 Perfluorobutyric acid



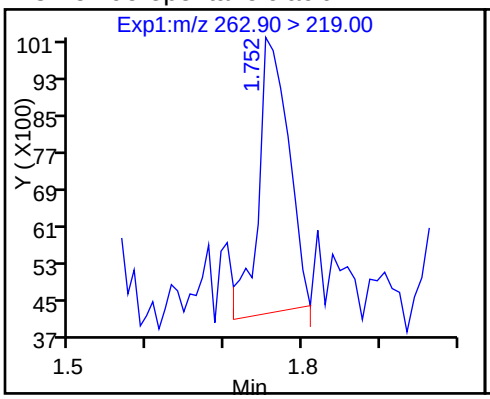
D 2 13C4 PFBA



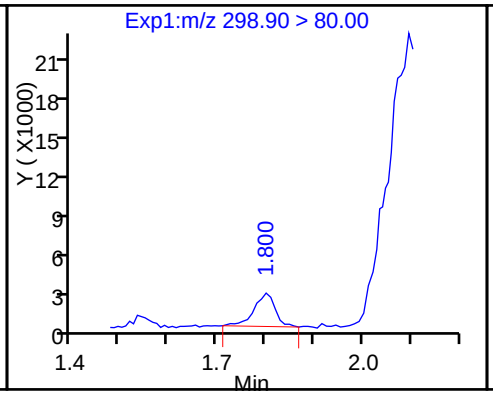
D 4 13C5-PFPeA



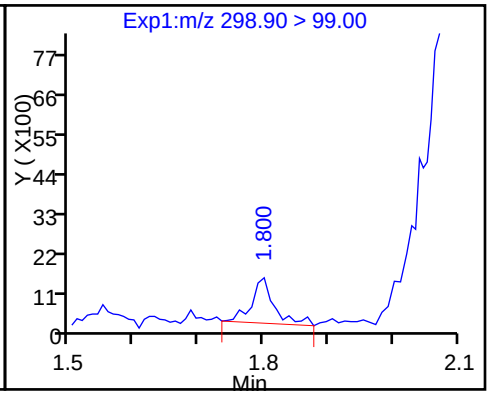
3 Perfluoropentanoic acid



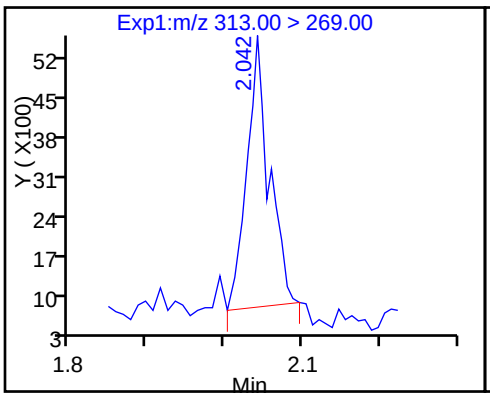
5 Perfluorobutanesulfonic acid



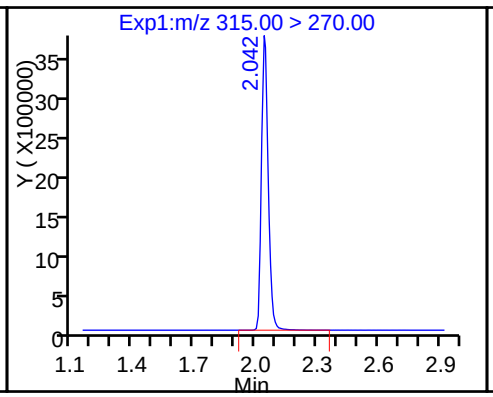
5 Perfluorobutanesulfonic acid



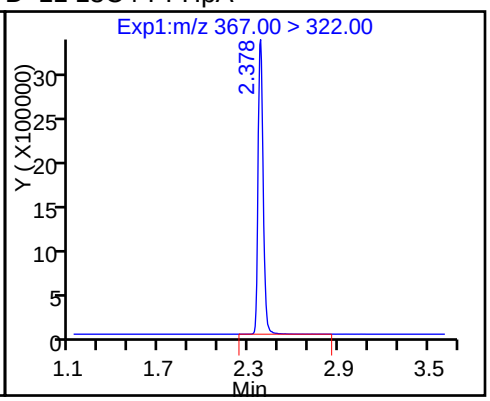
7 Perfluorohexanoic acid



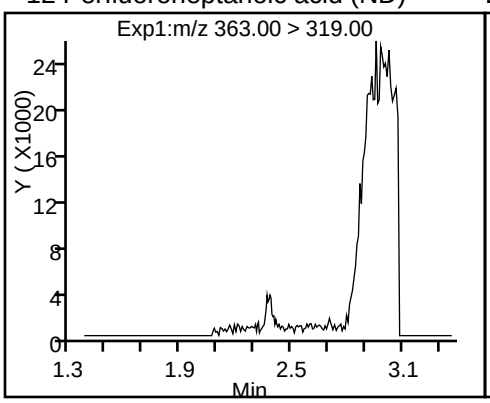
D 6 13C2 PFHxA



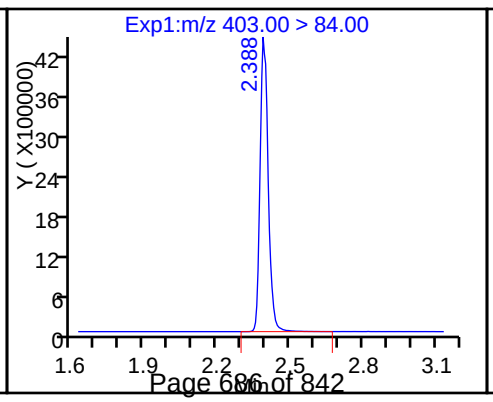
D 11 13C4-PFHpA



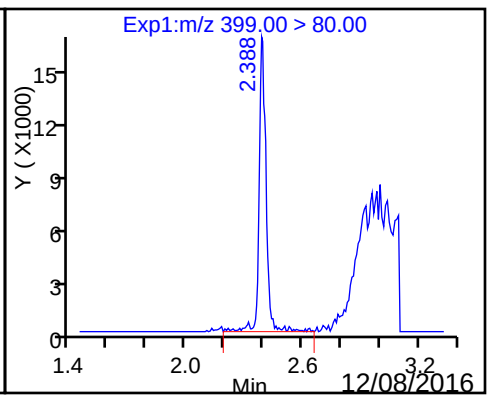
12 Perfluoroheptanoic acid (ND)



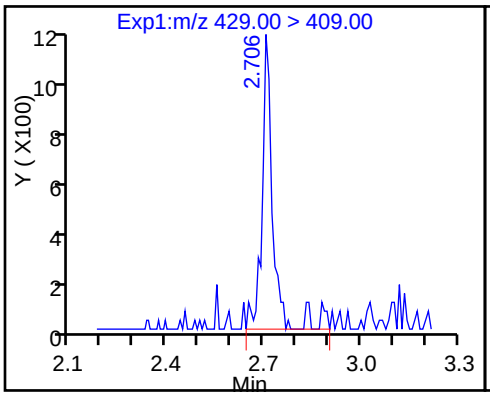
D 10 18O2 PFHxS



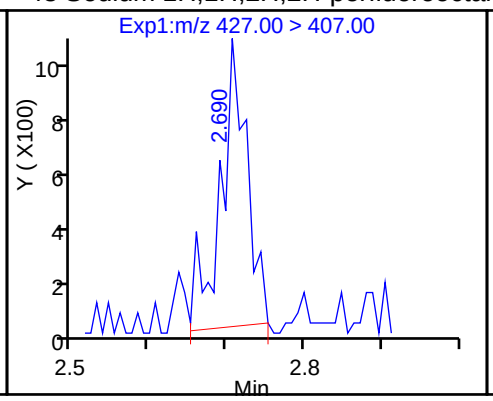
9 Perfluorohexanesulfonic acid



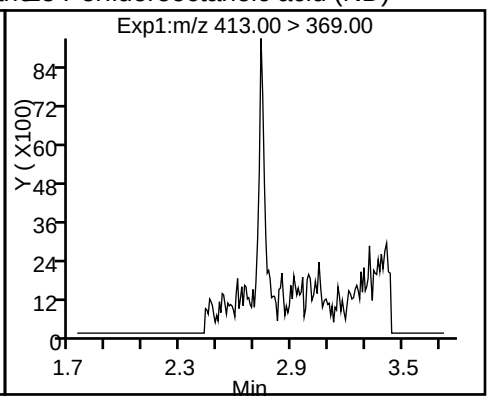
D 47 M2-6:2FTS



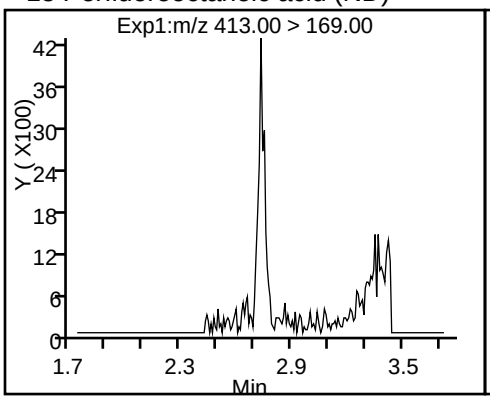
48 Sodium 1H,1H,2H,2H-perfluorooctane



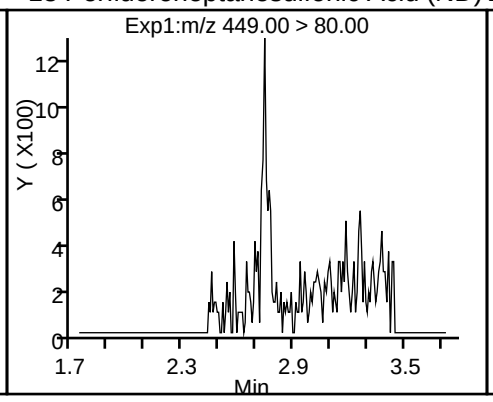
15 Perfluorooctanoic acid (ND)



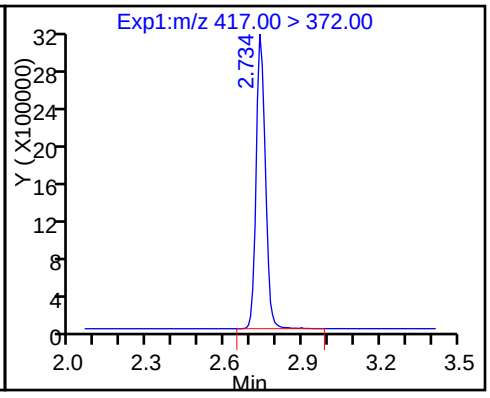
15 Perfluorooctanoic acid (ND)



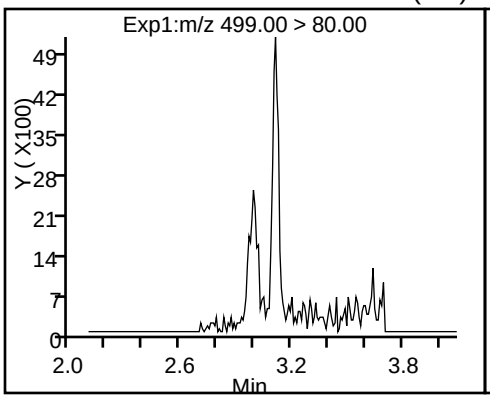
13 Perfluoroheptanesulfonic Acid (ND)



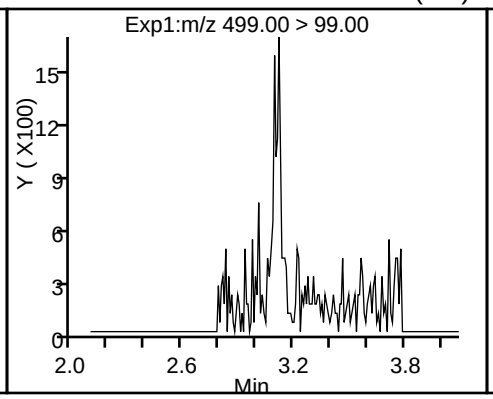
D 14 13C4 PFOA



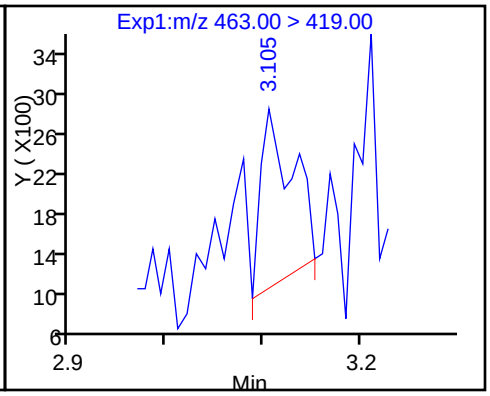
18 Perfluorooctane sulfonic acid (ND)



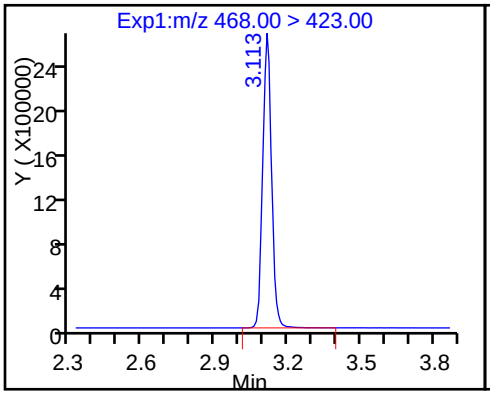
18 Perfluorooctane sulfonic acid (ND)



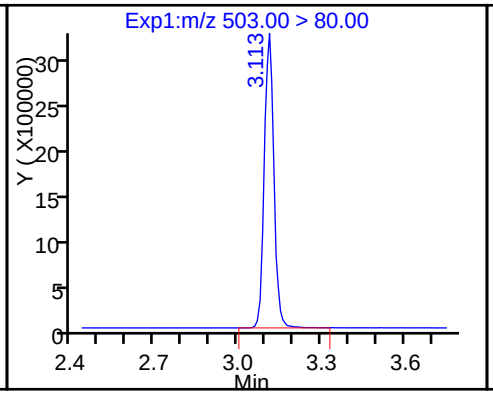
20 Perfluorononanoic acid



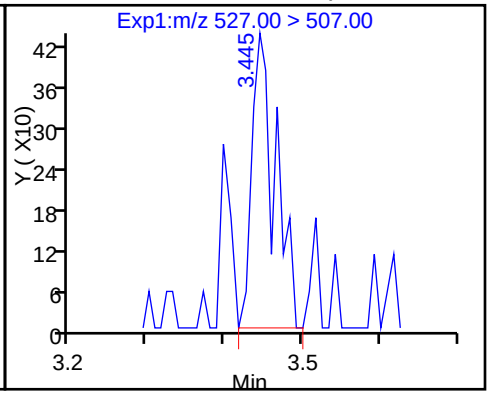
D 19 13C5 PFNA



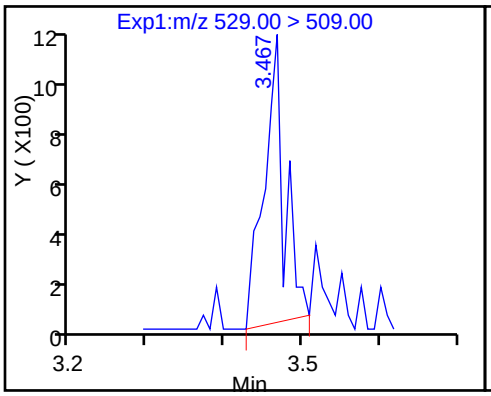
D 17 13C4 PFOS



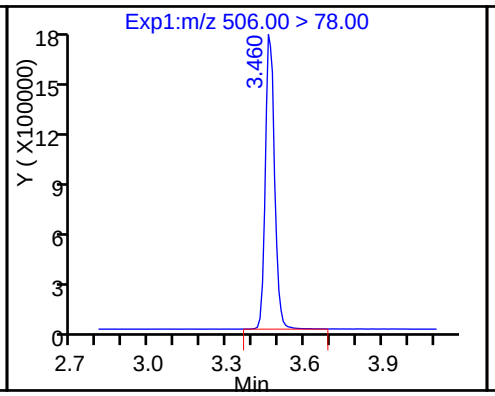
43 Sodium 1H,1H,2H,2H-perfluorooctane



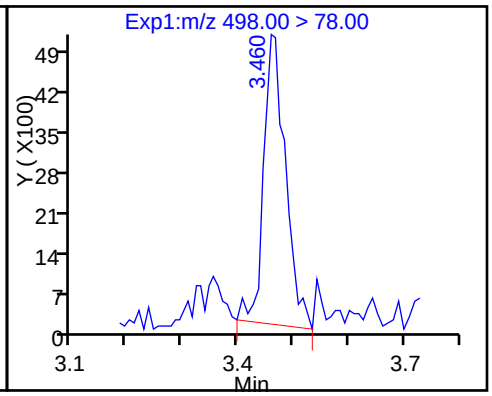
D 42 M2-8:2FTS



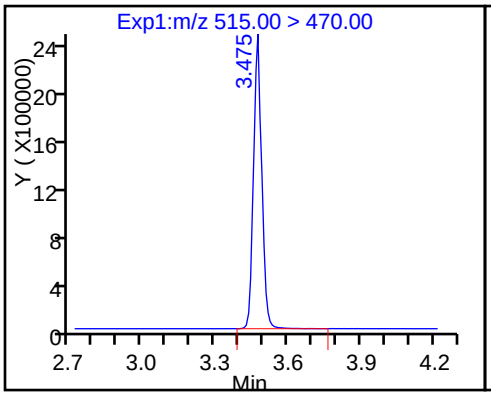
D 21 13C8 FOSA



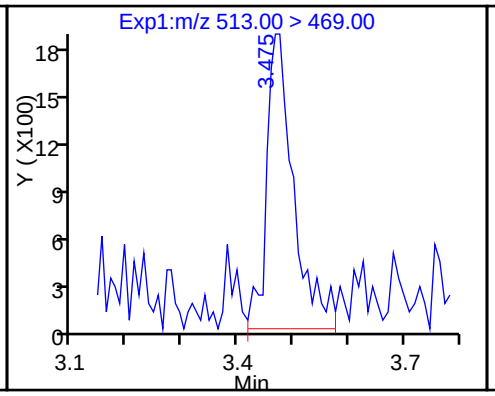
22 Perfluorooctane Sulfonamide



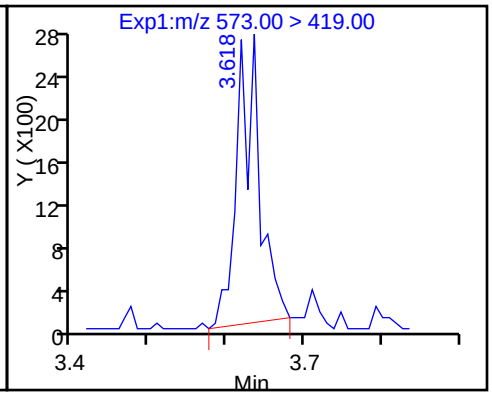
D 23 13C2 PFDA



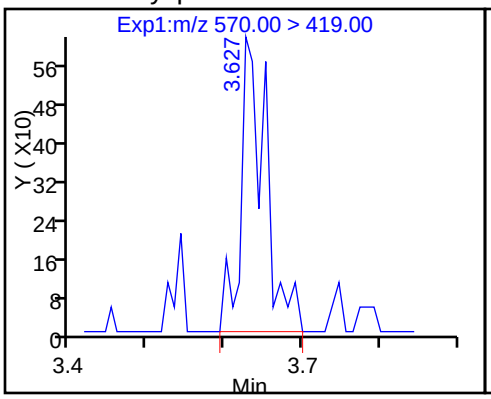
24 Perfluorodecanoic acid



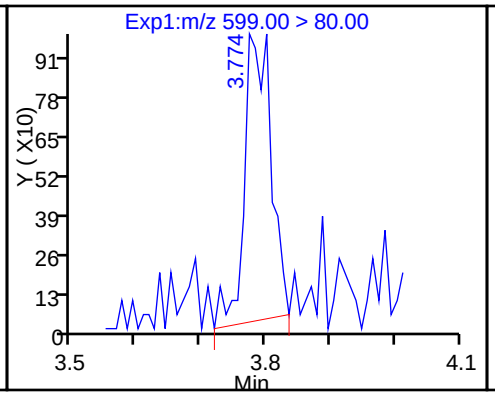
D 45 d3-NMeFOSAA



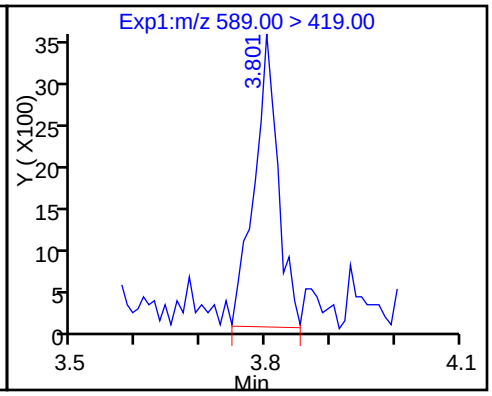
44 N-methyl perfluorooctane sulfonami



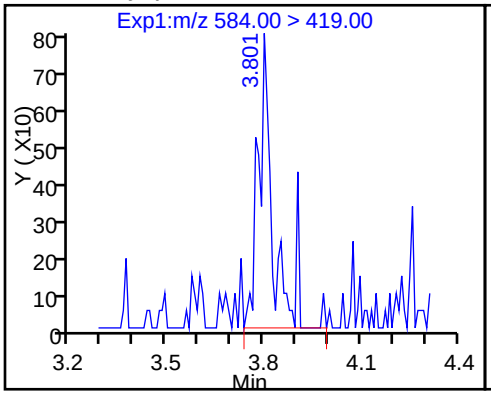
26 Perfluorodecane Sulfonic acid



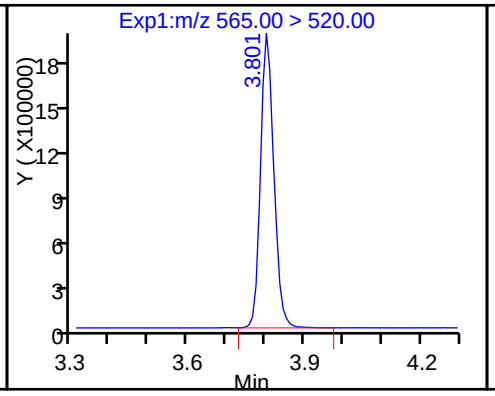
D 46 d5-NEtFOSAA



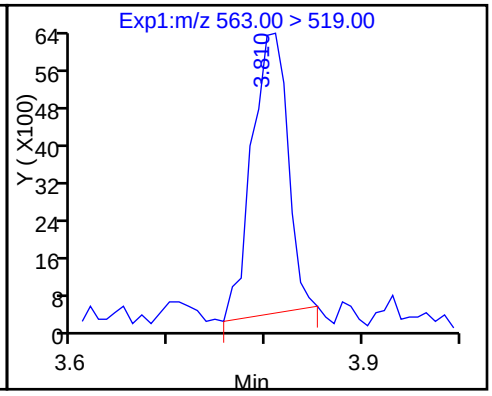
49 N-ethyl perfluorooctane sulfonamid



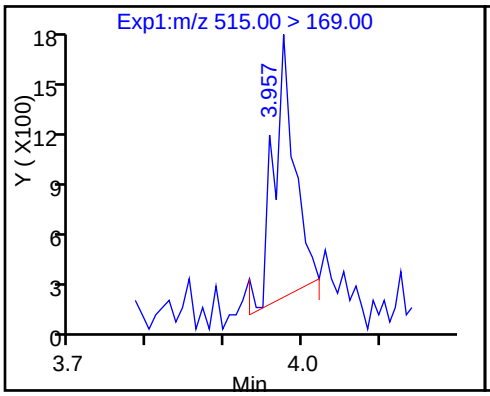
D 27 13C2 PFUnA



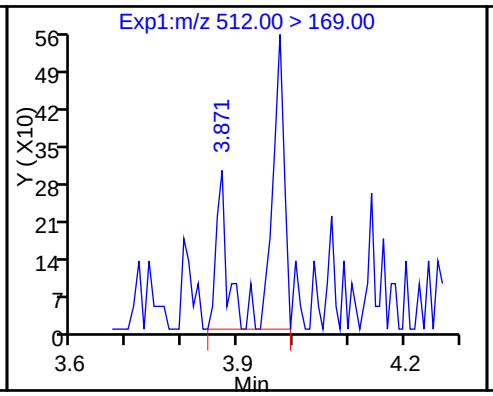
28 Perfluoroundecanoic acid



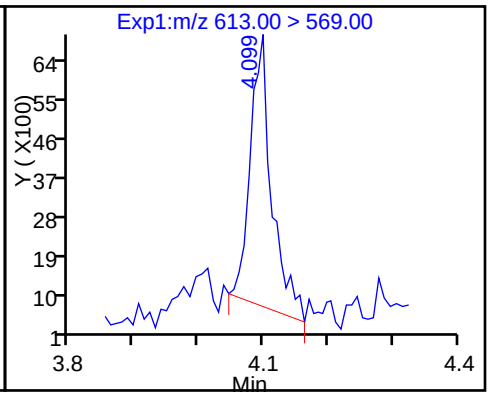
D 52 d-N-MeFOSA-M



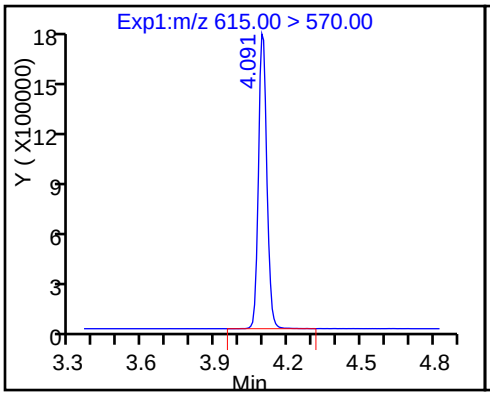
54 MeFOSA



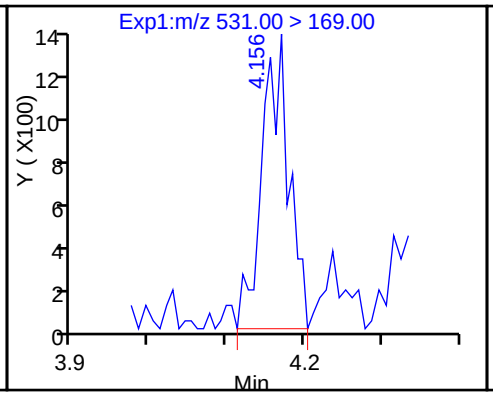
29 Perfluorododecanoic acid



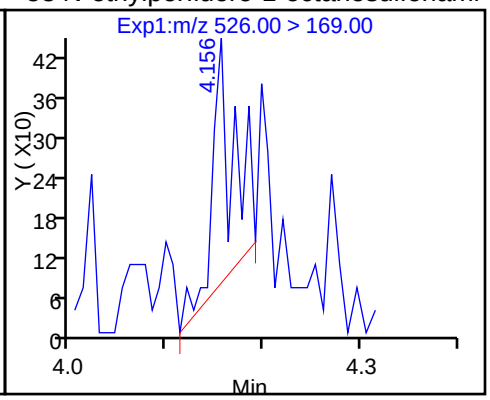
D 30 13C2 PFDoA



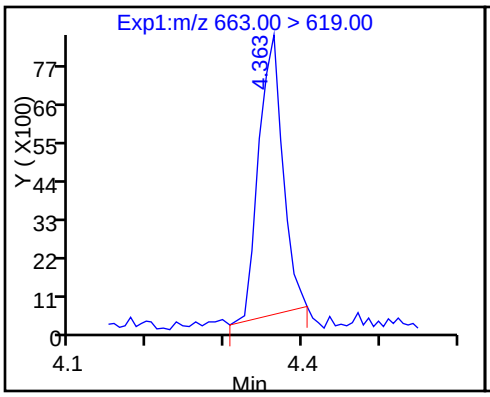
D 51 d-N-EtFOSA-M



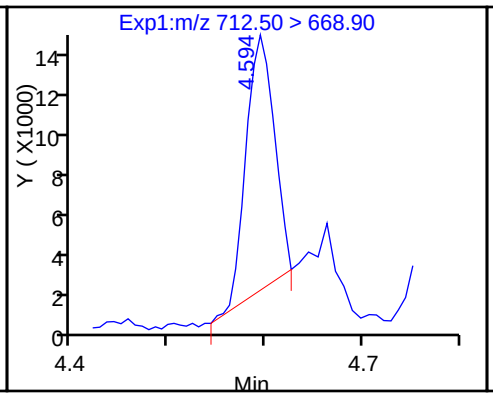
53 N-ethylperfluoro-1-octanesulfonami



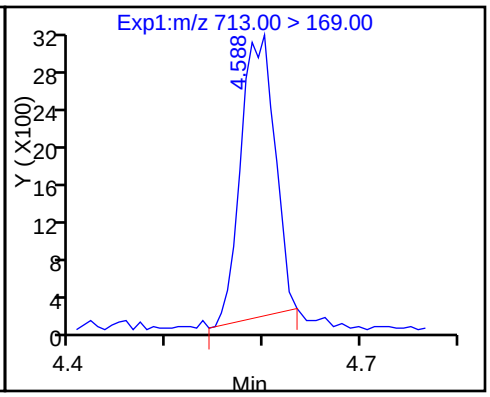
31 Perfluorotridecanoic acid



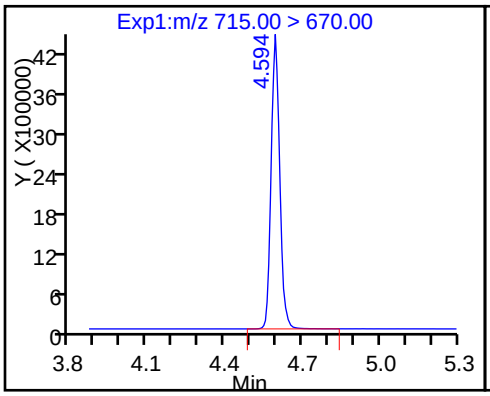
33 Perfluorotetradecanoic acid



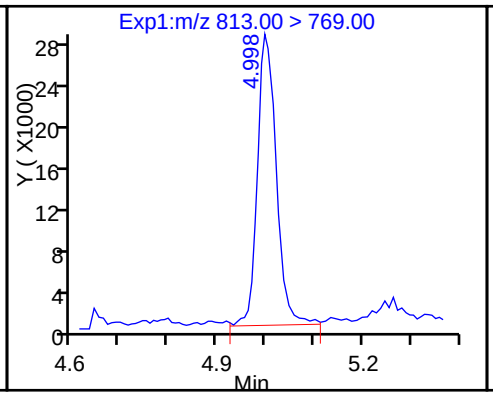
33 Perfluorotetradecanoic acid



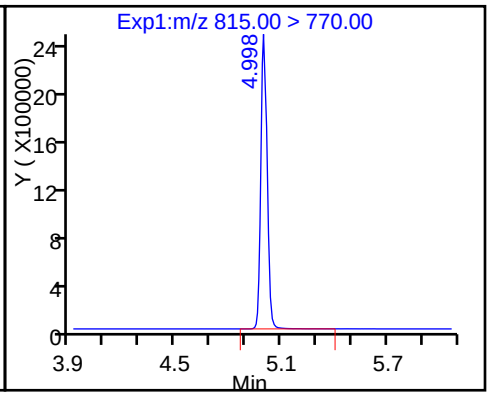
D 32 13C2-PFTeDA



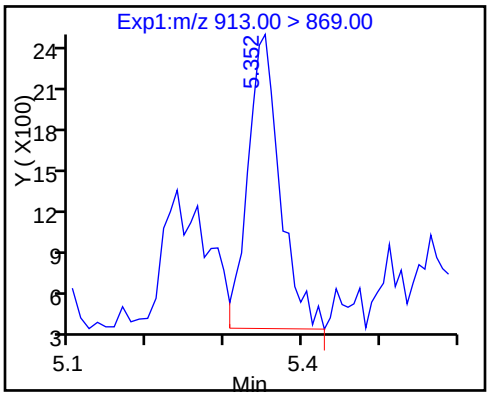
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-138291/1-A

Matrix: Solid Lab File ID: 20NOV2016D_005.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: SHAKE Date Extracted: 11/17/2016 12:49

Sample wt/vol: 4.98(g) Date Analyzed: 11/20/2016 21:10

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

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

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

Analysis Batch No.: 138814 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.30	U	0.50	0.30	0.10
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.30	U	0.50	0.30	0.13
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.30	U	0.40	0.30	0.10

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	111		25-150
STL00991	13C4 PFOS	89		25-150
STL00994	18O2 PFHxS	94		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_005.d
Lims ID: MB 320-138291/1-A
Client ID:
Sample Type: MB
Inject. Date: 20-Nov-2016 21:10:45 ALS Bottle#: 14 Worklist Smp#: 5
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: mb 320-138291/1-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 15:04:15 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 15:07:11

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.493	1.493	0.0	1.000	38475	0.2018			339	
D 2 13C4 PFBA										
217.00 > 172.00	1.493	1.493	0.0		10959398	55.4		111	975087	
D 4 13C5-PFPeA										
267.90 > 223.00	1.762	1.752	0.010		8931579	55.9		112	633992	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.762	1.762	0.0	1.000	20229	0.1090			131	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.800	1.791	0.009	1.000	6974	0.0242				
298.90 > 99.00	1.790	1.791	-0.001	0.995	1239		5.63(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.040	2.040	0.0	1.000	6932	0.0478			219	
D 6 13C2 PFHxA										
315.00 > 270.00	2.040	2.040	0.0		7670452	52.8		106	544721	
D 11 13C4-PFHpA										
367.00 > 322.00	2.376	2.366	0.010		7742238	58.9		118	551433	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.365	2.372	-0.007	1.000	6696	0.0423			62.1	
D 10 18O2 PFHxS										
403.00 > 84.00	2.386	2.382	0.004		8995157	44.5		94.1	769596	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.386	2.387	-0.001	1.000	36455	0.1810				
D 47 M2-6:2FTS										
429.00 > 409.00	2.722	2.704	0.018		3378	0.0644		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.704	2.713	-0.009	1.000	2241	NR				
D 14 13C4 PFOA										
417.00 > 372.00	2.732	2.733	-0.001		7580389	55.5		111	389860	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
20 Perfluorononanoic acid										
463.00 > 419.00	3.109	3.096	0.013	1.000	1576	0.0139			15.9	
D 19 13C5 PFNA										
468.00 > 423.00	3.101	3.096	0.005		5785244	52.9		106	557900	
D 17 13C4 PFOS										
503.00 > 80.00	3.109	3.096	0.013		6638157	42.6		89.2	405875	
D 42 M2-8:2FTS										
529.00 > 509.00	3.462	3.456	0.006		3078	0.0564		0.0		
D 21 13C8 FOSA										
506.00 > 78.00	3.462	3.458	0.004		5642761	22.5		45.0	378202	
D 23 13C2 PFDA										
515.00 > 470.00	3.470	3.465	0.005		4881688	48.7		97.4	370437	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.470	3.465	0.005	1.000	3991	0.0412			188	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.613	3.623	-0.010		2678	0.0616		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.630	3.632	-0.002	1.005	1175	NR				
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.751	3.782	-0.031	1.000	702	0.008316				
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.796	3.789	0.007		7255	0.1472		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.796	3.798	-0.002	1.000	1808	NR				
D 27 13C2 PFUnA										
565.00 > 520.00	3.796	3.800	-0.004		3660494	46.7		93.3	230179	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.796	3.800	-0.004	1.000	9389	0.1247			320	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.961	3.963	-0.002		2898	0.0478		0.0		
54 MeFOSA										
512.00 > 169.00	3.961	3.972	-0.011	1.000	1178	NR				
D 30 13C2 PFDoA										
615.00 > 570.00	4.095	4.091	0.004		2435458	31.5		63.0	112703	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.160	4.153	0.007		4015	0.0734		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.160	4.161	-0.001	1.000	1169	NR				
D 32 13C2-PFTeDA										
715.00 > 670.00	4.591	4.586	0.005		3138390	18.4		36.8	267175	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	4.996	4.990	0.006	1.000	20143	-0.1246			373	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.996	4.990	0.006		1595189	16.9		33.8	304150	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.336	5.344	-0.008	1.000	2666	0.0509			25.2	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 23-Nov-2016 15:07:12 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_005.d

Injection Date: 20-Nov-2016 21:10:45 Instrument ID: A8_N

Lims ID: MB 320-138291/1-A

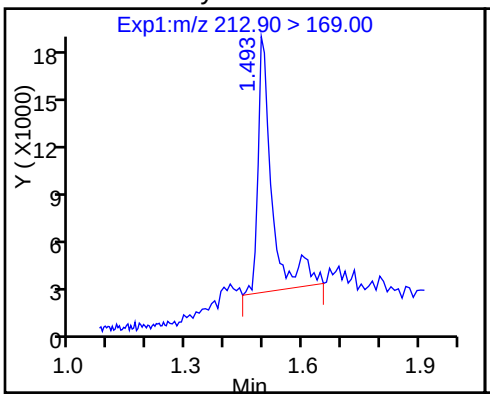
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 14 Worklist Smp#: 5

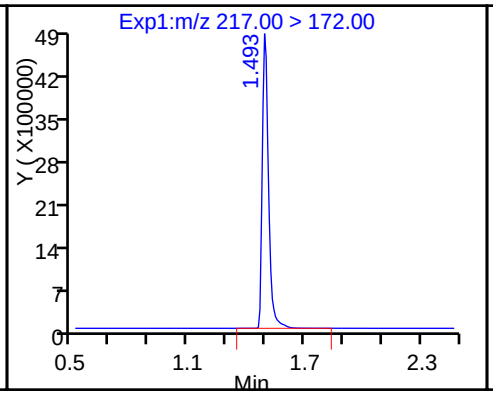
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

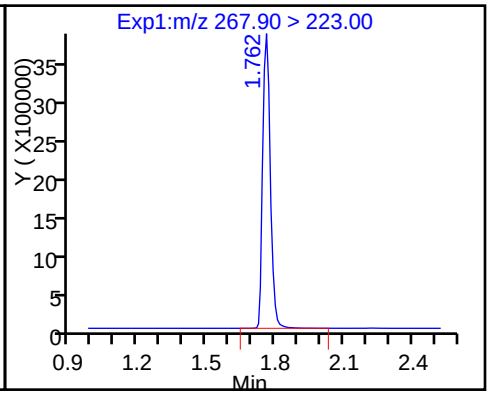
1 Perfluorobutyric acid



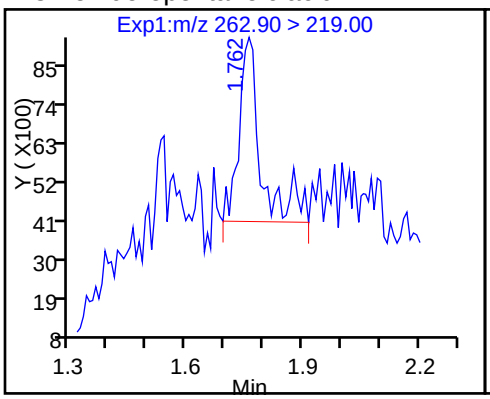
D 2 13C4 PFBA



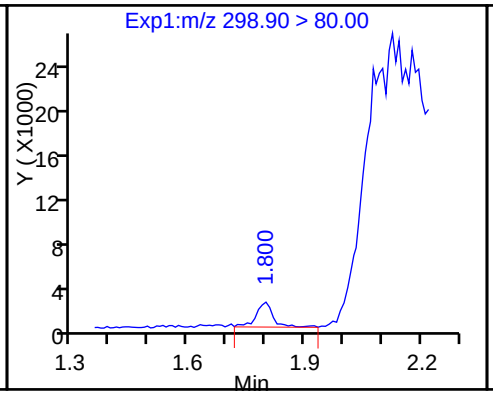
D 4 13C5-PFPeA



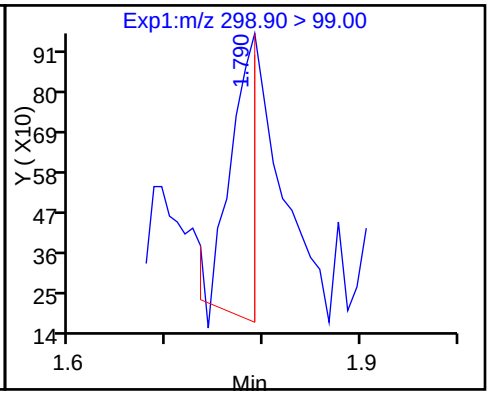
3 Perfluoropentanoic acid



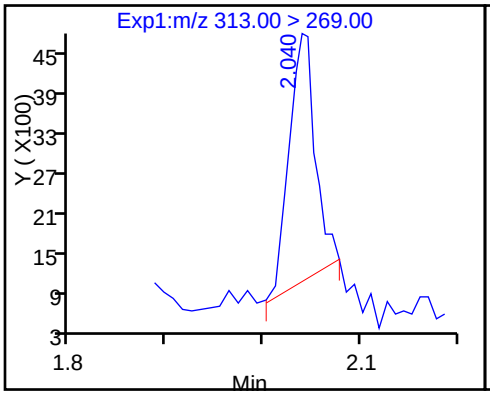
5 Perfluorobutanesulfonic acid



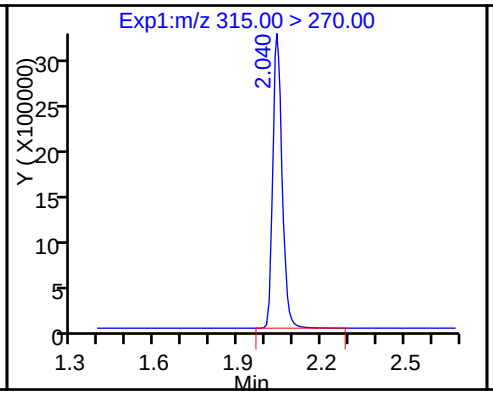
5 Perfluorobutanesulfonic acid



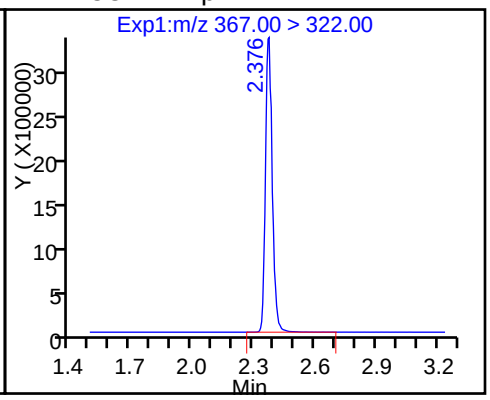
7 Perfluorohexanoic acid



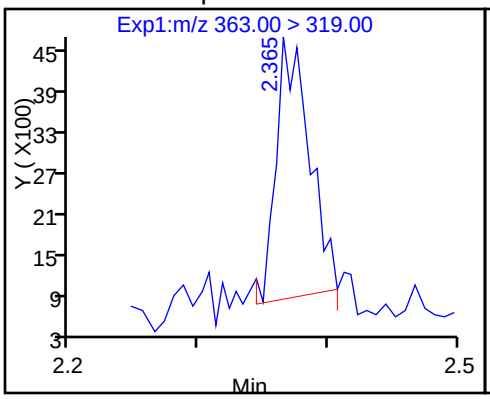
D 6 13C2 PFHxA



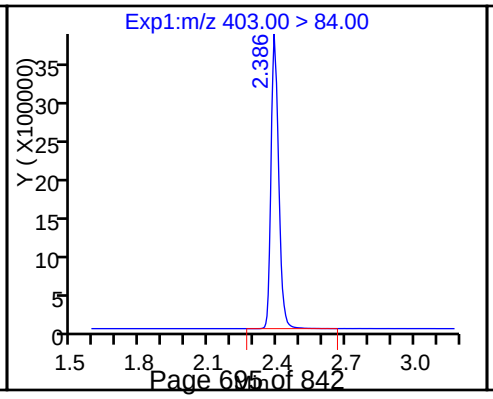
D 11 13C4-PFHpA



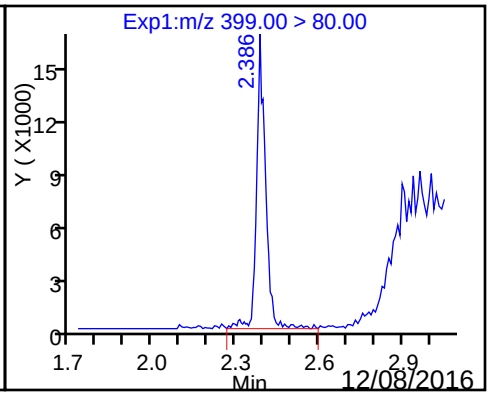
12 Perfluoroheptanoic acid



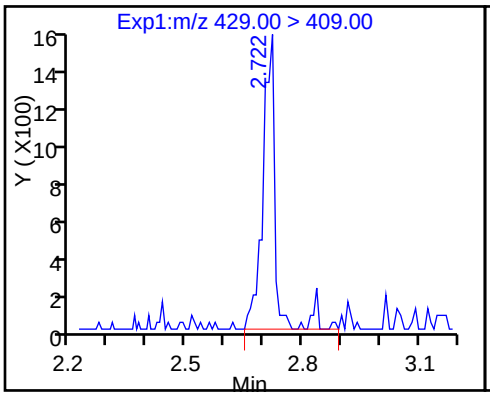
D 10 18O2 PFHxS



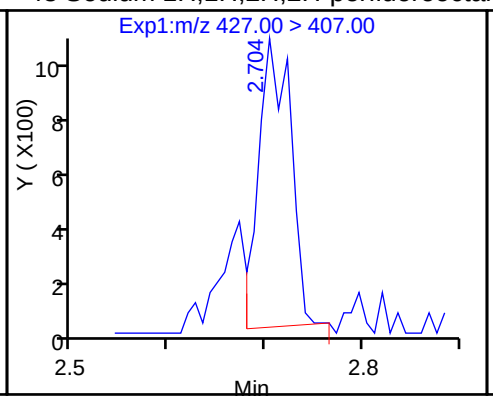
9 Perfluorohexanesulfonic acid



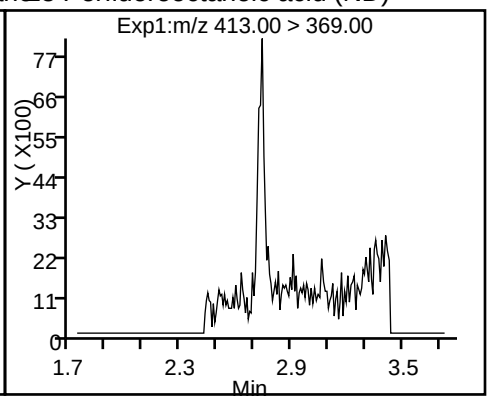
D 47 M2-6:2FTS



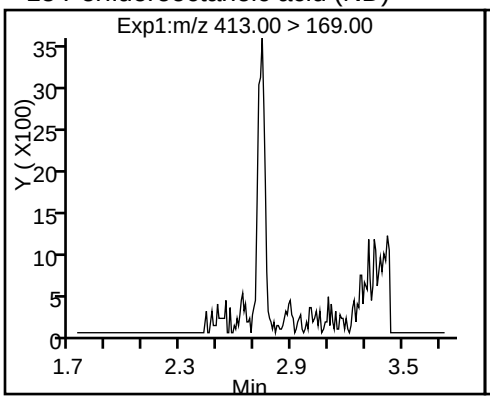
48 Sodium 1H,1H,2H,2H-perfluorooctane



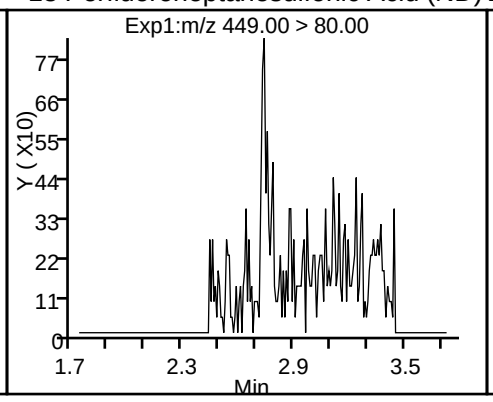
15 Perfluorooctanoic acid (ND)



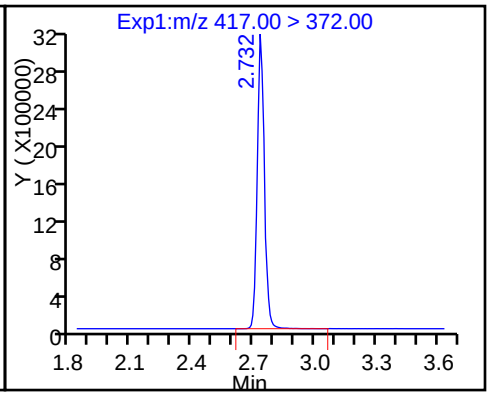
15 Perfluorooctanoic acid (ND)



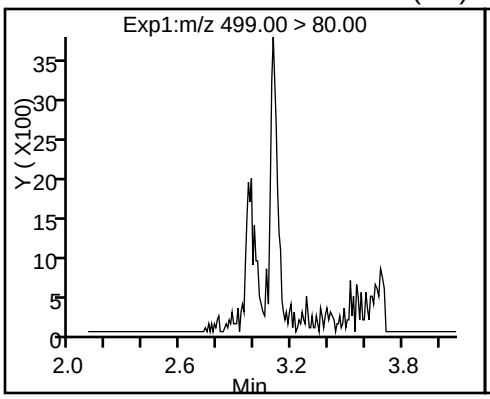
13 Perfluoroheptanesulfonic Acid (ND)



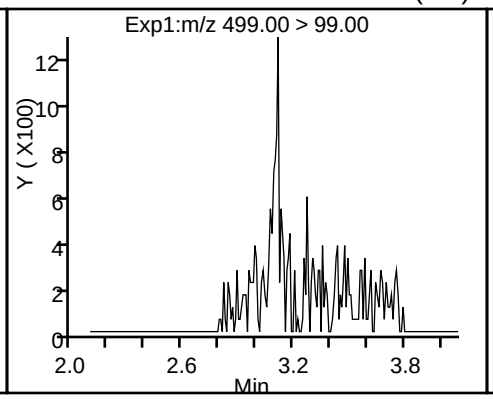
D 14 13C4 PFOA



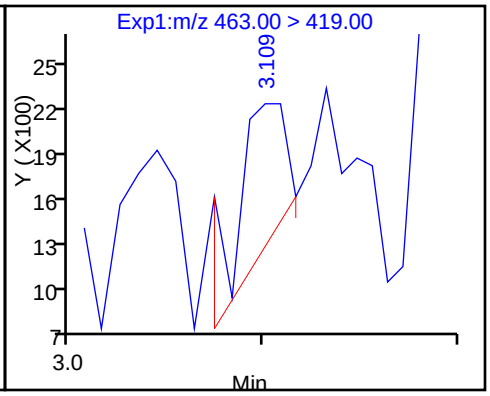
18 Perfluorooctane sulfonic acid (ND)



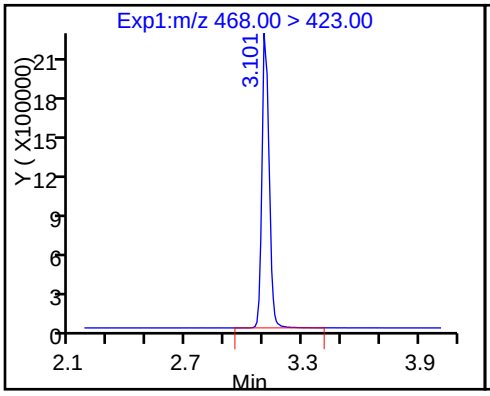
18 Perfluorooctane sulfonic acid (ND)



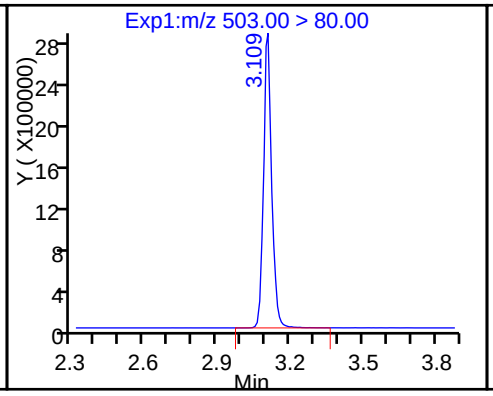
20 Perfluorononanoic acid



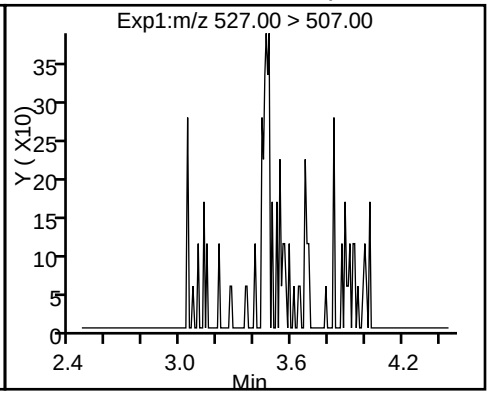
D 19 13C5 PFNA



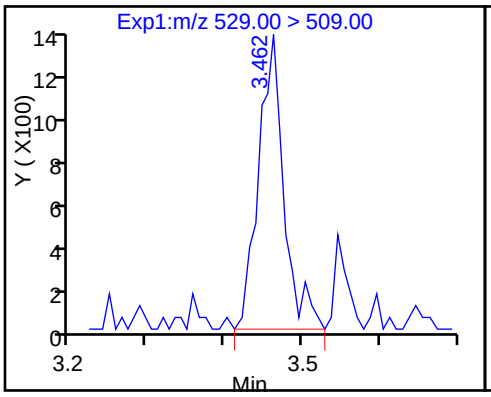
D 17 13C4 PFOS



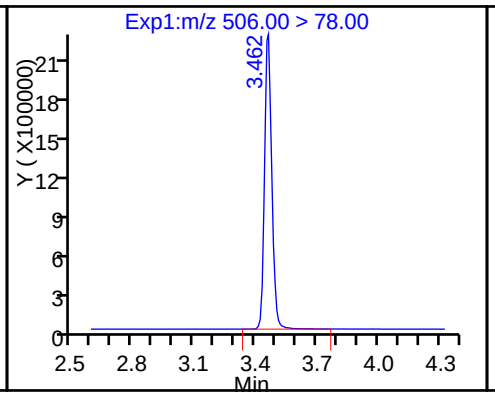
43 Sodium 1H,1H,2H,2H-perfluorooctane (ND)



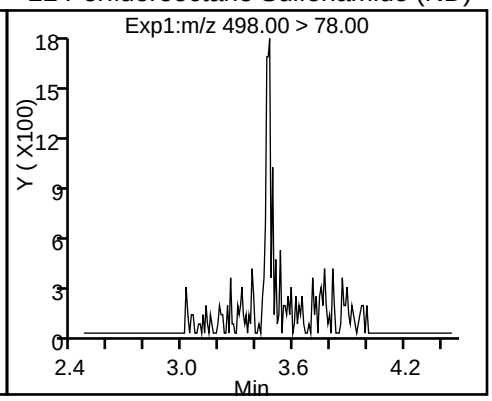
D 42 M2-8:2FTS



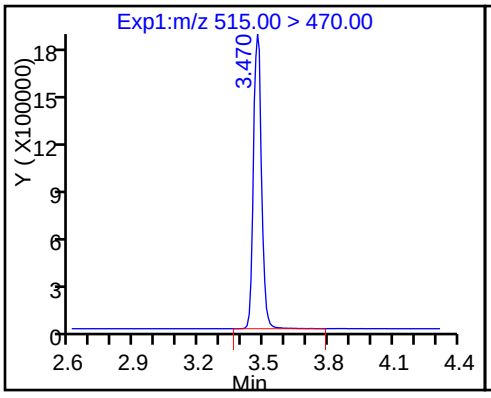
D 21 13C8 FOSA



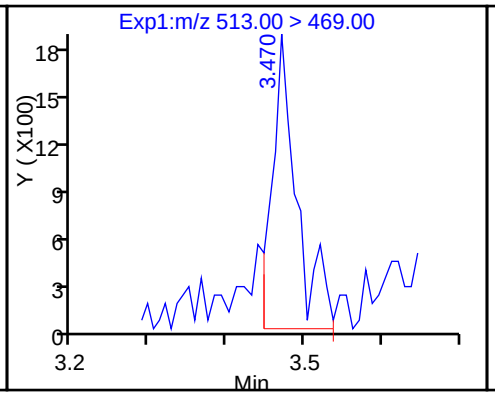
22 Perfluorooctane Sulfonamide (ND)



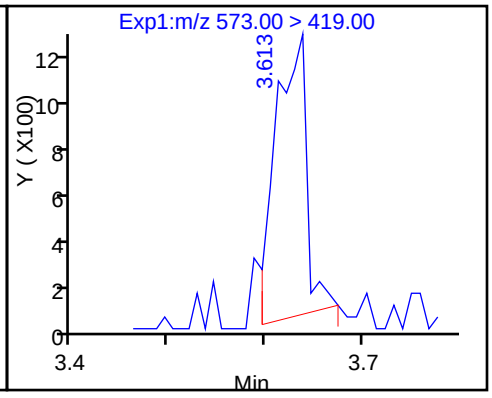
D 23 13C2 PFDA



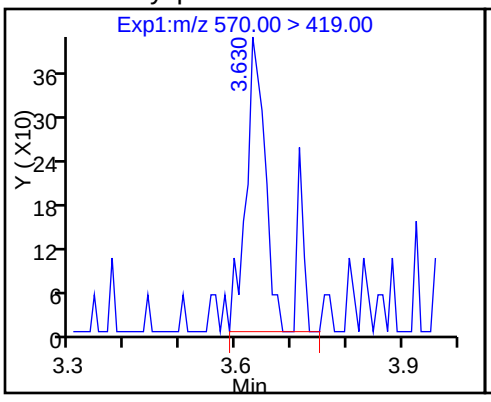
24 Perfluorodecanoic acid



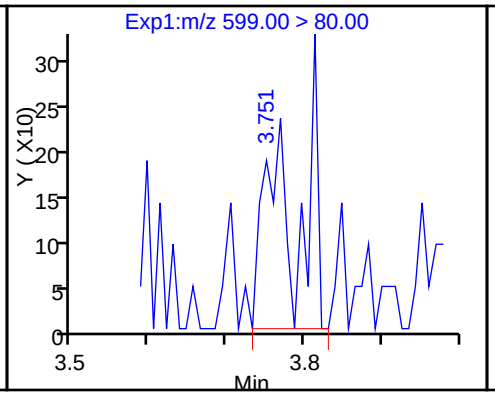
D 45 d3-NMeFOSAA



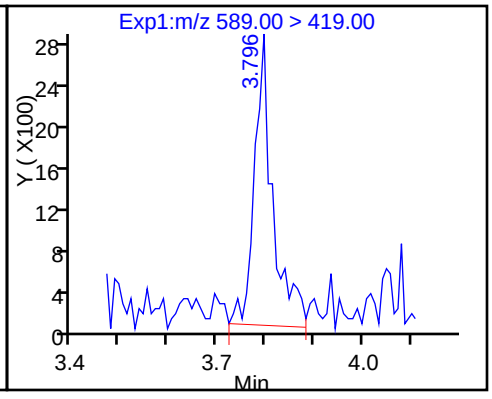
44 N-methyl perfluorooctane sulfonami



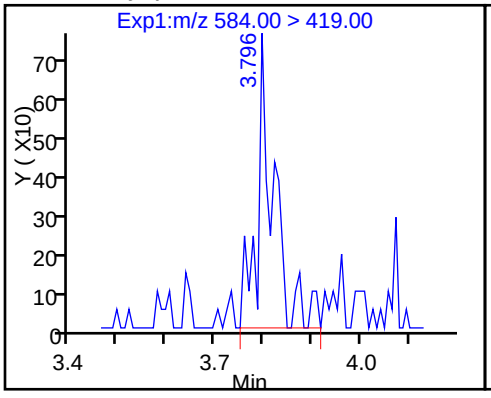
26 Perfluorodecane Sulfonic acid



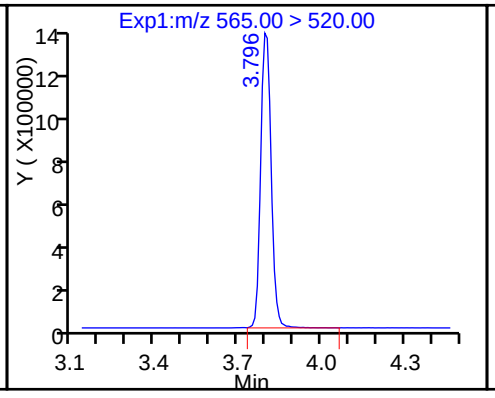
D 46 d5-NEtFOSAA



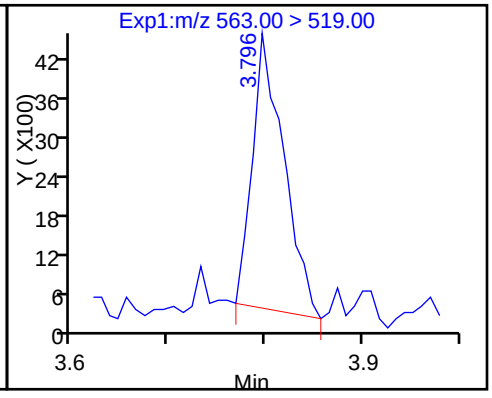
49 N-ethyl perfluorooctane sulfonamid



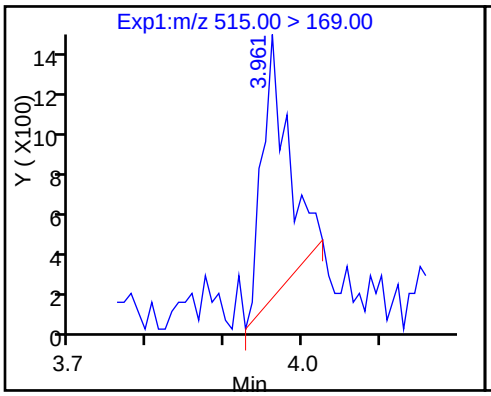
D 27 13C2 PFUnA



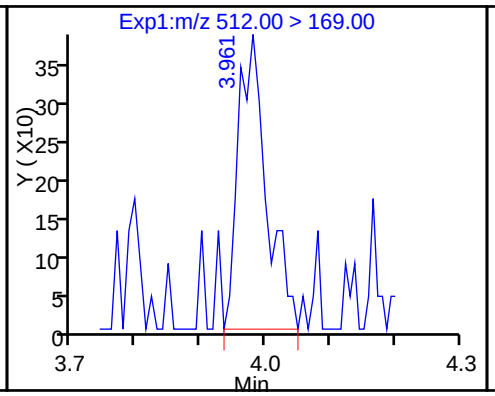
28 Perfluoroundecanoic acid



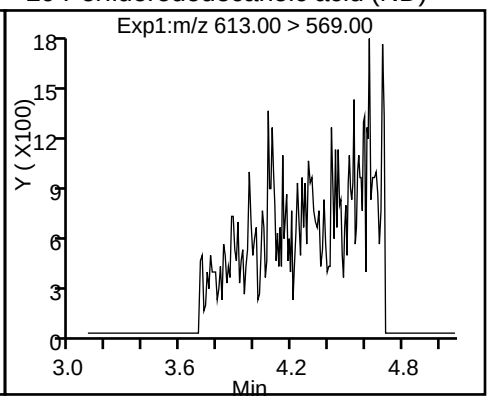
D 52 d-N-MeFOSA-M



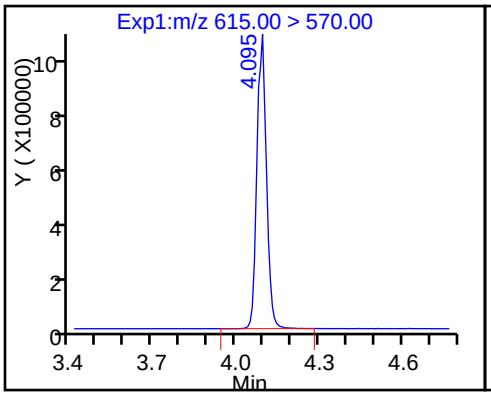
54 MeFOSA



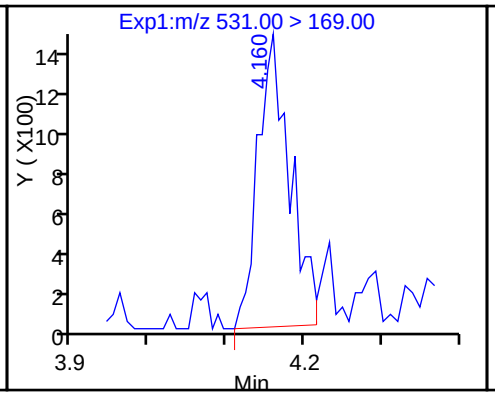
29 Perfluorododecanoic acid (ND)



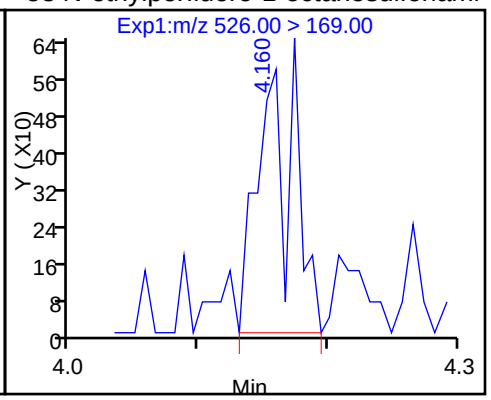
D 30 13C2 PFDoA



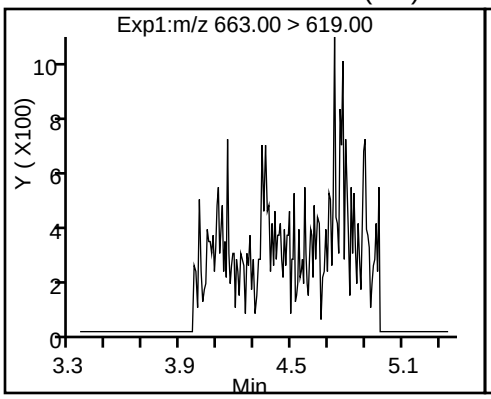
D 51 d-N-EtFOSA-M



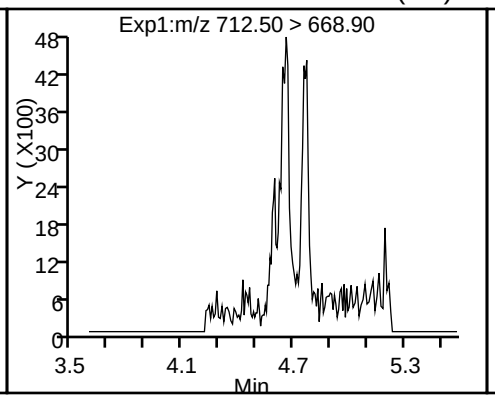
53 N-ethylperfluoro-1-octanesulfonami



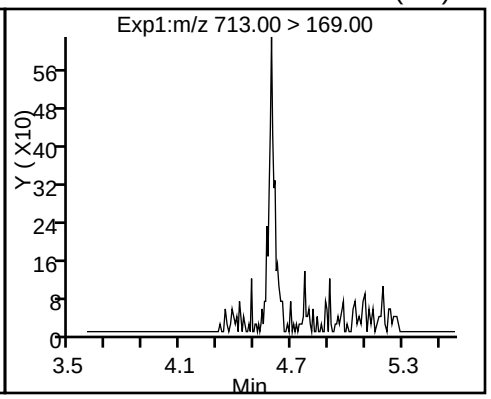
31 Perfluorotridecanoic acid (ND)



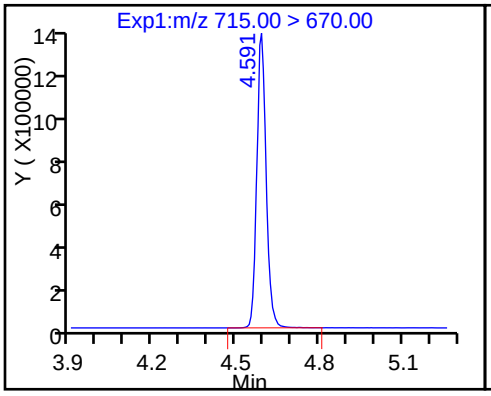
33 Perfluorotetradecanoic acid (ND)



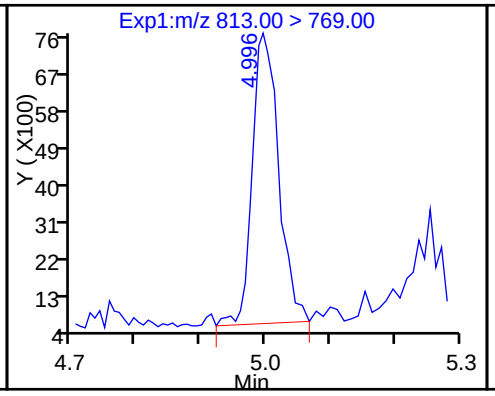
33 Perfluorotetradecanoic acid (ND)



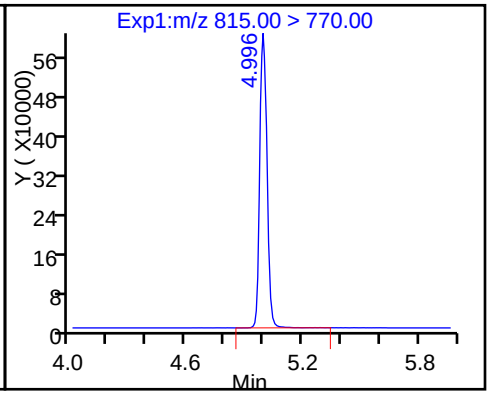
D 32 13C2-PFTeDA



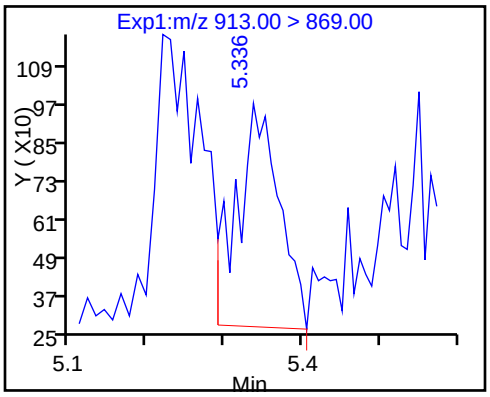
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-138217/2-A

Matrix: Water Lab File ID: 20NOV2016D_015.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: 3535 Date Extracted: 11/17/2016 08:49

Sample wt/vol: 250(mL) Date Analyzed: 11/20/2016 22:25

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

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

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

Analysis Batch No.: 138814 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0392		0.0025	0.0020	0.00075
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0347		0.0040	0.0030	0.0013
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0365		0.0025	0.0020	0.00092

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	78		25-150
STL00991	13C4 PFOS	72		25-150
STL00994	18O2 PFHxS	74		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_015.d
Lims ID: LCS 320-138217/2-A
Client ID:
Sample Type: LCS
Inject. Date: 20-Nov-2016 22:25:49 ALS Bottle#: 20 Worklist Smp#: 15
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-138217/2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 15:44:42 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 15:47:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.494	1.493	0.001	1.000	2833757	20.0		100	27104	
D 2 13C4 PFBA										
217.00 > 172.00	1.494	1.493	0.001		8127054	41.1		82.2	712616	
D 4 13C5-PFPeA										
267.90 > 223.00	1.753	1.752	0.001		7000009	43.8		87.6	1062194	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.762	1.762	0.0	1.000	2654057	18.2		91.2	33652	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.791	1.791	0.0	1.000	4154709	18.2		103		
298.90 > 99.00	1.791	1.791	0.0	1.000	1713468		2.42(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.040	2.040	0.0	1.000	2328553	20.2		101	89499	
D 6 13C2 PFHxA										
315.00 > 270.00	2.034	2.040	-0.006		6097788	42.0		84.0	460217	
D 11 13C4-PFHpA										
367.00 > 322.00	2.370	2.366	0.004		5356708	40.8		81.5	466734	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.370	2.372	-0.002	1.000	2200533	20.1		100	13890	
D 10 18O2 PFHxS										
403.00 > 84.00	2.380	2.382	-0.002		7098938	35.1		74.3	440913	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.386	2.387	-0.001	1.000	2663390	16.8		92.1		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.731	2.733	-0.002	1.000	2193596	19.6		98.1	39571	
413.00 > 169.00	2.722	2.733	-0.011	0.997	1314127		1.67(0.90-1.10)		69307	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.740	2.733	0.007	1.000	2426828	19.0		99.8		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.731	2.733	-0.002		5323964	39.0		78.0	402866	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.103	3.096	0.007	1.000	2113695	17.4		93.6	133322	
499.00 > 99.00	3.111	3.096	0.015	1.003	471808		4.48(0.90-1.10)		27752	
20 Perfluorononanoic acid										
463.00 > 419.00	3.103	3.096	0.007	1.000	1790871	20.0		100	17112	
D 19 13C5 PFNA										
468.00 > 423.00	3.111	3.096	0.015		4556875	41.7		83.3	252776	
D 17 13C4 PFOS										
503.00 > 80.00	3.103	3.096	0.007		5349402	34.4		71.9	313346	
D 21 13C8 FOSA										
506.00 > 78.00	3.457	3.458	-0.001		4283317	17.1		34.2	248070	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.465	3.458	0.007	1.000	1578612	20.4		102	76462	
D 23 13C2 PFDA										
515.00 > 470.00	3.465	3.465	0.0		4011164	40.0		80.1	222561	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.473	3.465	0.008	1.000	1520086	19.1		95.5	54039	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.781	3.782	-0.001	1.000	1236270	18.2		94.3		
D 27 13C2 PFUnA										
565.00 > 520.00	3.799	3.800	-0.001		3133261	39.9		79.9	321475	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.799	3.800	-0.001	1.000	1193848	18.5		92.6	31845	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.090	4.091	-0.001	1.000	1041632	19.7		98.6	22948	
D 30 13C2 PFDoA										
615.00 > 570.00	4.090	4.091	-0.001		2766290	35.8		71.5	150129	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.352	4.352	0.0	1.000	1094728	21.0		105	40092	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.586	4.586	0.0	1.000	1911375	19.4		97.1	44245	
713.00 > 169.00	4.593	4.586	0.007	1.001	352743		5.42(0.00-0.00)		73729	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.586	4.586	0.0		6440405	37.7		75.5	538763	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	4.997	4.990	0.007	1.000	1546425	25.4		127	46639	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.990	4.990	0.0		4124827	43.7		87.5	567609	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.345	5.344	0.001	1.000	1435438	24.1		121	15349	

Report Date: 23-Nov-2016 15:47:15 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_015.d

Injection Date: 20-Nov-2016 22:25:49 Instrument ID: A8_N

Lims ID: LCS 320-138217/2-A

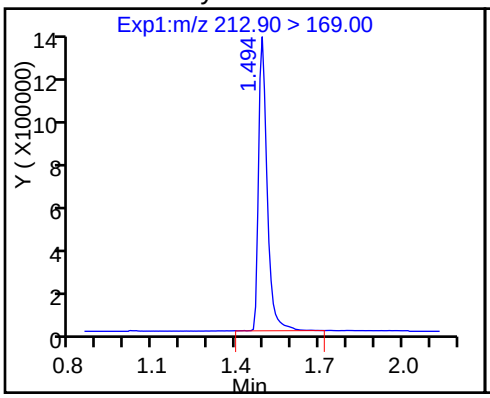
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 20 Worklist Smp#: 15

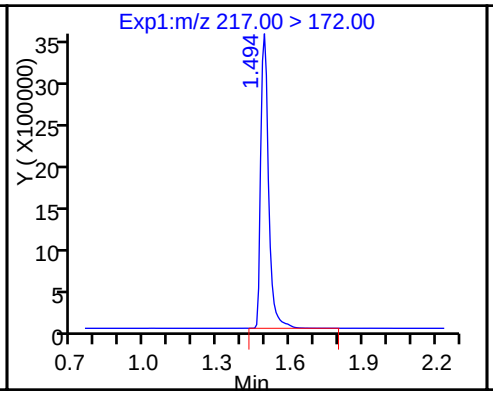
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

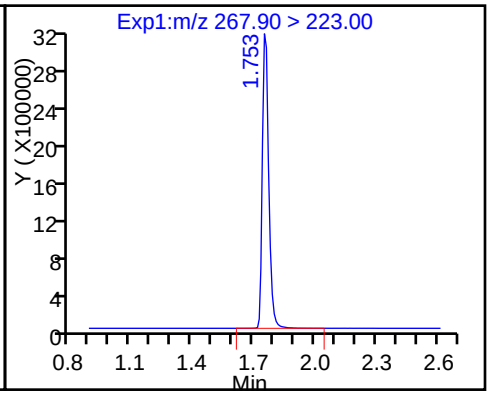
1 Perfluorobutyric acid



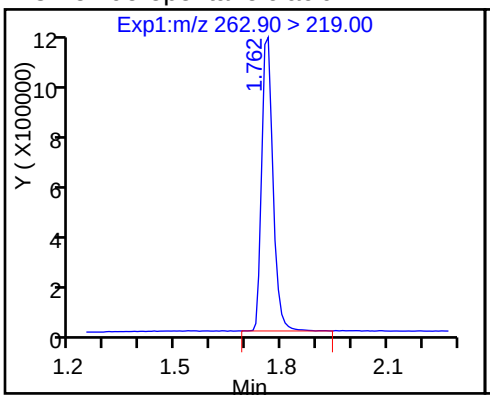
D 2 13C4 PFBA



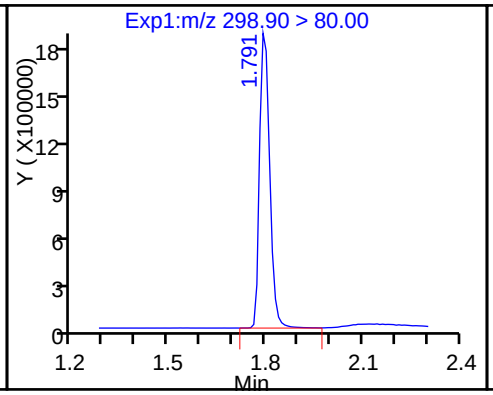
D 4 13C5-PFPeA



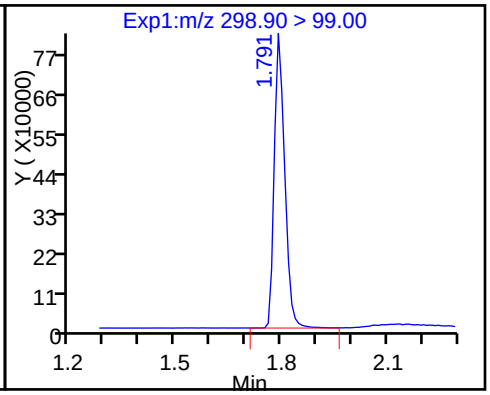
3 Perfluoropentanoic acid



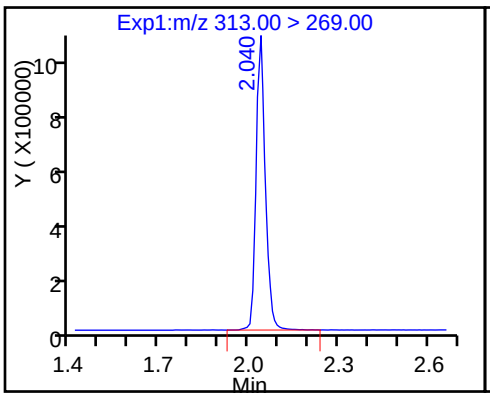
5 Perfluorobutanesulfonic acid



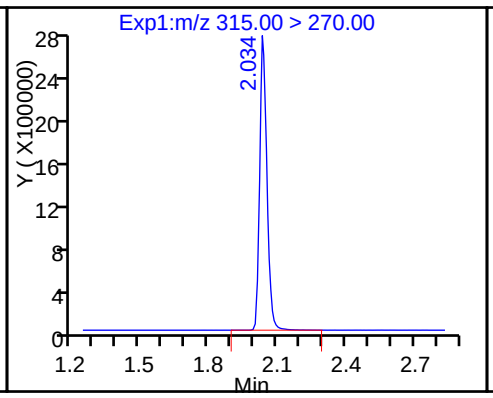
5 Perfluorobutanesulfonic acid



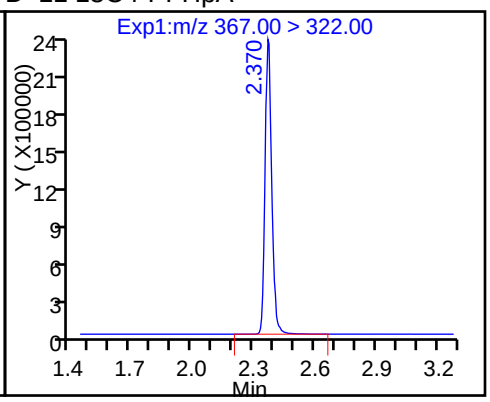
7 Perfluorohexanoic acid



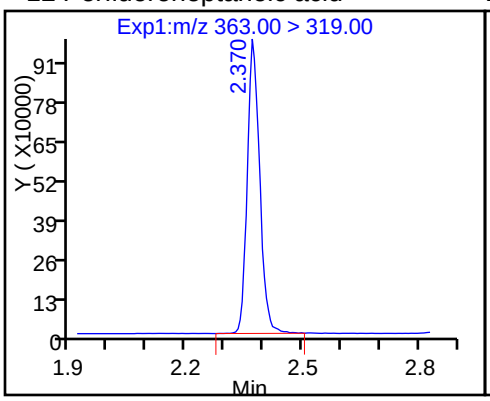
D 6 13C2 PFHxA



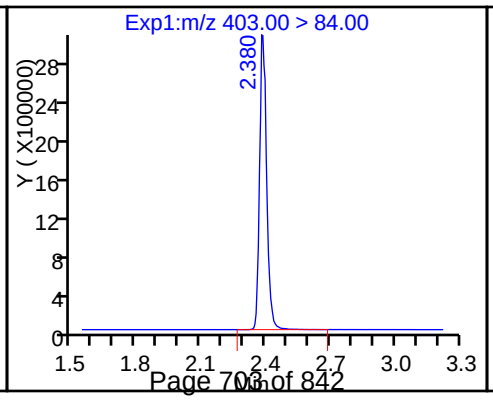
D 11 13C4-PFHpA



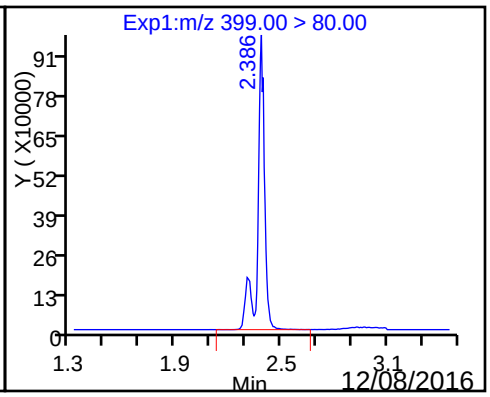
12 Perfluoroheptanoic acid



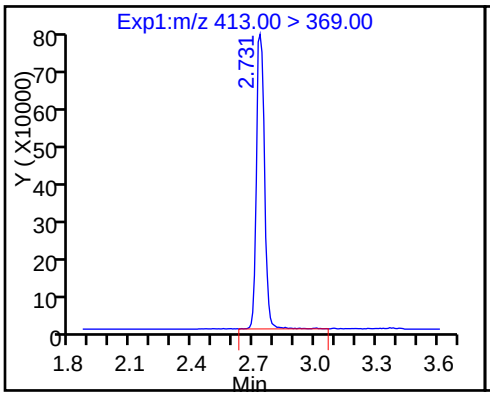
D 10 18O2 PFHxS



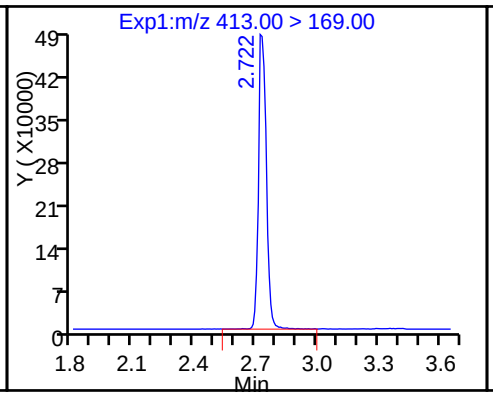
9 Perfluorohexanesulfonic acid



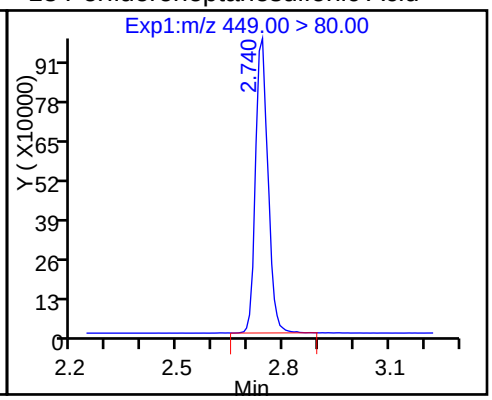
15 Perfluorooctanoic acid



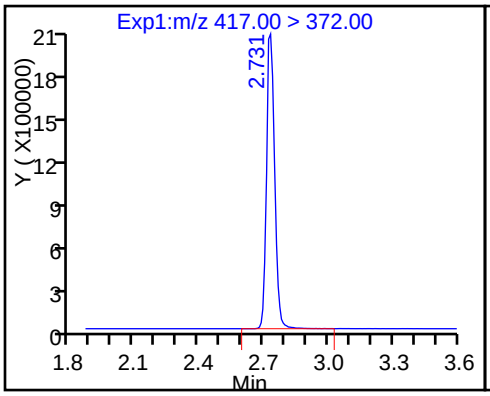
15 Perfluorooctanoic acid



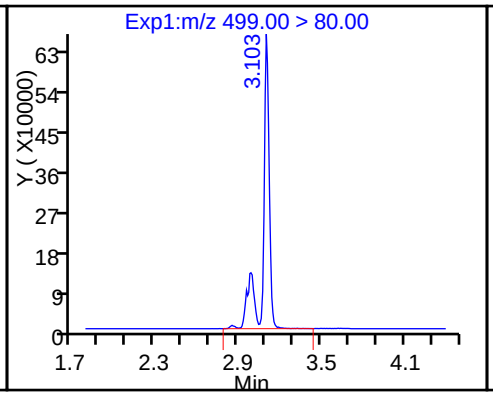
13 Perfluoroheptanesulfonic Acid



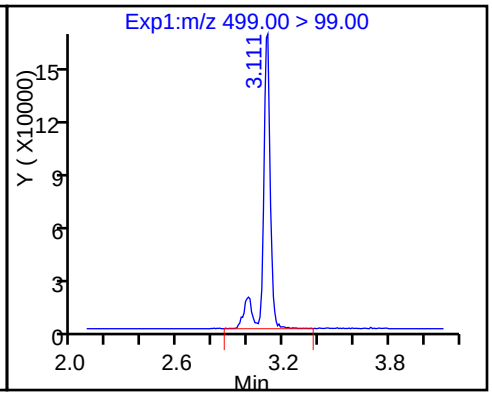
D 14 13C4 PFOA



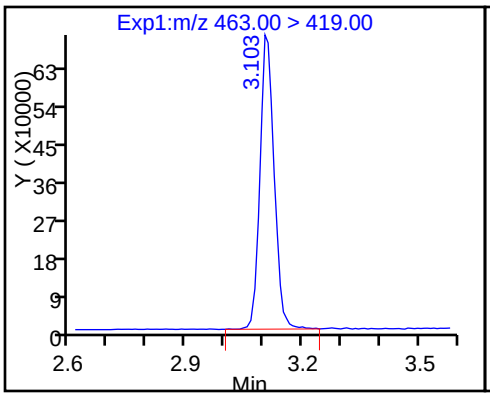
18 Perfluorooctane sulfonic acid



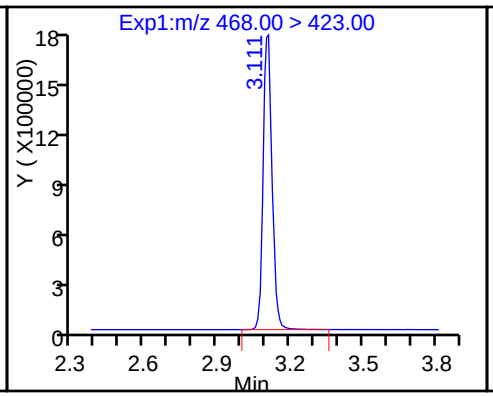
18 Perfluorooctane sulfonic acid



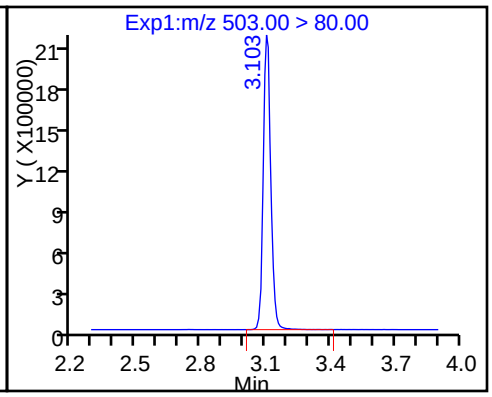
20 Perfluorononanoic acid



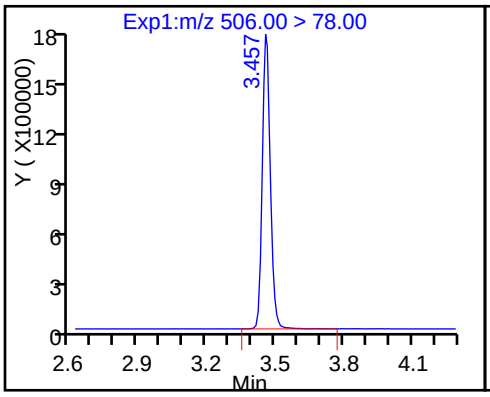
D 19 13C5 PFNA



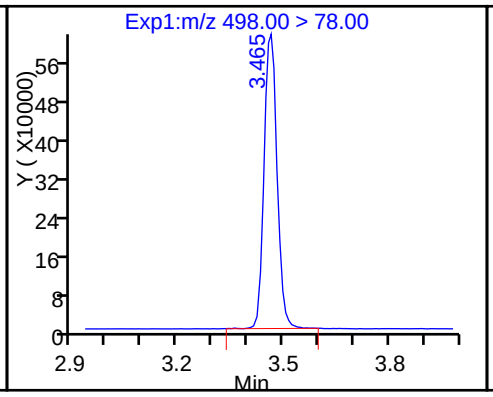
D 17 13C4 PFOS



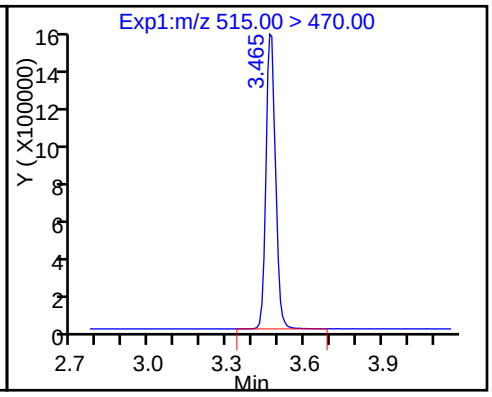
D 21 13C8 FOSA



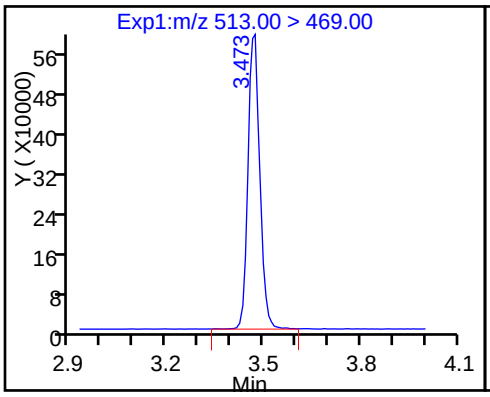
22 Perfluorooctane Sulfonamide



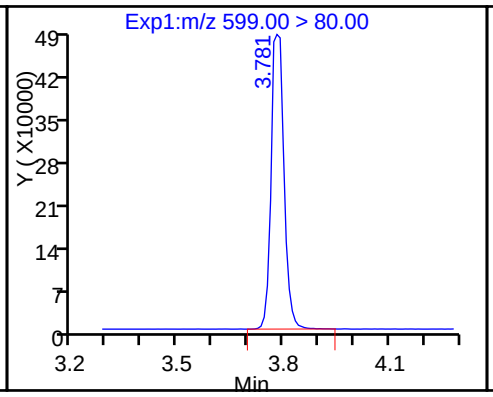
D 23 13C2 PFDA



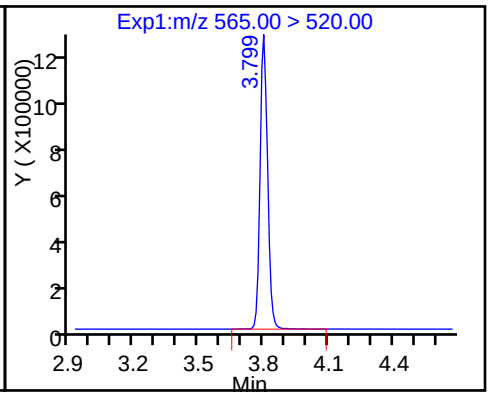
24 Perfluorodecanoic acid



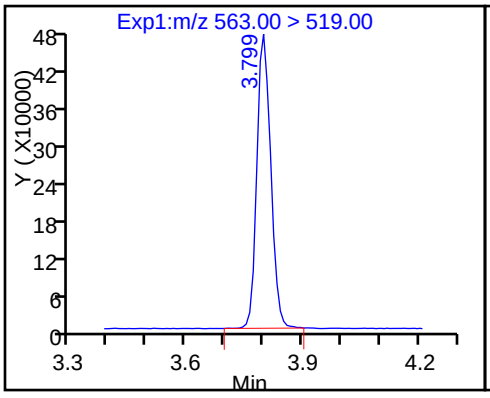
26 Perfluorodecane Sulfonic acid



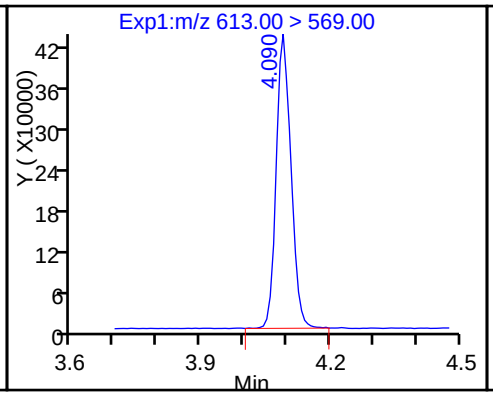
D 27 13C2 PFUnA



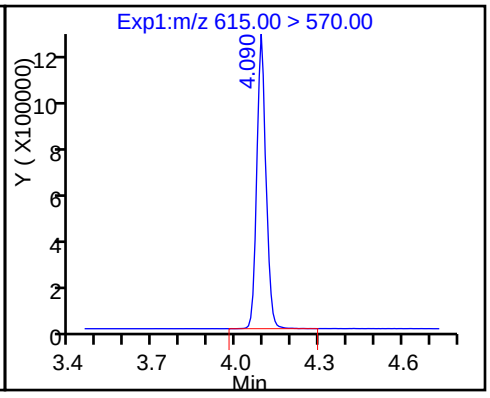
28 Perfluoroundecanoic acid



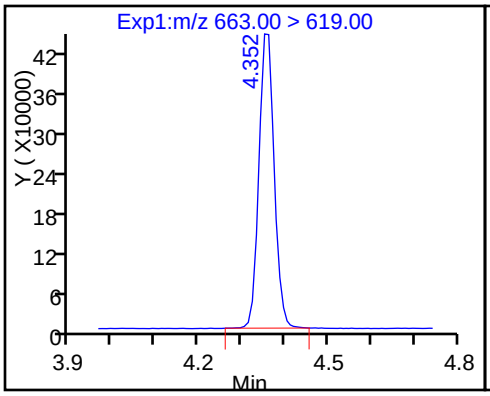
29 Perfluorododecanoic acid



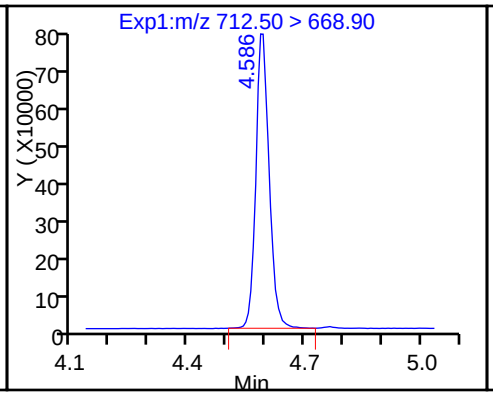
D 30 13C2 PFDoA



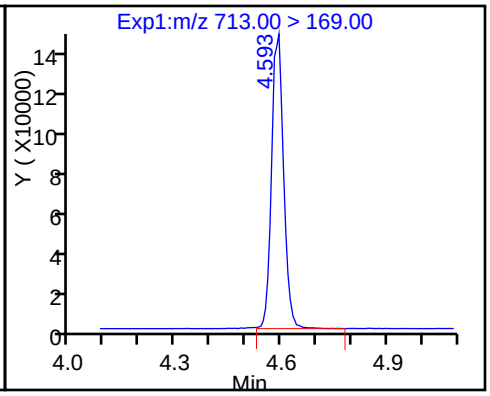
31 Perfluorotridecanoic acid



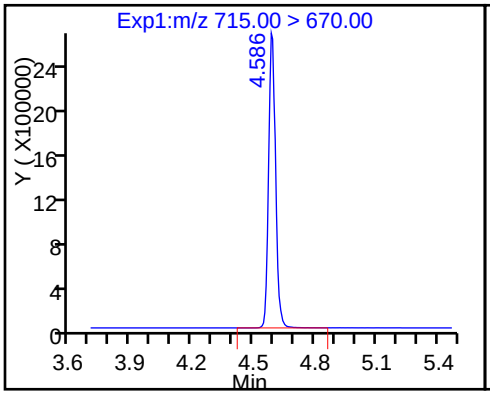
33 Perfluorotetradecanoic acid



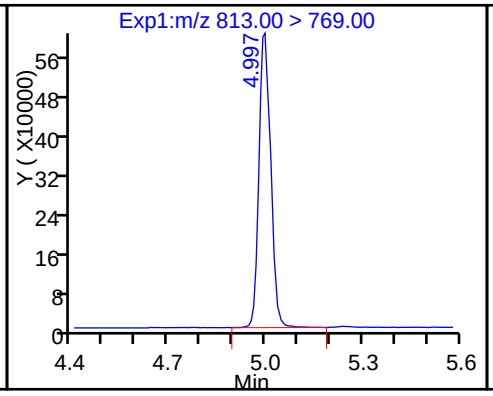
33 Perfluorotetradecanoic acid



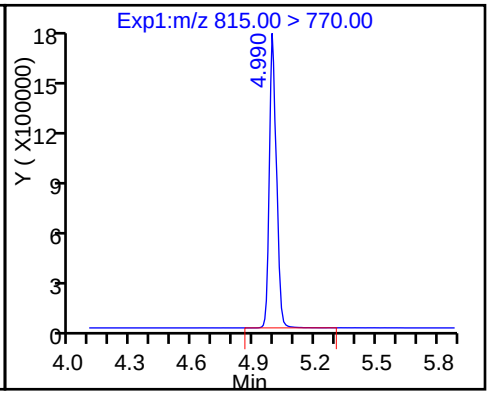
D 32 13C2-PFTeDA



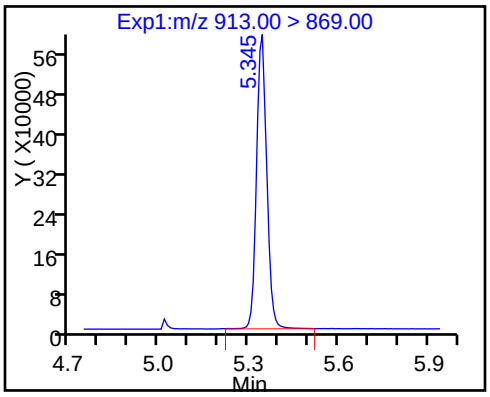
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: Lab Sample ID: LCS 320-138291/2-A

Matrix: Solid Lab File ID: 20NOV2016D_006.d

Analysis Method: 537 (Modified) Date Collected:

Extraction Method: SHAKE Date Extracted: 11/17/2016 12:49

Sample wt/vol: 5.03(g) Date Analyzed: 11/20/2016 21:18

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

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

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

Analysis Batch No.: 138814 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	4.37		0.50	0.30	0.10
1763-23-1	Perfluorooctane Sulfonate (PFOS)	3.90		0.50	0.30	0.13
375-73-5	Perfluorobutanesulfonic acid (PFBS)	4.70		0.40	0.30	0.10

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	107		25-150
STL00991	13C4 PFOS	92		25-150
STL00994	18O2 PFHxS	91		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_006.d
Lims ID: LCS 320-138291/2-A
Client ID:
Sample Type: LCS
Inject. Date: 20-Nov-2016 21:18:17 ALS Bottle#: 15 Worklist Smp#: 6
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: lcs 320-138291/2-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 15:04:15 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 15:10:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.488	1.493	-0.005	1.000	4571780	24.9		124	45143	
D 2 13C4 PFBA										
217.00 > 172.00	1.488	1.493	-0.005		10574918	53.5		107	769809	
D 4 13C5-PFPeA										
267.90 > 223.00	1.755	1.752	0.003		9076395	56.8		114	975678	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.755	1.762	-0.007	1.000	4204976	22.3		111	47093	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.793	1.791	0.002	1.000	6631343	23.7		134		
298.90 > 99.00	1.793	1.791	0.002	1.000	2729895		2.43(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.037	2.040	-0.003	1.000	3391930	23.0		115	90160	
D 6 13C2 PFHxA										
315.00 > 270.00	2.037	2.040	-0.003		7817718	53.8		108	504889	
D 11 13C4-PFHpA										
367.00 > 322.00	2.368	2.366	0.002		7131116	54.3		109	583828	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.368	2.372	-0.004	1.000	3413808	23.4		117	24795	
D 10 18O2 PFHxS										
403.00 > 84.00	2.384	2.382	0.002		8741558	43.3		91.5	468575	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.384	2.387	-0.003	1.000	4052284	20.7		114		
15 Perfluorooctanoic acid										
413.00 > 369.00	2.729	2.733	-0.004	1.000	3381339	22.0		110	65556	
413.00 > 169.00	2.729	2.733	-0.004	1.000	1994439		1.70(0.90-1.10)		102216	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.739	2.733	0.006	1.000	3683776	22.6		119		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 14 13C4 PFOA										
417.00 > 372.00	2.729	2.733	-0.004		7329802	53.7		107	607361	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.100	3.096	0.004	1.000	3048651	19.6		106	461241	
499.00 > 99.00	3.108	3.096	0.012	1.003	715038		4.26(0.90-1.10)		48812	
20 Perfluorononanoic acid										
463.00 > 419.00	3.100	3.096	0.004	1.000	2617373	23.7		118	27081	
D 19 13C5 PFNA										
468.00 > 423.00	3.100	3.096	0.004		5627444	51.4		103	424882	
D 17 13C4 PFOS										
503.00 > 80.00	3.100	3.096	0.004		6834275	43.9		91.8	307214	
D 21 13C8 FOSA										
506.00 > 78.00	3.455	3.458	-0.003		7904857	31.5		63.0	267480	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.455	3.458	-0.003	1.000	3493458	24.5		123	204571	
D 23 13C2 PFDA										
515.00 > 470.00	3.462	3.465	-0.003		4673837	46.6		93.3	244503	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.462	3.465	-0.003	1.000	2193324	23.6		118	78782	
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.778	3.782	-0.004	1.000	1255265	14.4		74.9		
D 27 13C2 PFUnA										
565.00 > 520.00	3.796	3.800	-0.004		3290265	41.9		83.9	258046	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.796	3.800	-0.004	1.000	1509265	22.3		112	43204	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.088	4.091	-0.003	1.000	1002287	23.4		117	29869	
D 30 13C2 PFDoA										
615.00 > 570.00	4.088	4.091	-0.003		2242270	29.0		58.0	153778	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.349	4.352	-0.003	1.000	678704	16.0		80.1	22225	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.591	4.586	0.005	1.000	1016181	12.7		63.7	32566	
713.00 > 169.00	4.585	4.586	-0.001	0.999	179877		5.65(0.00-0.00)		74360	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.585	4.586	-0.001		2765406	16.2		32.4	183809	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	4.989	4.990	-0.001	1.000	616468	12.3		61.3	13035	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.989	4.990	-0.001		1453403	15.4		30.8	201438	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.336	5.344	-0.008	1.000	387735	8.03		40.2	7064	

Report Date: 23-Nov-2016 15:10:08 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_006.d

Injection Date: 20-Nov-2016 21:18:17 Instrument ID: A8_N

Lims ID: LCS 320-138291/2-A

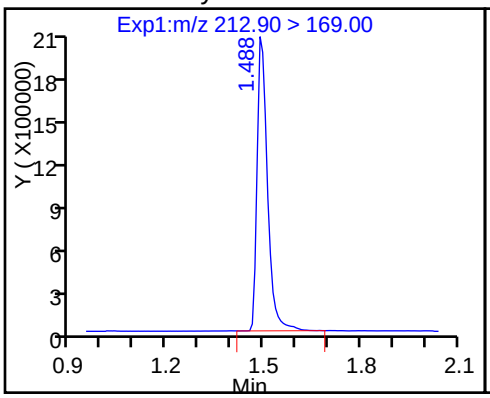
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 15 Worklist Smp#: 6

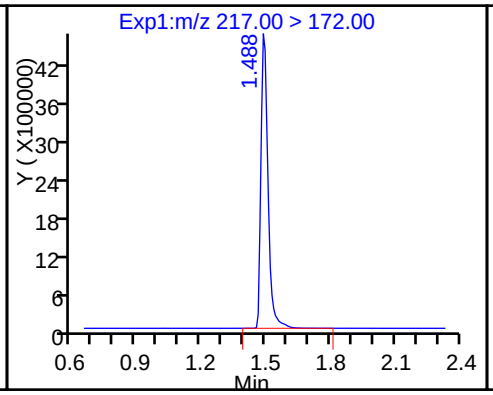
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

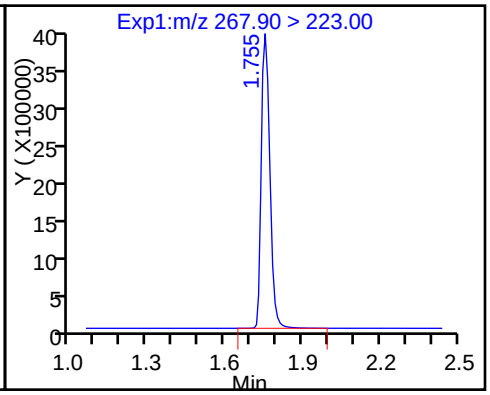
1 Perfluorobutyric acid



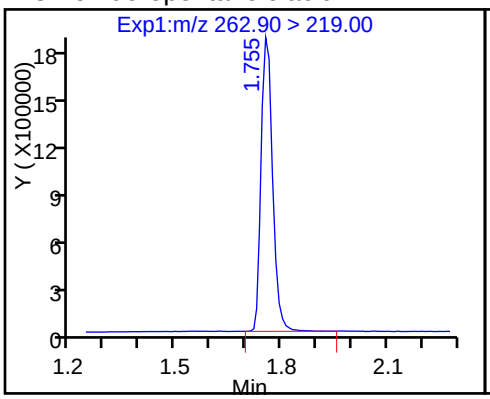
D 2 13C4 PFBA



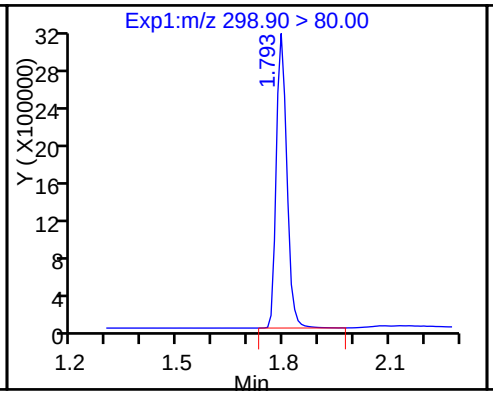
D 4 13C5-PFPeA



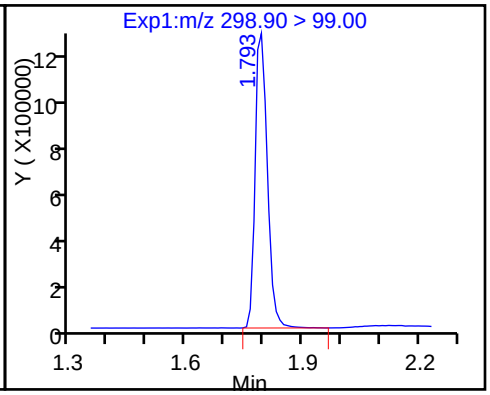
3 Perfluoropentanoic acid



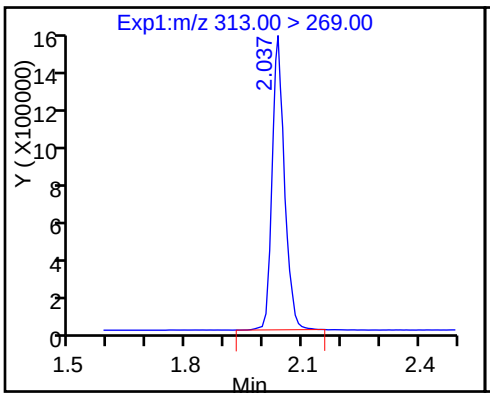
5 Perfluorobutanesulfonic acid



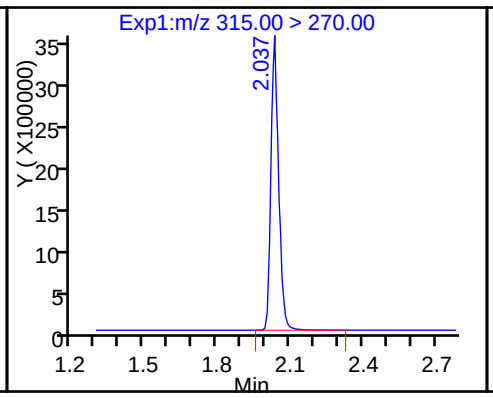
5 Perfluorobutanesulfonic acid



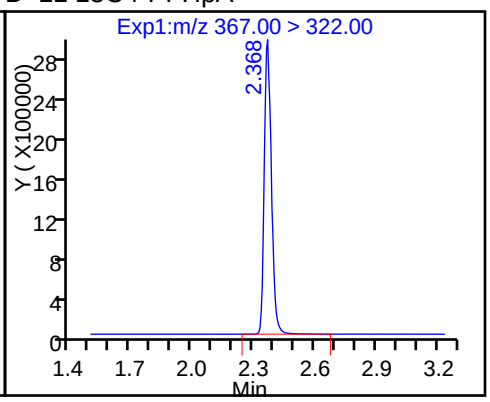
7 Perfluorohexanoic acid



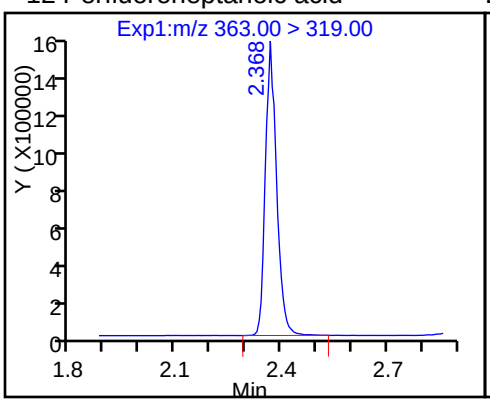
D 6 13C2 PFHxA



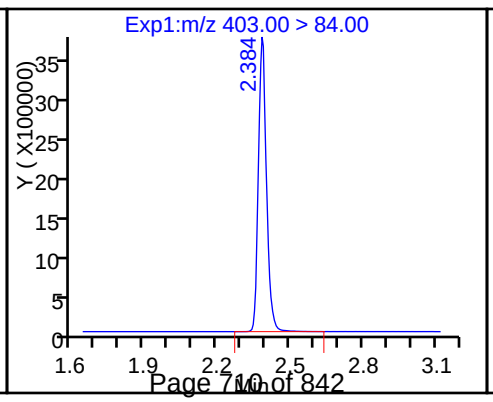
D 11 13C4-PFHpA



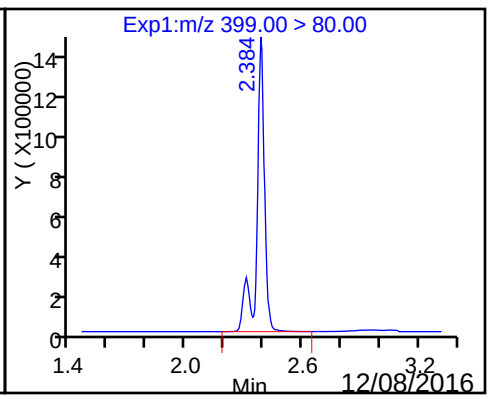
12 Perfluoroheptanoic acid



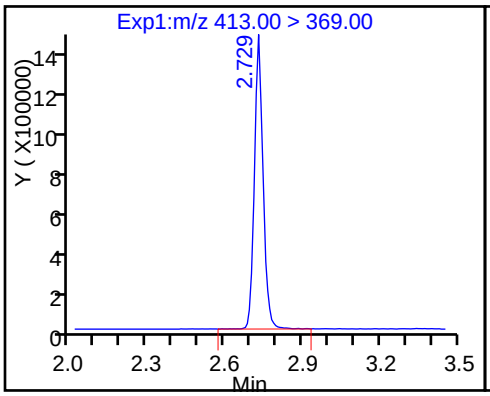
D 10 18O2 PFHxS



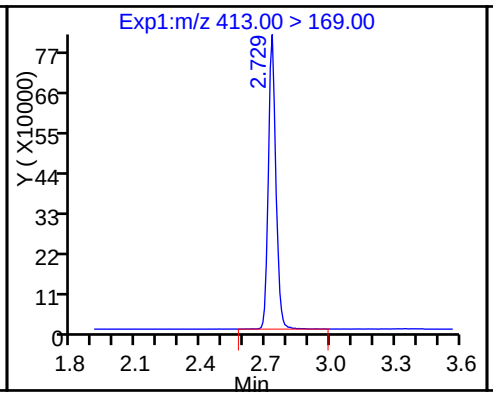
9 Perfluorohexanesulfonic acid



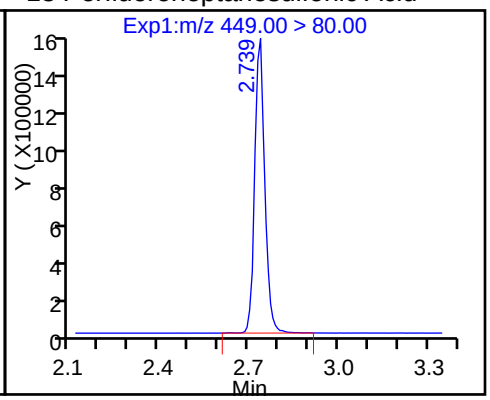
15 Perfluorooctanoic acid



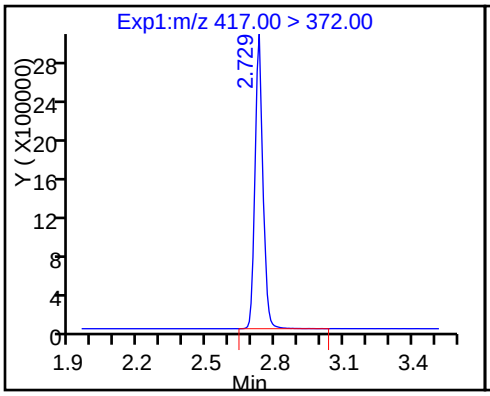
15 Perfluorooctanoic acid



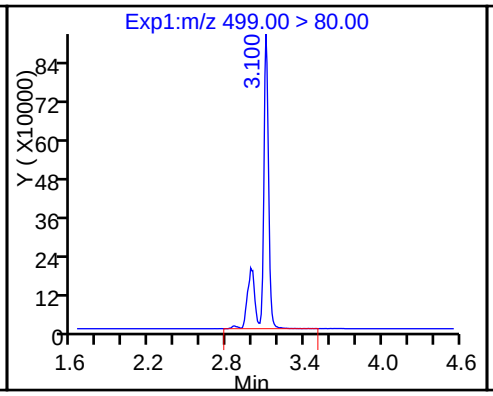
13 Perfluoroheptanesulfonic Acid



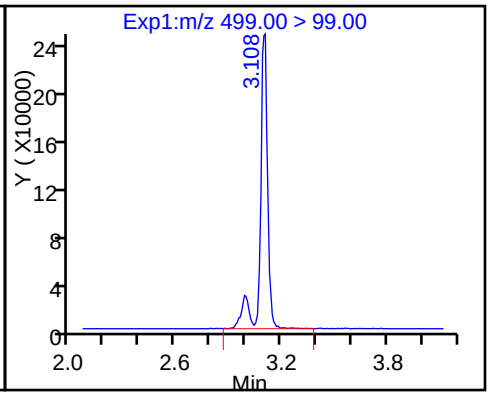
D 14 13C4 PFOA



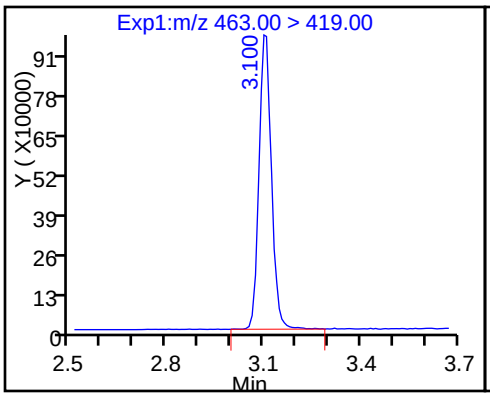
18 Perfluorooctane sulfonic acid



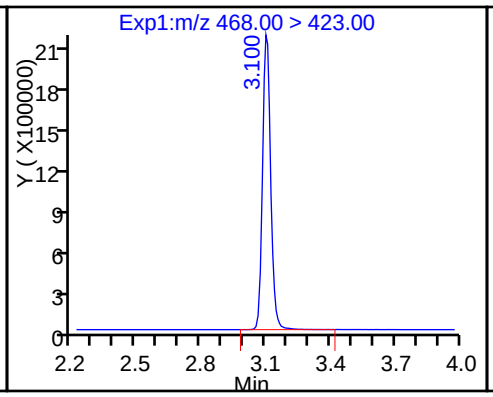
18 Perfluorooctane sulfonic acid



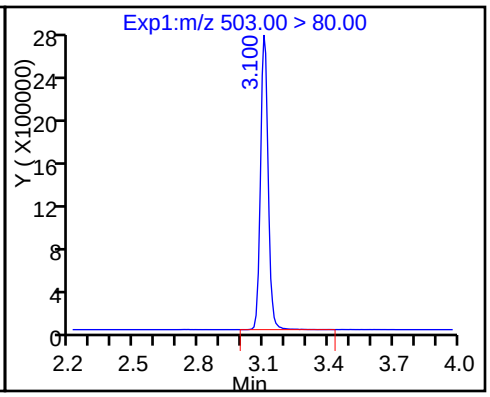
20 Perfluorononanoic acid



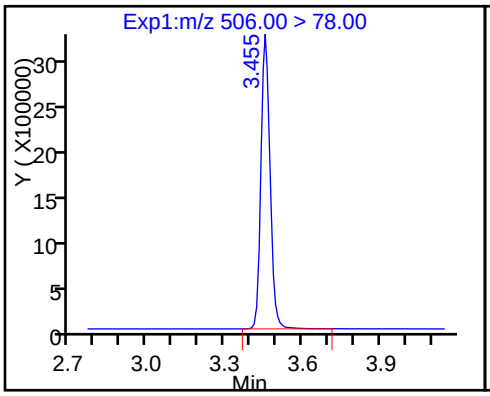
D 19 13C5 PFNA



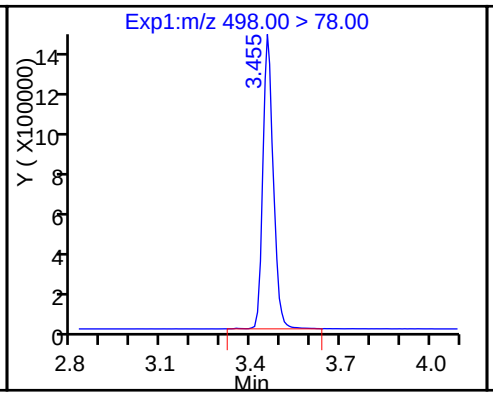
D 17 13C4 PFOS



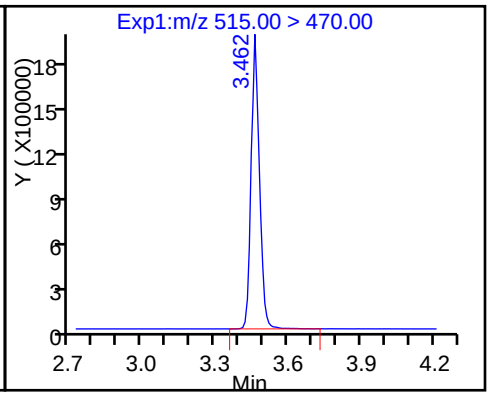
D 21 13C8 FOSA



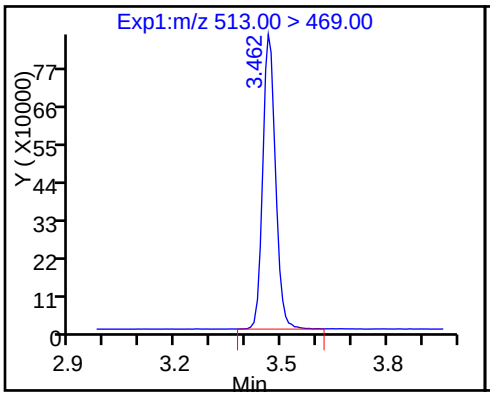
22 Perfluorooctane Sulfonamide



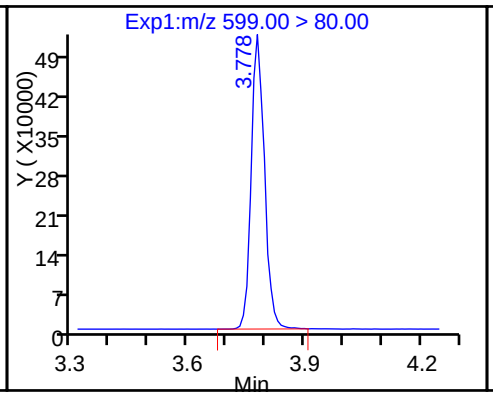
D 23 13C2 PFDA



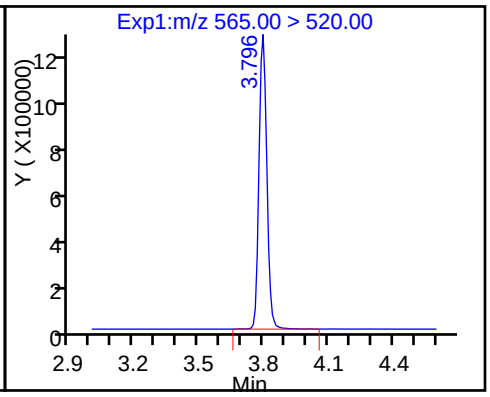
24 Perfluorodecanoic acid



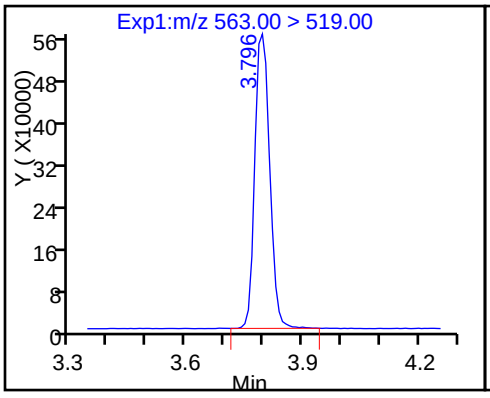
26 Perfluorodecane Sulfonic acid



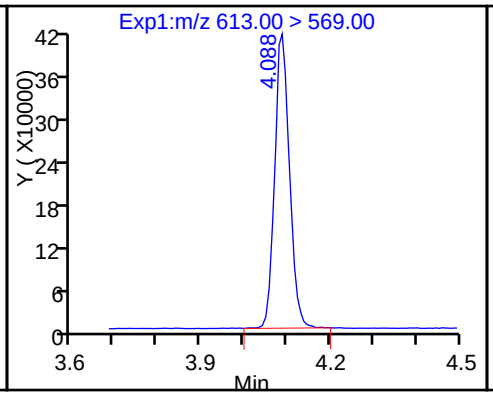
D 27 13C2 PFUnA



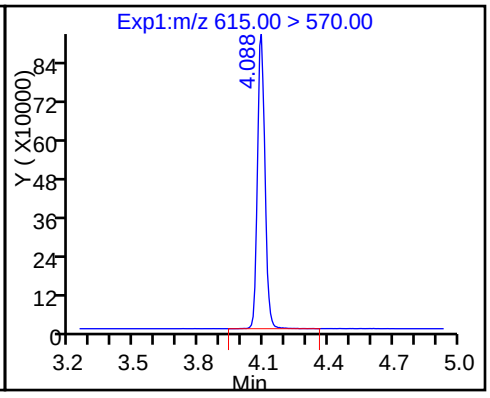
28 Perfluoroundecanoic acid



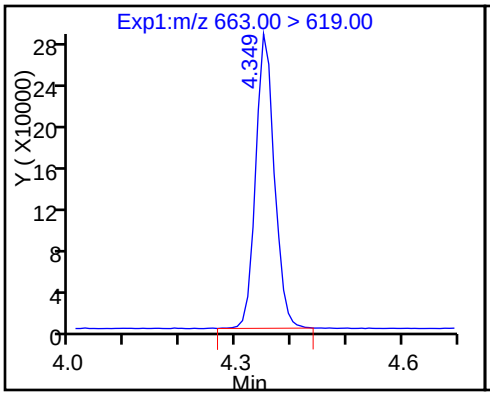
29 Perfluorododecanoic acid



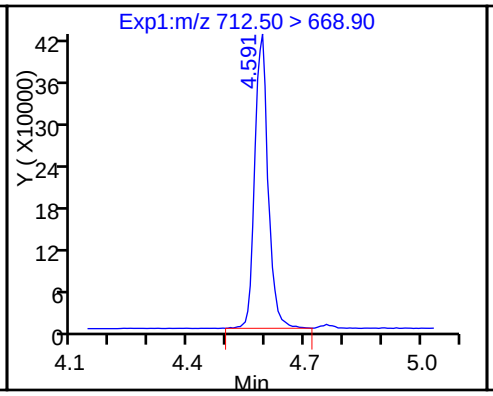
D 30 13C2 PFDoA



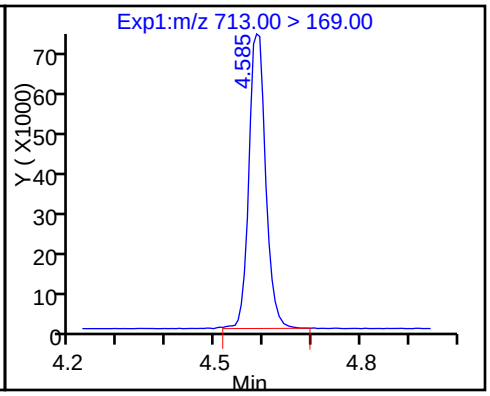
31 Perfluorotridecanoic acid



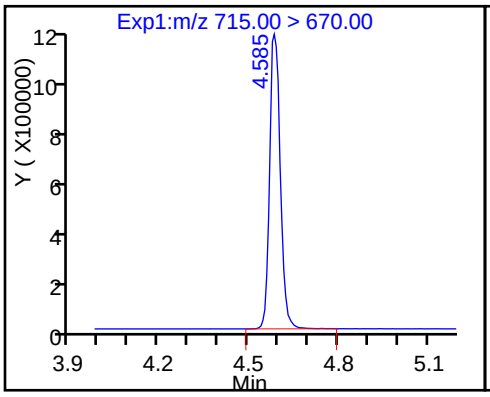
33 Perfluorotetradecanoic acid



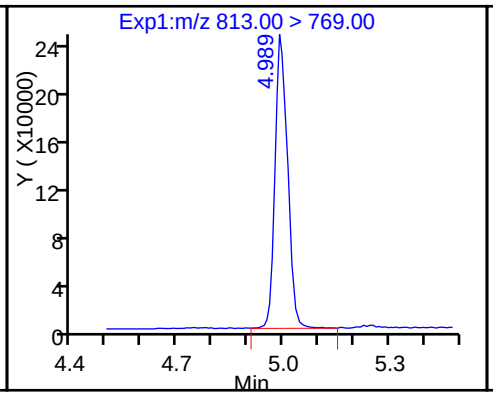
33 Perfluorotetradecanoic acid



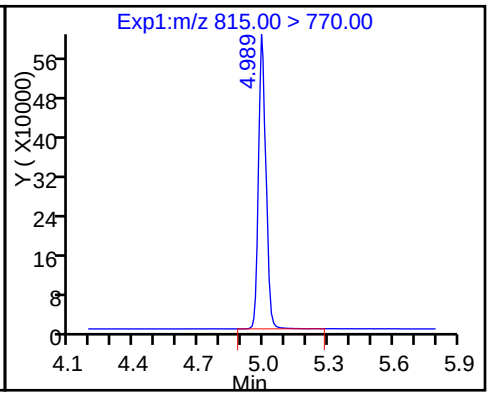
D 32 13C2-PFTeDA



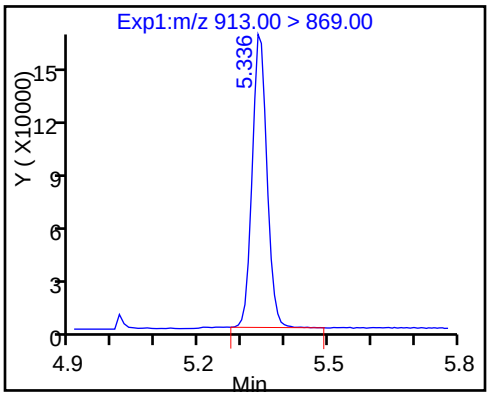
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-05-GW-17-21-MS MS | Lab Sample ID: 320-23542-2 MS

Matrix: Water | Lab File ID: 20NOV2016D_018.d

Analysis Method: 537 (Modified) | Date Collected: 11/14/2016 11:45

Extraction Method: 3535 | Date Extracted: 11/17/2016 08:49

Sample wt/vol: 251.3(mL) | Date Analyzed: 11/20/2016 22:48

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 1

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

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

Analysis Batch No.: 138814 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.244	4	0.0025	0.0020	0.00074
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*2.43*	*E 4*	*0.0040*	0.0030	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.107	J M	0.0025	0.0020	0.00091

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	43		25-150
STL00991	13C4 PFOS	59		25-150
STL00994	18O2 PFHxS	76		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_018.d
Lims ID: 320-23542-A-2-B MS
Client ID: DPT-16-05-GW-17-21-MS
Sample Type: MS
Inject. Date: 20-Nov-2016 22:48:20 ALS Bottle#: 23 Worklist Smp#: 18
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23542-a-2-b ms
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 15:59:08 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 15:59:08

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.496	1.493	0.003	1.000	2670418	42.4		212	21903	
D 2 13C4 PFBA										
217.00 > 172.00	1.496	1.493	0.003		3618152	18.3		36.6	340558	
D 4 13C5-PFPeA										
267.90 > 223.00	1.765	1.752	0.013		4124554	25.8		51.6	401485	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.765	1.762	0.003	1.000	4659778	54.4		272	27792	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.803	1.791	0.012	1.000	12496232	53.7		304		M
298.90 > 99.00	1.803	1.791	0.012	1.000	5563922		2.25(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.049	2.040	0.009	1.000	12870831	193.8		969	141300	
D 6 13C2 PFHxA										
315.00 > 270.00	2.043	2.040	0.003		3515245	24.2		48.4	315994	
D 11 13C4-PFHpA										
367.00 > 322.00	2.374	2.366	0.008		2244992	17.1		34.2	209419	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.374	2.372	0.002	1.000	1908959	41.5		208	5633	
D 10 18O2 PFHxS										
403.00 > 84.00	2.390	2.382	0.008		7251903	35.9		75.9	564928	
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.390	2.387	0.003	1.000	71773376	442.0		2429		E
D 47 M2-6:2FTS										
429.00 > 409.00	2.702	2.704	-0.002		18086	0.3450		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.711	2.713	-0.002	1.000	328224	NR		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.739	2.733	0.006	1.000	7513690	122.5		613	133228	
413.00 > 169.00	2.739	2.733	0.006	1.000	5172533		1.45(0.90-1.10)		147358	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.748	2.733	0.015	1.000	5130183	49.2		258		
D 14 13C4 PFOA										
417.00 > 372.00	2.739	2.733	0.006		2919646	21.4		42.8	237579	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.108	3.096	0.012	1.000	121321387	1221.2		6580	0.0	E
499.00 > 99.00	3.108	3.096	0.012	1.000	33105200		3.66(0.90-1.10)		0.0	
20 Perfluorononanoic acid										
463.00 > 419.00	3.116	3.096	0.020	1.000	629101	23.8		119	3826	
D 19 13C5 PFNA										
468.00 > 423.00	3.116	3.096	0.020		1343697	12.3		24.6	86069	
D 17 13C4 PFOS										
503.00 > 80.00	3.108	3.096	0.012		4366393	28.0		58.7	76934	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.462	3.456	0.006	0.998	128887	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.470	3.456	0.014		8215	0.1505		0.0		
D 21 13C8 FOSA										
506.00 > 78.00	3.462	3.458	0.004		947461	3.78		7.6	56770	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.462	3.458	0.004	1.000	386473	22.6		113	3173	
D 23 13C2 PFDA										
515.00 > 470.00	3.478	3.465	0.013		2483891	24.8		49.6	194339	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.470	3.465	0.005	1.000	955537	19.4		96.9	12129	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.638	3.623	0.015		6272	0.1442		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.621	3.632	-0.011	0.995	2256	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.787	3.782	0.005	1.000	1634598	29.4		153		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.796	3.789	0.007		14067	0.2854		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.805	3.798	0.007	1.002	4017	NR		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.805	3.800	0.005		2182252	27.8		55.6	177818	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.805	3.800	0.005	1.000	784266	17.5		87.4	13751	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.952	3.963	-0.011		1161	0.0192		0.0		
29 Perfluorododecanoic acid										
613.00 > 569.00	4.102	4.091	0.011	1.000	772418	18.4		92.0	19490	
D 30 13C2 PFDoA										
615.00 > 570.00	4.095	4.091	0.004		2197852	28.4		56.8	123799	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.152	4.153	-0.001		1175	0.0215		0.0		
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.359	4.352	0.007	1.000	913549	22.0		110	27504	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.598	4.586	0.012	1.000	1825731	23.4		117	53227	
713.00 > 169.00	4.591	4.586	0.005	0.999	323209		5.65(0.00-0.00)		68254	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.598	4.586	0.012		6695013	39.2		78.5	480005	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.002	4.990	0.012	1.000	1594229	33.2		166	39329	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.996	4.990	0.006		4772194	50.6		101	619046	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.344	5.344	0.0	1.000	1579654	33.4		167	9754	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 23-Nov-2016 15:59:08 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_018.d

Injection Date: 20-Nov-2016 22:48:20 Instrument ID: A8_N

Lims ID: 320-23542-A-2-B MS

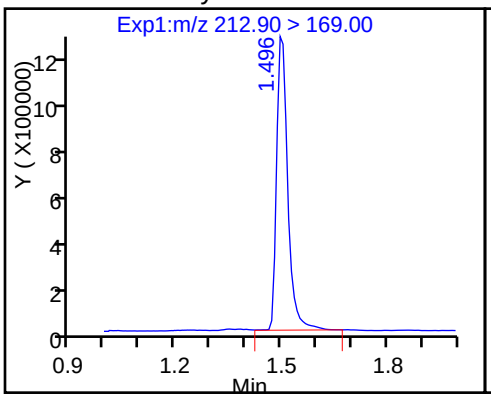
Client ID: DPT-16-05-GW-17-21-MS

Operator ID: A8-PC\A8 ALS Bottle#: 23 Worklist Smp#: 18

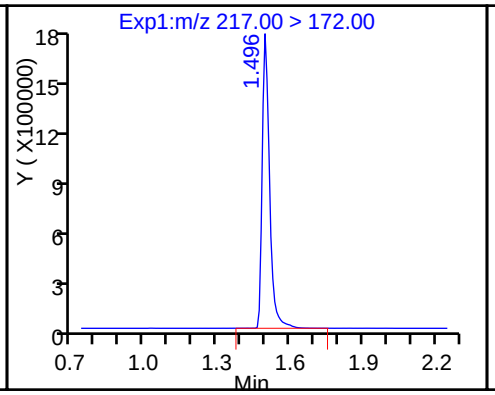
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

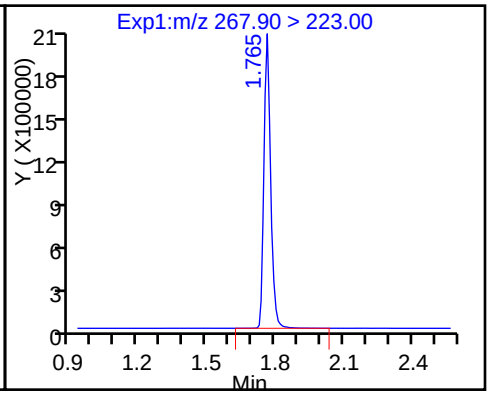
1 Perfluorobutyric acid



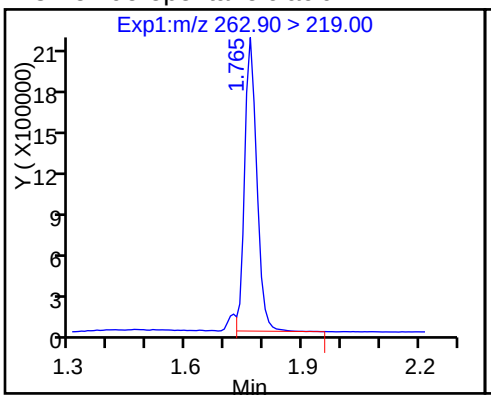
D 2 13C4 PFBA



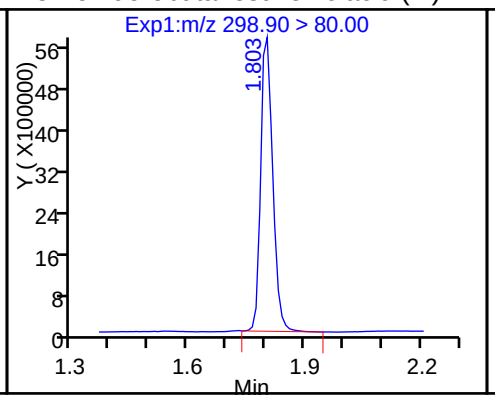
D 4 13C5-PFPeA



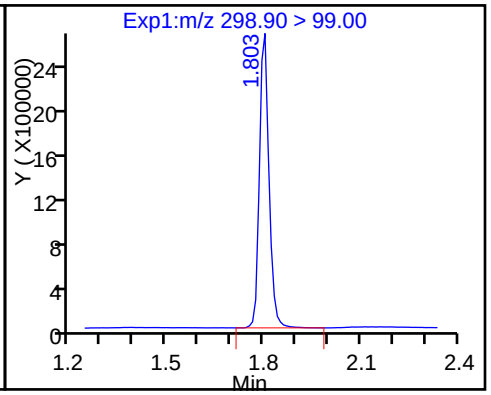
3 Perfluoropentanoic acid



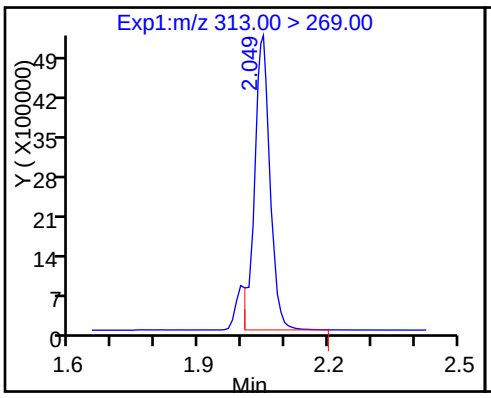
5 Perfluorobutanesulfonic acid (M)



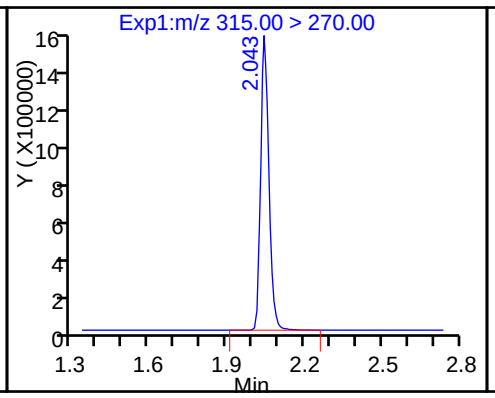
5 Perfluorobutanesulfonic acid



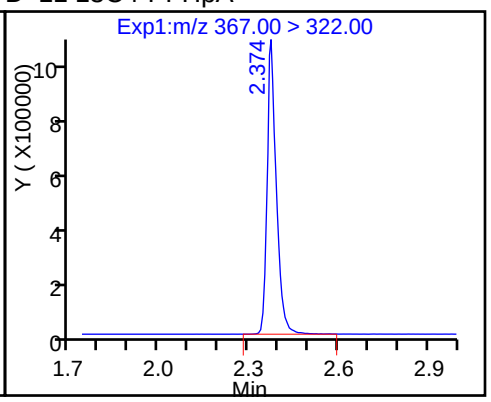
7 Perfluorohexanoic acid



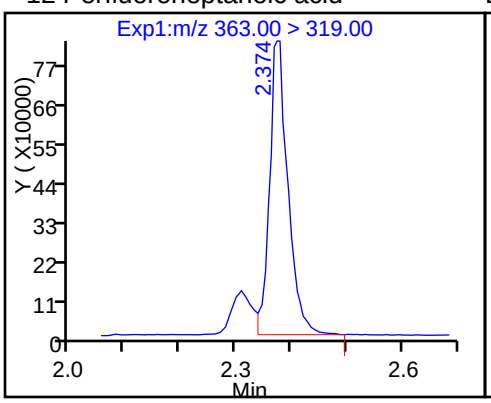
D 6 13C2 PFHxA



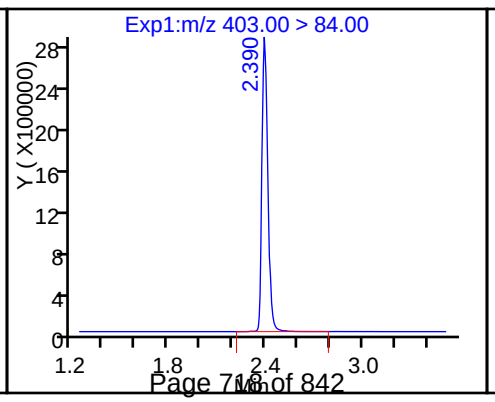
D 11 13C4-PFHpA



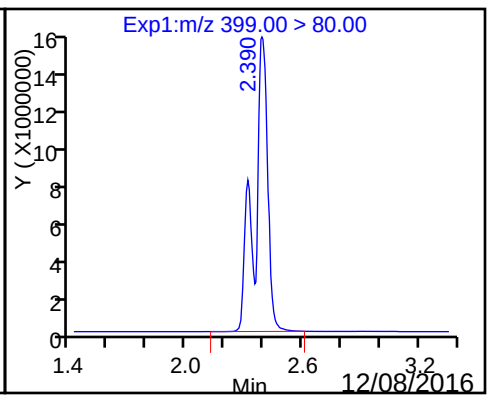
12 Perfluoroheptanoic acid



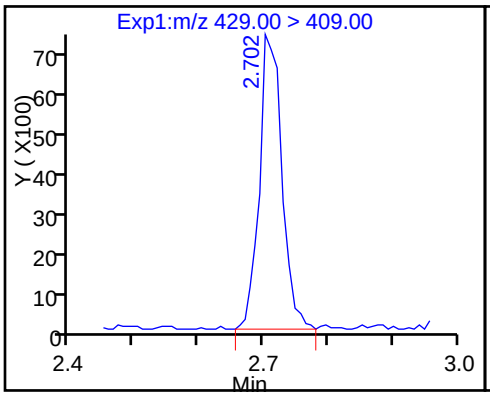
D 10 18O2 PFHxS



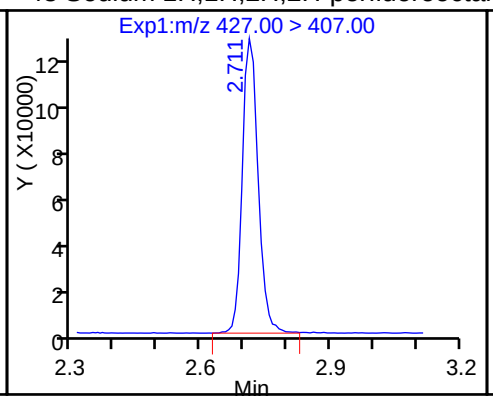
9 Perfluorohexanesulfonic acid



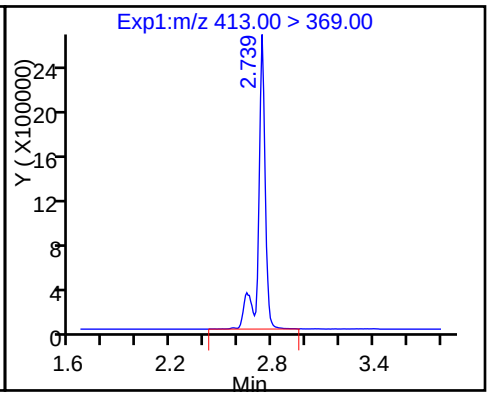
D 47 M2-6:2FTS



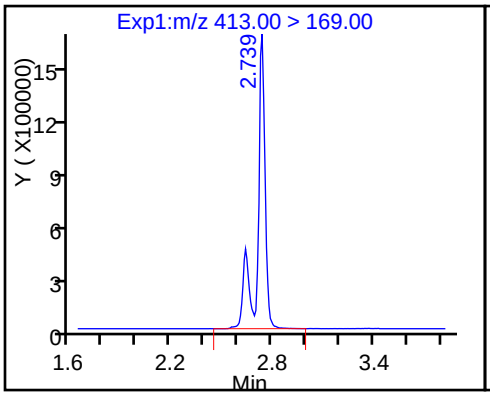
48 Sodium 1H,1H,2H,2H-perfluorooctane



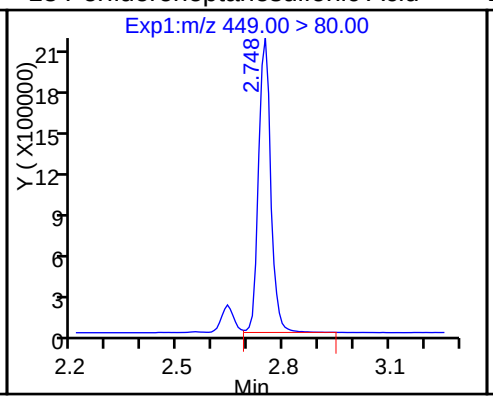
15 Perfluorooctanoic acid



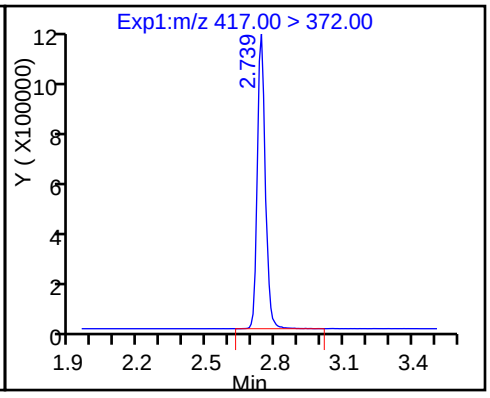
15 Perfluorooctanoic acid



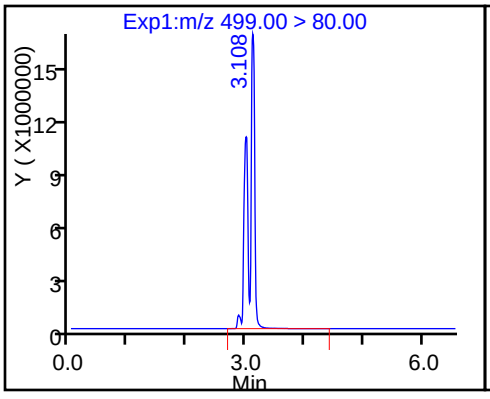
13 Perfluoroheptanesulfonic Acid



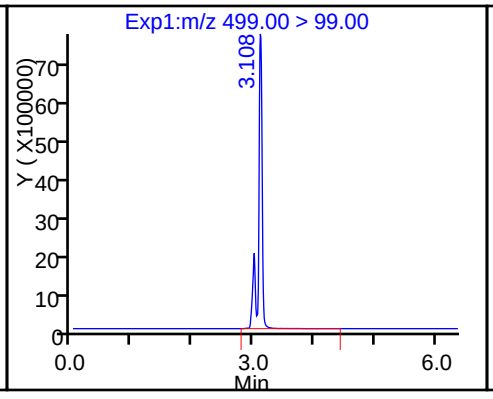
D 14 13C4 PFOA



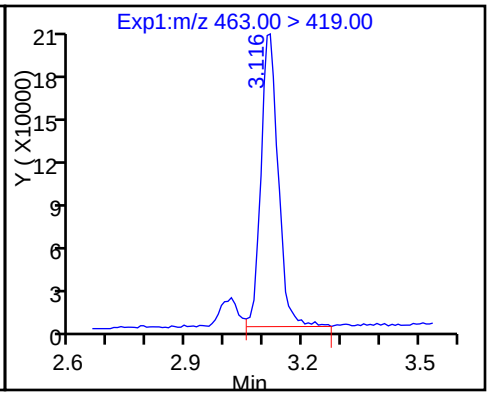
18 Perfluorooctane sulfonic acid



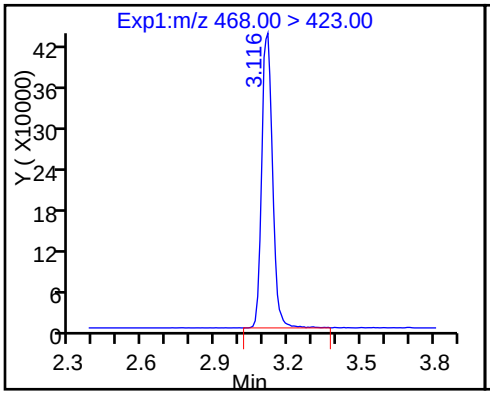
18 Perfluorooctane sulfonic acid



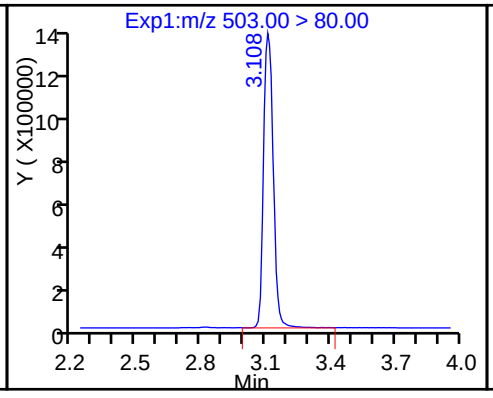
20 Perfluorononanoic acid



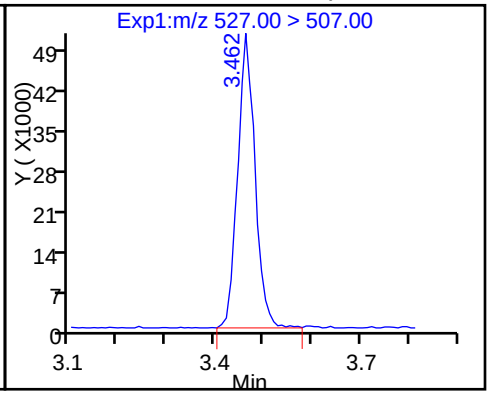
D 19 13C5 PFNA



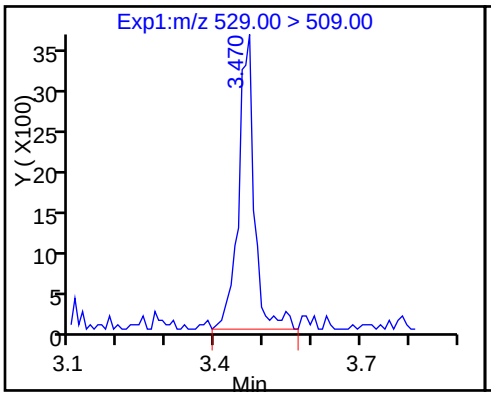
D 17 13C4 PFOS



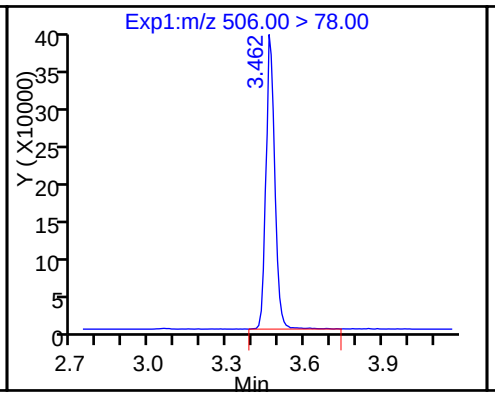
43 Sodium 1H,1H,2H,2H-perfluorooctane



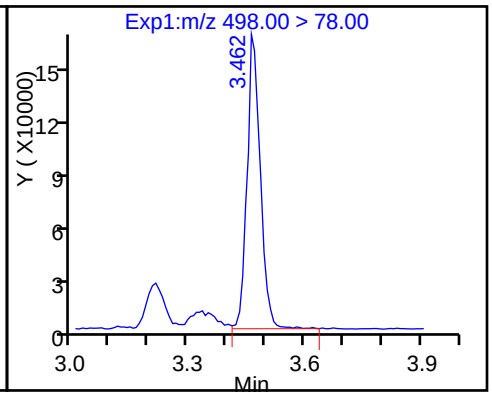
D 42 M2-8:2FTS



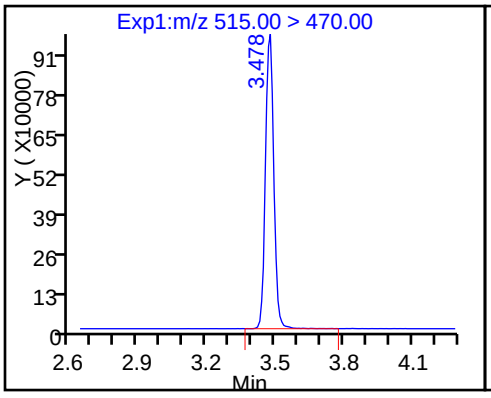
D 21 13C8 FOSA



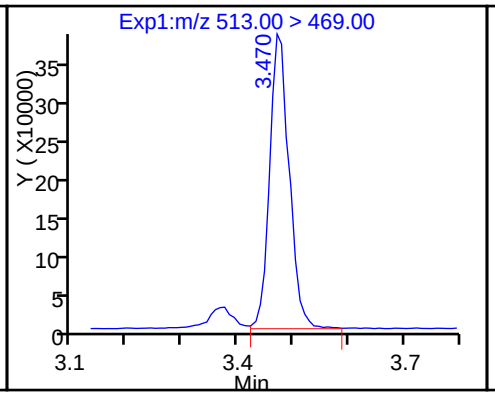
22 Perfluorooctane Sulfonamide



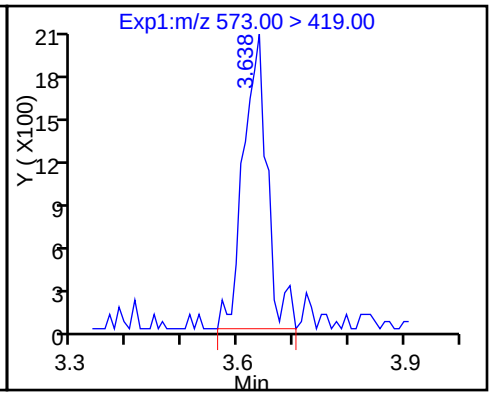
D 23 13C2 PFDA



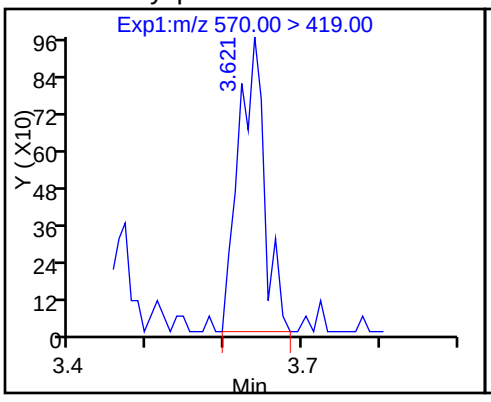
24 Perfluorodecanoic acid



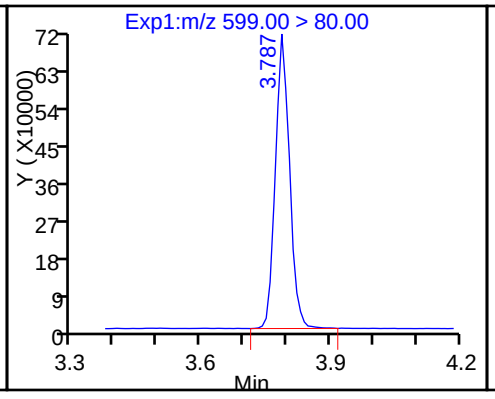
D 45 d3-NMeFOSAA



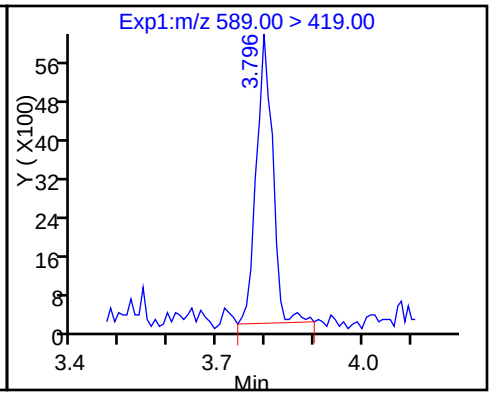
44 N-methyl perfluorooctane sulfonami



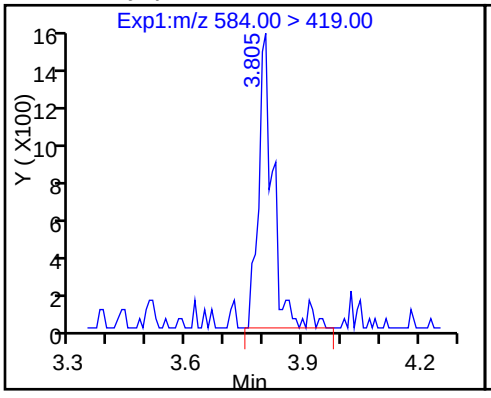
26 Perfluorodecane Sulfonic acid



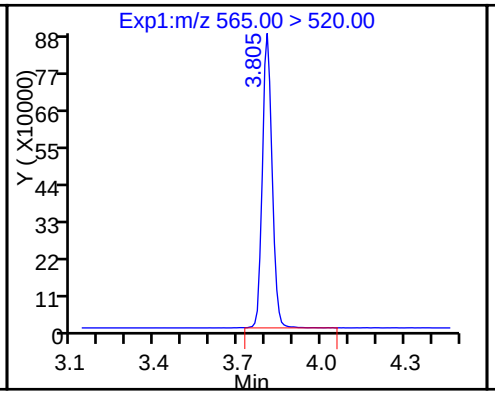
D 46 d5-NEtFOSAA



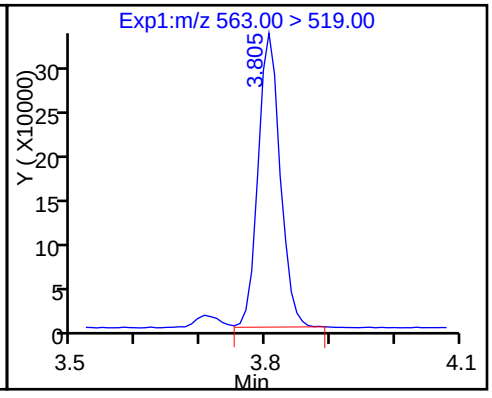
49 N-ethyl perfluorooctane sulfonamid



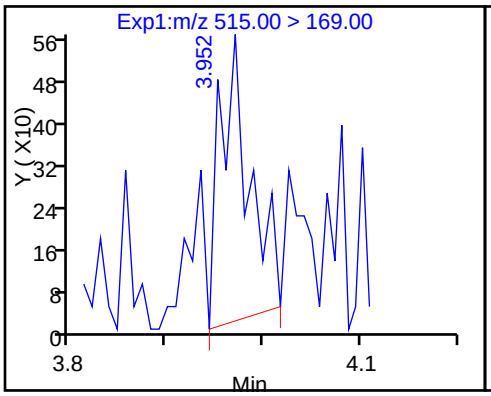
D 27 13C2 PFUnA



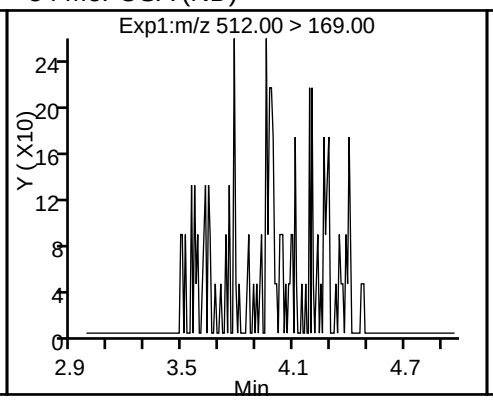
28 Perfluoroundecanoic acid



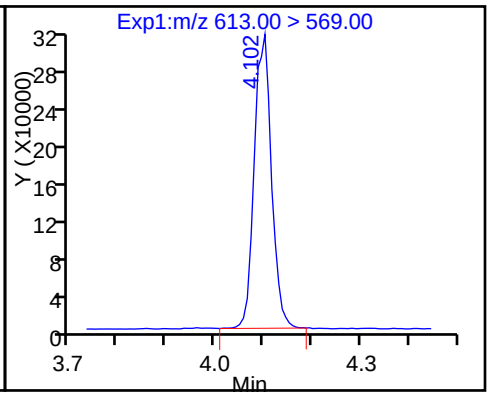
D 52 d-N-MeFOSA-M



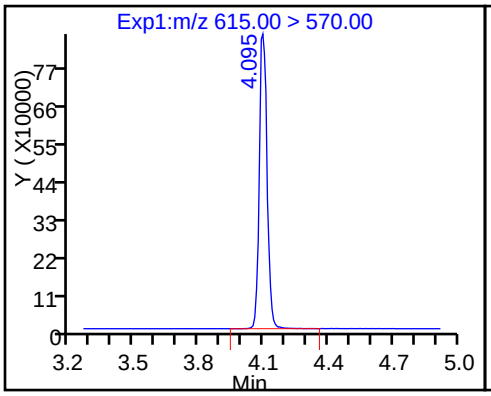
54 MeFOSA (ND)



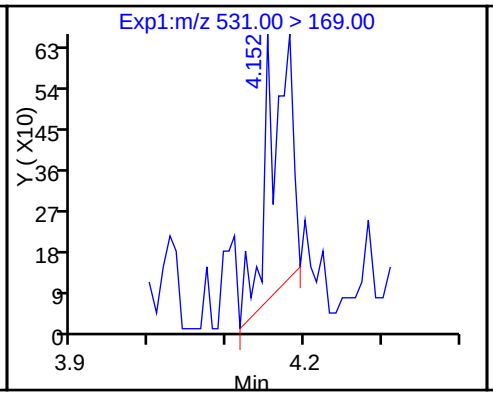
29 Perfluorododecanoic acid



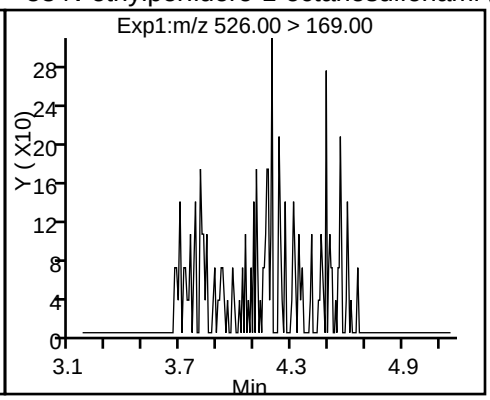
D 30 13C2 PFDoA



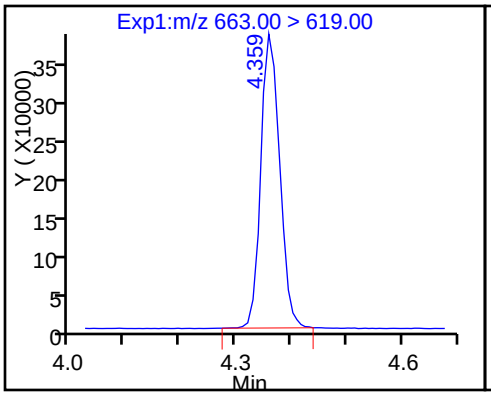
D 51 d-N-EtFOSA-M



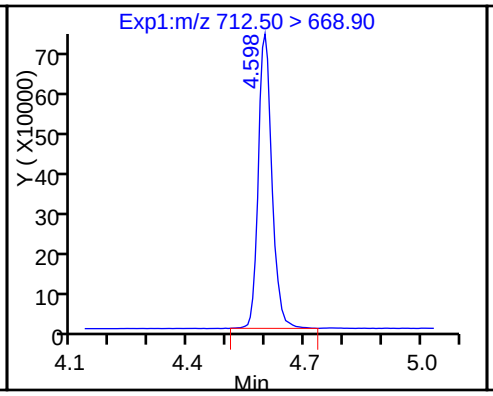
53 N-ethylperfluoro-1-octanesulfonami (ND)



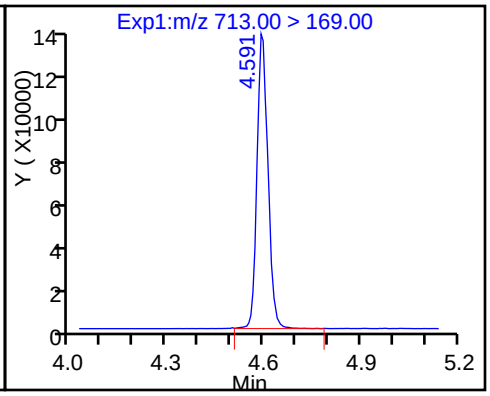
31 Perfluorotridecanoic acid



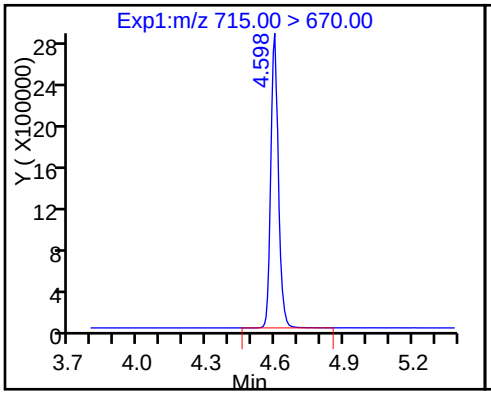
33 Perfluorotetradecanoic acid



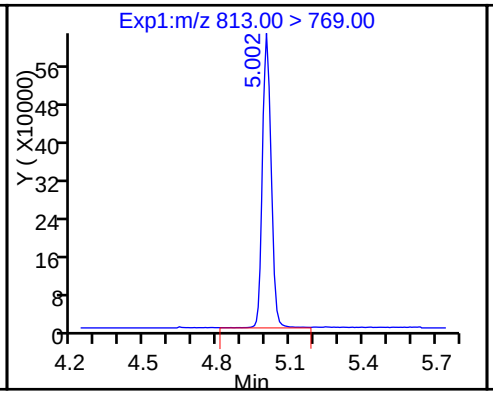
33 Perfluorotetradecanoic acid



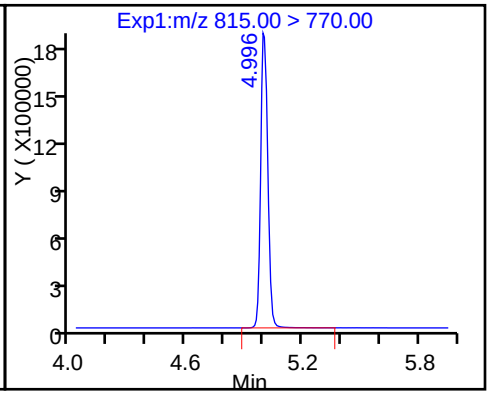
D 32 13C2-PFTeDA



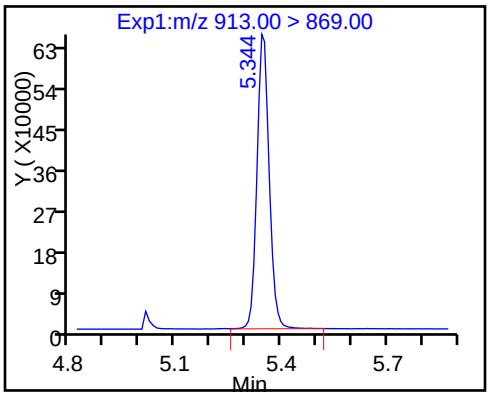
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

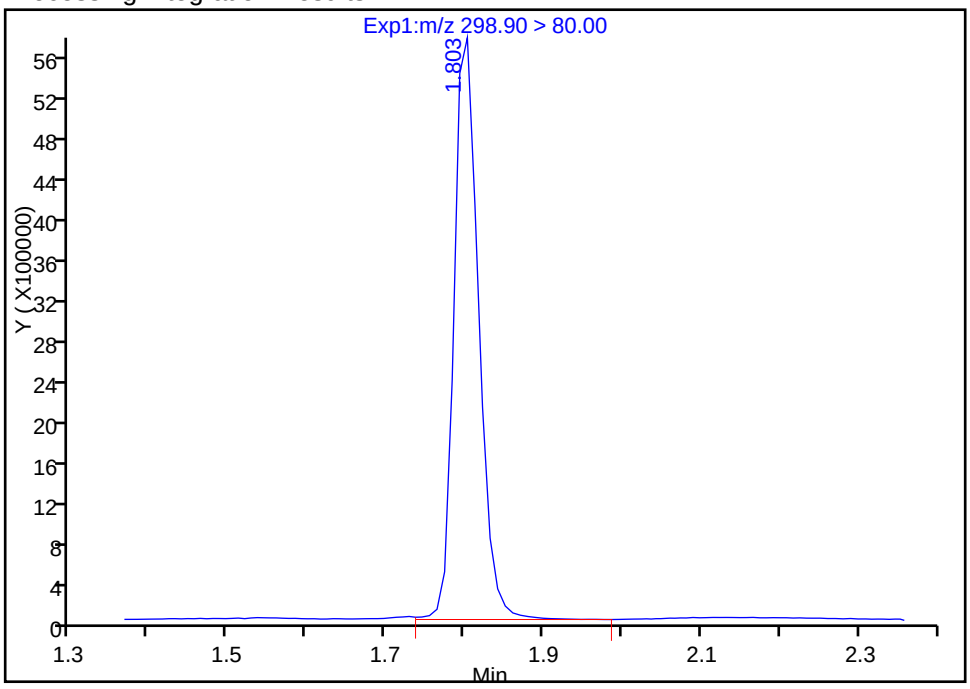
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_018.d				
Injection Date:	20-Nov-2016 22:48:20	Instrument ID:	A8_N		
Lims ID:	320-23542-A-2-B MS				
Client ID:	DPT-16-05-GW-17-21-MS				
Operator ID:	A8-PC\A8	ALS Bottle#:	23	Worklist Smp#:	18
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

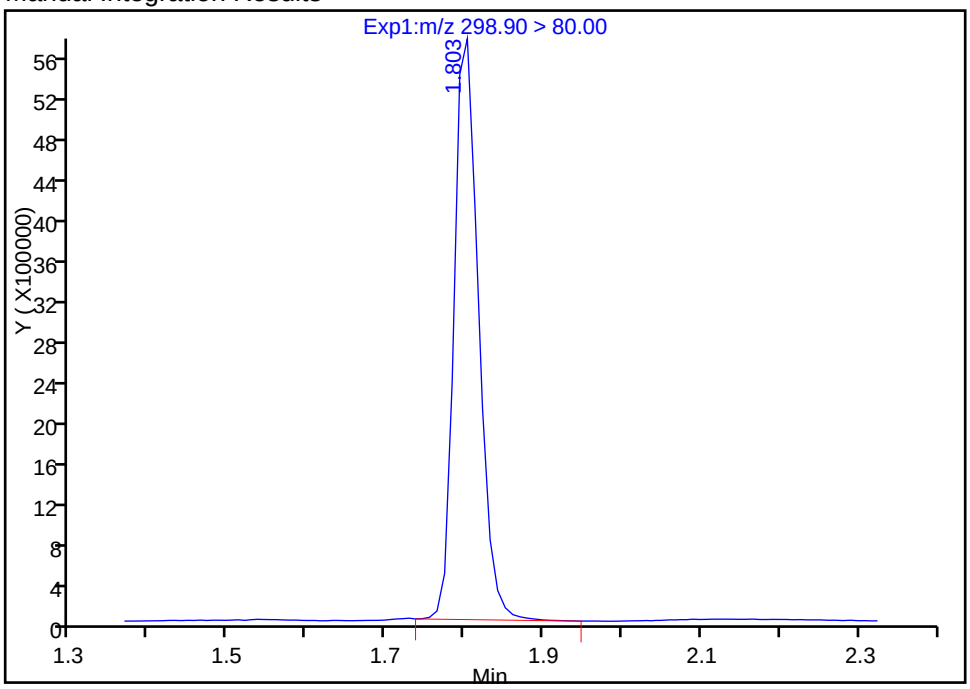
Processing Integration Results

RT: 1.80
Area: 12651033
Amount: 54.395039
Amount Units: ng/ml



Manual Integration Results

RT: 1.80
Area: 12496232
Amount: 53.729448
Amount Units: ng/ml



Reviewer: changnoit, 23-Nov-2016 15:59:08

Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-05-GW-17-21-MS MS | Lab Sample ID: 320-23542-2 MS DL

Matrix: Water | Lab File ID: 02DEC2016B_002.d

Analysis Method: 537 (Modified) | Date Collected: 11/14/2016 11:45

Extraction Method: 3535 | Date Extracted: 11/17/2016 08:49

Sample wt/vol: 251.3(mL) | Date Analyzed: 12/02/2016 13:06

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 100

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

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

Analysis Batch No.: 140382 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.268*	*4 D*	*0.25*	0.20	*0.074*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	3.08	4 D	0.40	0.30	0.13
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.20*	*U*	*0.25*	0.20	*0.091*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	78		25-150
STL00991	13C4 PFOS	145		25-150
STL00994	18O2 PFHxS	156	Q	25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_002.d
Lims ID: 320-23542-A-2-B MS
Client ID: DPT-16-05-GW-17-21-MS
Sample Type: MS
Inject. Date: 02-Dec-2016 13:06:59 ALS Bottle#: 2 Worklist Smp#: 25
Injection Vol: 2.0 ul Dil. Factor: 100.0000
Sample Info: 320-23542-A-2-B MS 100X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:55:36 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 14:56:31

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.593	1.615	-0.022		122994	0.3614		0.7	22350	
1 Perfluorobutyric acid										
212.90 > 169.00	1.593	1.617	-0.024	1.000	80578	0.3700		185	827	
D 4 13C5-PFPeA										
267.90 > 223.00	1.890	1.918	-0.028		89458	0.3311		0.7	12910	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.890	1.920	-0.030	1.000	101937	0.5474		274	878	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.929	1.961	-0.032	1.000	267992	0.3529		200		
298.90 > 99.00	1.929	1.961	-0.032	1.000	116457		2.30(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.192	2.239	-0.047		78785	0.3196		0.6	17653	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.192	2.241	-0.049	1.000	311012	2.06		1032	11900	
D 11 13C4-PFHpA										
367.00 > 322.00	2.547	2.599	-0.052		72441	0.3441		0.7	15646	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.554	2.600	-0.046	1.000	59715	0.3985		199	969	
D 10 18O2 PFHxS										
403.00 > 84.00	2.570	2.614	-0.044		222640	0.7361		1.6	89737	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.562	2.615	-0.053	1.000	2996602	6.01		3301		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.914	2.913	0.001	1.000	26716	NR		0.0		
D 47 M2-6:2FTS										
429.00 > 409.00	2.906	2.915	-0.009		2699	0.0194		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.922	2.984	-0.062	1.000	234199	1.35		673	2151	
413.00 > 169.00	2.922	2.984	-0.062	1.000	144233		1.62(0.90-1.10)		11097	
D 14 13C4 PFOA										
417.00 > 372.00	2.930	2.984	-0.054		85261	0.3886		0.8	16295	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.930	2.986	-0.056	1.000	112037	0.2694		141		
D 17 13C4 PFOS										
503.00 > 80.00	3.302	3.365	-0.063		170079	0.6953		1.5	23954	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.302	3.366	-0.064	1.000	5984463	15.5		8334	597179	
499.00 > 99.00	3.302	3.366	-0.064	1.000	1226506		4.88(0.90-1.10)		143763	
20 Perfluorononanoic acid										
463.00 > 419.00	3.302	3.373	-0.071	1.000	32149	0.2524		126	572	
D 19 13C5 PFNA										
468.00 > 423.00	3.302	3.374	-0.072		64245	0.3607		0.7	11804	
D 21 13C8 FOSA										
506.00 > 78.00	3.619	3.651	-0.032		24836	0.0600		0.1	2278	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.627	3.656	-0.029	1.000	10245	0.2205		110	466	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.644	3.674	-0.030	1.000	5116	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.644	3.676	-0.032		1435	0.0107		0.0		
24 Perfluorodecanoic acid										
513.00 > 469.00	3.779	3.738	0.041	1.000	1252	0.0108		5.4	25.1	
D 23 13C2 PFDA										
515.00 > 470.00	3.662	3.738	-0.076		59535	0.3585		0.7	1803	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.834	3.839	-0.005		3581	0.0448		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.807	3.847	-0.040	0.993	2985	NR		0.0		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.992	4.009	-0.017		8611	0.0967		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	4.002	4.016	-0.014	1.002	4704	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.973	4.049	-0.076	1.000	36446	0.1633		84.7		
D 27 13C2 PFUnA										
565.00 > 520.00	3.992	4.070	-0.078		47380	0.3767		0.8	9900	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.992	4.071	-0.079	1.000	15334	0.1527		76.4	442	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.083	4.105	-0.022		891	0.008379		0.0		
54 MeFOSA										
512.00 > 169.00	4.097	4.110	-0.013	1.000	1353	NR		0.0		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.285	4.290	-0.005		1395	0.0137		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.294	4.299	-0.005	1.000	1372	NR		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.294	4.370	-0.076		51241	0.4383		0.9	1896	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.294	4.370	-0.076	1.000	14789	0.1525		76.2	318	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.554	4.636	-0.082	1.000	17135	0.1607		80.4	306	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.803	4.882	-0.079		127231	0.5260		1.1	16986	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.803	4.884	-0.081	1.000	41461	0.2094		105	489	
713.00 > 169.00	4.796	4.884	-0.088	0.998	5913		7.01(0.00-0.00)		2471	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.229	5.320	-0.091		83950	0.6439		1.3	6930	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.337	5.320	0.017	1.000	1588	-0.8075		-403.8	35.5	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.788	5.720	0.068	1.000	268	0.003326		1.7	9.9	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 02-Dec-2016 14:56:31 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_002.d

Injection Date: 02-Dec-2016 13:06:59 Instrument ID: A8_N

Lims ID: 320-23542-A-2-B MS

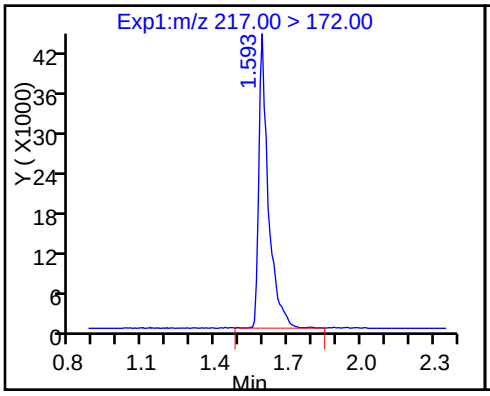
Client ID: DPT-16-05-GW-17-21-MS

Operator ID: A8-PC\A8 ALS Bottle#: 2 Worklist Smp#: 25

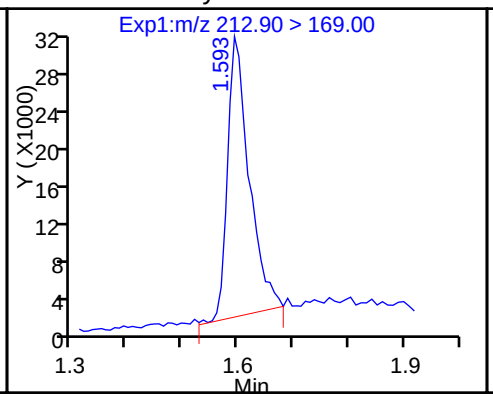
Injection Vol: 2.0 ul Dil. Factor: 100.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

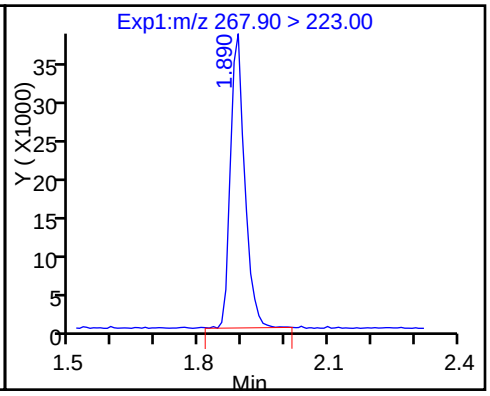
D 2 13C4 PFBA



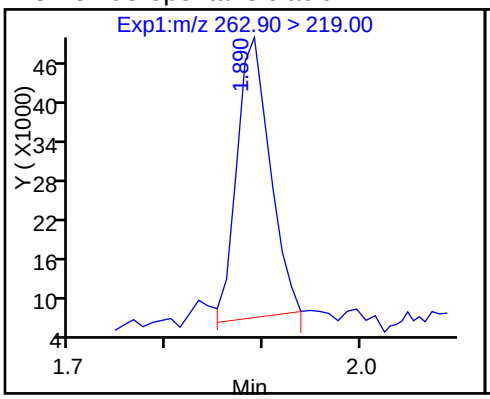
1 Perfluorobutyric acid



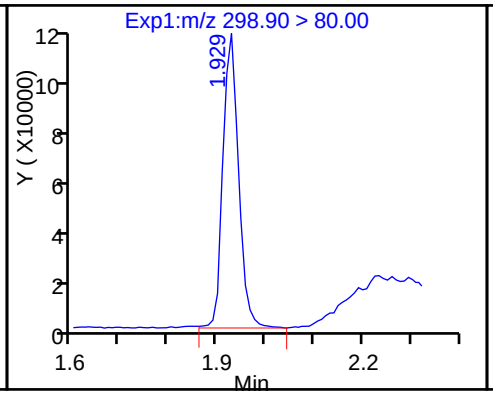
D 4 13C5-PFPeA



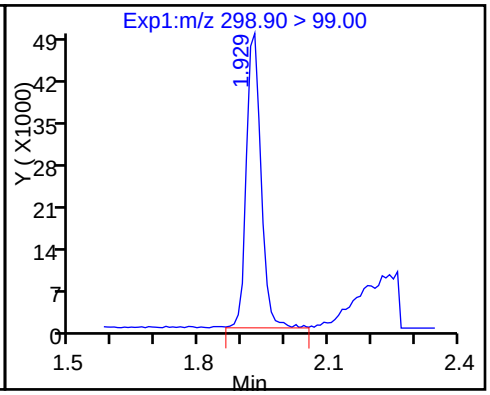
3 Perfluoropentanoic acid



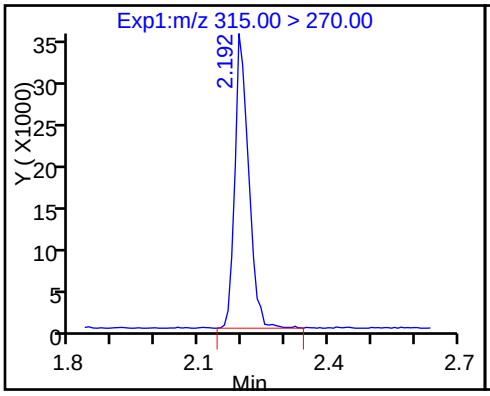
5 Perfluorobutanesulfonic acid



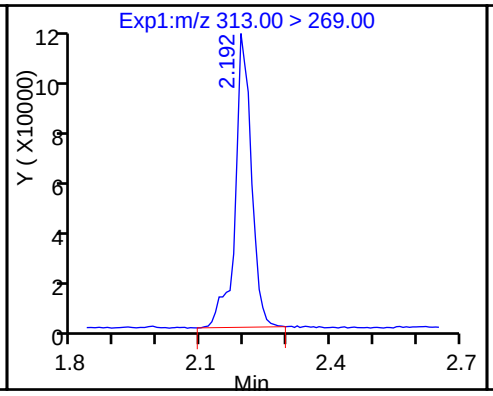
5 Perfluorobutanesulfonic acid



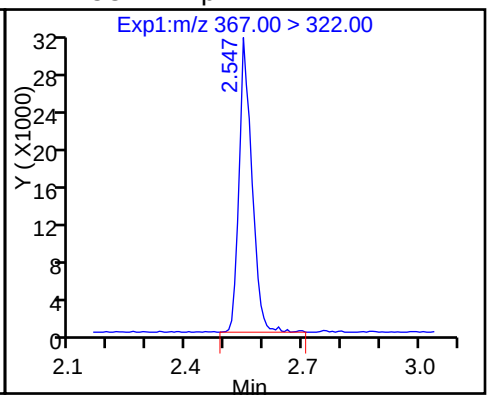
D 6 13C2 PFHxA



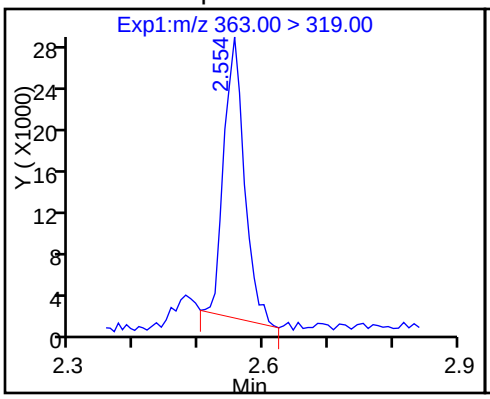
7 Perfluorohexanoic acid



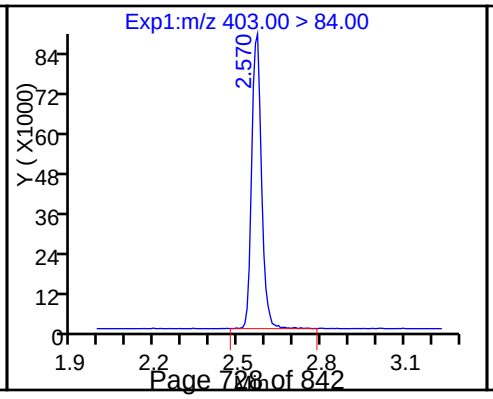
D 11 13C4-PFHpA



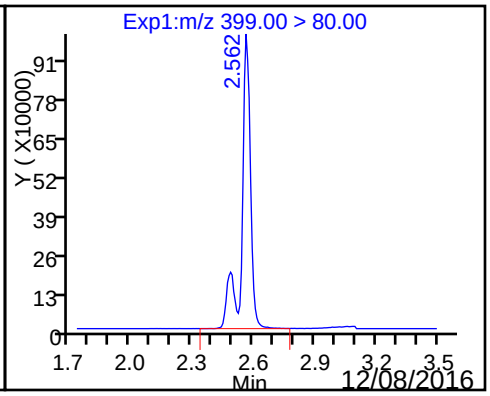
12 Perfluoroheptanoic acid



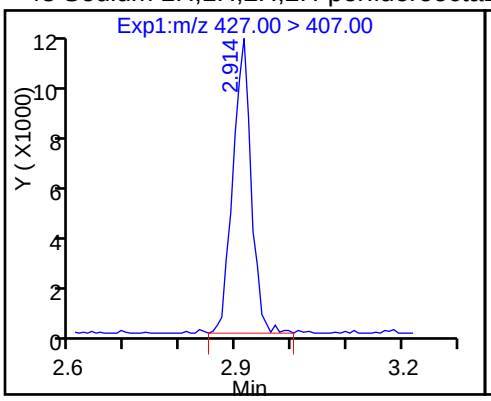
D 10 18O2 PFHxS



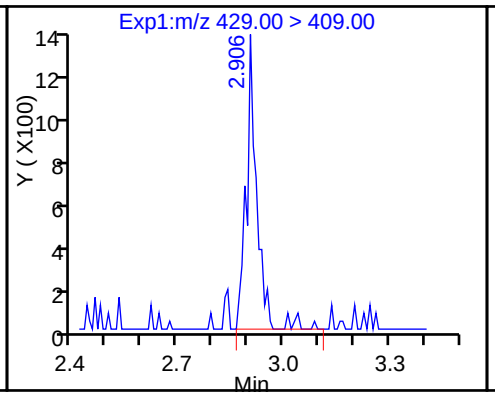
9 Perfluorohexanesulfonic acid



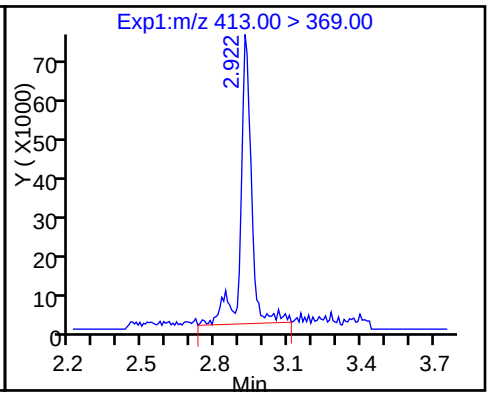
48 Sodium 1H,1H,2H,2H-perfluorooctane



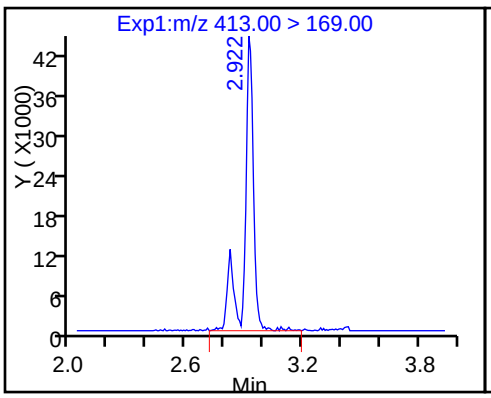
D 47 M2-6:2FTS



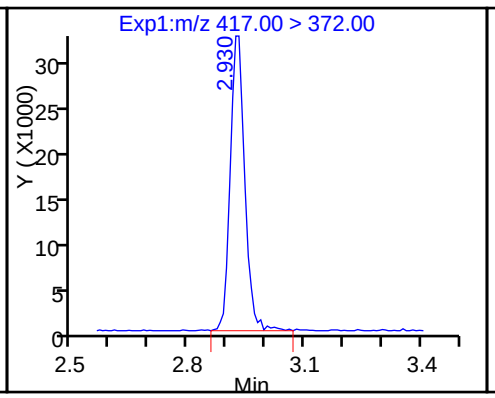
15 Perfluorooctanoic acid



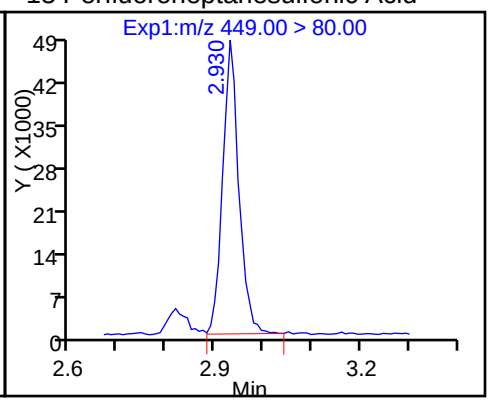
15 Perfluorooctanoic acid



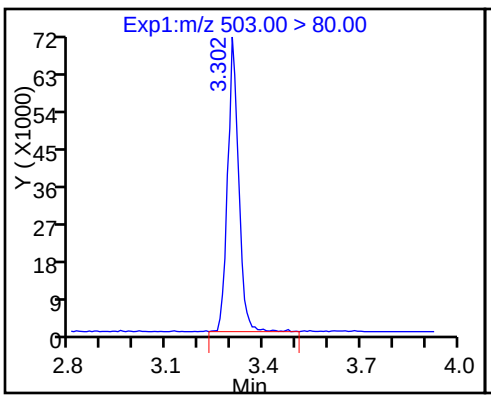
D 14 13C4 PFOA



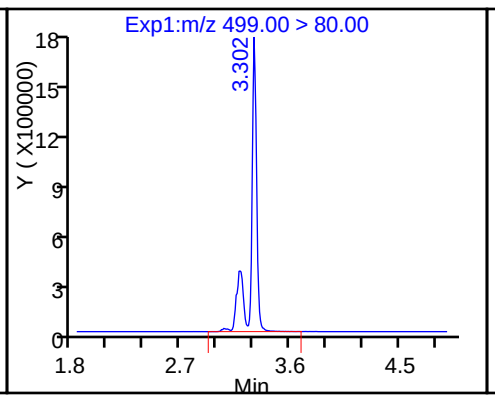
13 Perfluoroheptanesulfonic Acid



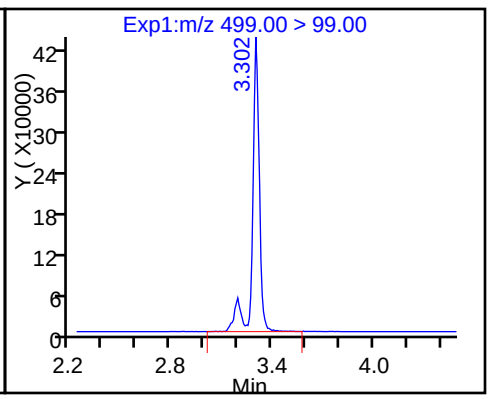
D 17 13C4 PFOS



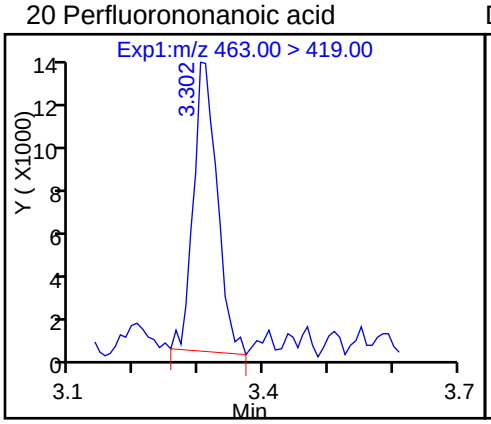
18 Perfluorooctane sulfonic acid



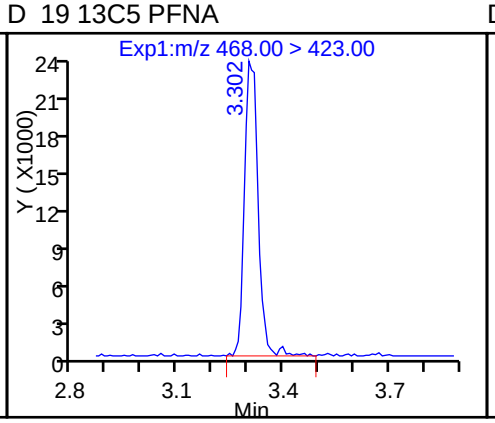
18 Perfluorooctane sulfonic acid



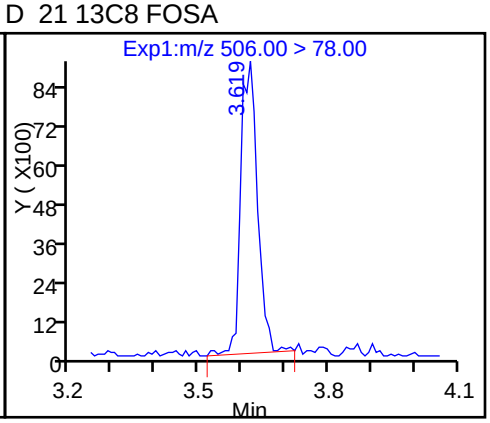
20 Perfluorononanoic acid



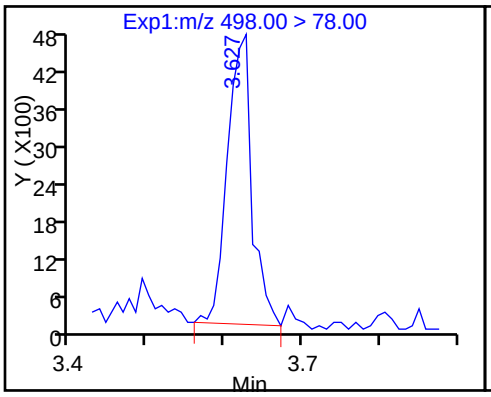
D 19 13C5 PFNA



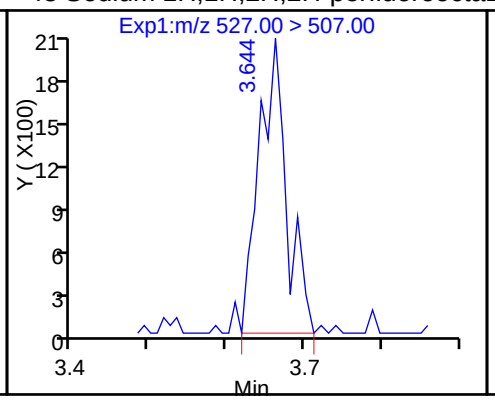
D 21 13C8 FOSA



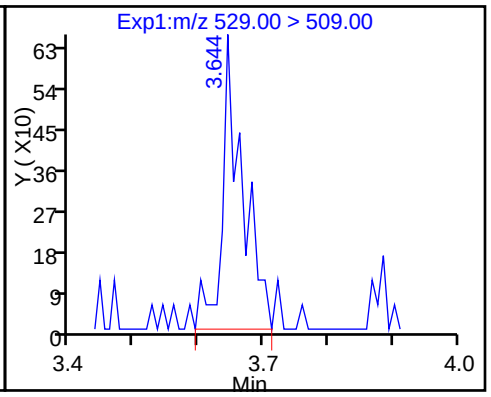
22 Perfluorooctane Sulfonamide



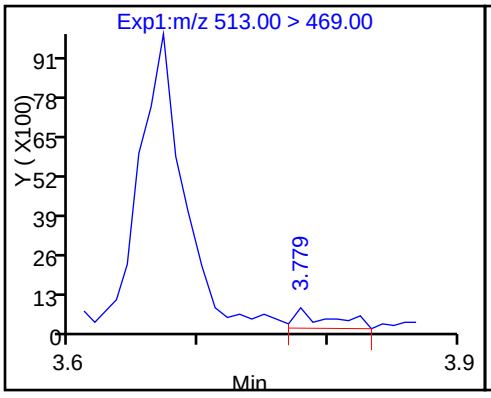
43 Sodium 1H,1H,2H,2H-perfluorooctane



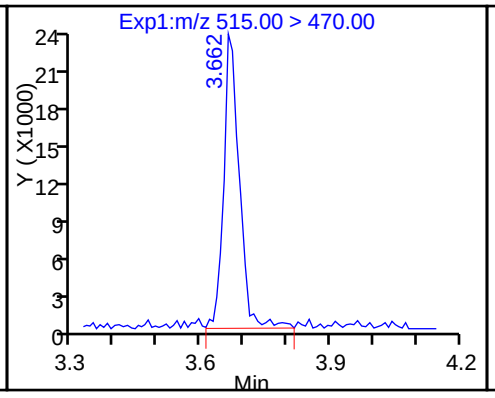
D 42 M2-8:2FTS



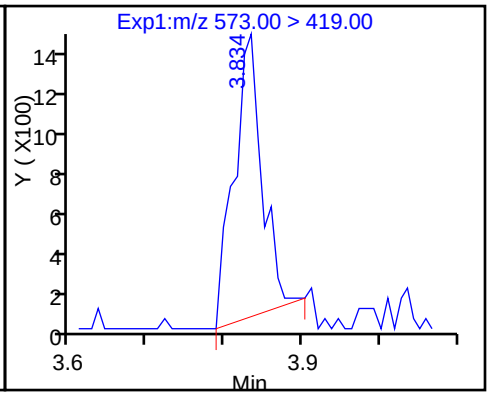
24 Perfluorodecanoic acid



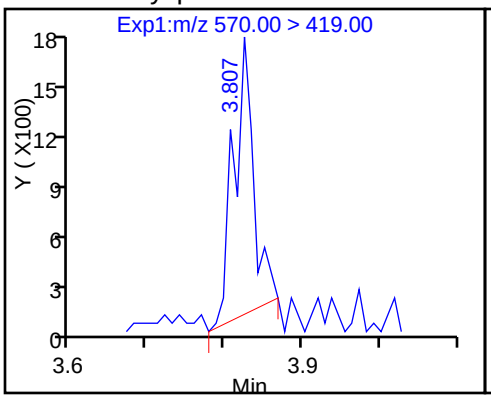
D 23 13C2 PFDA



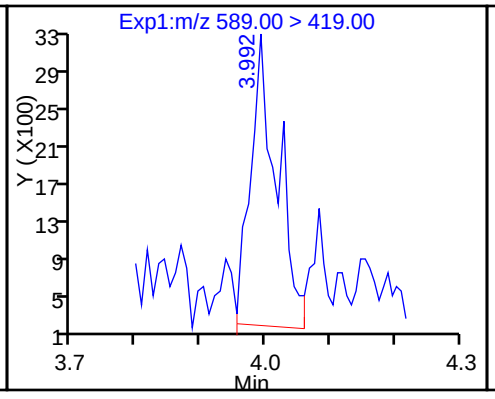
D 45 d3-NMeFOSAA



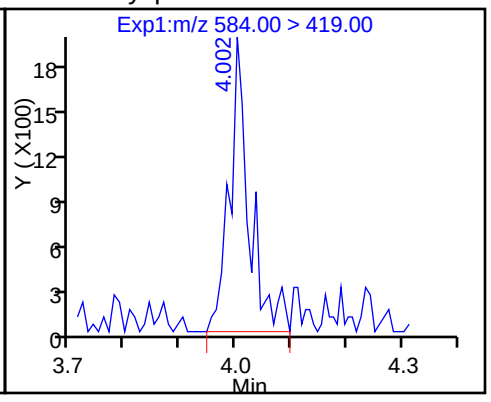
44 N-methyl perfluorooctane sulfonami



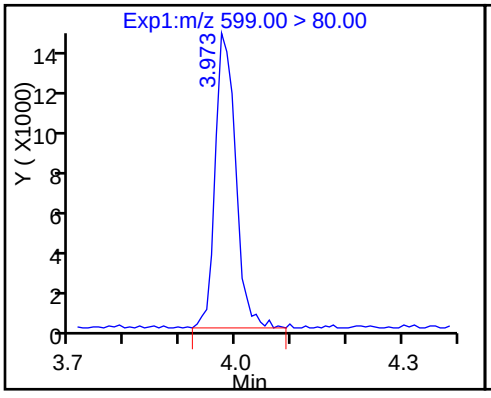
D 46 d5-NEtFOSAA



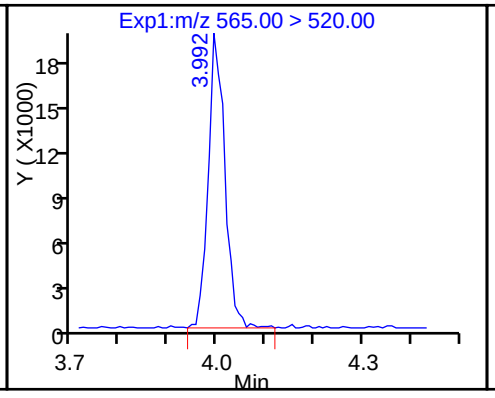
49 N-ethyl perfluorooctane sulfonamid



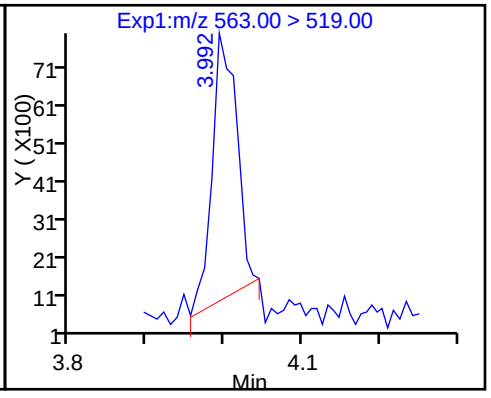
26 Perfluorodecane Sulfonic acid



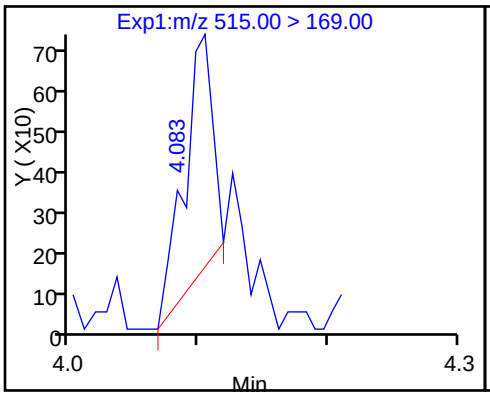
D 27 13C2 PFUnA



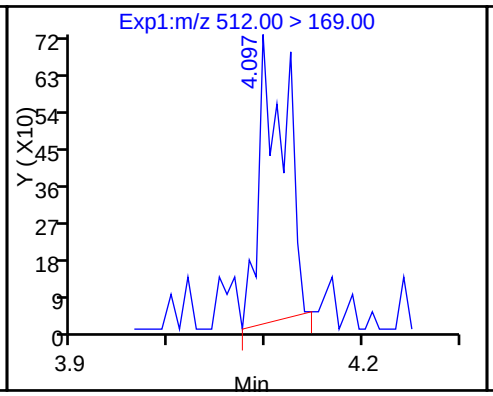
28 Perfluoroundecanoic acid



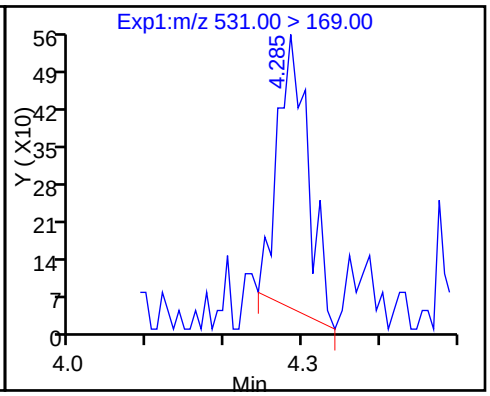
D 52 d-N-MeFOSA-M



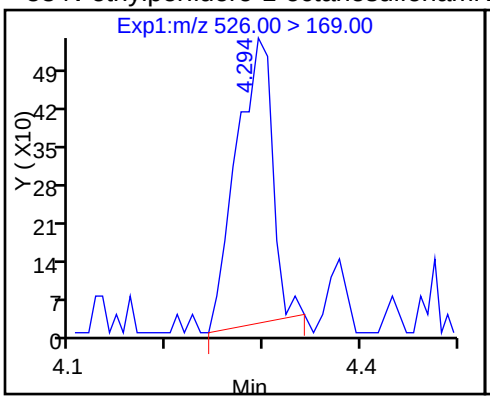
54 MeFOSA



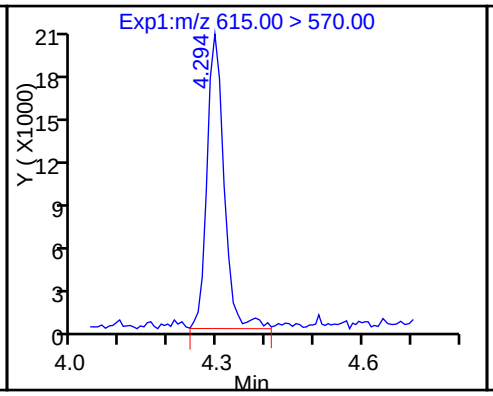
D 51 d-N-EtFOSA-M



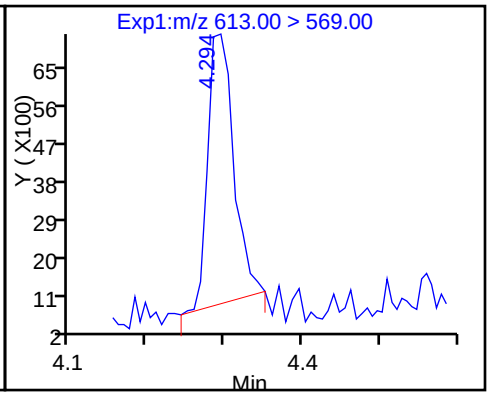
53 N-ethylperfluoro-1-octanesulfonami



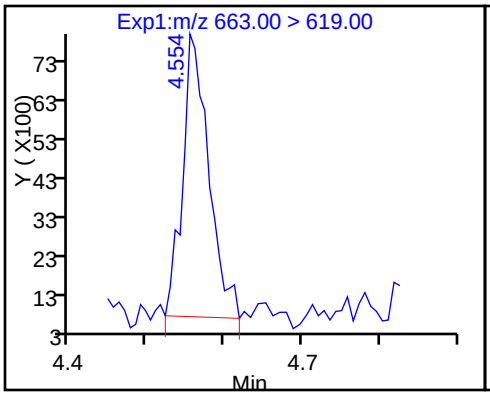
D 30 13C2 PFDoA



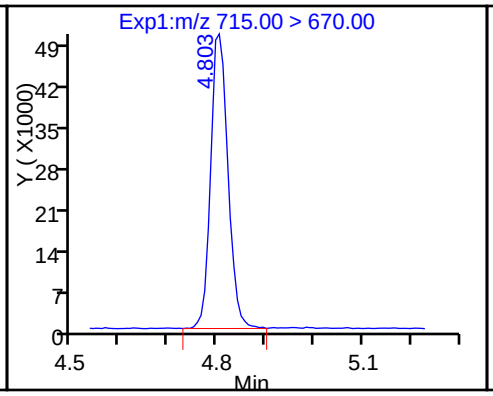
29 Perfluorododecanoic acid



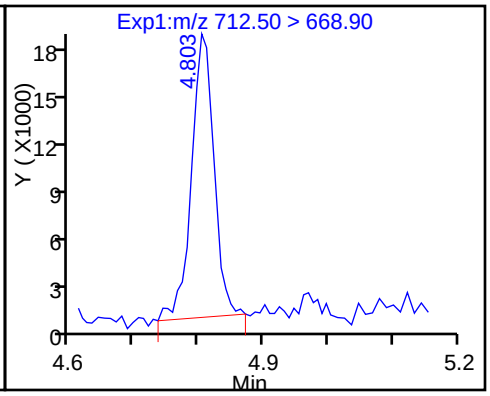
31 Perfluorotridecanoic acid



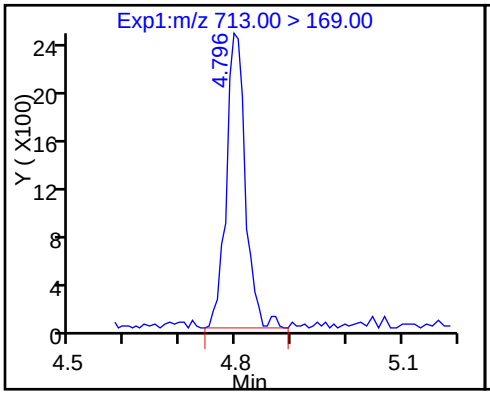
D 32 13C2-PFTeDA



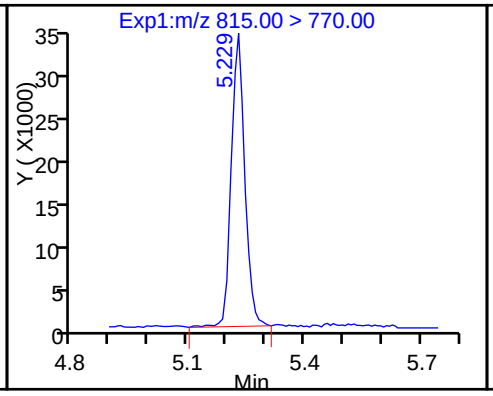
33 Perfluorotetradecanoic acid



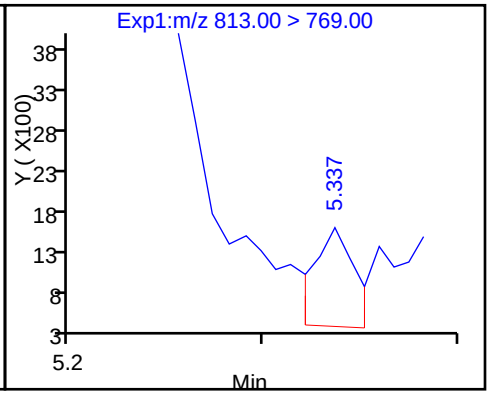
33 Perfluorotetradecanoic acid



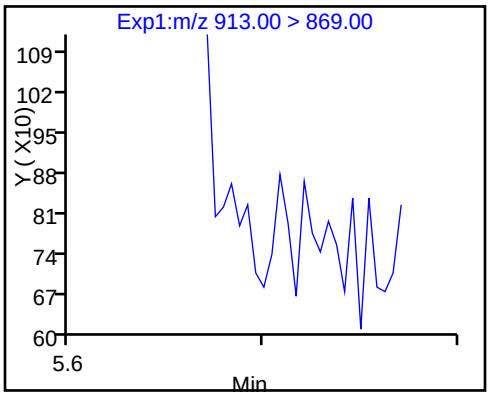
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-34-SO-14-15 MS Lab Sample ID: 320-23542-3 MS

Matrix: Solid Lab File ID: 20NOV2016D_008.d

Analysis Method: 537 (Modified) Date Collected: 11/14/2016 13:25

Extraction Method: SHAKE Date Extracted: 11/17/2016 12:49

Sample wt/vol: 4.99(g) Date Analyzed: 11/20/2016 21:33

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

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

% Moisture: 20.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 138814 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	12.2	M J	0.63	0.38	0.13
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*67.4*	*E 4*	*0.63*	0.38	*0.16*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	6.08		0.50	0.38	0.13

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	86		25-150
STL00991	13C4 PFOS	54		25-150
STL00994	18O2 PFHxS	72		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_008.d
Lims ID: 320-23542-A-3-B MS
Client ID:
Sample Type: MS
Inject. Date: 20-Nov-2016 21:33:19 ALS Bottle#: 17 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23542-a-3-b ms
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 15:37:27 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 15:37:39

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.493	1.493	0.0	1.000	3759565	26.0		130	36100	
D 2 13C4 PFBA										
217.00 > 172.00	1.493	1.493	0.0		8326360	42.1		84.3	608652	
D 4 13C5-PFPeA										
267.90 > 223.00	1.752	1.752	0.0		7912439	49.5		99.0	1673725	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.762	1.762	0.0	1.000	3634269	22.1		111	36620	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.791	1.791	0.0	1.000	5343808	24.1		136		
298.90 > 99.00	1.800	1.791	0.009	1.005	2181554		2.45(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.040	2.040	0.0	1.000	3291377	24.7		123	84133	
D 6 13C2 PFHxA										
315.00 > 270.00	2.040	2.040	0.0		7053531	48.6		97.2	600686	
D 11 13C4-PFHpA										
367.00 > 322.00	2.372	2.366	0.006		6423393	48.9		97.8	572074	
12 Perfluoroheptanoic acid										M
363.00 > 319.00	2.372	2.372	0.0	1.000	3129934	23.8		119	21369	M
D 10 18O2 PFHxS										
403.00 > 84.00	2.387	2.382	0.005		6910411	34.2		72.3	502978	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.387	2.387	0.0	1.000	4065346	26.3		144		
D 47 M2-6:2FTS										
429.00 > 409.00	2.705	2.704	0.001		4490	0.0856		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.705	2.713	-0.008	1.000	55813	NR		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.733	2.733	0.0	1.000	5938361	48.4		242	113956	M
413.00 > 169.00	2.733	2.733	0.0	1.000	3957716		1.50(0.90-1.10)		150384	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.733	2.733	0.0	1.000	2790420	29.0		152		
D 14 13C4 PFOA										
417.00 > 372.00	2.733	2.733	0.0		5846405	42.8		85.7	311711	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.104	3.096	0.008	1.000	24542657	267.3		1440	1236062	E
499.00 > 99.00	3.104	3.096	0.008	1.000	5748026		4.27(0.90-1.10)		540583	
20 Perfluorononanoic acid										
463.00 > 419.00	3.104	3.096	0.008	1.000	1954556	24.6		123	17051	
D 19 13C5 PFNA										
468.00 > 423.00	3.104	3.096	0.008		4051816	37.0		74.1	221741	
D 17 13C4 PFOS										
503.00 > 80.00	3.104	3.096	0.008		4035969	25.9		54.2	202429	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.458	3.456	0.002	0.996	12583	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.473	3.456	0.017		2008	0.0368		0.0		
D 21 13C8 FOSA										
506.00 > 78.00	3.458	3.458	0.0		5839340	23.3		46.6	573393	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.458	3.458	0.0	1.000	8522339	81.0		405	1278	
D 23 13C2 PFDA										
515.00 > 470.00	3.466	3.465	0.001		3364516	33.6		67.1	162747	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.466	3.465	0.001	1.000	1557168	23.3		117	19248	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.608	3.623	-0.015		1263	0.0290		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.633	3.632	0.001	1.007	1865	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.782	3.782	0.0	1.000	720213	14.0		72.8		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.773	3.789	-0.016		1529	0.0310		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.800	3.800	0.0		2229138	28.4		56.8	180520	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.791	3.800	-0.009	1.000	1017122	22.2		111	17158	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.974	3.963	0.011		1657	0.0273		0.0		
54 MeFOSA										
512.00 > 169.00	3.947	3.972	-0.025	1.000	1791	NR		0.0		
29 Perfluorododecanoic acid										
613.00 > 569.00	4.090	4.091	-0.001	1.000	698433	23.0		115	15715	
D 30 13C2 PFDoA										
615.00 > 570.00	4.090	4.091	-0.001		1587800	20.5		41.1	100912	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.140	4.153	-0.013		823	0.0150		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.314	4.161	0.153	1.000	505	NR		0.0		
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.352	4.352	0.0	1.000	696972	23.2		116	29978	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.593	4.586	0.007	1.000	1054417	18.7		93.3	27335	
713.00 > 169.00	4.586	4.586	0.0	0.999	188517		5.59(0.00-0.00)		38865	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.593	4.586	0.007		2979457	17.5		34.9	245120	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	4.997	4.990	0.007	1.000	765005	21.9		109	18411	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.997	4.990	0.007		1856299	19.7		39.4	186623	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.344	5.344	0.0	1.000	428279	12.5		62.7	6813	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 23-Nov-2016 15:37:39 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_008.d

Injection Date: 20-Nov-2016 21:33:19 Instrument ID: A8_N

Lims ID: 320-23542-A-3-B MS

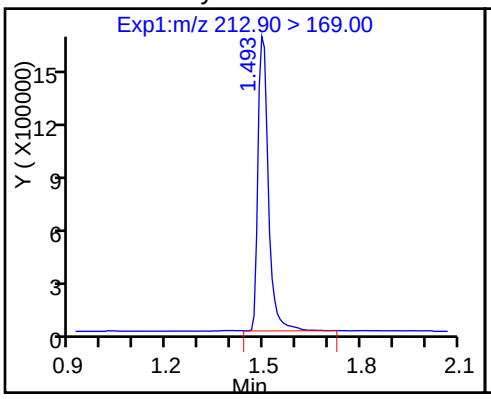
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 17 Worklist Smp#: 8

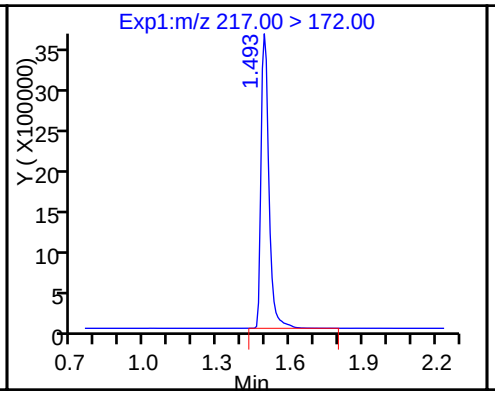
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

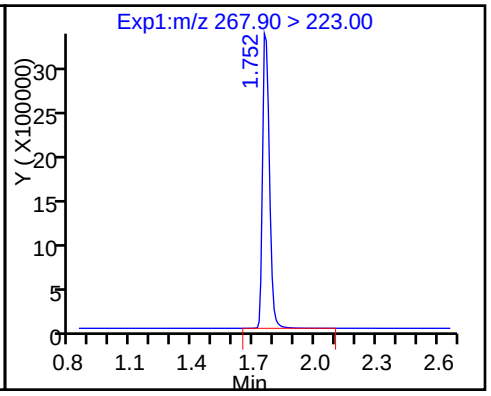
1 Perfluorobutyric acid



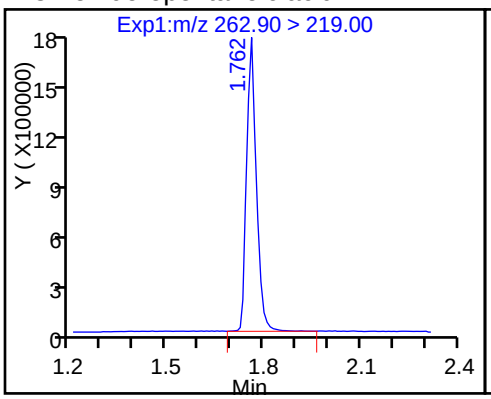
D 2 13C4 PFBA



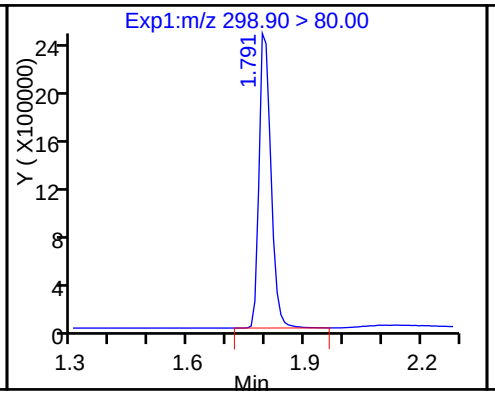
D 4 13C5-PFPeA



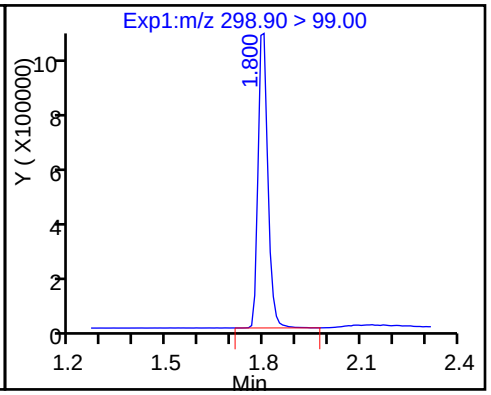
3 Perfluoropentanoic acid



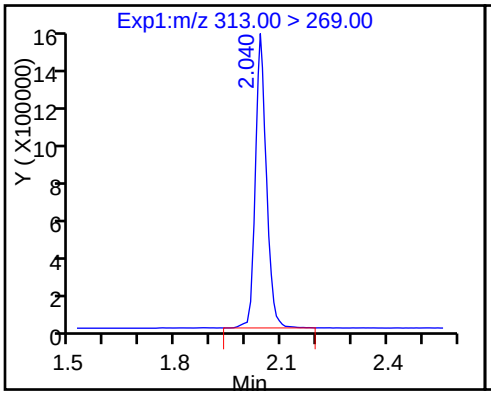
5 Perfluorobutanesulfonic acid



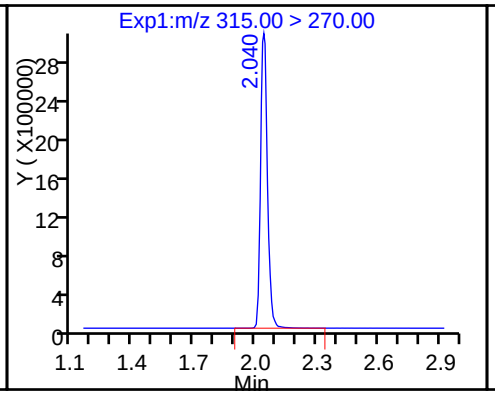
5 Perfluorobutanesulfonic acid



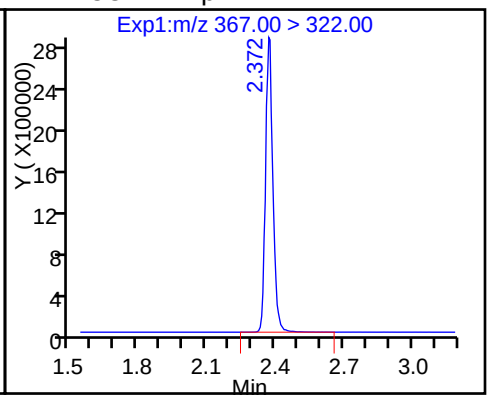
7 Perfluorohexanoic acid



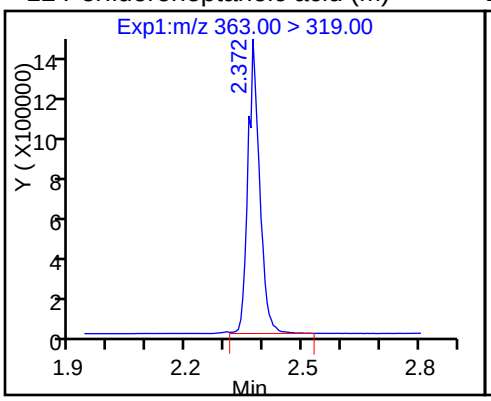
D 6 13C2 PFHxA



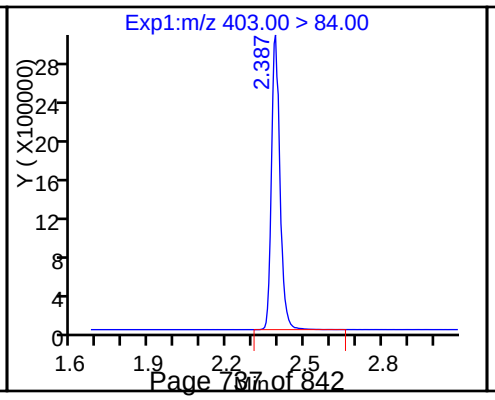
D 11 13C4-PFHpA



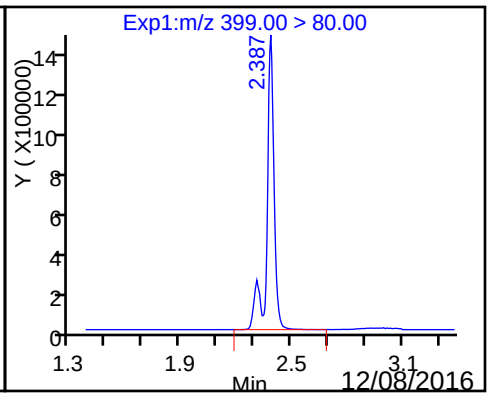
12 Perfluoroheptanoic acid (M)



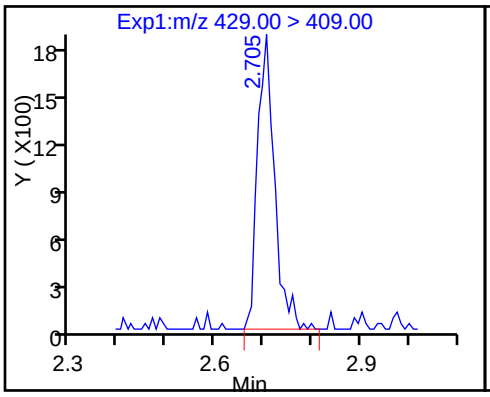
D 10 18O2 PFHxS



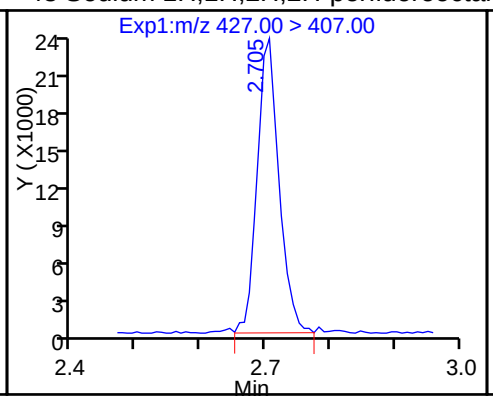
9 Perfluorohexanesulfonic acid



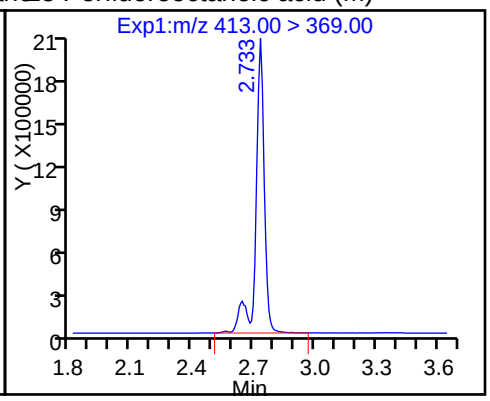
D 47 M2-6:2FTS



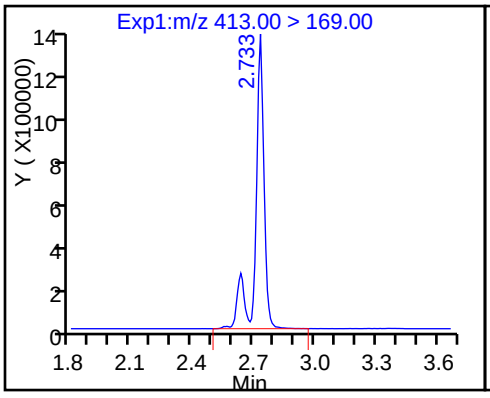
48 Sodium 1H,1H,2H,2H-perfluorooctane



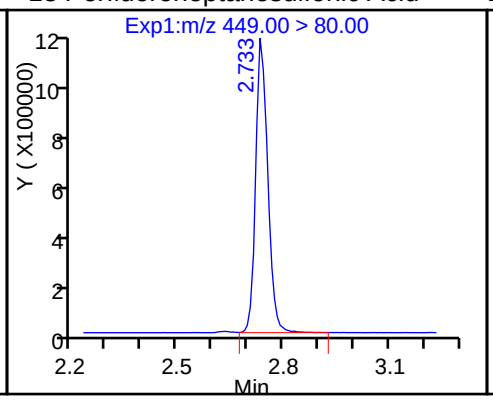
15 Perfluorooctanoic acid (M)



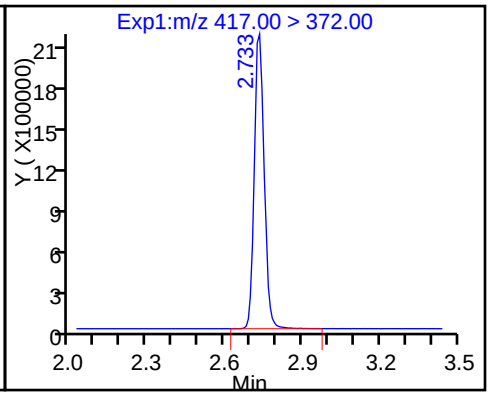
15 Perfluorooctanoic acid



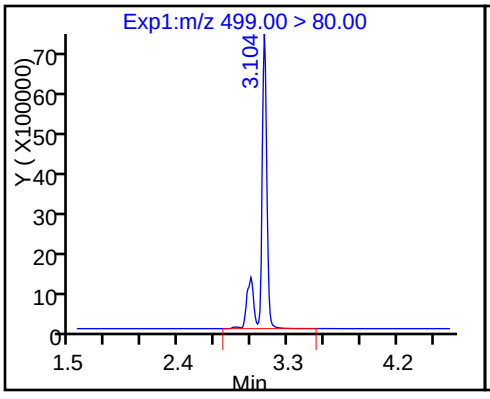
13 Perfluoroheptanesulfonic Acid



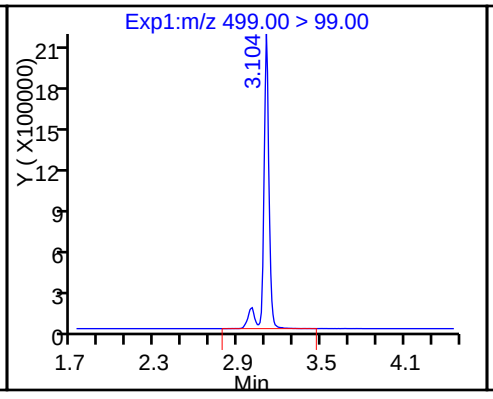
D 14 13C4 PFOA



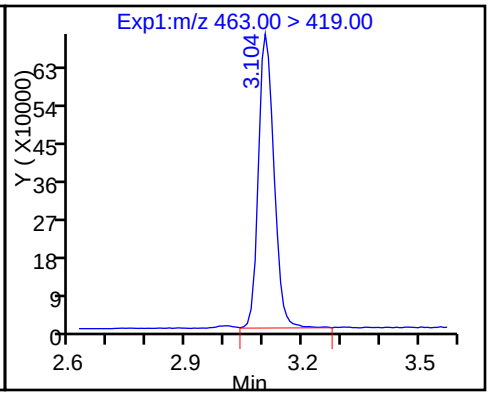
18 Perfluorooctane sulfonic acid



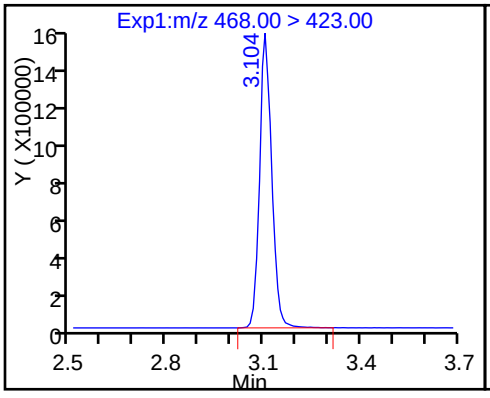
18 Perfluorooctane sulfonic acid



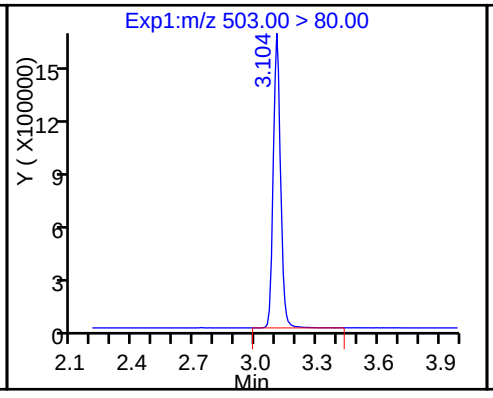
20 Perfluorononanoic acid



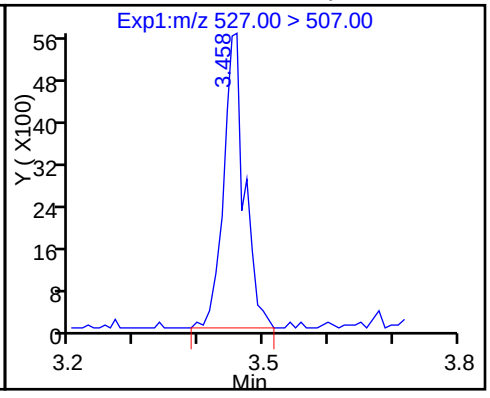
D 19 13C5 PFNA



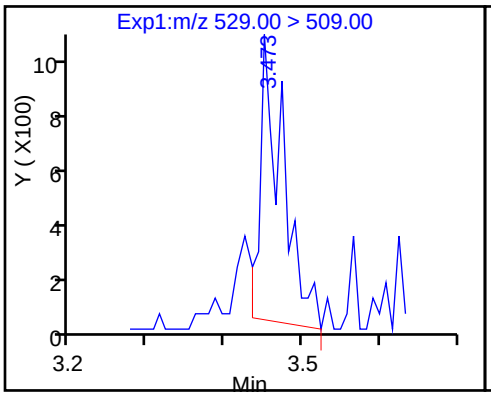
D 17 13C4 PFOS



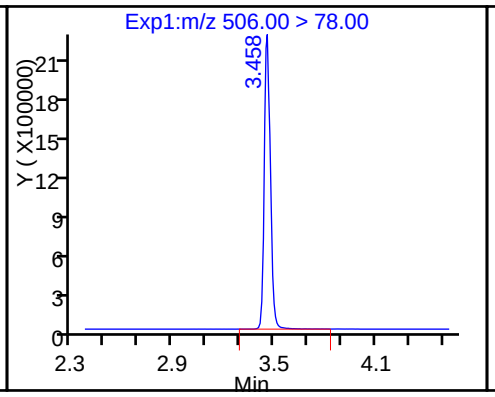
43 Sodium 1H,1H,2H,2H-perfluorooctane



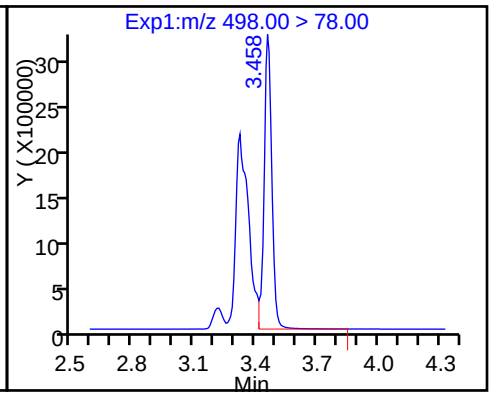
D 42 M2-8:2FTS



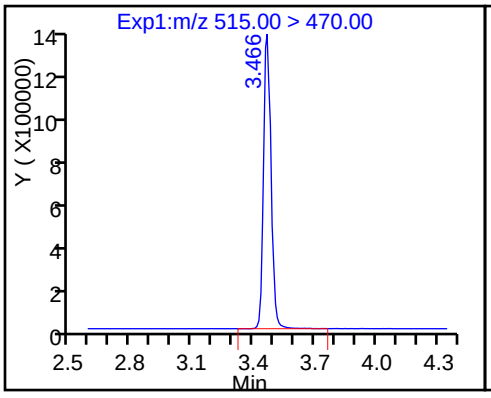
D 21 13C8 FOSA



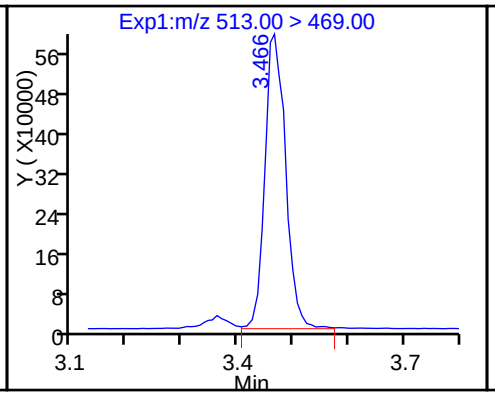
22 Perfluorooctane Sulfonamide



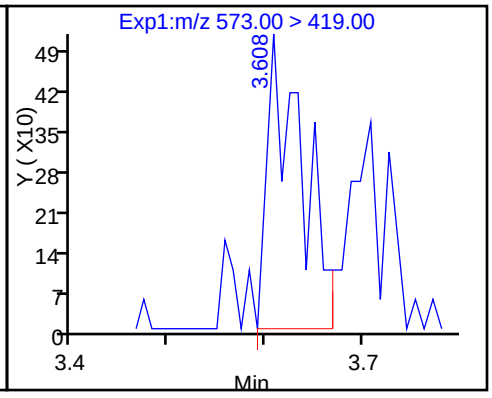
D 23 13C2 PFDA



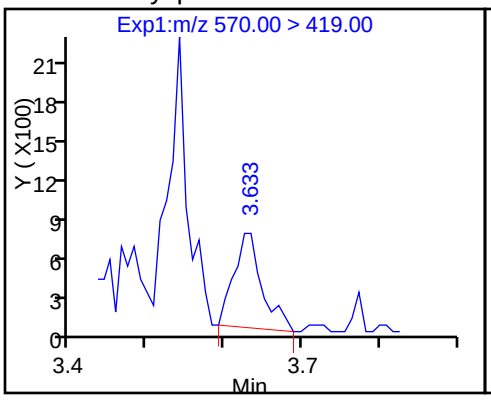
24 Perfluorodecanoic acid



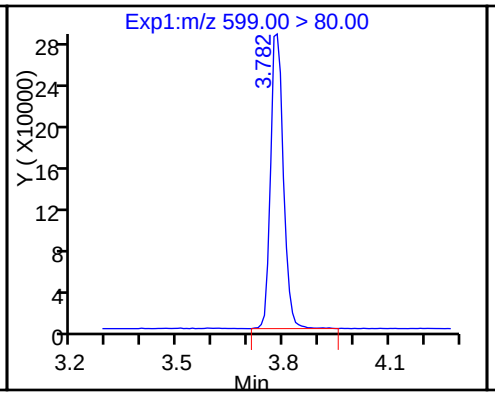
D 45 d3-NMeFOSAA



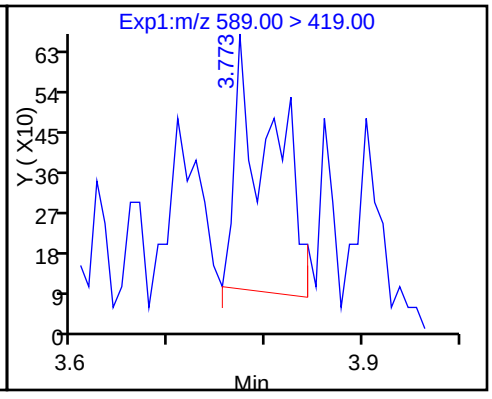
44 N-methyl perfluorooctane sulfonami



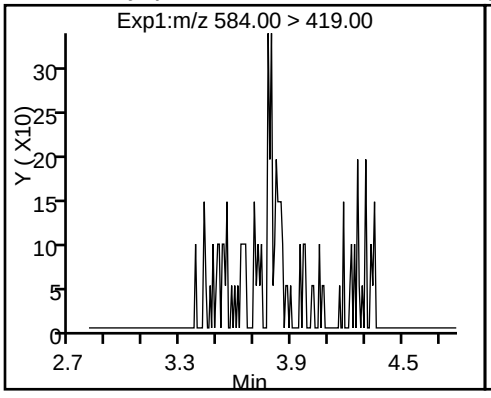
26 Perfluorodecane Sulfonic acid



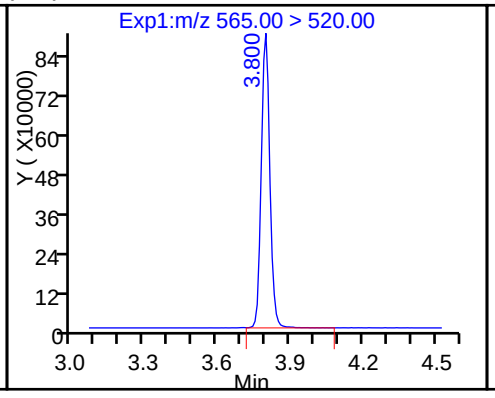
D 46 d5-NEtFOSAA



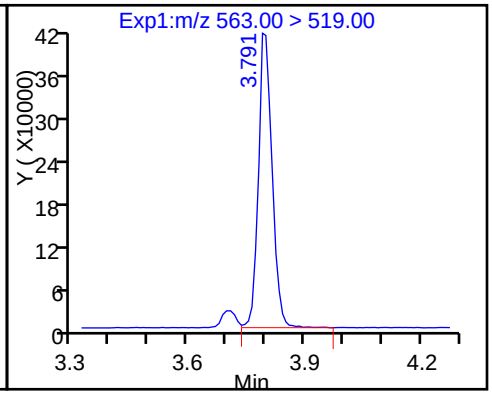
49 N-ethyl perfluorooctane sulfonamid



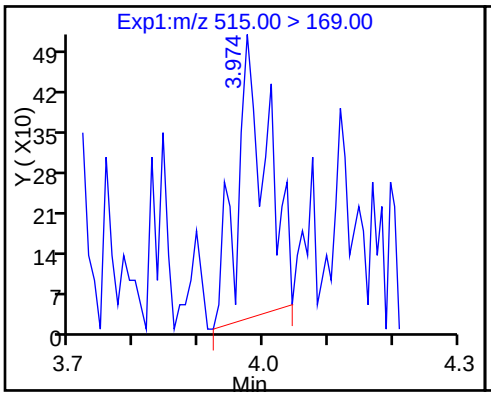
D 27 13C2 PFUnA



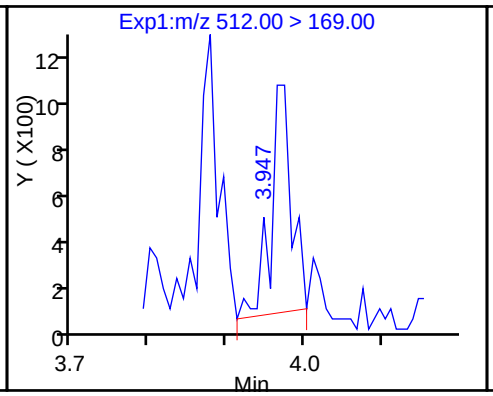
28 Perfluoroundecanoic acid



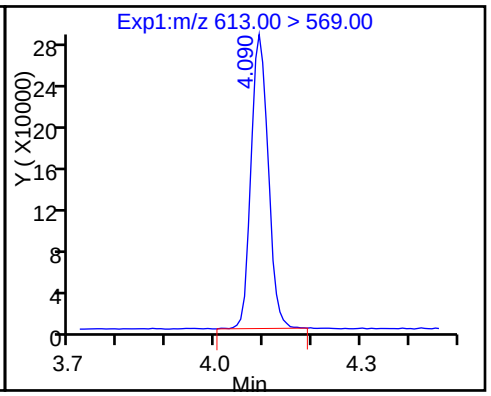
D 52 d-N-MeFOSA-M



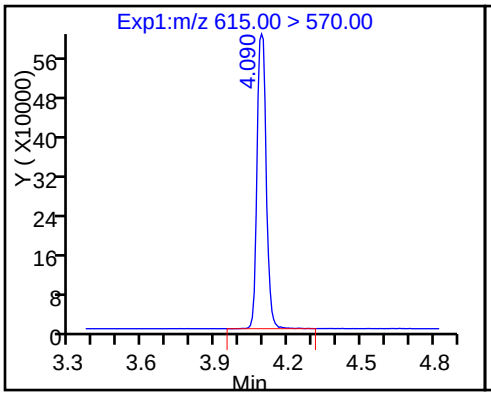
54 MeFOSA



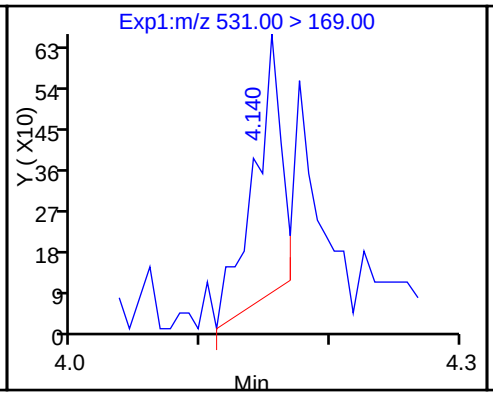
29 Perfluorododecanoic acid



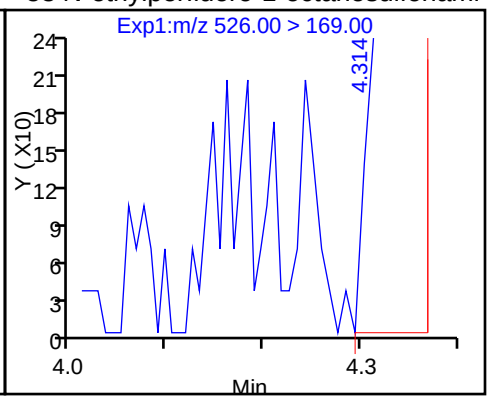
D 30 13C2 PFDoA



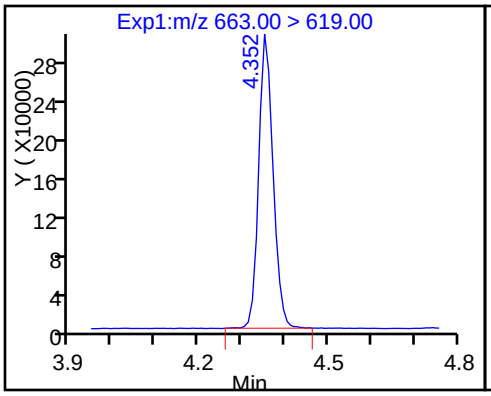
D 51 d-N-EtFOSA-M



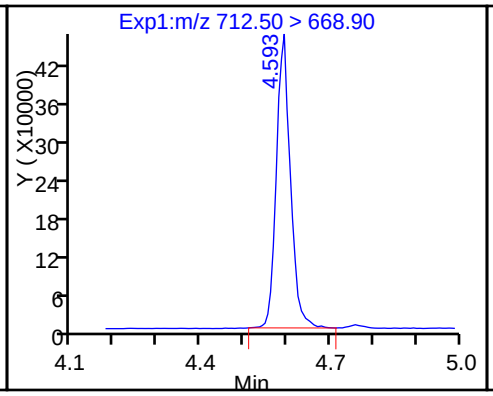
53 N-ethylperfluoro-1-octanesulfonami



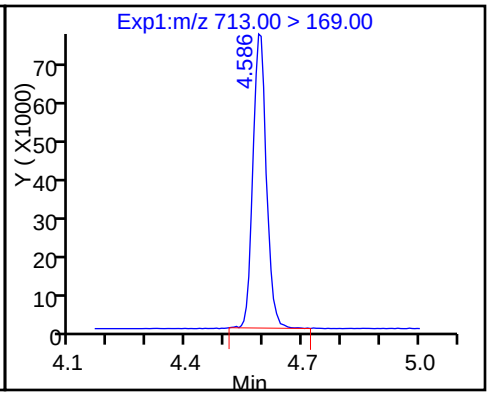
31 Perfluorotridecanoic acid



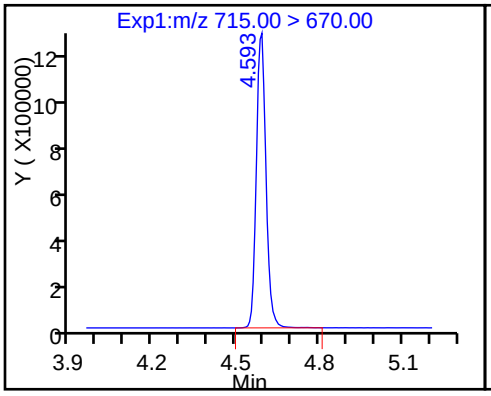
33 Perfluorotetradecanoic acid



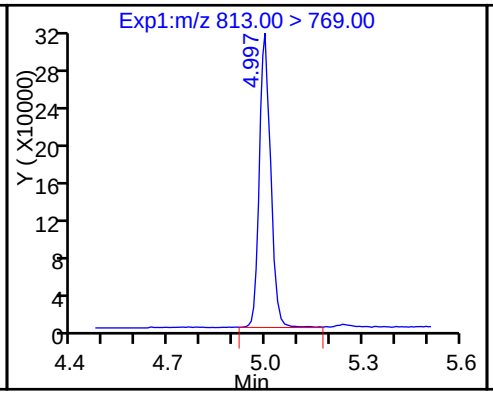
33 Perfluorotetradecanoic acid



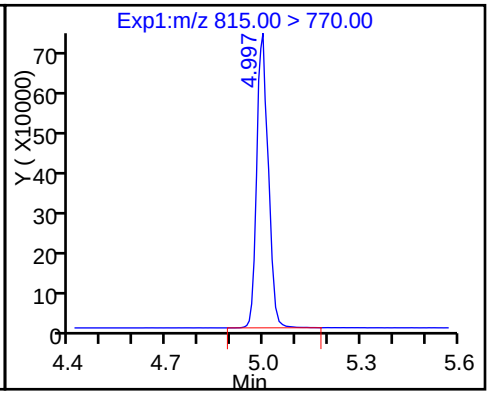
D 32 13C2-PFTeDA



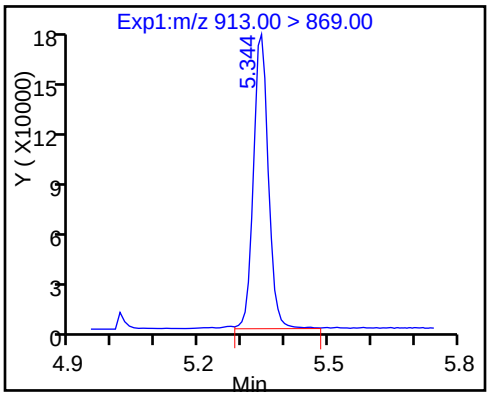
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

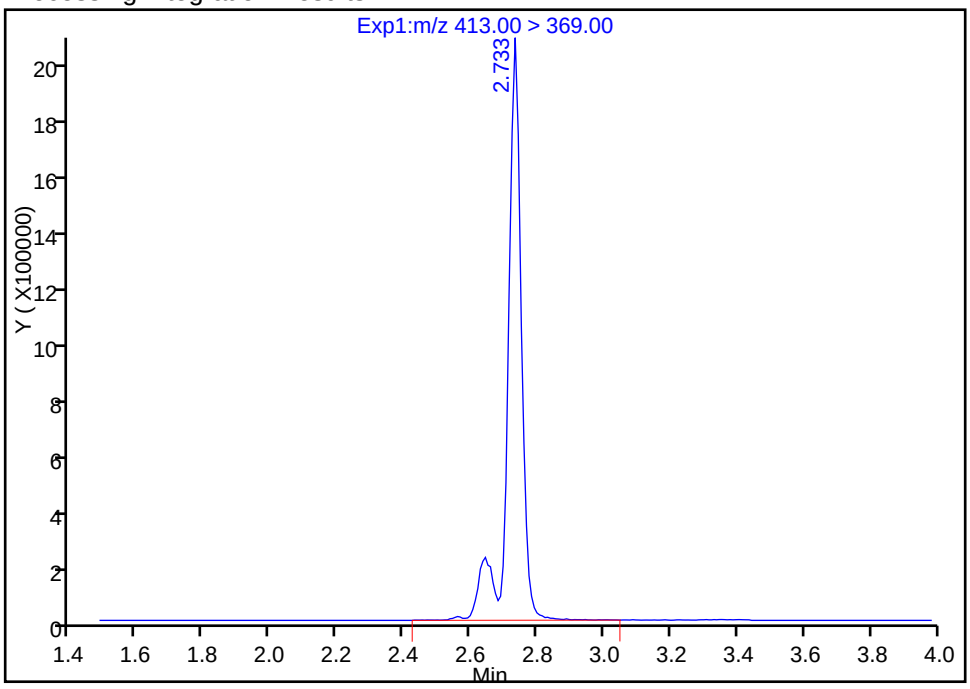
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_008.d
Injection Date: 20-Nov-2016 21:33:19 Instrument ID: A8_N
Lims ID: 320-23542-A-3-B MS
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 17 Worklist Smp#: 8
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

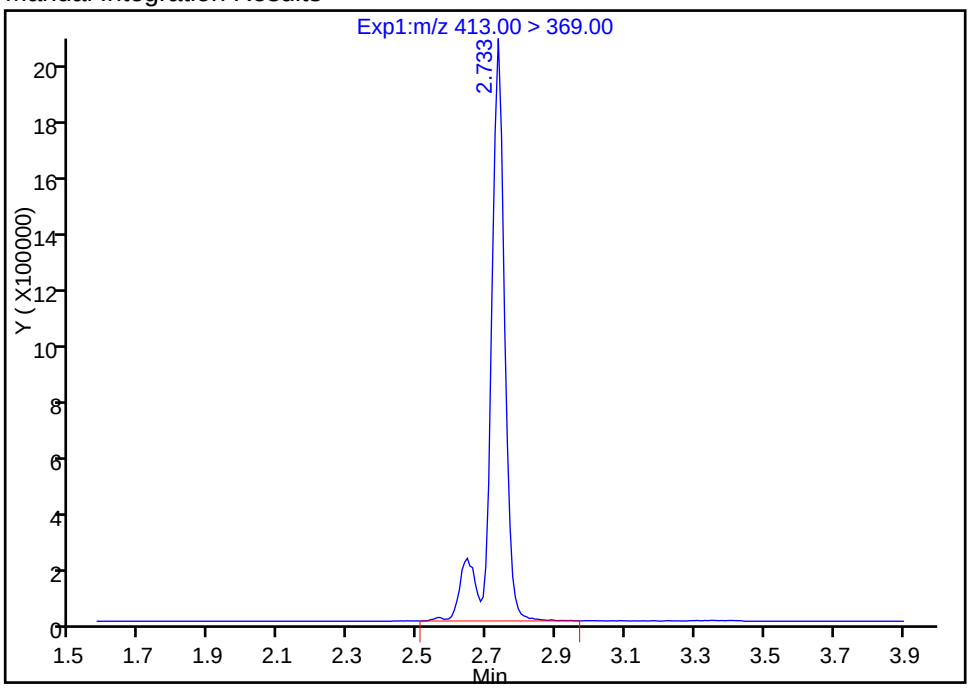
Processing Integration Results

RT: 2.73
Area: 5961012
Amount: 48.547992
Amount Units: ng/ml



Manual Integration Results

RT: 2.73
Area: 5938361
Amount: 48.363516
Amount Units: ng/ml



Reviewer: changnoit, 23-Nov-2016 15:37:27
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-34-SO-14-15 MS DL Lab Sample ID: 320-23542-3 MS DL

Matrix: Solid Lab File ID: 02DEC2016B_007.d

Analysis Method: 537 (Modified) Date Collected: 11/14/2016 13:25

Extraction Method: SHAKE Date Extracted: 11/17/2016 12:49

Sample wt/vol: 4.99(g) Date Analyzed: 12/02/2016 13:44

Con. Extract Vol.: 1.0(mL) Dilution Factor: 10

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

% Moisture: 20.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 140382 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*12.7*	*J D*	*6.3*	3.8	*1.3*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	69.2	4 D	6.3	3.8	1.6
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*4.90*	*J D*	*5.0*	3.8	*1.3*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	110		25-150
STL00991	13C4 PFOS	63		25-150
STL00994	18O2 PFHxS	84		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_007.d
Lims ID: 320-23542-A-3-B MS
Client ID:
Sample Type: MS
Inject. Date: 02-Dec-2016 13:44:33 ALS Bottle#: 7 Worklist Smp#: 30
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23542-A-3-B MS 10X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 15:02:58 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 15:03:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.582	1.615	-0.033		1416278	4.16		8.3	228018	
1 Perfluorobutyric acid										
212.90 > 169.00	1.582	1.617	-0.035	1.000	619310	2.47		123	5950	
D 4 13C5-PFPeA										
267.90 > 223.00	1.868	1.918	-0.050		1234556	4.57		9.1	247928	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.878	1.920	-0.042	1.000	579987	2.26		113	6102	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.916	1.961	-0.045	1.000	793125	1.94		110		
298.90 > 99.00	1.907	1.961	-0.054	0.995	331116		2.40(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.188	2.239	-0.051		1097415	4.45		8.9	151464	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.179	2.241	-0.062	1.000	493561	2.35		118	15643	
D 11 13C4-PFHpA										
367.00 > 322.00	2.531	2.599	-0.068		1056750	5.02		10.0	203643	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.538	2.600	-0.062	1.000	518090	2.37		119	6714	
D 10 18O2 PFHxS										
403.00 > 84.00	2.546	2.614	-0.068		1196887	3.96		8.4	243810	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.546	2.615	-0.069	1.000	704852	2.63		144		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.880	2.913	-0.033	1.000	20743	NR		0.0		
D 47 M2-6:2FTS										
429.00 > 409.00	2.888	2.915	-0.027		1431	0.0103		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.904	2.984	-0.080	1.000	1242112	5.06		253	20533	
413.00 > 169.00	2.904	2.984	-0.080	1.000	769475		1.61(0.90-1.10)		53048	
D 14 13C4 PFOA										
417.00 > 372.00	2.912	2.984	-0.072		1203412	5.48		11.0	235214	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.912	2.986	-0.074	1.000	473102	2.62		138		
D 17 13C4 PFOS										
503.00 > 80.00	3.278	3.365	-0.087		737476	3.01		6.3	100003	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.286	3.366	-0.080	1.000	4606300	27.5		1479	760557	
499.00 > 99.00	3.278	3.366	-0.088	0.998	1080030		4.26(0.90-1.10)		133247	
20 Perfluorononanoic acid										
463.00 > 419.00	3.286	3.373	-0.087	1.000	359134	2.34		117	5972	
D 19 13C5 PFNA										
468.00 > 423.00	3.286	3.374	-0.088		772870	4.34		8.7	104119	
D 21 13C8 FOSA										
506.00 > 78.00	3.593	3.651	-0.058		1022176	2.47		4.9	81869	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.601	3.656	-0.055	1.000	1479943	7.74		387	1302	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.627	3.674	-0.047	0.995	3016	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.643	3.676	-0.033		739	0.005536		0.0		
24 Perfluorodecanoic acid										
513.00 > 469.00	3.643	3.738	-0.095	1.000	252302	2.33		116	8059	
D 23 13C2 PFDA										
515.00 > 470.00	3.652	3.738	-0.086		558622	3.36		6.7	23773	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.796	3.839	-0.043		759	0.009488		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.786	3.847	-0.061	0.997	344	NR		0.0		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.989	4.009	-0.020		1253	0.0141		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.989	4.016	-0.027	1.000	2456	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.961	4.049	-0.088	1.000	125689	1.30		67.4		
D 27 13C2 PFUnA										
565.00 > 520.00	3.970	4.070	-0.100		341139	2.71		5.4	44370	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.980	4.071	-0.091	1.000	151913	2.10		105	3597	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.058	4.105	-0.047		334	0.003141		0.0		
54 MeFOSA										
512.00 > 169.00	4.109	4.110	-0.001	1.000	515	NR		0.0		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.424	4.290	0.134		243	0.002385		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 30 13C2 PFDoA										
615.00 > 570.00	4.274	4.370	-0.096		240827	2.06		4.1	10580	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.274	4.370	-0.096	1.000	103218	2.26		113	2635	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.534	4.636	-0.102	1.000	94789	1.89		94.6	869	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.779	4.882	-0.103		459742	1.90		3.8	97156	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.779	4.884	-0.105	1.000	199512	2.14		107	1086	
713.00 > 169.00	4.772	4.884	-0.112	0.998	28674		6.96(0.00-0.00)		12359	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.208	5.320	-0.112		202721	1.55		3.1	14761	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.367	5.320	0.047	1.000	5441	-0.7086		-35.4	13.8	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.700	5.720	-0.020	1.000	618	0.0163		0.8	10.3	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 02-Dec-2016 15:03:11 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_007.d

Injection Date: 02-Dec-2016 13:44:33 Instrument ID: A8_N

Lims ID: 320-23542-A-3-B MS

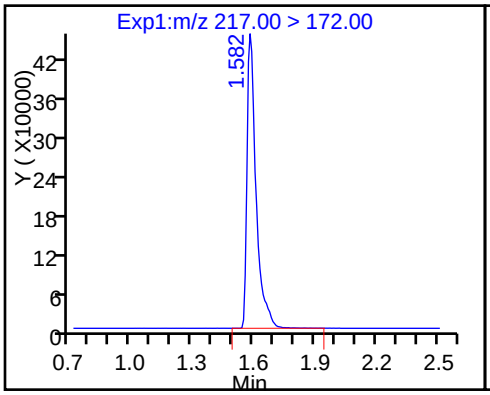
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 7 Worklist Smp#: 30

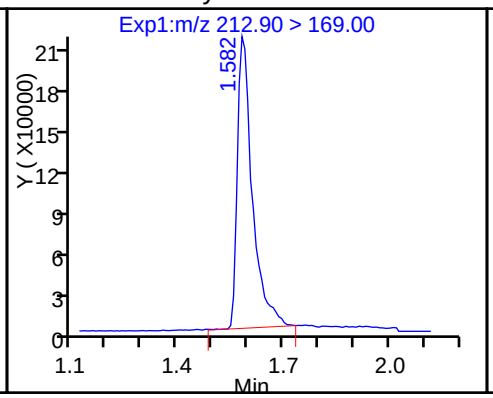
Injection Vol: 2.0 ul Dil. Factor: 10.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

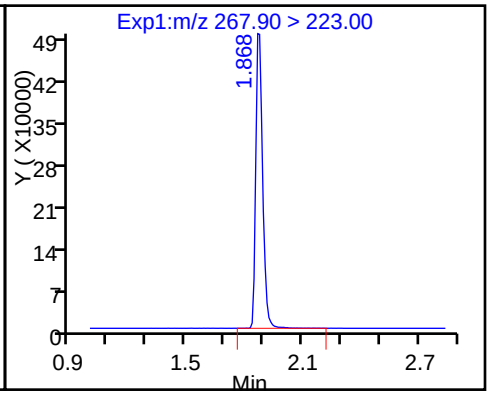
D 2 13C4 PFBA



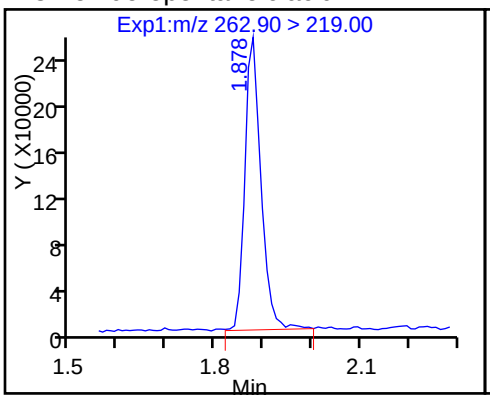
1 Perfluorobutyric acid



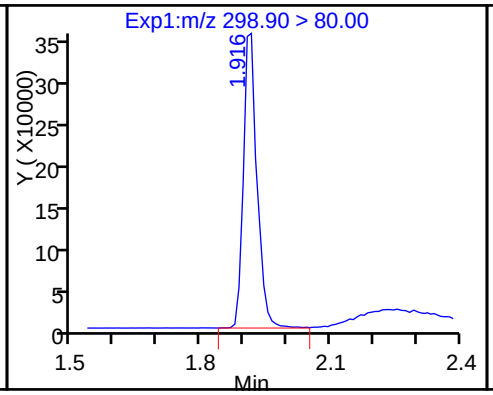
D 4 13C5-PFPeA



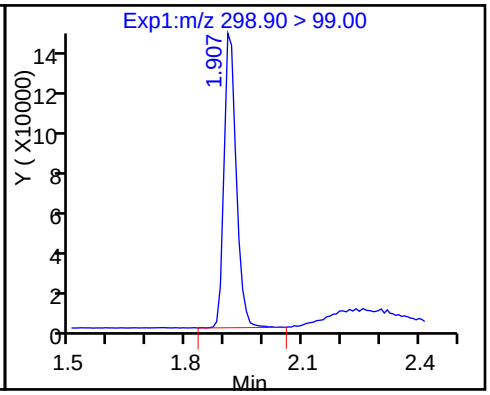
3 Perfluoropentanoic acid



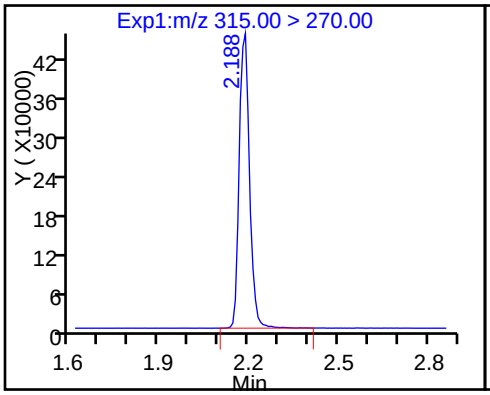
5 Perfluorobutanesulfonic acid



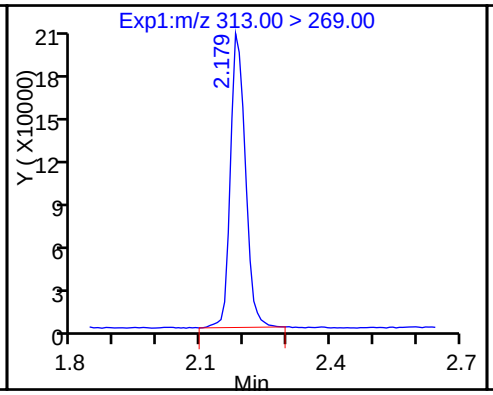
5 Perfluorobutanesulfonic acid



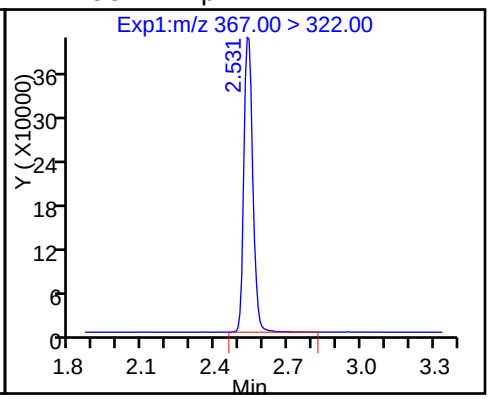
D 6 13C2 PFHxA



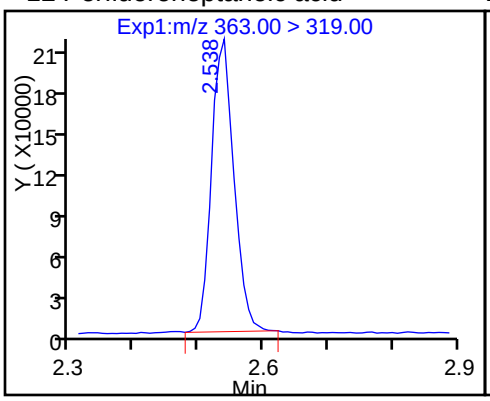
7 Perfluorohexanoic acid



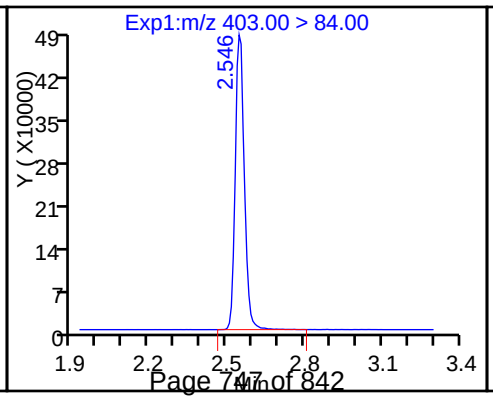
D 11 13C4-PFHpA



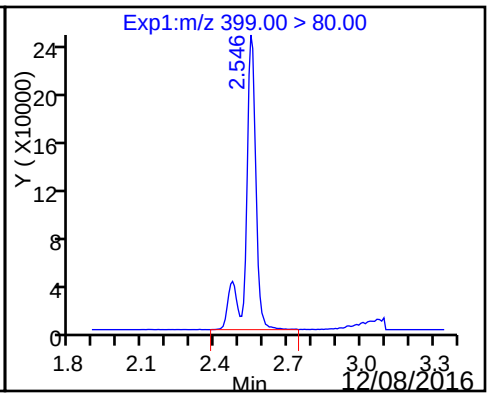
12 Perfluoroheptanoic acid



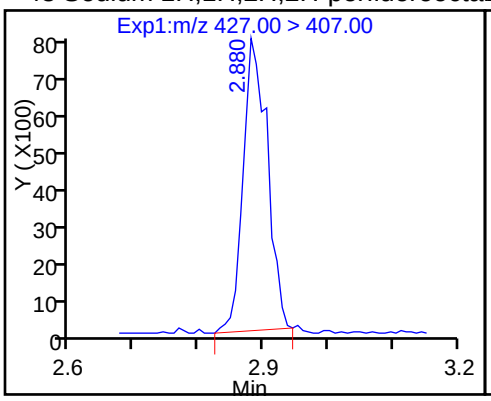
D 10 18O2 PFHxS



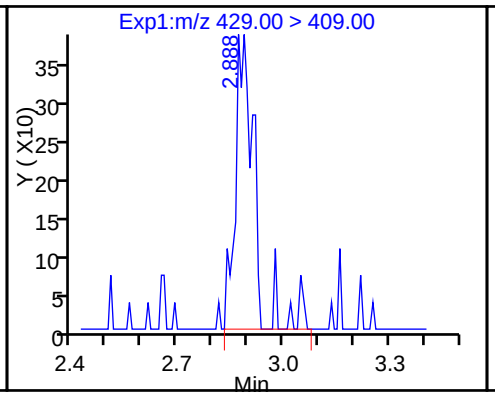
9 Perfluorohexanesulfonic acid



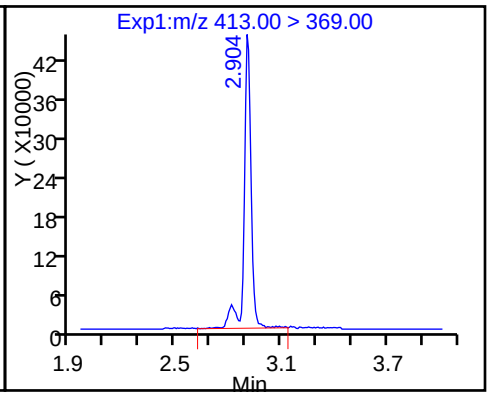
48 Sodium 1H,1H,2H,2H-perfluorooctane



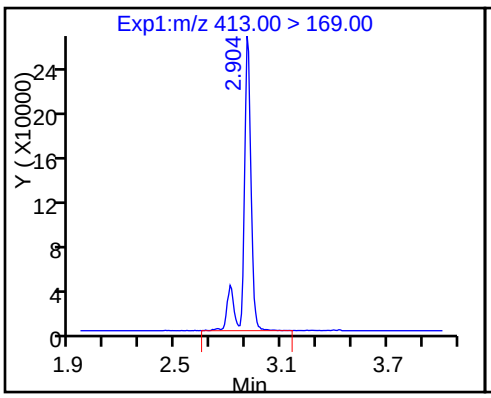
D 47 M2-6:2FTS



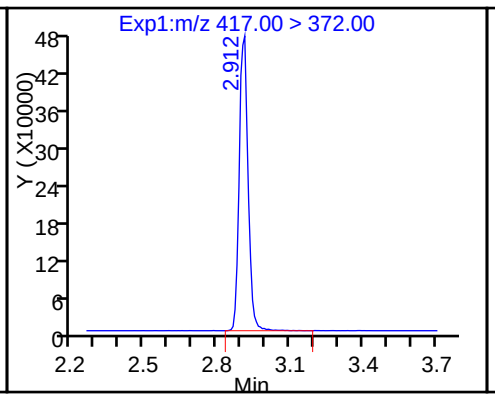
15 Perfluorooctanoic acid



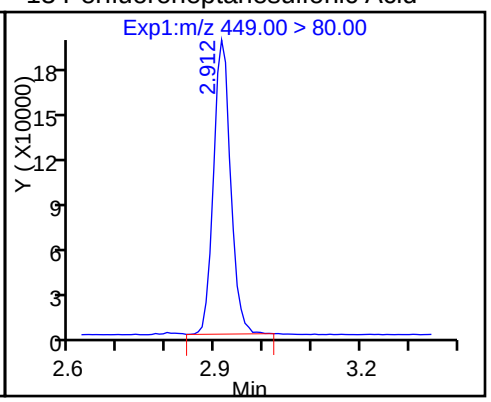
15 Perfluorooctanoic acid



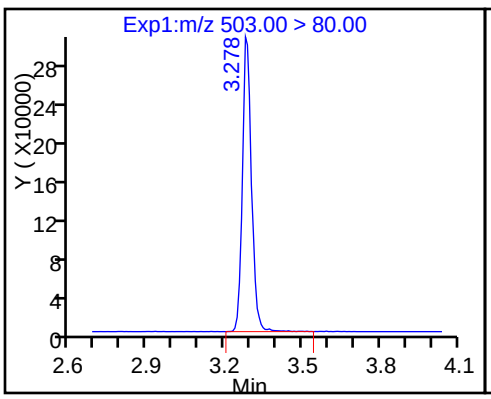
D 14 13C4 PFOA



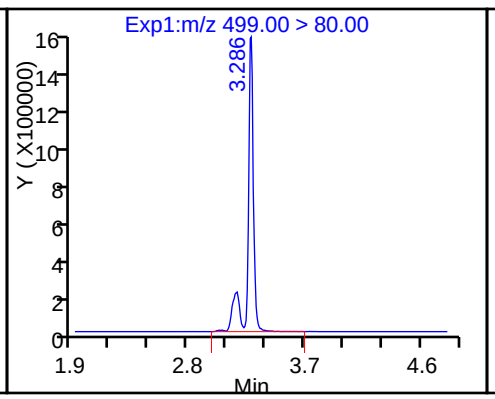
13 Perfluoroheptanesulfonic Acid



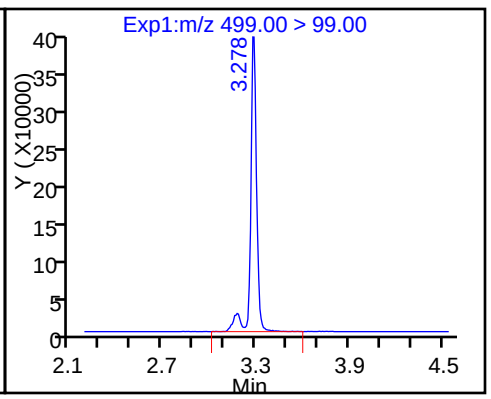
D 17 13C4 PFOS



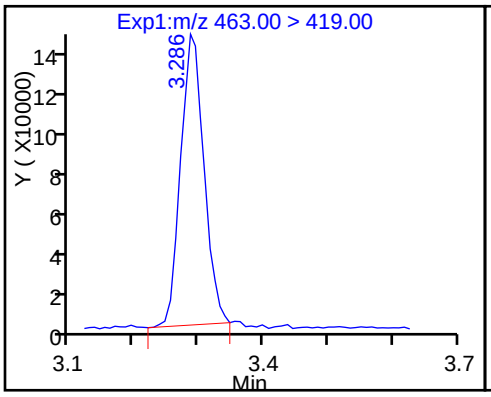
18 Perfluorooctane sulfonic acid



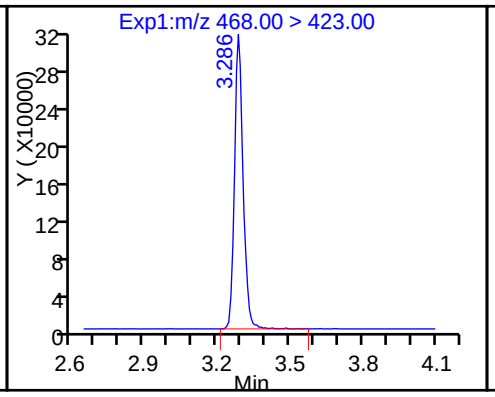
18 Perfluorooctane sulfonic acid



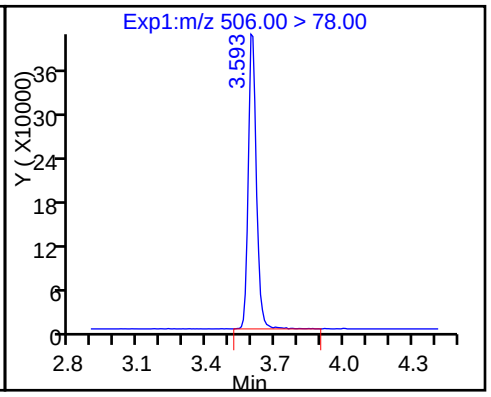
20 Perfluorononanoic acid



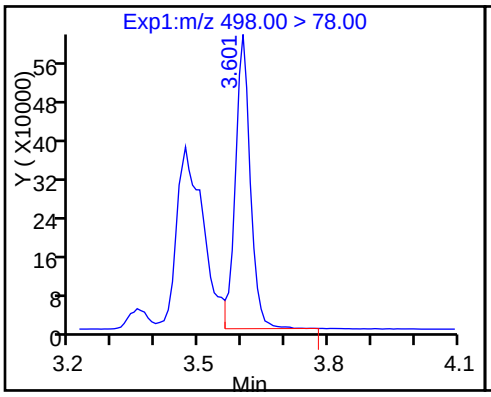
D 19 13C5 PFNA



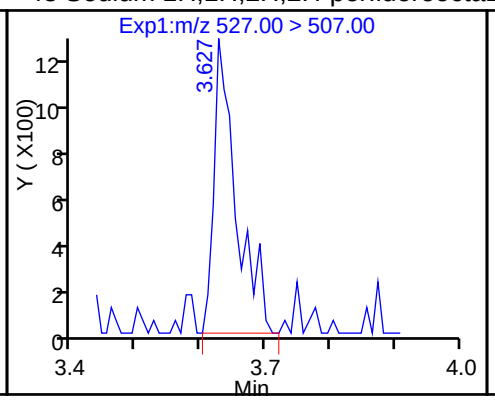
D 21 13C8 FOSA



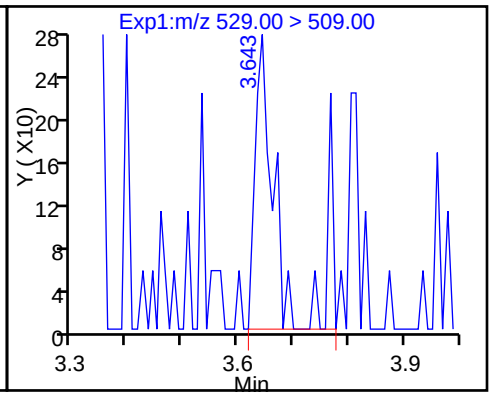
22 Perfluorooctane Sulfonamide



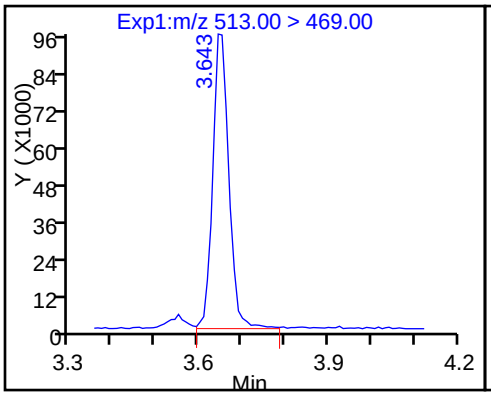
43 Sodium 1H,1H,2H,2H-perfluorooctane



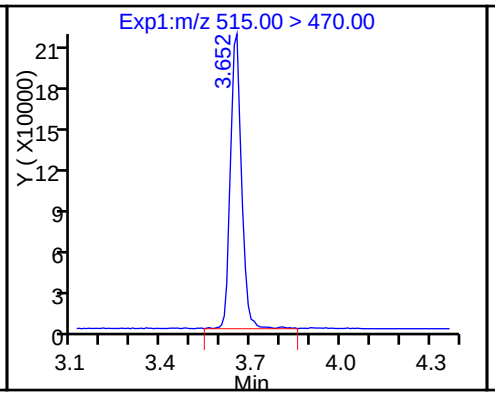
D 42 M2-8:2FTS



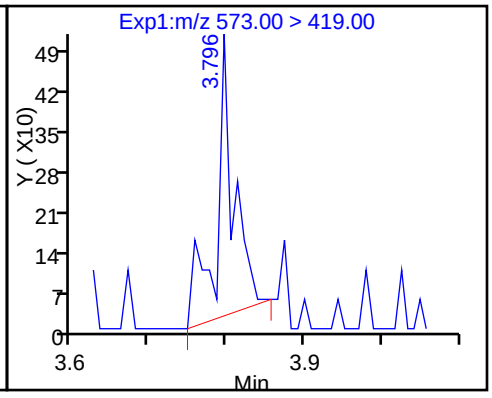
24 Perfluorodecanoic acid



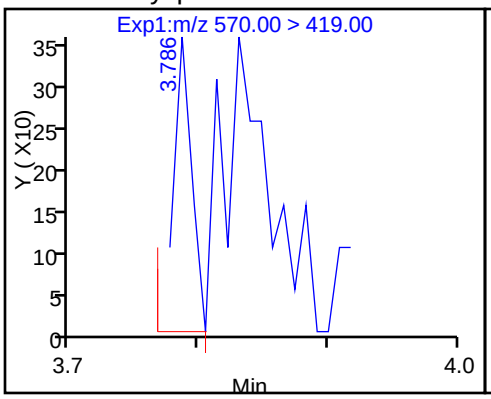
D 23 13C2 PFDA



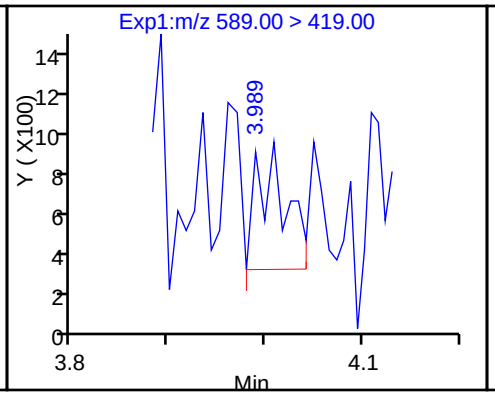
D 45 d3-NMeFOSAA



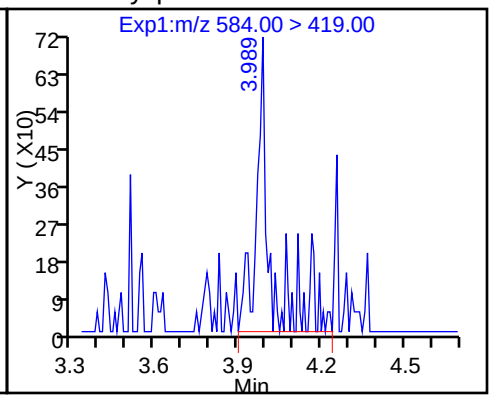
44 N-methyl perfluorooctane sulfonami



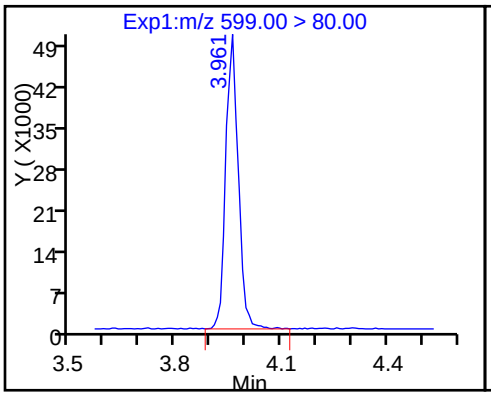
D 46 d5-NEtFOSAA



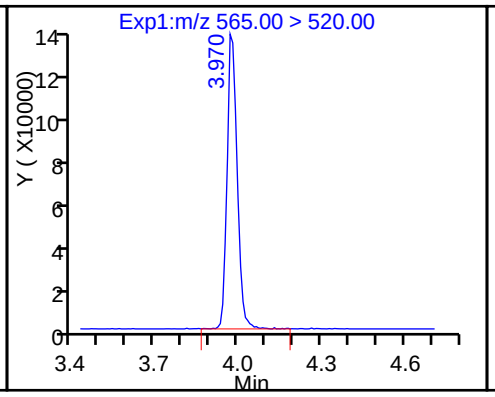
49 N-ethyl perfluorooctane sulfonamid



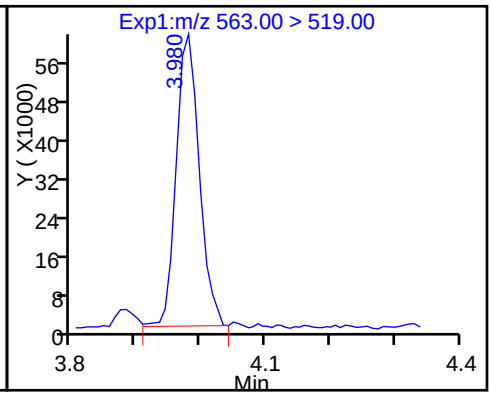
26 Perfluorodecane Sulfonic acid



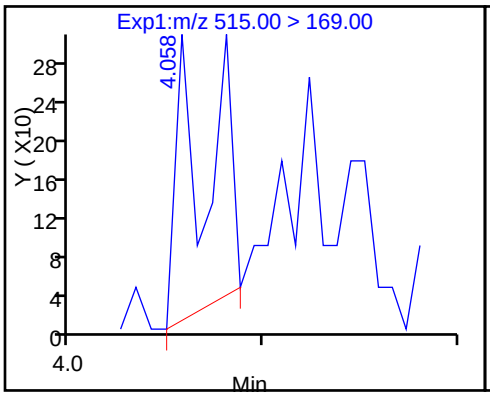
D 27 13C2 PFUnA



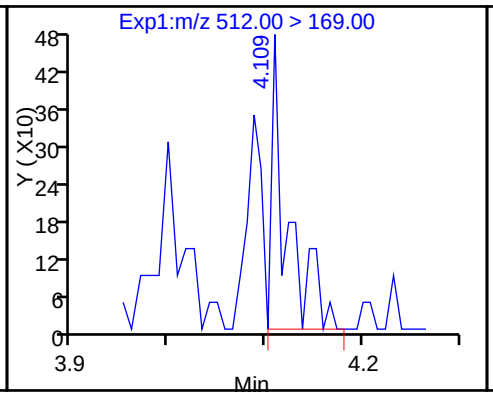
28 Perfluoroundecanoic acid



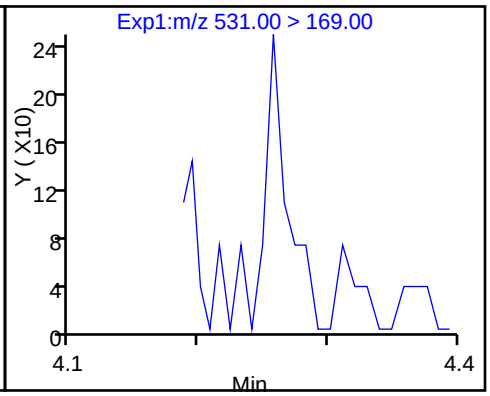
D 52 d-N-MeFOSA-M



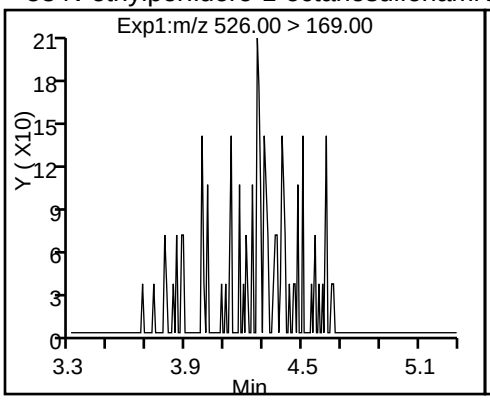
54 MeFOSA



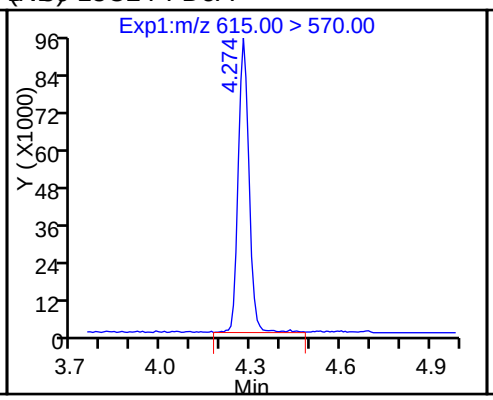
D 51 d-N-EtFOSA-M



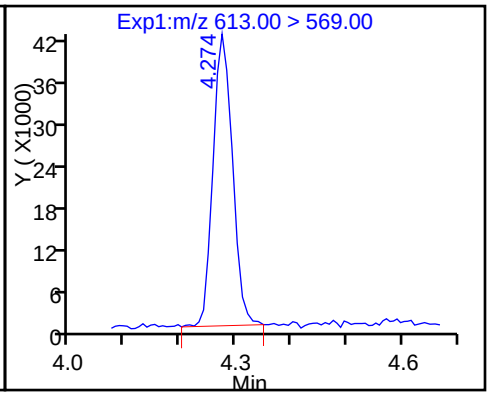
53 N-ethylperfluoro-1-octanesulfonami (NEtFOSA)



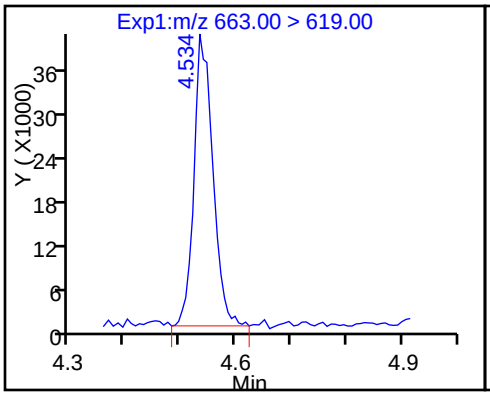
D 30 13C2 PFDoA



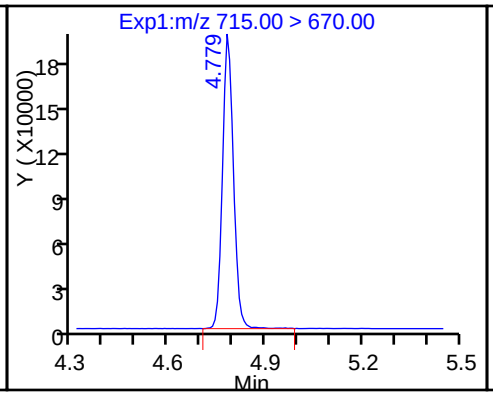
29 Perfluorododecanoic acid



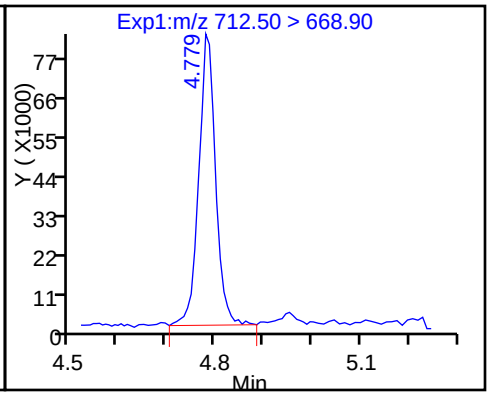
31 Perfluorotridecanoic acid



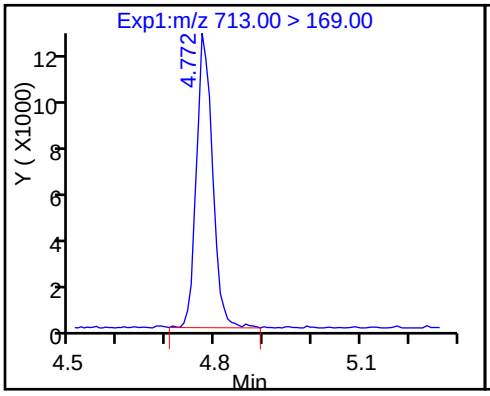
D 32 13C2-PFTeDA



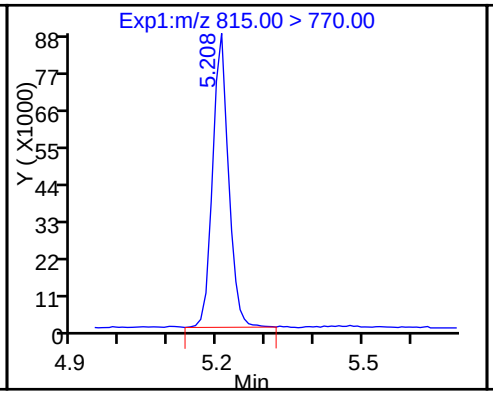
33 Perfluorotetradecanoic acid



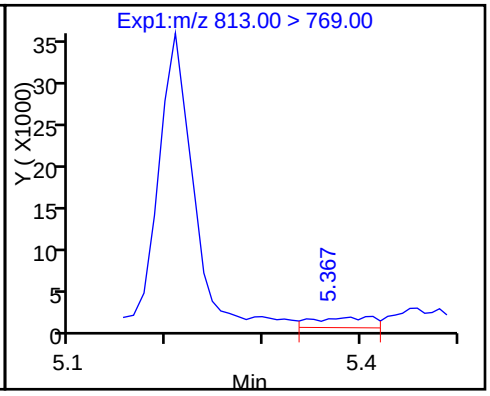
33 Perfluorotetradecanoic acid



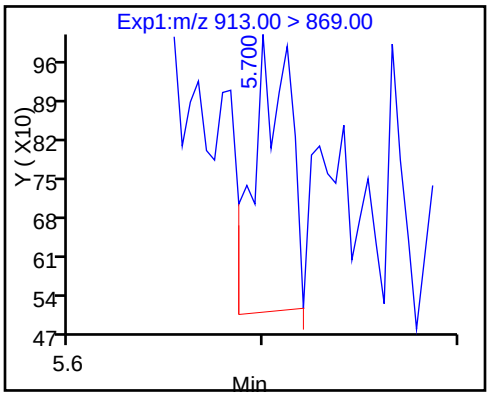
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-05-GW-17-21-MSD Lab Sample ID: 320-23542-2 MSD

Matrix: Water Lab File ID: 20NOV2016D_019.d

Analysis Method: 537 (Modified) Date Collected: 11/14/2016 11:45

Extraction Method: 3535 Date Extracted: 11/17/2016 08:49

Sample wt/vol: 247.8(mL) Date Analyzed: 11/20/2016 22:55

Con. Extract Vol.: 0.5(mL) Dilution Factor: 1

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

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

Analysis Batch No.: 138814 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.210	4 M	0.0025	0.0020	0.00075
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*2.05*	*E 4*	*0.0040*	0.0030	*0.0013*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.0881	M	0.0025	0.0020	0.00093

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	80		25-150
STL00991	13C4 PFOS	65		25-150
STL00994	18O2 PFHxS	82		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_019.d
Lims ID: 320-23542-A-2-C MSD
Client ID: DPT-16-05-GW-17-21-MSD
Sample Type: MSD
Inject. Date: 20-Nov-2016 22:55:50 ALS Bottle#: 24 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23542-a-2-c msd
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 23-Nov-2016 16:15:19 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK008

First Level Reviewer: changnoit Date: 23-Nov-2016 16:15:19

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.502	1.493	0.009	1.000	4257949	41.6		208	22221	
D 2 13C4 PFBA										
217.00 > 172.00	1.494	1.493	0.001		5878138	29.7		59.5	519930	
D 4 13C5-PFPeA										
267.90 > 223.00	1.762	1.752	0.010		6494281	40.6		81.2	419493	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.762	1.762	0.0	1.000	6315626	46.8		234	43107	
5 Perfluorobutanesulfonic acid										M
298.90 > 80.00	1.801	1.791	0.010	1.000	11008448	43.7		247		M
298.90 > 99.00	1.801	1.791	0.010	1.000	4996456		2.20(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.046	2.040	0.006	1.000	17879153	145.7		728	131872	
D 6 13C2 PFHxA										
315.00 > 270.00	2.046	2.040	0.006		6495858	44.7		89.5	561128	
D 11 13C4-PFHpA										
367.00 > 322.00	2.371	2.366	0.005		4457196	33.9		67.8	510945	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.371	2.372	-0.001	1.000	3382687	37.1		185	7499	
D 10 18O2 PFHxS										
403.00 > 84.00	2.392	2.382	0.010		7861802	38.9		82.2	521690	
9 Perfluorohexanesulfonic acid										E
399.00 > 80.00	2.392	2.387	0.005	1.000	66810124	379.5		2085		E
D 47 M2-6:2FTS										
429.00 > 409.00	2.705	2.704	0.001		18809	0.3588		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.714	2.713	0.001	1.000	310686	NR		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.732	2.733	-0.001	1.000	11902120	104.0		520	180557	M
413.00 > 169.00	2.732	2.733	-0.001	1.000	8027603		1.48(0.90-1.10)		210574	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.742	2.733	0.009	1.000	5181451	44.5		234		
D 14 13C4 PFOA										
417.00 > 372.00	2.732	2.733	-0.001		5447569	39.9		79.8	258716	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.111	3.096	0.015	1.000	112669220	1016.5		5477	716237	E
499.00 > 99.00	3.111	3.096	0.015	1.000	30200397		3.73(0.90-1.10)		0.0	
20 Perfluorononanoic acid										
463.00 > 419.00	3.111	3.096	0.015	1.000	1194902	23.6		118	4959	
D 19 13C5 PFNA										
468.00 > 423.00	3.111	3.096	0.015		2575147	23.5		47.1	138352	
D 17 13C4 PFOS										
503.00 > 80.00	3.111	3.096	0.015		4871771	31.3		65.4	68491	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.457	3.456	0.001	1.004	81208	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.442	3.456	-0.014		4546	0.0833		0.0		
D 21 13C8 FOSA										
506.00 > 78.00	3.465	3.458	0.007		1593037	6.35		12.7	113965	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.465	3.458	0.007	1.000	629427	21.9		110	4576	
D 23 13C2 PFDA										
515.00 > 470.00	3.465	3.465	0.0		3792607	37.8		75.7	252479	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.473	3.465	0.008	1.000	1587451	21.1		105	18451	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.624	3.623	0.001		5439	0.1251		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.616	3.632	-0.016	0.998	1347	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.781	3.782	-0.001	1.000	1817939	29.3		152		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.781	3.789	-0.008		8802	0.1786		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.816	3.798	0.018	1.009	3513	NR		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.799	3.800	-0.001		2791882	35.6		71.2	232066	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.799	3.800	-0.001	1.000	1111118	19.4		96.8	21401	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.955	3.963	-0.008		908	0.0150		0.0		
29 Perfluorododecanoic acid										
613.00 > 569.00	4.090	4.091	-0.001	1.000	982244	20.2		101	22062	
D 30 13C2 PFDoA										
615.00 > 570.00	4.090	4.091	-0.001		2543284	32.9		65.8	118838	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.351	4.153	0.198		741	0.0135		0.0		
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.203	4.161	0.042	1.000	308	NR		0.0		
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.361	4.352	0.009	1.000	1116082	23.2		116	36124	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.599	4.586	0.013	1.000	2276327	25.2		126	76239	
713.00 > 169.00	4.592	4.586	0.006	0.999	400964		5.68(0.00-0.00)		83938	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.599	4.586	0.013		7381469	43.3		86.5	508262	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	4.997	4.990	0.007	1.000	1992159	35.8		179	52158	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.997	4.990	0.007		5453901	57.8		116	697454	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.344	5.344	0.0	1.000	1958237	35.8		179	11544	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 23-Nov-2016 16:15:21 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_019.d

Injection Date: 20-Nov-2016 22:55:50 Instrument ID: A8_N

Lims ID: 320-23542-A-2-C MSD

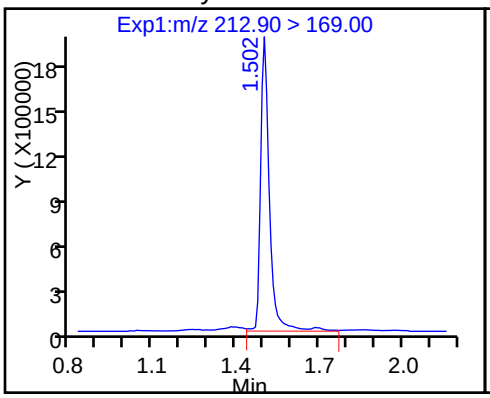
Client ID: DPT-16-05-GW-17-21-MSD

Operator ID: A8-PC\A8 ALS Bottle#: 24 Worklist Smp#: 19

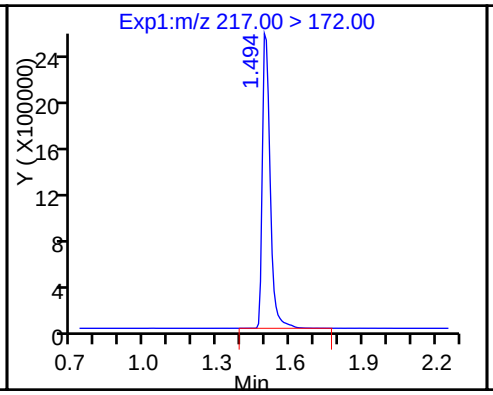
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

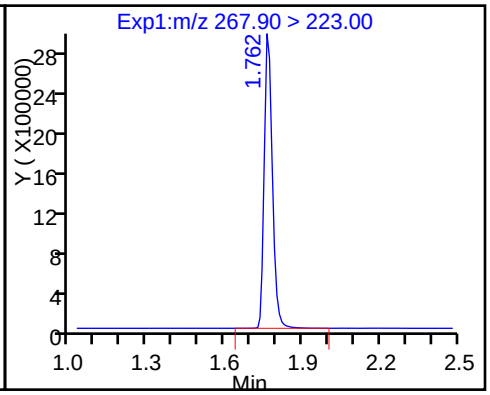
1 Perfluorobutyric acid



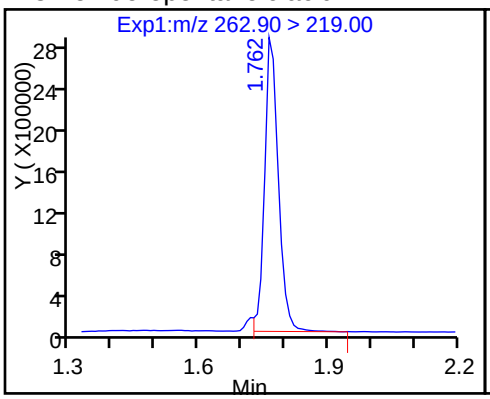
D 2 13C4 PFBA



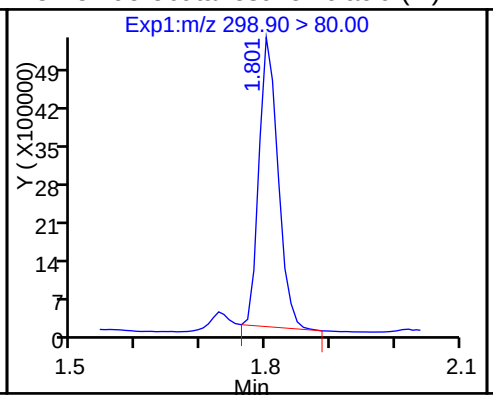
D 4 13C5-PFPeA



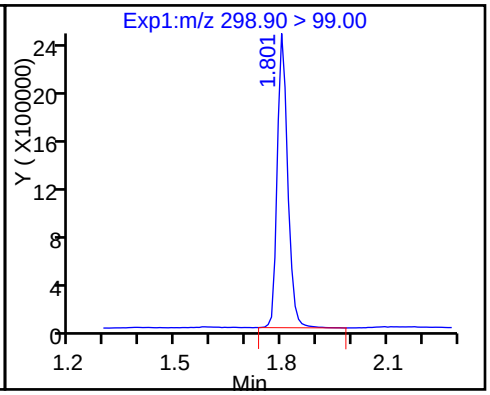
3 Perfluoropentanoic acid



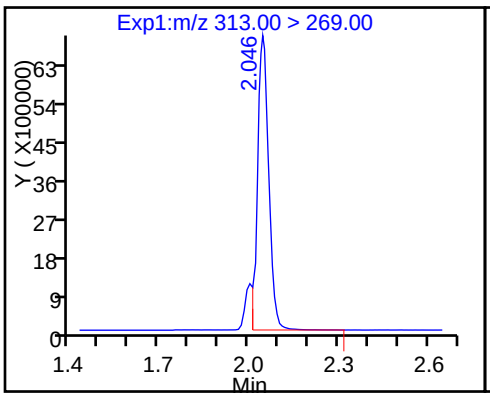
5 Perfluorobutanesulfonic acid (M)



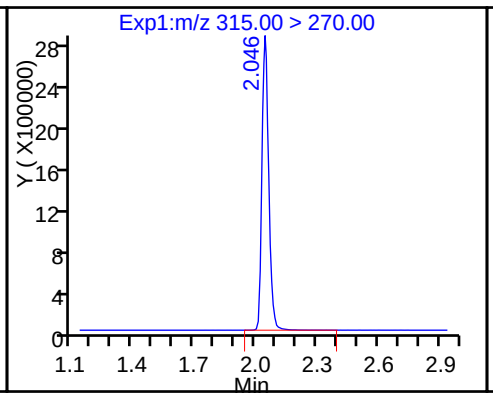
5 Perfluorobutanesulfonic acid



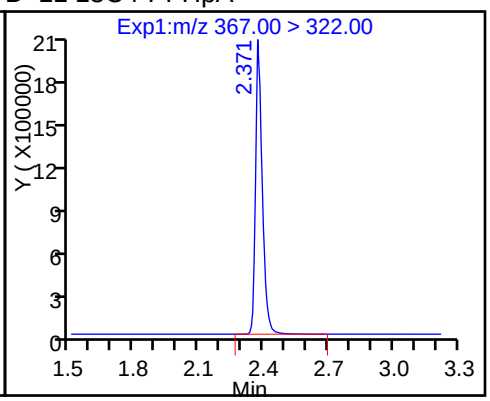
7 Perfluorohexanoic acid



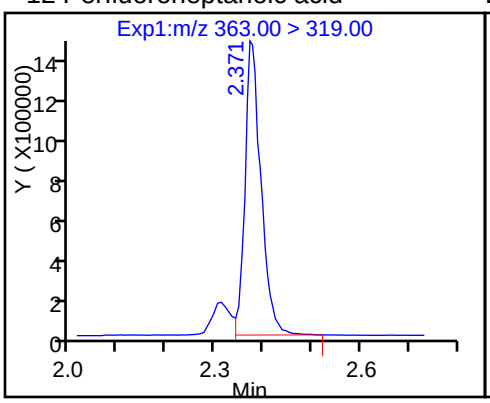
D 6 13C2 PFHxA



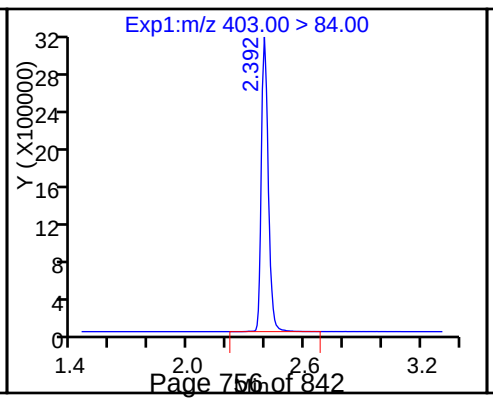
D 11 13C4-PFHpA



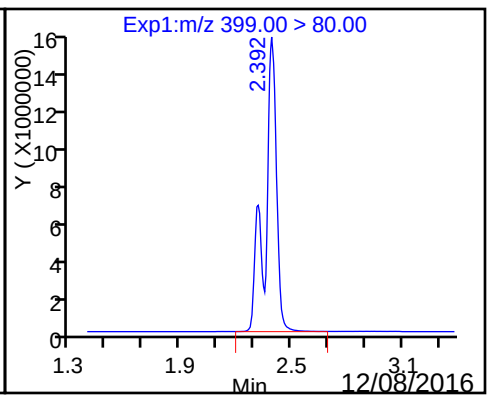
12 Perfluoroheptanoic acid



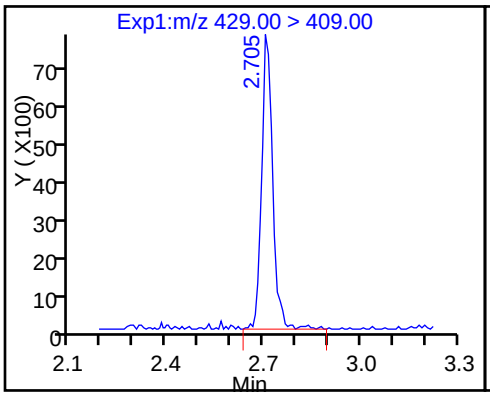
D 10 18O2 PFHxS



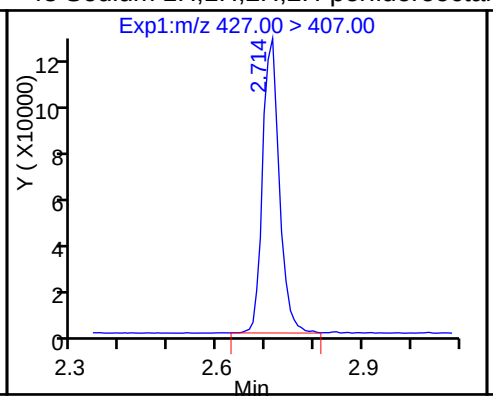
9 Perfluorohexanesulfonic acid



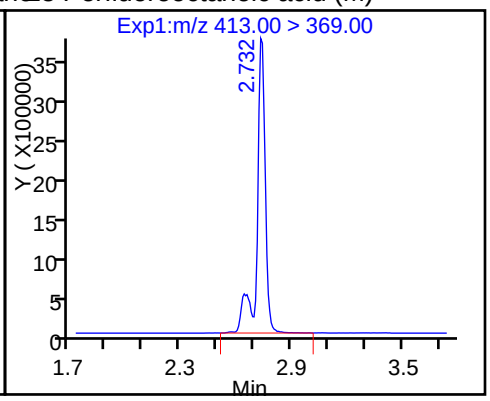
D 47 M2-6:2FTS



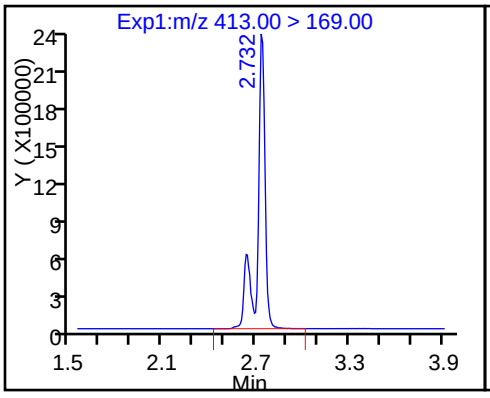
48 Sodium 1H,1H,2H,2H-perfluorooctane



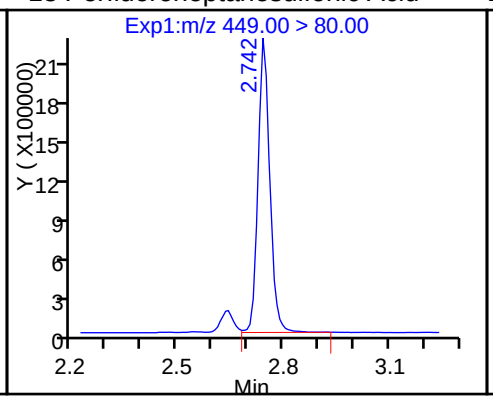
15 Perfluorooctanoic acid (M)



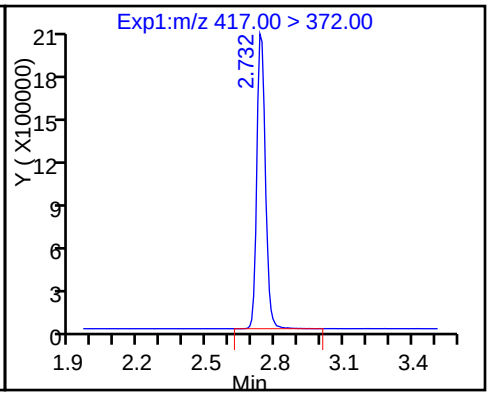
15 Perfluorooctanoic acid



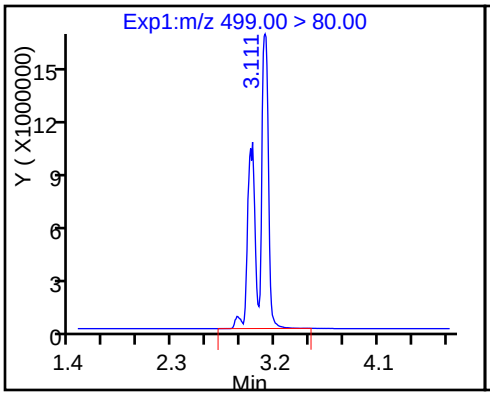
13 Perfluoroheptanesulfonic Acid



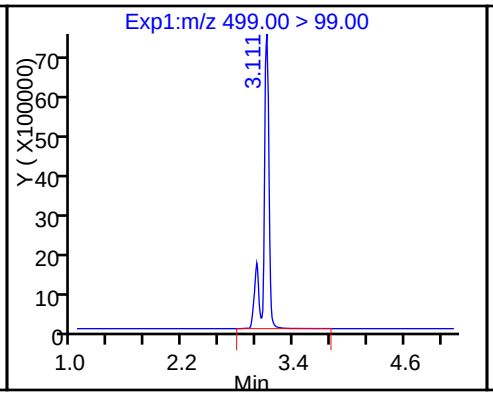
D 14 13C4 PFOA



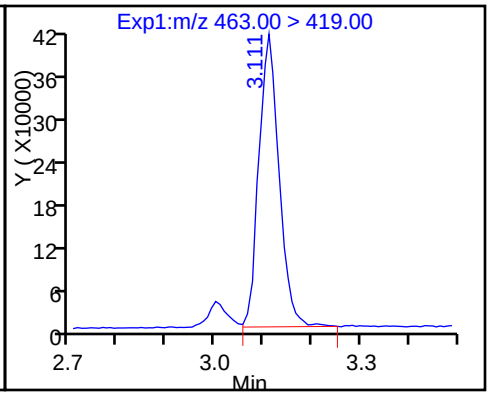
18 Perfluorooctane sulfonic acid



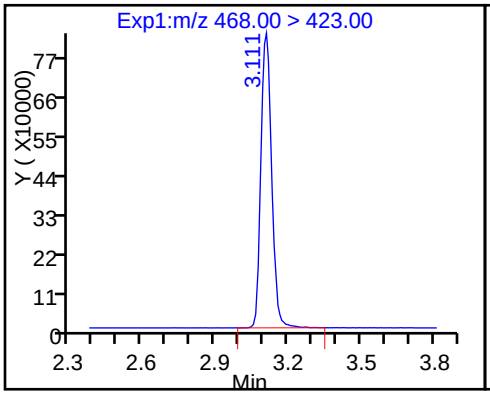
18 Perfluorooctane sulfonic acid



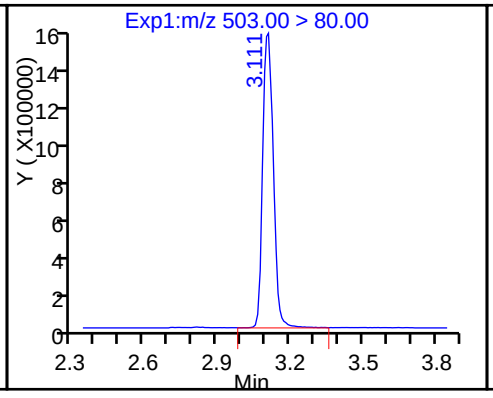
20 Perfluorononanoic acid



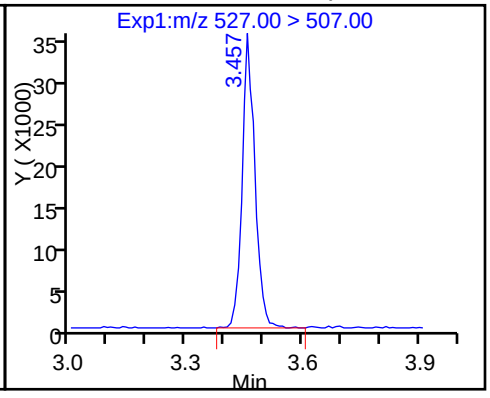
D 19 13C5 PFNA



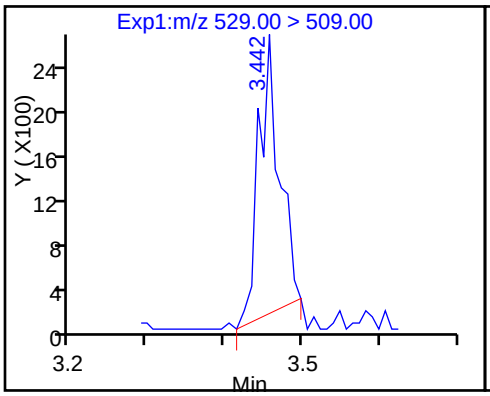
D 17 13C4 PFOS



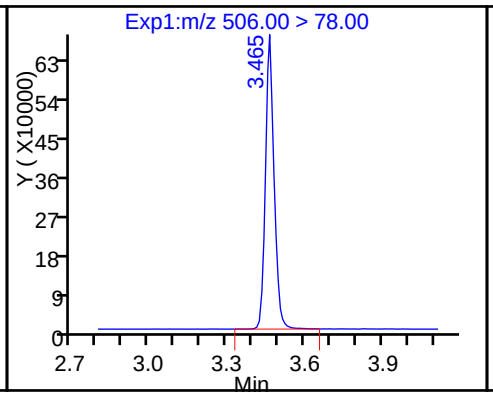
43 Sodium 1H,1H,2H,2H-perfluorooctane



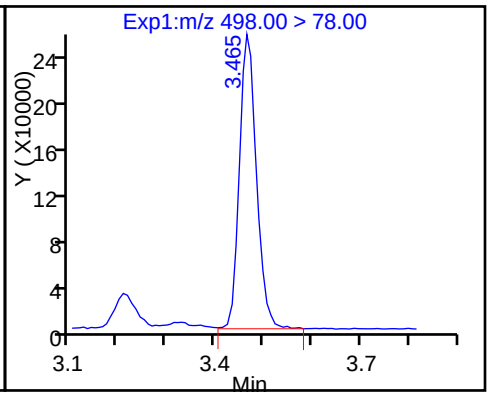
D 42 M2-8:2FTS



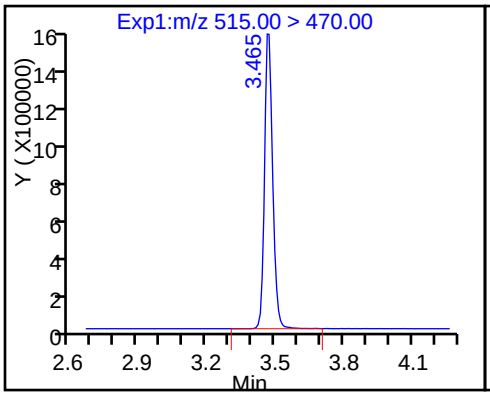
D 21 13C8 FOSA



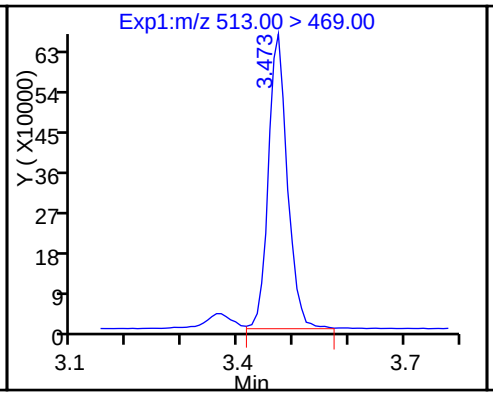
22 Perfluorooctane Sulfonamide



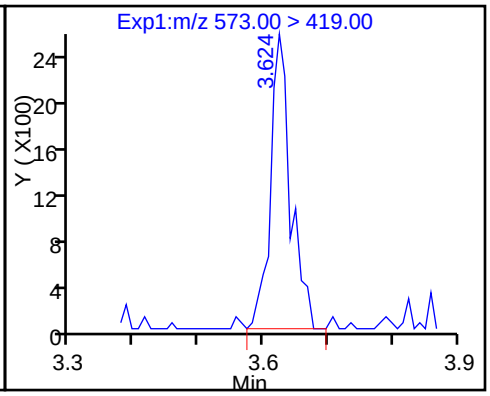
D 23 13C2 PFDA



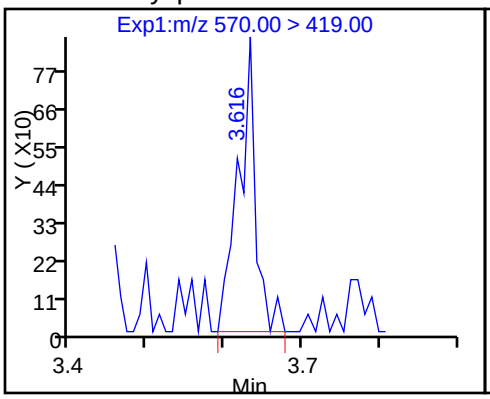
24 Perfluorodecanoic acid



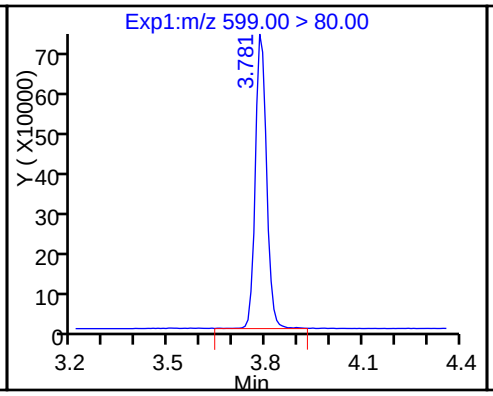
D 45 d3-NMeFOSAA



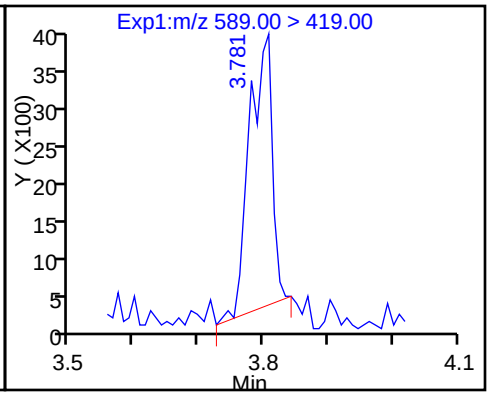
44 N-methyl perfluorooctane sulfonami



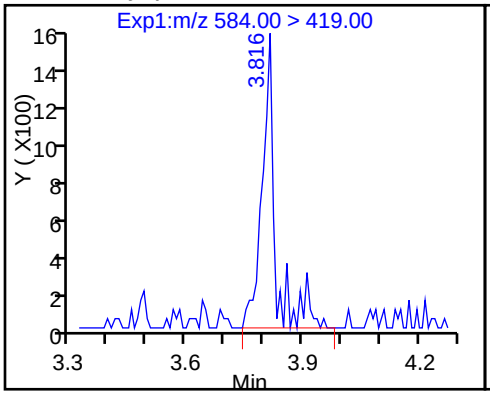
26 Perfluorodecane Sulfonic acid



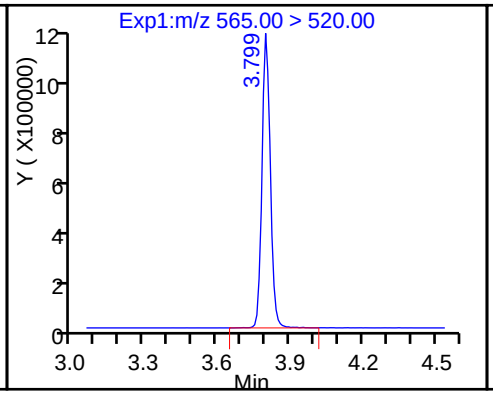
D 46 d5-NEtFOSAA



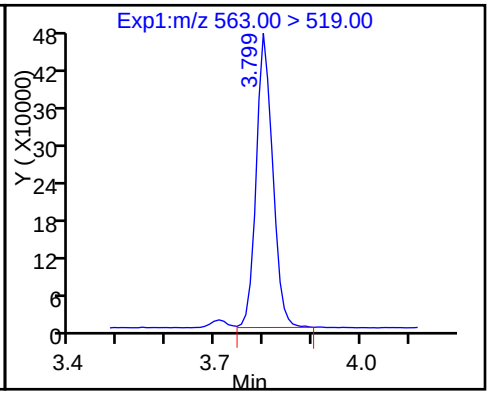
49 N-ethyl perfluorooctane sulfonamid



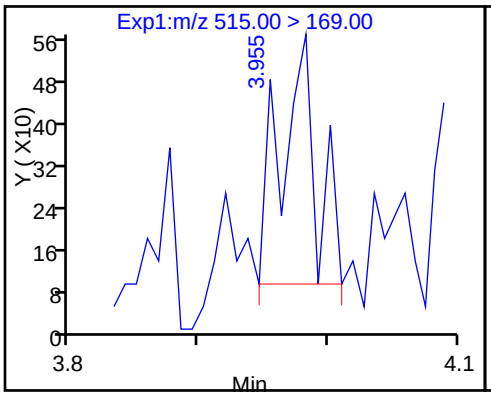
D 27 13C2 PFUnA



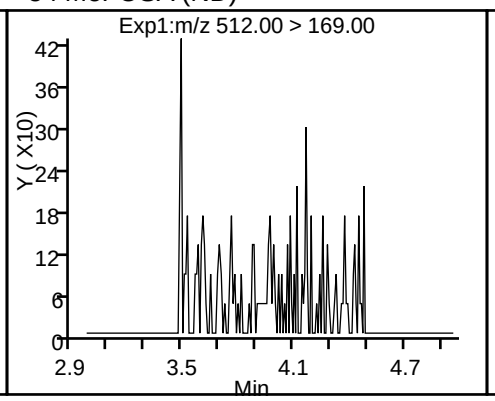
28 Perfluoroundecanoic acid



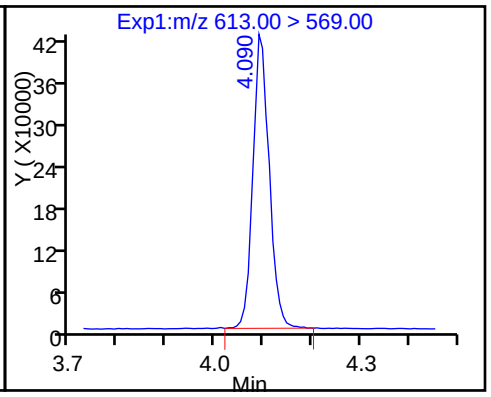
D 52 d-N-MeFOSA-M



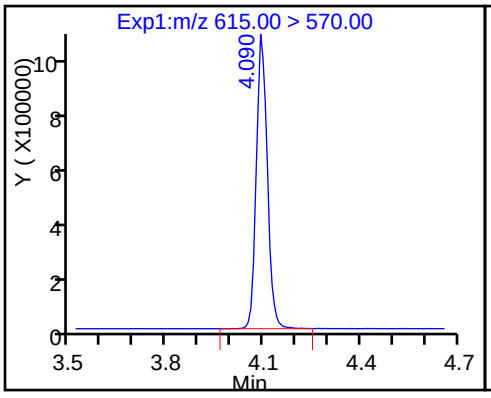
54 MeFOSA (ND)



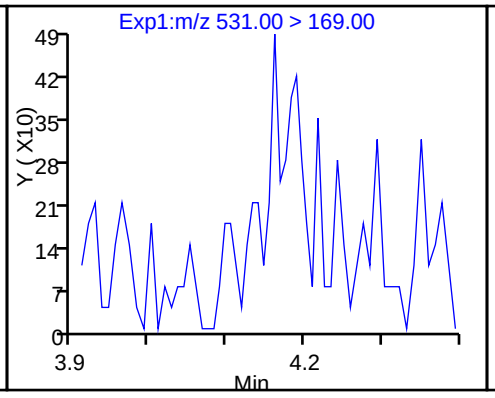
29 Perfluorododecanoic acid



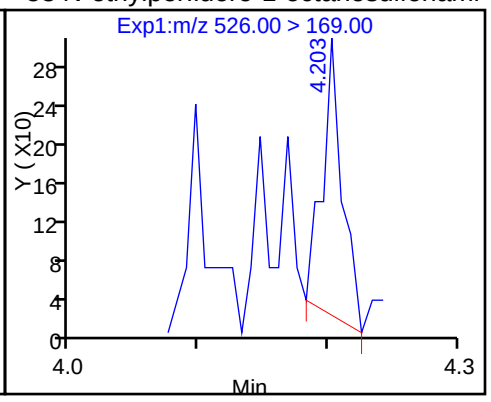
D 30 13C2 PFDoA



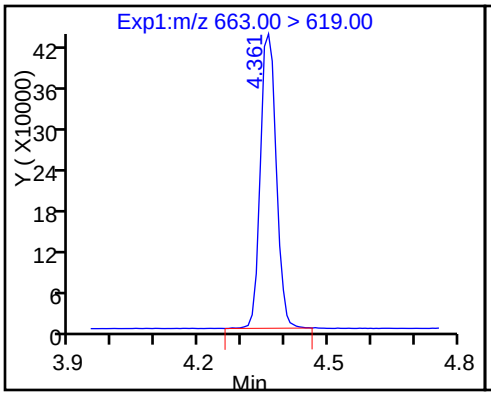
D 51 d-N-EtFOSA-M



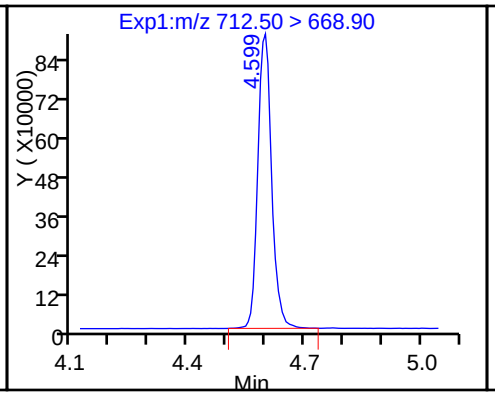
53 N-ethylperfluoro-1-octanesulfonami



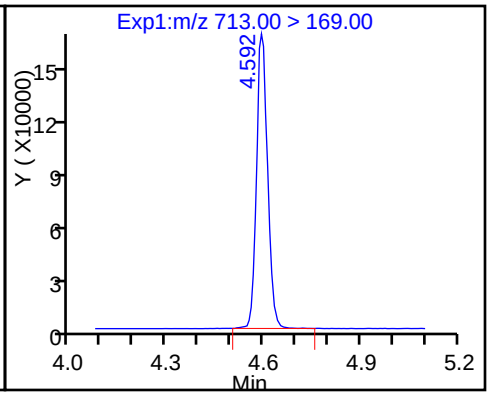
31 Perfluorotridecanoic acid



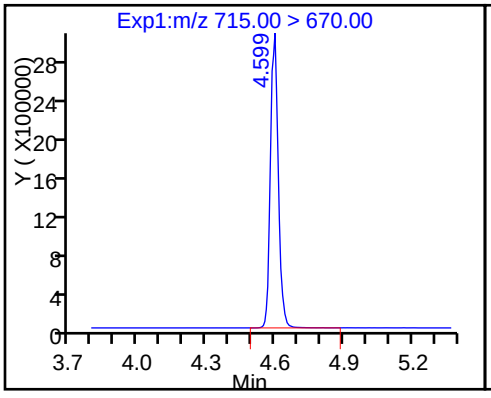
33 Perfluorotetradecanoic acid



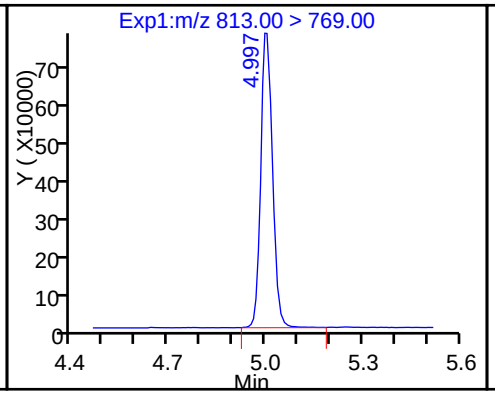
33 Perfluorotetradecanoic acid



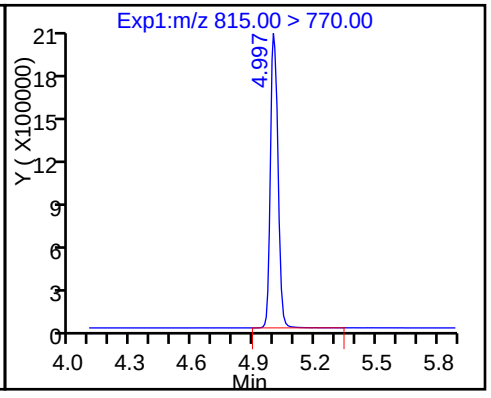
D 32 13C2-PFTeDA



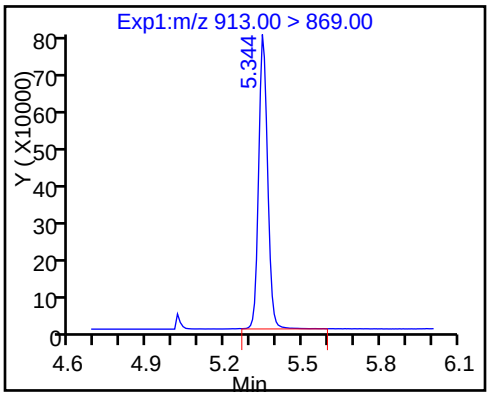
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

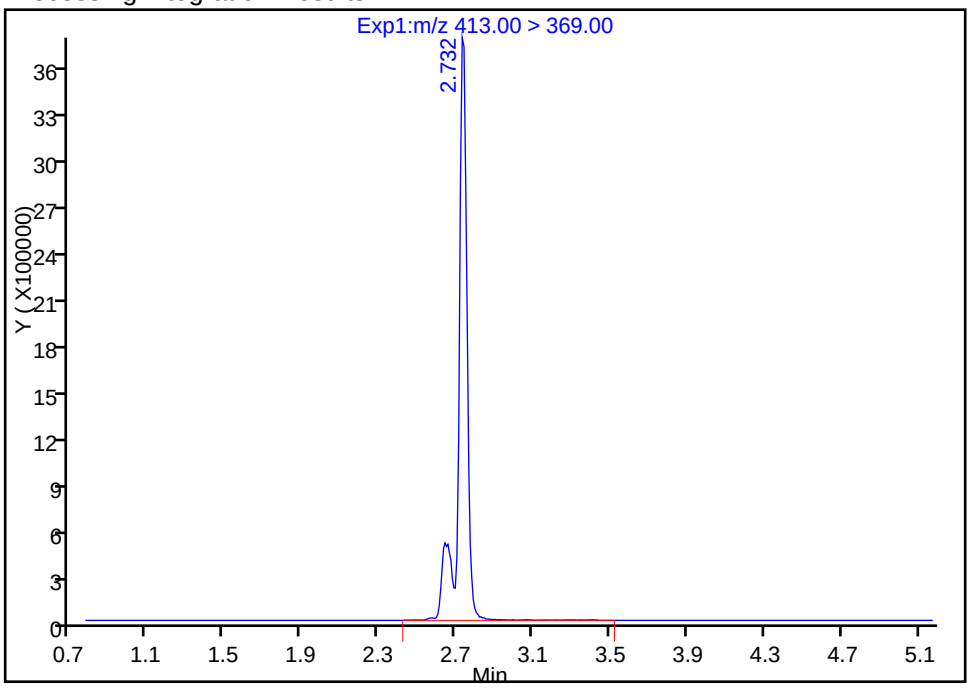
Data File:	\\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_019.d				
Injection Date:	20-Nov-2016 22:55:50	Instrument ID:	A8_N		
Lims ID:	320-23542-A-2-C MSD				
Client ID:	DPT-16-05-GW-17-21-MSD				
Operator ID:	A8-PC\A8	ALS Bottle#:	24	Worklist Smp#:	19
Injection Vol:	2.0 ul	Dil. Factor:	1.0000		
Method:	A8_N	Limit Group:	LC PFC_DOD ICAL		
Column:		Detector	EXP1		

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

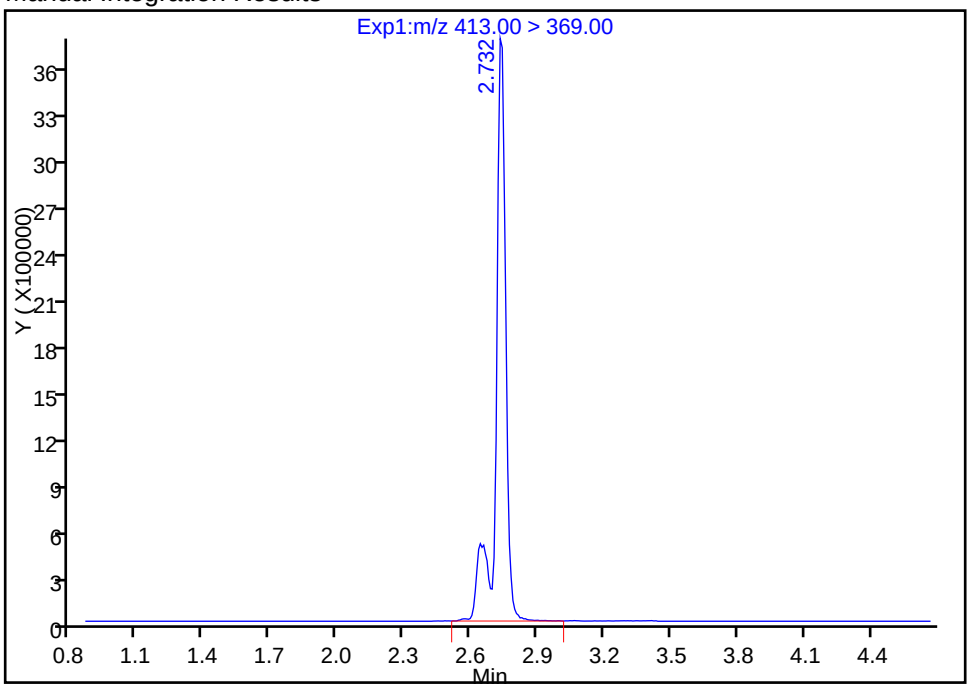
Processing Integration Results

RT: 2.73
Area: 12014885
Amount: 105.0164
Amount Units: ng/ml



Manual Integration Results

RT: 2.73
Area: 11902120
Amount: 104.0308
Amount Units: ng/ml



Reviewer: changnoit, 23-Nov-2016 16:15:19

Audit Action: Manually Integrated Audit Reason: Baseline

Manual Integration/User Assign Peak Report

TestAmerica Sacramento

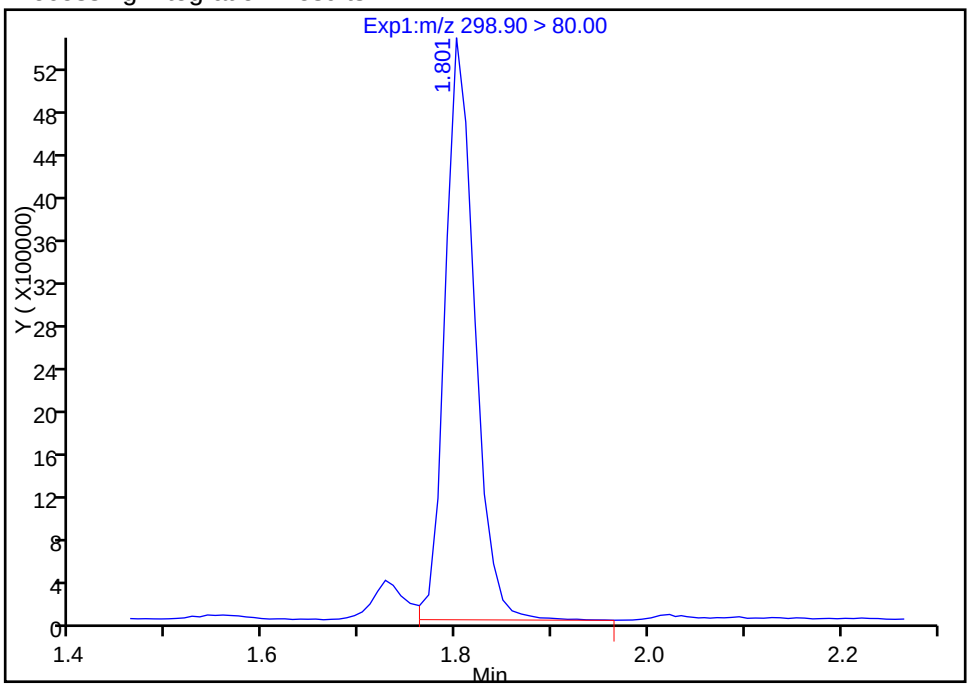
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_019.d
Injection Date: 20-Nov-2016 22:55:50 Instrument ID: A8_N
Lims ID: 320-23542-A-2-C MSD
Client ID: DPT-16-05-GW-17-21-MSD
Operator ID: A8-PC\A8 ALS Bottle#: 24 Worklist Smp#: 19
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

5 Perfluorobutanesulfonic acid, CAS: 375-73-5

Signal: 1

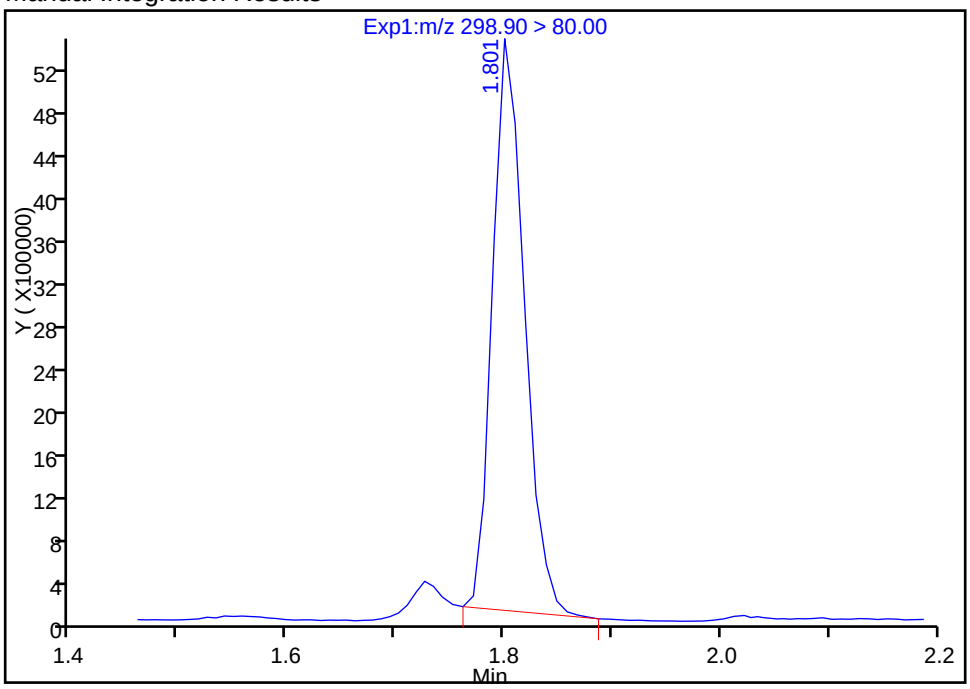
Processing Integration Results

RT: 1.80
Area: 11625537
Amount: 46.107992
Amount Units: ng/ml



Manual Integration Results

RT: 1.80
Area: 11008448
Amount: 43.660558
Amount Units: ng/ml



Reviewer: changnoit, 23-Nov-2016 16:15:19
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-05-GW-17-21-MSD | Lab Sample ID: 320-23542-2 MSD DL

Matrix: Water | Lab File ID: 02DEC2016B_003.d

Analysis Method: 537 (Modified) | Date Collected: 11/14/2016 11:45

Extraction Method: 3535 | Date Extracted: 11/17/2016 08:49

Sample wt/vol: 247.8(mL) | Date Analyzed: 12/02/2016 13:14

Con. Extract Vol.: 0.5(mL) | Dilution Factor: 100

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

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

Analysis Batch No.: 140382 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*0.214*	*J 4 D*	*0.25*	0.20	*0.075*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	2.79	4 D	0.40	0.30	0.13
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*0.20*	*U*	*0.25*	0.20	*0.093*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	101		25-150
STL00991	13C4 PFOS	99		25-150
STL00994	18O2 PFHxS	116		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_003.d
Lims ID: 320-23542-A-2-C MSD
Client ID: DPT-16-05-GW-17-21-MSD
Sample Type: MSD
Inject. Date: 02-Dec-2016 13:14:29 ALS Bottle#: 3 Worklist Smp#: 26
Injection Vol: 2.0 ul Dil. Factor: 100.0000
Sample Info: 320-23542-A-2-C MSD 100X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 14:55:36 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 15:01:17

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.590	1.615	-0.025		136790	0.4020		0.8	22816	
1 Perfluorobutyric acid										
212.90 > 169.00	1.590	1.617	-0.027	1.000	86006	0.3551		178	819	
D 4 13C5-PFPeA										
267.90 > 223.00	1.887	1.918	-0.031		111611	0.4131		0.8	16054	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.887	1.920	-0.033	1.000	137988	0.5939		297	1401	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.926	1.961	-0.035	1.000	183380	0.3232		183		
298.90 > 99.00	1.926	1.961	-0.035	1.000	77727		2.36(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.196	2.239	-0.043		102420	0.4155		0.8	22077	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.196	2.241	-0.045	1.000	316845	1.62		809	6775	
D 11 13C4-PFHpA										
367.00 > 322.00	2.544	2.599	-0.055		95867	0.4554		0.9	19844	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.551	2.600	-0.049	1.000	70244	0.3543		177	943	
D 10 18O2 PFHxS										
403.00 > 84.00	2.567	2.614	-0.047		166337	0.5500		1.2	67216	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.567	2.615	-0.048	1.000	1838726	4.93		2711		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.902	2.913	-0.011	1.000	8648	NR		0.0		
D 47 M2-6:2FTS										
429.00 > 409.00	2.910	2.915	-0.005		1622	0.0116		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.926	2.984	-0.058	1.000	240600	1.06		530	2608	
413.00 > 169.00	2.918	2.984	-0.066	0.997	153596		1.57(0.90-1.10)		11818	
D 14 13C4 PFOA										
417.00 > 372.00	2.918	2.984	-0.066		111296	0.5072		1.0	22430	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.926	2.986	-0.060	1.000	85524	0.3008		158		
D 17 13C4 PFOS										
503.00 > 80.00	3.306	3.365	-0.059		116260	0.4753		1.0	9243	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.306	3.366	-0.060	1.000	3659326	13.8		7455	209749	
499.00 > 99.00	3.306	3.366	-0.060	1.000	745523		4.91(0.90-1.10)		85538	
20 Perfluorononanoic acid										
463.00 > 419.00	3.306	3.373	-0.067	1.000	33480	0.2295		115	524	
D 19 13C5 PFNA										
468.00 > 423.00	3.298	3.374	-0.076		73575	0.4131		0.8	14862	
D 21 13C8 FOSA										
506.00 > 78.00	3.615	3.651	-0.036		31397	0.0758		0.2	2492	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.615	3.656	-0.041	1.000	11588	0.1973		98.6	963	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.649	3.674	-0.025	0.998	2322	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.658	3.676	-0.018		616	0.004614		0.0		
24 Perfluorodecanoic acid										
513.00 > 469.00	3.658	3.738	-0.080	1.000	23915	0.2046		102	881	
D 23 13C2 PFDA										
515.00 > 470.00	3.677	3.738	-0.061		60302	0.3631		0.7	2042	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.793	3.839	-0.046		1496	0.0187		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.828	3.847	-0.019	1.009	1845	NR		0.0		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.986	4.009	-0.023		6062	0.0681		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.986	4.016	-0.030	1.000	3234	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.977	4.049	-0.072	1.000	28956	0.1898		98.5		
D 27 13C2 PFUnA										
565.00 > 520.00	3.996	4.070	-0.074		40903	0.3252		0.7	7622	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.996	4.071	-0.075	1.000	18267	0.2107		105	411	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	4.078	4.105	-0.027		1003	0.009432		0.0		
54 MeFOSA										
512.00 > 169.00	4.092	4.110	-0.018	1.000	763	NR		0.0		
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.279	4.290	-0.011		1138	0.0112		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
53 N-ethylperfluoro-1-octanesulfonami										
526.00 > 169.00	4.279	4.299	-0.020	1.000	1189	NR		0.0		
D 30 13C2 PFDoA										
615.00 > 570.00	4.297	4.370	-0.073		41284	0.3531		0.7	1458	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.297	4.370	-0.073	1.000	16165	0.2068		103	319	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.556	4.636	-0.080	1.000	14170	0.1650		82.5	211	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.798	4.882	-0.084		97613	0.4035		0.8	15022	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.798	4.884	-0.086	1.000	33457	0.2097		105	405	
713.00 > 169.00	4.798	4.884	-0.086	1.000	4773		7.01(0.00-0.00)		2152	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.221	5.320	-0.099		60773	0.4661		0.9	4723	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.329	5.320	0.009	1.000	739	-0.8142		-407.1	15.5	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.729	5.720	0.009	1.000	389	0.005992		3.0	13.8	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 02-Dec-2016 15:01:18 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_003.d

Injection Date: 02-Dec-2016 13:14:29 Instrument ID: A8_N

Lims ID: 320-23542-A-2-C MSD

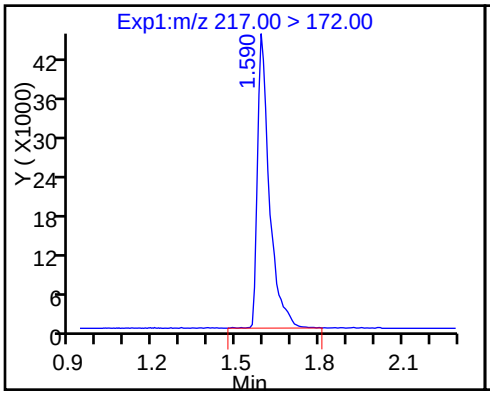
Client ID: DPT-16-05-GW-17-21-MSD

Operator ID: A8-PC\A8 ALS Bottle#: 3 Worklist Smp#: 26

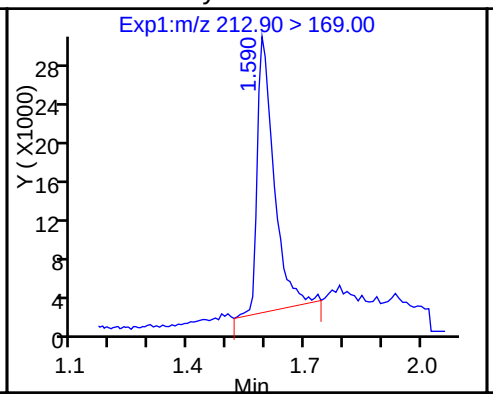
Injection Vol: 2.0 ul Dil. Factor: 100.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

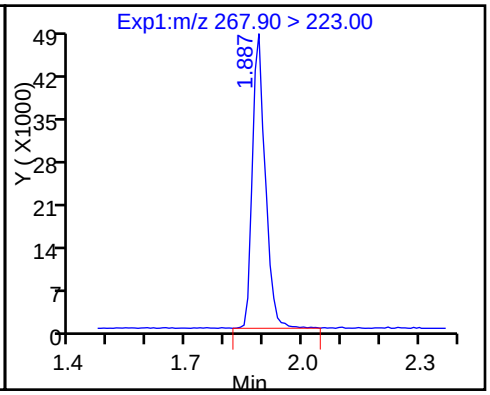
D 2 13C4 PFBA



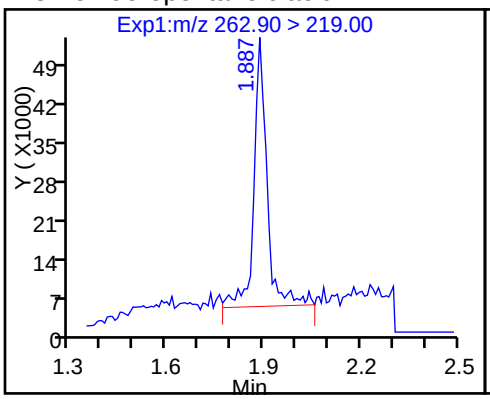
1 Perfluorobutyric acid



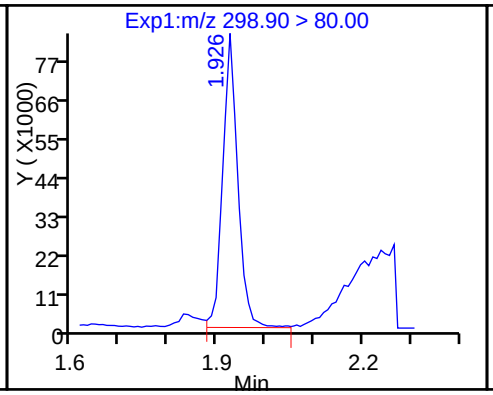
D 4 13C5-PFPeA



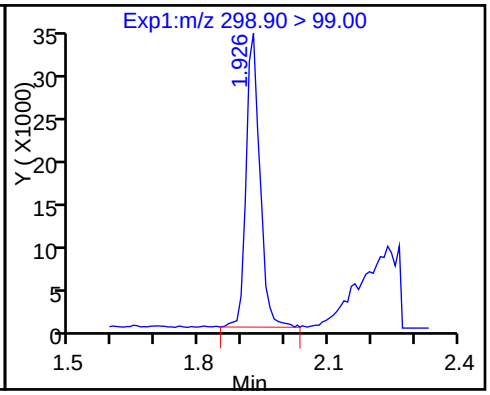
3 Perfluoropentanoic acid



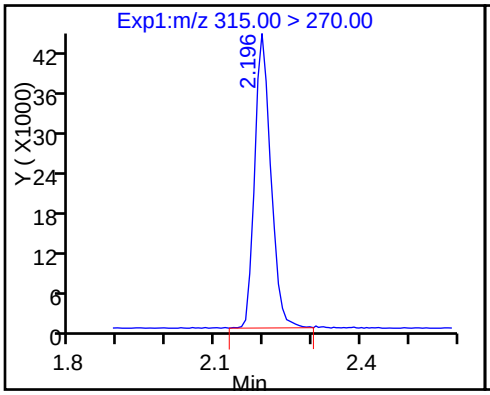
5 Perfluorobutanesulfonic acid



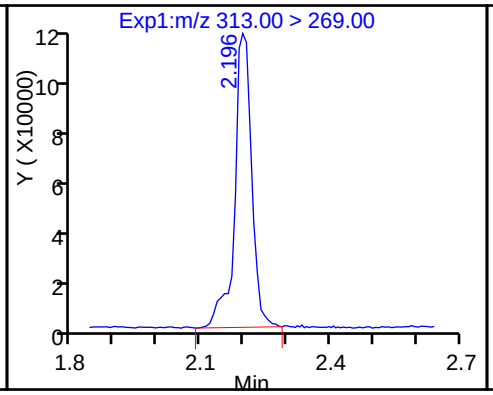
5 Perfluorobutanesulfonic acid



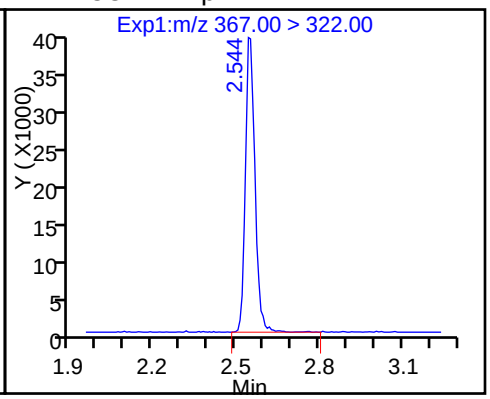
D 6 13C2 PFHxA



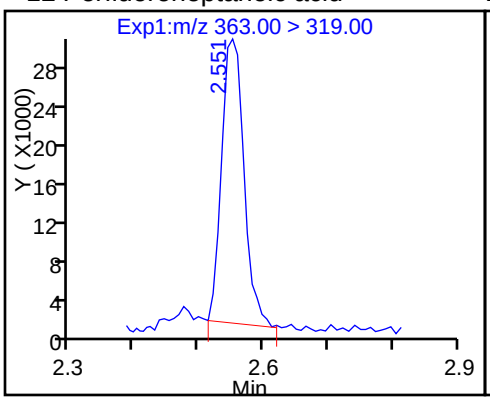
7 Perfluorohexanoic acid



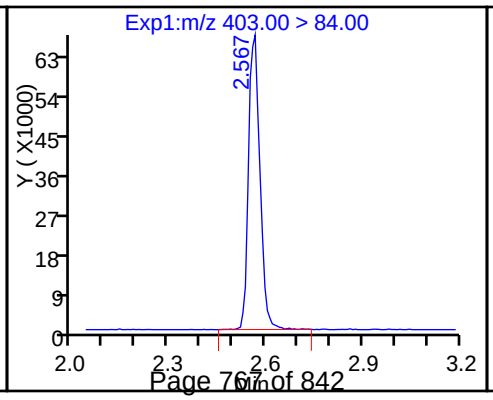
D 11 13C4-PFHpA



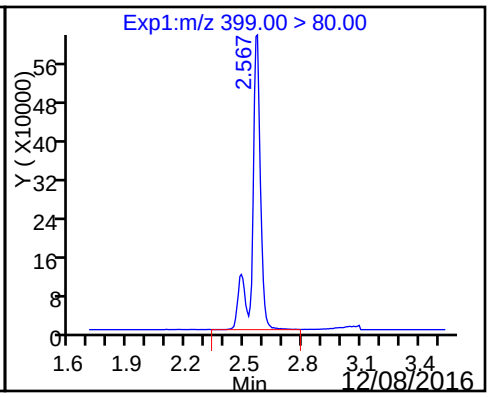
12 Perfluoroheptanoic acid



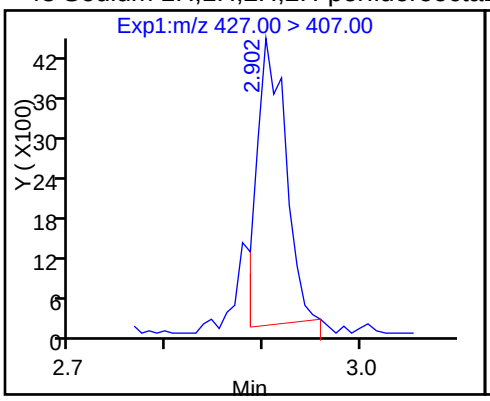
D 10 18O2 PFHxS



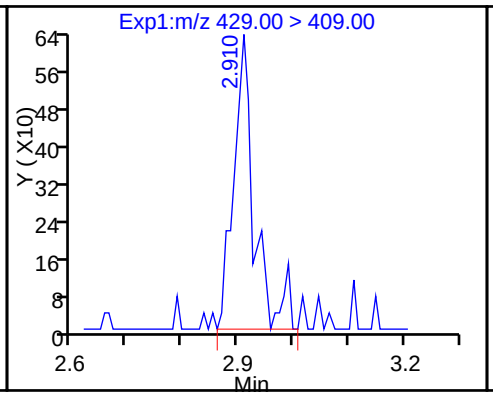
9 Perfluorohexanesulfonic acid



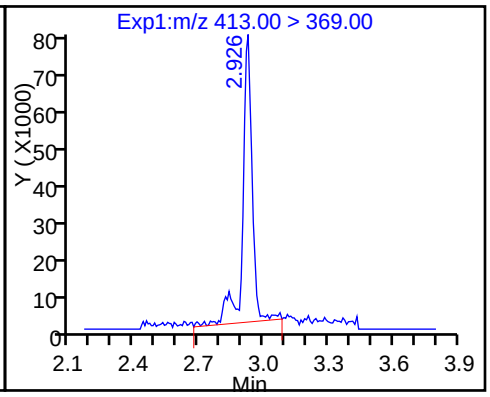
48 Sodium 1H,1H,2H,2H-perfluorooctane



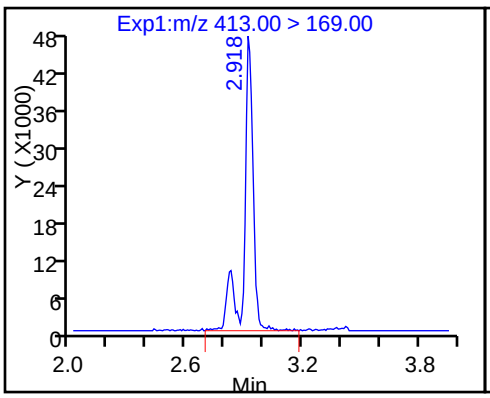
D 47 M2-6:2FTS



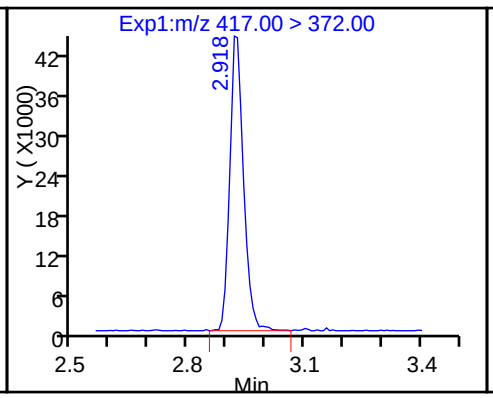
15 Perfluorooctanoic acid



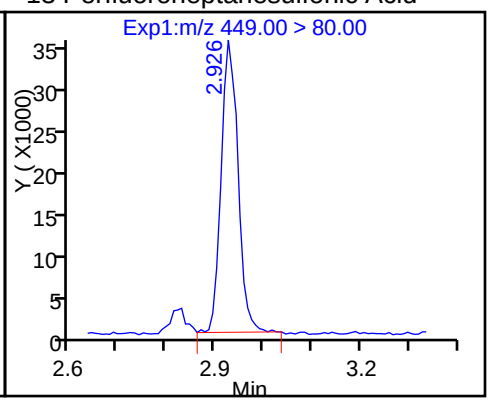
15 Perfluorooctanoic acid



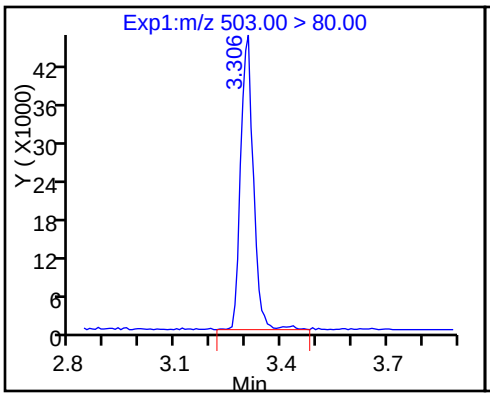
D 14 13C4 PFOA



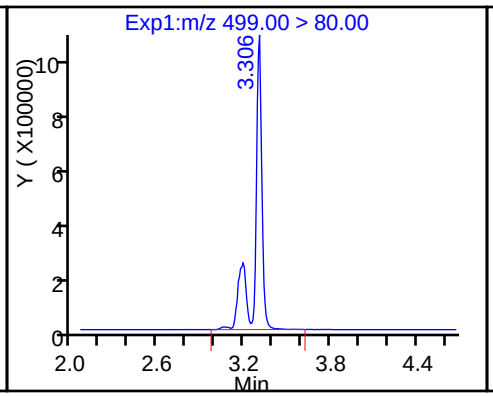
13 Perfluoroheptanesulfonic Acid



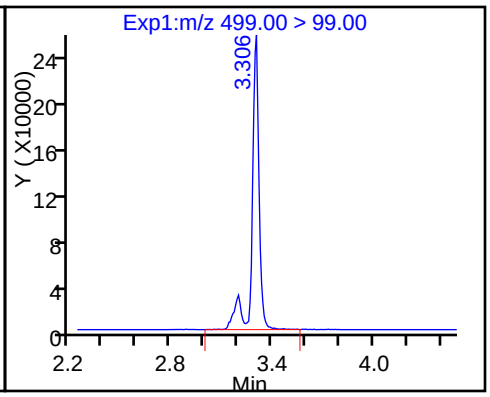
D 17 13C4 PFOS



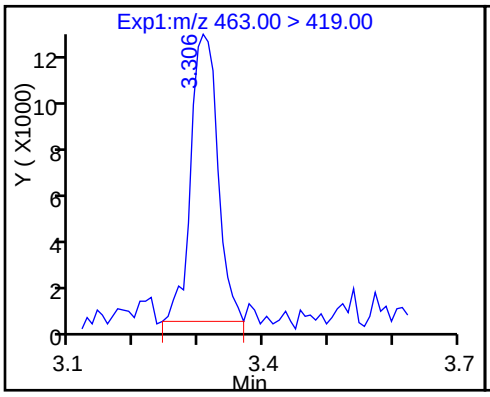
18 Perfluorooctane sulfonic acid



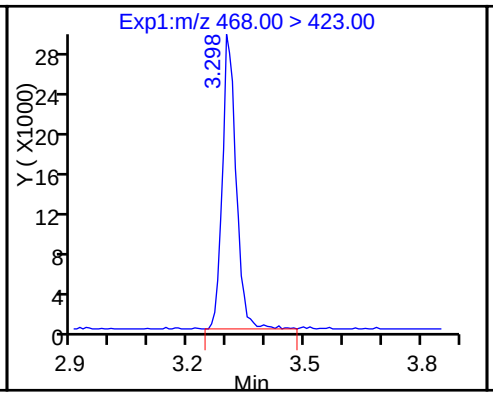
18 Perfluorooctane sulfonic acid



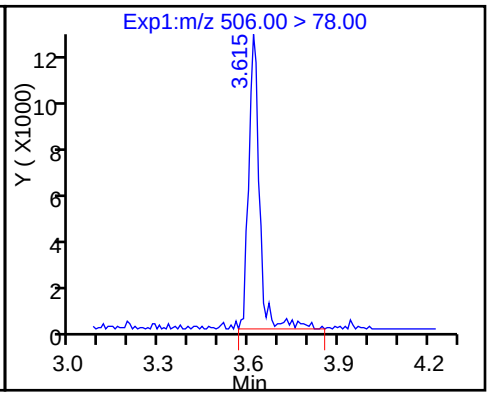
20 Perfluorononanoic acid



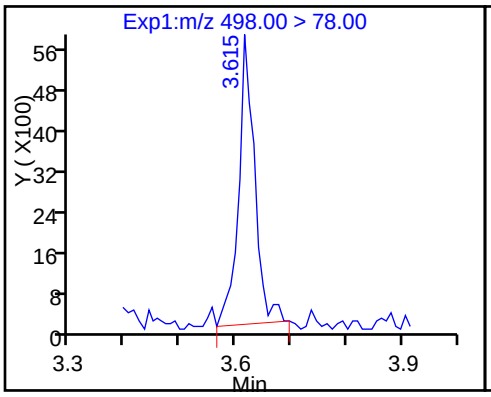
D 19 13C5 PFNA



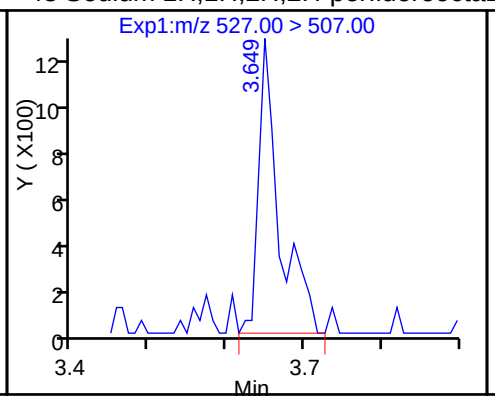
D 21 13C8 FOSA



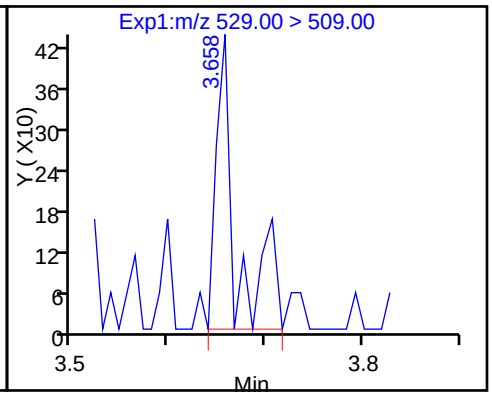
22 Perfluorooctane Sulfonamide



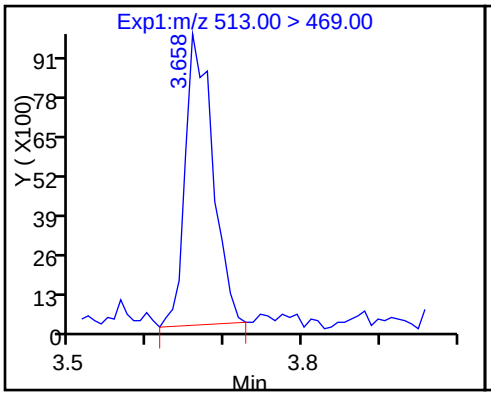
43 Sodium 1H,1H,2H,2H-perfluorooctane



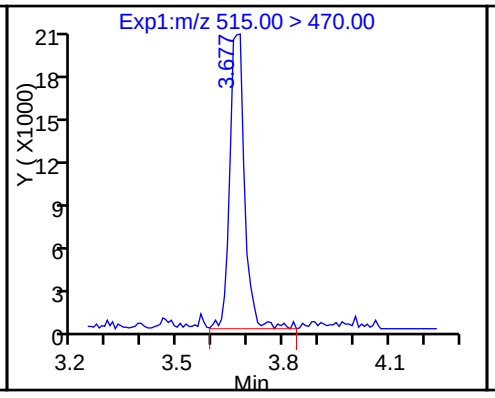
D 42 M2-8:2FTS



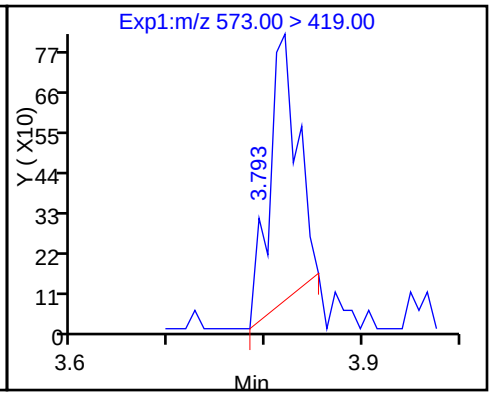
24 Perfluorodecanoic acid



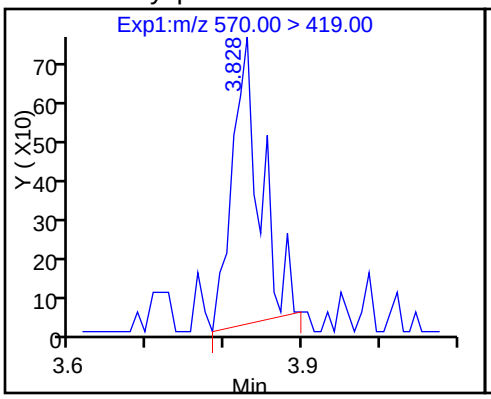
D 23 13C2 PFDA



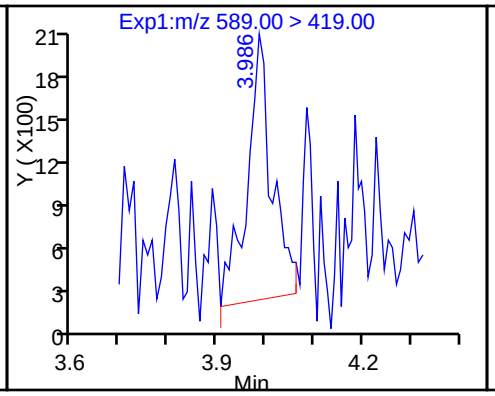
D 45 d3-NMeFOSAA



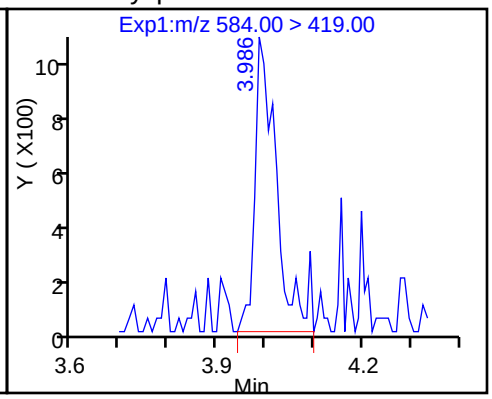
44 N-methyl perfluorooctane sulfonami



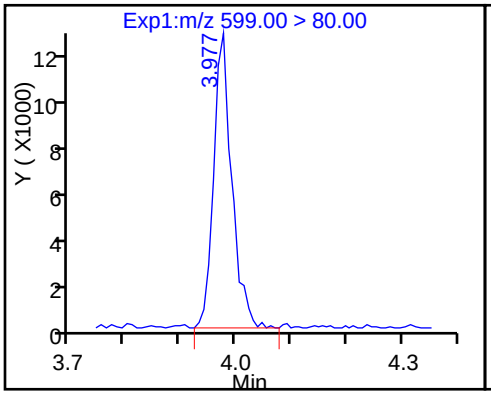
D 46 d5-NEtFOSAA



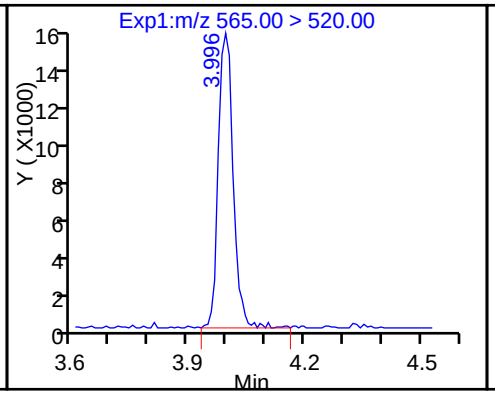
49 N-ethyl perfluorooctane sulfonamid



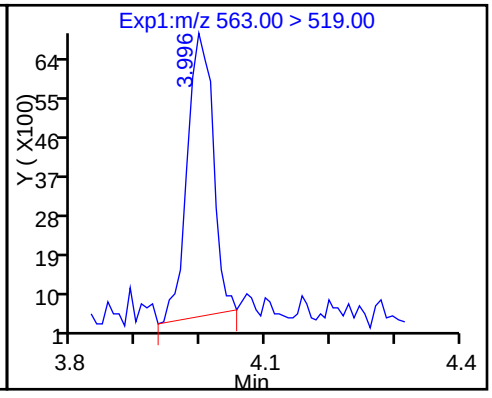
26 Perfluorodecane Sulfonic acid



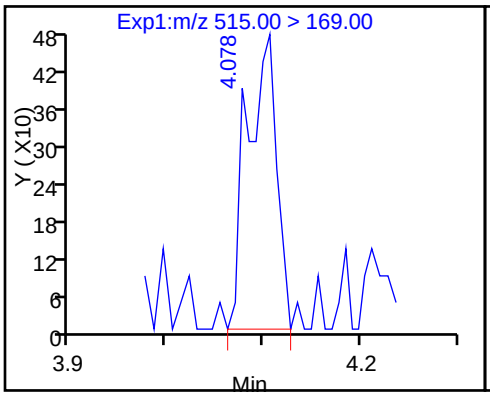
D 27 13C2 PFUnA



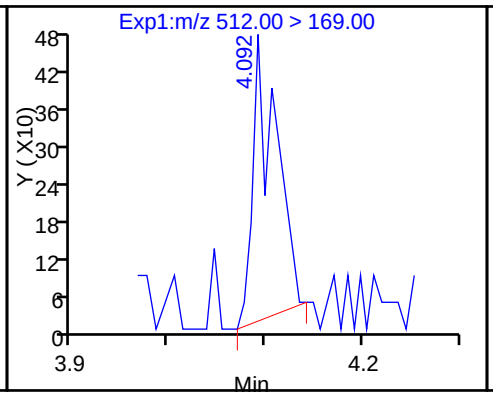
28 Perfluoroundecanoic acid



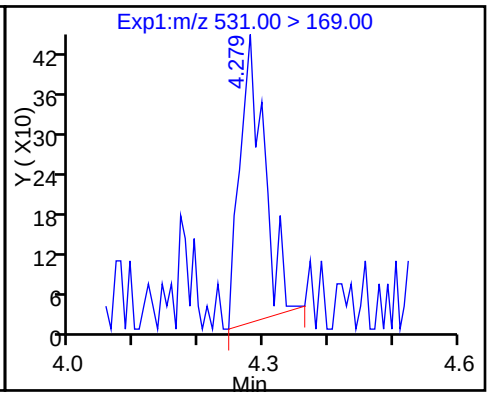
D 52 d-N-MeFOSA-M



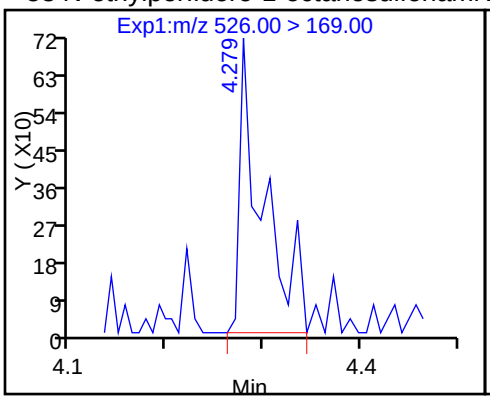
54 MeFOSA



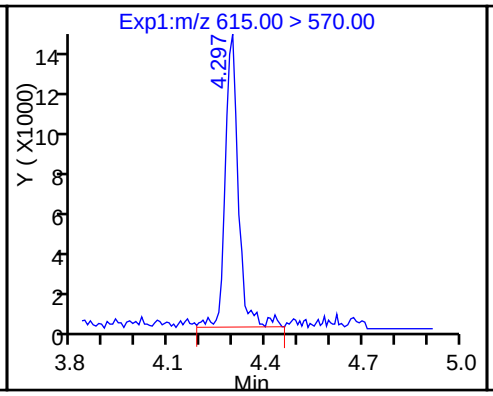
D 51 d-N-EtFOSA-M



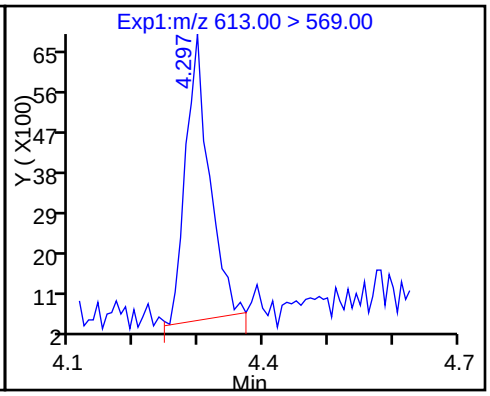
53 N-ethylperfluoro-1-octanesulfonami



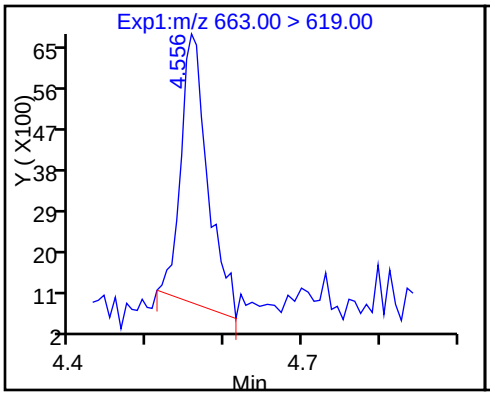
D 30 13C2 PFDoA



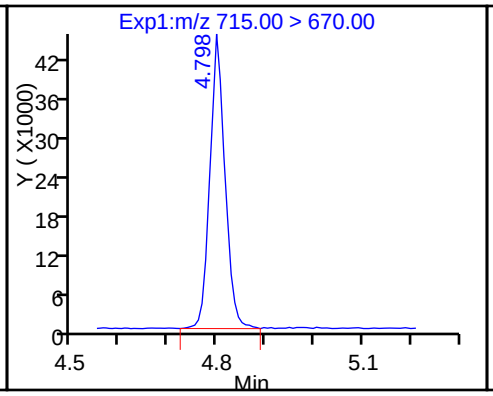
29 Perfluorododecanoic acid



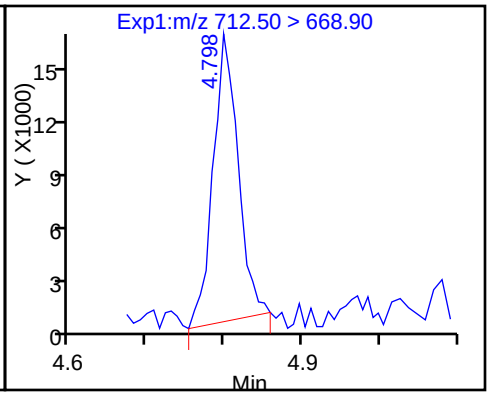
31 Perfluorotridecanoic acid



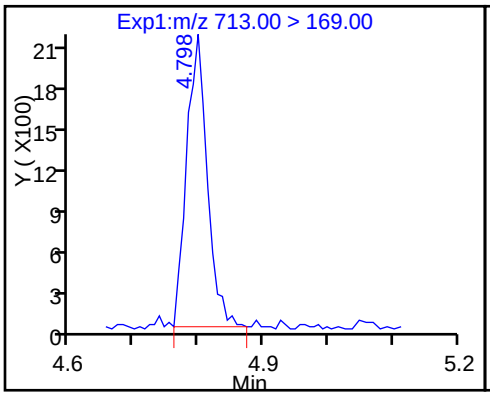
D 32 13C2-PFTeDA



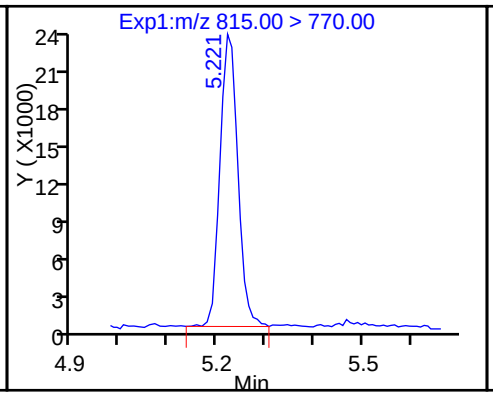
33 Perfluorotetradecanoic acid



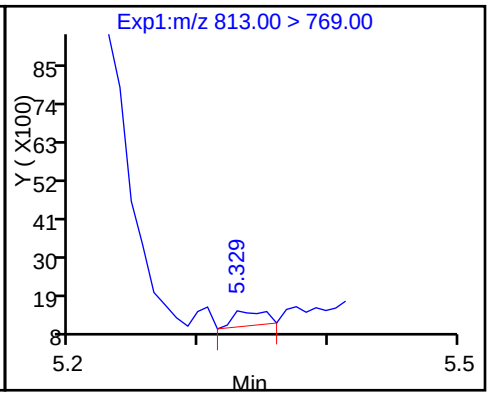
33 Perfluorotetradecanoic acid



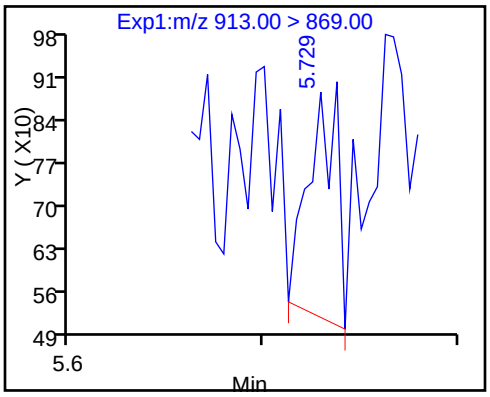
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-34-SO-14-15 MSD Lab Sample ID: 320-23542-3 MSD

Matrix: Solid Lab File ID: 20NOV2016D_009.d

Analysis Method: 537 (Modified) Date Collected: 11/14/2016 13:25

Extraction Method: SHAKE Date Extracted: 11/17/2016 12:49

Sample wt/vol: 5.03(g) Date Analyzed: 11/20/2016 21:40

Con. Extract Vol.: 1.0(mL) Dilution Factor: 1

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

% Moisture: 20.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 138814 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	13.1	M J	0.63	0.38	0.13
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*59.2*	*E 4*	*0.63*	0.38	*0.16*
375-73-5	Perfluorobutanesulfonic acid (PFBS)	5.82		0.50	0.38	0.13

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	84		25-150
STL00991	13C4 PFOS	60		25-150
STL00994	18O2 PFHxS	71		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_009.d
Lims ID: 320-23542-A-3-C MSD
Client ID:
Sample Type: MSD
Inject. Date: 20-Nov-2016 21:40:49 ALS Bottle#: 18 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 320-23542-a-3-c msd
Misc. Info.: Plate: 1 Rack: 4
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 28-Nov-2016 16:10:32 Calib Date: 14-Nov-2016 13:27:19
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161114-36864.b\14NOV2016A_018.d

Column 1 : Det: EXP1
Process Host: XAWRK018

First Level Reviewer: changnoit Date: 23-Nov-2016 15:40:12

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
1 Perfluorobutyric acid										
212.90 > 169.00	1.493	1.493	0.0	1.000	3924602	25.3		127	28486	
D 2 13C4 PFBA										
217.00 > 172.00	1.493	1.493	0.0		8914419	45.1		90.2	676825	
D 4 13C5-PFPeA										
267.90 > 223.00	1.762	1.752	0.010		7889404	49.3		98.7	680913	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.762	1.762	0.0	1.000	3679804	22.4		112	42582	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.791	1.791	0.0	1.000	5054313	23.3		132		
298.90 > 99.00	1.791	1.791	0.0	1.000	2120854		2.38(0.00-0.00)			
7 Perfluorohexanoic acid										
313.00 > 269.00	2.046	2.040	0.006	1.000	3310086	25.0		125	59541	
D 6 13C2 PFHxA										
315.00 > 270.00	2.040	2.040	0.0		7006202	48.3		96.5	420794	
D 11 13C4-PFHpA										
367.00 > 322.00	2.372	2.366	0.006		6057044	46.1		92.2	510636	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.372	2.372	0.0	1.000	2991013	24.1		121	23409	
D 10 18O2 PFHxS										
403.00 > 84.00	2.393	2.382	0.011		6769959	33.5		70.8	390301	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.393	2.387	0.006	1.000	4021663	26.5		146		
D 47 M2-6:2FTS										
429.00 > 409.00	2.705	2.704	0.001		4706	0.0898		0.0		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.697	2.713	-0.016	1.000	66749	NR		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										M
413.00 > 369.00	2.733	2.733	0.0	1.000	6274817	52.3		261	82921	M
413.00 > 169.00	2.733	2.733	0.0	1.000	4083088		1.54(0.90-1.10)		119504	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.733	2.733	0.0	1.000	2804556	26.3		138		
D 14 13C4 PFOA										
417.00 > 372.00	2.733	2.733	0.0		5712769	41.9		83.7	462739	
18 Perfluorooctane sulfonic acid										E
499.00 > 80.00	3.112	3.096	0.016	1.000	24076053	236.8		1276	1432958	E
499.00 > 99.00	3.112	3.096	0.016	1.000	5710876		4.22(0.90-1.10)		214353	
20 Perfluorononanoic acid										
463.00 > 419.00	3.104	3.096	0.008	1.000	2014160	23.6		118	17588	
D 19 13C5 PFNA										
468.00 > 423.00	3.104	3.096	0.008		4350577	39.8		79.5	314904	
D 17 13C4 PFOS										
503.00 > 80.00	3.104	3.096	0.008		4467929	28.7		60.0	213463	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.458	3.456	0.002	1.002	15655	NR		0.0		
D 42 M2-8:2FTS										
529.00 > 509.00	3.451	3.456	-0.005		2433	0.0446		0.0		
D 21 13C8 FOSA										
506.00 > 78.00	3.458	3.458	0.0		5098184	20.3		40.7	261784	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.458	3.458	0.0	1.000	9516362	103.6		518	1565	
D 23 13C2 PFDA										
515.00 > 470.00	3.474	3.465	0.009		3899805	38.9		77.8	296535	
24 Perfluorodecanoic acid										
513.00 > 469.00	3.466	3.465	0.001	1.000	1783949	23.1		115	21182	
D 45 d3-NMeFOSAA										
573.00 > 419.00	3.608	3.623	-0.015		623	0.0143		0.0		
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.625	3.632	-0.007	1.005	3077	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.782	3.782	0.0	1.000	762185	13.4		69.6		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.782	3.789	-0.007		966	0.0196		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.800	3.798	0.002	1.005	1425	NR		0.0		
D 27 13C2 PFUnA										
565.00 > 520.00	3.800	3.800	0.0		2577031	32.9		65.7	137754	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.791	3.800	-0.009	1.000	1172115	22.1		111	10947	
D 52 d-N-MeFOSA-M										
515.00 > 169.00	3.974	3.963	0.011		1907	0.0315		0.0		
54 MeFOSA										
512.00 > 169.00	3.965	3.972	-0.007	1.000	1424	NR		0.0		
29 Perfluorododecanoic acid										
613.00 > 569.00	4.090	4.091	-0.001	1.000	730323	22.9		114	17963	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 30 13C2 PFDoA										
615.00 > 570.00	4.090	4.091	-0.001		1672443	21.6		43.2	98859	
D 51 d-N-EtFOSA-M										
531.00 > 169.00	4.140	4.153	-0.013		1374	0.0251		0.0		
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.352	4.352	0.0	1.000	584194	18.5		92.5	19236	
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.593	4.586	0.007	1.000	1003576	16.9		84.3	31062	
713.00 > 169.00	4.586	4.586	0.0	0.999	176962		5.67(0.00-0.00)		36085	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.586	4.586	0.0		2840436	16.6		33.3	301029	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	4.993	4.990	0.003	1.000	737996	20.0		99.9	17114	
D 34 13C2-PFHxDA										
815.00 > 770.00	4.993	4.990	0.003		1781288	18.9		37.8	185360	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.339	5.344	-0.005	1.000	503907	14.0		70.0	9848	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Report Date: 28-Nov-2016 16:10:33 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_009.d

Injection Date: 20-Nov-2016 21:40:49 Instrument ID: A8_N

Lims ID: 320-23542-A-3-C MSD

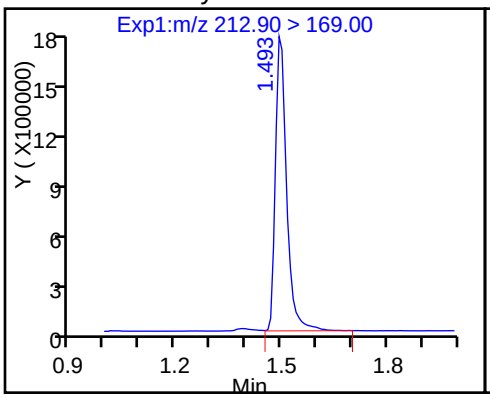
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 18 Worklist Smp#: 9

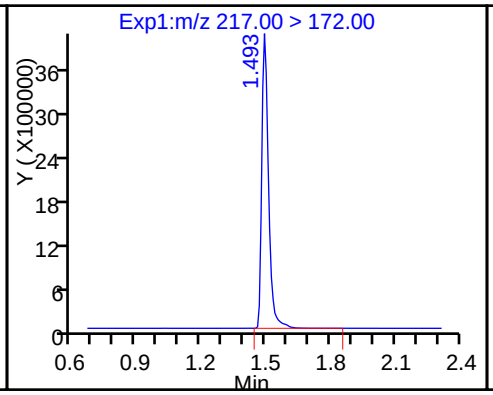
Injection Vol: 2.0 ul Dil. Factor: 1.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

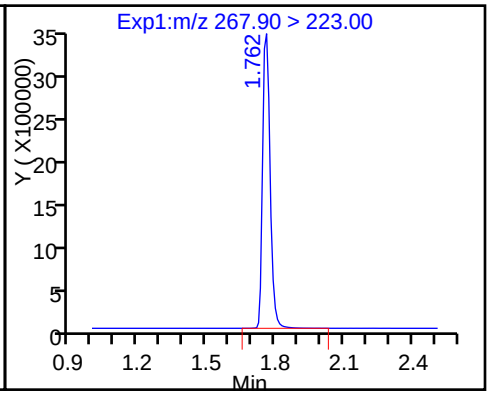
1 Perfluorobutyric acid



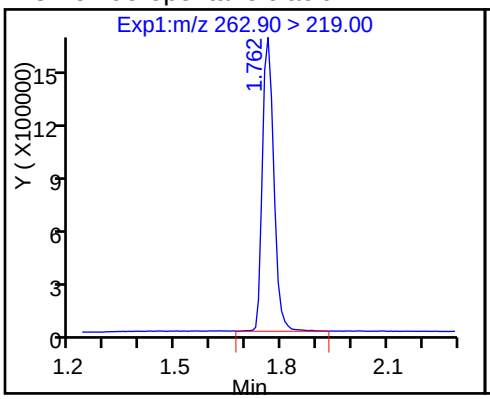
D 2 13C4 PFBA



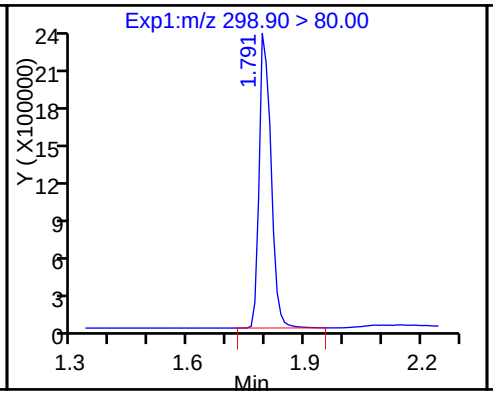
D 4 13C5-PFPeA



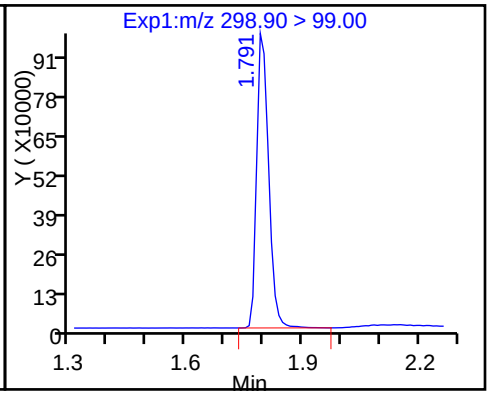
3 Perfluoropentanoic acid



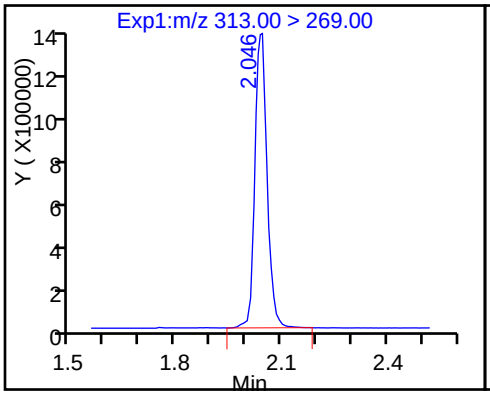
5 Perfluorobutanesulfonic acid



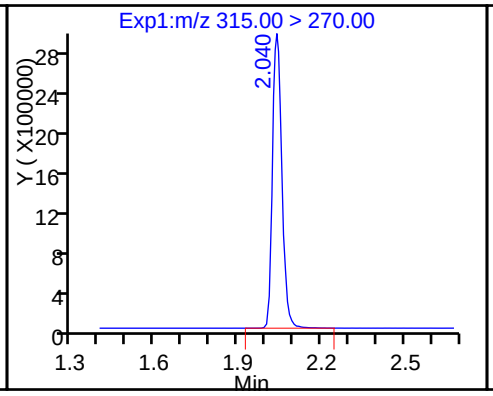
5 Perfluorobutanesulfonic acid



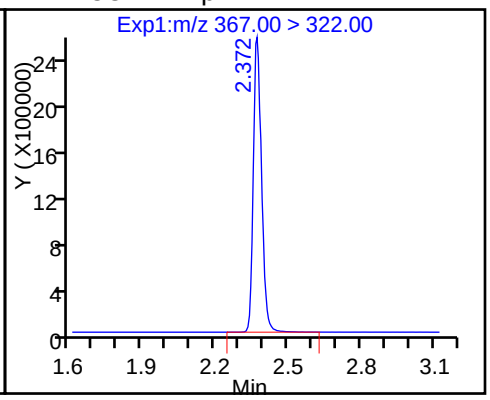
7 Perfluorohexanoic acid



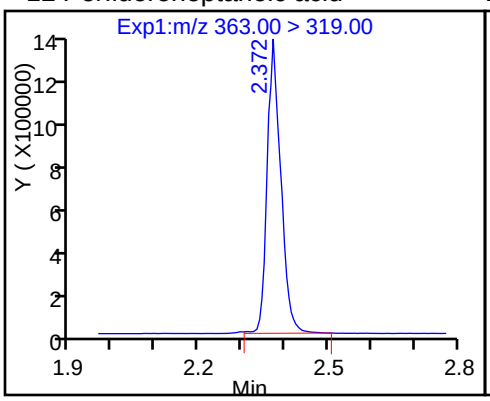
D 6 13C2 PFHxA



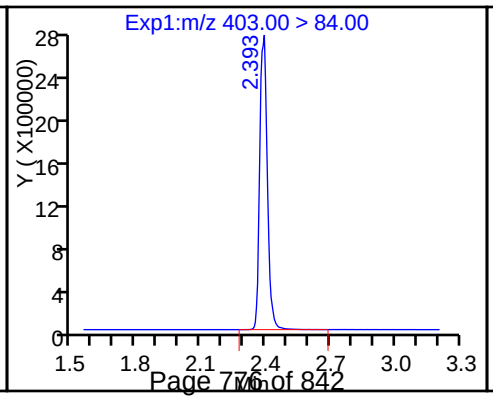
D 11 13C4-PFHpA



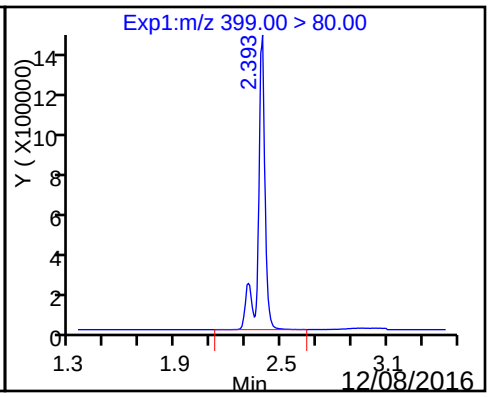
12 Perfluoroheptanoic acid



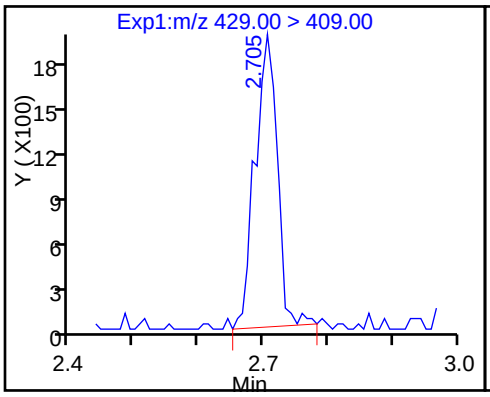
D 10 18O2 PFHxS



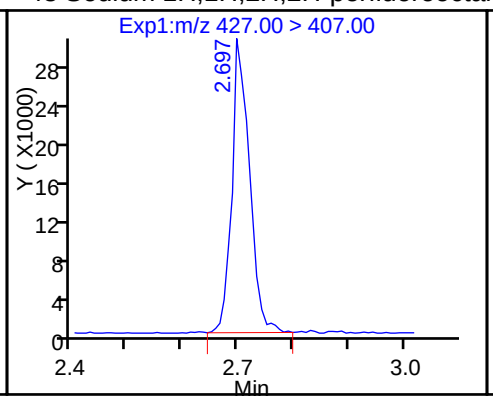
9 Perfluorohexanesulfonic acid



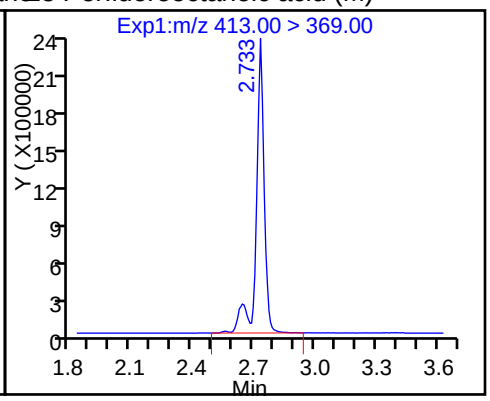
D 47 M2-6:2FTS



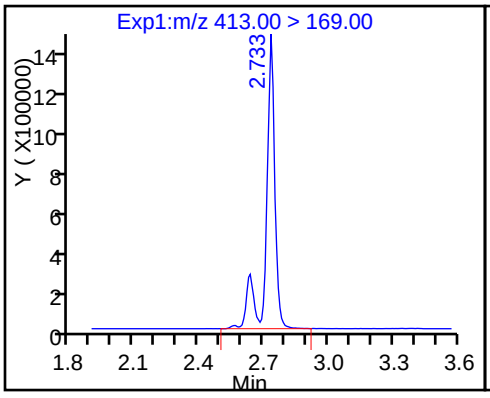
48 Sodium 1H,1H,2H,2H-perfluorooctane



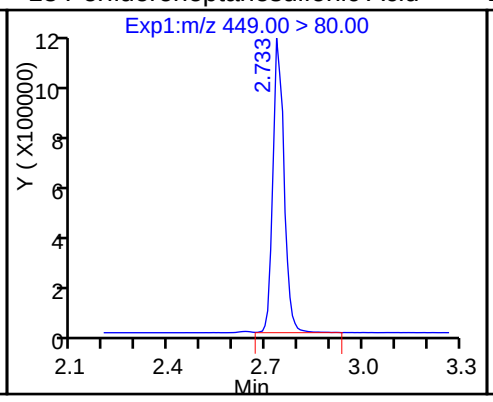
15 Perfluorooctanoic acid (M)



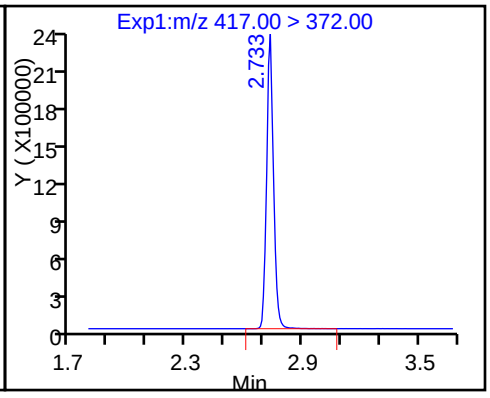
15 Perfluorooctanoic acid



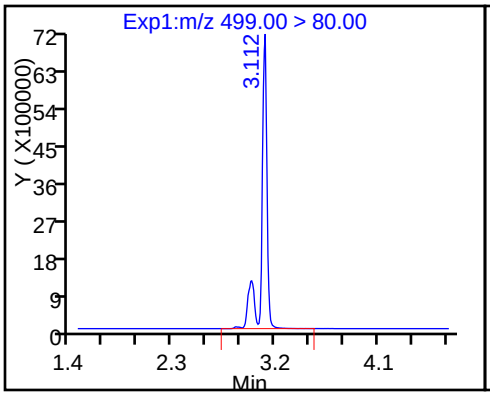
13 Perfluoroheptanesulfonic Acid



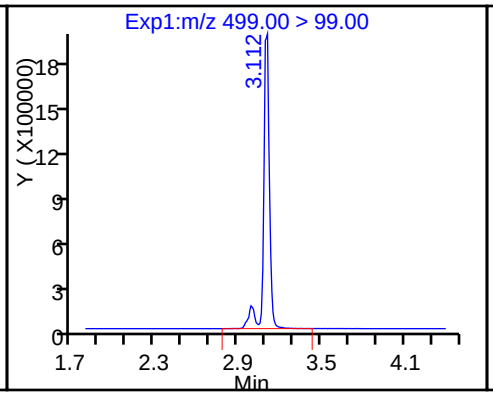
D 14 13C4 PFOA



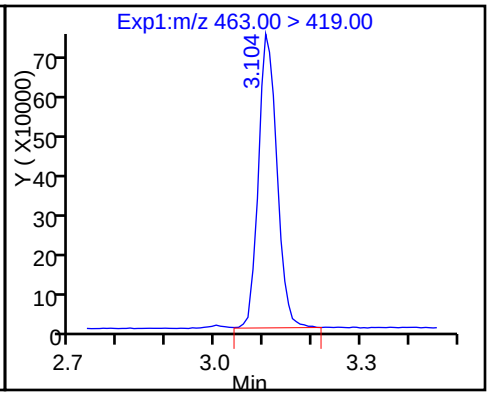
18 Perfluorooctane sulfonic acid



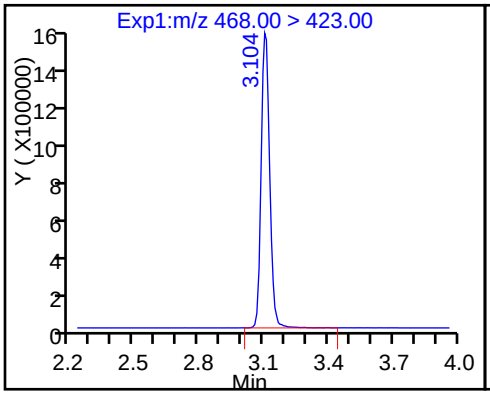
18 Perfluorooctane sulfonic acid



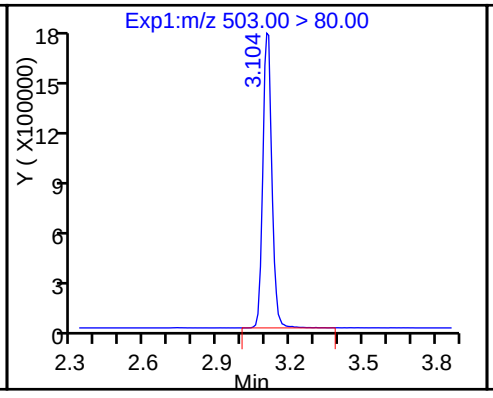
20 Perfluorononanoic acid



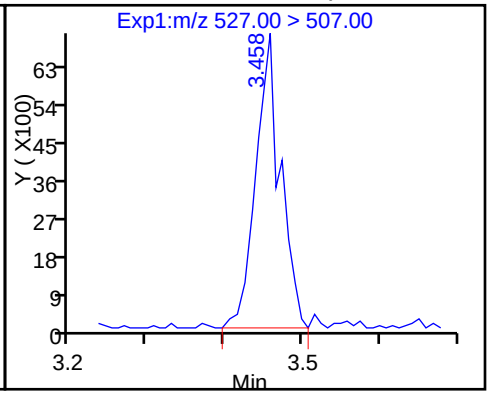
D 19 13C5 PFNA



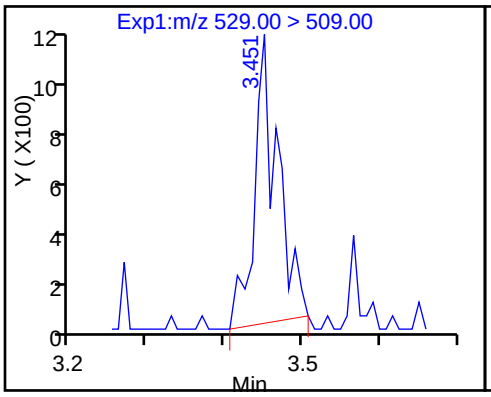
D 17 13C4 PFOS



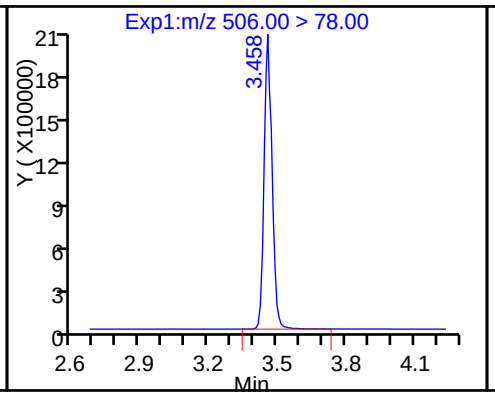
43 Sodium 1H,1H,2H,2H-perfluorooctane



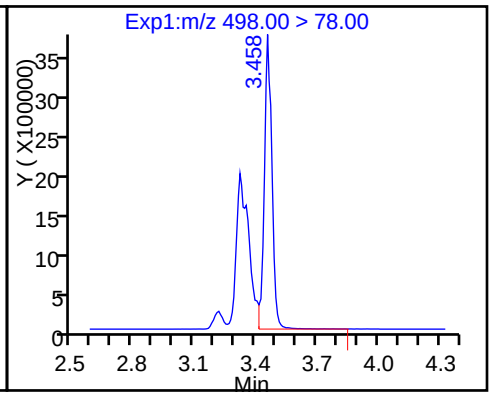
D 42 M2-8:2FTS



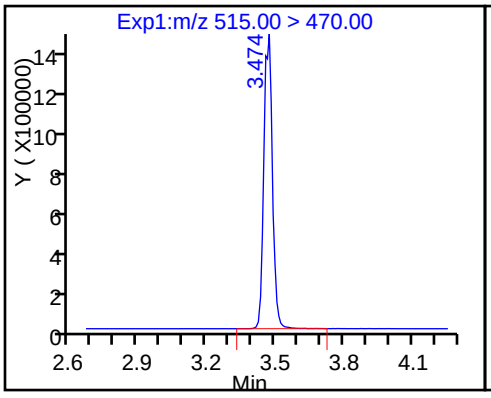
D 21 13C8 FOSA



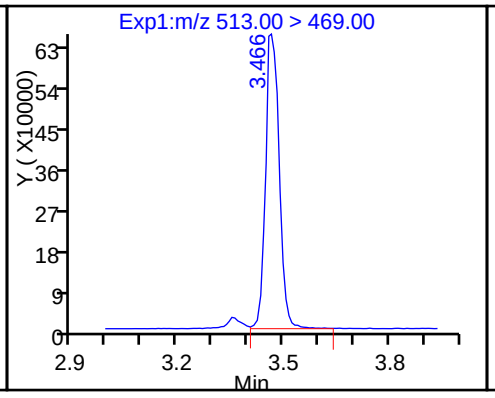
22 Perfluorooctane Sulfonamide



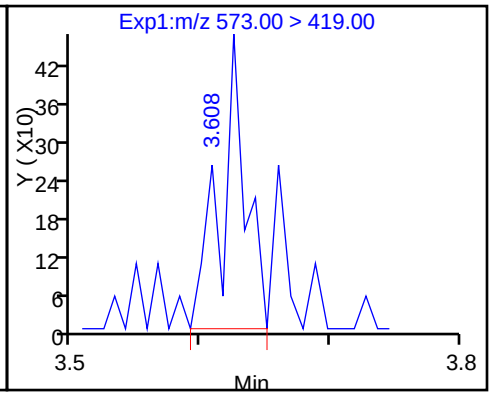
D 23 13C2 PFDA



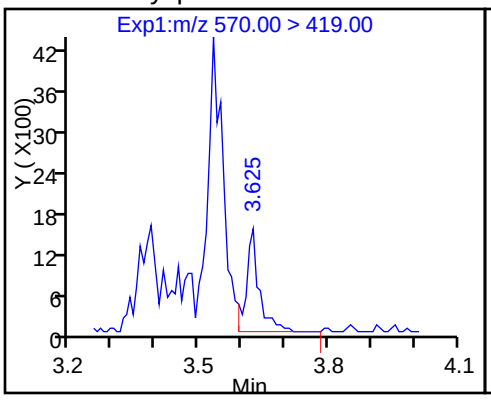
24 Perfluorodecanoic acid



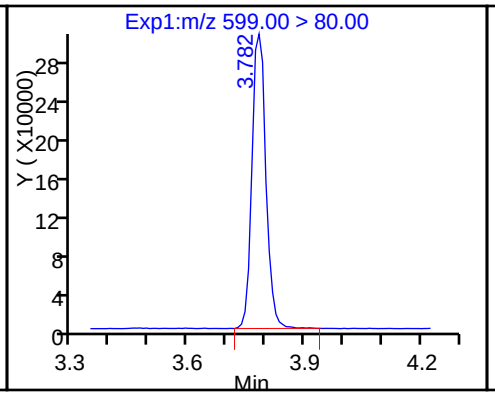
D 45 d3-NMeFOSAA



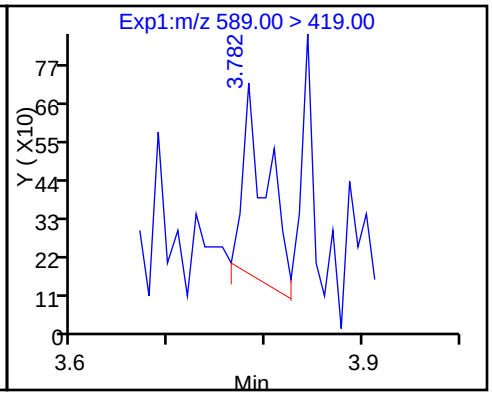
44 N-methyl perfluorooctane sulfonami



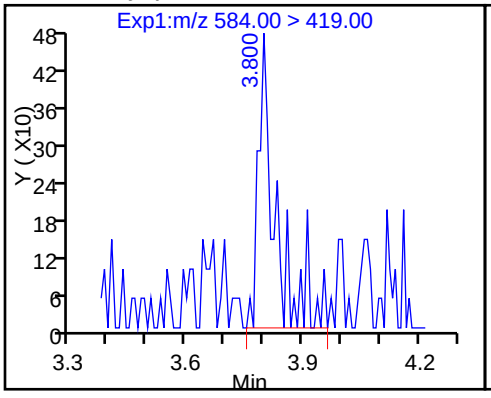
26 Perfluorodecane Sulfonic acid



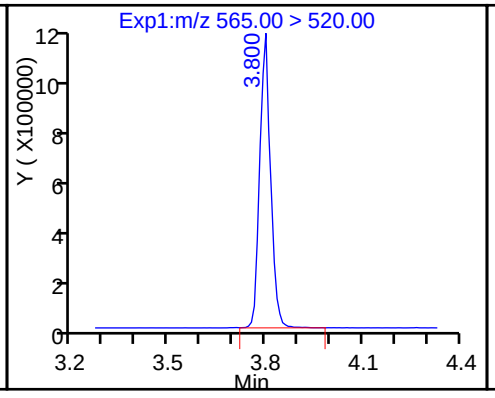
D 46 d5-NEtFOSAA



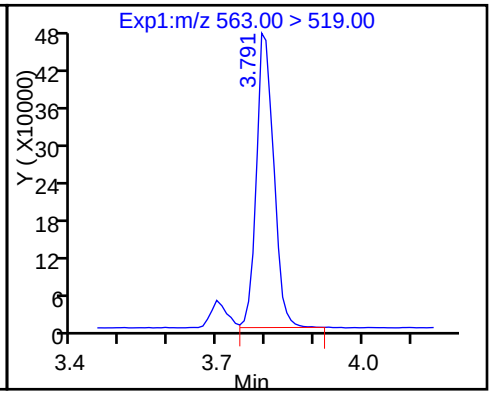
49 N-ethyl perfluorooctane sulfonamid



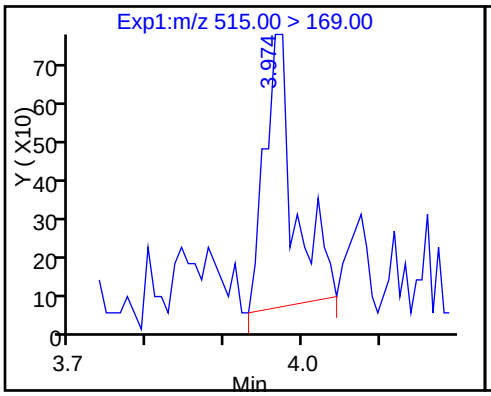
D 27 13C2 PFUnA



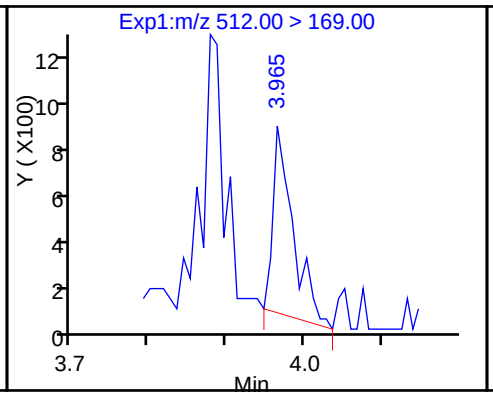
28 Perfluoroundecanoic acid



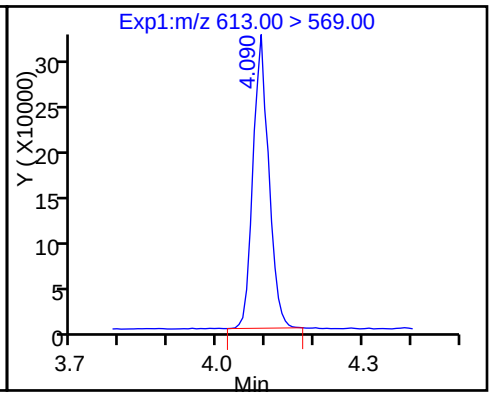
D 52 d-N-MeFOSA-M



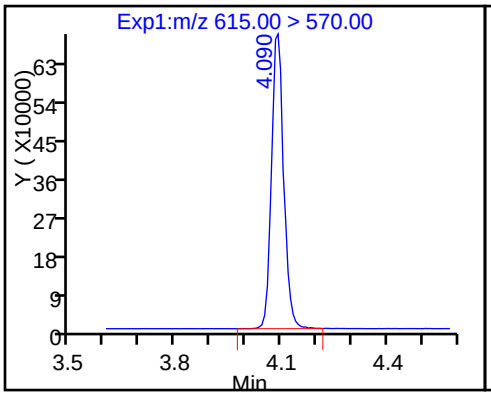
54 MeFOSA



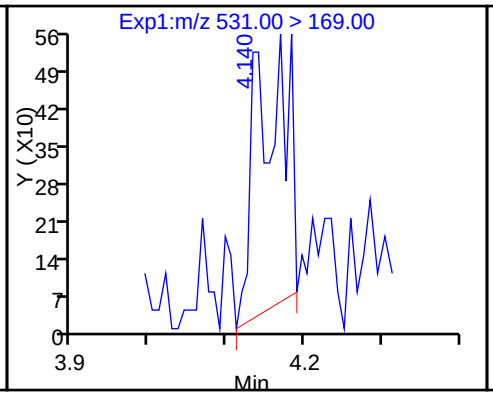
29 Perfluorododecanoic acid



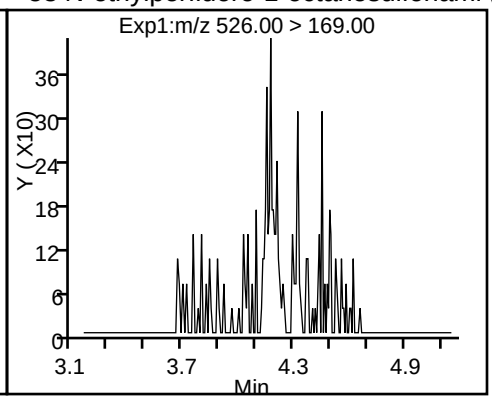
D 30 13C2 PFDoA



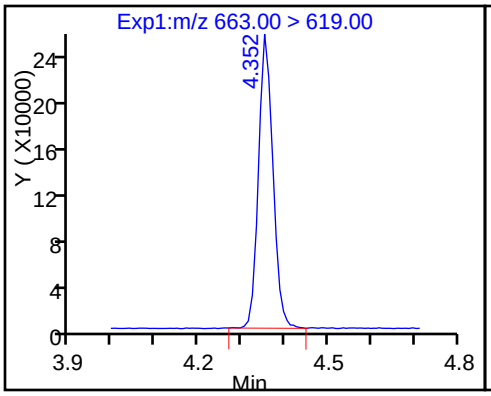
D 51 d-N-EtFOSA-M



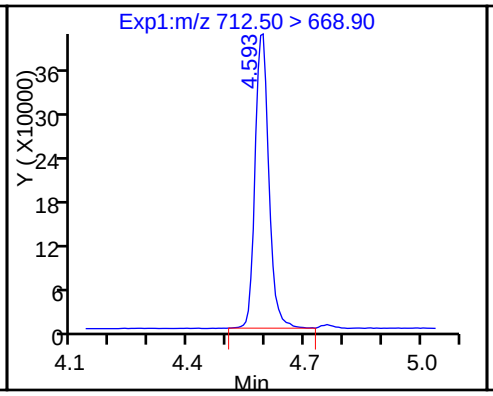
53 N-ethylperfluoro-1-octanesulfonami (ND)



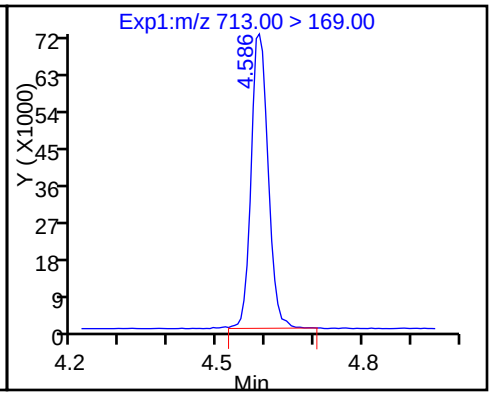
31 Perfluorotridecanoic acid



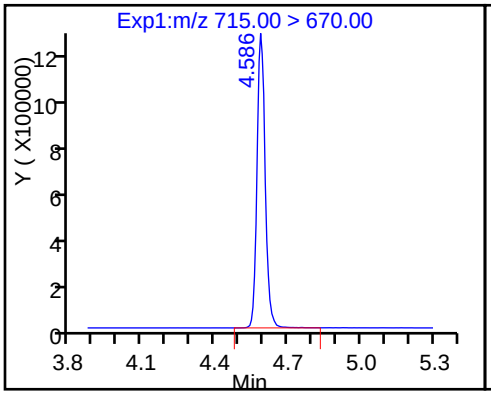
33 Perfluorotetradecanoic acid



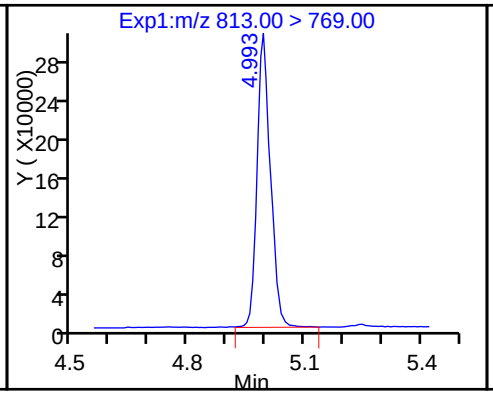
33 Perfluorotetradecanoic acid



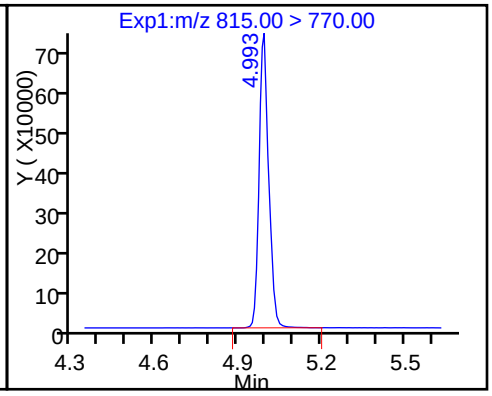
D 32 13C2-PFTeDA



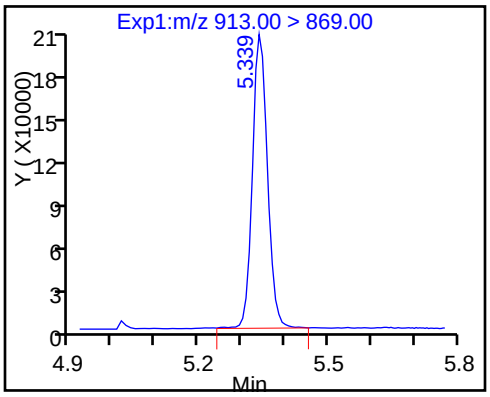
35 Perfluorohexadecanoic acid



D 34 13C2-PFHxDA



36 Perfluorooctadecanoic acid



Manual Integration/User Assign Peak Report

TestAmerica Sacramento

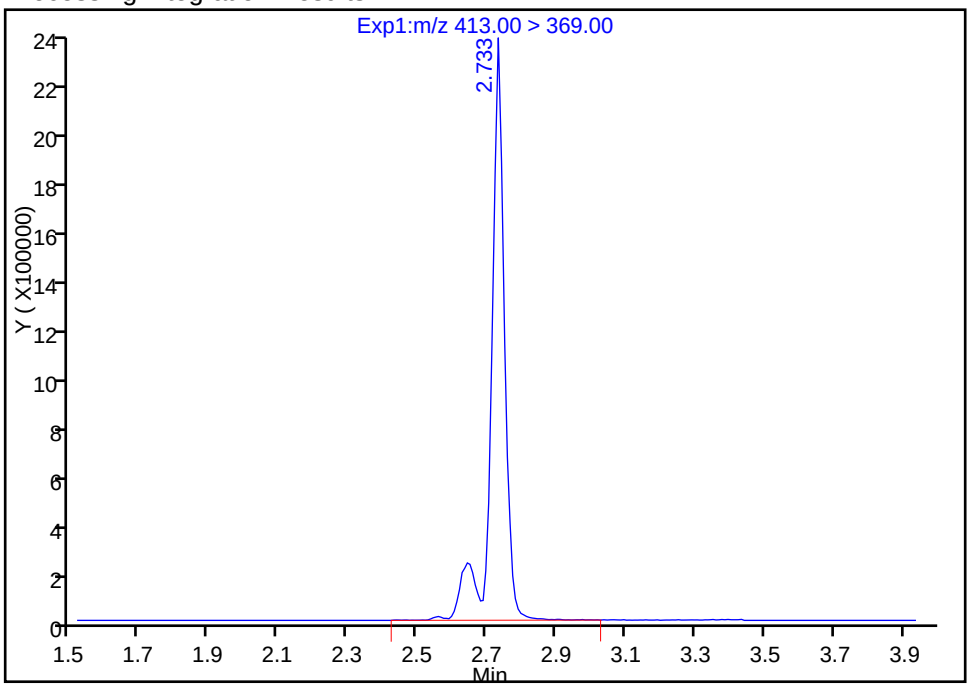
Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b\20NOV2016D_009.d
Injection Date: 20-Nov-2016 21:40:49 Instrument ID: A8_N
Lims ID: 320-23542-A-3-C MSD
Client ID:
Operator ID: A8-PC\A8 ALS Bottle#: 18 Worklist Smp#: 9
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Method: A8_N Limit Group: LC PFC_DOD ICAL
Column: Detector EXP1

15 Perfluorooctanoic acid, CAS: 335-67-1

Signal: 1

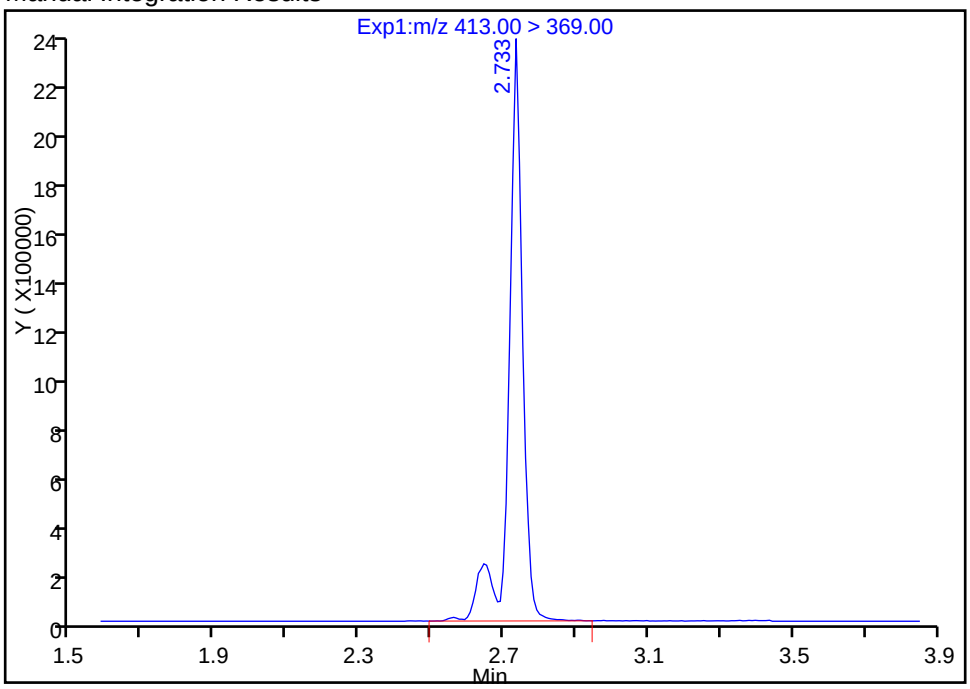
Processing Integration Results

RT: 2.73
Area: 6297827
Amount: 52.490926
Amount Units: ng/ml



Manual Integration Results

RT: 2.73
Area: 6274817
Amount: 52.299143
Amount Units: ng/ml



Reviewer: westendorfc, 28-Nov-2016 16:10:32
Audit Action: Manually Integrated Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Client Sample ID: DPT-16-34-SO-14-15 MSD DL Lab Sample ID: 320-23542-3 MSD DL

Matrix: Solid Lab File ID: 02DEC2016B_008.d

Analysis Method: 537 (Modified) Date Collected: 11/14/2016 13:25

Extraction Method: SHAKE Date Extracted: 11/17/2016 12:49

Sample wt/vol: 5.03(g) Date Analyzed: 12/02/2016 13:52

Con. Extract Vol.: 1.0(mL) Dilution Factor: 10

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

% Moisture: 20.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 140382 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*13.1*	*J D*	*6.3*	3.8	*1.3*
1763-23-1	Perfluorooctane Sulfonate (PFOS)	63.2	4 D	6.3	3.8	1.6
375-73-5	*Perfluorobutanesulfonic acid (PFBS)*	*4.97*	*J D*	*5.0*	3.8	*1.3*

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	108		25-150
STL00991	13C4 PFOS	67		25-150
STL00994	18O2 PFHxS	82		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_008.d
Lims ID: 320-23542-A-3-C MSD
Client ID:
Sample Type: MSD
Inject. Date: 02-Dec-2016 13:52:05 ALS Bottle#: 8 Worklist Smp#: 31
Injection Vol: 2.0 ul Dil. Factor: 10.0000
Sample Info: 320-23542-A-3-C MSD 10X
Misc. Info.: Plate: 1 Rack: 3
Operator ID: A8-PC\A8 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\A8_N.m
Limit Group: LC PFC_DOD ICAL
Last Update: 02-Dec-2016 15:02:58 Calib Date: 02-Dec-2016 12:29:29
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016A_020.d

Column 1 : Det: EXP1
Process Host: XAWRK011

First Level Reviewer: chandrasenas Date: 02-Dec-2016 15:03:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 2 13C4 PFBA										
217.00 > 172.00	1.582	1.615	-0.033		1456494	4.28		8.6	239031	
1 Perfluorobutyric acid										
212.90 > 169.00	1.582	1.617	-0.035	1.000	638967	2.48		124	5741	
D 4 13C5-PFPeA										
267.90 > 223.00	1.868	1.918	-0.050		1193194	4.42		8.8	510377	
3 Perfluoropentanoic acid										
262.90 > 219.00	1.868	1.920	-0.052	1.000	561453	2.26		113	5113	
5 Perfluorobutanesulfonic acid										
298.90 > 80.00	1.907	1.961	-0.054	1.000	791728	1.99		113		
298.90 > 99.00	1.907	1.961	-0.054	1.000	319091		2.48(0.00-0.00)			
D 6 13C2 PFHxA										
315.00 > 270.00	2.179	2.239	-0.060		1067043	4.33		8.7	241605	
7 Perfluorohexanoic acid										
313.00 > 269.00	2.179	2.241	-0.062	1.000	477249	2.34		117	15888	
D 11 13C4-PFHpA										
367.00 > 322.00	2.530	2.599	-0.069		1007679	4.79		9.6	137506	
12 Perfluoroheptanoic acid										
363.00 > 319.00	2.530	2.600	-0.070	1.000	492634	2.36		118	7231	
D 10 18O2 PFHxS										
403.00 > 84.00	2.545	2.614	-0.069		1166617	3.86		8.2	233763	
9 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.545	2.615	-0.070	1.000	691425	2.65		145		
48 Sodium 1H,1H,2H,2H-perfluorooctane										
427.00 > 407.00	2.879	2.913	-0.034	1.000	22916	NR		0.0		
D 47 M2-6:2FTS										
429.00 > 409.00	2.903	2.915	-0.012		1248	0.008961		0.0		

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
15 Perfluorooctanoic acid										
413.00 > 369.00	2.903	2.984	-0.081	1.000	1277290	5.26		263	22319	
413.00 > 169.00	2.903	2.984	-0.081	1.000	820186		1.56(0.90-1.10)		46579	
D 14 13C4 PFOA										
417.00 > 372.00	2.903	2.984	-0.081		1190163	5.42		10.8	251143	
13 Perfluoroheptanesulfonic Acid										
449.00 > 80.00	2.903	2.986	-0.083	1.000	477113	2.47		130		
D 17 13C4 PFOS										
503.00 > 80.00	3.277	3.365	-0.089		788724	3.22		6.7	64982	
18 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.284	3.366	-0.082	1.000	4535001	25.3		1362	387610	
499.00 > 99.00	3.277	3.366	-0.090	0.998	1032788		4.39(0.90-1.10)		189250	
20 Perfluorononanoic acid										
463.00 > 419.00	3.284	3.373	-0.089	1.000	376887	2.38		119	7503	
D 19 13C5 PFNA										
468.00 > 423.00	3.284	3.374	-0.090		797847	4.48		9.0	155389	
D 21 13C8 FOSA										
506.00 > 78.00	3.591	3.651	-0.060		843534	2.04		4.1	110327	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.600	3.656	-0.056	1.000	1574853	9.98		499	1504	
43 Sodium 1H,1H,2H,2H-perfluorooctane										
527.00 > 507.00	3.633	3.674	-0.041	1.000	3203	NR		0.0		
24 Perfluorodecanoic acid										
513.00 > 469.00	3.803	3.738	0.065	1.000	1479	0.0124		0.6	3.0	
D 23 13C2 PFDA										
515.00 > 470.00	3.642	3.738	-0.096		617509	3.72		7.4	28678	
44 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.812	3.847	-0.035	1.000	1034	NR		0.0		
D 46 d5-NEtFOSAA										
589.00 > 419.00	3.997	4.009	-0.012		1603	0.0180		0.0		
49 N-ethyl perfluorooctane sulfonamid										
584.00 > 419.00	3.978	4.016	-0.038	0.995	1405	NR		0.0		
26 Perfluorodecane Sulfonic acid										
599.00 > 80.00	3.951	4.049	-0.098	1.000	132178	1.28		66.3		
D 27 13C2 PFUnA										
565.00 > 520.00	3.978	4.070	-0.092		374417	2.98		6.0	72156	
28 Perfluoroundecanoic acid										
563.00 > 519.00	3.978	4.071	-0.093	1.000	169512	2.14		107	3894	
D 30 13C2 PFDoA										
615.00 > 570.00	4.272	4.370	-0.098		249643	2.14		4.3	9359	
29 Perfluorododecanoic acid										
613.00 > 569.00	4.263	4.370	-0.107	1.000	113133	2.39		120	2193	
31 Perfluorotridecanoic acid										
663.00 > 619.00	4.538	4.636	-0.098	1.000	76589	1.47		73.7	832	
D 32 13C2-PFTeDA										
715.00 > 670.00	4.776	4.882	-0.106		417948	1.73		3.5	58569	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
33 Perfluorotetradecanoic acid										
712.50 > 668.90	4.783	4.884	-0.101	1.000	173506	1.80		89.9	1001	
713.00 > 169.00	4.776	4.884	-0.108	0.998	25932		6.69(0.00-0.00)		11692	
D 34 13C2-PFHxDA										
815.00 > 770.00	5.201	5.320	-0.119		197723	1.52		3.0	16561	
35 Perfluorohexadecanoic acid										
813.00 > 769.00	5.307	5.320	-0.013	1.000	1425	-0.7943		-39.7	11.6	
36 Perfluorooctadecanoic acid										
913.00 > 869.00	5.814	5.720	0.094	1.000	410	0.0104		0.5	6.7	

QC Flag Legend

Processing Flags

NR - Missing Quant Standard

Report Date: 02-Dec-2016 15:03:31 Chrom Revision: 2.2 14-Nov-2016 08:15:18

TestAmerica Sacramento

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b\02DEC2016B_008.d

Injection Date: 02-Dec-2016 13:52:05 Instrument ID: A8_N

Lims ID: 320-23542-A-3-C MSD

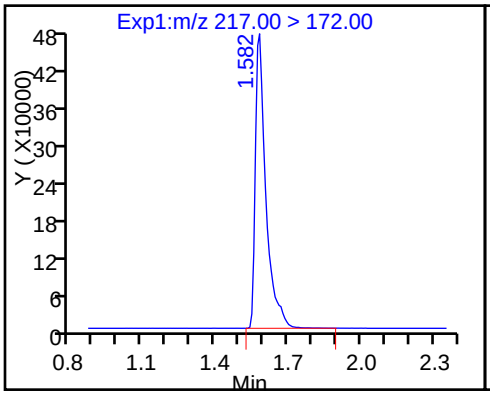
Client ID:

Operator ID: A8-PC\A8 ALS Bottle#: 8 Worklist Smp#: 31

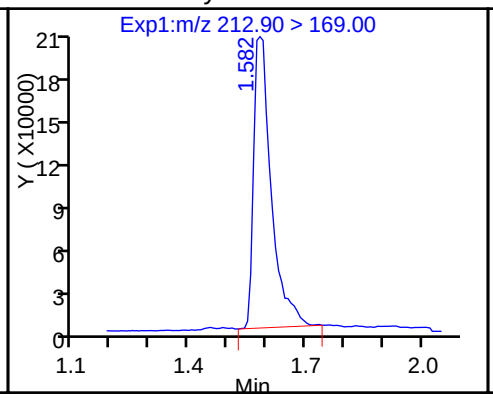
Injection Vol: 2.0 ul Dil. Factor: 10.0000

Method: A8_N Limit Group: LC PFC_DOD ICAL

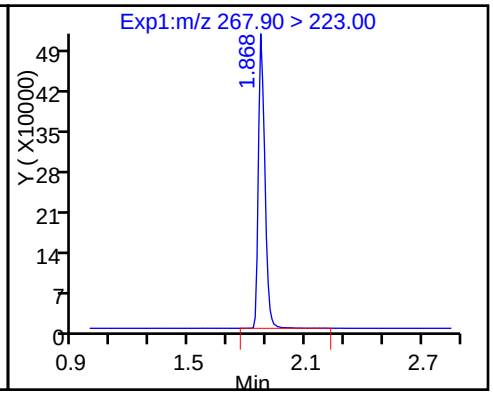
D 2 13C4 PFBA



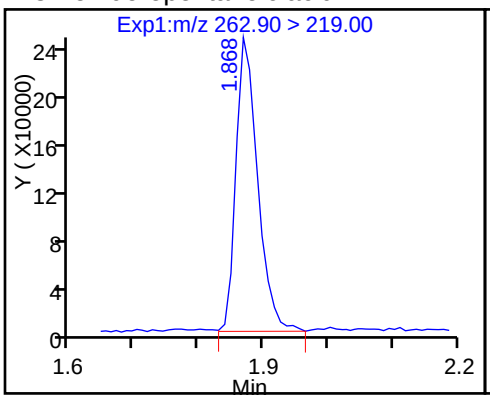
1 Perfluorobutyric acid



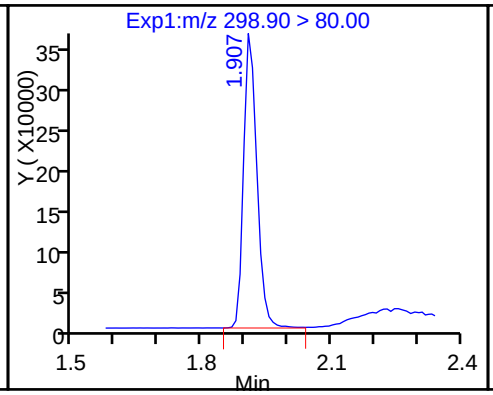
D 4 13C5-PFPeA



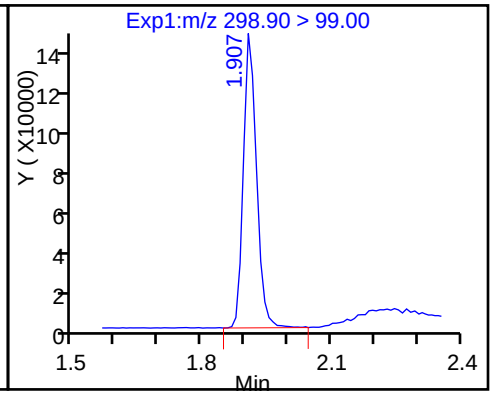
3 Perfluoropentanoic acid



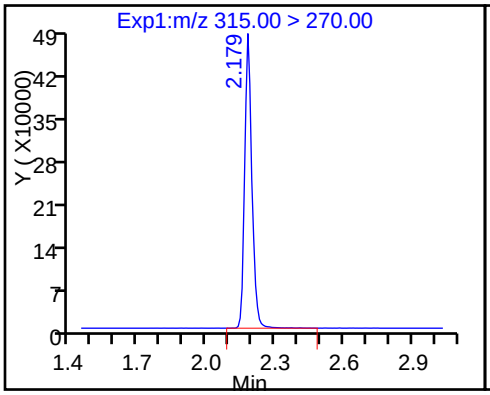
5 Perfluorobutanesulfonic acid



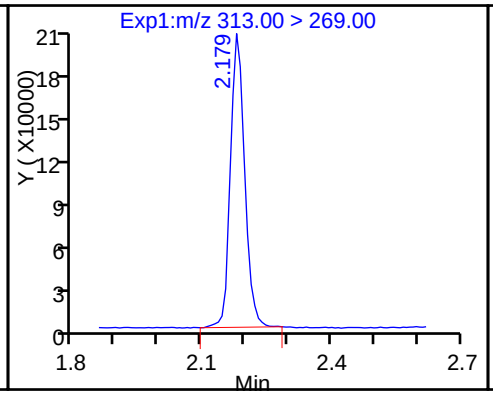
5 Perfluorobutanesulfonic acid



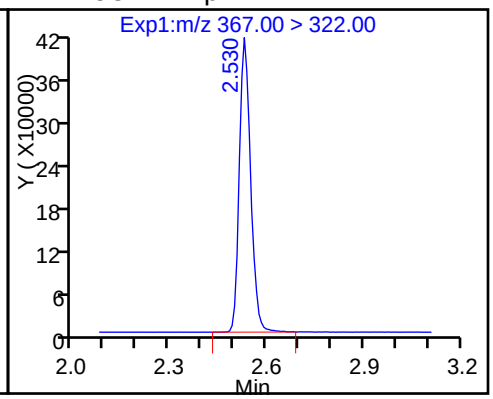
D 6 13C2 PFHxA



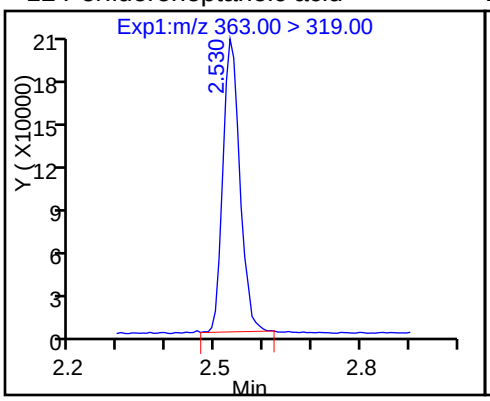
7 Perfluorohexanoic acid



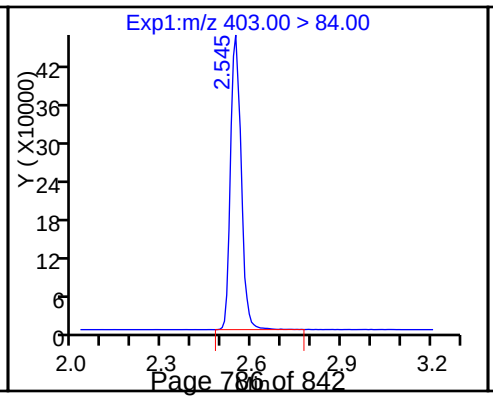
D 11 13C4-PFHpA



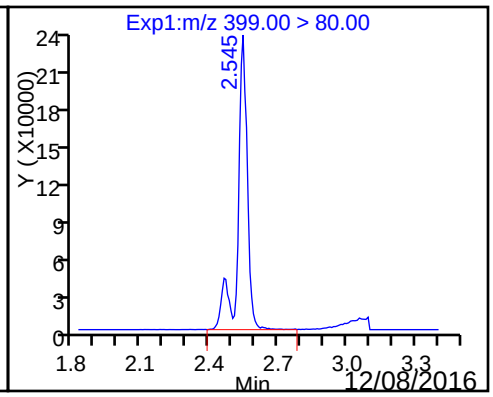
12 Perfluoroheptanoic acid



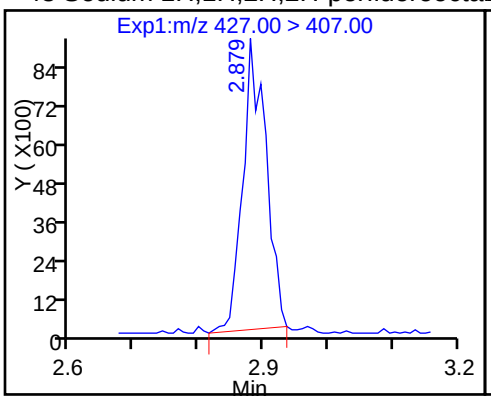
D 10 18O2 PFHxS



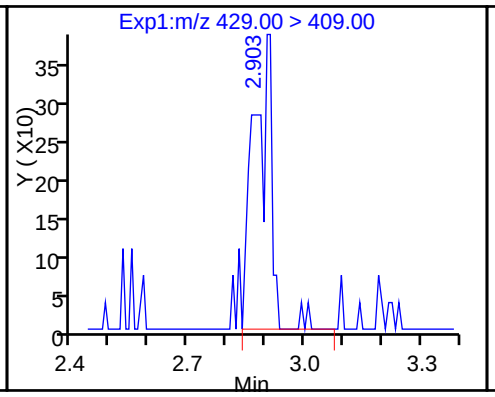
9 Perfluorohexanesulfonic acid



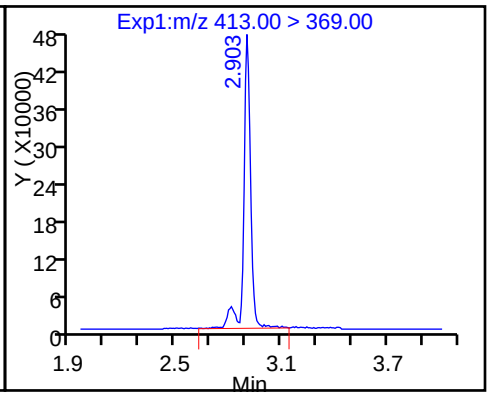
48 Sodium 1H,1H,2H,2H-perfluorooctane



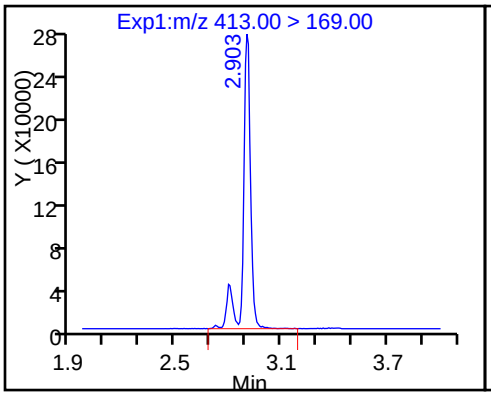
D 47 M2-6:2FTS



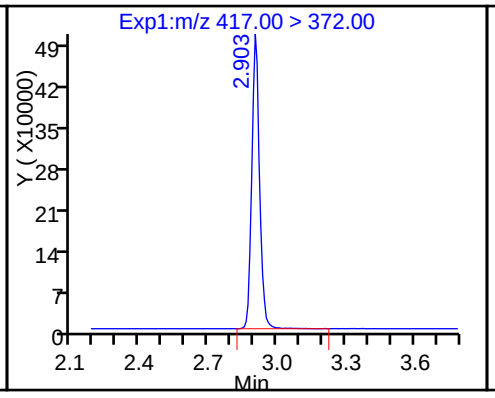
15 Perfluorooctanoic acid



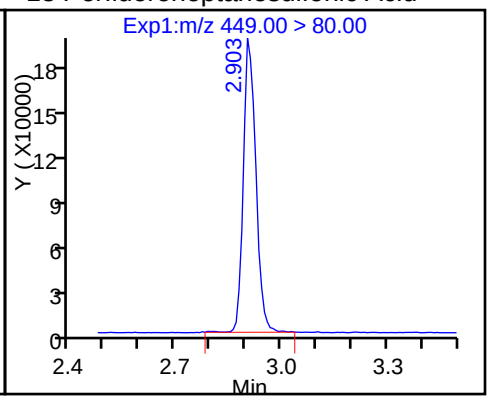
15 Perfluorooctanoic acid



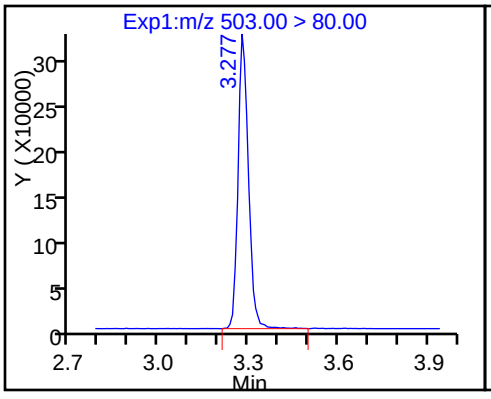
D 14 13C4 PFOA



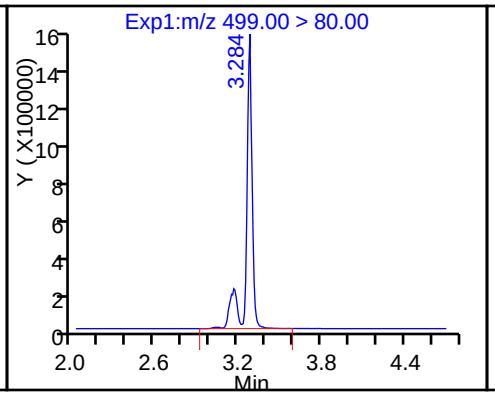
13 Perfluoroheptanesulfonic Acid



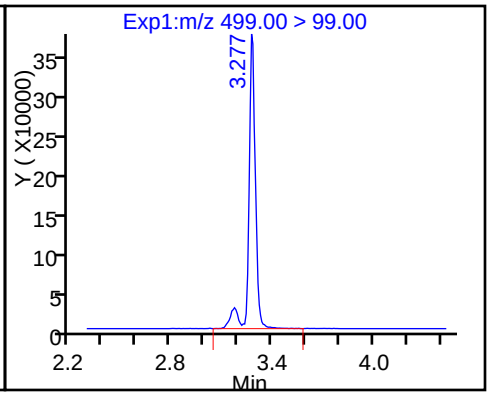
D 17 13C4 PFOS



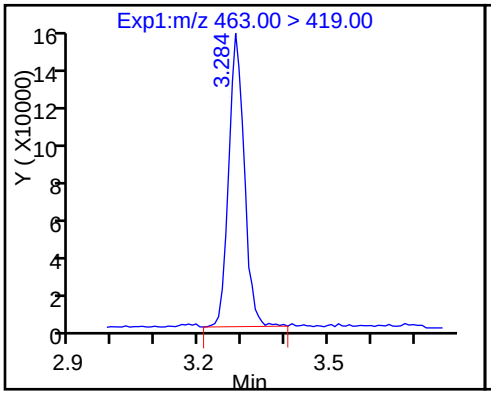
18 Perfluorooctane sulfonic acid



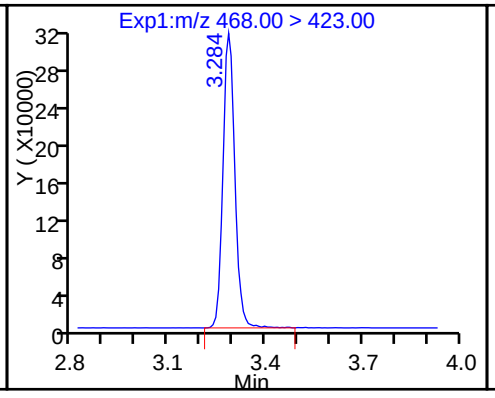
18 Perfluorooctane sulfonic acid



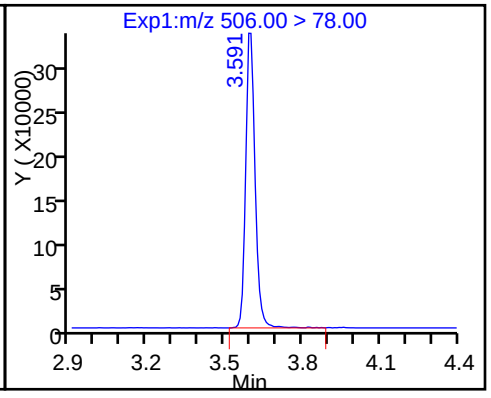
20 Perfluorononanoic acid



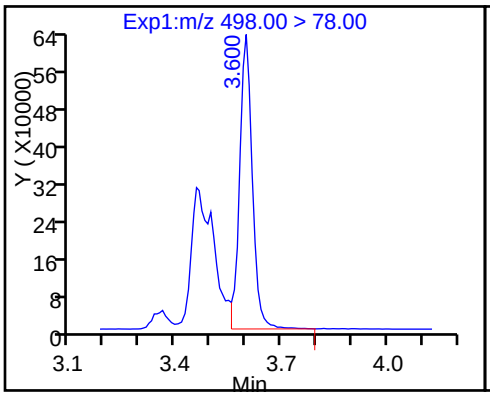
D 19 13C5 PFNA



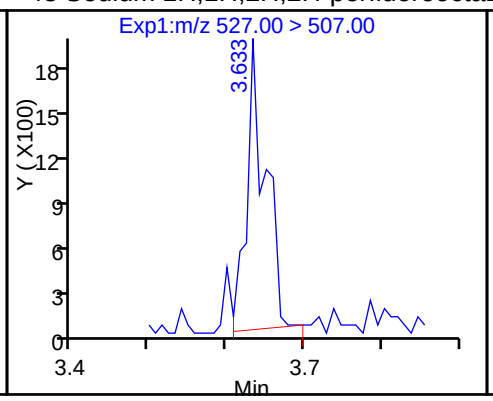
D 21 13C8 FOSA



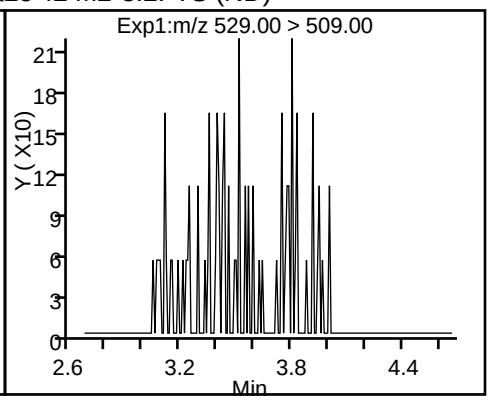
22 Perfluorooctane Sulfonamide



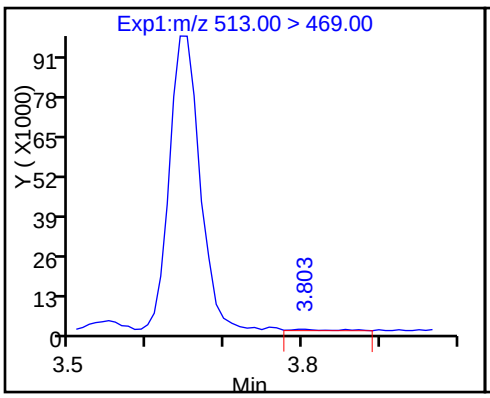
43 Sodium 1H,1H,2H,2H-perfluorooctane



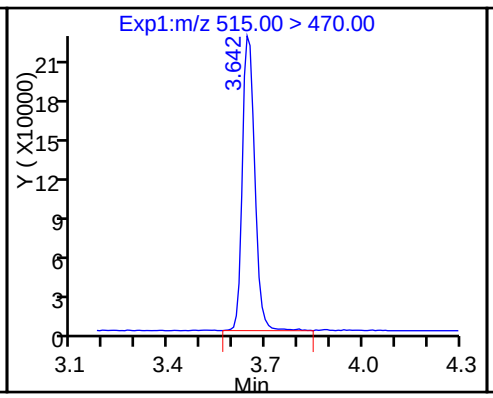
D 42 M2-8:2FTS (ND)



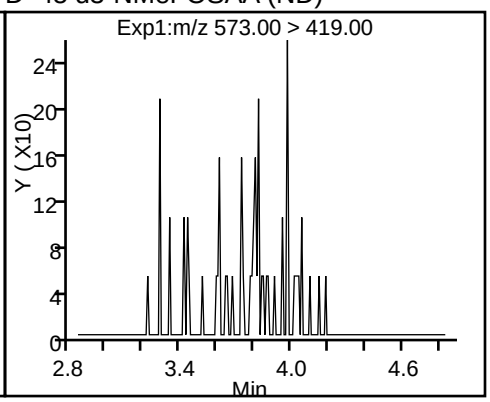
24 Perfluorodecanoic acid



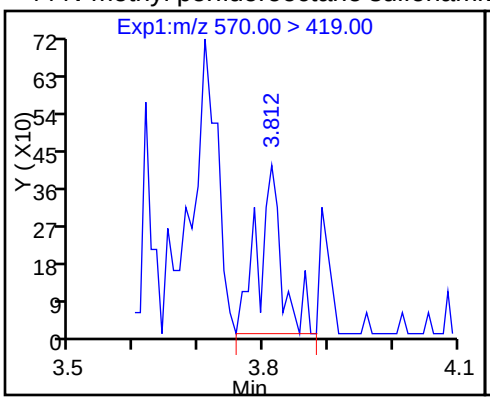
D 23 13C2 PFDA



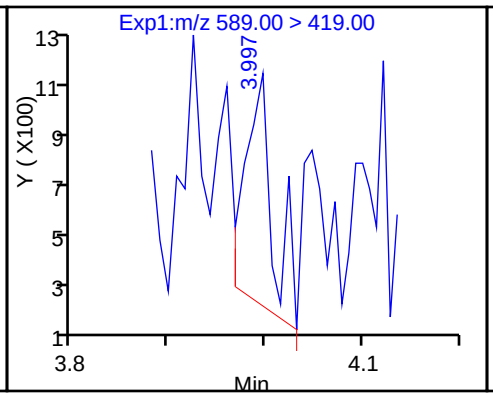
D 45 d3-NMeFOSAA (ND)



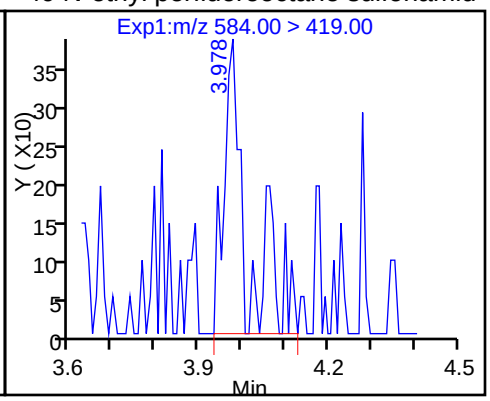
44 N-methyl perfluorooctane sulfonami



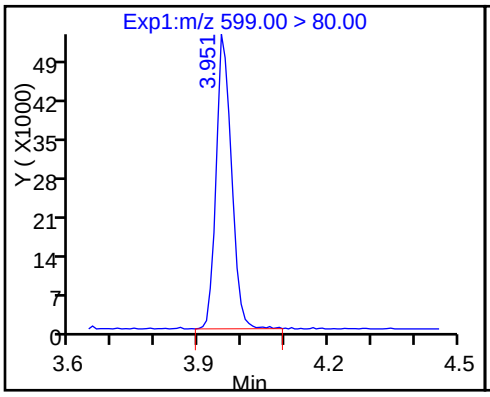
D 46 d5-NEtFOSAA



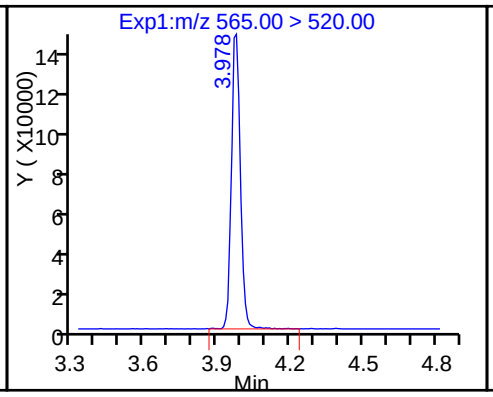
49 N-ethyl perfluorooctane sulfonamid



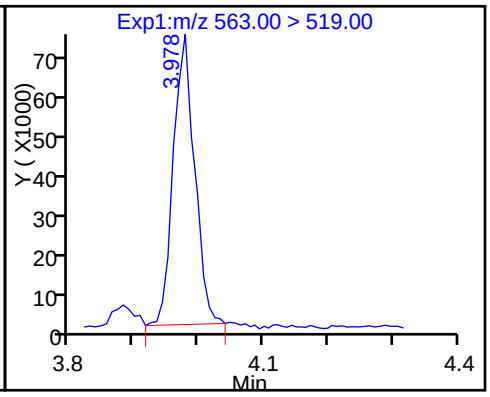
26 Perfluorodecane Sulfonic acid



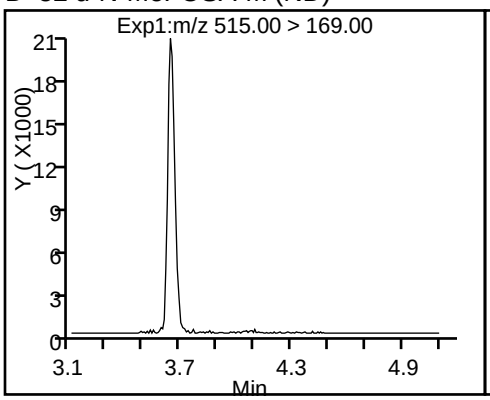
D 27 13C2 PFUnA



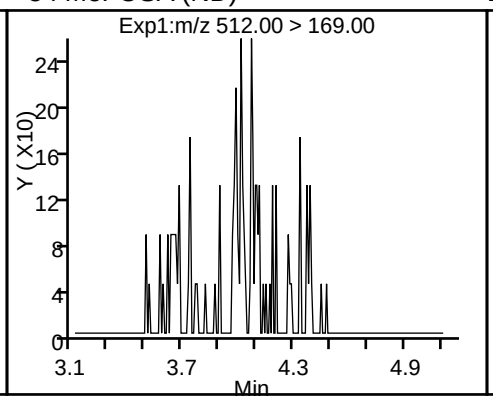
28 Perfluoroundecanoic acid



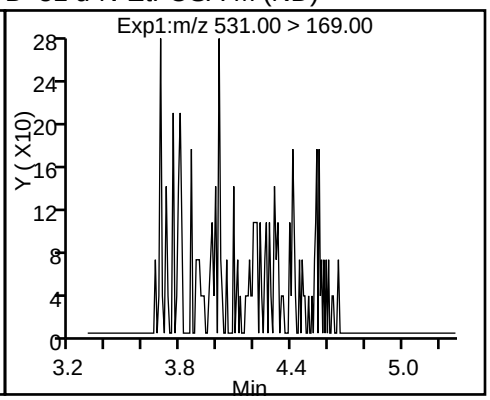
D 52 d-N-MeFOSA-M (ND)



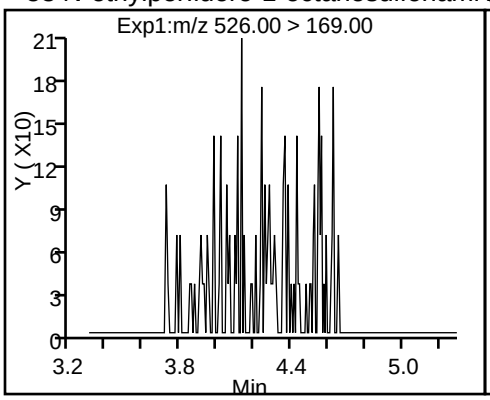
54 MeFOSA (ND)



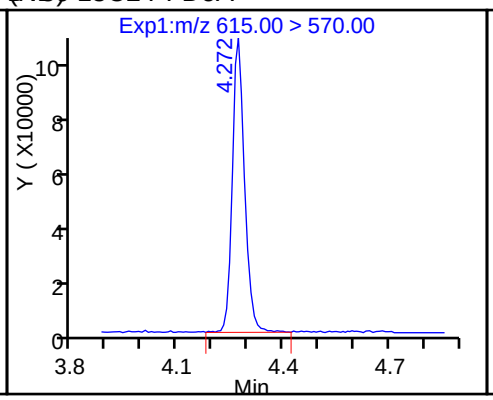
D 51 d-N-EtFOSA-M (ND)



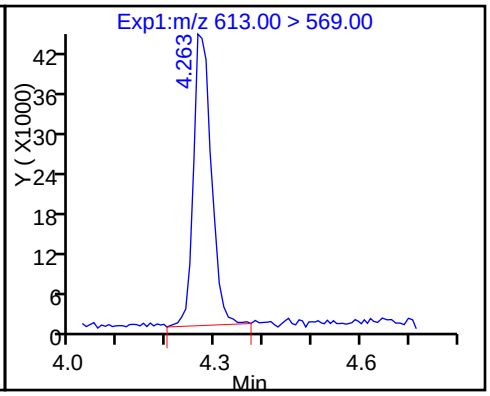
53 N-ethylperfluoro-1-octanesulfonami (ND)



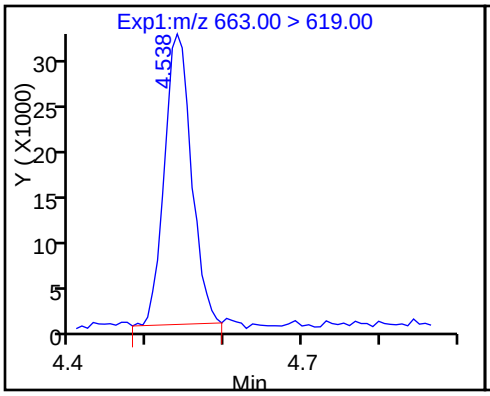
D 30 13C2 PFDoA



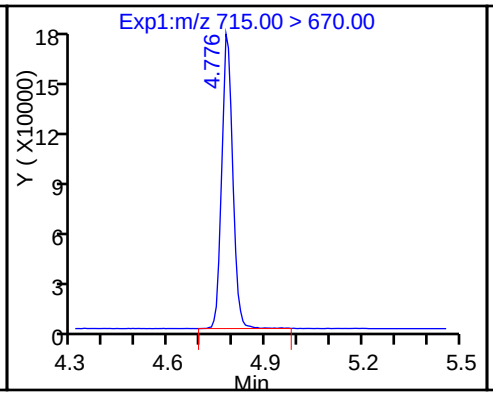
29 Perfluorododecanoic acid



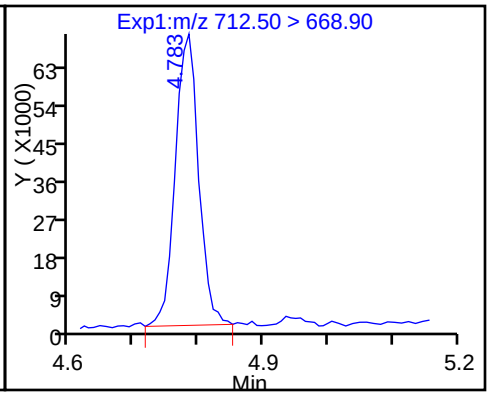
31 Perfluorotridecanoic acid



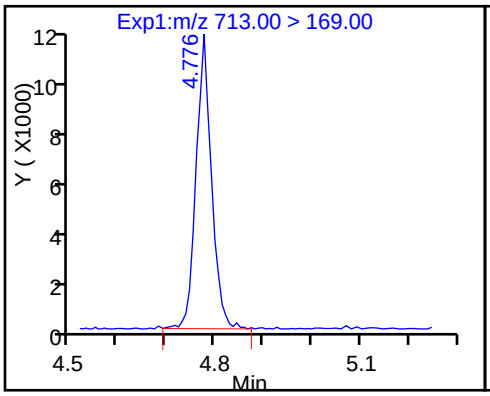
D 32 13C2-PFTeDA



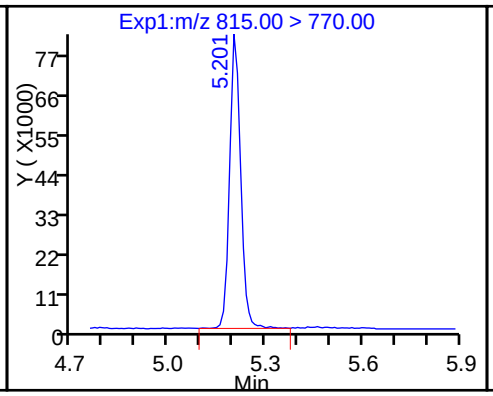
33 Perfluorotetradecanoic acid



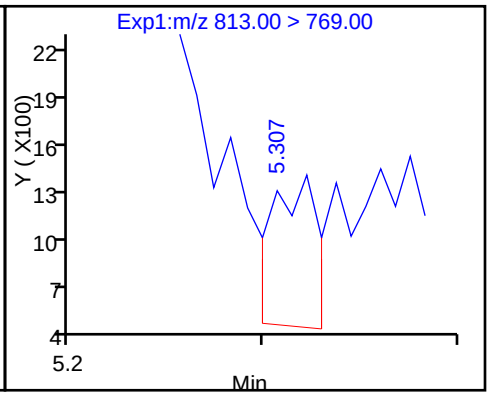
33 Perfluorotetradecanoic acid



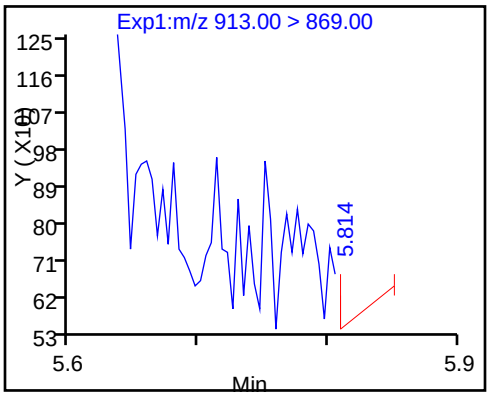
D 34 13C2-PFHxDA



35 Perfluorohexadecanoic acid



36 Perfluorooctadecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Instrument ID: A8_N Start Date: 11/14/2016 11:19

Analysis Batch Number: 137684 End Date: 11/14/2016 17:19

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-137684/1 CCB		11/14/2016 11:19	1		Acquity 2.1(mm)
RB 320-137684/2 CCB		11/14/2016 11:27	1		Acquity 2.1(mm)
RB 320-137684/3 CCB		11/14/2016 11:34	1		Acquity 2.1(mm)
IC 320-137684/4		11/14/2016 11:42	1	14NOV2016A_004.d	Acquity 2.1(mm)
IC 320-137684/5		11/14/2016 11:49	1	14NOV2016A_005.d	Acquity 2.1(mm)
IC 320-137684/6		11/14/2016 11:57	1	14NOV2016A_006.d	Acquity 2.1(mm)
IC 320-137684/7		11/14/2016 12:04	1	14NOV2016A_007.d	Acquity 2.1(mm)
IC 320-137684/8		11/14/2016 12:12	1	14NOV2016A_008.d	Acquity 2.1(mm)
IC 320-137684/9		11/14/2016 12:19	1	14NOV2016A_009.d	Acquity 2.1(mm)
ICB 320-137684/10		11/14/2016 12:27	1		Acquity 2.1(mm)
ICV 320-137684/11		11/14/2016 12:34	1	14NOV2016A_011.d	Acquity 2.1(mm)
RB 320-137684/12 CCB		11/14/2016 12:42	1		Acquity 2.1(mm)
IC 320-137684/13		11/14/2016 12:49	1	14NOV2016A_013.d	Acquity 2.1(mm)
IC 320-137684/14		11/14/2016 12:57	1	14NOV2016A_014.d	Acquity 2.1(mm)
IC 320-137684/15		11/14/2016 13:04	1	14NOV2016A_015.d	Acquity 2.1(mm)
IC 320-137684/16		11/14/2016 13:12	1	14NOV2016A_016.d	Acquity 2.1(mm)
IC 320-137684/17		11/14/2016 13:19	1	14NOV2016A_017.d	Acquity 2.1(mm)
IC 320-137684/18		11/14/2016 13:27	1	14NOV2016A_018.d	Acquity 2.1(mm)
ICB 320-137684/19		11/14/2016 13:34	1		Acquity 2.1(mm)
ICV 320-137684/20		11/14/2016 13:42	1		Acquity 2.1(mm)
RB 320-137684/21 CCB		11/14/2016 13:49	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 13:57	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 14:04	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 14:12	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 14:19	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 14:27	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 14:34	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 14:42	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 14:49	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 14:57	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 15:04	1		Acquity 2.1(mm)
RB 320-137684/32 CCB		11/14/2016 15:12	1		Acquity 2.1(mm)
CCV 320-137684/33		11/14/2016 15:19	1		Acquity 2.1(mm)
CCV 320-137684/34		11/14/2016 15:27	1		Acquity 2.1(mm)
RB 320-137684/35 CCB		11/14/2016 15:34	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 15:42	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 15:49	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 15:57	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 16:04	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Instrument ID: A8_N Start Date: 11/14/2016 11:19

Analysis Batch Number: 137684 End Date: 11/14/2016 17:19

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
ZZZZZ		11/14/2016 16:12	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 16:19	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 16:27	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 16:34	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 16:42	1		Acquity 2.1(mm)
ZZZZZ		11/14/2016 16:49	1		Acquity 2.1(mm)
RB 320-137684/46 CCB		11/14/2016 16:57	1		Acquity 2.1(mm)
CCV 320-137684/47		11/14/2016 17:04	1		Acquity 2.1(mm)
CCV 320-137684/48		11/14/2016 17:12	1		Acquity 2.1(mm)
RB 320-137684/49 CCB		11/14/2016 17:19	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Instrument ID: A8_N Start Date: 11/20/2016 17:17

Analysis Batch Number: 138811 End Date: 11/20/2016 20:33

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-138811/1 CCB		11/20/2016 17:17	1		Acquity 2.1(mm)
CCV 320-138811/2 CCVL		11/20/2016 17:25	1	20NOV2016C_003.d	Acquity 2.1(mm)
CCV 320-138811/3 CCVL		11/20/2016 17:32	1		Acquity 2.1(mm)
CCV 320-138811/4		11/20/2016 17:40	1		Acquity 2.1(mm)
CCV 320-138811/5		11/20/2016 17:47	1		Acquity 2.1(mm)
RB 320-138811/6 CCB		11/20/2016 17:55	1		Acquity 2.1(mm)
RB 320-138811/13 CCB		11/20/2016 18:47	1		Acquity 2.1(mm)
CCV 320-138811/14		11/20/2016 18:55	1		Acquity 2.1(mm)
CCV 320-138811/15		11/20/2016 19:02	1		Acquity 2.1(mm)
RB 320-138811/16 CCB		11/20/2016 19:10	1		Acquity 2.1(mm)
RB 320-138811/24 CCB		11/20/2016 20:10	1		Acquity 2.1(mm)
CCV 320-138811/25		11/20/2016 20:18	1		Acquity 2.1(mm)
CCV 320-138811/26		11/20/2016 20:25	1		Acquity 2.1(mm)
RB 320-138811/27 CCB		11/20/2016 20:33	1		Acquity 2.1(mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Instrument ID: A8_N Start Date: 11/20/2016 20:40

Analysis Batch Number: 138814 End Date: 11/20/2016 23:33

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-138814/1 CCB		11/20/2016 20:40	1		Acquity 2.1(mm)
CCV 320-138814/2		11/20/2016 20:48	1	20NOV2016D_002.d	Acquity 2.1(mm)
CCV 320-138814/3		11/20/2016 20:55	1		Acquity 2.1(mm)
RB 320-138814/4 CCB		11/20/2016 21:03	1		Acquity 2.1(mm)
MB 320-138291/1-A		11/20/2016 21:10	1	20NOV2016D_005.d	Acquity 2.1(mm)
LCS 320-138291/2-A		11/20/2016 21:18	1	20NOV2016D_006.d	Acquity 2.1(mm)
320-23542-3		11/20/2016 21:25	1	20NOV2016D_007.d	Acquity 2.1(mm)
320-23542-3 MS		11/20/2016 21:33	1	20NOV2016D_008.d	Acquity 2.1(mm)
320-23542-3 MSD		11/20/2016 21:40	1	20NOV2016D_009.d	Acquity 2.1(mm)
RB 320-138814/10 CCB		11/20/2016 21:48	1		Acquity 2.1(mm)
CCV 320-138814/11		11/20/2016 21:55	1	20NOV2016D_011.d	Acquity 2.1(mm)
CCV 320-138814/12		11/20/2016 22:03	1		Acquity 2.1(mm)
RB 320-138814/13 CCB		11/20/2016 22:10	1		Acquity 2.1(mm)
MB 320-138217/1-A		11/20/2016 22:18	1	20NOV2016D_014.d	Acquity 2.1(mm)
LCS 320-138217/2-A		11/20/2016 22:25	1	20NOV2016D_015.d	Acquity 2.1(mm)
320-23542-1		11/20/2016 22:33	1	20NOV2016D_016.d	Acquity 2.1(mm)
320-23542-2		11/20/2016 22:40	1	20NOV2016D_017.d	Acquity 2.1(mm)
320-23542-2 MS		11/20/2016 22:48	1	20NOV2016D_018.d	Acquity 2.1(mm)
320-23542-2 MSD		11/20/2016 22:55	1	20NOV2016D_019.d	Acquity 2.1(mm)
320-23542-4		11/20/2016 23:03	1	20NOV2016D_020.d	Acquity 2.1(mm)
RB 320-138814/21 CCB		11/20/2016 23:10	1		Acquity 2.1(mm)
CCV 320-138814/22		11/20/2016 23:18	1	20NOV2016D_022.d	Acquity 2.1(mm)
CCV 320-138814/23		11/20/2016 23:25	1		Acquity 2.1(mm)
RB 320-138814/24 CCB		11/20/2016 23:33	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Instrument ID: A8_N Start Date: 12/02/2016 10:06

Analysis Batch Number: 140382 End Date: 12/02/2016 14:22

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-140382/1 CCB		12/02/2016 10:06	1		Acquity 2.1(mm)
RB 320-140382/2 CCB		12/02/2016 10:14	1		Acquity 2.1(mm)
RB 320-140382/3 CCB		12/02/2016 10:22	1		Acquity 2.1(mm)
IC 320-140382/4		12/02/2016 10:29	1	02DEC2016A_004.d	Acquity 2.1(mm)
IC 320-140382/5		12/02/2016 10:37	1	02DEC2016A_005.d	Acquity 2.1(mm)
IC 320-140382/6		12/02/2016 10:44	1	02DEC2016A_006.d	Acquity 2.1(mm)
IC 320-140382/7		12/02/2016 10:52	1	02DEC2016A_007.d	Acquity 2.1(mm)
IC 320-140382/8		12/02/2016 10:59	1	02DEC2016A_008.d	Acquity 2.1(mm)
IC 320-140382/9		12/02/2016 11:07	1	02DEC2016A_009.d	Acquity 2.1(mm)
IC 320-140382/10		12/02/2016 11:14	1	02DEC2016A_010.d	Acquity 2.1(mm)
ICB 320-140382/11		12/02/2016 11:22	1		Acquity 2.1(mm)
ICV 320-140382/12		12/02/2016 11:29	1	02DEC2016A_012.d	Acquity 2.1(mm)
RB 320-140382/13 CCB		12/02/2016 11:37	1		Acquity 2.1(mm)
IC 320-140382/14		12/02/2016 11:44	1	02DEC2016A_014.d	Acquity 2.1(mm)
IC 320-140382/15		12/02/2016 11:52	1	02DEC2016A_015.d	Acquity 2.1(mm)
IC 320-140382/16		12/02/2016 11:59	1	02DEC2016A_016.d	Acquity 2.1(mm)
IC 320-140382/17		12/02/2016 12:07	1	02DEC2016A_017.d	Acquity 2.1(mm)
IC 320-140382/18		12/02/2016 12:14	1	02DEC2016A_018.d	Acquity 2.1(mm)
IC 320-140382/19		12/02/2016 12:22	1	02DEC2016A_019.d	Acquity 2.1(mm)
IC 320-140382/20		12/02/2016 12:29	1	02DEC2016A_020.d	Acquity 2.1(mm)
ICB 320-140382/21		12/02/2016 12:36	1		Acquity 2.1(mm)
ICV 320-140382/22		12/02/2016 12:44	1		Acquity 2.1(mm)
RB 320-140382/23 CCB		12/02/2016 12:51	1		Acquity 2.1(mm)
320-23542-2 DL		12/02/2016 12:59	100	02DEC2016B_001.d	Acquity 2.1(mm)
320-23542-2 MS DL		12/02/2016 13:06	100	02DEC2016B_002.d	Acquity 2.1(mm)
320-23542-2 MSD DL		12/02/2016 13:14	100	02DEC2016B_003.d	Acquity 2.1(mm)
320-23542-1 DL		12/02/2016 13:22	10	02DEC2016B_004.d	Acquity 2.1(mm)
ZZZZZ		12/02/2016 13:29	10		Acquity 2.1(mm)
320-23542-3 DL		12/02/2016 13:37	10	02DEC2016B_006.d	Acquity 2.1(mm)
320-23542-3 MS DL		12/02/2016 13:44	10	02DEC2016B_007.d	Acquity 2.1(mm)
320-23542-3 MSD DL		12/02/2016 13:52	10	02DEC2016B_008.d	Acquity 2.1(mm)
RB 320-140382/32 CCB		12/02/2016 13:59	1		Acquity 2.1(mm)
CCV 320-140382/33		12/02/2016 14:07	1	02DEC2016B_010.d	Acquity 2.1(mm)
CCV 320-140382/34		12/02/2016 14:14	1		Acquity 2.1(mm)
RB 320-140382/35 CCB		12/02/2016 14:22	1		Acquity 2.1(mm)

537 (Modified)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Instrument ID: A8_N Start Date: 12/02/2016 14:29

Analysis Batch Number: 140429 End Date: 12/02/2016 17:52

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
RB 320-140429/1 CCB		12/02/2016 14:29	1		Acquity 2.1(mm)
CCV 320-140429/2		12/02/2016 14:37	1	02DEC2016B_014.d	Acquity 2.1(mm)
CCV 320-140429/3		12/02/2016 14:44	1		Acquity 2.1(mm)
RB 320-140429/4 CCB		12/02/2016 14:52	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 14:59	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 15:07	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 15:14	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 15:22	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 15:29	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 15:37	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 15:44	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 15:52	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 15:59	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 16:07	1		Acquity 2.1(mm)
320-23542-4 DL		12/02/2016 16:14	10	02DEC2016C_011.d	Acquity 2.1(mm)
CCV 320-140429/16		12/02/2016 16:22	1	02DEC2016C_012.d	Acquity 2.1(mm)
CCV 320-140429/17		12/02/2016 16:29	1		Acquity 2.1(mm)
RB 320-140429/18 CCB		12/02/2016 16:37	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 16:44	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 16:52	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 16:59	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 17:07	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 17:14	1		Acquity 2.1(mm)
ZZZZZ		12/02/2016 17:22	1		Acquity 2.1(mm)
RB 320-140429/25 CCB		12/02/2016 17:29	1		Acquity 2.1(mm)
CCV 320-140429/26		12/02/2016 17:37	1		Acquity 2.1(mm)
CCV 320-140429/27		12/02/2016 17:44	1		Acquity 2.1(mm)
RB 320-140429/28 CCB		12/02/2016 17:52	1		Acquity 2.1(mm)

537 (Modified)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Batch Number: 138217 Batch Start Date: 11/17/16 08:49 Batch Analyst: Arauz, Horacio J

Batch Method: 3535 Batch End Date: 11/18/16 14:20

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00046	LCPFCSP 00066
MB 320-138217/1		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	
LCS 320-138217/2		3535, 537 (Modified)				250 mL	0.5 mL	25 uL	20 uL
320-23542-A-1	DPT-16-01-GW-17-21	3535, 537 (Modified)	T	266.74 g	26.14 g	240.6 mL	0.5 mL	25 uL	
320-23542-A-2	DPT-16-05-GW-17-21	3535, 537 (Modified)	T	284.91 g	26.35 g	258.6 mL	0.5 mL	25 uL	
320-23542-A-2 MS	DPT-16-05-GW-17-21-MS	3535, 537 (Modified)	T	277.51 g	26.23 g	251.3 mL	0.5 mL	25 uL	20 uL
320-23542-A-2 MSD	DPT-16-05-GW-17-21-MSD	3535, 537 (Modified)	T	273.81 g	26.03 g	247.8 mL	0.5 mL	25 uL	20 uL
320-23542-A-4	DPT-16-34-GW-31-35	3535, 537 (Modified)	T	280.63 g	26.42 g	254.2 mL	0.5 mL	25 uL	

Batch Notes	
Balance ID	QA-070
Batch Comment	0.1N NaOH/H2O_00026
H2O ID	11-14-16
Hexane ID	000146278
Manifold ID	5
Methanol ID	769617
Pipette ID	MD05306
Analyst ID - Reagent Drop	HJA
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	NSH
Solvent Lot #	776672
Solvent Name	0.3% NH4OH-Me
SOP Number	WS-LC-0025
SPE Cartridge Type	WAX 500mg
Solid Phase Extraction Disk ID	002836112A

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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Batch Number: 138291 Batch Start Date: 11/17/16 12:46 Batch Analyst: Sharifi, Nooshin

Batch Method: SHAKE Batch End Date: 11/19/16 13:18

Lab Sample ID	Client Sample ID	Method Chain	Basis	InitialAmount	FinalAmount	LCMPFCSU 00046	LCPFCSP 00064		
MB 320-138291/1		SHAKE, 537 (Modified)		4.98 g	1.0 mL	50 uL			
LCS 320-138291/2		SHAKE, 537 (Modified)		5.03 g	1.0 mL	50 uL	40 uL		
320-23542-A-3	DPT-16-34-SO-14-15	SHAKE, 537 (Modified)	T	5.05 g	1.0 mL	50 uL			
320-23542-A-3 MS	DPT-16-34-SO-14-15	SHAKE, 537 (Modified)	T	4.99 g	1.0 mL	50 uL	40 uL		
320-23542-A-3 MSD	DPT-16-34-SO-14-15	SHAKE, 537 (Modified)	T	5.03 g	1.0 mL	50 uL	40 uL		

Batch Notes	
Acetic Acid ID	429065
Balance ID	QA-070
Batch Comment	Pipette ID: MD05306, MG05455
Hexane ID	0000146278
Manifold ID	4
Methanol ID	769617
Methanolic Potassium Hydroxide ID	757037
Millipore Water Dispense Date	11-14-16
Sodium Hydroxide ID	758321
Ammonium Hydroxide/MeOH ID	776672
Analyst ID - Reagent Drop Witness	NSH
Blank Sand Lot #	156690
SPE Cartridge ID	016336091A
SPE Cartridge Type	WAX150mg

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 23542 Work List ID(s): 37097

Extraction Batch: 138291, 138217 Analysis Batch(es): 138814, 138811 (CCVL)

Delivery Rank 4 Due Date:

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 137684	✓	✓	
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? 71120, 71121, 71434, 71435	✓	✓	
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?	✓	✓	
3. If required, are positive hits confirmed and >40% RPD flagged?		✓	✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM#	✓	✓	
2. Do results make sense (e.g. dilutions, etc.)?	✓	✓	
3. Have all flags been reviewed for appropriateness?	✓	✓	
4. For level 3 and 4 reports, have forms and raw data been reviewed?		✓	
5. Was QC Checker run for this job?	✓	✓	

**Upon completion of this checklist, the reviewer must scan and attach the checklist to the TALS job.*

1st Level (Analyst): [signature] Date: 11/28/16

2nd Level Reviewer: [signature] Date: 11/29/2016

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 20NOV2016D_PFC Worklist Number: 37097
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161121-37097.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 138814	LC PFC ICAL Raw Batch: 138815	LC PFAS ICAL Raw Batch: 138816
# 1 RB	# 1 RB	# 1 RB	# 1 RB
# 2 CCV L5	# 2 CCV L5	# 2 CCV L5	# 2 CCV L5
# 3 CCV L5 Add-on	# 3 CCV L5 Add-on	# 3 CCV L5 Add-on	# 3 CCV L5 Add-on
# 4 RB	# 4 RB	# 4 RB	# 4 RB
# 5 MB 320-138291/1-A	# 5 MB 320-138291/1-A		
# 6 LCS 320-138291/2-A	# 6 LCS 320-138291/2-A		
# 7 320-23542-A-3-A	# 7 320-23542-A-3-A		
# 8 320-23542-A-3-B MS	# 8 320-23542-A-3-B MS		
# 9 320-23542-A-3-C MSD	# 9 320-23542-A-3-C MSD		
#10 RB	#10 RB	#10 RB	#10 RB
#11 CCV L5	#11 CCV L5	#11 CCV L5	#11 CCV L5
#12 CCV L5 Add-on	#12 CCV L5 Add-on	#12 CCV L5 Add-on	#12 CCV L5 Add-on
#13 RB	#13 RB	#13 RB	#13 RB
#14 MB 320-138217/1-A	#14 MB 320-138217/1-A		
#15 LCS 320-138217/2-A	#15 LCS 320-138217/2-A		
#16 320-23542-A-1-A	#16 320-23542-A-1-A		
#17 320-23542-A-2-A	#17 320-23542-A-2-A		
#18 320-23542-A-2-B MS	#18 320-23542-A-2-B MS		
#19 320-23542-A-2-C MSD	#19 320-23542-A-2-C MSD		
#20 320-23542-A-4-A	#20 320-23542-A-4-A		
#21 RB	#21 RB	#21 RB	#21 RB
#22 CCV L5	#22 CCV L5	#22 CCV L5	#22 CCV L5
#23 CCV L5 Add-on	#23 CCV L5 Add-on	#23 CCV L5 Add-on	#23 CCV L5 Add-on
#24 RB	#24 RB	#24 RB	#24 RB

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Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

AB 4/20/16

Batch Number: 320-138217

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Batch End: 11/18/2016 2:20:00PM

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-320-138217/1 N/A	N/A		250 mL				N/A	N/A	N/A		MB 320-138217/1-A
				0.5 mL								
2	LCS-320-138217/2 N/A	N/A		250 mL				N/A	N/A	N/A		LCS 320-138217/2-A
				0.5 mL								
3	320-23542-A-1 (PFC_IDA_DOD5)	N/A (320-23542-1)	266.74 g	240.6 mL				11/19/16	16_Days	4	10x PFOS C	320-23542-A-1-A
			26.14 g	0.5 mL								
4	320-23542-A-2 (PFC_IDA_DOD5)	N/A (320-23542-1)	284.91 g	258.6 mL				11/19/16	16_Days	4	100x PFOS	320-23542-A-2-A
			26.35 g	0.5 mL								
5	320-23542-A-2-MS (PFC_IDA_DOD5)	N/A (320-23542-1)	277.51 g	251.3 mL				11/19/16	16_Days	4	↓	320-23542-A-2-B MS
			26.23 g	0.5 mL								
6	320-23542-A-2-MSD (PFC_IDA_DOD5)	N/A (320-23542-1)	273.81 g	247.8 mL				11/19/16	16_Days	4	↓	320-23542-A-2-C MSD
			26.03 g	0.5 mL								
7	320-23542-A-4 (PFC_IDA_DOD5)	N/A (320-23542-1)	280.63 g	254.2 mL				11/19/16	16_Days	4	10x PFOA PFOS	320-23542-A-4-A
			26.42 g	0.5 mL								

12/08/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

98

Batch Number: 320-138217

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Batch End: 11-6-16 14:20

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-320-138217/1 N/A	N/A		250 mL				N/A	N/A	N/A		
				0.5 mL								
2	LCS-320-138217/2 N/A	N/A		250 mL				N/A	N/A	N/A		
				0.5 mL								
3	320-23542-A-1 (PFC_IDA_DOD5)	N/A (320-23542-1)	266.74 g					11/19/16	16_Days	4		
				0.5 mL								
4	320-23542-A-2 (PFC_IDA_DOD5)	N/A (320-23542-1)	284.91 g					11/19/16	16_Days	4		
				0.5 mL								
5	320-23542-A-2-MS (PFC_IDA_DOD5)	N/A (320-23542-1)	277.51 g					11/19/16	16_Days	4		
				0.5 mL								
6	320-23542-A-2-MSD (PFC_IDA_DOD5)	N/A (320-23542-1)	273.81 g					11/19/16	16_Days	4		
				0.5 mL								
7	320-23542-A-4 (PFC_IDA_DOD5)	N/A (320-23542-1)	280.63 g					11/19/16	16_Days	4		
				0.5 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138217

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Batch End:

Batch Notes

Manifold ID	5
Methanol ID	769617
Hexane ID	000146278
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	002836112A
H2O ID	11-14-16
Pipette ID	MD05306
Solvent Name	0.3% NH4OH-Me
Solvent Lot #	776672
Analyst ID - Reagent Drop	HJA
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	NGK
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: 320-138217

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number WS-LC-0025

Batch Comment 0.1N NaOH/H2O_00026

Comments

12/08/2016

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138217

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-138217/1	LCMPFCSU_00046	25 uL	0.5 mL	HJA 11-17-16	VGM 11-17-16
LCS 320-138217/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-138217/2	LCPFCSP_00066	20 uL	0.5 mL		
320-23542-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-23542-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-23542-A-2 MS	LCMPFCSU_00046	25 uL	0.5 mL		
320-23542-A-2 MS	LCPFCSP_00066	20 uL	0.5 mL		
320-23542-A-2 MSD	LCMPFCSU_00046	25 uL	0.5 mL		
320-23542-A-2 MSD	LCPFCSP_00066	20 uL	0.5 mL		
320-23542-A-4	LCMPFCSU_00046	25 uL	0.5 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138217

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

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): 320-138217 Test: PFC-L

Earliest Holding Time: 11-21-16

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 CI 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: HSA Date: 11-18-16

2nd Level Reviewer: VPM Date: 11/18/16

Comments: _____

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

AO 11/20/16

Batch Number: 320-138291

Method Code: 320-Shake_Bath_14D-320

Analyst: Sharifi, Nooshin

Batch Open: 11/17/2016 12:46:00PM

Batch End: 11-19-16 13:18p.m

Shake Extraction with Ultrasonic Bath Extraction

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-138291/1 N/A	N/A	4.98 g	1.0 mL	N/A	N/A	N/A		MB 320-138291/1-A
2	LCS~320-138291/2 N/A	N/A	5.03 g	1.0 mL	N/A	N/A	N/A		LCS 320-138291/2-A
3	320-23542-A-3 (PFC_IDA_DOD5)	N/A (320-23542-1)	5.05 g	1.0 mL	11/19/16	16_Days	4	10x PFOS	320-23542-A-3-A
4	320-23542-A-3~MS (PFC_IDA_DOD5)	N/A (320-23542-1)	4.99 g	1.0 mL	11/19/16	16_Days	4	10x PFOS	320-23542-A-3-B MS
5	320-23542-A-3~MSD (PFC_IDA_DOD5)	N/A (320-23542-1)	5.03 g	1.0 mL	11/19/16	16_Days	4	10x PFOS	320-23542-A-3-C MSD

12/08/2016

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138291

Analyst: Sharifi, Nooshin

Batch Open: 11/17/2016 12:46:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

Batch Notes

Balance ID	QA-070
Blank Sand Lot #	156690
Filter ID	NA
Millipore Water Dispense Date	
Analyst ID - Reagent Drop Witness	NSH
SPE Cartridge ID	016336091A
SPE Cartridge Type	WAX150mg
Hexane ID	0000146278
Methanol ID	769617
Ammonium Hydroxide/MeOH ID	776672
Sodium Hydroxide ID	758321
Methanolic Potassium Hydroxide ID	757037
Manifold ID	
Interference check solution ID	NA
Acetic Acid ID	429065
Batch Comment	Pipette ID: MD05306, MG05455

Comments

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138291

Method Code: 320-Shake_Bath_14D-320

Analyst: Sharifi, Nooshin

Batch Open: 11/17/2016 12:46:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-138291/1	LCMPFCSU_00046	50 uL	1.0 mL	NSH 11-17-16	HSA 11-17-16
LCS 320-138291/2	LCMPFCSU_00046	50 uL	1.0 mL		
LCS 320-138291/2	LCPFCSP_00064	40 uL	1.0 mL		
320-23542-A-3	LCMPFCSU_00046	50 uL	1.0 mL		
320-23542-A-3 MS	LCMPFCSU_00046	50 uL	1.0 mL		
320-23542-A-3 MS	LCPFCSP_00064	40 uL	1.0 mL		
320-23542-A-3 MSD	LCMPFCSU_00046	50 uL	1.0 mL		
320-23542-A-3 MSD	LCPFCSP_00064	40 uL	1.0 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 138291 Test: PFC-5

Earliest Holding Time: 11-28-16

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: 11-19-16

2nd Level Reviewer: HSA Date: 11-19-16

Comments: _____

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

West Sacramento

HPLC/LCMS Data Review Checklist

Job Number(s): 23542; 23651; 23718; 23783 Work List ID(s): 37450; 37461

Extraction Batch: 138217; 138291; 139627 Analysis Batch(es): 140382; 140429

Delivery Rank 4 Due Date: 11/19/16; 11/25/16

A. Calibration/Instrument Run QC	1st Level	2nd Level	N/A
1. ICAL locked in Chrom and TALS? ICAL Batch# 140382;	✓	✓	
2. ICAL, CCV Frequency & Criteria met.	✓	✓	
• $RF_{average}$ criteria appropriate for the method.	✓	✓	
• Linear Regression criteria appropriate if required ($r \geq 0.995$).	✓	✓	
• Quadratic fit criteria appropriate if required ($r^2 \geq 0.990$).			✓
• For Linear Regression and Quadratic fit – Does the y-intercept support ½ the reporting limit as described in CA-Q-S-005?	✓	✓	
• All curve points show calculated concentrations.	✓	✓	
3. Peaks correctly ID'd by data system.	✓	✓	
5. Tune check frequency & criteria met and Tune check report attached.	✓	✓	
B. QA/QC			
1. Are all QC samples properly linked in TALS?	✓	✓	
2. Method blank, LCS/LCSD and MS/SD frequencies met.	✓	✓	
3. LCS/LCSD and MB data are within control limits. If not, NCM is present.	✓	✓	
4. Are MS/MSD recoveries and RPD within control limits?	✓	✓	
5. Holding Times were met for prep and analytical.	✓	✓	
6. IS/Surrogate recoveries meet criteria or properly noted.	✓	✓	
C. Sample Analysis			
1. Was correct analysis performed and were project instructions followed?	✓	✓	
2. If required, are compounds within RT windows?	✓	✓	
3. If required, are positive hits confirmed and >40% RPD flagged?			✓
4. Manual Integrations reviewed and appropriate.	✓	✓	
5. All analytes correctly reported. (Primary, secondary, acceptable status)	✓	✓	
6. Correct reporting limits used. (based on client request, prep factors, and dilutions)	✓	✓	
D. Documentation			
1. Are all non-conformances documented/attached? NCM# 71898; 71899	✓	✓	
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): [signature] Date: 12/4/16

2nd Level Reviewer: [signature] Date: 12/5/16

NCMs: 71898; 71899; 71937; 71940

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 02DEC2016A_PFC Worklist Number: 37450
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37450.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 140382	LC PFC ICAL Raw Batch: 140383	LC PFAS ICAL Raw Batch: 140384
# 1 RB	# 1 RB		
# 2 RB	# 2 RB		
# 3 RB	# 3 RB		
# 4 IC L1	# 4 IC L1	# 4 IC L1	# 4 IC L1
# 5 IC L2	# 5 IC L2	# 5 IC L2	# 5 IC L2
# 6 IC L3	# 6 IC L3	# 6 IC L3	# 6 IC L3
# 7 IC L4	# 7 IC L4	# 7 IC L4	# 7 IC L4
# 8 IC L5	# 8 IC L5	# 8 IC L5	# 8 IC L5
# 9 IC L6	# 9 IC L6	# 9 IC L6	# 9 IC L6
#10 IC L7	#10 IC L7	#10 IC L7	#10 IC L7
#11 ICB	#11 ICB	#11 ICB	#11 ICB
#12 ICV	#12 ICV Tune NCM 71898	#12 ICV	
#13 RB	#13 RB	#13 RB	#13 RB
#14 IC L1 Add-on	#14 IC L1 Add-on	#14 IC L1 Add-on	#14 IC L1 Add-on
#15 IC L2 Add-on	#15 IC L2 Add-on	#15 IC L2 Add-on	#15 IC L2 Add-on
#16 IC L3 Add-on	#16 IC L3 Add-on	#16 IC L3 Add-on	#16 IC L3 Add-on
#17 IC L4 Add-on	#17 IC L4 Add-on	#17 IC L4 Add-on	#17 IC L4 Add-on
#18 IC L5 Add-on	#18 IC L5 Add-on	#18 IC L5 Add-on	#18 IC L5 Add-on
#19 IC L6 Add-on	#19 IC L6 Add-on	#19 IC L6 Add-on	#19 IC L6 Add-on
#20 IC L7 Add-on	#20 IC L7 Add-on	#20 IC L7 Add-on	#20 IC L7 Add-on
#21 ICB	#21 ICB	#21 ICB	#21 ICB
#22 ICV Add-on	#22 ICV Add-on	#22 ICV Add-on	
#23 RB	#23 RB	#23 RB	#23 RB
#24 320-23542-A-2-A	#24 320-23542-A-2-A		
#25 320-23542-A-2-B MS	#25 320-23542-A-2-B MS		
#26 320-23542-A-2-C MSD	#26 320-23542-A-2-C MSD		
#27 320-23542-A-1-A	#27 320-23542-A-1-A		
#28 320-23542-A-4-A	#28 320-23542-A-4-A Misinject		
#29 320-23542-A-3-A	#29 320-23542-A-3-A		
#30 320-23542-A-3-B MS	#30 320-23542-A-3-B MS		
#31 320-23542-A-3-C MSD	#31 320-23542-A-3-C MSD		
#32 RB	#32 RB	#32 RB	#32 RB
#33 CCV L5	#33 CCV L5	#33 CCV L5	#33 CCV L5
#34 CCV L5 Add-on	#34 CCV L5 Add-on	#34 CCV L5 Add-on	#34 CCV L5 Add-on
#35 RB	#35 RB	#35 RB	#35 RB

MS/MSD high targets NCM 71899

TestAmerica Laboratories
Worklist QC Batch Report

Worklist Name: 02DEC2016B_PFC Worklist Number: 37461
Instrument Name: A8_N Chrom Method: A8_N
Data Directory: \\ChromNa\Sacramento\ChromData\A8_N\20161202-37461.b
QC Batching: Disabled Limit Group Batching: Enabled

QC Batch: 1	LC PFC_DOD ICAL Raw Batch: 140429	LC PFC ICAL Raw Batch: 140430	LC PFAS ICAL Raw Batch: 140431
# 1 RB	# 1 RB	# 1 RB	# 1 RB
# 2 CCV L5	# 2 CCV L5	# 2 CCV L5	# 2 CCV L5
# 3 CCV L5 Add-on	# 3 CCV L5 Add-on	# 3 CCV L5 Add-on	# 3 CCV L5 Add-on
# 4 RB	# 4 RB	# 4 RB	# 4 RB
# 5 MB 320-139627/1-A	# 5 MB 320-139627/1-A		
# 6 LCS 320-139627/2-A	# 6 LCS 320-139627/2-A		
# 7 320-23651-A-2-A	# 7 320-23651-A-2-A		
# 8 320-23651-A-3-A	# 8 320-23651-A-3-A		
# 9 320-23718-A-3-A	# 9 320-23718-A-3-A		
#10 320-23718-A-3-B MS	#10 320-23718-A-3-B MS		
#11 320-23718-A-3-C MSD	#11 320-23718-A-3-C MSD		
#12 320-23783-A-1-A	#12 320-23783-A-1-A		
#13 320-23783-A-2-A	#13 320-23783-A-2-A		
#14 320-23783-A-5-A	#14 320-23783-A-5-A E 10x PFOS · E flag NCM 71937		
#15 320-23542-A-4-A	#15 320-23542-A-4-A		
#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	#18 RB
#19 320-23783-A-6-A	#19 320-23783-A-6-A		
#20 320-23783-A-7-A	#20 320-23783-A-7-A		
#21 320-23783-A-8-A	#21 320-23783-A-8-A		
#22 320-23783-A-9-A	#22 320-23783-A-9-A		
#23 320-23783-A-10-A	#23 320-23783-A-10-A		
#24 320-23783-A-11-A	#24 320-23783-A-11-A		
#25 RB	#25 RB	#25 RB	#25 RB
#26 CCV L5	#26 CCV L5	#26 CCV L5	#26 CCV L5
#27 CCV L5 Add-on	#27 CCV L5 Add-on	#27 CCV L5 Add-on	#27 CCV L5 Add-on
#28 RB	#28 RB	#28 RB	#28 RB

ICV 140382

~~Tune~~ + SBC 12/4/16

Tune NCM 71998

98

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

AB 11/20/16
AB 12/2/16

Batch Number: 320-138217

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Batch End: 11/18/2016 2:20:00PM

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-320-138217/1 N/A	N/A		250 mL				N/A	N/A	N/A		
				0.5 mL								
2	LCS-320-138217/2 N/A	N/A		250 mL				N/A	N/A	N/A		
				0.5 mL								
3	320-23542-A-1 (PFC_IDA_DOD5)	N/A (320-23542-1)	266.74 g	240.6 mL				11/19/16	16_Days	4	10x PFOS ✓ C	
			26.14 g	0.5 mL								
4	320-23542-A-2 (PFC_IDA_DOD5)	N/A (320-23542-1)	284.91 g	258.6 mL				11/19/16	16_Days	4	100x PFOS ✓	
			26.35 g	0.5 mL								
5	320-23542-A-2-MS (PFC_IDA_DOD5)	N/A (320-23542-1)	277.51 g	251.3 mL				11/19/16	16_Days	4		
			26.23 g	0.5 mL								
6	320-23542-A-2-MSD (PFC_IDA_DOD5)	N/A (320-23542-1)	273.81 g	247.8 mL				11/19/16	16_Days	4		
			26.03 g	0.5 mL								
7	320-23542-A-4 (PFC_IDA_DOD5)	N/A (320-23542-1)	280.63 g	254.2 mL				11/19/16	16_Days	4	10x PFOA PFOS PI ✓	
			26.42 g	0.5 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

98

Batch Number: 320-138217

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Batch End: 11-6-16 14:20

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	Div Rank	Comments	Output Sample Lab ID
1	MB-320-138217/1 N/A	N/A		250 mL				N/A	N/A	N/A		
				0.5 mL								
2	LCS-320-138217/2 N/A	N/A		250 mL				N/A	N/A	N/A		
				0.5 mL								
3	320-23542-A-1 (PFC_IDA_DOD5)	N/A (320-23542-1)	266.74 g					11/19/16	16_Days	4		
				0.5 mL								
4	320-23542-A-2 (PFC_IDA_DOD5)	N/A (320-23542-1)	284.91 g					11/19/16	16_Days	4		
				0.5 mL								
5	320-23542-A-2-MS (PFC_IDA_DOD5)	N/A (320-23542-1)	277.51 g					11/19/16	16_Days	4		
				0.5 mL								
6	320-23542-A-2-MSD (PFC_IDA_DOD5)	N/A (320-23542-1)	273.81 g					11/19/16	16_Days	4		
				0.5 mL								
7	320-23542-A-4 (PFC_IDA_DOD5)	N/A (320-23542-1)	280.63 g					11/19/16	16_Days	4		
				0.5 mL								

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138217

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Batch End:

Batch Notes

Manifold ID	5
Methanol ID	769617
Hexane ID	000146278
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	002836112A
H2O ID	11-14-16
Pipette ID	MD05306
Solvent Name	0.3% NH4OH-Me
Solvent Lot #	776672
Analyst ID - Reagent Drop	HJA
Analyst ID - SU Reagent Drop	HJA
Analyst ID - SU Reagent Drop Witness	NGK
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: 320-138217

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Method Code: 320-3535_IVWT-320

Batch End:

SOP Number	WS-LC-0025
Batch Comment	0.1N NaOH/H2O_00026

Comments

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138217

Method Code: 320-3535_IVWT-320

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-138217/1	LCMPFCSU_00046	25 uL	0.5 mL	HJA 11-17-16	NAW 11-17-16
LCS 320-138217/2	LCMPFCSU_00046	25 uL	0.5 mL		
LCS 320-138217/2	LCPFCSP_00066	20 uL	0.5 mL		
320-23542-A-1	LCMPFCSU_00046	25 uL	0.5 mL		
320-23542-A-2	LCMPFCSU_00046	25 uL	0.5 mL		
320-23542-A-2 MS	LCMPFCSU_00046	25 uL	0.5 mL		
320-23542-A-2 MS	LCPFCSP_00066	20 uL	0.5 mL		
320-23542-A-2 MSD	LCMPFCSU_00046	25 uL	0.5 mL		
320-23542-A-2 MSD	LCPFCSP_00066	20 uL	0.5 mL		
320-23542-A-4	LCMPFCSU_00046	25 uL	0.5 mL		

Aqueous Extraction Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138217

Analyst: Arauz, Horacio J

Batch Open: 11/17/2016 8:49:00AM

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): 320-138217 Test: PFC-L

Earliest Holding Time: 11-21-16

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 CI 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: HSA Date: 11-18-16

2nd Level Reviewer: VDM Date: 11/18/16

Comments:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Test America – Sacramento

Sample Dilution Record

Method ID PFC_IDA_DOD5 **Job #** 23542

Analyst (Print Name) Shyhara Chandrasena **Analyst Initials** SBC

Date 12/2/16

Sample#	Original F.V. (uL)	Aliquot (uL)	Dilution F.V. (uL)	Dilution Factor
1	500	100	1000	10x
2				
2MS				
2MSD				
3				
3MS				
3MSD				
4				
2				100x
2-MS				100x
2 MSD				100x

Comments:

C:\Users\phomsophat\AppData\Local\Microsoft\Windows\Temporary Internet Files\OLK708B\QA-747_SampleDilutionRecord.doc
10/20/16 RBH

100

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

AO 11/20/16
AB 12/2/16

Batch Number: 320-138291

Method Code: 320-Shake_Bath_14D-320

Analyst: Sharifi, Nooshin

Batch Open: 11/17/2016 12:46:00PM

Batch End: 11-19-16 13.18p.m

Shake Extraction with Ultrasonic Bath Extraction

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Initial Amount	Final Amount	Due Date	Analytical TAT	Div Rank	Comments	Output Sample Lab ID
1	MB-320-138291/1 N/A	N/A	4.98 g	1.0 mL	N/A	N/A	N/A		
2	LCS-320-138291/2 N/A	N/A	5.03 g	1.0 mL	N/A	N/A	N/A		
3	320-23542-A-3 (PFC_IDA_DOD5)	N/A (320-23542-1)	5.05 g	1.0 mL	11/19/16	16_Days	4	10x PFOS ✓	
4	320-23542-A-3-MS (PFC_IDA_DOD5)	N/A (320-23542-1)	4.99 g	1.0 mL	11/19/16	16_Days	4	10x PFOS ✓	
5	320-23542-A-3-MSD (PFC_IDA_DOD5)	N/A (320-23542-1)	5.03 g	1.0 mL	11/19/16	16_Days	4	10x PFOS ✓	

12/08/2016

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138291

Analyst: Sharifi, Nooshin

Batch Open: 11/17/2016 12:46:00PM

Method Code: 320-Shake_Bath_14D-320

Batch End:

Batch Notes

Balance ID	QA-070
Blank Sand Lot #	156690
Filter ID	NA
Millipore Water Dispense Date	
Analyst ID - Reagent Drop Witness	NSH
SPE Cartridge ID	016336091A
SPE Cartridge Type	WAX150mg
Hexane ID	0000146278
Methanol ID	769617
Ammonium Hydroxide/MeOH ID	776672
Sodium Hydroxide ID	758321
Methanolic Potassium Hydroxide ID	757037
Manifold ID	
Interference check solution ID	NA
Acetic Acid ID	429065
Batch Comment	Pipette ID: MD05306, MG05455

Comments

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-138291

Method Code: 320-Shake_Bath_14D-320

Analyst: Sharifi, Nooshin

Batch Open: 11/17/2016 12:46:00PM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-138291/1	LCMPFCSU_00046	50 uL	1.0 mL	NSH 11-17-16	HSA 11-17-16
LCS 320-138291/2	LCMPFCSU_00046	50 uL	1.0 mL		
LCS 320-138291/2	LCPFCSP_00064	40 uL	1.0 mL		
320-23542-A-3	LCMPFCSU_00046	50 uL	1.0 mL		
320-23542-A-3 MS	LCMPFCSU_00046	50 uL	1.0 mL		
320-23542-A-3 MS	LCPFCSP_00064	40 uL	1.0 mL		
320-23542-A-3 MSD	LCMPFCSU_00046	50 uL	1.0 mL		
320-23542-A-3 MSD	LCPFCSP_00064	40 uL	1.0 mL		

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 138291 Test: PFC-S

Earliest Holding Time: 11-28-16

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: 11-19-16

2nd Level Reviewer: HSA Date: 11-19-16

Comments: _____

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Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

AB 12/2/16

Batch Number: 320-139627

Method Code: 320-Shake_Bath_14D-320

Analyst: Arauz, Horacio J

Batch Open: 11/28/2016 11:03:00AM

Batch End: 11-30-16 16:30

Shake Extraction with Ultrasonic Bath Extraction

	Input Sample Lab ID (Analytical Method)	SDG (Job #)	Initial Amount	Final Amount	Due Date	Analytical TAT	Dlv Rank	Comments	Output Sample Lab ID
1	MB~320-139627/1 N/A	N/A	5.00 g	1.00 mL	N/A	N/A	N/A		MB 320-139627/1-A
2	LCS~320-139627/2 N/A	N/A	5.00 g	1.00 mL	N/A	N/A	N/A		LCS 320-139627/2-A
3	320-23651-A-2 (PFC_IDA_DOD5)	N/A (320-23651-1)	5.07 g	1.00 mL	11/21/16	16_Days	4		320-23651-A-2-A
4	320-23651-A-3 (PFC_IDA_DOD5)	N/A (320-23651-1)	5.05 g	1.00 mL	11/21/16	16_Days	4		320-23651-A-3-A
	320-23718-A-3 (PFC_IDA_DOD5)	N/A (320-23718-1)	5.00 g	1.00 mL	11/25/16	16_Days	4		320-23718-A-3-A
	320-23718-A-3~MS (PFC_IDA_DOD5)	N/A (320-23718-1)	5.01 g	1.00 mL	11/25/16	16_Days	4		320-23718-A-3-B MS
	320-23718-A-3~MSD (PFC_IDA_DOD5)	N/A (320-23718-1)	5.08 g	1.00 mL	11/25/16	16_Days	4		320-23718-A-3-C MSD
8	320-23783-A-1 (PFC_IDA_DOD5)	N/A (320-23783-1)	5.01 g	1.00 mL	11/29/16	11_Day_Rush	4		320-23783-A-1-A
9	320-23783-A-2 (PFC_IDA_DOD5)	N/A (320-23783-1)	5.07 g	1.00 mL	11/29/16	11_Day_Rush	4		320-23783-A-2-A
10	320-23783-A-5 (PFC_IDA_DOD5)	N/A (320-23783-1)	5.02 g	1.00 mL	11/29/16	11_Day_Rush	4	10X PFOS 681.79	320-23783-A-5-A
11	320-23783-A-6 (PFC_IDA_DOD5)	N/A (320-23783-1)	5.06 g	1.00 mL	11/29/16	11_Day_Rush	4		320-23783-A-6-A
12	320-23783-A-7 (PFC_IDA_DOD5)	N/A (320-23783-1)	5.03 g	1.00 mL	11/29/16	11_Day_Rush	4		320-23783-A-7-A
13	320-23783-A-8 (PFC_IDA_DOD5)	N/A (320-23783-1)	5.00 g	1.00 mL	11/29/16	11_Day_Rush	4		320-23783-A-8-A
14	320-23783-A-9 (PFC_IDA_DOD5)	N/A (320-23783-1)	5.02 g	1.00 mL	11/29/16	11_Day_Rush	4		320-23783-A-9-A
15	320-23783-A-10 (PFC_IDA_DOD5)	N/A (320-23783-1)	5.03 g	1.00 mL	11/29/16	11_Day_Rush	4		320-23783-A-10-A

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139627

Analyst: Arauz, Horacio J

Batch Open: 11/28/2016 11:03:00AM

Method Code: 320-Shake_Bath_14D-320

Batch End:

16	320-23783-A-11 (PFC_IDA_DOD5)	N/A (320-23783-1)	5.05 g	1.00 mL	11/29/16	11_Day_Rush	4	

Batch Notes

Balance ID	QA-070
Blank Sand Lot #	Fisher 156690
Filter ID	NA
Millipore Water Dispense Date	11-29-16
Analyst ID - Reagent Drop Witness	NSH
SPE Cartridge ID	016636277A
SPE Cartridge Type	WAX 150mg
Hexane ID	J.T.BAKER 0000146278
Methanol ID	789824
Ammonium Hydroxide/MeOH ID	794501
Sodium Hydroxide ID	758321
Methanolic Potassium Hydroxide ID	757037
Manifold ID	5, 9
Interference check solution ID	NA
Acetic Acid ID	429065
Batch Comment	Pipette MD05306

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139627

Analyst: Arauz, Horacio J

Batch Open: 11/28/2016 11:03:00AM

Method Code: 320-Shake_Bath_14D-320

Batch End:

Comments

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139627

Method Code: 320-Shake_Bath_14D-320

Analyst: Arauz, Horacio J

Batch Open: 11/28/2016 11:03:00AM

Batch End:

Reagent Additions Worksheet

Lab ID	Reagent Code	Amount Added	Final Amount	By	Witness
MB 320-139627/1	LCMPFCSU_00046	50 uL	1.00 mL	HJA 11-28-16	NSH 11-28-16
LCS 320-139627/2	LCMPFCSU_00046	50 uL	1.00 mL		
LCS 320-139627/2	LCPFCSP_00070	40 uL	1.00 mL		
320-23651-A-2	LCMPFCSU_00046	50 uL	1.00 mL		
320-23651-A-3	LCMPFCSU_00046	50 uL	1.00 mL		
320-23718-A-3	LCMPFCSU_00046	50 uL	1.00 mL		
320-23718-A-3 MS	LCMPFCSU_00046	50 uL	1.00 mL		
320-23718-A-3 MS	LCPFCSP_00070	40 uL	1.00 mL		
320-23718-A-3 MSD	LCMPFCSU_00046	50 uL	1.00 mL		
320-23718-A-3 MSD	LCPFCSP_00070	40 uL	1.00 mL		
320-23783-A-1	LCMPFCSU_00046	50 uL	1.00 mL		
320-23783-A-2	LCMPFCSU_00046	50 uL	1.00 mL		
320-23783-A-5	LCMPFCSU_00046	50 uL	1.00 mL		
320-23783-A-6	LCMPFCSU_00046	50 uL	1.00 mL		
320-23783-A-7	LCMPFCSU_00046	50 uL	1.00 mL		
320-23783-A-8	LCMPFCSU_00046	50 uL	1.00 mL		
320-23783-A-9	LCMPFCSU_00046	50 uL	1.00 mL		
320-23783-A-10	LCMPFCSU_00046	50 uL	1.00 mL		

Solid SW-846-3500 Analysis Sheet

(To Accompany Samples to Instruments)

Batch Number: 320-139627

Analyst: Arauz, Horacio J

Batch Open: 11/28/2016 11:03:00AM

Method Code: 320-Shake_Bath_14D-320

Batch End:

320-23783-A-11	LCMPFCSU_00046	50 uL	1.00 mL	HSA 11-28-16	NSH 11-28-16

Other Reagents:

Reagent	Amount/Units	Lot#:

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 320-139627 Test: PFC-IDA_0005

Earliest Holding Time: 11-29-16

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 CI 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: HSA Date: 11-30-16

2nd Level Reviewer: VPM Date: 11-30-16

Comments:

GENERAL CHEMISTRY

COVER PAGE
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-23542-1

SDG No.:

Project: Former Bay Head Road Annex (RFP JU06-01)

Client Sample ID	Lab Sample ID
DPT-16-34-SO-14-15	320-23542-3

Comments:

9-IN
DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-23542-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: D 2216 LOQ Date: 01/01/2012 08:18

Analyte	Wavelength/ Mass	LOQ (%)	
Percent Moisture		0.1	
Percent Solids		0.1	

9-IN
CALIBRATION BLANK DETECTION LIMITS
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento Job Number: 320-23542-1

SDG Number:

Matrix: Solid Instrument ID: NOEQUIP

Method: D 2216 XRL Date: 01/01/2012 08:19

Analyte	Wavelength/ Mass	XRL (%)	
Percent Moisture		0.1	
Percent Solids		0.1	

13-IN
ANALYSIS RUN LOG
GENERAL CHEMISTRY

Lab Name: TestAmerica Sacramento

Job No.: 320-23542-1

SDG No.:

Instrument ID: NOEQUIP

Analysis Method: D 2216

Start Date: 11/22/2016 13:53

End Date: 11/22/2016 13:53

Lab Sample Id	D/F	Type	Time	Analytes																									
				%Sol	Moist																								
320-23542-3	1	T	13:53	X	X																								
ZZZZZZ			13:53																										
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ZZZZZZ			13:53																										
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Prep Types:
T = Total/NA

GENERAL CHEMISTRY BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-23542-1

SDG No.:

Batch Number: 139136 Batch Start Date: 11/22/16 13:53 Batch Analyst: Yang, Maisee

Batch Method: D 2216 Batch End Date: 11/23/16 10:20

Lab Sample ID	Client Sample ID	Method Chain	Basis	DISH#	DishWeight	SampleMassWet	SampleMassDry		
320-23542-A-3	DPT-16-34-SO-14-15	D 2216	T	1	2.00 g	7.32 g	6.23 g		

Batch Notes	
Balance ID	QA-068 No Unit
Date and Time Samples in Desiccator	11/23/16 @9:12
Date and Time Samples out of Desiccator	11/23/16 @10:20
Date samples were placed in the oven	11/22/16
Oven Temp In	110 Degrees C
Time samples were place in the oven	14:25
Date samples were removed from oven	11/23/16
Oven Temp Out	109 Degrees C
Time Samples were removed from oven	9:12
Oven ID	Soil Prep #2
Thermometer ID	151969607

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.

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Sacramento
Preparation Data Review Checklist

Preparation Batch Number(s): 139136 Test: % Moisture

Earliest Holding Time: N/A

320-23542; -23546; -23559; -23627; -23651

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	N/A	NA
Weights in anticipated range and not targeted	✓	✓
All additional test requirements performed, documented, and uploaded to TALS correctly (e.g. final amount, initial amount, turbidity, and CI Check)	N/A	NA
The pH is transcribed correctly in TALS	N/A	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	N/A	NA
All spike amounts correct and added to necessary samples and QC	N/A	NA
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: CFR Date: 11/25/16

2nd Level Reviewer: MY Date: 11/28/16

Comments:

Shipping and Receiving Documents

Chain of Custody Record

Temperature on Receipt 2.0°C

Drinking Water? Yes ☐ No ☑

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124 (1007)

Client	Project Manager	Date	Chain of Custody Number
AECOM	Kurt VanGelder	11/14/16	299016
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 of 1
3101 WILSON BLVD	(703) 549-8728		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
ARLINGTON / VA / 22201	MIKE GLINSKI	JILL KELLMANN	
Project Name and Location (State)	**Carrier/Waybill Number**		
Former Bayhead Rd Annex			
Contract/Purchase Order/Quote No.			
32007449 / 60444465			

Analysis (Attach list if more space is needed)

Special Instructions/ Conditions of Receipt

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAc/ NaOH	PFOA	PFOS	PFBS
DPT-16-01-GW-17-21	11/14/16	1030		✓			2						✓	✓	✓
DPT-16-05-GW-17-21		1145		✓			2						✓	✓	✓
DPT-16-05-GW-17-21-MS		1145		✓			2						✓	✓	✓
DPT-16-05-GW-17-21-MSD		1145		✓			2						✓	✓	✓
DPT-16-34-SO-14-15		1325				✓	1						✓	✓	✓
DPT-16-34-GW-31-35		1430		✓			2						✓	✓	✓

320-23542 Chain of Custody

Possible Hazard Identification
☑ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal
☐ Return To Client ☑ Disposal By Lab ☐ Archive For _____ Months
(A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required
☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☑ 14 Days ☐ 21 Days ☐ Other _____

QC Requirements (Specify)

1. Relinquished By: AECOM	Date: 11/14/16	Time: 1700	1. Received By: TRANSFER TO FEDEX	Date:	Time:
2. Relinquished By:	Date:	Time:	2. Received By:	Date: 11/15/16	Time: 0930
3. Relinquished By:	Date:	Time:	3. Received By:	Date:	Time:

Comments: 2.0°C

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: AECOM Technical Services Inc. Job Number: 320-23542-1

Login Number: 23542 **List Source: TestAmerica Sacramento**
List Number: 1
Creator: Nelson, Kym D

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.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to Job Narrative for details.
Is the Field Sampler's name present on COC?	N/A	
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.	False	Refer to Job Narrative for details.
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	

"DPT-16-01-GW-17-21","537","11/20/16","22:33","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.011","","TRG","Yes","Y","M","Y","0.00095","0.0026","0.0026","UG_L","UG_L","","","0","","","","0","",
"","","","","","","","","","","","",""
"DPT-16-01-GW-17-21","537","11/20/16","22:33","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.86","","TRG","No","Y","E","Y","0.0013","0.0042","0.0042","UG_L","UG_L","","","0","","","","0","","","
","","","","","","","","","","",""
"DPT-16-01-GW-17-21","537","11/20/16","22:33","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.062","","TRG","Yes","Y","M","Y","0.00078","0.0026","0.0026","UG_L","UG_L","","","0","","","","0","",
"","","","","","","","","","","","",""
"DPT-16-01-GW-17-21","537","12/02/16","13:22","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","","","TRG","No","N","U","Y","0.0095","0.026","0.026","UG_L","UG_L","","","0","","","","0","","","","","",
"","","","","","","","",""
"DPT-16-01-GW-17-21","537","12/02/16","13:22","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","0.98","","TRG","Yes","Y","D","Y","0.013","0.042","0.042","UG_L","UG_L","","","0","","","","0","","","","
","","","","","","","","","",""
"DPT-16-01-GW-17-21","537","12/02/16","13:22","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid
(PFOA)","0.066","","TRG","No","Y","D","Y","0.0078","0.026","0.026","UG_L","UG_L","","","0","","","","0","","",""
,"","","","","","","","","","",""
"DPT-16-05-GW-17-21","537","11/20/16","22:40","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.050","","TRG","Yes","Y","JM","Y","0.00089","0.0024","0.0024","UG_L","UG_L","","","0","","","","0",""
,"","","","","","","","","","","","",""
"DPT-16-05-GW-17-21","537","11/20/16","22:40","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","2.2","","TRG","No","Y","JE","Y","0.0012","0.0039","0.0039","UG_L","UG_L","","","0","","","","0","","",""
,"","","","","","","","","","",""
"DPT-16-05-GW-17-21","537","11/20/16","22:40","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.19","","TRG","Yes","Y","JM","Y","0.00072","0.0024","0.0024","UG_L","UG_L","","","0","","","","0","",
"","","","","","","","","","","","",""
"DPT-16-05-GW-17-21","537","12/02/16","12:59","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","","","TRG","No","N","U","Y","0.089","0.24","0.24","UG_L","UG_L","","","0","","","","0","","","","","","","
","","","","","","",""
"DPT-16-05-GW-17-21","537","12/02/16","12:59","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","2.8","","TRG","Yes","Y","JD","Y","0.12","0.39","0.39","UG_L","UG_L","","","0","","","","0","","","","","",
"","","","","","","","",""
"DPT-16-05-GW-17-21","537","12/02/16","12:59","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid
(PFOA)","0.21","","TRG","No","Y","DJ","Y","0.072","0.24","0.24","UG_L","UG_L","","","0","","","","0","","","","","
","","","","","","","","",""
"DPT-16-34-GW-31-35","537","11/20/16","23:03","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.12","","TRG","Yes","Y","M","Y","0.00090","0.0025","0.0025","UG_L","UG_L","","","0","","","","0","",""
,"","","","","","","","","","","",""
"DPT-16-34-GW-31-35","537","11/20/16","23:03","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","1.2","","TRG","No","Y","E","Y","0.0013","0.0039","0.0039","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-34-GW-31-35","537","11/20/16","23:03","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","0.95","","TRG","No","Y","EM","Y","0.00074","0.0025","0.0025","UG_L","UG_L","","","0","","","","0","",
"","","","","","","","","","","","",""
"DPT-16-34-GW-31-35","537","12/02/16","16:14","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.081","","TRG","No","Y","D","Y","0.0090","0.025","0.025","UG_L","UG_L","","","0","","","","0","","","",
"","","","","","","","","","",""
"DPT-16-34-GW-31-35","537","12/02/16","16:14","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","1.4","","TRG","Yes","Y","D","Y","0.013","0.039","0.039","UG_L","UG_L","","","0","","","","0","","","","",
"","","","","","","","","",""
"DPT-16-34-GW-31-35","537","12/02/16","16:14","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid
(PFOA)","1.0","","TRG","Yes","Y","D","Y","0.0074","0.025","0.025","UG_L","UG_L","","","0","","","","0","","","","

","","","","","","","","","","",""
"DPT-16-34-SO-14-15","537","11/20/16","21:25","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","34","","TRG","No","Y","J","Y","0.16","0.62","0.62","UG_KG","UG_KG","","","0","","","","0","","","","",""
,"","","","","","","","","",""
"DPT-16-34-SO-14-15","537","11/20/16","21:25","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","3.2","","TRG","Yes","Y","MJ","Y","0.13","0.62","0.62","UG_KG","UG_KG","","","0","","","","0","","","","
","","","","","","","","","",""
"DPT-16-34-SO-14-15","537","11/20/16","21:25","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","Yes","N","U","Y","0.13","0.50","0.50","UG_KG","UG_KG","","","0","","","","0","","","","","",
"","","","","","","","","",""
"DPT-16-34-SO-14-15","537","12/02/16","13:37","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate (PFOS)","35","","TRG","Yes","Y","JD","Y","1.6","6.2","6.2","UG_KG","UG_KG","","","0","","","","0","","","","","",
"","","","","","","","","",""
"DPT-16-34-SO-14-15","537","12/02/16","13:37","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid (PFOA)","3.6","","TRG","No","Y","JD","Y","1.3","6.2","6.2","UG_KG","UG_KG","","","0","","","","0","","","","","",
"","","","","","","","","",""
"DPT-16-34-SO-14-15","537","12/02/16","13:37","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","No","N","U","Y","1.3","5.0","5.0","UG_KG","UG_KG","","","0","","","","0","","","","","","","",
"","","","","","",""
"DPT-16-05-GW-17-21-MSDSD","537","11/20/16","22:55","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.0881","","SC","Yes","Y","M","Y","0.00093","0.0025","0.0025","UG_L","UG_L","","","0","","","","0.050"
,"0.0357","0.0881","106","19","50","150","30","","","","","","",""
"DPT-16-05-GW-17-21-MSDSD","537","11/20/16","22:55","T","NA","Initial","1763-23-1","Perfluorooctane
Sulfonate
(PFOS)","2.05","","SC","No","Y","E4","Y","0.0013","0.0040","0.0040","UG_L","UG_L","","","0","","","","2.2","0.03
74","2.05","0","17","60","140","30","","*","","","","",""
"DPT-16-05-GW-17-21-MSDSD","537","11/20/16","22:55","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.210","","SC","Yes","Y","4M","Y","0.00075","0.0025","0.0025","UG_L","UG_L","","","0","","","","0.19",
"0.0404","0.210","59","15","60","140","30","","*","","","","",""
"DPT-16-05-GW-17-21-MSDSD","537","12/02/16","13:14","T","NA","DILUTION1","335-67-1","Perfluorooctanoic
acid
(PFOA)","0.214","","SC","No","Y","J4D","Y","0.075","0.25","0.25","UG_L","UG_L","","","0","","","","0.21","0.0404
","0.214","4","22","60","140","30","","*","","","","",""
"DPT-16-05-GW-17-21-MSDSD","537","12/02/16","13:14","T","NA","DILUTION1","375-73-
5","Perfluorobutanesulfonic acid
(PFBS)","","","SC","No","N","U","Y","0.093","0.25","0.25","UG_L","UG_L","","","0","","","","0.19","0.0357","0","0
","","50","150","30","","","","","","",""
"DPT-16-05-GW-17-21-MSDSD","537","12/02/16","13:14","T","NA","DILUTION1","1763-23-1","Perfluorooctane
Sulfonate
(PFOS)","2.79","","SC","Yes","Y","4D","Y","0.13","0.40","0.40","UG_L","UG_L","","","0","","","","2.8","0.0374","2.
79","0","10","60","140","30","","*","","","","",""
"DPT-16-05-GW-17-21-MSMS","537","11/20/16","22:48","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","2.43","","SC","No","Y","E4","Y","0.0013","0.0040","0.0040","UG_L","UG_L","","","2.2","0.0369","2.43","
610","0","","","","","60","140","","*","","","","","",""
"DPT-16-05-GW-17-21-MSMS","537","11/20/16","22:48","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.244","","SC","Yes","Y","4","Y","0.00074","0.0025","0.0025","UG_L","UG_L","","","0.19","0.0398","0.2
44","145","0","","","","","60","140","","*","","","","","",""
"DPT-16-05-GW-17-21-MSMS","537","11/20/16","22:48","T","NA","Initial","375-73-5","Perfluorobutanesulfonic
acid
(PFBS)","0.107","","SC","Yes","Y","JM","Y","0.00091","0.0025","0.0025","UG_L","UG_L","","","0.050","0.0352","0
.107","161","0","","","","","50","150","","*","","","","","",""
"DPT-16-05-GW-17-21-MSMS","537","12/02/16","13:06","T","NA","DILUTION1","375-73-
5","Perfluorobutanesulfonic acid

(PFBS)","","","SC","No","N","U","Y","0.091","0.25","0.25","UG_L","UG_L","","","0.19","0.0352","0","0","0","","","","","50","150","","","","","","","","","","
"DPT-16-05-GW-17-21-MSMS","537","12/02/16","13:06","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","3.08","","SC","Yes","Y","4D","Y","0.13","0.40","0.40","UG_L","UG_L","","","2.8","0.0369","3.08","749","0","","","","","","60","140","","*","","","","","","","","
"DPT-16-05-GW-17-21-MSMS","537","12/02/16","13:06","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid
(PFOA)","0.268","","SC","No","Y","4D","Y","0.074","0.25","0.25","UG_L","UG_L","","","0.21","0.0398","0.268","140","0","","","","","","60","140","","","","","","","","","","
"DPT-16-34-SO-14-15MS","537","11/20/16","21:33","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","6.08","","SC","Yes","Y","","Y","0.13","0.50","0.50","UG_KG","UG_KG","","","0.37","4.46","6.08","136","0","","","","","","50","150","","","","","","","","","","
"DPT-16-34-SO-14-15MS","537","11/20/16","21:33","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","67.4","","SC","No","Y","E4","Y","0.16","0.63","0.63","UG_KG","UG_KG","","","34","4.68","67.4","719","0","","","","","","60","140","","*","","","","","","","","
"DPT-16-34-SO-14-15MS","537","11/20/16","21:33","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","12.2","","SC","Yes","Y","MJ","Y","0.13","0.63","0.63","UG_KG","UG_KG","","","3.2","5.04","12.2","179","0","","","","","","60","140","","*","","","","","","","","
"DPT-16-34-SO-14-15MS","537","12/02/16","13:44","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","69.2","","SC","Yes","Y","4D","Y","1.6","6.3","6.3","UG_KG","UG_KG","","","35","4.68","69.2","740","0","","","","","","60","140","","*","","","","","","","","
"DPT-16-34-SO-14-15MS","537","12/02/16","13:44","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","4.90","","SC","No","Y","JD","Y","1.3","5.0","5.0","UG_KG","UG_KG","","","3.7","4.46","4.90","110","0","","","","","","50","150","","","","","","","","","","
"DPT-16-34-SO-14-15MS","537","12/02/16","13:44","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid
(PFOA)","12.7","","SC","No","Y","JD","Y","1.3","6.3","6.3","UG_KG","UG_KG","","","3.6","5.04","12.7","182","0","","","","","","60","140","","*","","","","","","","","
"DPT-16-34-SO-14-15SD","537","11/20/16","21:40","T","NA","Initial","335-67-1","Perfluorooctanoic acid
(PFOA)","13.1","","SC","Yes","Y","MJ","Y","0.13","0.63","0.63","UG_KG","UG_KG","","","0","","","","3.2","5.00","13.1","198","7","60","140","30","","*","","","","","","","
"DPT-16-34-SO-14-15SD","537","11/20/16","21:40","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","59.2","","SC","No","Y","E4","Y","0.16","0.63","0.63","UG_KG","UG_KG","","","0","","","","34","4.64","59.2","549","13","60","140","30","","*","","","","","","
"DPT-16-34-SO-14-15SD","537","11/20/16","21:40","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","5.82","","SC","Yes","Y","","Y","0.13","0.50","0.50","UG_KG","UG_KG","","","0","","","","0.37","4.42","5.82","132","4","50","150","30","","","","","","","","
"DPT-16-34-SO-14-15SD","537","12/02/16","13:52","T","NA","DILUTION1","335-67-1","Perfluorooctanoic acid
(PFOA)","13.1","","SC","No","Y","JD","Y","1.3","6.3","6.3","UG_KG","UG_KG","","","0","","","","3.6","5.00","13.1","191","3","60","140","30","","*","","","","","","
"DPT-16-34-SO-14-15SD","537","12/02/16","13:52","T","NA","DILUTION1","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","63.2","","SC","Yes","Y","4D","Y","1.6","6.3","6.3","UG_KG","UG_KG","","","0","","","","35","4.64","63.2","617","9","60","140","30","","*","","","","","","
"DPT-16-34-SO-14-15SD","537","12/02/16","13:52","T","NA","DILUTION1","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","4.97","","SC","No","Y","JD","Y","1.3","5.0","5.0","UG_KG","UG_KG","","","0","","","","3.7","4.42","4.97","113","2","50","150","30","","","","","","","","
"LCS 320-138217/2-A","537","11/20/16","22:25","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid
(PFBS)","0.0365","","SC","Yes","Y","","Y","0.00092","0.0025","0.0025","UG_L","UG_L","","","0","0.0354","0.0365","103","0","","","","","","50","150","","","","","","","","","","
"LCS 320-138217/2-A","537","11/20/16","22:25","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate

(PFOS)","0.0347","","SC","Yes","Y","","Y","0.0013","0.0040","0.0040","UG_L","UG_L","","","0","0.0371","0.0347","94","0","","","","","","60","140","","","","","","","","","","
"LCS 320-138217/2-A","537","11/20/16","22:25","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","0.0392","","SC","Yes","Y","","Y","0.00075","0.0025","0.0025","UG_L","UG_L","","","0","0.0400","0.0392","98","0","","","","","","60","140","","","","","","","","","","
"LCS 320-138291/2-A","537","11/20/16","21:18","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","4.70","","SC","Yes","Y","","Y","0.10","0.40","0.40","UG_KG","UG_KG","","","0","3.51","4.70","134","0","","","","","","50","150","","","","","","","","","","
"LCS 320-138291/2-A","537","11/20/16","21:18","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","3.90","","SC","Yes","Y","","Y","0.13","0.50","0.50","UG_KG","UG_KG","","","0","3.69","3.90","106","0","","","","","","60","140","","","","","","","","","","
"LCS 320-138291/2-A","537","11/20/16","21:18","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","4.37","","SC","Yes","Y","","Y","0.10","0.50","0.50","UG_KG","UG_KG","","","0","3.98","4.37","110","0","","","","","","60","140","","","","","","","","","","
"MB 320-138217/1-A","537","11/20/16","22:18","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","Yes","N","U","Y","0.00092","0.0025","0.0025","UG_L","UG_L","","","0","","","","0","
"MB 320-138217/1-A","537","11/20/16","22:18","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","","","TRG","Yes","N","U","Y","0.0013","0.0040","0.0040","UG_L","UG_L","","","0","","","","0","
"MB 320-138217/1-A","537","11/20/16","22:18","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","","","TRG","Yes","N","U","Y","0.00075","0.0025","0.0025","UG_L","UG_L","","","0","","","","0","
"MB 320-138291/1-A","537","11/20/16","21:10","T","NA","Initial","375-73-5","Perfluorobutanesulfonic acid (PFBS)","","","TRG","Yes","N","U","Y","0.10","0.40","0.40","UG_KG","UG_KG","","","0","","","","0","
"MB 320-138291/1-A","537","11/20/16","21:10","T","NA","Initial","1763-23-1","Perfluorooctane Sulfonate (PFOS)","","","TRG","Yes","N","U","Y","0.13","0.50","0.50","UG_KG","UG_KG","","","0","","","","0","
"MB 320-138291/1-A","537","11/20/16","21:10","T","NA","Initial","335-67-1","Perfluorooctanoic acid (PFOA)","","","TRG","Yes","N","U","Y","0.10","0.50","0.50","UG_KG","UG_KG","","","0","","","","0","

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Data Validation Report

Project:	Former Bay Head Road Annex- Annapolis, MD
Laboratory:	TestAmerica-West Sacramento, CA
Job Number:	320-23542-1
Analyses/Method:	Perfluorinated Compounds (PFCs) in Water, Soils, Sediments and Tissues by Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS)/ Revision 1.4 (August 2015)
Validation Level:	Limited
Resolution Consultants Project Number:	60444465-DM.DE
Prepared by:	Paula DiMattei/Resolution Consultants Completed on: 12/07/16
Reviewed by:	Robert Kennedy/Resolution Consultants Completed on: 12/19/16
File Name: J23542-1_PFC memo.docx	

SUMMARY

The samples listed below were collected by Resolution Consultants from the Former Bay Head Road Annex site in Annapolis, MD on November 14, 2016.

Sample ID	Matrix/Sample Type
DPT-16-01-GW-17-21	Groundwater
DPT-16-05-GW-17-21	Groundwater
DPT-16-34-GW-31-35	Groundwater
DPT-16-34-SO-14-15	Soil

Data validation activities were conducted with reference to:

- TestAmerica-West Sacramento SOP: Perfluorinated Compounds (PFCs) in Water, Soils, Sediments and Tissues by Liquid Chromatography/Mass Spectrometry/Mass Spectrometry (LC/MS/MS)/Revision 1.4 (August 2015);
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (September 2016);
- USEPA Contract Laboratory Program National Functional Guidelines for High Resolution Superfund Methods Data Review (April 2016)
- Quality Systems Manual (QSM) for Environmental Laboratories, Version 5.0 (DoD, July 2013); and
- the project-specific Sampling and Analysis Plan.

In the absence of method-specific information, laboratory quality control (QC) limits, project-specific requirements and/or professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following review elements (where applicable to the method):

✗	Data completeness (chain-of-custody (COC)/sample integrity
✓	Holding times/sample preservation
✓	Initial calibration/initial and continuing calibration verification
✓	Laboratory method blanks/equipment blanks
✗	Matrix spike (MS) and/or matrix spike duplicate (MSD) results
✓	Laboratory control sample (LCS) results
NA	Field duplicate results
✓	Labeled compound results
✓	Sample results/reporting issues

The symbol (✓) indicates that no validation qualifiers were applied based on this parameter. An "NA" indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (✗) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Select data points were qualified as estimated due to nonconformances of certain QC criteria (see discussion below). Qualified sample results are presented in Table 1.

RESULTS

Data Completeness (chain-of-custody (COC)/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

The laboratory noted in the case narrative that all groundwater samples were decanted to new bottles prior to spiking and extraction because of the presence of excessive amounts of sediment present in the sample bottles. In these cases, the sample bottles are not rinsed as required by the method. Consequently, professional judgment was applied to qualify the positive results for all target compounds as estimated (J-) in these samples indicating a potential loss of target compounds that may have remained in the original sample bottle. Qualified sample results are presented in Table 1.

Holding Times/Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

Initial Calibration/Initial and Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD) or correlation coefficient (r) or coefficient of determination (r^2) method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery acceptance criteria were met; and
- the continuing calibration verification standard (CCV) frequency and method percent difference or percent drift (%D) criteria were met.

All QC acceptance criteria were met.

Laboratory Method Blanks/Equipment Blanks

Laboratory method blanks and equipment blanks are evaluated as to whether there are contaminants detected above the detection limit (DL). Target compounds were not detected in the laboratory method blanks associated with the samples in this data set. An equipment blank was not submitted with the samples in this data set.

MS/MSD Results

The MS/MSD percent recovery (%R) and relative percent difference (RPD) results were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met except for the nonconformances summarized below. Nonconformances are not noted below if qualification of the data was not required.

Sample ID	Compound	MS/MSD % R	QC Limits
DPT-16-05-GW-17-21	PFBS	161/ok	50-150
Sample ID	**Compound**	**MS/MSD % R**	**QC Limits**
DPT-16-34-SO-14-15	PFOA	179/198	60-140

The parent sample was qualified as follows: (based on NFG 2016)

Criteria	Actions[1]	
	Detected	Not detected
RPD >Upper Acceptance Limit	J	No qualification
%R >Upper Acceptance Limit	J+	No qualification
%R >10% but < Lower Acceptance Limit	J-	UJ
<10%	J-	R
[1]Professional judgment was used to include bias codes as applicable		

Qualified sample results are presented in Table 1.

LCS Results

The LCS %Rs were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

Field Duplicate Results

Field duplicate samples were not submitted with this data set. Qualification of the data was not required on this basis.

Labeled Compound Results

The labeled compound results were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met or qualification of the data was not required.

Sample Results/Reporting Issues

If applicable, compounds detected at concentrations less than the LOQ but greater than the DL are qualified by the laboratory as estimated (J). This "J" qualifier is retained during data validation.

It should be noted that the overall bias for a sample result is considered to be indeterminate in cases where the cumulative nonconformances do not show a consistent bias or in cases of the presence of a conflicting high and low bias.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Qualifier Codes and Explanations

Attachment B: Reason Codes and Explanations

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
DPT-16-01-GW-17-21	WG	Perfluorooctanoic Acid (PFOA)	0.062	0.0021	0.0026	µg/L	J-	si
DPT-16-01-GW-17-21	WG	Perfluorobutanesulfonic Acid (PFBS)	0.011	0.0021	0.0026	µg/L	J-	si
DPT-16-01-GW-17-21	WG	Perfluorooctanesulfonic Acid (PFOS)	0.98	0.031	0.042	µg/L	J-	si
DPT-16-05-GW-17-21	WG	Perfluorooctanoic Acid (PFOA)	0.19	0.0019	0.0024	µg/L	J-	si
DPT-16-05-GW-17-21	WG	Perfluorobutanesulfonic Acid (PFBS)	0.050	0.0019	0.0024	µg/L	J	m,si
DPT-16-05-GW-17-21	WG	Perfluorooctanesulfonic Acid (PFOS)	2.8	0.29	0.39	µg/L	J-	si
DPT-16-34-GW-31-35	WG	Perfluorobutanesulfonic Acid (PFBS)	0.12	0.0020	0.0025	µg/L	J-	si
DPT-16-34-GW-31-35	WG	Perfluorooctanesulfonic Acid (PFOS)	1.4	0.030	0.039	µg/L	J-	si
DPT-16-34-GW-31-35	WG	Perfluorooctanoic Acid (PFOA)	1.0	0.020	0.025	µg/L	J-	si
DPT-16-34-SO-14-15	SO	Perfluorooctanoic Acid (PFOA)	3.2	0.37	0.62	µg/Kg	J+	m

Attachment A

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J+	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample and is potentially biased high.
J-	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample and is potentially biased low.
JN	The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment B

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
c	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas
k	Estimated Maximum Possible Concentration (EMPC)
l	LCS or OPR recoveries
lc	Labeled compound recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
p	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
s	Surrogate recovery
si	Sample integrity issue
su	Ion suppression
t	Temperature preservation issue
x	Percent solids
y	Serial dilution results
z	ICS results

INSTALLATION_ID	SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	SAMPLE_NAME	SAMPLE_MATRIX_DESC	COLLECT_DATE	ANALYTICAL_METHOD_GRP_DESC	SDG
DAVID_TAYLOR_RC	SITE 00003	DPT-16-01	Direct Push/Geoprobe	1474410	496803	DPT-16-01-GW-17-21	Ground water	11/14/2016	Perfluoroalkyl Compounds	320-23542-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-05	Direct Push/Geoprobe	1474350	496710	DPT-16-05-GW-17-21	Ground water	11/14/2016	Perfluoroalkyl Compounds	320-23542-1
DAVID_TAYLOR_RC	SITE 00003	DPT-16-34	Direct Push/Geoprobe	1474530	496331	DPT-16-34-GW-31-35	Ground water	11/14/2016	Perfluoroalkyl Compounds	320-23542-1